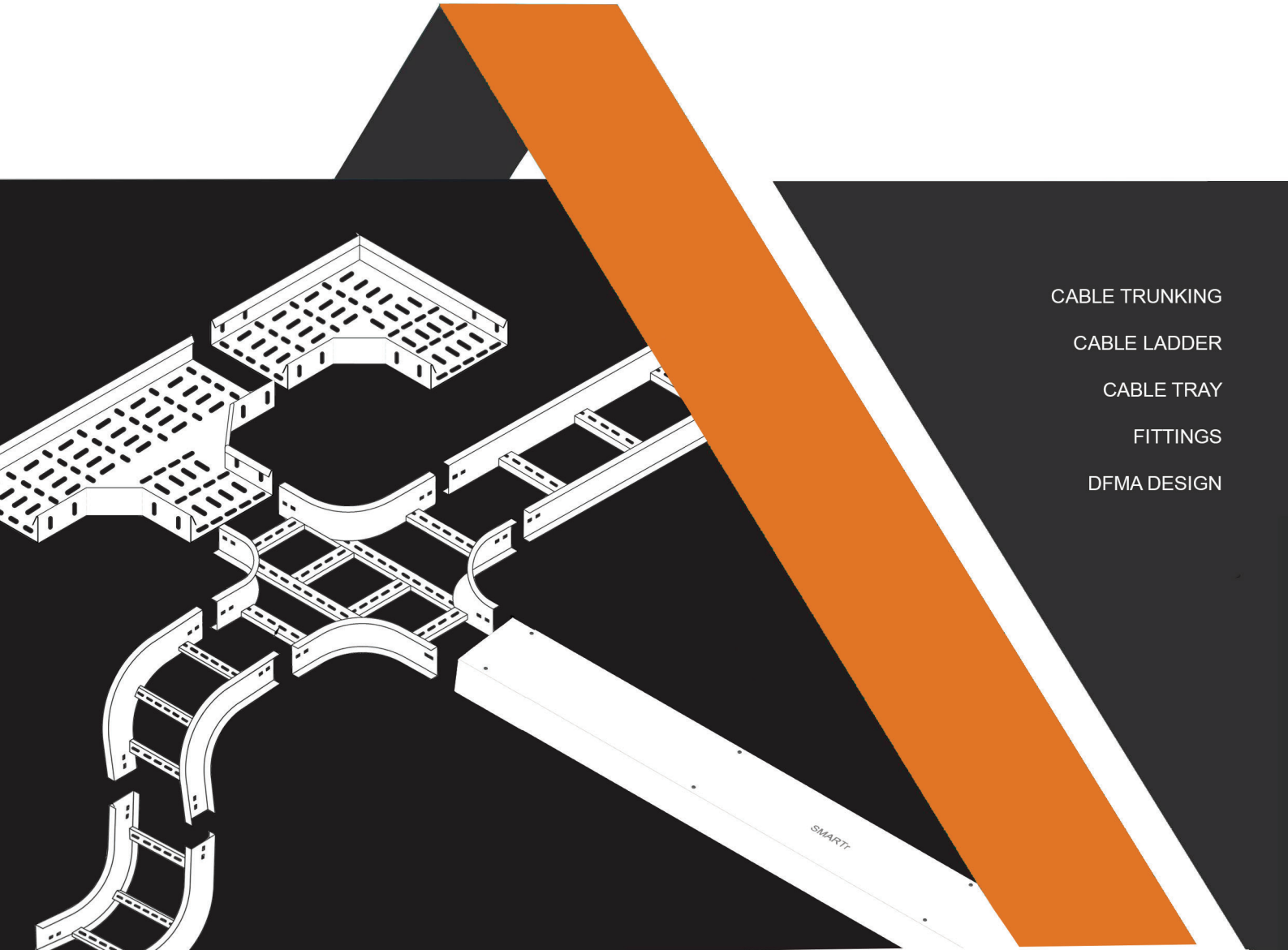


# SMART<sup>r</sup> CABLE MANAGEMENT SYSTEMS



CABLE TRUNKING

CABLE LADDER

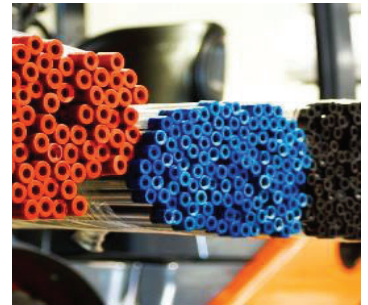
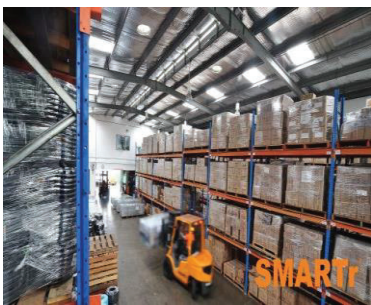
CABLE TRAY

FITTINGS

DFMA DESIGN

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# CONTENTS



MATERIAL	MATERIAL SPECIFICATION	ADVANTAGES
Steel	ASTM JIS BS EN ISO	(a) Electrical Shielding (b) Finish options (c) Low Thermal Expansion
Stainless Steel	AISI Type 304 or 316	(a) Superior Corrosion Resistance (b) Withstands High Temperatures

FINISHING	SPECIFICATION	RECOMMENDED USE
Electro-Galvanized Steel	BS EN 10152 - Former Standard: BS 1449 PART 3 (Withdrawn in 2023)	Indoor
Pre-Galvanized Zinc	ASTM A653 G90 - Former Standard: ASTM A525 G90 (Withdrawn in 1994)	Indoor
Hot-Dipped Galvanized	ASTM A123, BS EN ISO 1461 - Former Standard: BS 729 (Withdrawn in 1999)	Indoor / Outdoor
Stainless Steel 304, 316	ASTM 240, BS EN 10088	Outdoor Chemical Environments
Special Paint Coating	As Per Customer Specification	Indoor / Semi Outdoor
Epoxy Coated	SS249	Indoor

## Zinc Coatings

Zinc protects steel in two ways, it protects the steel as a coating and as a sacrificial anode to repair bare areas such as cut edges, scratches, and gauges. The corrosion protection of zinc is directly related to its thickness and the environment. This means a 0.2 mil coating will last twice if a 0.1 mil coating in the same environment.

### Electro-Galvanized Steel

Electro-Galvanized Steel (Also known as steel plated or electroplated) is the process by which a coating of steel is deposited by electrolysis from a bath of steel.

The coating is pure and metallically bonded. A maximum of 0.5 mil of steel can be applied by this method.

This film is a barrier coating which slows subsequent corrosive attacks. This coating is usually recommended for indoor use in relatively dry areas.

### Pre-Galvanized Zinc

Pre-galvanized steel is produced by coating coils of sheet steel with zinc at the mills. This also known as mill galvanized or hot dip mill galvanized. These coils are then slit to size and fabricated by roll forming, shearing, punching, or forming to produce pre-galvanized cable containment products.

During fabrication cut edges and welded areas are not normally zinc coated. However, the zinc near the uncoated metal becomes a sacrificial anode to protect the bare areas after a short period of time.

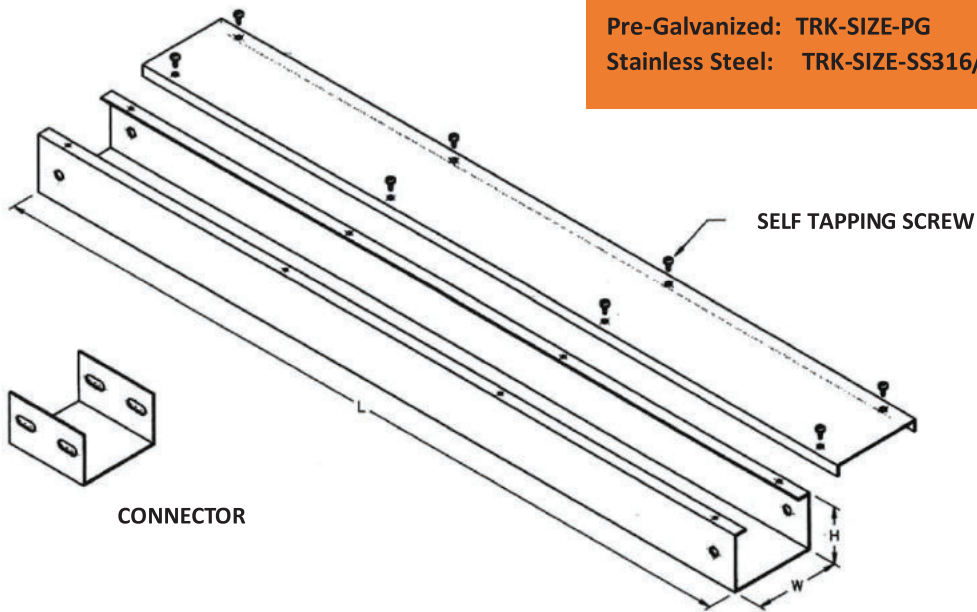
Pre-galvanized steel is not used outdoors but suitable for extended exposure in dry or mildly corrosive atmospheres.

