



Tube Catalog

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DELREZ & LOURTIE

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- Fortis : 240-0391000-94 - IBAN : BE87 2400 3910 0094 - Bic/Swift : GEBABEBB

SELECTING THE PROPER TUBEDESIGN FITTINGS

Tubedesign fittings are a blackheart malleable casting and are manufactured to BS EN 1562 1997 for the strength requirements. Tubedesign fittings are hot dip galvanised to BS EN 1461 1999. Tubedesign fittings are supplied with stainless steel setscrews. The only tool required to tighten the setscrew is a simple allen key. When tightened to a torque of 4.1kg/m (29ft/lb), the setscrew is capable of withstanding an applied slip load of 900kg. This torque cannot be achieved using an allen key, but can be obtained when the setscrew is fully tightened using a ratchet key and a correctly set torque wrench. Tubedesign fittings are available in 5 standard sizes as detailed in this brochure. If a Tubedesign fitting reference number does not include a tube reference number then this fitting size is not available at the time of printing.

SELECTING A TUBEDESIGN FITTING

Selecting a Tubedesign fitting is very simple. Using the information in the brochure, select the fitting to suit the task required, select the size of tube that is suitable then combine the two reference numbers. ie. A short inline tee using 42.4mm tube = 101C. Whilst the information and guidelines in this brochure are given as guidance, the ultimate responsibility for selecting the correct fitting and size for any application belongs to the customer. The customer must also ensure that any structure or construction is of sufficient strength to support the weight of the Tubedesign fittings and tube as well as any applied load. Full technical support and assistance is available upon request.

FINISH

The standard finish of Tubedesign fittings and associated tubing is hot dipped galvanised

AVAILABILITY

Tubedesign fittings are available from authorised stockists around the Country. For details of your nearest stockist or if you are in doubt about the correct way of reading this brochure or interpreting any information within this brochure please contact Tubedesign.

HEALTH AND SAFETY CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH REGULATIONS 1988

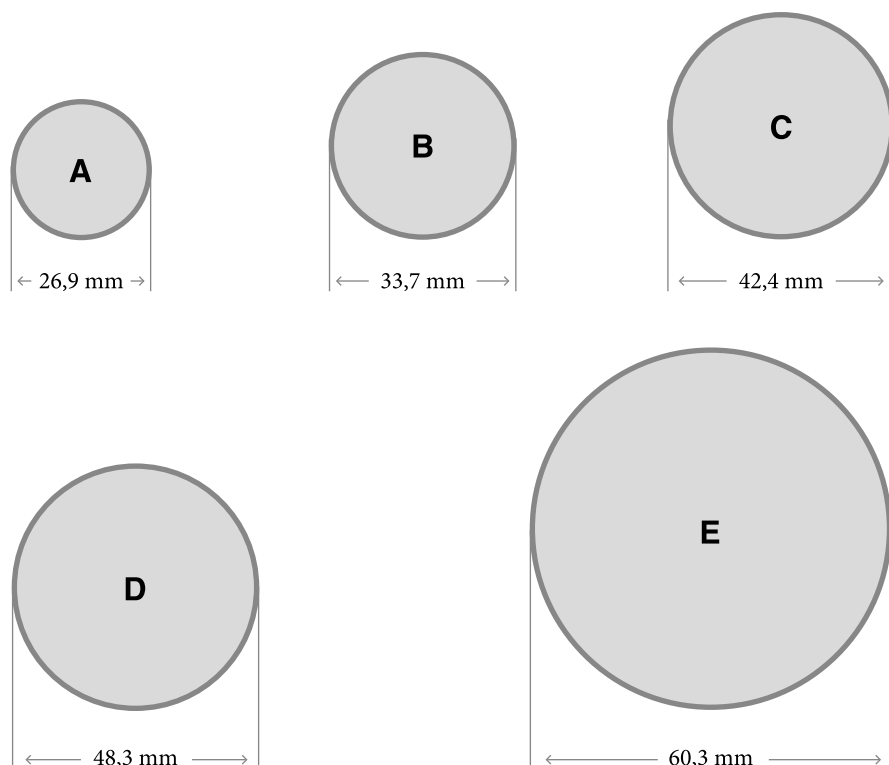
Tubedesign have and continue to investigate the Tubedesign fittings and associated tubing. None are considered to be hazardous within the meaning of the regulations provided that the tube is cut using pipecutters or saws and the Tubedesign fittings are tightened with the proprietary allen or ratchet key. Any welding will have COSHH implications, especially if any surface is pre finished, i.e. galvanised, painted, powder coated etc. Tubedesign do not recommend that Tubedesign fittings are welded.

Whilst every effort has been taken to ensure that the information contained in this brochure is correct, Tubedesign reserve the right to alter and revise this information as and when considered necessary in line with their on-going policy of product research and development.

Users of Tubedesign fittings are reminded that no part of this brochure may be reproduced in any form without prior permission in writing from Tubedesign.

TUBE SIZE GUIDE

TUBE DESIGN FITTINGS



Tubedesign Size	Tube Dia (mm)	O/D Nominal Bore (mm)	Nominal Bore (in.)
A	26.9	20	3/4
B	33.7	25	1
C	42.4	32	1 1/4
D	48.3	40	1 1/2
E	60.3	50	2

NOTE:

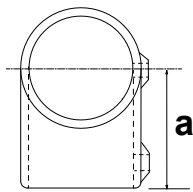
The Nominal bore is a discretionary dimension only. The wall thickness can vary depending on the gauge of tube used which will alter the bore dimension



COLOURED TUBE IS FOR AESTHETIC PURPOSES ONLY - STANDARD TUBE FINISH IS GALVANISED

TECHNICAL INFORMATION

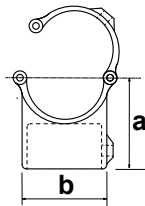
TUBEDESIGN FITTINGS



101

This Tubedesign fitting is a 90° short tee connection between 2 tubes. Typical use is on straight and level guardrail to connect the vertical post to the top rail or end/mid rail. This Tubedesign fitting cannot be used to join tubes in the top of the short tee, to join tubes use the 104 Tubedesign fitting.

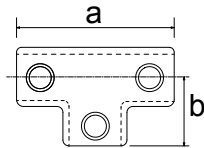
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
101A	26,9	41							0,20
101B	33,7	48							0,33
101C	42,4	62							0,49
101B/C	33.7/ 42.4	58							0,40
101D	48,3	69							0,58
101E	60,3	86							0,89



A101

This Tubedesign fitting is an add on short tee used for making additions to, upgrading or modifying an existing structure without having the need to dismantle part or all of the structure. This Tubedesign fitting does not allow tubes to be joined within the fitting.

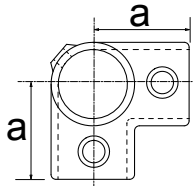
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
A101C	42,4	60	55						0,62
A101D	48,3	70	63						0,81



104

This Tubedesign fittings is a 90° long tee connection between 2 tubes. Typical use is on straight and level guardrail to connect the vertical post to the top rail. This Tubedesign fitting can be used to join tubes in the top of the long tee. This fitting is used in conjunction with the Tubedesign fitting 119 when building 2 or 3 rail guardrail systems.

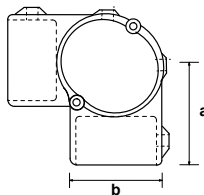
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
104A	26,9	82	41						0,37
104B	33,7	93	46						0,53
104C	42,4	120	60						0,83
104D	48,3	136	68						0,99
104E	60,3	169	85						1,62



116

This Tubedesign fitting is a 90° corner joint with the vertical passing through the Tubedesign fitting. Typical use is on straight and level guardrail for connecting the mid/lower rail to the vertical at a 90° corner. This Tubedesign fitting can also be used in a similar way on other rectangular structures. This fitting is normally used in conjunction with Tubedesign fitting 128 when building a 2 or 3 rail guardrail system.

