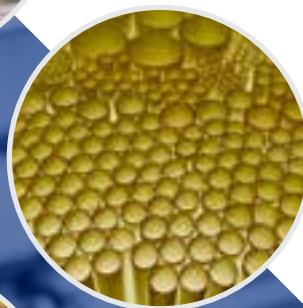


ALTAIR[®]

CABLE MANAGEMENT SYSTEMS

PRODUCT CATALOGUE





ALTAIR PROFILE

Earning and maintaining customer loyalty and trust is central to our success. This commitment to our customers is shared across the organization by providing customers what they want; when they want it and through our continued focus on delivering value and quality.

All of this, needless to say is backed up by a full edged technical support team and a dedicated distribution network.

Our Vision:

At Altair it is our vision to be customers' supplier of choice for cable management products.

Our Mission:

We are committed to meeting the challenges of the construction industry by continuously providing new and reliable cable management solutions through state-of-the-art manufacturing techniques, extended reach, sound business ethics all backed up by a team of professionals.

It is our mission to build a mutually beneficial and long term association with our associates, customers, partners and employees.

Innovation and the customer remain key to our vision. This when tempered by traits such as honesty, faith and a sense of conviction, we have a real winner.

With offices in the United Kingdom and in Sharjah in the UAE, Altair is a specialized manufacturer of quality cable management solutions including Floor Distribution Systems, GI Conduits, Cable

Trays, Trunking & Ladders Systems and Raised Access Flooring.

Altair products are well known and have a reputation for quality and workmanship. All products subscribe to relevant standards and are further backed up by independent testing at both local and international laboratories.

The fact that Altair conforms to ISO 9001:2008 standards for quality management is further testimony of the high exacting standards that are followed within the organization and reflects the procedures and management process adopted through out the company.

Our business is guided by four principles: Integrity, Openness, Accountability and Boldness.

Integrity in the way we conduct our business; Openness in our dealings;

Accountability in terms of taking responsibility for our actions and boldness in the pursuit of our goals.

These values have equipped us well to deal with the operational challenges presented by the market.

At Altair we consider customers to be an important component of the business and all our efforts are directed at providing our customers with the best service and solutions.



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A low-angle, upward-looking photograph of several modern skyscrapers with glass and steel facades. The perspective creates a sense of height and architectural scale. The entire image is overlaid with a semi-transparent blue filter.

GI CONDUITS AND ACCESSORIES



GI CONDUITS AND ACCESSORIES

An electrical conduit is an electrical piping system used for protection and routing of electrical wiring. Electrical conduits may be made of metal, plastic, fiber or fired clay. Conduit is generally installed by electricians at the site of installation of electrical equipment. Its use form and installation details are often specified by wiring regulations. The term "Conduit" is commonly used by electricians to describe any system that contains electrical conductors.

The Altair range of rigid conduits offer a cost effective solutions of both new build and refurbishment contracts. The wide range of fittings and ancillary products means that almost any installation can be specified with confidence. Manufactured from high quality steel, Altair rigid conduits are capable of withstanding extreme conditions on site and exceeds the stringent requirements of established International Standards

These products are available in class 4 hot dip galvanized, black enameled and class 3 pre-galvanised versions. The product is manufactured to various international standards such as the relevant clauses of BS EN 50086/ BS 4568 and BS31. Additionally a range of conduits and fittings complying to the American Standards are also available.

The class 4 range from Altair is Hot Dipped Galvanised Inside and Outside to ensure excellent rust resistance performance in hot and humid environments. Altair accessories are manufactured from malleable iron and hot dipped galvanised thereafter to ensure rigidity and strength under impact conditions.

	PART NUMBER	EXTERNAL DIAMETER	NO. OF LENGTHS PER BUNDLE	NO. OF BUNDLES PER LIFT	METERS PER LIFT	APPROX. WEIGHT PER LIFT TONNES
BS 4568/BS EN 50086 Part 1. Class 4 Finish Hot Dipped Galvanised Inside & Outside 3.75 Meter Lengths	ATRC20/4	20mm	8	50	1500	1.16
	ATRC25/4	25mm	8	40	1200	1.17
	ATRC32/4	32mm	4	40	615	0.80
BS 31 Class 4 Finish Hot Dipped Galvanised Inside 6 Outside 3.75 Meter Lengths	ATRC38/4	1 1/2"(38mm)	4	20	315	0.54
	ATRC50/4	2"(50mm)	4	20	315	0.85
Pre-Galvanised Inside & Outside 3.75 Meter Lengths Class 3	ATRC20/PG	20mm	8	50	1500	1.09
	ATRC25 PG	25mm	8	40	1200	1.11
	ATRC32/PG	32mm	4	40	615	0.74
BS 4568/BS EN 50086 Part 1. Class 2 Finish Black Enamelled Inside & Outside	ATRC20/2	20mm	8	50	1500	1.16
	ATRC25/2	25mm	8	40	1200	1.17
	ATRC32/2	32mm	4	40	615	0.80
BS 31 Class 2 Finish Hot Dipped Galvanised Inside & Outside 3.75 Meter Lengths	ATRC38/2	1 1/2"(38mm)	4	24	315	0.54
	ATRC50/2	2"(50mm)	4	20	315	0.85

Above conduit is packed and shipped in LIFTS (also known as Master Bundles). Each LIFT comprising the stated number of individual bundles measuring approximately 40-50 centimeters in diameter and 3.75 meters in length. The weight varies according to the size and finish of conduits but approximately weights are shown above.

BOXES - SMALL

Material : **Malleable Iron**

Finishes : **Black Enamel, Galvanised**

60.3mm Internal Diameter

20mm Boxes-Min 25mm Deep

25mm Boxes-Min 28mm Deep

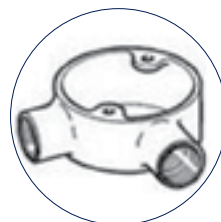
With tapped hole in base for earthing screw. Supplied without covers or fixing unless ordered.



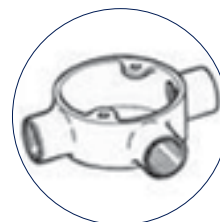
ATBCS101
Terminal Boxes
Size: 20mm & 25mm



ATBCS102
Through Boxes
Size: 20mm & 25mm



ATBCS103
Angle Boxes
Size: 20mm & 25mm



ATBCS104
Tee Boxes
Size: 20mm & 25mm



ATBCS105
Cross Boxes
Size: 20mm & 25mm



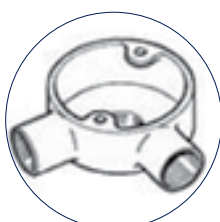
ATBCS106
Black Outlet Boxes
Size: 20mm & 25mm



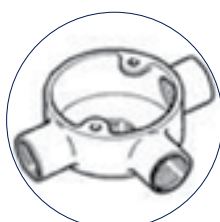
ATBCS107
Terminal Boxes with Back Outlet:
Size: 20mm & 25mm



ATBCS108
Through Boxes with Back Outlet
Size: 20mm & 25mm



ATBCS109
Angle Way Boxes with Back Outlet
Size: 20mm & 25mm



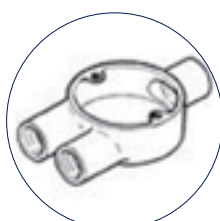
ATBCS110
Tee Boxes with Back Outlet
Size: 20mm & 25mm



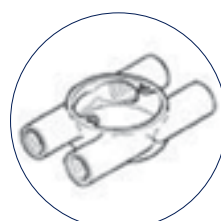
ATBCS111
Cross Box with Back Outlet
Size: 20mm & 25mm



ATBCL112
U Boxes
Size: 20mm & 25mm



ATBCL113
Three Way Branch Box
Size: 20mm & 25mm



ATBCL114
Twin Through Way H Box
Size: 20mm & 25mm

BOXES - LARGE

Material : **Malleable Iron**

Finishes : **Black Enamel, Galvanised**

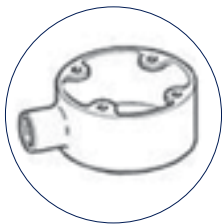
81mm Internal Diameter

20mm & 25mm Boxes Min 35mm Deep | 32mm Box Min 38mm Deep

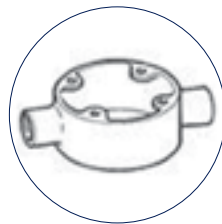
38mm (1 1/2" Box Min 44mm Deep | 50mm (2") Box Min 57mm Deep

Tapped M4 at 71.5mm centres

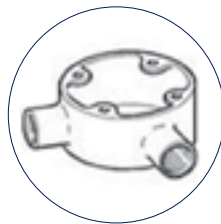
With tapped hole in base for earthing screw. Supplied without covers or fixing unless ordered



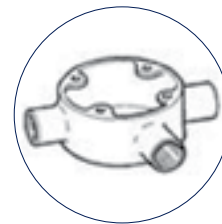
ATBCL115XX
Large Terminal Box: Size
20,25,32,38 and 50mm



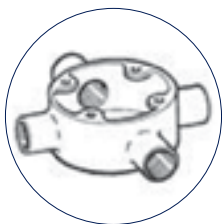
ATBCL116XX
Large Through Box
Size: 20,25,32,38 and 50mm



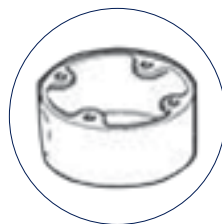
ATBCL117XX
Large Angle Box
Size: 20,25,32,38 and 50mm



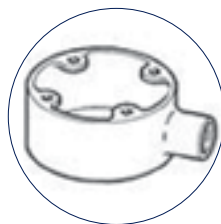
ATBCL118XX
Large Tee
Size: 20,25,32,38 and 50mm



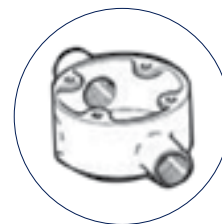
ATBCL119XX
Large Cross Box
Size: 20,25,32,38 and 50mm



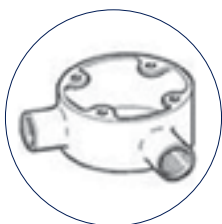
ATBCL120XX
Large Back Outlet Box: Size
20,25,32,38 and 50mm



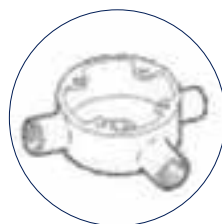
ATBCL121XX
Large Terminal Box With Back Outlet
Size: 20,25,32,38 and 50mm



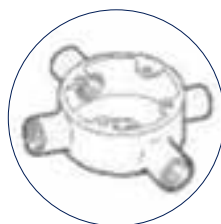
ATBCL122XX
Large Through Box With Back Outlet
Size: 20,25,32,38 and 50mm



ATBCL123XX
Large Angle Box With Back Outlet
Size: 20,25,32,38 and 50mm



ATBCL124XX
Large Tee Box With Back Outlet
Size: 20,25,32,38 and 50mm



ATBCL125XX
Large Cross Box With Back Outlet
Size: 20,25,32,38 and 50mm

Notes : XX denotes size eg-20,25,32,38,50 mm

BOXES – CEILING ROSE

Material : **Malleable Iron**

Finishes : **Black Enamel Galvanised**

55mm Internal Diameter

Minimum Depth 12.5mm

Tapped M4 at 50.8mm Centres with tapped hole in base for earthing screw.

With tapped hole in base for earthing screw. Supplied without covers or fixing unless ordered



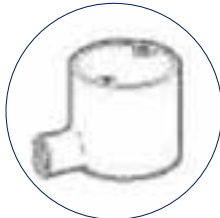
ATBCCR136
Shallow Ceiling Rose

BOXES – SMALL SPECIAL DEPTH

Material : **Malleable Iron**

Finishes : **Black Enamel, Galvanised**

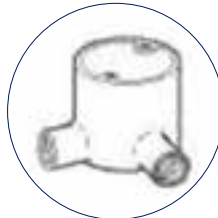
Tapped M4 at 50.8mm centres with tapped hole in base for earthing screw. Supplied without covers or fixing screws unless ordered.



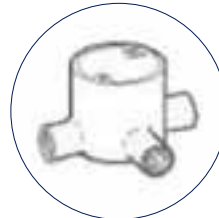
ATBCSSD126
Extra Large Terminal Boxes



ATBCSSD127
Extra Large Through Boxes



ATBCSSD128
Extra Large Angle Boxes



ATBCSSD129
Extra Large Tee Boxes



ATBCSSD126
Extra Large Cross Boxes

BOXES – SMALL EXTENSION PATTERN

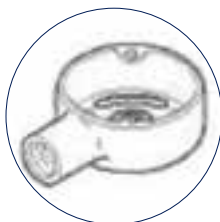
Material : **Malleable Iron**

60.3mm Internal Diameter

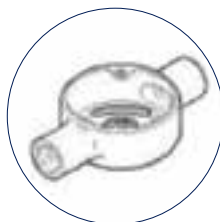
20mm Boxes Min 25mm Deep

25mm Boxes Min 28mm Deep

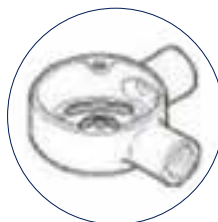
With tapped hole in base for earthing screw. Supplied without covers or fixing unless ordered.



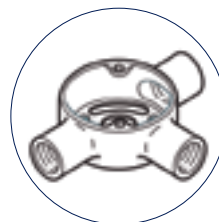
ATBCSEP131
Terminal Extension Pattern Boxes
Size : 20 & 25mm



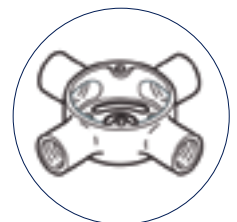
ATBCSEP132
Through Extension Pattern Boxes
Size : 20 & 25mm



ATBCSEP133
Angle Extension Pattern Boxes
Size : 20 & 25mm



ATBCSEP134
Tee Extension Pattern Boxes
Size : 20 & 25mm



ATBCSEP135
Cross Extension Pattern Boxes
Size : 20 & 25mm

BOXES-LOOP IN

Material : **Steel**

Finishes : **Black Enamel, Galvanised**

20mm clearance with tapped hole in base for earthing screw.



ATBLI142
Medium Steel
1 Hole or 4 Knockouts
29mm Deep x 63.5 mm
Internal Diameter



ATBLI143
Medium Malleable
1 to 4 Holes
31mm Deep x 63.5 mm
Internal Diameter

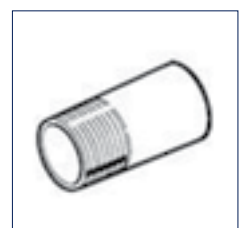
ADAPTORS

Material : **Steel**

Finishes : **Black Enamel, Galvanised**



ATA144
Imperial to Metric Adaptor

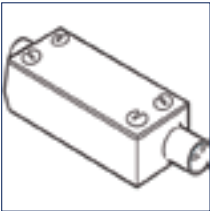


ATA145
Metric to Imperial Adaptor

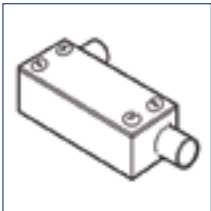
BOXES-RECTANGULAR, JUNCTION

Material : Malleable Iron
Finishes : Black Enamel Galvanised

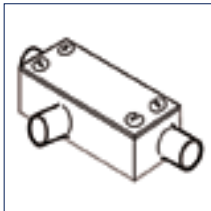
INTERNAL			
Size	Length	Width	Depth
20-25mm	92	52	30
32-38mm	140	65	42
50mm	243	114	59



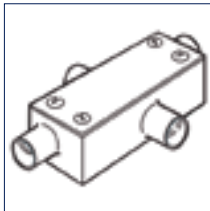
ATBRJ137
Through Rectangular
Junction Box
Size : 20,25,32,38 and 50mm



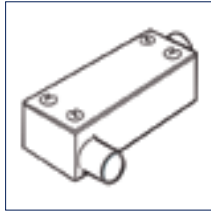
ATBRJ138
Tangent Angle,
Right Hand
Size : 20,25,32,38 and 50mm



ATBRJ139
Tangent Tee
Size : 20,25,32,38 and 50mm



ATBRJ140
Intersection
Size : 20,25,32,38 and 50mm



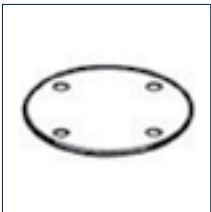
ATBRJ141
Tangent Angle, Left Hand
Size : 20,25,32,38 and 50mm

COVERS-CIRCULAR LARGE

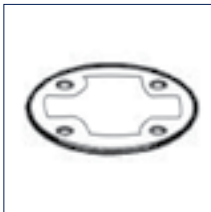
Material : Steel
Malleable Iron, Malleable Iron with copper earthwire
Finishes : Black Enamel Galvanised



ATCCS149
Cover, Ball and Socket,
Earthed



ATCCL150
Cover, Light, Loose,
No Screws



ATCCL151
Cover, Heavy, Loose,
No Screws



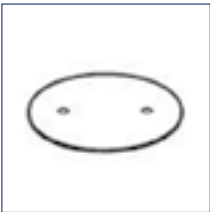
ATCCL152
Cover, Ball and Socket,
Earthed



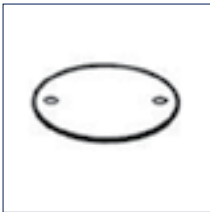
ATCCL153
Cover,
Female Dome

COVERS-CIRCULAR SMALL

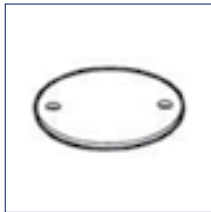
Material : Steel
Malleable Iron, Malleable Iron with copper earthwire
Finishes : Black Enamel, Galvanised



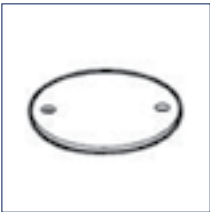
ATCCS146
Cover Light,
Overlapping,
Loose, No
Screws



ATCCS147
Cover Light,
Loose, No
Screws



ATCCS148
Cover Heavy,
Loose, No
Screws



ATCCS149
Cover, Heavy,
Loose, No
Screws



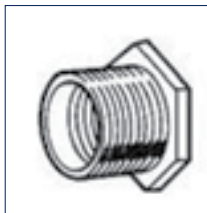
ATCCS150
Cover, Female
Dome



ATCCS141
Cover, Male
Dome

REDUCERS

Material : Malleable Iron
Finishes : Brass Galvanised



ATR157
25-20
32-20
32-25

LOCKNUTS

Material : Malleable Iron
Finishes : Brass Galvanised



ATL158
Locknut, Hexagon Light



ATL159
Locknut, Hexagon Heavy



ATL160
Locknut, Circular Milled Edge

BUSHES

Material : Brass
Finishes : Self Colour



ATBU182
Bush, Short Male



ATBU183
Bush, Long Male



ATBU184
Bush, Female

COUPLINGS

Material : Steel
Malleable Iron
Finishes : Black Enamel
Galvanised, Self Colour Galvanised



ATC154
Coupling, Solid



ATC155
Coupling, Inspection



ATC156
Coupling, Earthing

PLUGS & GLANDS

Material : Malleable Iron, Brass
Finishes : Black Enamel, Galvanised,
Self Colour



ATPG185
Plug, Hexagon Head



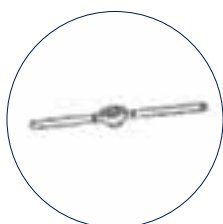
ATPG186
Plug, Slotted Head



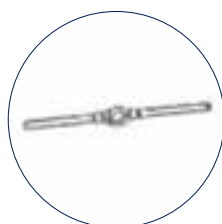
ATPG187
Gland for TRS or Similar
Cable

STOCKS, GUIDES AND DIES

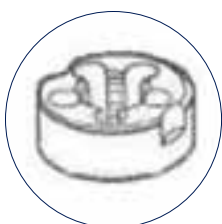
Complete set comprises of Stock, Dies and Guides. To Screw conduit Dia. Of 16mm up to 50mm