### Hot-Dipped Galvanized After Fabrication

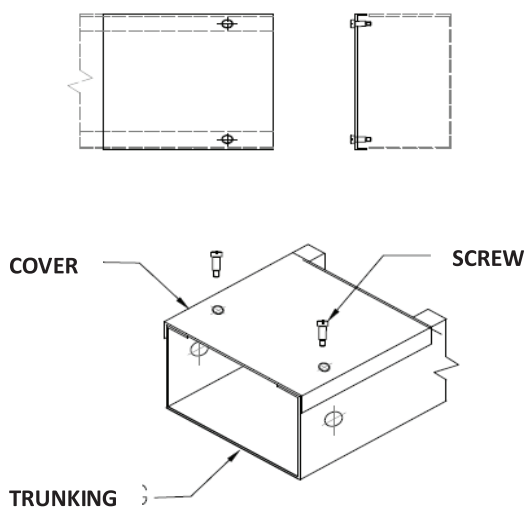
Hot-Dipped Galvanized cable containment are fabricated from steel and then completely immersed in a bath of molten zinc. A metallic bond occurs resulting in a zinc coating that completely coats all surface, including edges and welds.

SMARTr Trunking  
 Manufactured in accordance with:  
 (a) SS 249 : 1981 (2012)  
 (b) BS EN 50085 / IEC 61084

Item code	
SS249:	TRK-SIZE-ST-COLOR
Epoxy:	TRK-SIZE-COLOUR
HDG:	TRK-SIZE-HDG
Pre-Galvanized:	TRK-SIZE-PG
Stainless Steel:	TRK-SIZE-SS316/304



Material	Standards	Finishing
Pre-Galvanized Steel	BS EN 10346 - Former Standard: BS 2989: 1982 (Withdrawn in 1991)	Original
Hot-Rolled Steel	JIS G 3131 SPHC & HDG to ASTM A123, BS EN ISO 1461 - Former Standard: BS 729 (Withdrawn in 1999)	HDG
Mild Steel	JIS G 3131 SPHC	HDG
Electro-Galvanized	JIS G 3313 SECC, BS EN 10152	Epoxy Coated
Stainless Steel	AISI 304, 316 & 316L	Original



Product Standard List			
Width (W)	Height (H)	Length (L)	Thickness
50	25-50	2440-3000	0.8 -1.5
75	50-75	2440-3000	0.8 -1.5
100	50-100	2440-3000	0.8 -1.5
150	50-100	2440-3000	0.8 -1.5
200	100	2440-3000	1.0 – 1.6
250	100	2440-3000	1.0 – 1.6
300	100-150	2440-3000	1.0 – 1.6
450	100	2440-3000	1.5 – 2.0
600	100	2440-3000	1.5 – 2.0
700	100	2440-3000	1.5 – 2.0

All dimension is in mm & other sizes available on request

Tolerance on nominal thickness is  $\pm 7.5\%$

**SMARTr Trunking**  
 Manufactured in accordance with:

(a) SS 249 : 1981 (2012)

(b) BS EN 50085 / IEC 61084

**Item code**

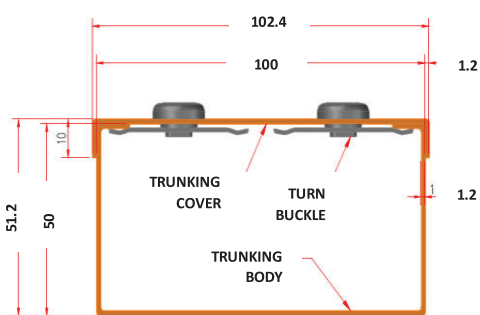
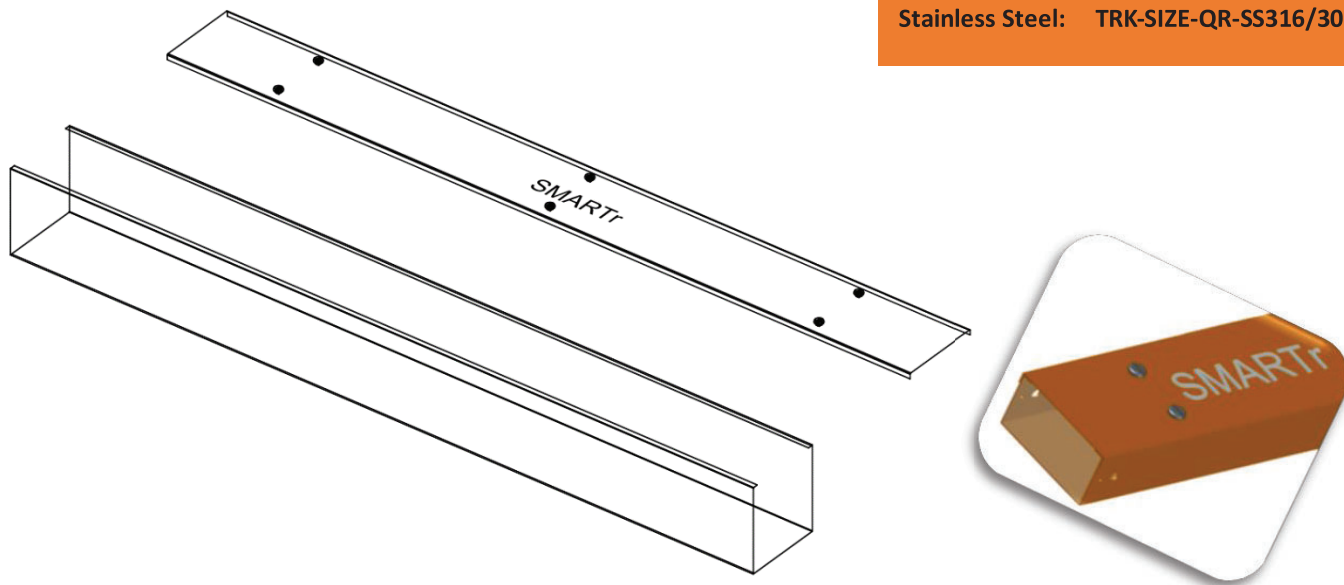
SS249: TRK-SIZE-QR-ST-COLOR

Epoxy: TRK-SIZE-QR-COLOUR

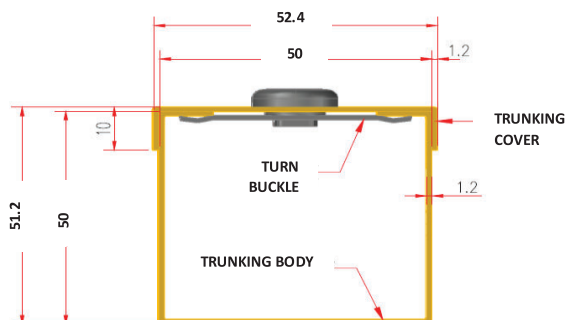
HDG: TRK-SIZE-QR-HDG

Pre-Galvanized: TRK-SIZE-QR-PG

Stainless Steel: TRK-SIZE-QR-SS316/304



**Type (1)**



**Type (2)**

Material	Standards	Finishing
Pre-Galvanized Steel	BS EN 10346 - Former Standard: BS 2989: 1982 (Withdrawn in 1991)	Original
Hot-Rolled Steel	JIS G 3131 SPHC & HDG to ASTM A123, BS EN ISO 1461 - Former Standard: BS 729 (Withdrawn in 1999)	HDG
Mild Steel	JIS G 3131 SPHC	HDG
Electro-Galvanized	JIS G 3313 SECC, BS EN 10152	Epoxy Coated
Stainless Steel	AISI 304, 316 & 316L	Original

Product Standard List			
Width (W)	Height (H)	Length (L)	Thickness
50	25-50	2440-3000	0.8 -1.5
75	50-75	2440-3000	0.8 -1.5
100	50-100	2440-3000	0.8 -1.5
150	50-100	2440-3000	0.8 -1.5
200	100	2440-3000	1.0 – 1.6
250	100	2440-3000	1.0 – 1.6
300	100-150	2440-3000	1.0 – 1.6
450	100	2440-3000	1.5 – 2.0
600	100	2440-3000	1.5 – 2.0
700	100	2440-3000	1.5 – 2.0

All dimension is in mm & other sizes available on request

Tolerance on nominal thickness is  $\pm 7.5\%$

## SMARTr DFMA friendly Quick Release Turn Buckle Trunking

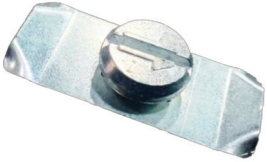
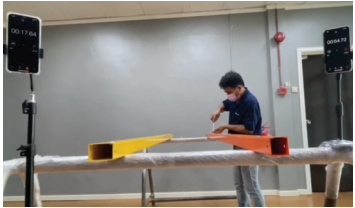


Attached turn buckle with the cover.



Tight fit.