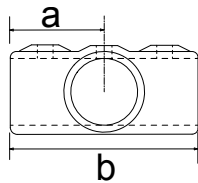
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
116A	26,9	40							0,27
116B	33,7	48							0,48
116C	42,4	60							0,62
116D	48,3	68							0,76
116E	60,3	87							1,29



A116

This Tubedesign fitting is a 90° retro fit corner joint with the vertical passing through the Tubedesign fitting. This fitting enables existing structures to be added to without the need to dismantle the structure.

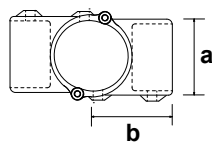
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
A116D	48,3	61	88						1,17



119

This Tubedesign fitting is a 90° joint between a vertical and 2 horizontal rails. Typical use is on straight and level guardrail for connecting the mid/lower rail to the vertical. The vertical must remain continuous with the cross rails being cut. This fitting is normally used in conjunction

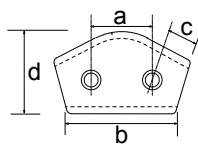
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
119A	26,9	40	80						0,29
119B	33,7	46	92						0,39
119C	42,4	60	120						0,63
119D	48,3	67	134						0,77
119E	60,3	84	168						1,25



A119

This Tubedesign fitting is a 90° retro fit joint between a vertical and 2 horizontal rails. This fitting enables existing structures to be added to without the need to dismantle the structure.

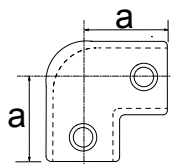
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
A119D	48,3	88	61						1,17



124

This Tubedesign fitting is a variable elbow connector (110° and 180°). This Tubedesign fitting is used to connect two rails to avoid the need to bend the tube and it can also be used at the bottom of a slope or stair guardrail to join the top rail to the vertical

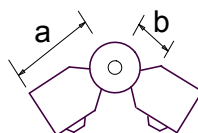
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
124B	33,7	48	60	14	64				0,40
124C	42,4	61	71	15	78				0,66
124D	48,3	54	62	16	82				0,65



125

This Tubedesign fitting is a 90° elbow connection between 2 tubes. Typical use is on straight and level guardrail to connect the vertical post to the top rail. This fitting is normally used in conjunction with Tubedesign fitting 101 when building a two rail guardrail system. This Tubedesign fitting can also be used to create a 90° tube bend.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
125A	26,9	41							0,28
125B	33,7	47							0,37
125C	42,4	60							0,61
125D	48,3	67							0,72
125E	60,3	85							1,21



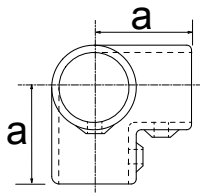
125H

This Tubedesign fitting is a variable elbow for creating angle joints in tubes without the need to bend the tube. This Tubedesign fitting enables the connection of two tubes of the same size.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
125HB	33,7	62	35						0,62
125HC	42,4	76	38						0,92
125HD	48,3	84	42						1,15

TECHNICAL INFORMATION

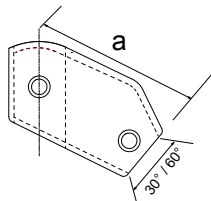
TUBEDESIGN FITTINGS



128

This Tubedesign fitting is a 3 way enclosed 90° corner joint. Typical use is on straight and level guardrail for connecting the top rails to the vertical at a 90° corner. This Tubedesign fitting can also be used to create enclosed corner joints on other rectangular structures. This Tubedesign fitting is normally used in conjunction with the Tubedesign fitting 116 on 2 or 3 rail guardrail systems.

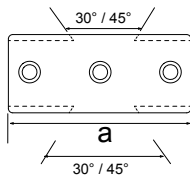
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
128A	26,9	40							0,36
128B	33,7	48							0,50
128C	42,4	61							0,80
128D	48,3	67							1,00
128E	60,3	86							1,67



129

This Tubedesign fitting is an adjustable tee between 30° and 60° and is used to connect the vertical to the top rail on a sloping or staircase systems. This Tubedesign fitting does not allow tubes to be joined inside the fitting. This Tubedesign fitting is normally used in conjunction with the Tubedesign fitting 130 on 2 or 3 rail systems, it can also be used for bracing on structures.

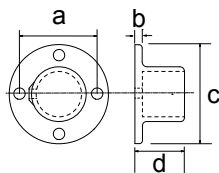
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
129B	33,7	62							0,41
129C	42,4	75							0,67
129D	48,3	80							0,78



130

This Tubedesign fitting is an adjustable cross between 30° and 45°. This Tubedesign fitting is used as a cross connection to connect the vertical to the mid/lower rails on a sloping or staircase guardrail systems with the upright remaining vertical. The vertical must remain continuous with the cross rails being cut. This Tubedesign fitting is normally used in conjunction with the Tubedesign fitting 129 on 2 or 3 rail systems. This Tubedesign fitting is not recommended to be used as the top fitting on guardrail systems.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
130B	33,7	147							0,65
130C	42,4	198							1,07
130D	48,3	216							1,17

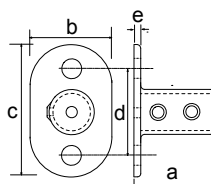


131

This Tubedesign fitting is ideal as a flange for terminating rails to a wall or similar structures. This Tubedesign fitting can be used as a base flange for non load bearing structure.

THIS TUBEDESIGN FITTING IS NOT RECOMMENDED FOR USE AS A BASE PLATE FOR GUARDRAIL SYSTEMS OR IN LOAD BEARING APPLICATIONS.

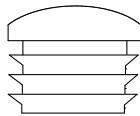
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
131A	26,9	56	5	83	42			7	0,31
131B	33,7	65	7	90	48			6,5	0,46
131C	42,4	76	8	102	51			6,5	0,65
131D	48,3	88	8	115	60			6,5	0,87
131E	60,3	95	8	127	65			9,5	1,04



132

This Tubedesign fitting is a structural base plate for all aspects of vertical post support. When using this Tubedesign fitting as the base plate for a guardrail system the fitting should be positioned with holes 90° to the line of the rails to give maximum strength. The holes in the base are large enough to allow mechanical or chemical anchors to be used.

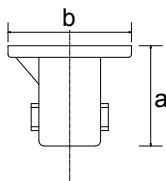
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
132A	26,9	60	52	105	77	8		11	0,41
132B	33,7	72	63	128	90	9		14	0,65
132C	42,4	86	73	140	100	10		14	0,89
132D	48,3	90	90	152	113	12		14	1,24
132E	60,3	105	97	167	128	12		17	1,59



133

This Tubedesign fitting is a plastic stop end cap for sealing the open ends of tubes. This Tubedesign fitting can be used on medium or heavy weight tube. This Tubedesign fitting is only a frictional fit, for a more permanent fix a suitable adhesive is recommended.

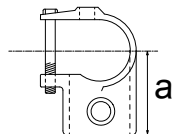
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
133A	26,9								0,004
133B	33,7								0,007
133C	42,4								0,016
133D	48,3								0,020
133E	60,3								0,024



134

This Tubedesign fitting is a base support cast into concrete which is flush to the finished ground level. The upright is held in place using the grubscrew but can easily be removed without leaving any obstructions. It is recommended that the minimum size casting hole is 300mm x 300mm x 300mm.

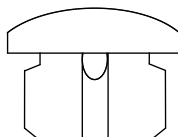
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
134B	33,7	126	128						1,95
134C	42,4	138	140						2,56
134D	48,3	138	140						2,45



135

This Tubedesign fitting is an inline add on tee used for making additions to, upgrading or modifying an existing structure without having the need to dismantle part or all of the structure. The Hexagonal headed bolt is for retaining purposes only and should not be over tightened MAX torque 15Nm.