ATG202
Complete set comprising of
Stock, Dies Guides for
20 & 25mm Conduit.
Overall Dia. Of Dies 42mm



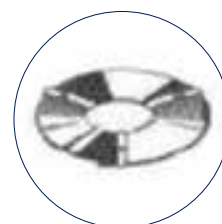
ATG203
Complete set comprising
of Stock, Dies & Guides for
32mm Conduit.
Overall Dia. Of Dies
63.5mm



ATG206
Draw in tape
20 Mtrs x 3.2mm
30 Mtrs x 3.2mm



ATG204
Die 16 16mm Die 42mm
Die 20 20mm Die 42mm
Die 25 25mm Die 42mm
Die 32 32mm Die 63.5mm
Die 38 38mm Die 88mm
Die 50 50mm Die 88mm



ATG205
Die 16 16mm Die 42mm
Die 20 20mm Die 42mm
Die 25 25mm Die 42mm
Die 32 32mm Die 63.5mm
Die 38 38mm Die 88mm
Die 50 50mm Die 88mm

RINGS & CLIPS

Material : **Steel**

Malleable Iron with Steel

Saddle Centre for parallel or right angle runs

Finishes : **Black Enamel Galvanised, Self Colour**



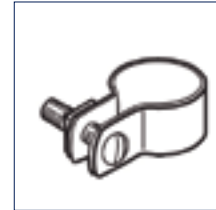
ATTR178
Ring, Adapter



ATRC179
Ring, Extension



ATBRC180
Girder Clip, Adjustable



ATRC181
Clip, Earthing

SADDLES

Material : **Steel**

Malleable Iron with Steel Top

Finishes : **Black Enamel Galvanised**



ATS161
Saddle, Hospital



ATS162
Saddle, Distance



ATS163
Saddle, Space Bar, One Way



ATS164
Clip (Half Saddle)



ATS165
Saddle 1 Way (Single)



ATS166
Cramper, Steel



ATS167
Nipple, Normal



ATS168
Nipple, 300mm Long



ATS169
Coupling, Flange

ELBOWS

Material : **Malleable Iron**

20mm-32mm Steel Cover

38mm (1½") 50mm (2")

Malleable Iron Cover

Finishes : **Brass Galvanised**



ATE170
Elbow, Solid



ATE171
ELBOW, Channel Inspection



ATE172
Bend, Normal, Internal Thread



ATE173
Bend, Inspection

BENDS

Material : **Steel**

Malleable Iron

20mm-32mm Steel Cover

38mm (1½") 50mm (2")

Malleable Iron Cover

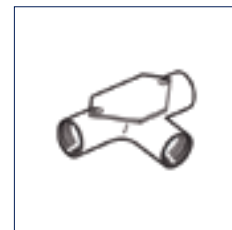
Finishes : **Brass Galvanised**

TEES

Material : **Malleable Iron**
 20mm-32mm Steel Cover
 38mm (1½") 50mm (2")
 Malleable Iron Cover
 Finishes : **Black Enamel Galvanised**



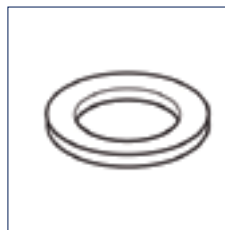
ATTR176
Tee, Solis



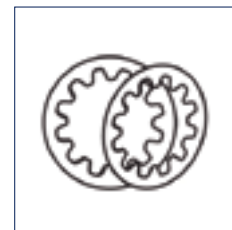
ATTR177
Tee, Channel Inspection

WASHERS

Material : **Malleable Iron**
 20mm-32mm Steel Cover
 38mm (1½") 50mm (2")
 Malleable Iron Cover
 Finishes : **Black Enamel Galvanised**



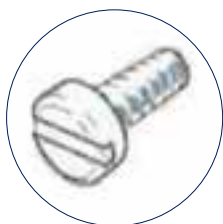
ATW174
Lead No.E112, Neoprene



ATW175
Serrated No

SCREWS

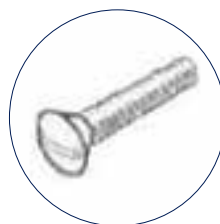
(Order as required)



ATS188
Brass, M4 Pan Head
Size: 6, 10, 12, 16, 20 & 25mm



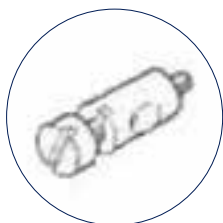
ATS189
Brass, M3.5 Pan Head
Size: 6, 10, 12, 16, 20 & 25mm



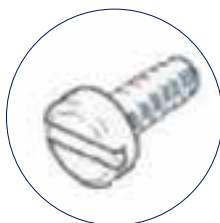
ATS190
Brass, M3.5 Counter Sunk
Size: 6, 10, 12, 16, 20 & 25mm



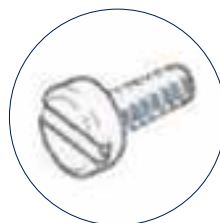
ATS191
Brass, M3.5 Cheese Head
Size: 6, 10, 12, 16, 20 & 25mm



ATS192
Brass, M4 Earth Terminal Studs



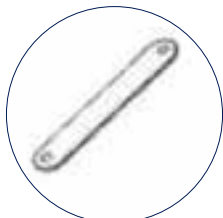
ATS193
Screw- Steel, Bright Zinc Plated
M4 Pan Head
Size: 5 & 6mm



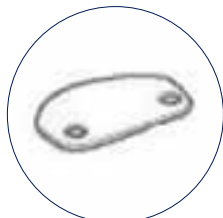
ATS194
Screw-Steel, Bright Zinc
Plated M3.5 Flat Head
Size: 5 & 6mm

GASKETS

(Order as required)



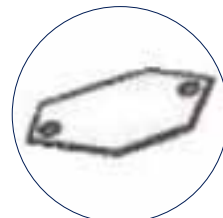
ATG195
Rubber Gasket for
Coupling Inspection
Size: 20,25,32,38 & 50mm



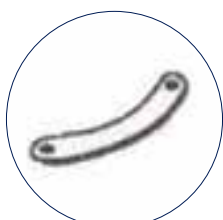
ATG196
Rubber Gasket for Elbow
Channel Inspection
Size: 20,25,32,38 & 50mm



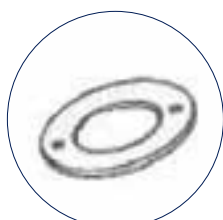
ATG197
Rubber Gasket for Elbow
Circular Inspection



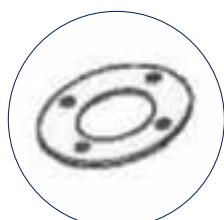
ATG198
Rubber Gasket for Tee
Channel Inspection
Size: 20,25,32,38 & 50mm



ATG199
Rubber Gasket for Bend Inspection
Size: 20,25,32,38 & 50mm



ATG200
Rubber Gasket for Small
Circular Box



ATG201
Rubber Gasket for Box,
Large Circular
Size: 20,25,32,38 & 50mm

Rubber Gaskets are also available for all sizes of Adaptable Boxes

Length of run in meters	Conduit Diameter (mm)																			
	16	20	25	32	16	20	25	32	16	20	25	32	16	20	25	32	16	20	25	32
	Straight				One Bend				Two Bend				Three Bend				Three Bend			
1	Covered by Tables 1 & 2				188	303	543	947	177	286	514	900	158	256	463	818	130	213	388	692
1.5					182	294	528	923	167	270	487	857	143	233	422	750	111	182	333	600
2					177	286	514	900	158	256	463	818	130	213	388	692	97	159	292	629
2.5					171	278	500	878	150	244	442	783	120	196	358	643	86	141	260	474
3					167	270	487	857	143	233	422	750	111	182	333	600				
3.5	179	290	521	911	162	263	475	837	136	222	404	720	103	169	311	563				
4	177	286	514	900	158	256	463	818	130	213	388	692	97	159	292	529				
4.5	174	282	507	889	154	250	452	800	125	204	373	667	91	149	275	500				
5	171	278	500	878	150	244	442	783	120	196	358	643	86	141	260	474				
6	167	270	487	857	143	233	422	750	111	182	333	600								
7	162	263	475	837	136	222	404	720	103	169	311	563								
8	158	256	463	818	130	213	388	692	97	159	292	529								
9	154	250	452	800	125	204	373	667	91	149	275	500								
10	150	244	442	783	120	196	358	643	86	141	260	474								

Cable capacity of conduits:

The following tables give guidance on the calculation of the number of single core pvc insulated cables that can be housed within various sizes of conduits.

Table 1: Cable Factors for short straight runs

Type of Conductor	Conductor cross sectional area (mm²)	Factor
Solid	1	22
	1.5	27
	2.5	39
Stranded	1.5	31
	2.5	43
	4	58
	6	88
	10	146

Table 2: Cable Factors for short straight runs

Type of Conductor"	Conductor cross sectional area (mm²)	Factor
Solid	1	22
	1.5	27
	2.5	39
Stranded	4	43
	6	58
	10	105

The table deal with two particular cases

Single core pvc insulated cables in straight runs exceeding 3 meters in length.
Single core pvc insulated cables in straight runs exceeding 3 meters in lengths or in runs of any length with bends or sets.

Straight runs not exceeding 3 meters in length:

For each type of cable being used obtain the cable factor from Table 1. Sum all the cable factors and compare with the conduit factor given in the Ttable 2. The conduit sizes which will accommodate the cables are those with a conduit factor equal to or greater than the sum of the cable factors.

Straight runs exceeding 2 meters in the length of runs of any length incorporating bends or sets:

For each type of cable being used obtain the cable factor from Table 3. Sum all the cable factors and compare with the conduit factor given in Tables 4 for the relevant length of run and the number of bends and sets in that run. The conduit sizes which will accommodate the cables are those with a conduit factor equal to or greater than the sum of the cable factors.

Conduit Dia (mm)	Factor
16	290
20	460
25	800
32	1400

Spacing of supports for conduits:

The following table gives guidance on the spacing of supports for conduits:

Nominal size of conduit mm	Maximum distance between supports	
	Horizontal Run (m)	Vertical Run (m)
16mm	0.75	1
17mm to 25mm	1.75	2
26mm to 40mm	2	2.25
Over 40mm	2.25	2.5

The table is based on the 16th edition of the IEE Wiring Regulations Appendix 11. These tables are for guidance only and considerations should include future needs.

METAL FLEXIBLE CONDUITS



Construction	Galvanized sheet steel inner core with PVCu or LSZH oversheath	Galvanized Sheet steel helically wound with single clutch which allows good crush protection and high flexibility
Standard color	Black	Standard Sheet Steel
Features	conforms to BS EN 50086 Rating : IP55 as standard ; IP 66 available on request Class 4 Heavy Duty Application High Mechanic Strength Highly Flexible Operating Temperature : -15° C to +80° C UV Resistant	conforms to BS EN 50086 Rating: IP40 as standard Class 4 Heavy Duty Application High Mechanic Strength Highly Flexible Operating Temperature : -15° C to +80° C

METAL FLEXIBLE CONDUITS ORDERING INFORMATION							
Size(MM)	Bare	PVC	LSZH	Packing	Adaptors		
12	ATMF B/12	ATMF PVC/12	ATMF LSZH/12	20Mtr/Roll	ATMF A12	ATMF A12 B	ATMF A12 LT
16	ATMF B/16	ATMF PVC/16	ATMF LSZH/16	20Mtr/Roll	ATMF A16	ATMF A16 B	ATMF A16 LT
20	ATMF B/20	ATMF PVC/20	ATMF LSZH/20	20Mtr/Roll	ATMF A20	ATMF A20 B	ATMF A20 LT
25	ATMF B/25	ATMF PVC/25	ATMF LSZH/25	20Mtr/Roll	ATMF A25	ATMF A25 B	ATMF A25 LT
32	ATMF B/32	ATMF PVC/32	ATMF LSZH/32	20Mtr/Roll	ATMF A32	ATMF A32 B	ATMF A32 LT
40	ATMF B/40	ATMF PVC/40	ATMF LSZH/40	15Mtr/Roll	ATMF A40	ATMF A40 B	ATMF A40 LT
50	ATMF B/50	ATMF PVC/50	ATMF LSZH/50	15Mtr/Roll	ATMF A50	ATMF A50 B	ATMF A50 LT

TECHNICAL DATA

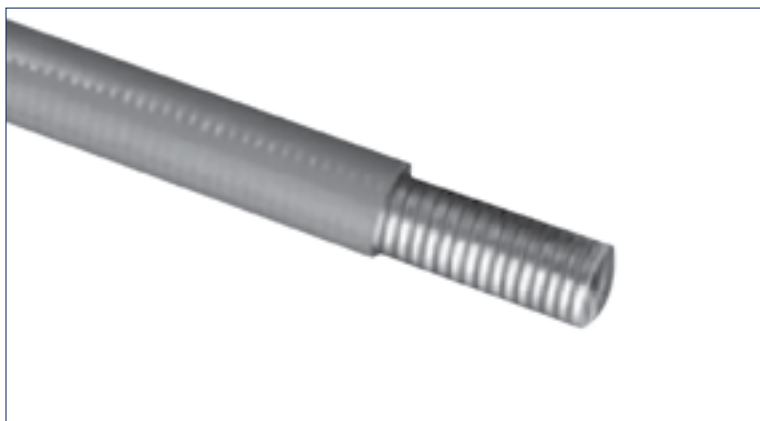
Raw material Standard:

Altair ensures that all the materials for construction of flexible conduits conform to all the following. Pregalvanized sheet to BS 2989 & BS EN 10142 designation FE P02 2275 which corresponds to a minimum average coating weight of 275 grams per square meter of surface area as basic core material.

Altair flexible conduits are manufactured in accordance to BS EN 50086-2-3 and BS 731 part 1. The different flexible conduit systems conform to the relevant IEC 529/ BS EN 60529 Protective IP ratings. The thin wall PVCu covered product range can withstand 10 second flame resistance as defined in CEI 23-14v-1971. The system complies with all the relevant requirements of the latest edition of the IEC wiring (BS 7671) regulations. Altair have 3 models of adaptor, Brass adaptor and Liquid tight Brass adaptor with nickel Coated which protect from corrosion.

Note: Upon request we can provide different length packing.

LIQUID TIGHT COATED STEEL FLEXIBLE CONDUIT



Altair Liquid Tight PVC Coated Steel Flexible Conduit is constructed helically wound single lock with thick PVC oversheath which provides smooth surface. The internal surface of the conduit is free from bures sharp edges. It's diameter will be uniform through out its length.

This can be applied for Outdoor Installations, Machine Tools, under floor applications, connecting Machines to control Elevators, Metro Stations, CCTV cameras to give mechanical protection cables and wires.

TECHNICAL DATA

Construction	Galvanized Sheet steel inner core with PVCu or LSZH oversheath
Standard Color	Black or Grey
Features	Conforms to BS EN 50086 High Mechanical Strength Class 4 Heavy Duty Application Rating : IP 65 & IP 66 Low Flexible Operating Temperature: -20°C to +105°C UV Resistant

ORDER INFORMATION

Size (MM)	PVC	LSZH	Min. Bend Radius (MM)	Sheet Thickness	packing
12	ATMF PVC/12LT	ATMF LSZH/12LT	40	0.25	20mtr / roll
16	ATMF PVC/16LT	ATMF LSZH/16LT	50	0.25	20mtr / roll
20	ATMF PVC/20LT	ATMF LSZH/20LT	65	0.25	20mtr / roll
25	ATMF PVC/25LT	ATMF LSZH/25LT	75	0.25	20mtr / roll
32	ATMF PVC/32LT	ATMF LSZH/32LT	100	0.3	20mtr / roll
40	ATMF PVC/40LT	ATMF LSZH/40LT	120	0.35	15mtr / roll
50	ATMF PVC/50LT	ATMF LSZH/50LT	140	0.35	15mtr / roll

Note: Upon request we can provide different length packing





GI BOX

GI BACK BOX

Altair back boxes are produced from Pre-galvanized steel conforming BS 4662.

They are available in various depths like 25mm, 35mm & 47mm designed with adjustable lugs for easy fitting of accessories and with one brass earth terminal.

Every Size of box is produced with Specified number & size of knockouts which allows adequate cable entries for wiring purpose.

With tapped hole in base for earthing screw. Supplied without covers or fixing unless ordered.

Single Gang Back Box

Item code	Width (mm)	Length (mm)	Depth (mm)
AGB33-25	72	72	25
AGB33-35	72	72	35
AGB33-47	72	72	47



Double Gang Back Box

Item code	Width (mm)	Length (mm)	Depth (mm)
AGB36-25	72	132	25
AGB36-35	72	132	35
AGB36-47	72	132	47



Single Gang Extension Box

Item code	Size	Thickness	Qty
AGBE33-25	72	72	25
AGBE33-35	72	72	35
AGBE33-47	72	72	47



Double Gang Extension Box

Item code	Size	Thickness	Qty
AGBE36-25	72	132	25
AGBE36-35	72	132	35
AGBE36-47	72	132	47



Blank Cover for Back Box

Item code	Size	Qty
AGBC33	3x3	100Pcs/Box
AGBC36	3x6	100Pcs/Box



Note: Upon request we can provide in different size & thickness

METAL BACK BOX

Metal Clad Back Box			
Item Code	Description	Size	KnockOuts
AMCB33	Single Clad Metal Clad Box	86x86	6 x ø20
AMCB36	Double Clad Metal Clad Box	86x146	8 x ø20
BS5733, All boxes are with a brass earth terminal			



Metal Clad Back Cover		
Item Code	Description	Size
AMCBC33	Single Gang Metal Clad Box Cover	86x86
AMCBC36	Double Gang Metal Clad Cover	86x146



Rectangular Box (Single Gang)			
Item Code	Width (mm)	Length (mm)	Depth (mm)
AMB42-50	100	50	50



Square Metal Box			
Item Code	Width (mm)	Length (mm)	Depth (mm)
AMB44-38	100	100	38
AMB44-54	100	100	54



Octagonal Metal Box			
Item Code	Width (mm)	Length (mm)	Depth (mm)
AMOB44-38	90	90	38
AMOB44-54	90	90	54



Cover for Metal Box			
Item Code	Size	Thickness	Qty
AMBC42	4X2	1MM	100 Pcs/Box
AMBC44	4X4	1MM	101 Pcs/Box
AMOBC44	4X4	1MM	102 Pcs/Box



Note: Knockout 20mm,25mm & 32mm available on request. Also can provide different height and thickness.

METAL ENCLOSURE



Altair has designed H-series wall mount Enclosure for Multi-purpose application, body & plate are produced using high quality steel. No compromise is done in the quality of the product. It complies with IEC 62208, also give maximum Protection against its environmental conditions.