### WHY SMARTr QUICK RELEASE TURN BUCKLE BETTER?

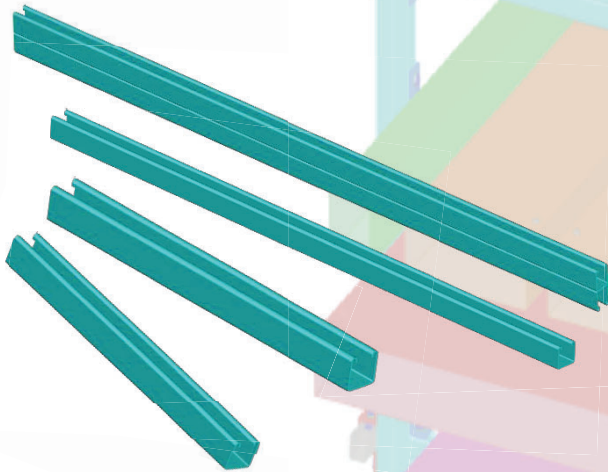
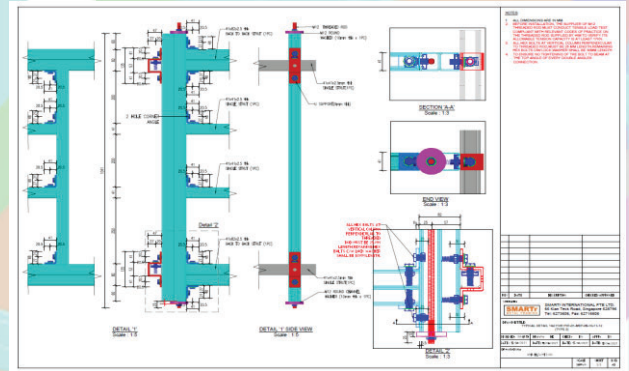
DFMA DESIGN ADVANTAGE	SMARTr ZINC ALLOY TURN BUCKLE WITH HDG STEEL PLATE	CONVENTIONAL PLASTIC TURN BUCKLE
 <p>Quick-release turn buckle type trunking is most suitable for DFMA installations where space is limited.</p>	 <p>Manufactured from high-strength alloy with a hot-dipped Galvanized steel plate, providing maintenance-free performance, high durability, and resistance to deformation under fire exposure.</p>	 <p>Conventional plastic turn buckles commonly found in the market may soften or deform under elevated temperatures, which may affect long-term durability and mechanical strength.</p>
PROBLEM WITH TRADITIONAL STEEL SCREW INSTALLATION	INCONSISTENT INSTALLATION QUALITY	TIME-CONSUMING INSTALLATION
 <p>Standard steel screws are prone to rust over time, while SMARTr Alloy Turn Buckles provide superior corrosion resistance and durability.</p>	 <p>Steel screw installations are prone to incomplete tightening and missing fasteners, resulting in an untidy appearance over time.</p>	 <p>Traditional screw-type trunking requires tools and multiple fastening points. Installation testing shows SMARTr quick-release turn buckle systems can reduce installation time by over 80%.</p>

### COMPARISON TABLE

DESCRIPTION	QUICK RELEASE (TURNBUCKLE)	SCREW
Material	Zinc Alloy	Mild Steel
Design	Compact, fire-resistant & easy to use	Difficult & time-consuming
Properties	Durable, cost-efficient, corrosion-resistant & rust-proof	Prone to rust even with electroplating
Process	Casting	Cold Forging
Installation	Fast & Easy	Time-Consuming

# SMARTr Specializes in DFMA design to meet customer requirements.

(a) We provide detail modular drawings in 3D and 2D format.



(b) We provide pre-cut HDG strut as per the modular required lengths.

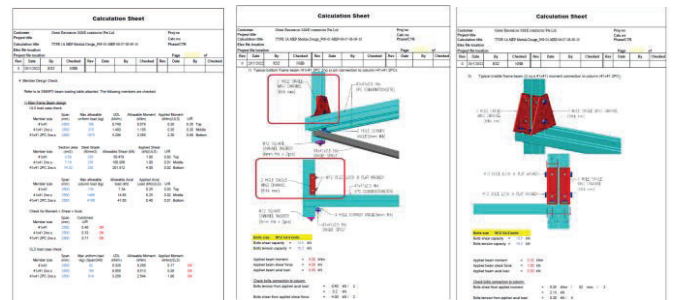
Special note: All cut edges are fully Hot-Dipped Galvanized without the need to touch up.



(c) Example of an Off-site installation of DFMA modular.

OVERALL VIEW  
Scale : 1:16

(d) Providing PE (Professional Engineer) to calculate the DFMA load and other calculation.

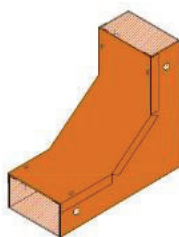


# CABLE TRUNKING FITTINGS

*In the interest of continuous improvements, SMART International Pte Ltd reserves the right without prior notice to alter the design and specification of their product.*