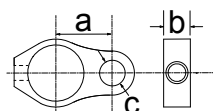
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
135A	26,9	53							0,29
135B	33,7	53							0,36
135C	42,4	68							0,55
135D	48,3	79							0,63
135E	60,2	94							0,96



136

This Tubedesign fitting is a metal stop end cap for sealing the open ends of tubes. This Tubedesign fitting can be used only be used on medium (3.2) weight tube. This Tubedesign fitting is a drive in fit that is difficult to remove without the need for adhesive. For a plastic alternative use the Tubedesign fitting 133.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
184A	26,9								0,05
184B	33,7								0,06
184C	42,4								0,11
184D	48,3								0,15
184E	60,3								0,26



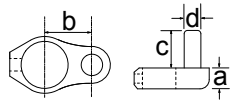
138

This Tubedesign fitting is a female section of a 2 part gate hinge and works in conjunction with the Tubedesign fitting 140. It is not recommended to be used to support heavy or wide gates, should this be required then it is recommended that the Tubedesign fittings 101, 147, and 179 are used.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
138A	26,9	30	26	14					0,19
138B	33,7	33	26	14					0,20
138C	42,4	38	26	14					0,21
138D	48,3	41	26	14					0,24

TECHNICAL INFORMATION

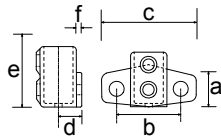
TUBEDESIGN FITTINGS



This Tubedesign fitting is a male section of a 2 part gate hinge and works in conjunction with the Tubedesign fitting 138. It is not recommended to be used to support heavy or wide gates, should this be required then it is recommended that the Tubedesign fittings 101, 147, and 179 are used.

140

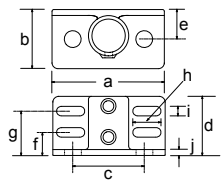
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
140A	26,9	26	30	38	13				0,25
140B	33,7	26	33	38	13				0,27
140C	42,4	26	40	38	13				0,30
140D	48,3	26	44	38	13				0,33



This Tubedesign fitting is a heavier duty side palm base fitting for fixing level or sloping guardrails to walls, steps ramps etc. The flush design enables uprights to be tight to the structure. The tube is unable to pass through this fitting as supplied, should this be required then the base must be reamed out.

141

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
141B	33,7	65	100	150	30	90	8	18	0,99
141C	42,4	65	100	150	35	90	8	18	1,23
141D	48,3	65	100	150	40	90	8	18	1,39

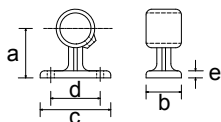


This Tubedesign fitting is a base flange with toe board attachment facility. This fitting is ideal as a base for the vertical on guardrails where the addition of a toe board or kicking flat is required.

142

Tubedesign Reference No	Tube Size	A	B	C	D	E	F
142C	42,4	160	92	100	90	45	30
142D	48,3	160	92	100	90	45	30

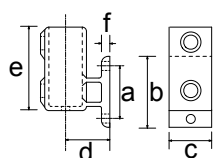
Tubedesign Reference No	Tube Size	H	I	J	DIA	Kg
142D	42,4	31	11	12	18	2,14
142D	48,3	31	11	12	18	2,08



This Tubedesign fitting is a wall mounting bracket for handrails. This Tubedesign fitting can also be used to tie structures back to walls, mount exhibition panels or fix kicking flats to guardrails. This Tubedesign fitting is not recommended as a solitary base for guardrail systems or for similar load bearing applications. This Tubedesign fitting does not allow tubes to be joined inside the fitting.

143

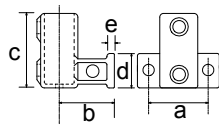
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
143A	26,9	55	45	79	58	6		7	0,32
143B	33,7	57	45	79	62	7		7	0,38
143C	42,4	63	45	102	81	8		8	0,49
143D	48,3	71	50	109	83	7		8	0,60



This Tubedesign fitting is an offset side palm base fixing for fixing level or sloping guardrails to walls, steps ramps etc. The tube is unable to pass through this fitting as supplied, should this be required then the base must be reamed out. Access to the top fixing is restricted; it is recommended that a threaded stud is fixed first with a maximum projection of 25mm.

144

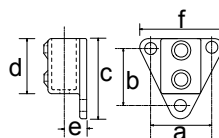
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
144B	33,7	68	96	47	65	104	7	14	0,83
144C	42,4	73	110	54	65	114	8	14	1,15
144D	48,3	90	124	63	65	122	8	14	1,37



This Tubedesign fitting is a non structural offset side palm base fixing for fixing level or sloping guardrails to walls, steps ramps etc. The tube is unable to pass through this fitting as supplied, should this be required then the base must be reamed out.

145

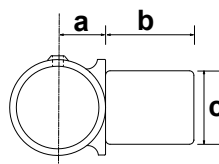
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
145B	33,7	68	57	103	46	9		14	0,85
145C	42,4	73	64	113	55	9		14	1,16
145D	48,3	88	74	120	69	9		14	1,54



This Tubedesign fitting is a flush side palm base fixing for fixing level or sloping guardrails to walls, steps ramps etc. The flush design enables uprights to be tight to the structure. The tube is unable to pass through this fitting as supplied, should this be required then the base must be reamed out. If the base is reamed out the bottom fixing will become redundant.

146

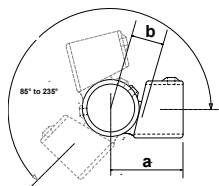
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
146B	33,7	72	63	102	76	28	88	11	0,74
146C	42,4	82	70	107	85	36	108	11	1,08
146D	48,3	86	77	115	90	33	111	10	0,89



This Tubedesign fitting is an offset swivel tee and is normally used in conjunction with Tubedesign fittings 101 or 125 to create a 360° swivel joint on handrail or offset guardrail down variable angled slopes. This Tubedesign fitting can also be used with a 101 and a 179 to create a heavy duty gate hinge.

147

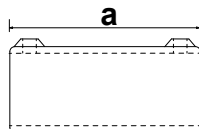
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
147B	33,7	23	29	34					0,33
147C	42,4	28	36	42					0,45
147D	48,3	31	41	48					0,55



This Tubedesign fitting is shown priced and sold as a single fitting but is normally used in Pairs to create angles between 85° and 235°. A centre tube is required to join the fittings together to create the angle. When using this Tubedesign fitting for the top rail of a guardrail system the upright must be left at full height and the open end capped using a Tubedesign 133 plastic stop end.

148

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
148A	26,9	53	32						0,19
148B	33,7	60	38						0,30
148C	42,4	73	48						0,43
148D	48,3	95	62						0,63



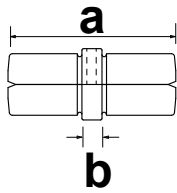
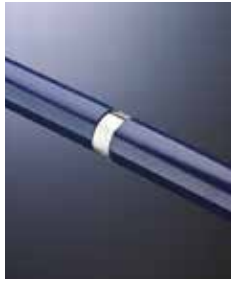
This Tubedesign fitting is an external in line connector for joining 2 tubes of the same diameter. This Tubedesign fitting is not recommended to be used as a structural joint. For a smooth inline joint the Tubedesign 150 can be used.

149

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
149A	26,9	77							0,30
149B	33,7	89							0,40
149C	42,4	102							0,58
149D	48,3	102							0,61
149E	60,3	120							0,94

TECHNICAL INFORMATION

TUBEDESIGN FITTINGS

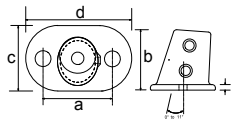


150

This Tubedesign fitting is an internal inline connector for joining 2 tubes of the same diameter. This Tubedesign fitting is not to be used as a structural or load bearing joint. When used to connect tubes on a guardrail system this Tubedesign fitting must be used within a 100mm from an upright. This Tubedesign fitting can only be used on 3.2mm wall thick tube.