Material Used	Steel for Body & Plate		
Body Thickness	1.5MM	Plate Thickness	2.0MM
Body Finish	Epoxy-polyester powder	Plate Finish	Zinc
Color	Grey RAL 7035		
IP degree of protection		IP66 conforming to IEC 60529	
IK degree of protection		IK10 conforming to IEC 62262	

Model	Width	Height	Depth
AMEH21512	200mm	150mm	120mm
AMEH2212	200mm	200mm	120mm
AMEH22512	200mm	250mm	120mm
AMEH2312	200mm	300mm	120mm
AMEH2215	200mm	200mm	150mm
AMEH22515	200mm	250mm	150mm
AMEH2315	200mm	300mm	150mm
AMEH25315	250mm	300mm	150mm
AMEH3315	300mm	300mm	150mm
AMEH3415	300mm	400mm	150mm
AMEH4415	400mm	400mm	150mm
AMEH3515	300mm	500mm	150mm
AMEH4515	400mm	500mm	150mm
AMEH5515	500mm	500mm	150mm
AMEH4615	400mm	600mm	150mm
AMEH5615	500mm	600mm	150mm
AMEH25320	250mm	300mm	200mm
AMEH3320	300mm	300mm	200mm
AMEH3420	300mm	400mm	200mm
AMEH4420	400mm	400mm	200mm
AMEH3520	300mm	500mm	200mm
AMEH4520	400mm	500mm	200mm
AMEH5520	500mm	500mm	200mm
AMEH4620	400mm	600mm	200mm

Model	Width	Height	Depth
AMEH5620	500mm	600mm	200mm
AMEH6620	600mm	600mm	200mm
AMEH5720	500mm	700mm	200mm
AMEH6820	600mm	800mm	200mm
AMEH8820	800mm	800mm	200mm
AMEH610020	600mm	1000mm	200mm
AMEH810020	800mm	1000mm	200mm
AMEH612020	600mm	1200mm	200mm
AMEH812020	800mm	1200mm	200mm
AMEH3425	300mm	400mm	250mm
AMEH4425	400mm	400mm	250mm
AMEH3525	300mm	500mm	250mm
AMEH4525	400mm	500mm	250mm
AMEH5525	500mm	500mm	250mm
AMEH4625	400mm	600mm	250mm
AMEH5625	500mm	600mm	250mm
AMEH6625	600mm	600mm	250mm
AMEH5725	500mm	700mm	250mm
AMEH6825	600mm	800mm	250mm
AMEH8825	800mm	800mm	250mm
AMEH610025	600mm	1000mm	250mm
AMEH810025	800mm	1000mm	250mm
AMEH612025	600mm	1200mm	250mm
AMEH812025	800mm	1200mm	250mm

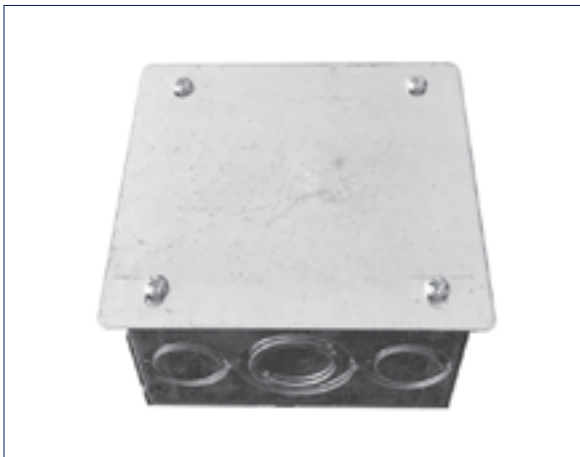
NOTE : Tailored size can be offered as per customer request with respective to MOQ.....

GI ADAPTABLE BOX

Altair adaptable Boxes can serve as an utility Junction Box for wiring purpose and also can be used as junction box for installation with Electrical Conduits. Boxes are supplied with or without knockouts.

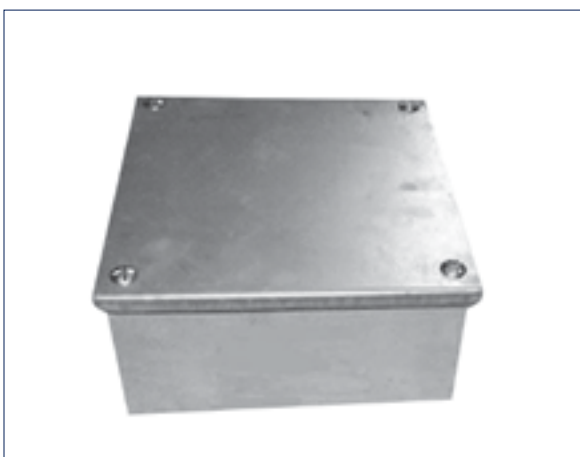
Material : **Steel**
 Finish : **Pre-Galvanized / Hot Dip Galvanized**
 Standard : **BS 4568**
 IP Rating : **IP 40 / IP 54 / IP 55 / IP 65**

BOXES WITH MULTIPLE KNOCKOUTS



Item Code	Width	Length	Depth
AGA332	75	75	50
AGA442	100	100	50
AGA443	100	100	75
AGA444	100	100	100
AGA662	150	150	50
AGA663	150	150	75
AGA664	150	150	100
AGA883	200	200	75
AGA884	200	200	100
AGA10103	250	250	75
AGA10104	250	250	100

BOXES WITHOUT KNOCKOUTS



Item Code	Width	Length	Depth
AGA332-2	75	75	50
AGA442-2	100	100	50
AGA443-2	100	100	75
AGA444-2	100	100	100
AGA662-2	150	150	50
AGA663-2	150	150	75
AGA664-2	150	150	100
AGA883-2	200	200	75
AGA884-2	200	200	100
AGA10103-2	250	250	75
AGA10104-2	250	250	100

Note: Different size and thickness can be Provided as per request



A low-angle, upward-looking photograph of several modern skyscrapers. The buildings are covered in glass and steel, creating a complex pattern of lines and reflections. The entire image is overlaid with a semi-transparent blue filter. The text 'FLOOR BOX' is centered in the middle of the image, flanked by two short horizontal green lines.

FLOOR BOX

RAISED FLOOR SYSTEMS

Raised Floor Trunking Systems are increasingly being put to use in new build commercial applications. Hitherto, the concept found application in renovations, where the raised floor created a new level that would provide for containment in the floor void.

Of late, new construction incorporating raised access flooring is increasingly popular owing to the flexibility it affords to the end-user. Raised floors can be moved around, changed, and adapted to various services. Air conditioning, plumbing and electrical services can be contained within a 450mm high raised floor, with the degree of strength and rigidity similar to that seen in a standard screeded floor.

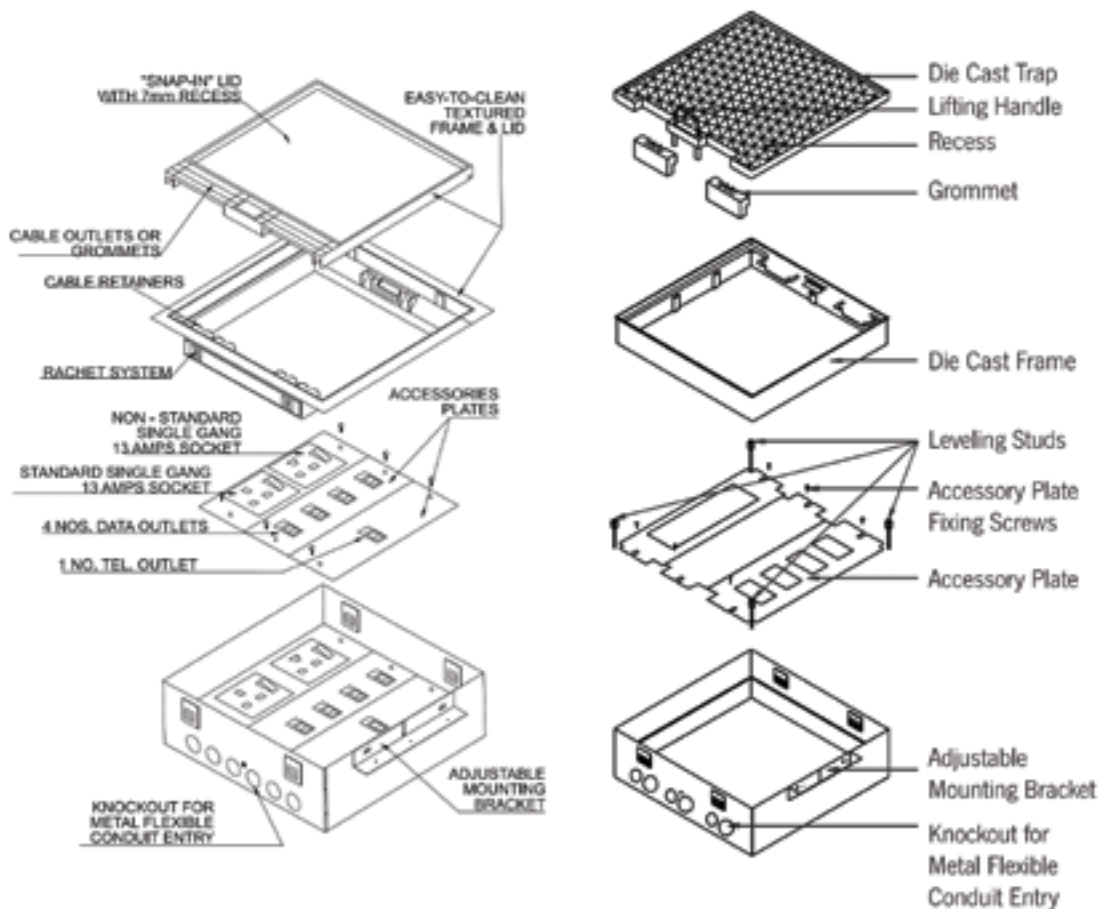
From a services perspective, the raised floor trunking system ensures that the end-user can shift the relative position of the floor box on the given floor

area. The only limiting factor in relocating the floor box is the length of the flexible lead that connects the floor box fitted on the raised floor to the raised floor containment placed beneath the raised flooring.

The raised floor trunking beneath the raised flooring is not a load bearing component. Moreover, the trunking can be loosely laid directly on the slab beneath the raised floor, or clamped onto the slab.

Services are transferred from the containment to the boxes using metal flexible conduits. The flexible conduits are terminated to the boxes on one side, with the raised floor trunking on the other side.

Raised floor trunkings can be supplied in different sizes depending on the need at site. Trunkings of 38mm are supplied as a standard. However, various



depth ranging from 38mm to 100mm can be made available on request for higher cable capacity requirements.

The width of the raised floor trunking is limited by the grid spacing seen on the floor plan. Allowing for space to fix pedestals and the junction boxes of a comparable size, the maximum width possible for a raised floor trunking is 450mm, as the standard grid normally seen in raised flooring is 600mm.

Normal concrete slabs and floors are of a similar colour to pre-galvanised steel used in manufacturing trunkings. In order to differentiate the electrical containment from the other services, the containments are epoxy coated in various colours. This enables easy identification, maintenance and servicing. Trunking covers are secured to the base using screw-fix schemes to enable adequate earthing of the covers.

The use of PVC coated flexible conduits to connect services from the trunkings to the floor boxes is recommended, as this reduces the chances of vermin attack.

RAISED FLOOR TRUNKING



Trunking



Junction Box



Service Box
Polyamide Service Box



Service Box
Diecast Service Box

Note 1: Raised floor trunking is epoxy coated as standard. Pre-Galvanised finish is available on request.

Note 2: Various heights of trunking are available on request

Note 3: 1.0mm trunking is available on request

Note 4: Metal trunking is supplied in lengths of 2440mm

Note 5: comply to the requirements of BS7671

W x H (mm)	1.2 mm thick
75x28	ATTRT 75/1
150x38	ATTRT 150/2
225x38	ATTRT 225/3
300x38	ATTRT 300/3
450x38	ATTRT 450/3

L x W x H (mm)	
75x150x38	ATTRJ 75/1
150x150x38	ATTRJ 150/1
225x225x38	ATTRJ 225/3
300x300x38	ATTRJ 300/3
300x225x38	ATTRJ 3022/3
450x450x38	ATTRJ 450/3
450x225x38	ATTRJ 4522/3
450x300x38	ATTRJ 4530/3

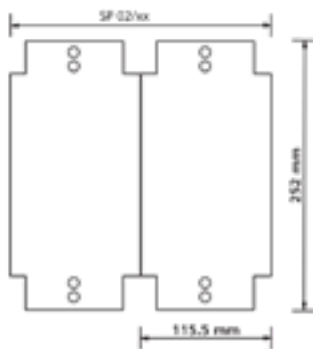
L x W (mm)	Cube
250 X 250	ARSBQ 250/2
250 X 250	ARSBQ 250/3

L x W (mm)	Galvanized
250 X 125	ATSBG 250/1
250x250	ATSBG 250/2
250x250	ATSBG 250/3
375x250	ATSBG 375/2
375x250	ATSBG 375/3

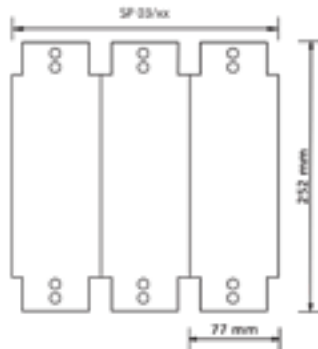
L x W (mm)	Polyamide*
250 X 250	ARSBP 250/2
250 X 250	ARSBP 250/3

L x W (mm)	Diecast
250 X 250	ATUSD 250/2
250 X 250	ATUSD 250/3

FLOOR DISTRIBUTION SYSTEM ACCESSORIES



ATP 02/XX
Accessory places for 2 compartment
250 X 250mm



ATP 03/XX
Accessory places for 3 compartment
250 X 250mm



ATP / XX /01 Blank Plate



ATP / XX /02
Plate suitable for panel mounted 2
Gang 13Amp Switch Socket.
For plates with wiring devices add
suffix WD



ATP / XX /03
Plate for 4 Nos LJU 6C
(Knockout aperture
size 22X37mm)

PANEL MOUNTED OUTLETS



13Amp ZGang DP Panel Mounted Switch Socket
Outlet. Carton Qty : 10 Nos



Replace TT with 02 for 115mm wide plates and 03
for 77mm wide plates

All Altair Switch Sockets comply to the relevant
requirements of BS1363 Part2:1995
Double Pole Switching for even greater safety
Twin earth terminals comply to the requirements of
high integrity earthing as stipulated by Section 607
of BS671
Mounting details: 2 and 3 Compartment Floor Boxes

UNDER FLOOR SYSTEMS

Inscreed Service Junction Box



Product Code	Length x Width
AAUJ/ 250/1	250 X 125
AAUJ/ 250/2	250 X 250
AAUJ/ 250/3	250 X 250
AAUJ/ 300/2	300 X 300
AAUJ/ 300/3	300 X 300

Standard Height of the junction box is 65-75mm
Boxes also available in the height of 75-90mm & 90-105

Inscreed Service Outlet Box



Product Code	Length x Width
AAUS/ 250/1	250 X 125
AAUS/ 250/2	250 X 250
AAUS/ 250/3	250 X 250
AAUS/ 300/2	300 X 300
AAUS/ 300/3	300 X 300

Standard Height of the Service box is 65-75mm
Boxes also available in the height of 75-90mm & 90-105

Flush Floor Trunking



Ordering Information
[PG] Pre galvanized
[HDG] Hot dip galvanized
[EC] Epoxy coated available on request
[SS] Stainless steel
[ALU] Aluminum
[SP] Special order on customer request
Standard thickness 1.20mm to 2.00mm
Standard length 2.44 mtr
Example:
For hot dip galvanized HDG straight length 3 compartment 65mm high and 300mm wide
Product code: AA-FFT300= 65x300/3x1.2HDG

Product Code	Single Compartment	Two Compartment	Three Compartment	Width X Height [mm]
AA-FFT150	FFT 150/1			150X65
AA-FFT300		FFT 300/2	FFT 300/3	300 X 65
AA-FFT400		FFT 400/2	FFT 400/3	400 X 65

Flush Floor Junction Box



Product Code	LxWx H
AAFJ/ 150/1	150 X 150X 65
AAFJ/ 300/2	300 X 300 X 65
AAFJ/ 300/3	300 X 300 X 65
AAFJ/ 400/2	400 X 400 X 65
AAFJ/ 400/3	400 X 400 X 65

Flush Floor Service Box



Product Code	LxW
AAFS/ 250/1	250 X 125
AAFS/ 250/2	250 X 250
AAFS/ 250/3	250 X 250
AAFS/ 300/2	300 X 300
AAFS/ 300/3	300 X 300

OUTLET BOX

Altair has designed this product for concrete floor application, it's Panel is made of Aluminum material to make more stronger. Its having flat and Side mounting panel to fix modules, giving maximum of 8 single Modules or 4 double modules respectively.



Base Box:

Its with temporary lid, having body size 190mm x 120mm x 75mm & Galvanized steel body which will secure body during concrete pour to prevent ingress of slurry.

Ordering Information	
Product Code	ACF - 210L
Panel Material	Aluminum
Panel Size	210mm x 140mm
Base Material	Steel
Base Case Size	190mm x 125mm x 65mm
Cutout Size	233mm
Module Capacity	8 Modules
Depth	65mm

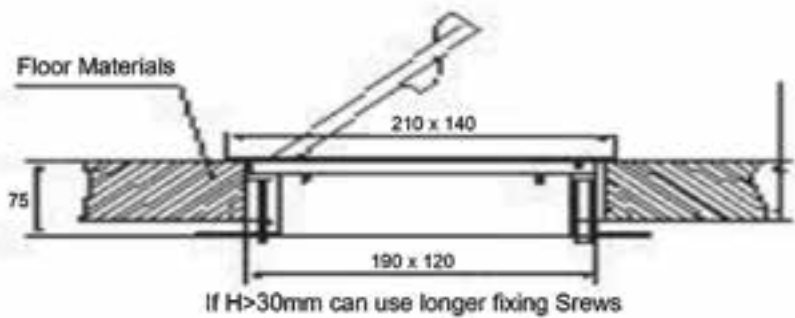
2 Size modules



1 Size modules



Outline Drawing



Altair has designed this product for using both indoor and outdoor purpose. Its applicable in Garden, Access Floor, Board room tables, Walls, Counters, Concrete Floor, Ceiling, Shop Fronts, Desks, Kitchen Room Table etc.

Its weather Proof, which will protect fully from dust & will withstands water flow at 1kg/cm², The hinge, which opens to less than 90deg, prevents the cover from being left open accidentally & causing people to trip over it, It can withstand the weight of pedestrians while protecting the cable from pressure and stress which makes it a reliable products. Pop them up when you need, tuck them when you don't.