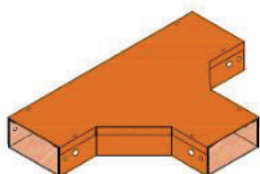
90 Deg Horizontal Flat Elbow



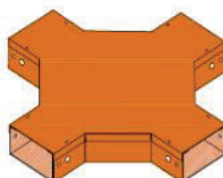
90 Deg Vertical Inside Riser



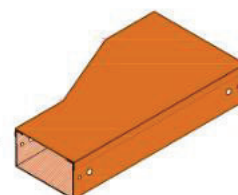
90 Deg Vertical Outside Riser



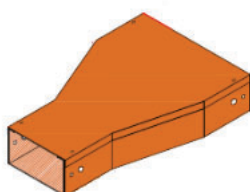
90 Deg Horizontal Tee



90 Deg Horizontal Cross



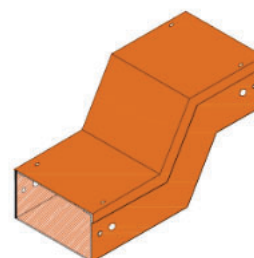
Left Hand Reducer



Straight Reducer



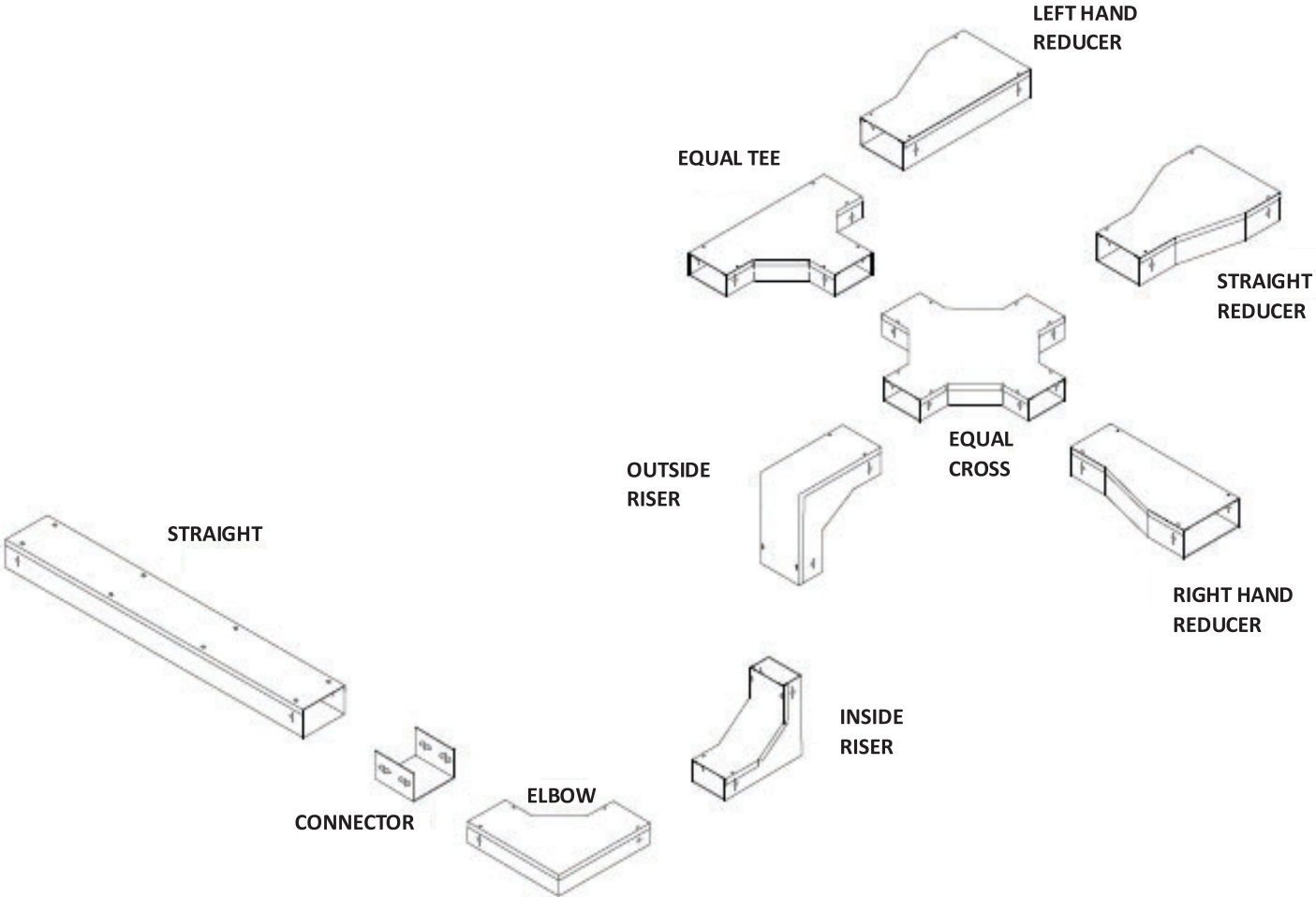
Special Tee



Vertical Offset

*All fittings available in screw type & quick release turn buckle type*

# Typical Cable Trunking Fitting Installation

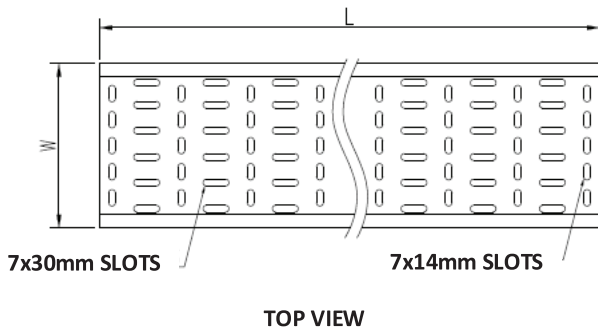
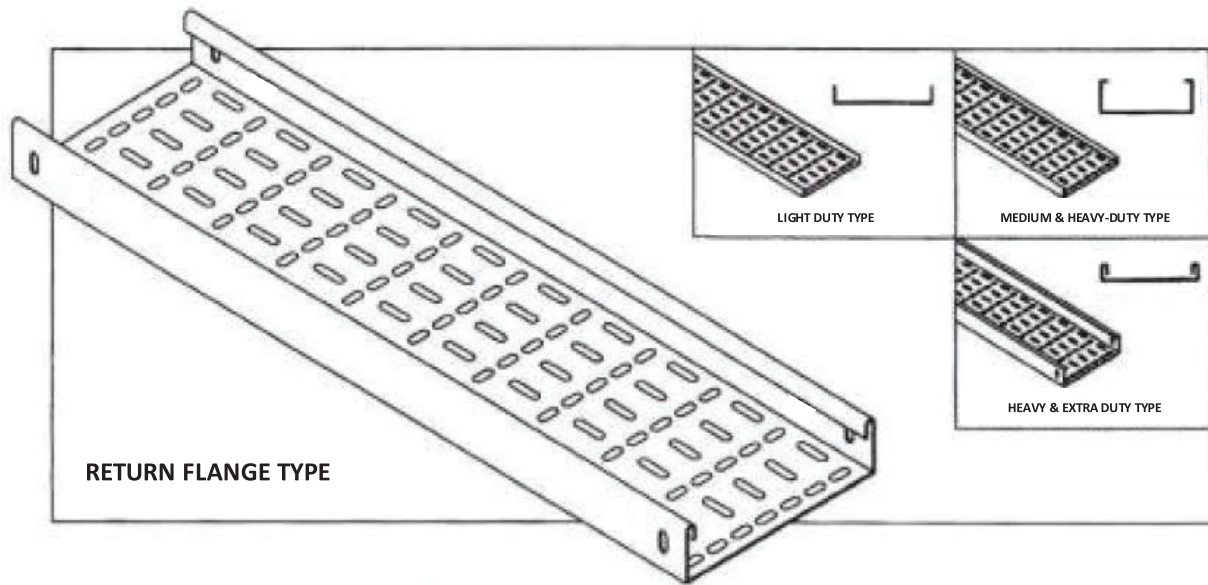


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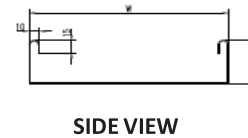
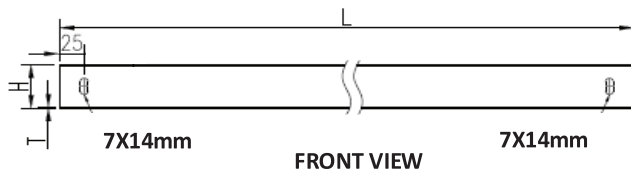
SMARTr Tray Tested Under:  
(a) BS EN 61537: 2007

CABLE TRAY

In the interest of continuous improvements, SMARTr International Pre Ltd reserves the right without prior notice to alter the design and specification of their product.



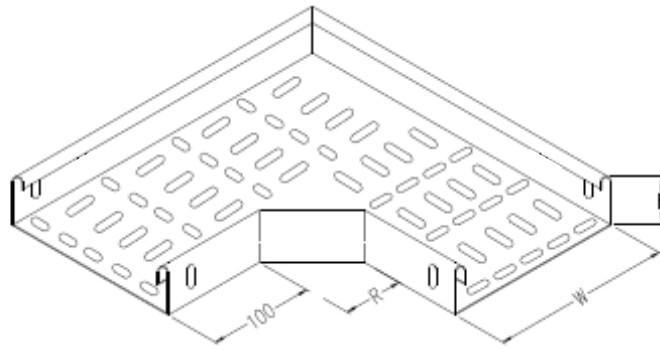
Material	Standards	Finishing
Pre-Galvanized Steel	BS EN 10346 - Former Standard: BS 2989: 1982 (Withdrawn in 1991)	Original
Hot-Rolled Steel	JIS G 3131 SPHC & HDG to ASTM A123, BS EN ISO 1461 - Former Standard: BS 729 (Withdrawn in 1999)	HDG
Mild Steel	JIS G 3131 SPHC	HDG
Electro-Galvanized	JIS G 3313 SECC, BS EN 10152	Epoxy Coated
Stainless Steel	AISI 304, 316 & 316L	Original



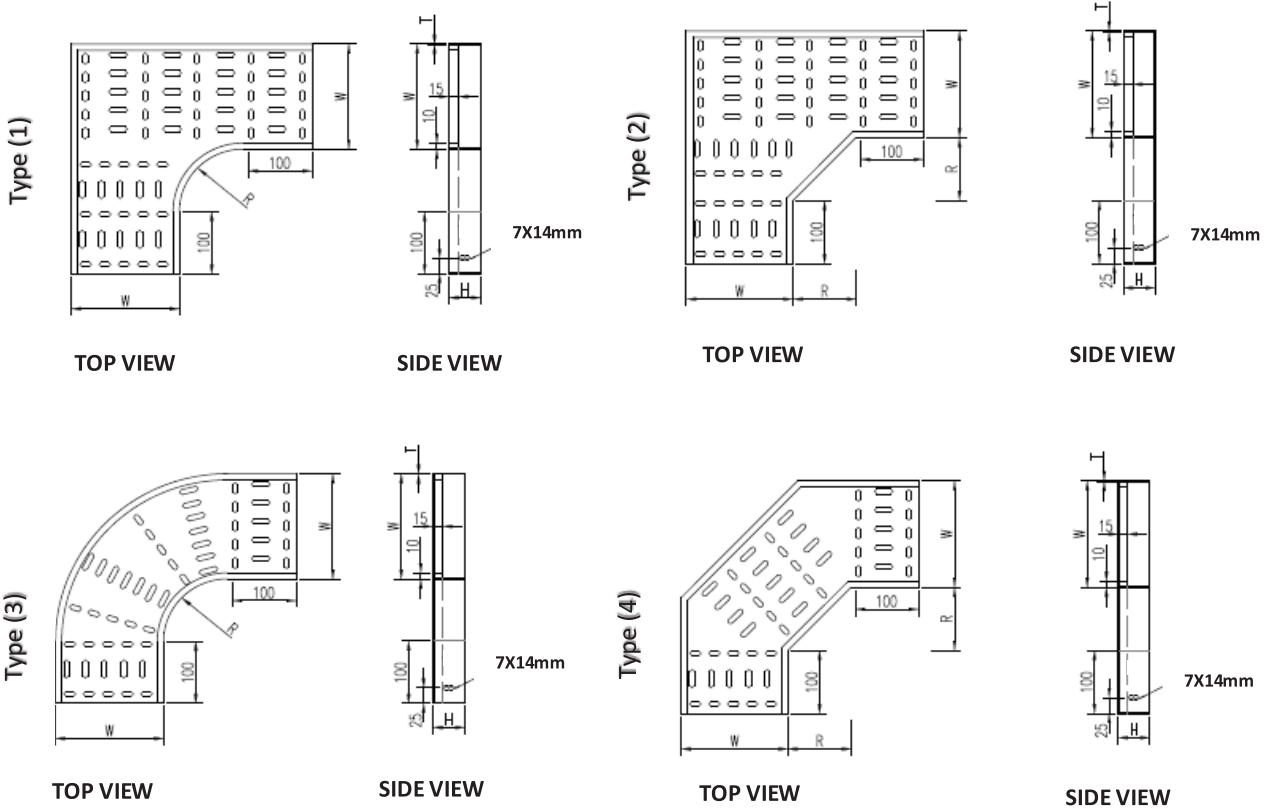
Light Duty			
Width (W)	Height (H)	Length (L)	Thickness
150	15-25	2440-3000	1.0-2.0
300	15-25	2440-3000	1.0-2.0
450	15-25	2440-3000	1.0-2.0
600	15-25	2440-3000	1.0-2.0
750	15-25	2440-3000	1.0-2.0
900	15-25	2440-3000	1.0-2.0
1000	15-25	2440-3000	1.0-2.0
All dimension is in mm & other sizes available on request			

Heavy Duty			
Width (W)	Height (H)	Length (L)	Thickness
100	50	2440-3000	1.0-2.0
150	50	2440-3000	1.0-2.0
200	50	2440-3000	1.0-2.0
300	50	2440-3000	1.0-2.0
450	50	2440-3000	1.0-2.0
600	50	2440-3000	1.0-2.0
800	50	2440-3000	1.0-2.0
All dimension is in mm & other sizes available on request			

Extra Heavy Duty			
Width (W)	Height (H)	Length (L)	Thickness
150	100-150	2440-3000	1.0-2.0
200	100-150	2440-3000	1.0-2.0
300	100-150	2440-3000	1.0-2.0
450	100-150	2440-3000	1.0-2.0
600	100-150	2440-3000	1.0-2.0
750	100-150	2440-3000	1.0-2.0
900	100-150	2440-3000	1.0-2.0
1000	100-150	2440-3000	1.0-2.0
All dimension is in mm & other sizes available on request			