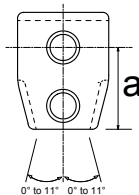
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
150A	26,9	76	22						0,16
150B	33,7	79	20						0,25
150C	42,4	80	20						0,37
150D	48,3	80	20						0,44



152

This Tubedesign fitting is a structural base flange for use on sloping guardrail systems between 0° and 11° enabling the upright to remain vertical. The design of this Tubedesign fitting will only allow its installation in the correct plane.

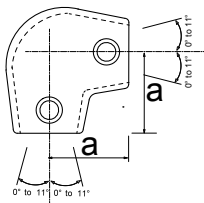
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
152B	33,7	88	90	80	127	8		13,5	0,88
152C	42,4	100	99	90	140	10		14,5	1,15
152D	48,3	113	101	96	153	11		14,5	1,47



153

This Tubedesign fitting is a short tee for use on sloping guardrail systems between 0° and 11°. Typical use is to connect the vertical post to the top rail or end/mid rail. This Tubedesign fitting cannot be used to join tubes in the top of the short tee, to join tubes used the 155 Tubedesign fitting.

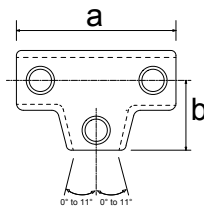
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
153B	33,7	48							0,38
153C	42,4	60							0,54
153D	48,3	68							0,68



154

This Tubedesign fitting is an elbow for use on sloping guardrail systems between 0° and 11°. Typical use is on guardrail to connect the vertical post to the top rail. This fitting is normally used in conjunction with Tubedesign fitting 153 when building a 2 or 3 rail guardrail system.

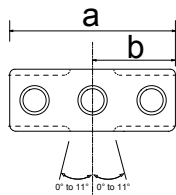
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
154B	33,7	47							0,41
154C	42,4	58							0,64
154D	48,3	68							0,84



155

This Tubedesign fitting is a long tee for use on sloping guardrail systems between 0° and 11°. Typical use is on guardrail to connect the vertical post to the top rail. This Tubedesign fitting can be used to join tubes in the top of the long tee. This fitting is used in conjunction with the Tubedesign fitting 156 when building 2 or 3 rail guardrail systems.

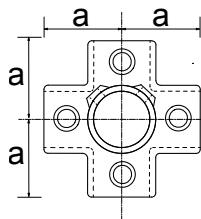
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
155B	33,7	104	45						0,55
155C	42,4	143	61						0,95
155D	48,3	169	68						1,15



156

This Tubedesign fitting is a long tee for use on sloping guardrail systems between 0° and 11°. Typical use is on guardrail for connecting the mid/lower rail to the vertical. The vertical must remain continuous with the cross rails being cut. This fitting is normally used in conjunction with Tubedesign fitting 155 when building a 2 or 3 rail guardrail system.

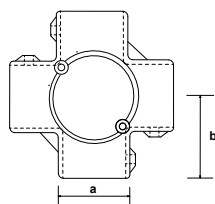
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
156B	33,7	110	55						0,47
156C	42,4	140	70						0,73
156D	48,3	160	80						0,86



158

This Tubedesign fitting is a 4 way cross connection that enables the vertical to pass through the centre of the fitting with 4 horizontal tubes joining at 90° to each other. This Tubedesign fitting is ideal for structures with multiple verticals. The vertical must remain continuous with the horizontal rails being cut.

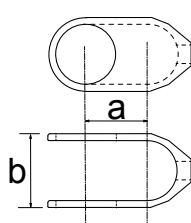
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
158A	26,9	41							0,53
158B	33,7	46							0,62
158C	42,4	60							1,03
158D	48,3	67							1,18



A158

This Tubedesign fitting is a 4 way retro fit cross connection that enables the vertical to pass through the centre of the fitting with 4 horizontal tubes joining at 90° to each other. This fitting enables existing structures to be added to without the need to dismantle the structure.

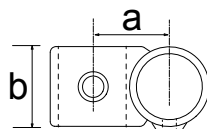
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
A158D	48,3	61	88						1,85



160

This Tubedesign fitting is an add on 90° crossover and is designed to give a 90° crossover joint used for making additions to, upgrading or modifying an existing structure without having the need to dismantle part or all of the structure. This Tubedesign fitting does not allow tubes to be joined within the fitting.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
160A	26,9	30	42						0,27
160B	33,7	34	46						0,26
160C	42,4	43	58						0,39
160D	48,3	49	64						0,51
160E	60,2	62	84						0,70



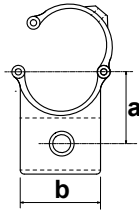
161

This Tubedesign fitting is an offset 90° crossover. This Tubedesign fitting does not allow tubes to be joined within the fitting. Typical use is on offset guardrail systems or for racking systems.

Tubedesign Reference No	A	B	C	D	E
161B/C	36	40	44	45	5
161B/D	36	40	51	55	5
161C/D	44	45	51	55	5
161D/E	51	55	62	62	5

TECHNICAL INFORMATION

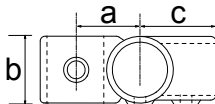
TUBEDESIGN FITTINGS



A161

This Tubedesign fitting is an add on 90° crossover and is designed to give a 90° crossover joint used for making additions to, upgrading or modifying an existing structure without having the need to dismantle part or all of the structure. This Tubedesign fitting does not allow tubes to be joined within the fitting.

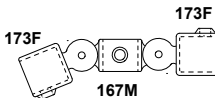
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
A161C	42,4	50	48						0,67
A161D	48,3	55	52						0,83



165

This Tubedesign fitting is a combination fitting designed for the construction of racking systems. This Tubedesign fitting enables the connection of a vertical upright at 90° to 2 horizontal rails, 1 being the tie rail and the other being the load rail. On pallet racking the upright normally has the load rail on the inside, whilst for shelved racking the upright normally has the load rail on the outside.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
165A	26,9	36	31	39					0,29
165B	33,7	42	38	48					0,48
165C	42,4	50	45	60					0,67
165D	48,3	55	52	68					0,82

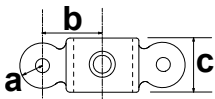


167

This Tubedesign fitting is a double combination fitting with the swivel connectors at 180° to each other. Each swivel has a travel of approximately 85° from the horizontal in both vertical directions. This Tubedesign fitting combines 1 x 167M and 2 x 173F.

THIS FITTING IS NOT DESIGNED TO WITHSTAND LATERAL LOADS. ENTIRE STRUCTURES SHOULD NOT BE BUILT JUST USING SWIVEL FITTINGS AS IT WOULD BE UNSTABLE.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
167A	26,9								0,70
167B	33,7								1,10
167C	42,4								1,34
167D	48,3								1,55
167E	60,2								

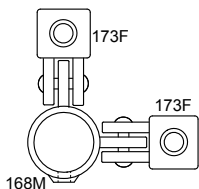


167M

This Tubedesign fitting is a double male inline fitting with the lugs at 180° to each other. This Tubedesign fitting is the male part of the 167 swivel combination, this Tubedesign fitting can also be used to secure various types of infill in place.

THIS FITTING IS NOT DESIGNED TO WITHSTAND LATERAL LOADS.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
167MA	26,9	15	35	32				8	0,20
167MB	33,7	19	42	41				10,5	0,35
167MC	42,4	19	48	46				10,5	0,41
167MD	48,3	19	52	48				10,5	0,45
167ME	60,3	19	60	53				10,5	0,60

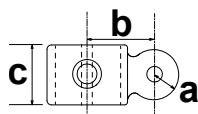


168

This Tubedesign fitting is a 90° corner combination fitting with the swivel connectors at 90° to each other. Each swivel has a travel of approximately 85° from the horizontal in both vertical directions. This Tubedesign fitting combines 1 x 168M and 2 x 173F.