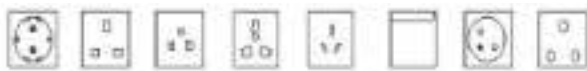
Product Data

Panel Material : Brass Alloy / Stainless Steel
Frame Capacity : 3 Modules
Base Material : ABS



Ordering Information			
Product#	Panel Material	Surface Color	Application
AOB-2SFA	Stainless Steel	Silver	Access floor
AOB-2SFC	Stainless Steel	Silver	Concrete Floor
AOB-2BFA	Brass Alloy	Golden	Access floor
AOB-2BFC	Brass Alloy	Golden	Concrete Floor

2 Size modules



1 Size modules



Mounting configuration



Applicable to AOB-2SFA, AOB-2BFA



Applicable to AOB-2SFC, AOB-2BFC

According to customers requirements Altair has designed compact type Pop-up outlet box for small area with arc edge and more modules capacity space which also offers you the most reliable products. This product is applicable in Desks, Floors, Board room tables, Counters, Kitchen room tables, Shop Fronts, Walls and Ceilings. its very easy to use. It doesn't affect way passing & cleaning when closing with special connecting terminal & very easy to connect. it's design make it safe

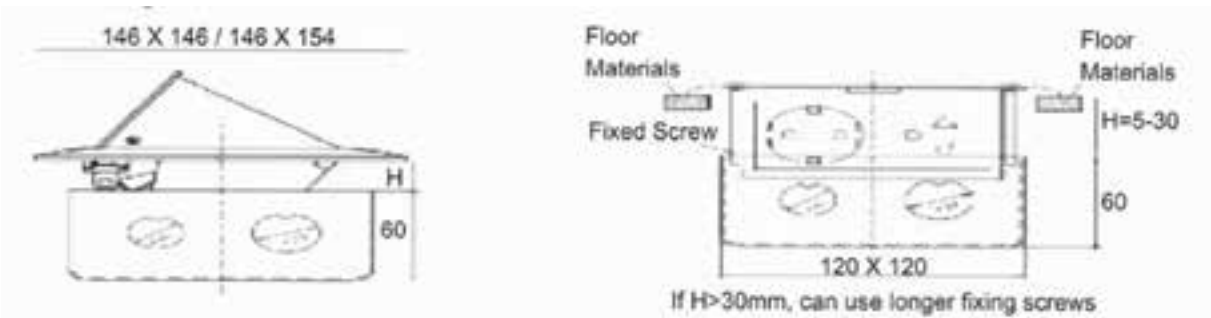
Product Data

- Panel Material : Brass alloy/ Aluminum
- Frame Capacity : 4 Modules
- Available Modules : Type 45, 43
- Damping Device (DP) : Available
- Optional Base Boxes : B120



Ordering Information				
Product#	Panel Material	Panel Size (mm)	Cutout (mm)	Surface Color
APU-26B	Brass Alloy	146 x 146	126 x 126	Golden
APU-26L	Aluminum	146 x 146	126 x 126	Silver

Outline Drawing





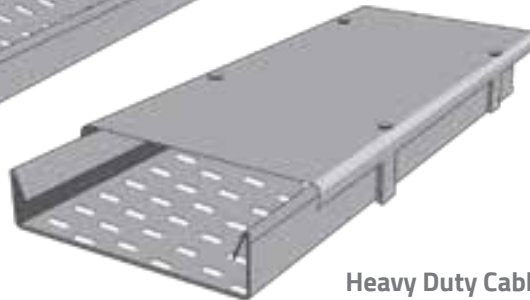
GI CABLE TRAY, TRUNKING AND LADDERS

CABLE TRAYS

Heavy Duty Cable Tray



Heavy Duty Cable Tray With Cover



In a building environment, cables need to be run from the main distribution board to sub main boards. In order to ensure safe transportation and distribution of cables it is essential to use an appropriate cable support system.

Cable Trays ensure that this support function is adequately performed. The trays are supported at regular intervals enabling appropriate loading in accordance with requirements of standards.

The choice of products and nish depends on atmospheric conditions and the capability of the support system to withstand adverse conditions.

Altair cable trays offer a high degree of exhibity, both from a perspective of locating the component parts

to accessing the cable supports. The cable trays are available in various nishes including pre-galvanised, galvanised after manufacture and epoxy coated finishes and various grades of stainless steel. Altair cable trays and ladders comply to the requirements of the BS EN6153722001.

The usage of accessories will ensure that the client is delivered a proper solution, complete with component parts. This will also reduce the need to cut on-site and, risks associated with the onset of resultant corrosion. If the need arises to cut product onsite, it is recommended to apply a layer of cold galvanizing paint on the cut surface /edges after the rough edges have been filed off.

Materials	Finishes Available
Pre-galvanised to BS EN10142:1993	Original Finish
Hot Rolled Sheet Steel to BS EN 10111:1998	Hot Dip Galvazed to BS 729:1971
Electro Galvanised Steel to BS EN 10152:1994	Epoxy Coated
Hot Rolled Sheet Steel to BS EN 10111:1998	Hot Dip Galvazed to BS 729:1971 and epoxy coated
Stainless Steel Grade AISI 304, 316 or 316L	Original Finish



In humid / salt laden conditions, it is recommended to use products that have been galvanised after manufacture. This will reduce the chances of product failure in such conditions. In extremely corrosive surroundings, stainless steel containment is recommended, as this has the capability to withstand such conditions. For non exposed corrosive areas such as sewage treatment plans, the usage of non metallic containment is recommended.

Light Duty Cable Trays:

Length: 3 Meters
 Flange Height
 For widths ranging from 50mm to 100mm: 15mm
 For widths ranging from 150mm to 600mm: 25mm

Heavy Duty Cable Trays:

Length: 3 Meters
 Flange Height
 For all widths: 50mm
 Return range: 12mm (25mm available on request)



90° Flat Bend



90° Outside Riser



Reducer



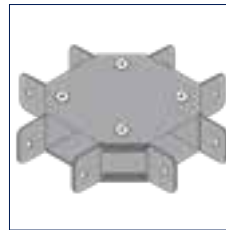
Heavy Duty



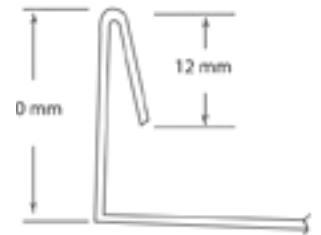
Equal Tee



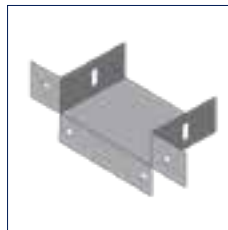
Inside Riser



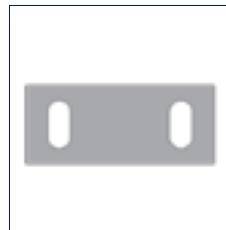
4 Way Cross



Straight Section

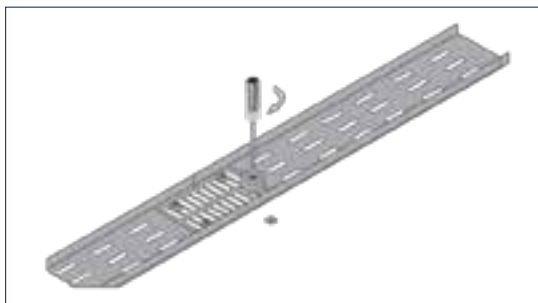
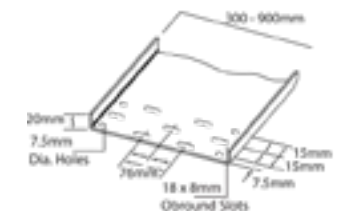
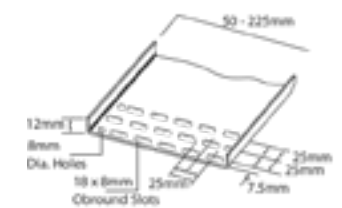


Flanged Coupler



Tee

Light Duty

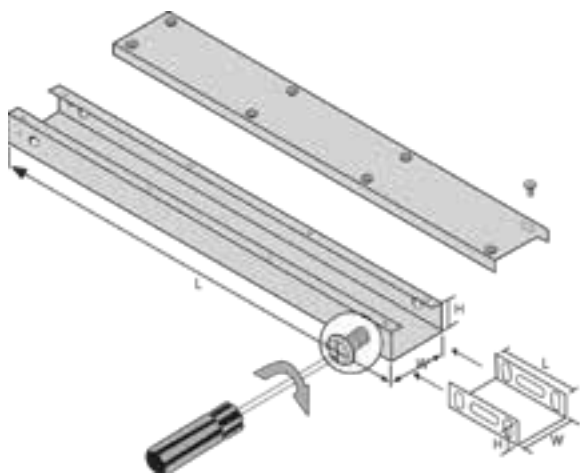


Width (mm)	Gauge (mm)	Trays	Flat Bend 90 degree	Flat Equal Tee	Cross	Inside Riser 90	Outside Riser 90
50	1.0	AHT/50	AHT/90B/50	AHT/ET/50	AHT/X/50	AHT/90IR/50	AHT/90OR/50
75	1.0	AHT/75	AHT/90B/75	AHT/ET/75	AHT/X/75	AHT/90IR/75	AHT/90OR/75
100	1.0	AHT/100	AHT/90B/100	AHT/ET/100	AHT/1X/00	AHT/90IR/100	AHT/90OR/100
150	1.2	AHT/150	AHT/90B/150	AHT/ET/150	AHT/X/150	AHT/90IR/150	AHT/190OR/50
225	1.2	AHT/225	AHT/90B/225	AHT/2ET/25	AHT/X/225	AHT/90IR/225	AHT/290OR/25
300	1.5	AHT/300	AHT/90B/300	AHT/ET/300	AHT/3X/00	AHT/90IR/300	AHT/90OR/300
450	1.5	AHT/450	AHT/90B/450	AHT/ET/450	AHT/X/450	AHT/90IR/450	AHT/90OR/450
600	2.0	AHT/600	AHT/90B/600	AHT/ET/600	AHT/X/600	AHT/90IR/600	AHT/690OR/00
750	2.0	AHT/750	AHT/90B/750	AHT/ET/750	AHT/X/750	AHT/90IR/750	AHT/90OR/750
900	2.0	AHT/900	AHT/90B/900	AHT/ET/900	AHT/X/900	AHT/90IR/900	AHT/90OR/900

Note: Different thickness and sizes can be made available on request

Please note : Altair reserves the right to change perforation patterns and product specifications without prior notice

TRUNKING



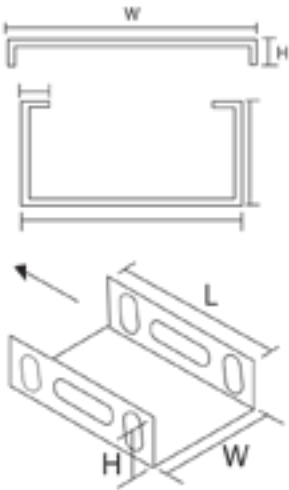
Cable trunkings are used to contain wires from final distribution boards to wiring points located in a given floor area. The wires could be power or data depending on the user requirement.

As the application is generally indoor, the requirement calls for trunkings to be manufactured from pre-galvanised sheet steel, with certain minimum requirements from a thickness and galvanizing specification. However, certain applications may dictate the usage of such trunkings externally. This will entail the galvanizing of such folded trunkings after manufacture. Trunkings may also be manufactured from stainless steel or non metallic composites in extremely corrosive conditions. Trunkings are supplied completed with covers and it is essential that the installer ensures proper installation by removing covers and laying wires therein. Pulling wires within trunkings (which

cease to be trunkings & should be called ductings) could result in damaging the insulation of wires and subsequent failure of the feed.

Altair trunkings are manufactured to BS4678 and in various other sizes to suit site requirements and conditions. Special thickness and dimensions can be made available on request.

Covers are secured to the base using screwfix or turnbuckle schemes. It is essential to ensure that earth continuity is maintained between the covers and the base, irrespective of the method of fixing the covers to the body of the trunking. The extent of corrosion protection of the trunking is decided based on the site requirements. Trunkings are available in various finishes like pre-galvanised, epoxy coated, stainless steel etc for protection from a corrosive atmosphere.



Full U Connector for strongjoint support & protection



Self Tapping Screw Zince Chromate M4 X 8mm. Used for securing the cover to the base of the trunking.



Bolt - Pressed Nut Zinc Chromate (M6).

Cable Trunking - Twist Fix Type



Twist Bolt or Clamp Fix ensures quicker installation time



Captive nuts keep cables from screw thread getting scratched and damaged

Materials	Finishes Available
Pre-galvanised to BS EN10142:1993	Original Finish
Hot Rolled Sheet Steel to BS EN 10111:1998	Hot Dip Galvazed to BS 729:1971
Electro Galvanised Steel to BS EN 10152:1994	Epoxy Coated
Hot Rolled Sheet Steel to BS EN 10111:1998	Hot Dip Galvazed to BS 729:1971 and epoxy coated

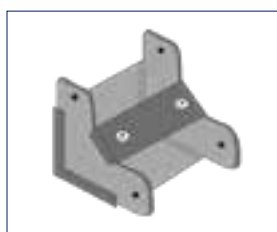
TRUNKING TO 352989 (BSEN 101434993)

Size (mm)	Thickness (mm)	Reference
50 X 50	1.0	ATC/FF/022
75 X 50	1.2	ATC/FF/032
75 x 75	1.2	ATC/FF/033
100 X 50	1.2	ATC/FF/042
100 X 75	1.2	ATC/FF/043
100 X 100	1.2	ATC/FF/044
150 X 50	1.4	ATC/FF/062
150 X 75	1.6	ATC/FF/062
150 X 100	1.6	ATC/FF/064
150 X 150	1.6	ATC/FF/066
225 X 50	1.6	ATC/FF/092
225 X 75	1.6	ATC/FF/093

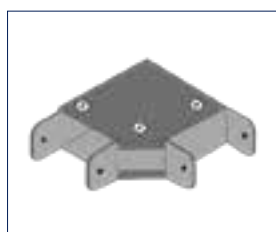
Size (mm)	Thickness (mm)	Reference
225 X 100	1.6	ATC/FF/094
225 X 150	1.6	ATC/FF/096
300 x 50	1.6	ATC/FF/122
300 X 75	1.6	ATC/FF/123
300 X 100	1.6	ATC/ FF/ 124
300 X 150	1.6	ATC/FF/126
300 X 300	2.0	ATC/FF/1212

Multi Compartment Trunking

For different compartments, apply as follows
 2 Compartment Apply suffix _____/2C
 3 Compartment Apply suffix _____/3C



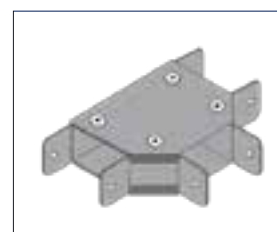
90° Inside Riser



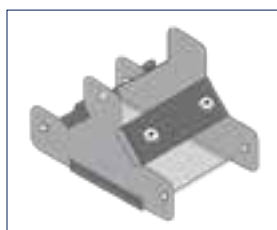
90° Flat Elbow



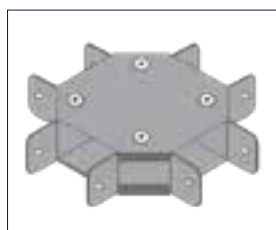
Reducer



Equal Tee



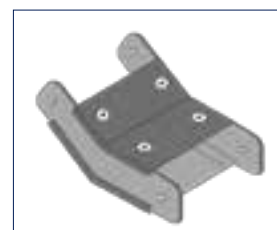
Vertical Equal Tee



4 Way Cross



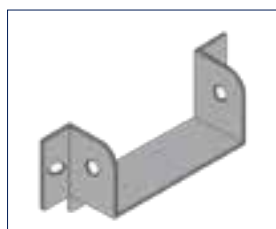
45 Elbow



45 Inside Riser



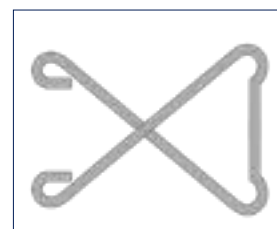
End Cap



Flanged Coupler



Joint



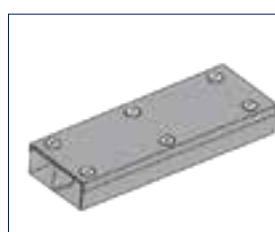
Cable Retainer



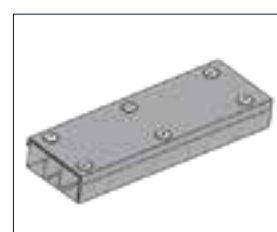
Pin Rack



Hangar



2 Compartment Trunking



3 Compartment Trunking

STANDARD CABLE TRUNKING ACCESSORIES:

Size	Bend 90 Degree	Bend 45 Degree	Inside Riser 90 Degree	Outside Riser 90 Degree	Tee	Cross	Joint	End Cap
50x50	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022
75x50	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022
75x75	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022
100x50	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022
100x75	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022
100x100	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022
150x50	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022
150x75	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022
150x100	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022
150x150	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022
225x50	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022
225x75	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022
225x100	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022
225x150	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022
300x50	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022
300x75	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022
300x100	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022
300x150	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022
300x300	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022	AT/90B/022

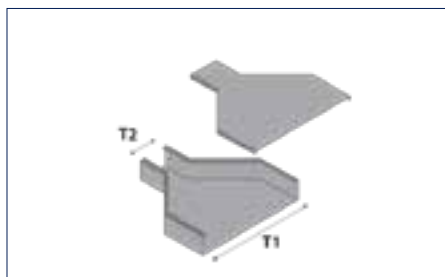
Reducer

For ordering Reducer for trunking size T1 to T2

T1 : 75 X 75

T2 : 50 X 50

The part number should be ATR3322



Please note that we reserve the right to make specification changes without notice. All dimensions and material specifications are subject to commercial tolerance within published specification.

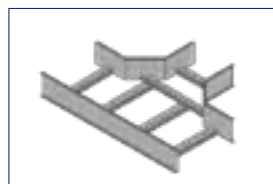
CABLE LADDERS



Bend



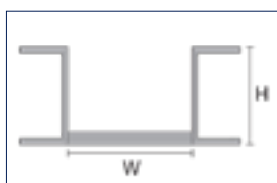
Cross



Tee



Inside Riser



Cable Ladder Dimensions



Couplers



Outside Riser



Reducer

Ladders like cable trays are load bearing components meant for industrial and large cable support applications. The load bearing capability of a ladder is significantly higher than that of a cable tray of a comparable size. Altair ladders are manufactured from sheet steel and the rungs are either welded or bolted onto the side rails. Either scheme is acceptable from a performance perspective; however the bolted schemes can be relatively stronger as the area of contact between the rungs and the side rails is higher. The dimensions of the side rails and rungs determine

the number of cables that can be run and the relative strengths of the system.

Ladders are manufactured from sheet steel and are epoxy coated or hot dip galvanised after manufacture to reduce the risk of corrosion. In certain applications, the ladders are deep galvanised to reduce corrosion risk to the minimum.