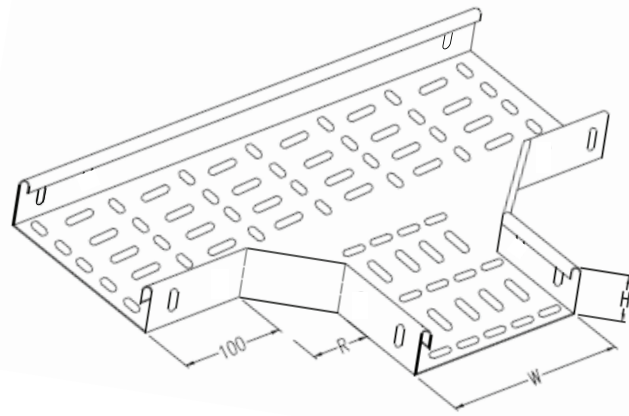
90 Deg Horizontal Flat Elbow



Light Duty			
Width (W)	Height (H)	Radius (R)	Thickness
150	15-25	100	1.0-2.0
300	15-25	100	1.0-2.0
450	15-25	100	1.0-2.0
600	15-25	100	1.0-2.0
750	15-25	100	1.0-2.0
900	15-25	100	1.0-2.0
1000	15-25	100	1.0-2.0
All dimension is in mm & other sizes available on request			

Heavy Duty			
Width (W)	Height (H)	Radius (R)	Thickness
100	50	100	1.0-2.0
150	50	100	1.0-2.0
200	50	100	1.0-2.0
300	50	100	1.0-2.0
450	50	100	1.0-2.0
600	50	100	1.0-2.0
800	50	100	1.0-2.0
All dimension is in mm & other sizes available on request			

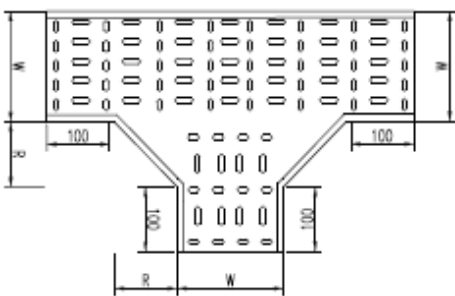
Extra Heavy Duty			
Width (W)	Height (H)	Radius (R)	Thickness
150	100-150	100	1.0-2.0
200	100-150	100	1.0-2.0
300	100-150	100	1.0-2.0
450	100-150	100	1.0-2.0
600	100-150	100	1.0-2.0
750	100-150	100	1.0-2.0
900	100-150	100	1.0-2.0
1000	100-150	100	1.0-2.0
All dimension is in mm & other sizes available on request			



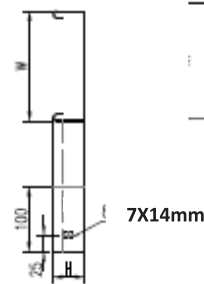
**90 Deg Horizontal Equal Tee**

**Type (1)**

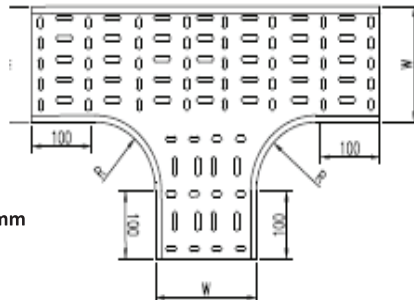
**Type (2)**



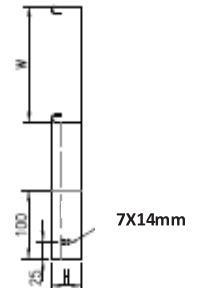
**TOP VIEW**



**SIDE VIEW**



**TOP VIEW**

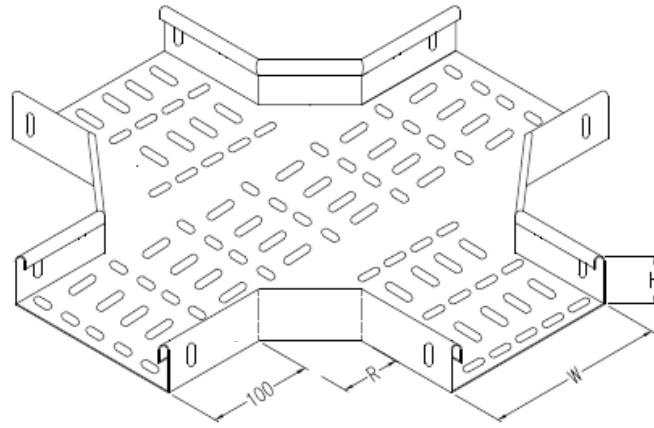


**SIDE VIEW**

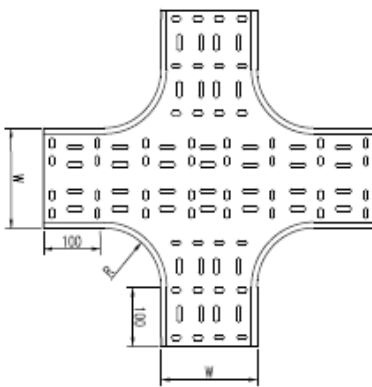
Light Duty			
Width (W)	Height (H)	Radius (R)	Thickness
150	15-25	100	1.0-2.0
300	15-25	100	1.0-2.0
450	15-25	100	1.0-2.0
600	15-25	100	1.0-2.0
750	15-25	100	1.0-2.0
900	15-25	100	1.0-2.0
1000	15-25	100	1.0-2.0
<i>All dimension is in mm &amp; other sizes available on request</i>			

Heavy Duty			
Width (W)	Height (H)	Radius (R)	Thickness
100	50	100	1.0-2.0
150	50	100	1.0-2.0
200	50	100	1.0-2.0
300	50	100	1.0-2.0
450	50	100	1.0-2.0
600	50	100	1.0-2.0
800	50	100	1.0-2.0
<i>All dimension is in mm &amp; other sizes available on request</i>			

Extra Heavy Duty			
Width (W)	Height (H)	Radius (R)	Thickness
150	100-150	100	1.0-2.0
200	100-150	100	1.0-2.0
300	100-150	100	1.0-2.0
450	100-150	100	1.0-2.0
600	100-150	100	1.0-2.0
750	100-150	100	1.0-2.0
900	100-150	100	1.0-2.0
1000	100-150	100	1.0-2.0
<i>All dimension is in mm &amp; other sizes available on request</i>			

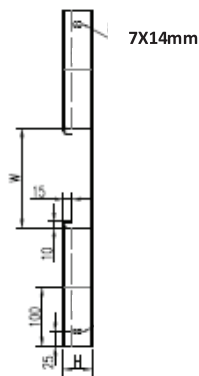


90 Deg Horizontal Equal Cross

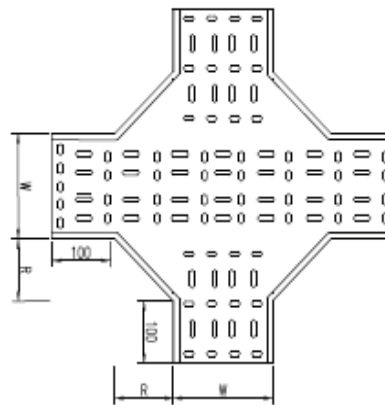


TOP VIEW

Type (1)

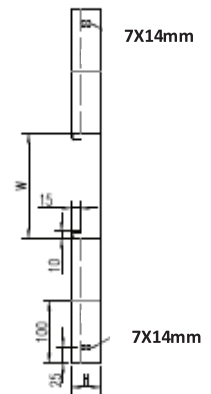


SIDE VIEW



TOP VIEW

Type (2)

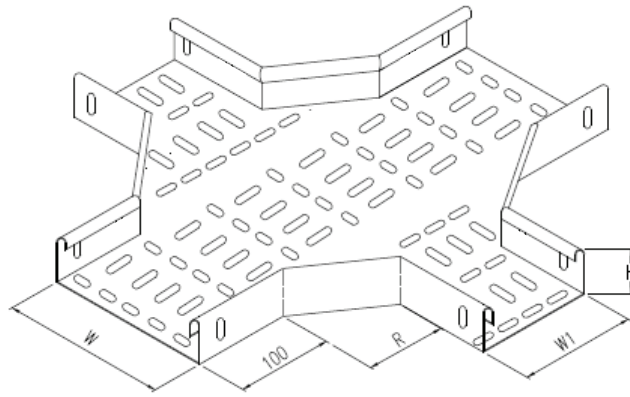


SIDE VIEW

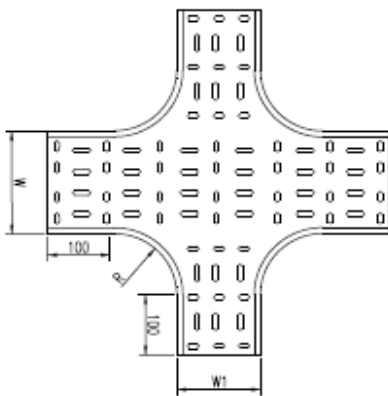
Light Duty			
Width (W)	Height (H)	Radius (R)	Thickness
150	15-25	100	1.0-2.0
300	15-25	100	1.0-2.0
450	15-25	100	1.0-2.0
600	15-25	100	1.0-2.0
750	15-25	100	1.0-2.0
900	15-25	100	1.0-2.0
1000	15-25	100	1.0-2.0
All dimension is in mm & other sizes available on request			