THIS FITTING IS NOT DESIGNED TO WITHSTAND LATERAL LOADS. ENTIRE STRUCTURES SHOULD NOT BE BUILT JUST USING SWIVEL FITTINGS AS IT WOULD BE UNSTABLE.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
167MA	26,9	15	35	32				8	0,20
167MB	33,7	19	42	41				10,5	0,35
167MC	42,4	19	48	46				10,5	0,41
167MD	48,3	19	52	48				10,5	0,45
167ME	60,3	19	60	53				10,5	0,60

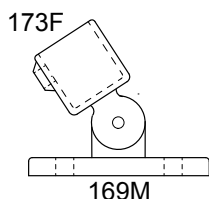


168M

This Tubedesign fitting is a double male inline fitting with the lugs at 90° to each other. This Tubedesign fitting is the male part of the 168 swivel combination, this Tubedesign fitting can also be used to secure various types of infill in place at 90° to each other.

THIS FITTING IS NOT DESIGNED TO WITHSTAND LATERAL LOADS.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
168MA	26,9	15	38	34				8	0,22
168MB	33,7	19	44	40				10,5	0,33
168MC	42,4	19	48	33				10,5	0,29
168MD	48,3	19	54	46				10,5	0,45
168ME	60,2	19	60	46				10,5	0,54

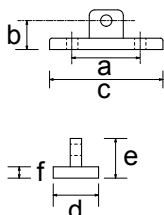


169

This Tubedesign fitting is a NON STRUCTURAL swivel locating flange combination fitting, this Tubedesign fitting should never be used as an angled base fitting for guardrail systems. The swivel has a travel of approximately 85° from the vertical in each direction. This Tubedesign fitting combines 1 x 169M and 1 x 173F.

THIS FITTING IS NOT DESIGNED TO WITHSTAND LATERAL LOADS. ENTIRE STRUCTURES SHOULD NOT BE BUILT JUST USING SWIVEL FITTINGS AS IT WOULD BE UNSTABLE.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
169A	26,9								0,62
169B	33,7								0,75
169C	42,4								0,84
169D	48,3								0,91
169E	60,2								

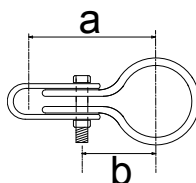


169M

This Tubedesign fitting is the male part of the 169 swivel locating flange combination. This Tubedesign fitting can also be used to secure various types of infill in place.

THIS FITTING IS NOT DESIGNED TO WITHSTAND LATERAL LOADS.

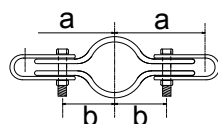
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
169M	48,3	85	34	112	52	52	7	11	0,36



170

This Tubedesign fitting is a single location panel clip. The typical use for this Tubedesign fitting is for retaining weld mesh panels between tubes on guardrail systems. To enable this Tubedesign fitting to retain the mesh correctly it is recommended that the mesh panels are framed with an 8mm bar. This panel clip has an 18mm slot in the main body that enables dimensions A & B to be increased by up to 10mm.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
170A	26,9	52	26						0,06
170B	33,7	56	28						0,07
170C	42,4	60	30						0,08
170D	48,3	70	35						0,09
170E	60,3	72	36						0,10



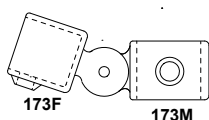
171

This Tubedesign fitting is a double location panel clip. The typical use for this Tubedesign fitting is for retaining weld mesh panels between tubes on guardrail systems. To enable this Tubedesign fitting to retain the mesh correctly it is recommended that the mesh panels are framed with an 8mm bar. This panel clip has an 18mm slot in the main body that enables dimensions A & B to be increased by up to 10mm.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
171A	26,9	52	26						0,10
171B	33,7	56	28						0,11
171C	42,4	60	30						0,12
171D	48,3	70	35						0,13
171E	60,3	72	36						0,14

TECHNICAL INFORMATION

TUBEDESIGN FITTINGS

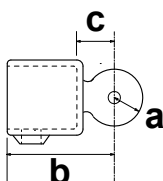


173

This Tubedesign fitting is a single swivel combination fitting. The swivel has a travel of approximately 85° from the horizontal in both vertical directions. This Tubedesign fitting combines 1 x 173M and 1 x 173F.

THIS FITTING IS NOT DESIGNED TO WITHSTAND LATERAL LOADS. ENTIRE STRUCTURES SHOULD NOT BE BUILT JUST USING SWIVEL FITTINGS AS IT WOULD BE UNSTABLE.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
173A	26,9								0,41
173B	33,7								0,64
173C	42,4								0,82
173D	48,3								0,90
173E	60,3								1,43

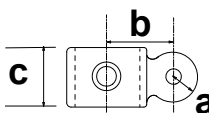


173F

This Tubedesign fitting is the female section of all the swivel combination fittings. This Tubedesign fitting is used in conjunction with the "M" part of the swivel combination and is not generally used on its own.

THIS FITTING IS NOT DESIGNED TO WITHSTAND LATERAL LOADS.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
173FA	26,9	10	58	27				8	0,23
173FB	33,7	19	62	27				10,5	0,35
173FC	42,4	19	69	27				10,5	0,44
173FD	48,3	19	78	27				10,5	0,53
173FE	60,3	19	96	42				10,5	0,89

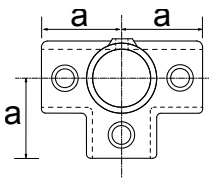


173M

This Tubedesign fitting is a single male inline fitting with one lug. This Tubedesign fitting is the male part of the 173 swivel combination, this Tubedesign fitting can also be used to secure various types of infill in place.

THIS FITTING IS NOT DESIGNED TO WITHSTAND LATERAL LOADS.

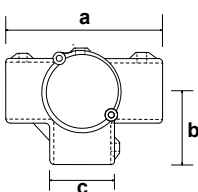
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
173MA	26,9	16	38	34				10,5	0,16
173MB	33,7	19	43	40				10,5	0,26
173MC	42,4	19	48	45				10,5	0,33
173MD	48,3	19	54	45				10,5	0,35
173ME	60,3	24	62	48				10,5	0,49



176

This Tubedesign fitting is a 3 way outlet tee allowing 3 tubes to join at 90° to each other with the vertical passing through the fitting. Typical use would be on structures such as market stalls or play frames.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
176A	26,9	40							0,35
176B	33,7	48							0,51
176C	42,4	60							0,77
176D	48,3	67							0,98
176E	60,3	86							1,47



A176

This Tubedesign fitting is a 3 way retro fit outlet tee allowing 3 tubes to join at 90° to each other with the vertical passing through the fitting. This fitting enables existing structures to be added to without the need to dismantle the structure.

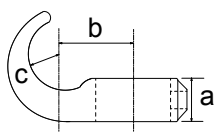
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
A176D	48,3	178	88	61					1,51



This Tubedesign fitting is a simple locking collar. Typical use is for extra support on structures such as racking systems where the slip load on the set screw may be exceeded. This Tubedesign fitting can also be used as the pivot point for a Tubedesign heavy duty gate hinge.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
179A	26,9	23							0,09
179B	33,7	26							0,12
179C	42,4	26							0,14
179D	48,3	27							0,15

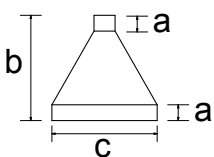
179



This Tubedesign fitting is a simple hook. Typical use is for locating chains in place across openings. This Tubedesign fitting not recommended as a permanent chain location, should this be required then it is recommended that the fitting 173M is used with the chain held in place using a nut and bolt.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
182A	26,9	26	33	12					0,17
182B	33,7	26	35	12					0,19
182C	42,4	26	40	12					0,21
182D	48,3	26	43	12					0,23

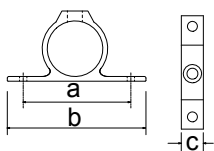
182



This Tubedesign fitting is a weather shield for giving added protection to a vertical post support. Normally used in conjunction with a Tubedesign 132 base fitting on flat roofs. This fitting needs to be sealed to the Vertical using a suitable sealant.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
192B	33,7	25	125	146					0,35
192C	42,4	25	150	157					0,40
192D	48,3	25	155	170					0,45