Fittings c/w Hexagon Head Bolt M8, Nut and Washer

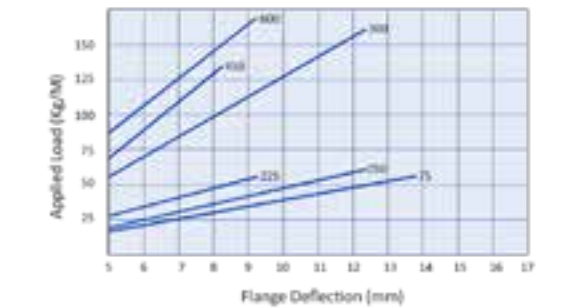
Materials		Finishes Available	
Pre—galvanised to BS EN1014221993		Original Finish	
Hot Rolled Sheet Steel to BS EN 10111:1998		Hot Dip Galvanised to BS 729:1971	
Electro Galvanised Steel to BS EN 10152:1994		90B/	Epoxy Coated
Hot Rolled Sheet Steel to BS EN 10111:1998		Hot Dip Galvanised to BS 729:1971 and epoxy coated	
Stainless Steel Grade AISI 304, 316 or 316L		Original Finish 055	

Width (mm)	Gauge (mm)	Trays	Flat Bend 90 degree	Flat Equal Tee	Cross	Inside Riser 90
150	ACL/150	ACL/90B/150	ACL/1ET/50	ACL/X/150	ACL/90IR/150	ACL/90OR/150
300	ACL/300	ACL/90B/300	ACL/1ET/300	ACL/X/300	ACL/90IR/300	ACL/90OR/300
450	ACL/450	ACL/90B/450	ACL/1ET/450	ACL/X/450	ACL/90IR/450	ACL/90OR/450
600	ACL/600	ACL/90B/600	ACL/1ET/600	ACL/X/600	ACL/90IR/600	ACL/90OR/600
750	ACL/750	ACL/90B/750	ACL/1ET/750	ACL/X/750	ACL/90IR/750	ACL/90OR/750
900	ACL/900	ACL/90B/900	ACL/1ET/900	ACL/X/900	ACL/90IR/900	ACL/90OR/900
1000	ACL/1000	ACL/190B/000	ACL/11ET/000	ACL/X/1000	ACL/90IR/1000	ACL/90OR/1000

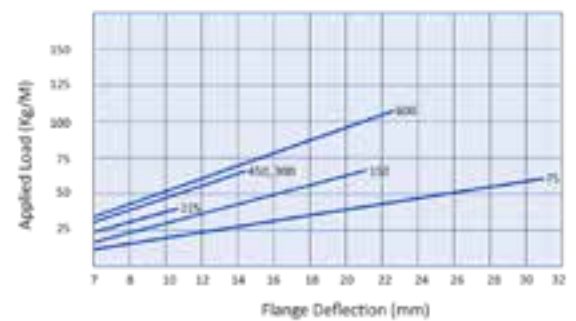
Note : Thickness of cable ladders is 2mm and height is 100mm

LOADING GRAPHS FOR TRAYS AND LADDERS

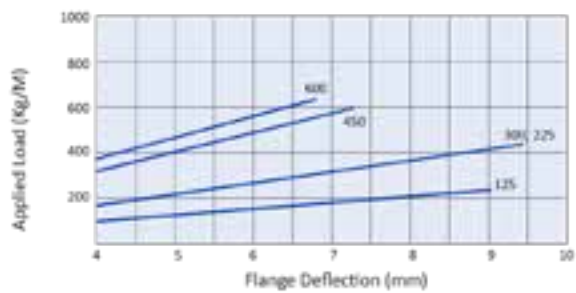
Loading Graphs Of Light Duty Cable Trays
2 Meter Continuous Span



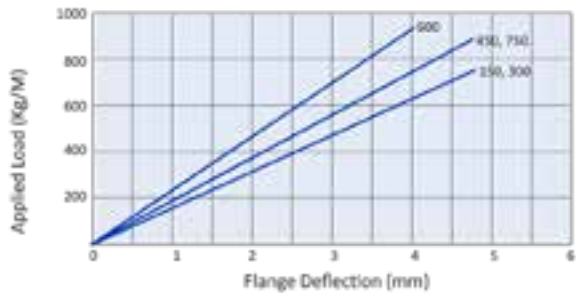
Loading Graphs Of Light Duty Cable Trays
2.5 Meter Continuous Span



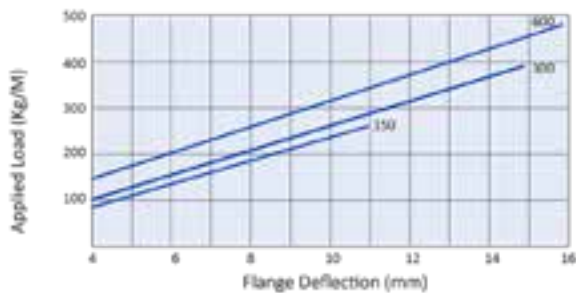
Loading Graphs Of Heavy Duty Return Flange Cable
Trays: 2 Meter Continuous Span



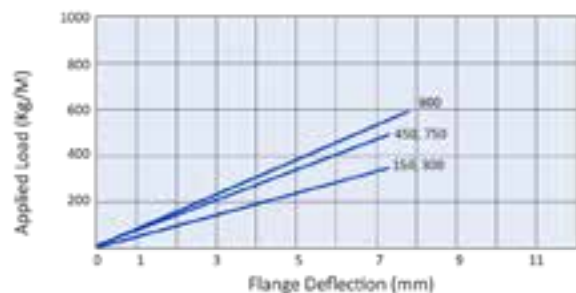
Loading Graphs Cable Ladders:
1.5 Meter Continuous Span



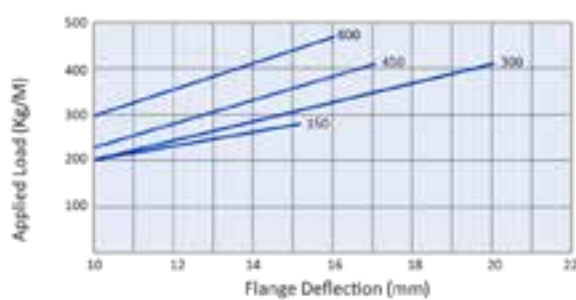
2.5 Meter Continuous Span



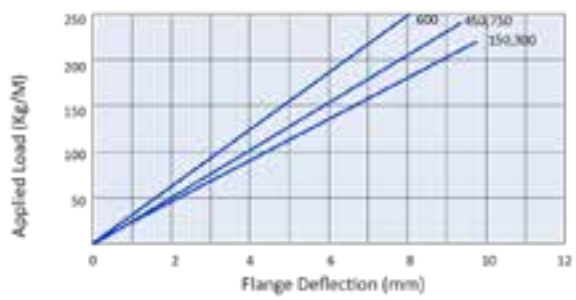
2 Meter Continuous Span



3 Meter Continuous Span



3 Meter Continuous Span



CABLE TRUNKING CAPACITY GUIDE

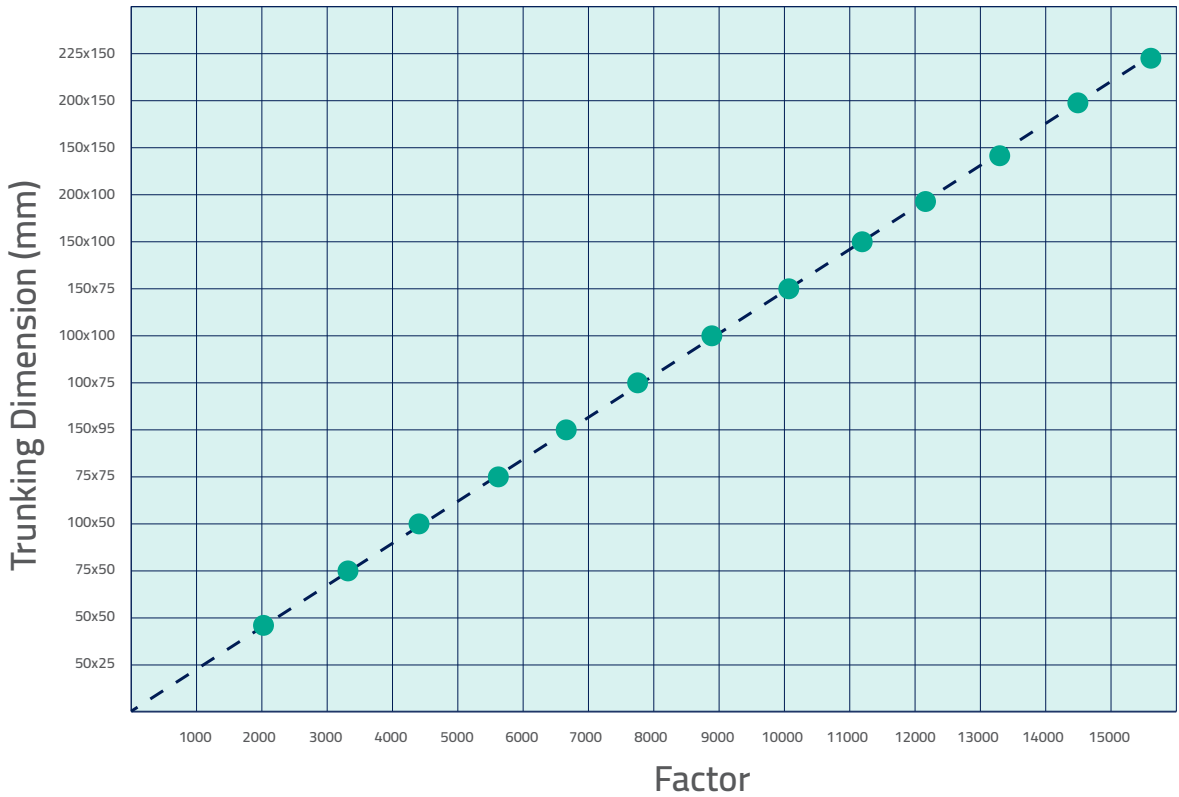


Table 1 - Factors for Trunking			Table 2 - Factors for Trunking					
Types of Conductor	Conductor Cross Sectional area (mm)	Factor	Trunking Dimensions (mm x mm)		Factor	Trunking Dimensions (mm x mm)		Factor
Solid	1.5	7.1	50 x 50		767	200 x 50		4532
	2.5	10.2	50 x 50		1037	200 x 75		6392
Stranded	1.5	8.1	75 x 50		1555	200 x 100		8500
	2.5	11.4	75 x 75		2371	200 x 150		12770
	4	15.2	100 x 50		2091	225 x 100		7170
	6	22.9	100 x 75		3189	225 x 150		14350
	10	36.3	100 x 100		4252	250 x 100		10630
	16	42.9	150 x 50		3189	250 x 150		15945
	25	62.6	150 x 75		4780	300 x 100		12784
	35	95	150 x 100		6392	300 x 150		19170
			150 x 150		9585			

The above data is based on the 15th edition of the IEF Wiring Regulations for ELectrical Installation (1981) which allows for a space factor of 43%. Trunking size is determines by multiplying the number of each single core pvc insulated cable sizes by the appropriate factor shown in Table 1 and 2. This factor should either equal or exceed the final factor used.

SELECTING THE RIGHT FINISH

Introduction:

In planning any cabling or support installation, the choice of an appropriate corrosion resistant finish is always a key issue at the specification state, ranking along installation time and load carrying ability. However, unlike these other factors, which are only of importance during the installation phase, the correct choice of finish has long term implications and is crucial for ensuring the longevity (and aesthetics) of the complete installation in line with the client's expectations.

Since future maintenance of any support system is virtually impossible once loaded, it is vital that the finish specified for the equipment is capable of providing life time protection from corrosion within the intended environment- ideally with some margin of safety.

The following pages give information on how corrosion occurs and technical data on standard construction materials and surface finishes available within each Altair products.

Our sales engineers would only be too pleased to throw more light on this aspect of business.

What is corrosion:



Corrosion is the disintegration of an engineered material into its constituent atoms due to chemical reactions with its surroundings. In the most common terms, this means electrochemical oxidation of metals in reaction with an oxidant such as oxygen. A very common example of corrosion is rusting. Corrosion can also occur in materials other than metals, such as ceramics or polymers, although in this context, the term degradation is more common. In other words, corrosion is the wearing away of metals due to a chemical reaction.

Many structural alloys corrode merely from exposure to moisture in the air, but the process can be strongly affected by exposure to certain substances. Corrosion can be concentrated locally to form a pit or

crack, or it can extend across a wide area more or less uniformly corroding the surface. Because corrosion is a diffusion controlled process, it occurs on exposed surfaces. As a result, methods to reduce the activity of the exposed surface, such as passivation and chromate-conversion, can increase a material's corrosion resistance. However, some corrosion mechanisms are less visible and less predictable.

Chemical Corrosion:

Few metals suffer corrosion damage in a dry, unpolluted atmosphere at a normal ambient temperature. Unfortunately such environments are exceptional and atmospheric pollutants are likely to be present to some degree in most solutions where support system will be installed. This mild chemical corrosion is normal in almost all situations and useful information on types of material or choice of finish which will inhibit and control this are given in the following pages.

Electro-Mechanical Corrosion:

When two dissimilar metals in the contact become damp, it is possible for corrosion to be induced in one of the metals. Such corrosion may progress rapidly and cause considerable damage, so it is important to consider and, if necessary take steps to eliminate this process occurring.

Electrochemical or electrolytic corrosion takes place because the two different metals each behave as electrodes and the moisture as the electrolyte in a simple battery; as with any battery the resulting flow of current will cause corrosion of the anode. The likely effects of this reaction can be predicted using the Galvanic series.

Galvanic Series:

Even when two dissimilar metals are in moist contact, electro-mechanical corrosion need not necessarily take place.

The likelihood depends upon the potential difference between the two metals; this can be obtained by taking their respective values and subtracting one from the other.

When the potential difference is less than the values given in the table below, corrosion is unlikely to occur.

ENVIRONMENT	MAX. POTENTIAL DIFFERENCE
Marine & Outdoor	0.3 Volts
Indoor	0.5 Volts
Indoor, Hermetically Sealed (Dry)	No Restriction*

*When no moisture to act as electrolyte, no electromechanical corrosion can take place.

If corrosion takes place, the metal which is higher in the series will be corroded in preference to that which is lower in the series.

If the affected metal has a small surface area in relation to its counterpart it will be corroded very aggressively and any sacrificial protection it provided may be short lived.

If on the other hand, it has a large surface area in comparison to its less reactive counterpart, small minor corrosion may take place at points of contact but the process is likely to reach equilibrium rapidly so that any further reaction is insignificant.

If from consideration of this series excessive corrosion does appear likely then the risk can be largely eliminated by insulating the dissimilar metals from one another, breaking the electrical path between them. A layer of paint on either surface is usually sufficient to achieve this.

How do you prevent corrosion:

Rust is permeable to air and water, therefore the interior iron continues to corrode. Rust prevention thus requires coatings that preclude rust formation.

Stainless steel forms a passivation layer of chromium(III) oxide.

Similar passivation behavior occurs with magnesium, titanium, zinc, zinc oxides, aluminium, polyaniline, and other electroactive conductive polymers.

Galvanization:

An important approach to rust prevention entails galvanization, which typically consists of an application, on the object to be protected, of a layer of zinc by either hot-dip galvanizing or electroplating. Zinc is traditionally used because it is cheap, adheres well to steel, and provides a cathodic protection to the steel surface in case of damage of the Zinc layer. In more corrosive environments (such as salt water), cadmium is preferred. Galvanization often fails at seams, holes, and joints where the coating is pierced. In these cases, the coating provides cathodic protection to metal, where it acts as a galvanic anode rusting in preference.

More modern coatings add aluminium to the coating as zinc-alume; aluminium will migrate to cover scratches and thus provide protection for longer. These approaches rely on the aluminium and zinc oxides protecting the once-scratched surface rather than oxidizing as a sacrificial anode. In some cases, very aggressive environments or long design life, both zinc and a coating are applied to provide corrosion protection.

Cathodic protection:

Cathodic protection is a technique used to inhibit corrosion on buried or immersed structures by supplying an electrical charge that suppresses the electro-chemical reaction. If correctly applied, corrosion can be stopped completely.

In its simplest form, it is achieved by attaching a sacrificial anode, thereby making the iron or steel the cathode in the cell formed. The sacrificial anode must be made from something with a more negative electrode potential than the iron or steel, commonly zinc, aluminium, or magnesium.

Coatings and painting:

Rust formation can be controlled with coatings, such as paint, that isolate the iron from the environment. Large structures with enclosed box sections, such as ships and modern automobiles, often have a wax-based product injected into these sections. Such treatments also contain rust inhibitors.

Covering steel with concrete can provide some protection to steel by the high pH environment at the steel-concrete interface. However rusting of steel in concrete can still be a problem.

The Merits of Zinc:

The Galvanic series shows why Zinc is such a useful corrosion resistant coating for mild steel.

Firstly, Zinc forms an impervious barrier around the steel, coating it with a metal whose own rate of chemical corrosion, is both low and predictable in most situations.

Secondly, if the coating is damaged at any point, the zinc surrounding the damaged area become an anode of the electrolytic cell and is sacrificially corroded away very slowly in preference to the underlying steel. This ensures the strength of the steel structure remains unaffected.

Because zinc appears near the top of the Galvanic series, it will act as a sacrificial anode in relation to most other metals; thus its relatively low cost and the ease with which it can be applied as a galvanized coating on steel means that it continues to be the most commonly specified protective finish for support systems.

Common Corrosion Situations:

The most common occurrences of contact between dissimilar metals within systems are:-

- Where stainless steel components are fixed to a carbon steel structure
- Where galvanized or zinc plated components are being fixed onto a stainless steel support system.
- Where copper components (eg copper tubing or MICC cables) are being installed onto a galvanized steel support system.

In relation to these sets of conditions the following comments apply.

Stainless Steel - Mild Steel:

This situation has been the subject of much consideration and debate over the last 15 years, particularly in the off-shore energy industry. These metals are sufficiently close together in the Galvanic series for any electrolytic effects to be ignored in normal off-shore environments. One exception is where a small mild steel component is in direct contact with a large mass of stainless steel. It is now accepted that the application of a single paint coating to one of the juxtapose surfaces will provide sufficient insulation to break the electrical circuit, effectively eliminating any problems.

Small galvanized components on Stainless Steel:

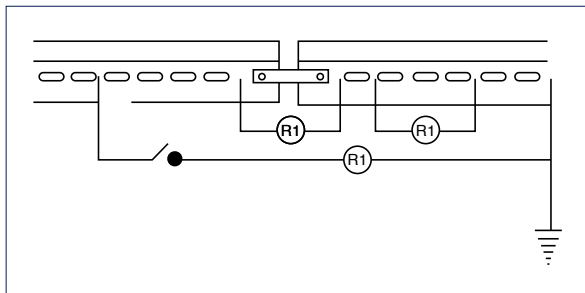
This zinc coating will provide very limited protection to its underlying steel because of the rapidity with which it will erode away. Once exposed, the base steel (often a fastening) will be aggressively corroded causing unsightly staining of the stainless steel and a pre-mature failure to the component. In the case of fastenings such failure could be catastrophic to the installation so appropriate stainless steel fastenings should always be used with a stainless steel support system.

Copper on Zinc:

If copper is laid directly on to a galvanized surface, the zinc will rapidly erode. Thus MICC cable should always have an insulated sheath if it is to be installed on a galvanized cable tray.

Electrical Continuity:

To ensure electrical safety in a cable carrying rack installation, the installation must have suitable electrical continuity.



The electrical resistance values at most unfavourable point R1 (joining between racks) and R2 (material resistance) measured across two points that are 500mm apart in the same straight run are compared. The design of the joint has critical importance in the resistance value R1, as does the material, the surface finish and the method of assembly.

Contact between different materials or finishes encourages oxidation, thus reducing electrical continuity. The same condition may arise through insufficient contact pressure at the joint point.

The maximum admissible values according to IEC61537 are $R1 \leq 50 \Omega$

Hot Dip Galvanizing:

Hot-dip galvanizing is a process of coating iron, steel, or aluminum with a thin zinc layer, by passing the metal through a molten bath of zinc at a temperature of around 860 °F (460 °C).

When exposed to the atmosphere, the pure zinc (Zn) reacts with oxygen (O₂) to form zinc oxide (ZnO), which further reacts with carbon dioxide (CO₂) to form zinc carbonate (ZnCO₃), a usually dull grey, fairly strong material that stops further corrosion in many circumstances, protecting the steel below from the elements.

Galvanized steel is widely used in applications where rust resistance is needed, and can be identified by the crystallization patterning on the surface (often called a "spangle").

Though the process may vary slightly from plant to plant, the fundamental steps in the galvanizing process are:

Degreasing / Caustic Cleaning:

A hot alkaline solution removes dirt, oil, grease, shop oil, and soluble markings.

Pickling:

Dilute solutions of either hydrochloric or sulfuric acid removes surface rust and mill scale to provide a chemically clean metallic surface.

Fluxing:

Steel is immersed in liquid flux (usually a zinc ammonium chloride solution) to remove oxides and to prevent oxidation prior to dipping into the bath of molten zinc. In the dry galvanizing process, the item is separately dipped in a liquid flux bath, removed, allowed to dry, and then galvanized.

In the wet galvanizing process, the flux floats atop the molten zinc and the item passes through the flux immediately prior to galvanizing.