Heavy Duty			
Width (W)	Height (H)	Radius (R)	Thickness
100	50	100	1.0-2.0
150	50	100	1.0-2.0
200	50	100	1.0-2.0
300	50	100	1.0-2.0
450	50	100	1.0-2.0
600	50	100	1.0-2.0
800	50	100	1.0-2.0
All dimension is in mm & other sizes available on request			

Extra Heavy Duty			
Width (W)	Height (H)	Radius (R)	Thickness
150	100-150	100	1.0-2.0
200	100-150	100	1.0-2.0
300	100-150	100	1.0-2.0
450	100-150	100	1.0-2.0
600	100-150	100	1.0-2.0
750	100-150	100	1.0-2.0
900	100-150	100	1.0-2.0
1000	100-150	100	1.0-2.0
All dimension is in mm & other sizes available on request			

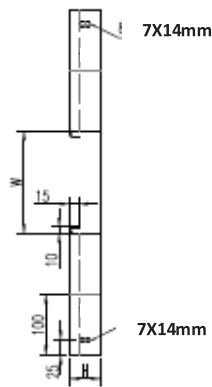


90 Deg Horizontal Unequal Cross

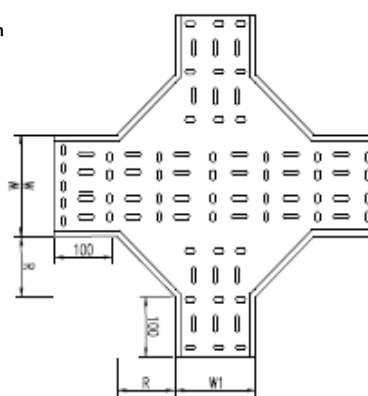


TOP VIEW

Type (1)

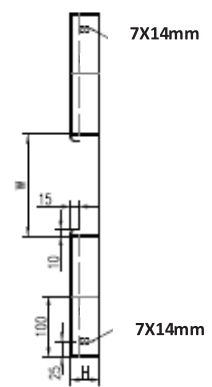


SIDE VIEW



TOP VIEW

Type (2)

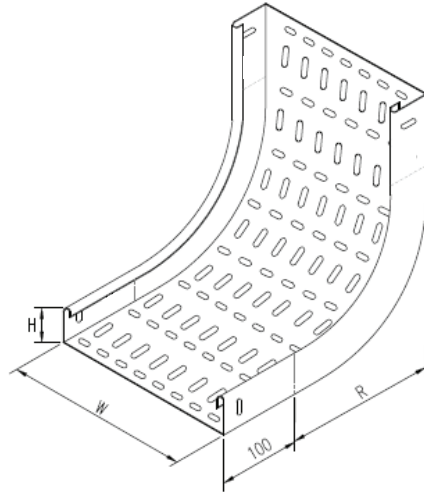


SIDE VIEW

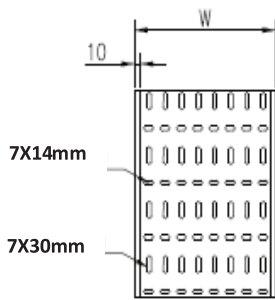
Light Duty				
Width (W)	Height (H)	W1	Radius (R)	Thickness
150	15-25	100	100	1.0-2.0
300	15-25	100	100	1.0-2.0
450	15-25	100	100	1.0-2.0
600	15-25	150	100	1.0-2.0
750	15-25	150	100	1.0-2.0
900	15-25	150	100	1.0-2.0
1000	15-25	300	100	1.0-2.0
All dimension is in mm & other sizes available on request				

Heavy Duty				
Width (W)	Height (H)	W1	Radius (R)	Thickness
100	50	150	100	1.0-2.0
150	50	150	100	1.0-2.0
200	50	150	100	1.0-2.0
300	50	300	100	1.0-2.0
450	50	300	100	1.0-2.0
600	50	300	100	1.0-2.0
800	50	300	100	1.0-2.0
All dimension is in mm & other sizes available on request				

Extra Heavy Duty				
Width (W)	Height (H)	W1	Radius (R)	Thickness
150	50-100	150	100	1.0-2.0
300	50-100	150	100	1.0-2.0
450	50-100	150	100	1.0-2.0
600	50-100	300	100	1.0-2.0
750	50-100	300	100	1.0-2.0
900	50-100	300	100	1.0-2.0
1000	50-100	450	100	1.0-2.0
All dimension is in mm & other sizes available on request				

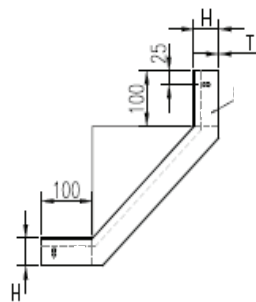


90 Deg Vertical Inside Riser



TOP VIEW

Type (1)

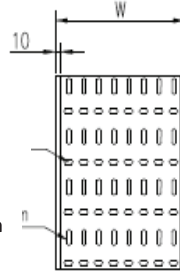


SIDE VIEW

7X14mm

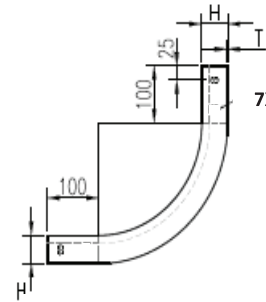
7X14mm

7X30mm



TOP VIEW

Type (2)



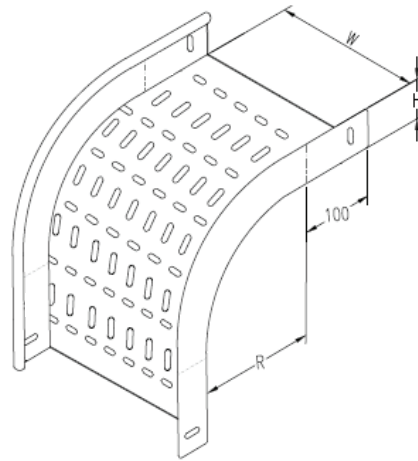
SIDE VIEW

7X14mm

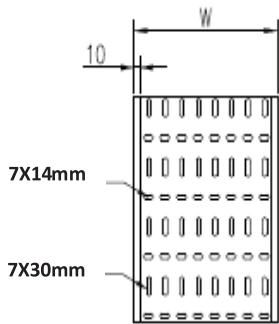
Light Duty			
Width (W)	Height (H)	Radius (R)	Thickness
150	15-25	100	1.0-2.0
300	15-25	100	1.0-2.0
450	15-25	100	1.0-2.0
600	15-25	100	1.0-2.0
750	15-25	100	1.0-2.0
900	15-25	100	1.0-2.0
1000	15-25	100	1.0-2.0
<i>All dimension is in mm &amp; other sizes available on request</i>			

Heavy Duty			
Width (W)	Height (H)	Radius (R)	Thickness
100	50	100	1.0-2.0
150	50	100	1.0-2.0
200	50	100	1.0-2.0
300	50	100	1.0-2.0
450	50	100	1.0-2.0
600	50	100	1.0-2.0
800	50	100	1.0-2.0
<i>All dimension is in mm &amp; other sizes available on request</i>			

Extra Heavy Duty			
Width (W)	Height (H)	Radius (R)	Thickness
150	100-150	100	1.0-2.0
200	100-150	100	1.0-2.0
300	100-150	100	1.0-2.0
450	100-150	100	1.0-2.0
600	100-150	100	1.0-2.0
750	100-150	100	1.0-2.0
900	100-150	100	1.0-2.0
1000	100-150	100	1.0-2.0
<i>All dimension is in mm &amp; other sizes available on request</i>			

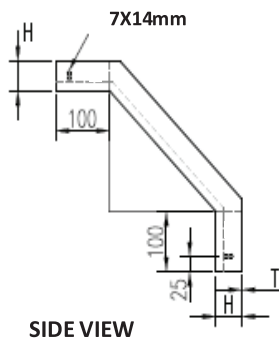


90 Deg Vertical Outside Riser

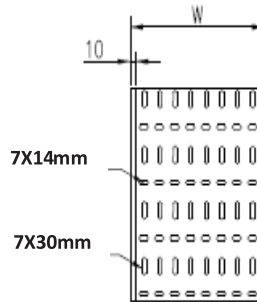


TOP VIEW

Type (1)

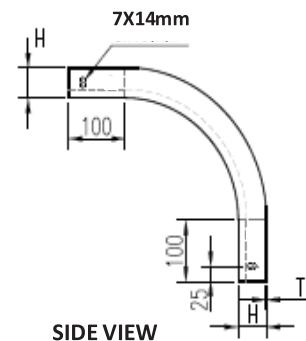


SIDE VIEW



TOP VIEW

Type (2)