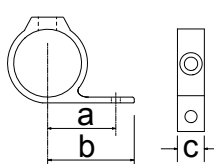
192



This Tubedesign fitting is a double sided fixing bracket. Normally used to fix boards or display panels almost flush to the tube. The tubes cannot be joined inside this fitting.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
198A	26,9	94	128	36				10	0,33
198B	33,7	86	120	32				10	0,33
198C	42,4	95	130	37				10	0,40
198D	48,3	104	140	37				10	0,45

198



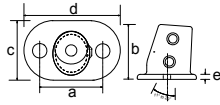
This Tubedesign fitting is a single sided fixing bracket. Normally used to fix boards or display panels almost flush to the tube. The tubes cannot be joined inside this fitting.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
199A	26,9	48	65					10	0,24
199B	33,7	43	62					10	0,23
199C	42,4	48	65					10	0,31
199D	48,3	50	72					10	0,34

199

TECHNICAL INFORMATION

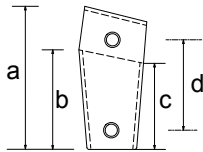
TUBEDESIGN FITTINGS



This Tubedesign fitting is a structural base flange for use on sloping guardrail systems between 11° and 29° enabling the upright to remain vertical. The design of this Tubedesign fitting will only allow its installation in the correct plane.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
252D	48,3	127	108	92	166	10		17	1,52

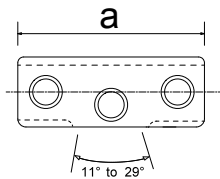
252



This Tubedesign fitting is a short tee for use on sloping guardrail systems between 11° and 29°. Typical use is to connect the vertical post to the top rail or end/mid rail. This Tubedesign fitting cannot be used to join tubes in the top of the short tee, to join tubes used the 255 Tubedesign fitting.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
253D	48,3	144	88	60	86				0,86

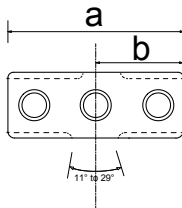
253



This Tubedesign fitting is a long tee for use on sloping guardrail systems between 11° and 29°. Typical use is on guardrail to connect the vertical post to the top rail. This Tubedesign fitting can be used to join tubes in the top of the long tee. This fitting is used in conjunction with the Tubedesign fitting 256 when building 2 rail guardrail systems.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
255D	48,3	188							1,07

255



This Tubedesign fitting is a long tee for use on sloping guardrail systems between 11° and 29°. Typical use is on guardrail for connecting the mid/lower rail to the vertical. The vertical must remain continuous with the cross rails being cut. This fitting is normally used in conjunction with Tubedesign fitting 255 when building a two rail guardrail system.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
256D	48,3	188	94						1,05

256



This is a hexagonal key and is the only tool required for tightening up the setscrews in the Tubedesign fittings. The correct torque cannot be achieved using the Hexagonal key; the ratchet key and a torque wrench are recommended to achieve the correct torque setting.

Tubedesign Reference No	Size	Kg
235 - ABC	1/4" A/F	0,03
235 - DE	5/16" A/F	0,06

A/F = Across Flats

T-INB



T-ST

These are case hardened Stainless Steel setscrews. These setscrews are supplied pre fitted into the Tubedesign fitting but can be purchased as spares. The recommended torque setting for the setscrews is 39Nm

Tubedesign Reference No	Size	Kg
232ABC	1/4" BSP	0,01
232DE	3/8" BSP	0,015



T-RATE

This ratchet key is for tightening the setscrews. The ratchet key is supplied with 2 removable hexagon heads. Whilst this ratchet key can tighten the setscrews tighter than the hexagonal key a torque wrench is recommended to be used to achieve the correct torque setting.

Tubedesign Reference No	Size	Kg
233	ABCDE	0,39

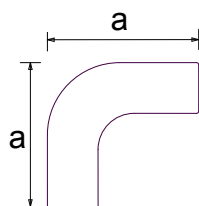


T-DOP

These are replacement heads for the Tubedesign 233 ratchet key.

Tubedesign Reference No	Size	Kg
234ABC	1/4" A/F	0,04
234DE	5/16" A/F	0,04

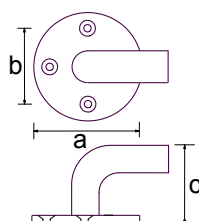
A/F = Across Flats



DDA-1

This Tubedesign DDA fitting is a 90° one piece elbow. This fitting is connected to the 42.3mm tube using 2 x 150-C42 Tubedesign fittings.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
DDA-1	42,4	99							0,41



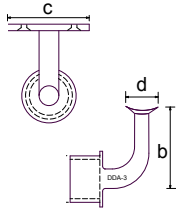
DDA-2

This Tubedesign DDA fitting is a bracket for terminating the 42.3mm tube back to the wall. This fitting is connected to the 42.3mm tube using a 150-C42 Tubedesign fitting.

Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
DDA-2	42,4	85	65	108				7 cs	0,75

TECHNICAL INFORMATION

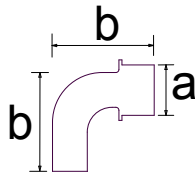
TUBEDESIGN FITTINGS



DDA-3

This Tubedesign DDA fitting is a bracket for holding the top or intermediate rail to an upright. This DDA fitting is attached to the upright using standard Tubedesign D48 fittings. The 42.3 mm tube is fixed to this fitting using either 2 self tapping screws or 2 heavy duty pop rivets.

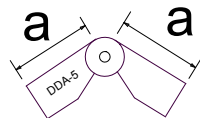
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
DDA-3	42,4	48,3	80	88	31			5.5 cs	0,58



DDA-4

This Tubedesign DDA fitting is an elbow for attaching the top or intermediate rail to an upright. This DDA fitting is attached to the upright using standard Tubedesign D48 fittings and connected to the 42.3 mm tube using a 150-C42 fitting.

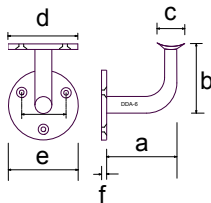
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
DDA-4	42,4	48,3	100						0,53



DDA-5

This Tubedesign DDA fitting is a variable elbow for creating a bend in the 42.3mm handrail tube. This fitting connected to the 42.3 mm tube using 2 x 150-C42 fitting.

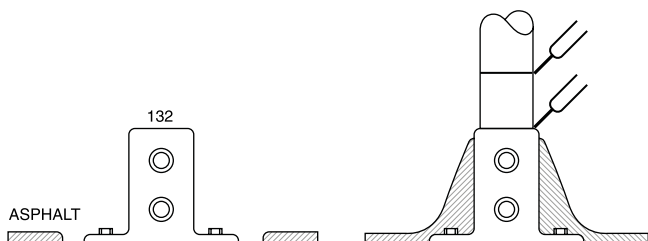
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
DDA-5	42,4	88							0,60



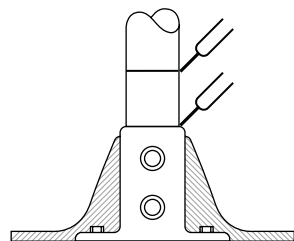
DDA-6

This Tubedesign DDA fitting is a bracket for holding the top or intermediate rail to a wall. The 42.3 mm tube is fixed to this fitting using either 2 self tapping screws or 2 heavy duty pop rivets.

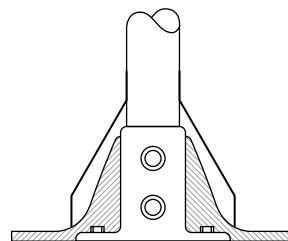
Tubedesign Reference No	Tube Size	A	B	C	D	E	F	DIA	Kg
DDA-6	42,4	95	80	28	76	85	10	5.5 cs	0,81



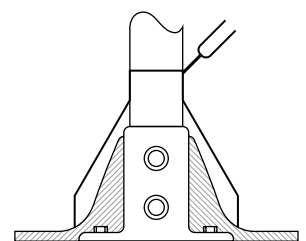
ROOF: remove all the asphalt and fix Tubedesign fitting 132 onto the roof



Fix upright into the Tubedesign 132 fitting and seal fitting to the tube. Dress asphalt over the 132 fitting. Put circle sealant around the tube.