Galvanizing:

The article is immersed in a bath of molten zinc between 815-850 F (435-455 C). During galvanizing, the zinc metallurgically bonds to the steel, creating a series of highly abrasion-resistant zinc-iron alloy layers, commonly topped by a layer of impact-resistant pure zinc.

Finishing:

After the steel is withdrawn from the galvanizing

bath, excess zinc is removed by draining, vibrating or - for small items - centrifuging. The galvanized item is then air-cooled or quenched in liquid.

inspection:

Coating-thickness and surface-condition inspections complete the process.

The galvanizing process has existed for more than 250 years and is used throughout various markets to provide steel with unmatched protection from the ravages of corrosion.

A wide range of steel products from nails to highway guardrail to suspension wires to rocket launch pad sound suppression system benefit from galvanizing's superior corrosion protection properties.

Specification:

BS729 provides the specification for a hot dip galvanized coating. Heavier gauges of steel will usually take up a thicker coating of zinc than lighter gauges so the standard defines the coating of different steel gauges in terms of the weight of zinc per square meter of surface area.

Ensuring compliance with this standard is obviously important. Unfortunately it is not reasonable to use this weight principle for checking the coating weight on component which have already been galvanized. As it involves calculating the surface area then weighing a component, destructively removing the coating by chemical means and then reweighing the components. It is usual to measure the coating thickness at a number of points on the surface of a component. The component thickness given in the standard and their equivalent coating weights are shown below:

Steel Thickness	Min. Avg Coating	Coating Thickness m
1 to 2mm	335	47
2 to 5mm	460	65

It is important to distinguish between hot dip galvanized after manufacture to BS729 and less precise descriptions such as galvanized, mill galvanized or even the term hot dip galvanized when used without reference to any standard. Mill galvanized steel is frequently used as an alternative finish for many support system components and is available from Altair. This material, however, is of a much thinner zinc coating and renders it un-suitable for exposed applications.



Suggested specification text: All components should be hot dip galvanized after completed manufacture to the requirements of BS729.

Pre galvanized steel:

A zinc coating can be economically applied to sheet steel immediately after its manufacture; the result, pre-galvanized steel (to BS2989 or BS EN 10142) is an alternative, bright material which is suitable for non-arduous environments.

Pre-galvanized (or mill galvanized) steel is produced by unwinding steel coil and passing it continuously through a bath of molten zinc and then past air jets to remove excess zinc from the surface. The process is closely controlled to produce a thin, even and ripple free zinc coating with very few imperfections. The material has a spangled crystalline pattern on the surface with an attractive metallic luster which usually goes dull within a year or so.

The pre-galvanized steel coil must be cut to shape during subsequent manufacture of support equipment. Then the edges of the finished components will have no zinc coating. This aspect, together with relatively light zinc coating provided by the process, make pre-galvanized services supports suitable for indoor, non-corrosive environments (particularly where an aesthetically attractive appearance is important) but suitable for humid indoor or outdoor applications.

Specification:

BS2989 (also known as BSEN10142) provides the specification for pre-galvanized steel; within this standard Z275 coating classification is normally used for service support equipment.

Table2 indicates the minimum zinc thickness for this grade of pre-galvanized steel.

Steel Thickness	Min.thickness	
	BS729	BS2889 Z275
1 to 2mm	47	19
2 to 5mm	65	19



Suggested specification text: made from pre-galvanized steel to BS2989, Z275 coating classification.

Stainless steel:

For all practical purpose stainless steel service support can be regarded as maintenance free and suffering no corrosion. Inevitable there is a relatively high price to pay for these attractive properties but in aggressive environments or where the cost or inconvenience of gaining subsequent maintenance access is prohibitive this initial cost premium may well be justified.

Stainless steel contains a high proportion of chromium (usually at least 11%) and the steels remarkable immunity to corrosive attack is conferred

by the chromium rich oxide film which occurs naturally on its surface. This invisible film is not only inert and tightly bonded to the surface; it also re-forms quickly if the surface is damaged in any way.

The fire resistance of stainless steel is particularly noteworthy; test have demonstrated that stainless steel cable supports can be expected to maintain their integrity for considerable periods even when exposed to direct flame temperature exceeding 1000C. This may be an important consideration where the electrical circuits being supported provide for emergency power or control system. Stainless steel is also used where hygiene is major consideration. Its advantage in such applications are again its excellent resistance to various chemical and washes which are frequently used for cleaning purpose and the smoothness of surface (depending on the finish specified) which minimizes the soiling or contamination that can take place.

Specifications:

Many grades of stainless steel are available but for services support in aggressive environments the usual choice is Type 316S31 as defined by BS1449 Part 2. This grade contains molybdenum to improve its corrosion resistance (particularly in the presence of chlorides) and high temperature strength. It is extensively used in the chloride laden marine conditions which exists on offshore installations or l coastal areas. It can be supplied with various surface treatments ranging from aesthetically attractive (but expensive) electro polished finish down to more utilitarian functional finishes.

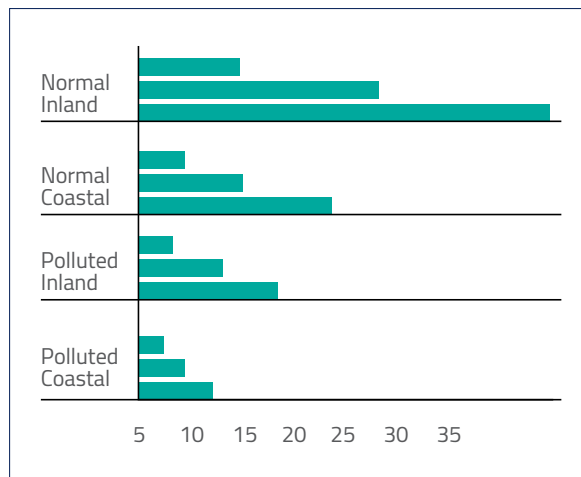
Stainless steel has a higher tensile strength than mild steels, however as with most support systems failure will ultimately occur through buckling or deformation of the components rather than through the steel itself being torn apart, meaning that often this high strength cannot be utilized to advantage in practice.

Powder Coated Finishes:

Altair offers a number of alternative powder coated finishes and details of those which are available for each product range are given in the product guide and the relevant data sheets in this manual.

Epoxy Coating:

Epoxy coatings are based on thermo-setting epoxy resins and give a very hard durable finish suitable for internal applications. Epoxy coatings are usually thin but they have good chemicals resistance with excellent adhesion and coating flexibility



A - 1 mm steel Hot Dip Galvanized after manufacture to BS729 (minimum 47um coating thickness)
 B- As A, but Depp Galvanized with 95um zinc thickness (2xA)
 C- As A, but Deep Galvanized with 140um zinc thickness (3xA)

Design Criteria:

Before the design of a support frame work can be commenced, it is important to have some idea of the likely loads that will be imposed in the form of cables, pipes or other equipment. This point may appear self-evident but experience suggests that often too little consideration is given to identifying and estimating these loads in advance, in the absence of sufficient information an over cautious design approach is instead taken, resulting in the purchase and erection of a support system that is un necessarily expensive.

Factors to be considered:

Consideration should be given to the following factors when under taking the design of a Support system although some of these like snow or wind loads may not be relevant to any installation.

- Distributed loads
- Point loads
- Snow, Wind or external forces
- Safety factor
- Deflection
- Spacing of supports
- Location of couplers
- Installation of cables within a support system
- Earth protection
- Electro-magnetic compatibility
- Thermal expansion and contraction

Distributed Loads:

Before commencing the design process for a new installation, it is usual to consider whether future changes in the pattern of demand for building services will impose increased loading requirements on the support system. If so, it is good design practice to allow both the physical space and sufficient load

carrying capacity for the future addition of 25% more cables or other loading medium.

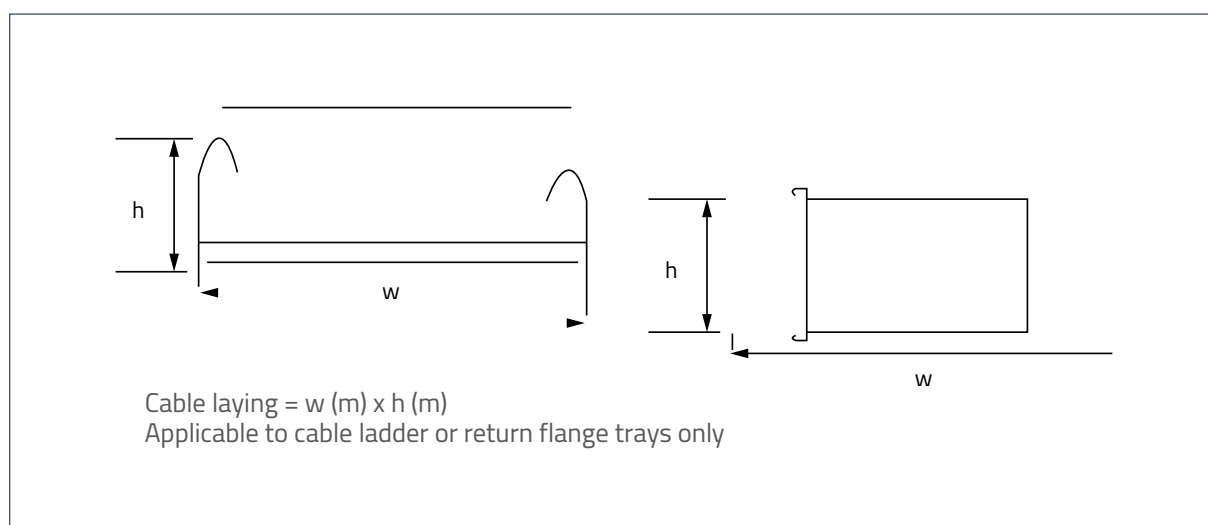
Estimation of cable loads:

If full details of the cabling layout are available then the likely cable load can be calculated using either manufacturer's published information or the tables of Cable Weights and Diameters which are provided in this brochure. However it is often necessary to select a tray or ladder design in the absence of accurate information on the likely cable load. To assist this selection process a useful approach can be to choose a likely size of tray or ladder and then to estimate the maximum cable weight which is capable of being contained within it. This estimate may be arrived at using the following guide.

Max. Cabling capacity (kg/m) = Cable laying area (m²) x 3000

Drawing : Cable laying area (m²) – w (m) x h (m)

Applicable to cable ladder or return flange tray only.



This formula only provides an estimate of the maximum load which can be physically contained within a tray or ladder. The ability of that tray or ladder to support such a load depends on the spacing at its supports.

Cable Weights and Diameters:

Tables 3 and 4 give typical weights and diameters for PVC sheathed, steel wire armoured cables with stranded copper conductors.

Tables 5 and 6 give weights and diameters for PVC sheathed, un-armoured stranded copper power cables. Cables with XLPE (Cross Linked Polyethylene) insulation are usually slightly lighter and so the information given may also be used for these cables too.

For all other types of cables – paper insulated cables or cables with aluminium conductors – please refer to the cable manufacturer's catalogue for details and guidance

Table 3

PVC Armoured Powder / Control Cables to BS6346						
Nom. area of conductor (mm ²)	2 Crore		3 Crore		4 Crore	
	Kg/m	Dia in mm	Kg/m	Dia in mm	Kg/m	Dia in mm
1.5	0.3	12.3	0.3	12.8	0.4	13.5
2.5	0.4	13.6	0.4	14.1	0.5	15.0
4.0	0.5	15.1	0.5	15.8	0.7	17.8
6.0	0.6	16.5	0.7	18.0	0.9	19.2
10.0	0.9	20.1	1.0	21.2	1.2	22.8
16.0	1.0	21.9	1.2	23.1	1.7	26.3

Table 4

PVC Insulated and Sheathed Circular Surface Wiring						
Nom. area of conductor (mm ²)	2 Crore		3 Crore		4 Crore	
	Kg/m	Dia in mm	Kg/m	Dia in mm	Kg/m	Dia in mm
1.5	0.1	7.7	0.1	8.2	0.1	9.1
2.5	0.1	9.2	0.2	9.7	0.2	10.6
4.0	0.2	10.2	0.3	10.3	0.3	12.6
6.0	0.2	12.0	0.3	12.3	0.4	14.2
10.0	0.4	14.6	1.5	15.5	0.7	17.4
16.0	0.6	16.9	0.7	17.7	0.9	20.0

Table 5

PVC Unarmoured Standard Copper Power Cables to BS6346						
Nom. area of conductor (mm ²)	2 Crore		3 Crore		4 Crore	
	Kg/m	Dia in mm	Kg/m	Dia in mm	Kg/m	Dia in mm
25	0.7	18.4	1.0	20.4	1.3	22.7
35	0.9	20.0	1.3	22.4	1.7	25.0
50	1.2	22.2	1.7	25.4	2.3	28.6
70	1.7	24.6	2.4	28.4	3.1	32.2
95	2.3	28.2	3.3	33.1	4.3	37.2
120	2.8	30.9	4.0	36.0	5.3	40.6
150	3.5	34.1	4.9	39.7	6.5	45.0
185	4.2	37.8	6.1	44.1	8.0	49.8
240	5.5	43.2	8.0	49.6	10.6	56.2
300	7.0	47.2	9.7	55.0	13.2	62.5
400	8.5	53.2	12.6	61.4	16.7	69.6

Table 6

PVC Armoured Standard Copper Power Cables to BS6346						
Nom. area of conductor (mm ²)	2 Core		3 Core		4 Core	
	Kg/m	Dia in mm	Kg/m	Dia in mm	Kg/m	Dia in mm
25	1.3	23.0	1.7	25.1	2.1	27.5
35	1.6	24.8	2.1	27.3	2.6	30.0
50	2.0	27.2	2.6	30.5	3.5	34.8
70	2.5	29.5	3.6	34.8	4.5	38.4
95	3.5	34.4	4.6	39.1	5.9	43.3
120	4.1	37.1	5.5	41.9	7.5	48.1
150	4.9	40.2	7.0	47.2	8.8	52.3
185	6.3	45.1	8.4	51.4	10.7	57.5
240	7.8	40.4	10.7	57.3	13.5	63.9
300	9.3	55.4	12.7	62.6	16.4	69.9
400	11.3	60.8	15.7	68.8	21.3	78.8

Values show approximate weight and diameter of typical cables. D = Overall cable diameter

Point Loads:

Point loads may consist of permanent equipment, such as lighting luminaries, junction boxes and other switch gear or temporary loads such as commissioning equipment or installation personnel. Analysis of uniformly distributed loads (such as cables or pipes) is relatively simply by analyzing the effect of a point load is quite complex; fortunately a simple alternative approach is available.

Firstly, one makes the assumption that the point load will be situated in the worst position at mid span. The force this point load imposes can then be taken as equivalent to that imposed by a load of twice its value uniformly distributed along the span. Thus the point load can be converted to the equivalent Uniformly Distributed Load (UDL) which is then added to other UDLs to produce one total uniform load. The suitability of a tray or ladder to carry this total load can then be considered using the load graph information.

Example:

Point load : 30Kgs

Support Spacing = 3m

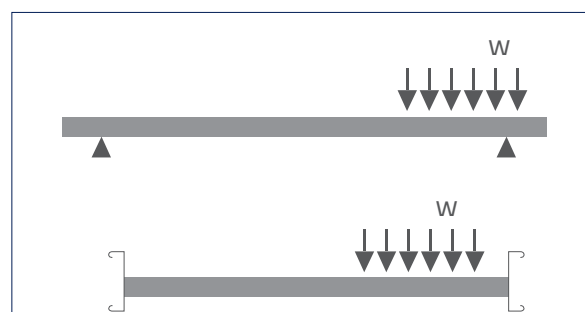
UDL = 100 kg/m

UDL equivalent to 30Kg point load

$$\begin{array}{rcl} 2 \times \text{Point Load} & & 2 \times 30 \text{ Kg} \\ \text{-----} & = & \text{-----} \\ \text{Support Spacing} & & 3 \text{ M} \end{array} = 20 \text{ Kg/m}$$

Although this treatment does assume the point load

will be in the worst case position the installer should, give discretion, always positioning any point load as close as possible both to a support and to either side flange, minimizing the stress on the installation.



Single Spans:

For single spans the loading capacity is also severely reduced. In this circumstances the safe Working load should, as a simple rule, be reduced to half of that indicated by the loading graphs in this manual. This derating of the loading capacity for either single spans of point loads depends to some extent upon the tray or ladder type and intended span. If therefore the design calculations indicate this aspect is critical, more detailed information should be sought.

Snow, Wind and External Factors:

The loading graphs in this manual show the maximum safe working steady load for each type of support system. If the system is outdoors and must sustain snow, ice wind and other variable forces these must also be taken into account at the design stage.

For snow and ice the appropriate extra weight is indicated by these standards and must be added to the weight of the cable (and any point loads) to give

a total working a load, this should then be compared with the safe working load for the tray or ladder using the graphs in the manual.

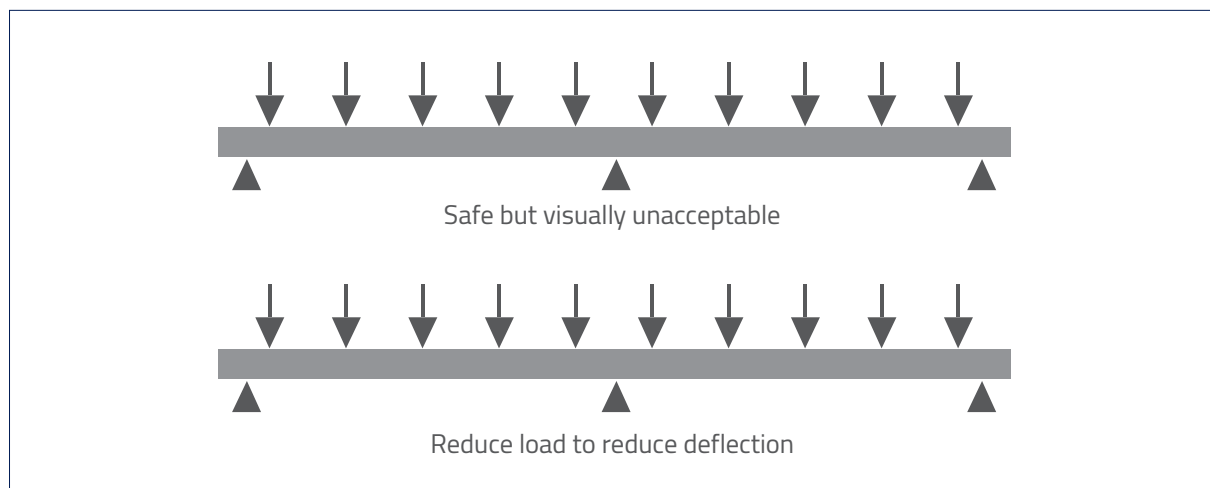
The horizontal force imposed by a wind is proportional to the vertical surface area of the installation so particular care must be taken where cable tray or cable ladder will be mounded on the edge. Where high winds are likely, large spans should be avoided.

High winds can also create a strong lifting force on ladder or tray covers and this to dust be borne in mind when installing covers in exposed locations. Ideally covers should not be installed temporarily, they should only be installed after the electrical installation has been completed and they must be properly secured immediately.