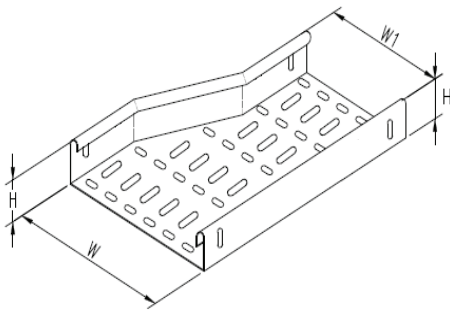


SIDE VIEW

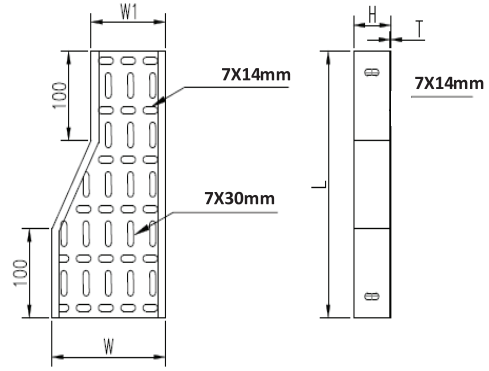
Light Duty			
Width (W)	Height (H)	Radius (R)	Thickness
150	15-25	100	1.0-2.0
300	15-25	100	1.0-2.0
450	15-25	100	1.0-2.0
600	15-25	100	1.0-2.0
750	15-25	100	1.0-2.0
900	15-25	100	1.0-2.0
1000	15-25	100	1.0-2.0
All dimension is in mm & other sizes available on request			

Heavy Duty			
Width (W)	Height (H)	Radius (R)	Thickness
100	50	100	1.0-2.0
150	50	100	1.0-2.0
200	50	100	1.0-2.0
300	50	100	1.0-2.0
450	50	100	1.0-2.0
600	50	100	1.0-2.0
800	50	100	1.0-2.0
All dimension is in mm & other sizes available on request			

Extra Heavy Duty			
Width (W)	Height (H)	Radius (R)	Thickness
150	100-150	100	1.0-2.0
200	100-150	100	1.0-2.0
300	100-150	100	1.0-2.0
450	100-150	100	1.0-2.0
600	100-150	100	1.0-2.0
750	100-150	100	1.0-2.0
900	100-150	100	1.0-2.0
1000	100-150	100	1.0-2.0
All dimension is in mm & other sizes available on request			

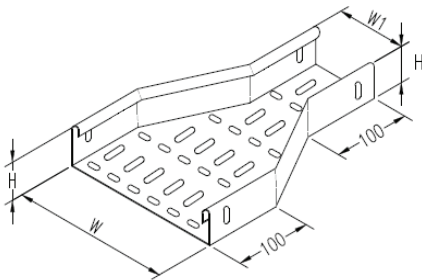


**Offset Right Reducer**

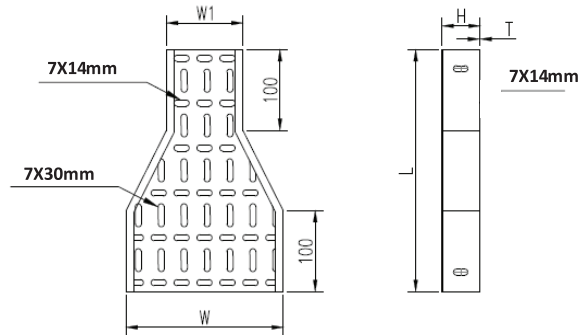


**TOP VIEW**

**SIDE VIEW**

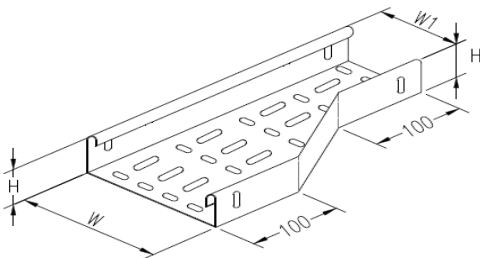


**Offset Straight Reducer**

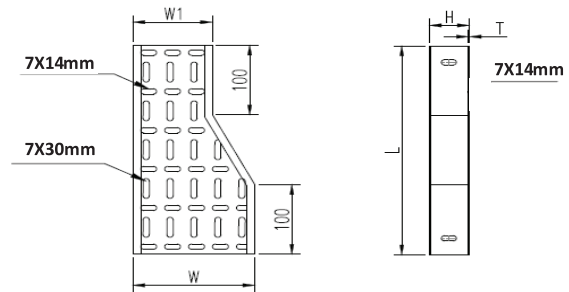


**TOP VIEW**

**SIDE VIEW**



**Offset Left Reducer**



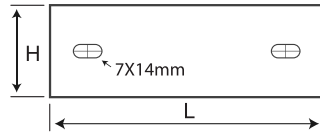
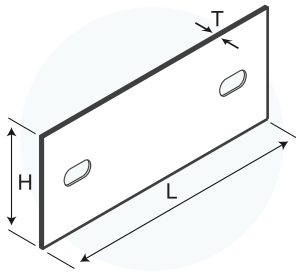
**TOP VIEW**

**SIDE VIEW**

Light Duty			
Width (W)	Width (W1)	Height (H)	Thickness
150	100	15-25	1.0-2.0
200	100-150	15-25	1.0-2.0
300	100	15-25	1.0-2.0
300	150-200	15-25	1.0-2.0
450	100-150	15-25	1.0-2.0
450	200-300	15-25	1.0-2.0
600	100-200	15-25	1.0-2.0
600	300-450	15-25	1.0-2.0
All dimension is in mm & other sizes available on request			

Heavy Duty			
Width (W)	Width (W1)	Height (H)	Thickness
150	100	50	1.0-2.0
200	100-150	50	1.0-2.0
300	100	50	1.0-2.0
300	150-200	50	1.0-2.0
450	100-150	50	1.0-2.0
450	200-300	50	1.0-2.0
600	100-200	50	1.0-2.0
600	300-450	50	1.0-2.0
All dimension is in mm & other sizes available on request			

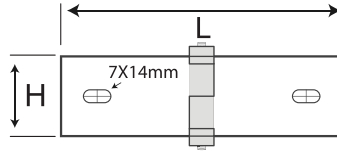
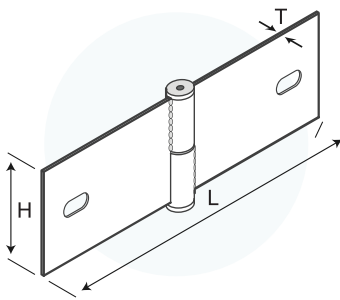
Extra Heavy Duty			
Width (W)	Width (W1)	Height (H)	Thickness
150	100	50-100	1.0-2.0
200	100-150	50-100	1.0-2.0
300	100	50-100	1.0-2.0
450	100-150	50-100	1.0-2.0
450	200-300	50-100	1.0-2.0
600	100-200	50-100	1.0-2.0
600	300-450	50-100	1.0-2.0
All dimension is in mm & other sizes available on request			



**FRONT VIEW**

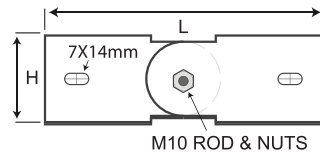
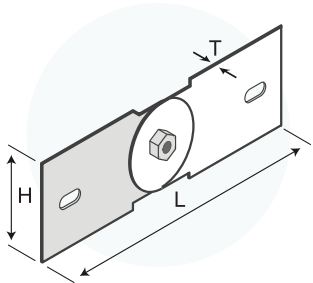
Straight Joint			
Height Tray	Height (H)	Length (L)	Thickness
50	43	190	1.5-2.0
75	68	190	1.5-2.0
100	93	190	1.5-2.0
125	118	190	2.0
150	143	190	2.0

Apply on return flange tray



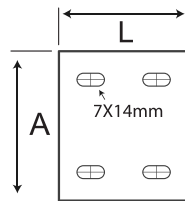
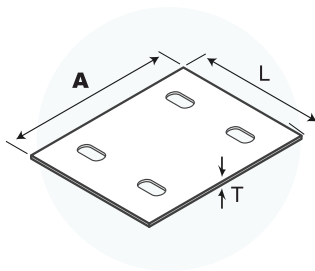
**FRONT VIEW**

Horizontal Joint			
Height Tray	Height (H)	Length (L)	Thickness
50	43	210	1.5-2.0
75	68	210	1.5-2.0
100	93	210	1.5-2.0
125	118	210	2.0
150	143	210	2.0



**FRONT VIEW**

Vertical Joint			
Height Tray	Height (H)	Length (L)	Thickness
50	43	250	1.5-2.0
75	68	250	1.5-2.0
100	93	250	1.5-2.0
125	118	250	2.0
150	143	250	2.0