Slide 192 weather shield down the upright and over the circle of sealant.



Seal the top of the 192 weather shield to the upright and complete fixing the guardrail.

TECHNICAL DETAILS

TUBEDESIGN FITTINGS

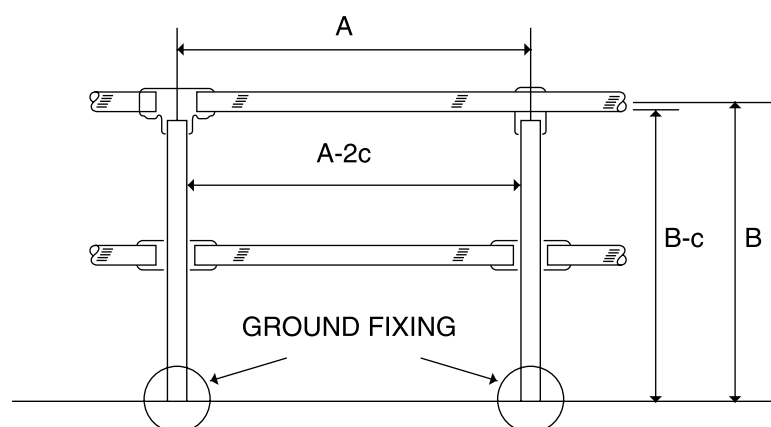
GUIDE TO GUARDRAIL BAY SIZES USING TUBEDESIGN FITTINGS

FITTING SIZE	B34	C42	C42	D48	D48	D48	E60	E60
TUBE O/D MM	33.7	42.4	42.4	48.3	48.3	48.3	60.2	60.2
WALL THICKNESS MM	3.2	3.2	4.0	3.2	4.0	5.0	3.7	4.5
DESIGN LOAD IN N/M GUARDRAIL HEIGHT 900MM								
360	814MM	1369MM	1595MM	1828MM	2584MM	3052MM	3265MM	3858MM
740	396MM	666MM	776MM	889MM	1257MM	2229MM	1588MM	1876MM
DESIGN LOAD IN N/M GUARDRAIL HEIGHT 1100MM								
360	666MM	1120MM	1305MM	1496MM	2114MM	2778MM	2671MM	3155MM
740	324MM	545MM	635MM	728MM	1028MM	1824MM	1300MM	1535MM

The above dimensions are a guide only

A structural engineer should be used for specific requirements

HOW TO CALCULATE THE CORRECT TUBE LENGTH



Size	c
A27	-14
B34	-17
C42	-22
D48	-25
E60	-30

When calculating the length of the upright and crossrails to avoid interference, use the following calculation:

Upright height = $B - c$

Crossrail = $A - 2c$

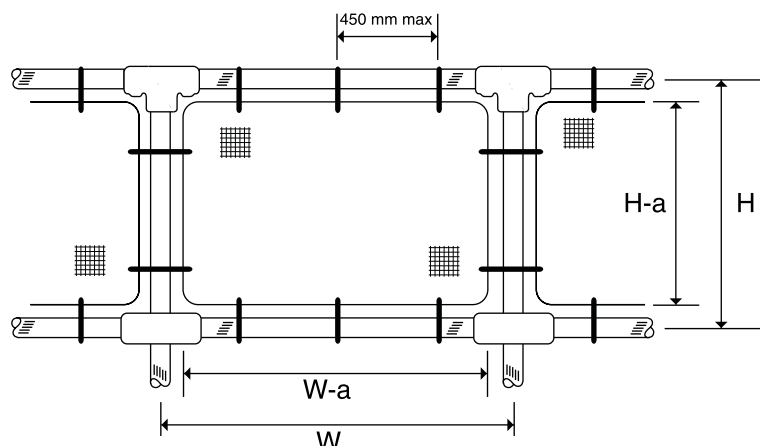
A = Distance between uprights centre to centre.

B = Height of upright ground level to centre line top rail

TECHNICAL DETAILS

TUBE DESIGN FITTINGS

UPRIGHT CONSTRUCTION



Size	a
A27	60
B34	76
C42	86
D48	90
E60	99

When calculating the height and width of a weld mesh infill panel, use the following calculation:

Panel height = $H - a$

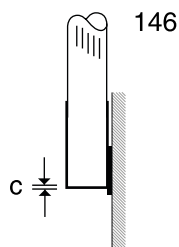
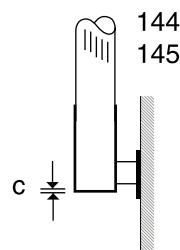
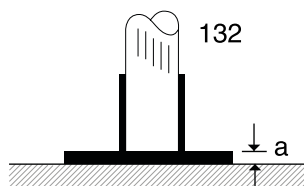
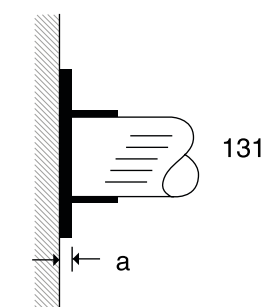
Panel width = $W - a$

It is recommended that the mesh panel is framed with an 8mm rod.

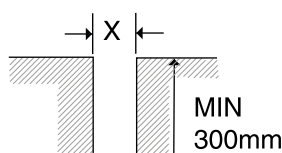
Panel clip centres should be no greater than 450mm.

Mesh size that is under 35mm square will require cut outs in the mesh to accommodate the panel clip.

BASES AND WALL PLATES



CORED HOLE INTO CONCRETE

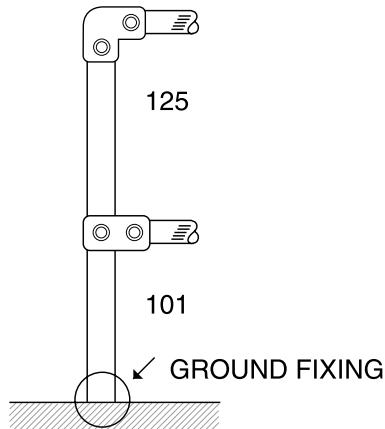


$$X = \text{TUBE DIA} + 30\text{mm}$$

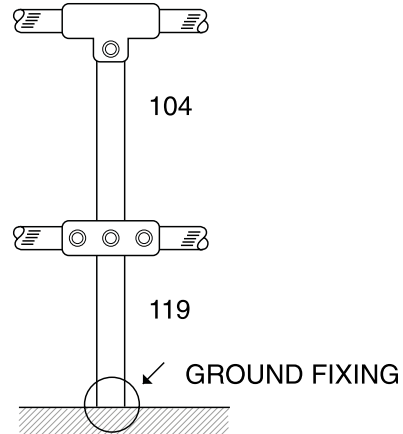
TUBE SIZE	a	c
A27 (26.9)	6	5
B34 (33.7)	6	5
C42 (42.4)	6	6
D48 (48.3)	6	6
E60 (60.3)	6	6