Safety Factor:

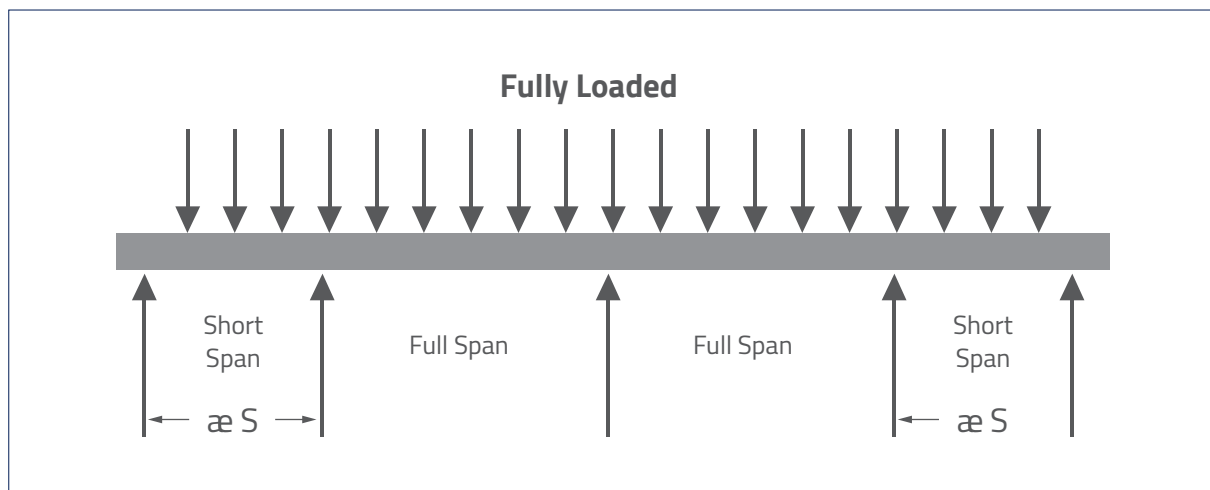
To arrive at a Safe Working Load for each type of equipment, Altair tests products to find the ultimate failure load. This failure load is then multiplied by a safety factor of 2 to arrive at a Safe Working Load.

This safety factor may need to be increased by the designer depending upon the circumstances. For example, if the support system is expected to be subject to aggressive abuse a safety factor as high as three or more may be used. Such treatment is however, the exception and care should be taken not to over-design the system by using an unnecessarily high safety factory.



Deflection:

The deflection of a cable tray or ladder under load is not directly related to its strength but it is obviously of aesthetic importance. For this reason it may be necessary to estimate the likely deflection whilst designing an installation, especially if it will be in a highly visible area. Experience has shown that in order to maintain a degree of deflection which is subjectively acceptable to the eye, the load on the cable tray or ladder will often be restricted to well below its safe maximum.



Spacing of Supports:

Service support installations are usually considered as multi span arrangements but it is important to

recognise that the loading capability of the system is not Uniform from end to end. The strength of the two end spans in any run is much lower than that of intermediate spans, even when the ends are rigidly fixed. In many situations the end spans will be more lightly loaded anyway; if however they are not and the installation will be fully loaded from end-to-end then the support spacing of both end spans should be reduced to no more than three quarters that of intermediate spans.

Sometimes the necessary support spacing may be dictated by the nature of the building fabric. If however the designer has discretion over the spacing of the supports the loading graphs can be used to maximize this distance. This will reduce the number of support components and fixings that will be required, thus reducing the overall cost of the installed system.

Over the last decade there has been a steady reduction in the use of light duty cable tray in favour of medium or heavy duty cable tray or cable ladder. This trend, has however, not always been accompanied by a re-assessment of the support spacings to take advantage of the greater strength they provide, with the result that many installation ultimately cost more than necessary.

Support for Cable Tray:

If a standard Altair cable tray is being installed then in most circumstances a 1 Meter support spacing is ideal. Many light duty tray installations are intended to carry just one or two cables and often the tray supports will be mounted on the existing building fabric. However, where more substantial cable trays are being used it is often necessary to build a dedicated supporting structure; some attention to the design of this can provide tremendous economies in both purchasing and installation costs. On wider trays the maximum safe working load can be increased by

fitting an appropriate fishplate across the underside of each tray to tray joint.

Support for Cable Ladders:

Cable ladder installations are usually designed with a significantly longer spacing between supports, 3 to 5 Meters being a typical span distance.

Support for Accessories:

Cable tray and cable ladder accessories must always be provided with local support.

Location of couplers:

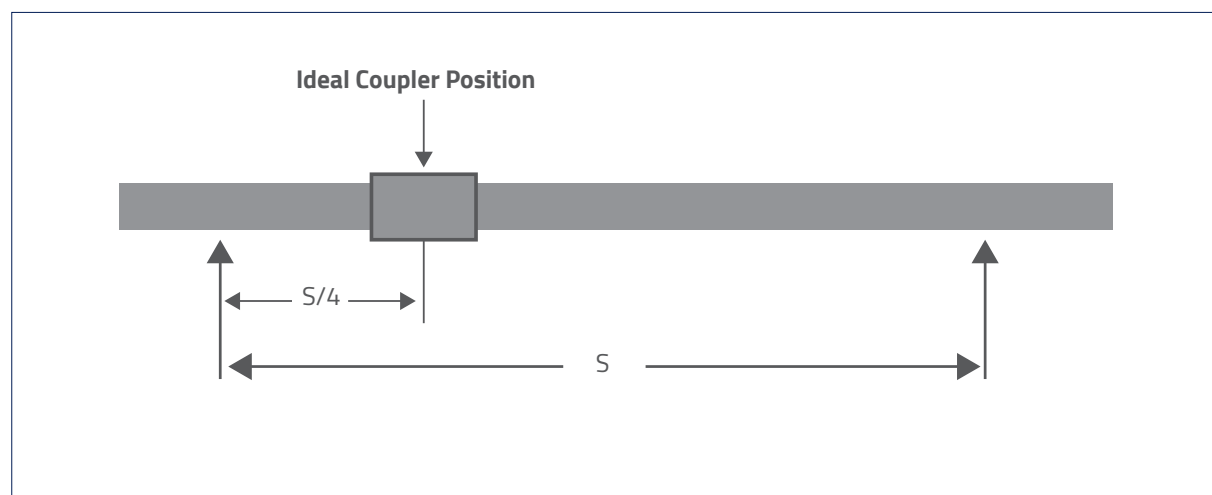
In practice it is often possible to pre-determine where the couplers will be located within a straight run of cable tray or ladder. However it is well worth making some effort to roughly plan their position during the early stages of installation.

The worst position for the couplers is either at mid-span or immediately over a point of support at these locations they will suffer the greatest stress. Both locations should be particularly avoided on the end spans of an installation. From a practical view point it is also more difficult to assemble and fix down tray or ladder if the couplers are positioned immediately over the supports. The best position of joints in a continuous installation is one quarter of the span distance on either side of each point of support.

The loading graphs show safe working loads and typical deflections for cable trays and ladders with joints within the spans, not over the points of support; however because the positions of the joints will vary depending upon the distance between supports the actual deflection will vary from span to span and may therefore differ marginally from the values given in the graphs.

Loading Graphs:

Each of the loading graphs show the maximum recommended load for a range of spans. If point loads



will be added, or for short runs with three spans or less, deflections may be greater than shown. It is important that point loads are taken into account in calculating total working load which is used for comparison with a loading graph.

For single spans the loading capability is also severely reduced. In this circumstances, the working load should, as a simple rule, be reduced to half that indicated by the loading graph in this manual.

This derating of the loading capacity for either single spans or point loads depends to some extent upon the tray or ladder type and the intended span. If therefore the design calculations indicate this aspect is critical, more detailed information should be sought from Altair.

Standards

BS449	Specification for the use of structural steel in buildings	This standard has been replaced by BS5950
BS476	Fire tests on building materials and structure	A standard in 33 parts covering all aspects of fire testing and classification of materials in relation to their combustion characteristics
BS729	Specification for hot dip galvanized coatings on iron and sheet articles	Information on galvanized coatings, including their appearances and coating weights and the repair of galvanized items
BS1140	Specification for resistance spot welding of uncoated and coated low carbon steel	Procedure for use in the correct fabrication and assembly of metal components using spot welding
BS1449 Pt1	Carbon and carbon manganese plate, sheet and strip	This 15 part standard includes the types of mild steel normally used for the manufacture of cable support system. See BS EN10130 and BS EN10051
BS1449 Pt2	Specification for fixing accessories for building purposes Pt 1: Fixing of sheet, roof and wall covering	This specification includes the types of stainless steel normally used for the manufacture of cable support systems
BS1494 Pt1	Method for specifying electroplated coatings of zinc and cadmium on iron and steel	Includes details for roofing nuts and bolts
BS1706	Method for specifying electroplated coatings of zinc and cadmium on iron and steel	The relevant specification for dichromate zinc plated wire mesh and a number of other small zinc plated components
BS3382	Specification for electroplated coating on threaded components	Cover the zinc plated finish used on threaded fasteners (for zinc plating of non-threaded components see BS1706 above)
BS3692	Specification for ISO Metric Precision Hexagon Bolts, Screws and Nuts, Metric Unit	Specification covering the design (but not the finish) of all threaded components supplied by Altair
BS4320	Specification for metal washes for general engineering purposes, metric series	Covers all types of washers supplied by Altair
BS4464	Specification for spring washers for general engineering purposes	Covers metric spring washers supplied by Altair
BS4652	Specification for metallic zinc rich priming paint (Organic Media)	Gives details of application, drying time, storage and weathering resistance of zinc rich paint

BS4872	Specification for approval testing of welders when welding procedure approval is not required	Covers the approval testing of welders for manual or semi-automatic fusion welding
BS5493	Code of practice for protective coating of Iron and Steel structures against corrosion	Guide to the specification of protective finishes on steel structures
BS5750	Quality System	Equivalent to BS EN ISO9000. Guide and specifications for quality management systems.
BS5950 Pt5	Structural use of steel works in buildings. Code of practice for design of cold formed sections	Provides recommendations for the design of structural steel work using cold formed sections
BS6339 Pt2	Code of practice for wind loads	How to calculate wind loads for structured in the UK
BS6497	Specification for powder organic coatings for application and stoving to hot dip galvanized hot rolled steel sections	Covers the application of powder coatings to cable support systems, including, when necessary, the pre-treatment of galvanized Steel
BS6946	Specification for metal channel cable support systems for electrical installations	The relevant standard for the Altair support system includes type tests and requirements for Altair Channels and Brackets
BS7671	Requirements for electrical installations. IEE Wiring Regulations - 16th edition	Regulations for design, selection, erection, inspection and testing of electrical installations in the UK
BS6946	Specification for metal channel cable support systems for electrical installations	The relevant standard for the Altair support system includes type test and requirements for Altair channels and brackets
BS7671	Requirements for electrical installations. IEE Wiring Regulations - 16th edition	Regulations for design, selection, erection, inspection and testing of electrical installations in the UK
BS CP3. Chapter V: Pt2	Code of base data for the design of buildings, wind loads (to be replaced by BS6399 Part 2)	Recommendations on the assumed wind loads to be used in the design of buildings and structures. Relevant to support systems installed outdoors, particularly in exposed locations
BS EN10051	Specification for hot rolled sheet tolerance on dimensions and shape	This is now used with BS1449 Section 1.2 Grade HR4 but replaced Section 1.6 of BSE449
BS EN10130	Specification for cold rolled low carbon steel flat product for cold forming	This gives the technical delivery conditions for Grade Fe P01 which has replaced BS1449 Section 1.3 Grade CR4
BS EN10142	Specification for continuously hot dip zinc coated low carbon steel sheet	This standard includes the pre-galvanised steel used for support systems and replaces BS2989 Grade Z2 G275.
BS EN10147	Specification for continuously hot dip zinc coated structural steel sheet	This standard includes the pre-galvanised steel used on Altai Channels and replaces BS2989 Grade Z25 G275

BS EN ISO9002	Quality Systems. Model for quality assurance in production, installation and servicing	Detailed quality system as operated by Altair and independently assessed.
BS PD6484	Commentary on corrosion at bi-metallic contacts and its alleviation	Guidance on how to avoid situations in which corrosion may arise when different metals and alloys come into contact



CHANNEL & TREADED ROD



Unistrat Slotted Channel

Item Code	Size
AC4141HD	41×41 / 2.5mm 3mtr (HD)
AC4141PG	41×41 / 1.5mm 3mtr (PG)



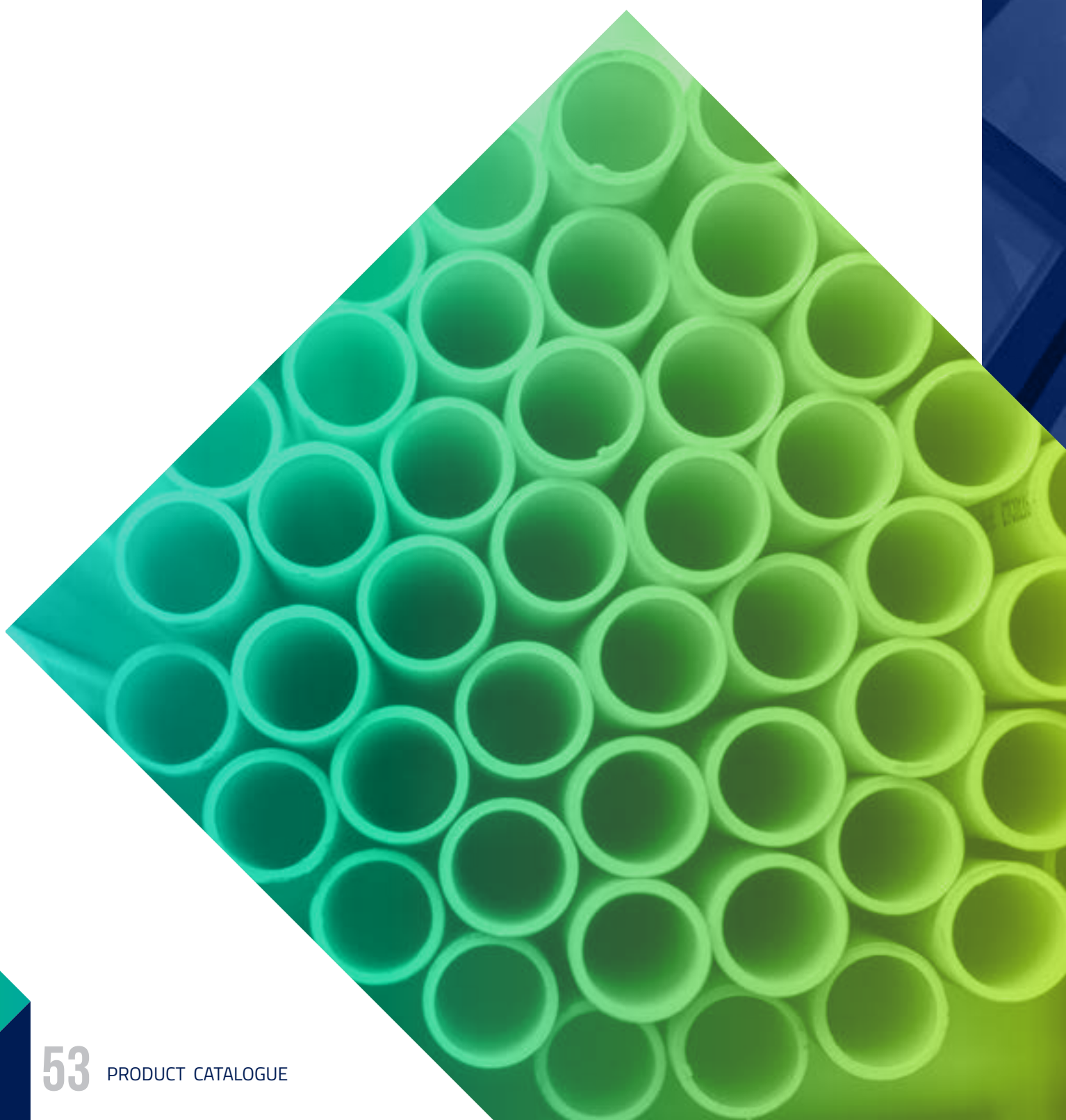
Unistrat Slotted Channel

Item Code	Size
AC4121HD	41×21 / 2.5mm 3mtr (HD)
AC4121PG	41×21 / 1.5mm 3mtr (PG)



Pre Galvanized Threaded Rod

Item Code	Size
ATR04	04mm X3mtr (LG)
ATR06	06mm X3mtr LG
ATR08	08mm X3mtr (LG)
ATR10	10mm X3mtr (LG)
ATR12	12mm X3mtr (LG)





PVC CONDUITS AND ACCESSORIES

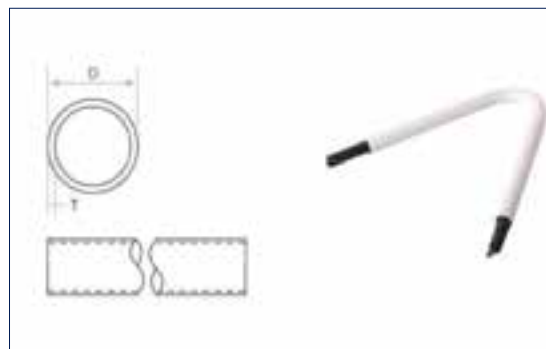
PVC CONDUITS & ACCESSORIES

BS EN 61386/BS 50086 /BS 4607

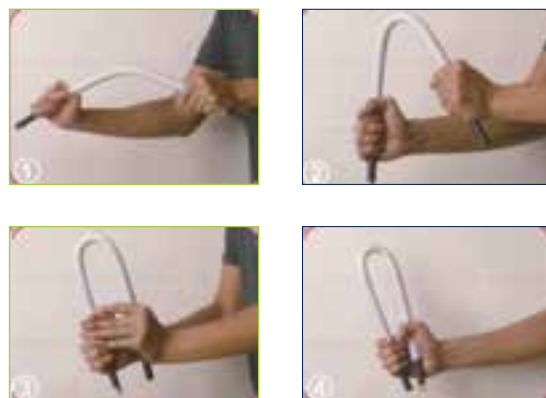
Heavy Duty (HD)						
"SIZE (MM)"	ITEM CODE	"WALL THICKNESS (MM)"			PACKING BUNDLE	
		O.D	I.D	T	MTR	LTH
ø 20	ARPC20HD	20	16.4	1.8	72.5	25
ø 25	ARPC25HD	25	21.2	1.9	72.5	25
ø 32	ARPC32HD	32	27	2.5	29	10
ø 40	ARPC40HD	40	35	2.5	23.2	8
ø 50	ARPC50HD	50	43.6	3.2	11.6	4



Medium Duty (MD)						
"SIZE (MM)"	ITEM CODE	"WALL THICKNESS (MM)"			PACKING BUNDLE	
		O.D	I.D	T	MTR	LTH
ø 20	ARPC20HD	20	17	1.5	72.5	25
ø 25	ARPC25HD	25	21.6	1.7	72.5	25
ø 32	ARPC32HD	32	28	2	29	10
ø 40	ARPC40HD	40	35.8	2.1	23.2	8
ø 50	ARPC50HD	50	45	2.5	11.6	4



Light Duty (LD)						
"SIZE (MM)"	ITEM CODE	"WALL THICKNESS (MM)"			PACKING BUNDLE	
		O.D	I.D	T	MTR	LTH
ø 20	ARPC20HD	20	17.6	1.2	72.5	25
ø 25	ARPC25HD	25	22.2	1.4	72.5	25
ø 32	ARPC32HD	32	29	1.5	29	10
ø 40	ARPC40HD	40	36.8	1.6	23.2	8
ø 50	ARPC50HD	50	46	2	11.6	4



Flexible Corrugated PVC Heavy Duty Conduit (HD)				
"SIZE (MM)"	ITEM CODE	"WALL THICKNESS (MM)"		PACKING BUNDLE
		O.D	I.D	MTR
ø 20	AFPC20HD	20	16.4	72.5
ø 25	AFPC25HD	25	21.2	72.5
ø 32	AFPC32HD	32	27	29
ø 40	AFPC40HD	40	35	23.2
ø 50	AFPC50HD	50	43.6	11.6