Dimensions a & c are subtracted from upright length

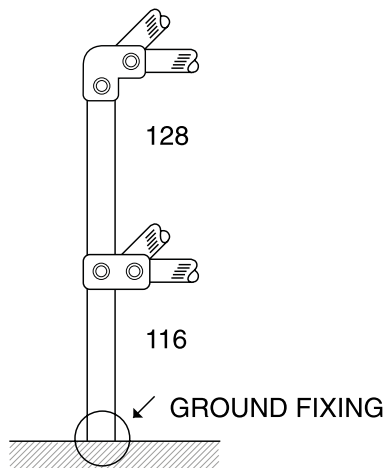
UPRIGHT CONSTRUCTION



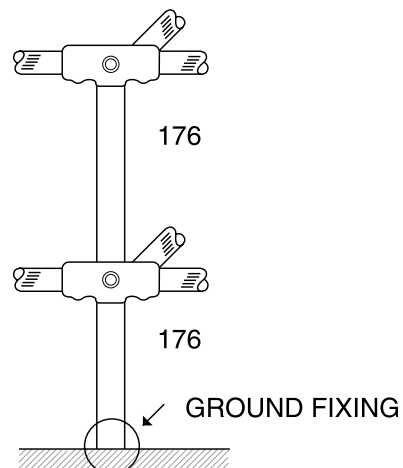
END POST



MID POST

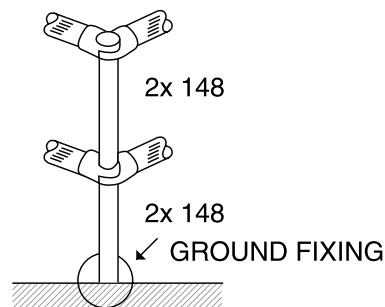


CORNER POST

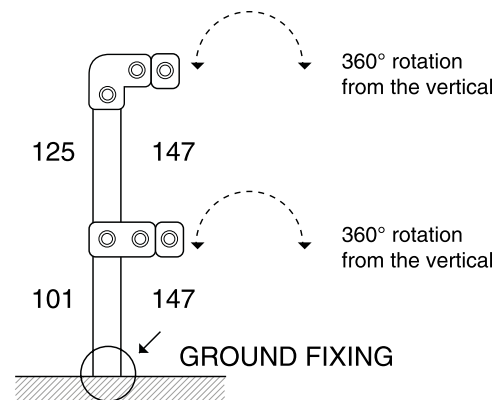


DIVIDER POST

85° to 235° on plan

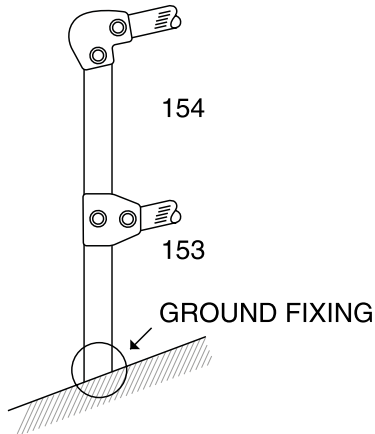


ADJUSTABLE POST

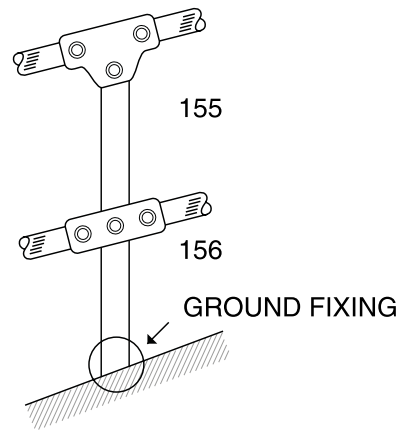


360° ROTATION

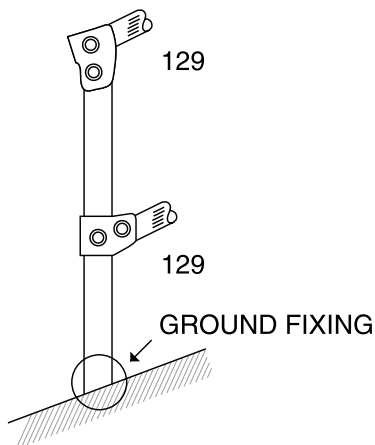
UPRIGHT CONSTRUCTION



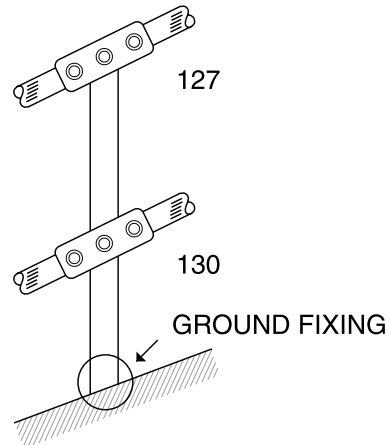
END POST 0° to 11°



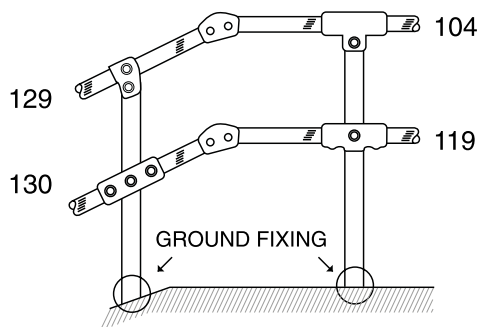
MID POST 0° to 11°



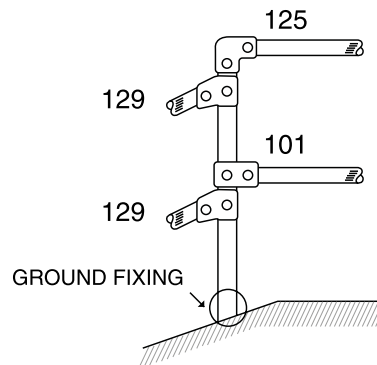
ADJUSTABLE 30° TO 60°



ADJUSTABLE 30° TO 45°



LEVEL TO SLOPING USING 124



LEVEL TO SLOPING SINGLE POST

TECHNICAL DETAILS

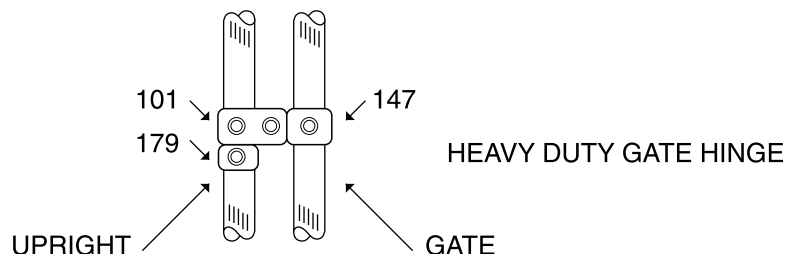
TUBEDESIGN FITTINGS

GUIDE TO GUARDRAIL BAY SIZES USING TUBEDESIGN FITTINGS

For wide or heavy gates the 138 and the 140 Tubedesign fittings are not strong enough.

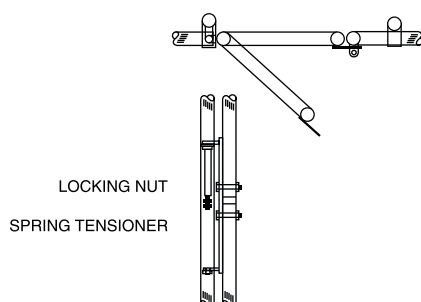
This design should be used.

The set Screw on the 101 fitting on the upright is left undone to enable it to pivot on the 179.



SELF CLOSING GATE

SELF CLOSING GATE SPRING TENSIONER INSTRUCTIONS



The gate is supplied with U bolts that will suit B34 / C42 / D48 tube.

To set the correct tension on the gate use 2 x 24mm A/F spanners. Loosen the locking nut keeping the spanner on the locking nut, turn the spring tensioner nut anti clockwise until the gate gently closes with no undue force. Keeping the spanner on the spring tensioner nut tighten the lock nut. Test the gate & adjust if required.

TYPICAL USES

Using standard tube and Tubedesign fittings imagination is your only limitation to what can be built. From Industrial to Retail, from Safety to play.

Safety Railings / Racking / Shopping Trolley Bays / Exhibition Stands / Play Areas / Lighting Grid Systems / Market Stalls / Cycle Rack Frameworks / Handrails / Awnings and Car Ports / Benches / Hanging Rails / Support Framework PLUS MANY MORE.....