COUPLER



SIZE(MM)	ITEM CODE
ø 20	ARPC20
ø 25	ARPC25
ø 32	ARPC32
ø 40	ARPC40
ø 50	ARPC50

EXPANSION COUPLER



SIZE(MM)	ITEM CODE
ø 20	ARPEC20
ø 25	ARPEC25
ø 32	ARPEC32
ø 40	ARPEC40
ø 50	ARPEC50

STRAP SADDLES



SIZE(MM)	ITEM CODE
ø 20	ARPCSS20
ø 25	ARPCSS25
ø 32	ARPCSS32
ø 40	ARPCSS40
ø 50	ARPCSS50

SPACER BAR SADDLES



SIZE(MM)	ITEM CODE
ø 20	ARPCBS20
ø 25	ARPCBS25
ø 32	ARPCBS32
ø 40	ARPCBS40
ø 50	ARPCBS50

FEMALE ADAPTOR



SIZE(MM)	ITEM CODE
ø 20	ARPCFA20
ø 25	ARPCFA25
ø 32	ARPCFA32
ø 40	ARPCFA40
ø 50	ARPCFA50

MALE ADAPTOR



SIZE(MM)	ITEM CODE
ø 20	ARPCMA20
ø 25	ARPCMA25
ø 32	ARPCMA32
ø 40	ARPCMA40
ø 50	ARPCMA50

TERMINAL 1 WAY J/BOX



SIZE(MM)	ITEM CODE
ø 20	ARPCJ120
ø 25	ARPCJ125
ø 32	ARPCJ132

THROUGH 2 WAY J/BOX



SIZE(MM)	ITEM CODE
ø 20	ARPCJ2-20
ø 25	ARPCJ2-25
ø 32	ARPCJ2-32

ANGLE 2 WAY J/BOX



SIZE(MM)	ITEM CODE
ø 20	ARPCJ3-20
ø 25	ARPCJ3-25
ø 32	ARPCJ3-32

3 WAY J/BOX



SIZE(MM)	ITEM CODE
ø 20	ARPCJ420
ø 25	ARPCJ425
ø 32	ARPCJ432

INTERSECTION 4 WAY J/BOX



SIZE(MM)	ITEM CODE
ø 20	ARPCJ5-20
ø 25	ARPCJ5-25
ø 32	ARPCJ5-32

2 WAY (U) J/BOX



SIZE(MM)	ITEM CODE
ø 20	ARPCJ6-20
ø 25	ARPCJ6-25
ø 32	ARPCJ6-32

3 WAY (Y) J/BOX



SIZE(MM)	ITEM CODE
ø 20	ARPCJ720
ø 25	ARPCJ725
ø 32	ARPCJ732

4 WAY (H) J/BOX



SIZE(MM)	ITEM CODE
ø 20	ARPCJ8-20
ø 25	ARPCJ8-25
ø 32	ARPCJ8-32

CIRCULAR EXTENSION RING



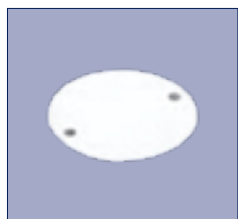
SIZE(MM)	ITEM CODE
ø 20	ARPCJER-1
ø 25	ARPCJER-2

LOOP IN BOX



SIZE(MM)	"KNOCK OUT"	ITEM CODE
ø 20	4	ARPCJ720
ø 25	2	ARPCJ725

CIRCULAR LID



SIZE(MM)	ITEM CODE
"ø 20,ø 25	"ARPCJC-20/25
ø 32"	ARPCJC-32"

RUBBER GASKET



SIZE(MM)	ITEM CODE
ø 20,ø 25	ARPCJG-20/25
ø 32	ARPCJG-32

LONG BEND



LONG BEND	ITEM CODE
ø 20	ARPCB20
ø 25	ARPCB25
ø 32	ARPCB32
ø 40	ARPCB40
ø 50	ARPCB50

INSPECTION BEND



SIZE(MM)	ITEM CODE
ø 20	ARPCIB-20
ø 25	ARPCIB-25
ø 32	ARPCIB-32

ELBOW



SIZE(MM)	ITEM CODE
ø 20	ARPCE-20
ø 25	ARPCE-25
ø 32	ARPCE-32

INSPECTION ELBOW



SIZE(MM)	ITEM CODE
ø 20	ARPCIE-20
ø 25	ARPCIE-25
ø 32	ARPCIE-32

TEE



SIZE(MM)	ITEM CODE
ø 20	ARPCT-20
ø 25	ARPCT-25
ø 32	ARPCT-32

INSPECTION TEE



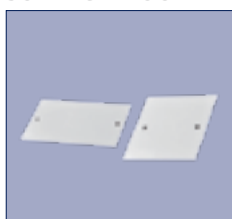
SIZE(MM)	ITEM CODE
ø 20	ARPCIT-20
ø 25	ARPCIT-25
ø 32	ARPCIT-32

SURFACE MOUNTING BOX



SIZE(MM)	ITEM CODE
3 X 3	ARPCBB33
6 X 6	ARPCBB63

SURFACE MOUNTING BOX LID



SIZE(MM)	ITEM CODE
3 X 3	ARPCBBC33
6 X 6	ARPCBBC63

FLEXIBLE CONDUIT ADAPTOR



SIZE(MM)	ITEM CODE	PACKING (Pcs/Box)
ø 20	APFCA20	100
ø 25	APFCA25	100
ø 32	APFCA32	100
ø 40	APFCA40	50
ø 50	APFCA50	50

A low-angle, upward-looking photograph of several modern skyscrapers. The buildings are characterized by their geometric forms, with large rectangular volumes and protruding balconies. The windows are dark and rectangular, arranged in a grid-like pattern. The entire image is overlaid with a semi-transparent blue filter. In the center, the text 'PVC TRUNKING' is written in a bold, white, sans-serif font. Two thin, horizontal green lines are positioned above and below the text, extending slightly beyond its width.

PVC TRUNKING

PVC TRUNKING

Floor | Arc | Half-Moon | Hump



PRODUCT DESCRIPTION

- Backed with high quality sided tape for permanent fixture
- Good for floor wiring to facilitate trolley pass and to avoid tripping, especially in public places, like shopping malls, hospitals and stations
- Material: PVC
- The bottom of duct can be stuck with DOUBLE COATED FOAM TAPE then fasten on the floor easily
- Length: Standard length will be 2000 (MM), customizes length possible per request
- Color: X= Refers Color (Grey-G, White-W, Black-B and Wood-T)



PARAMETER

PRODUCT	DESCRIPTION	SIZE (MM) Width * Height	THICKNESS (MM)	PACKING Pcs/Bundle
APFT1X	PVC 35 *10 ARC FLOOR TRUNKING	35 * 10	1.5	75
APFT2X	PVC 48 *15 ARC FLOOR TRUNKING	48 * 15	2	45
APFT3X	PVC 70 *18 ARC FLOOR TRUNKING	70 * 18	2.2	30
APFT4X	PVC 90 *20 ARC FLOOR TRUNKING	90 * 20	2.2	20

PARTITION MAXI TRUNKING



ITEM No	DESCRIPTION	SIZE Width * Height	PACKING Pcs/Bundle
APCMT50	PVC PARTITION TRUNKING 100*50	100*50	4
APCMT60	PVC PARTITION TRUNKING 100*60	100*60	4

PRODUCT DESCRIPTION

- Impact Strength: Resistant to compression and impact, suitable to be buried in concrete.
- Non-Conductive: Good insulation, able to resist 25KV voltage, assuring a safe system.
- Fire Resistance: with self-extinguishing function.
- Corrosion Resistance: Resistance to acids, bases and salts, assuring a lower maintenance cost and longer performance life.
- Smooth surface: Small friction and high flow capacity to ensure the cables go through smoothly.
- Easy Installation: Light weight, easy to cut, transport, bent and handle, easy connecting by solvent cement and treading joining without leakage.

ACCESSORIES

CONNECTION CAP



ITEM CODE	SIZE(h)
APCMT50CC	50
APCMT60CC	60

EXTERNAL BEND



ITEM CODE	SIZE(h)
APCMT50EB	50
APCMT60EB	60

FLAT BEND



ITEM CODE	SIZE(h)
APCMT50FB	50
APCMT60FB	60

EQUAL TEE



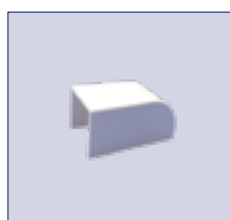
ITEM CODE	SIZE(h)
APCMT50ET	50
APCMT60ET	60

INTERNAL BEND



ITEM CODE	SIZE(h)
APCMT50IB	50
APCMT60IB	60

END BEND



ITEM CODE	SIZE(h)
APCMT50EC	50
APCMT60EC	60

uPVC TRUNKING

BS 4678/4, BS EN 50086/2/2/3341



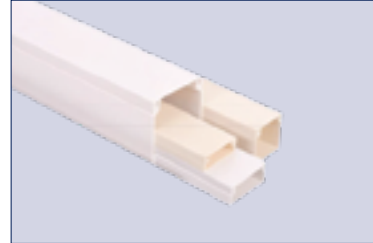
MINI TRUNKING

Item code	Size		Packing Bundle	
	H	W	Mtr	Lth
APMT1616	16	16	87	30
APMT2516	16	25	72.5	25
APMT2525	25	25	58	20
APMT4025	25	40	29	10
APMT4040	40	40	23.2	8



ADHESIVE MINI TRUNKING

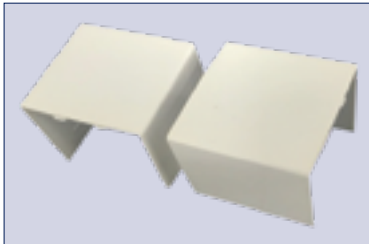
Item code	Size		Packing Bundle	
	H	W	Mtr	Lth
APMTA1616	16	16	87	30
APMTA2516	16	25	72.5	25
APMTA2525	25	25	58	20
APMTA4025	25	40	29	10
APMTA4040	40	40	23.2	8



MAXI TRUNKING

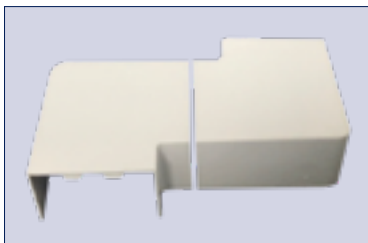
Item code	Size		Packing Bundle	
	H	W	Mtr	Lth
APMT5025	25	50	23.2	8
APMT5050	50	50	11.6	4
APMT7550	50	75	11.6	4
APMT7575	75	75	8.7	3
APMT10050	50	100	8.7	3
APMT10075	75	100	8.7	3
APMT100100	100	100	5.8	2

STRAIGH COUPLING



Item Code	Size	Item Code	Size
APMTSC1616	16X16	APMTSC5050	50X50
APMTSC2516	16X25	APMTSC7550	75X50
APMTSC2525	25X25	APMTSC7575	75X75
APMTSC4025	25X40	APMTSC10050	50X100
APMTSC4040	40X40	APMTSC10075	75X100
APMTSC5025	25X50	APMTSC100100	100X100

FLAT BEND



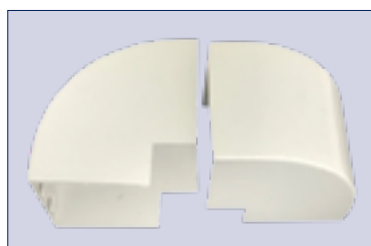
Item Code	Size	Item Code	Size
APMTFB1616	16X16	APMTFB5050	50X50
APMTFB2516	16X25	APMTFB7550	75X50
APMTFB2525	25X25	APMTFB7575	75X75
APMTFB4025	25X40	APMTFB10050	50X100
APMTFB4040	40X40	APMTFB10075	75X100
APMTFB5025	25X50	APMTFB100100	100X100

INTERNAL BEND



Item Code	Size	Item Code	Size
APMTIB1616	16X16	APMTIB5050	50X50
APMTIB2516	16X25	APMTIB7550	75X50
APMTIB2525	25X25	APMTIB7575	75X75
APMTIB4025	25X40	APMTIB10050	50X100
APMTIB4040	40X40	APMTIB10075	75X100
APMTIB5025	25X50	APMTIB100100	100X100

EXTERNAL BEND



Item Code	Size	Item Code	Size
APMTEB1616	16X16	APMTEB5050	50X50
APMTEB2516	16X25	APMTEB7550	75X50
APMTEB2525	25X25	APMTEB7575	75X75
APMTEB4025	25X40	APMTEB10050	50X100
APMTEB4040	40X40	APMTEB10075	75X100
APMTEB5025	25X50	APMTEB100100	100X100

EQUAL TEE



Item Code	Size	Item Code	Size
APMTSC1616	16X16	APMTSC5050	50X50
APMTSC2516	16X25	APMTSC7550	75X50
APMTSC2525	25X25	APMTSC7575	75X75
APMTSC4025	25X40	APMTSC10050	50X100
APMTSC4040	40X40	APMTSC10075	75X100
APMTSC5025	25X50	APMTSC100100	100X100

FLAT BEND



Item Code	Size	Item Code	Size
APMTFB1616	16X16	APMTFB5050	50X50
APMTFB2516	16X25	APMTFB7550	75X50
APMTFB2525	25X25	APMTFB7575	75X75
APMTFB4025	25X40	APMTFB10050	50X100
APMTFB4040	40X40	APMTFB10075	75X100
APMTFB5025	25X50	APMTFB100100	100X100

COMPARTMENT / PARAPET TRUNKING



PERFORMANCE

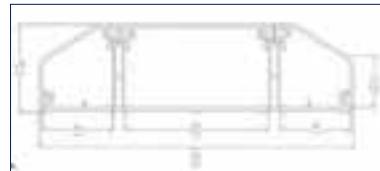
- Deformation resistance: Per meter length is applied per square of cross section of 0.13g load. 2 hours after the maximum deformation, the height direction 10%, the width direction 10%.
- Impact properties : -5°C Low temperature, 2 hours, 1.0 kg(medium) hammer, height 100 ± 1mm, the corresponding impact energy, the sample no visible cracks.
- Heat resistance: 60 ± 20 °c under the condition of 5mm diameter ball 20N applied force, the pressure on the specimen surface, surface indentation diameter 2mm.
- Insulation: 50HZ, 2500V, AC 60 seconds without breakdown, the insulation resistance of not less than 100 megohms.

Mainly used Ming assembly line project, for cable, telephone line, cable, network lines, etc. Play a protective role. Particularly suitable for Building, Schools, Hospitals, Shopping Mall, Hotels, Factories and indoor wiring and wiring renovation project.

Advantage: 86- type switch socket panel can be mounted directly on the holder without deep gang box.

PARAMETER

Item No	Size						"THICKNESS (MM)"	"PACKING Pcs/bag"
	External Size		Internal Size					
	W	H	H1	W1	W2	W3		
AP3CT180	180	50	32	41	80	41	2.2	2



ACCESSORIES



AP3CT180ET
Equal Tee



AP3CT180FB
Flat Bend



AP3CT180SB33 | AP3CT180SB36
Switch Box



AP3CT180CC
Connecting Cover



AP3CT180CC
End Cap



AP3CT180IR
Inside Riser



AP3CT180OR
Outside Riser



CABLE RAMP

OUTDOOR CABLE RAMP

Professional Cable Protection

The new ALTAIR Cable Ramp meets every expectation for professional cable protection, compact cable crossover, capable of supporting vehicle traffic. This crossover can readily support heavy traffic, due to the load bearing capacity of 20-30 Tons. It's resistance to oils, acids & petrol. The bottom has a non-slip surface, to ensure an optimal grip on the widest variety of surface. Normally it's produced in block body & yellow cover.



PRODUCT	DESCRIPTION	CAPACITY (TONS)	SIZE(MM) (L*H*W)	WEIGHT (KG)	CHANNEL SIZE (mm)
ACR2C-N	RUBBERIZED CABLE RAMP 2CHANNEL (NORMAL)	20	1000*250*50	9.2	2C (30*30)
ACR3C-N	RUBBERIZED CABLE RAMP 3CHANNEL (NORMAL)	20	1000*310*55	14	3C (35*35)
ACR5C-N	RUBBERIZED CABLE RAMP 5CHANNEL (NORMAL)	20	770*485*65	19	4C (40*40) + 1C (42*18)
ACR2C-L	RUBBERIZED CABLE RAMP 2CHANNEL (LARGE)	20	900*165*105	28.5	2C (90*90)
ACR3C-L	RUBBERIZED CABLE RAMP 3CHANNEL (LARGE)	20	900*600*75	23.5	3C (60*50)
ACR5C-L	RUBBERIZED CABLE RAMP 5CHANNEL (LARGE)	20	900*600*75	23.5	5C (50*40)
ACR2C-XL	RUBBERIZED CABLE RAMP 2CHANNEL (EXTRA LARGE)	30	700*785*140	29	2C (120*115) + 2C (20*30) + 2C (20*40)

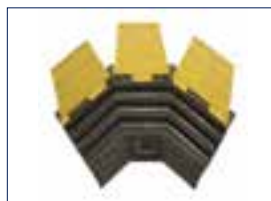


CABLE RAMPS PRODUCT FEATURES

- 1) Great for Indoor & Outdoor use.
- 2) Interlocking connectors hook multiple cable protector pieces together.
- 3) Heavy duty commercial grade molded thermoplastic rubber.
- 4) Durable & weatherproof.
- 5) Operating temperature range from -40 +70.
- 6) Heavy loading capacity & strong impacting resistance.

BEND

Bend normally available in 30 curves for Normal Cable Ramp & 45 curves for Large cable Ramp.



PRODUCT	DESCRIPTION	SIZE (L*H*W)
ACR2CB-N	2C Bend Normal	320MM*250MM*50MM
ACR2CB-L	2C Bend Large	475MM*615MM*105MM
ACR3CB-N	3C Bend Normal	280MM*310MM*55MM
ACR3CB-L	3C Bend Large	450MM*600MM*75MM
ACR5CB-N	5C Bend Normal	220MM*485MM*65MM
ACR5CB-L	5C Bend Large	310MM*600MM*75MM

FLEXIBLE CABLE PROTECTOR



PRODUCT CODE : **AFCP-1C**
 DESCRIPTION : Flexible Cable Protector 1 Channel
 SIZE : Overall Exterior 71mm *13mm
 Middle Channel 15.3mm*8mm
 WEIGHT : 3 Kgs
 LENGTH : 3 Mtrs



PRODUCT CODE : **AFCP-2C**
 DESCRIPTION : Flexible Cable Protector 2 Channel
 SIZE : Overall Exterior 107mm *18mm
 Middle Channel 20mm*13mm
 WEIGHT : 4.5 Kgs
 LENGTH : 3 Mtrs



PRODUCT CODE : **AFCP-3C**
 DESCRIPTION : Flexible Cable Protector 3 Channel
 SIZE : Overall Exterior 83mm *17mm
 Middle Channel 23.5mm*10.7mm
 WEIGHT : 3 Kgs
 LENGTH : 3 Mtrs



PRODUCT CODE : **AFCP-5C**
 DESCRIPTION : Flexible Cable Protector 5 Channel
 SIZE : Overall Exterior 121mm *23mm
 Middle Channel 16.7mm*15mm
 WEIGHT : 4.85 Kgs
 LENGTH : 3 Mtrs

(Note : Upon request we can provide 10Mtr/Lth Black or Grey Colour)







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