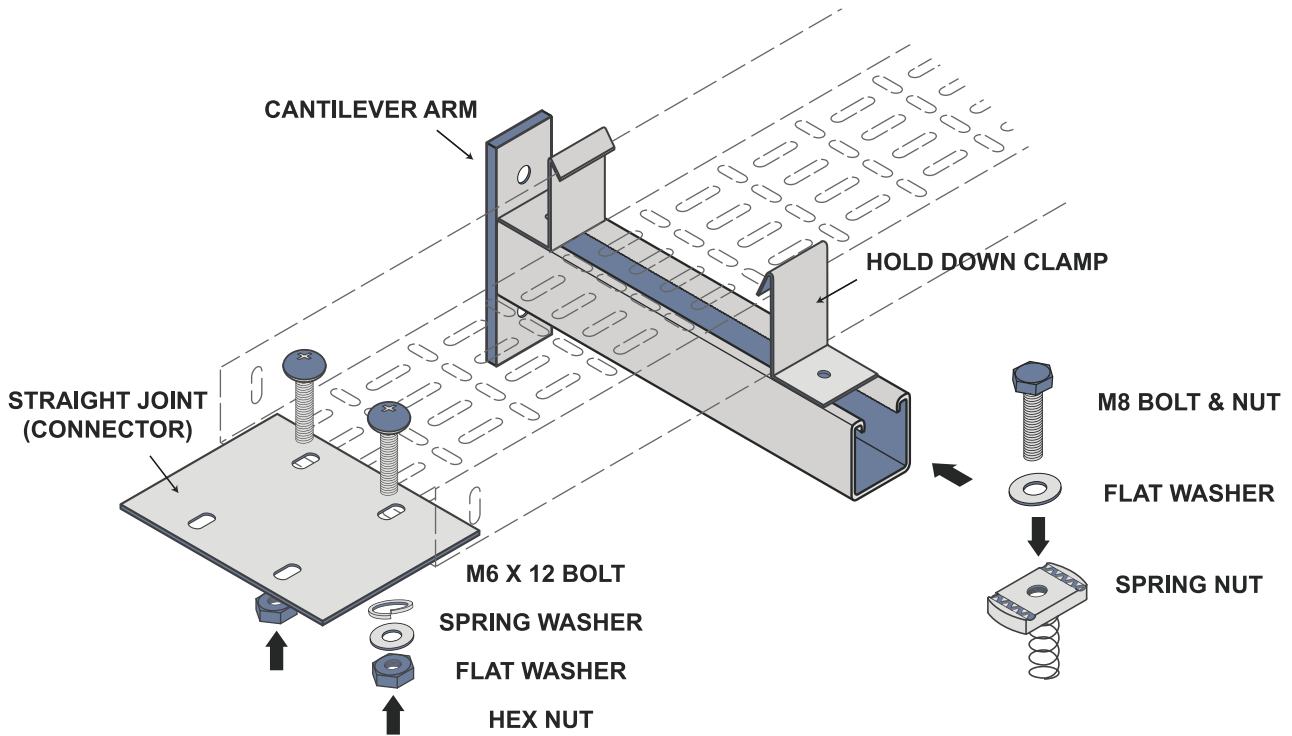


**FRONT VIEW**

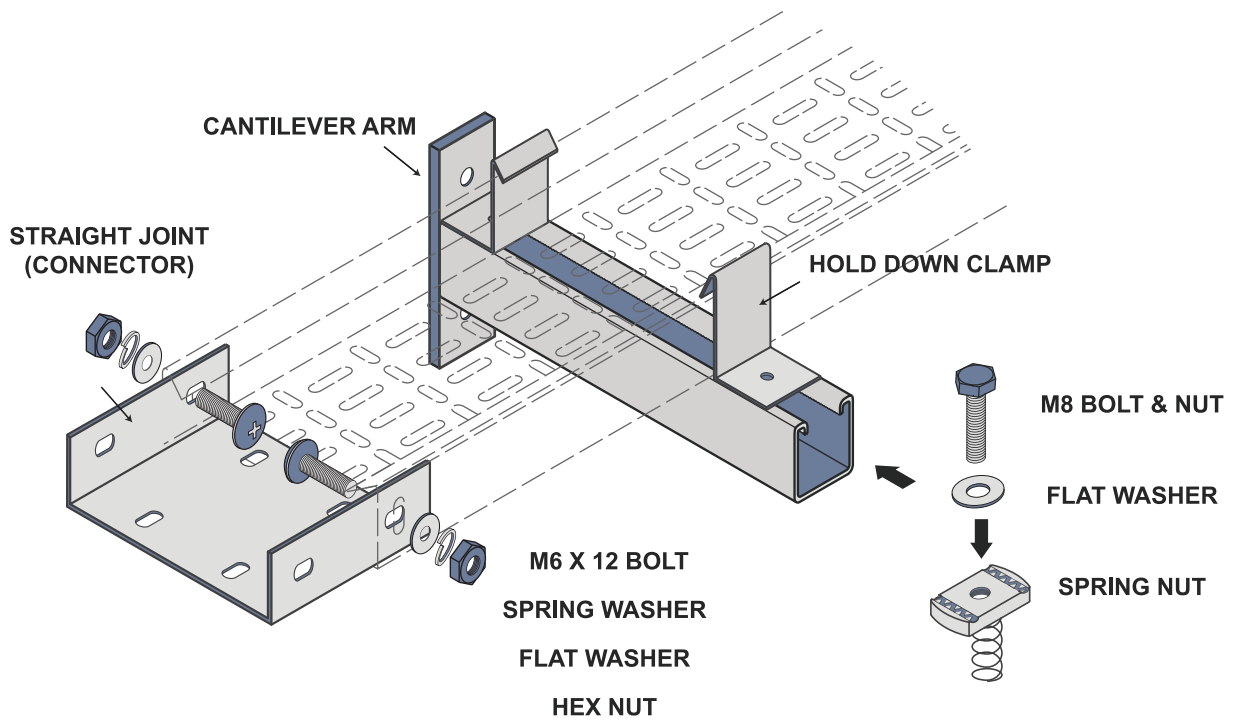
Fish Joint			
Height Tray	Height (H)	Length (L)	Thickness
50	43	180	1.2
75	68	180	1.2
100	93	180	1.2-1.5
125	118	180	1.2-1.5
150	143	180	1.2-1.5

**A** = Plate Width (adjusted to match tray size)

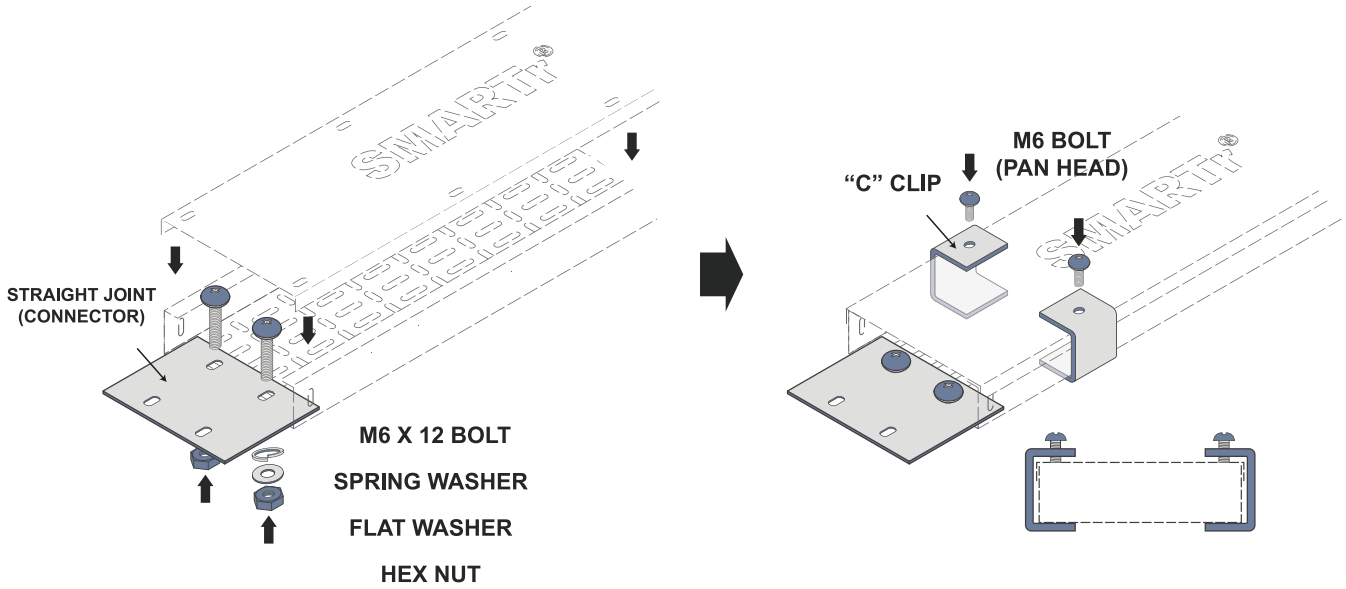
## CABLE TRAY (NON-RETURN FLANGE TYPE)



## CABLE TRAY (RETURN FLANGE TYPE)

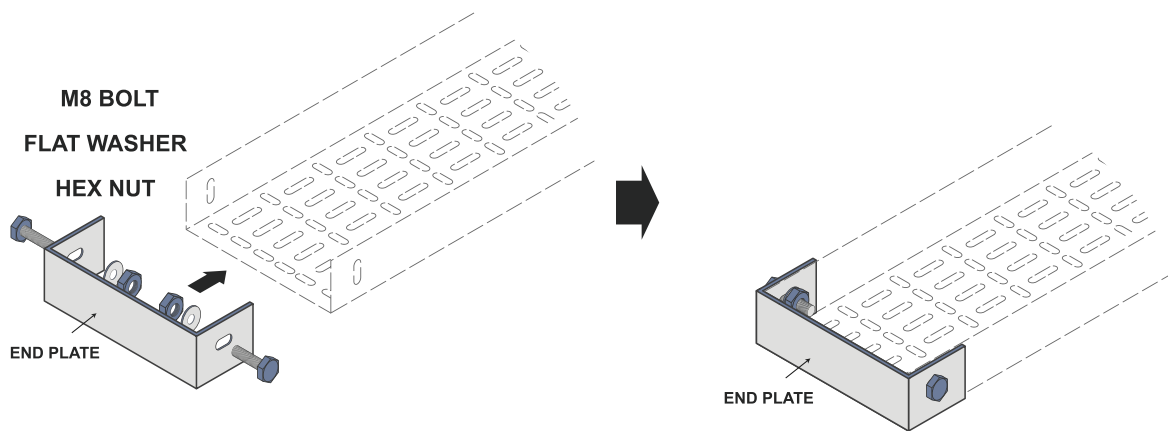


## CABLE TRAY TRUNKING

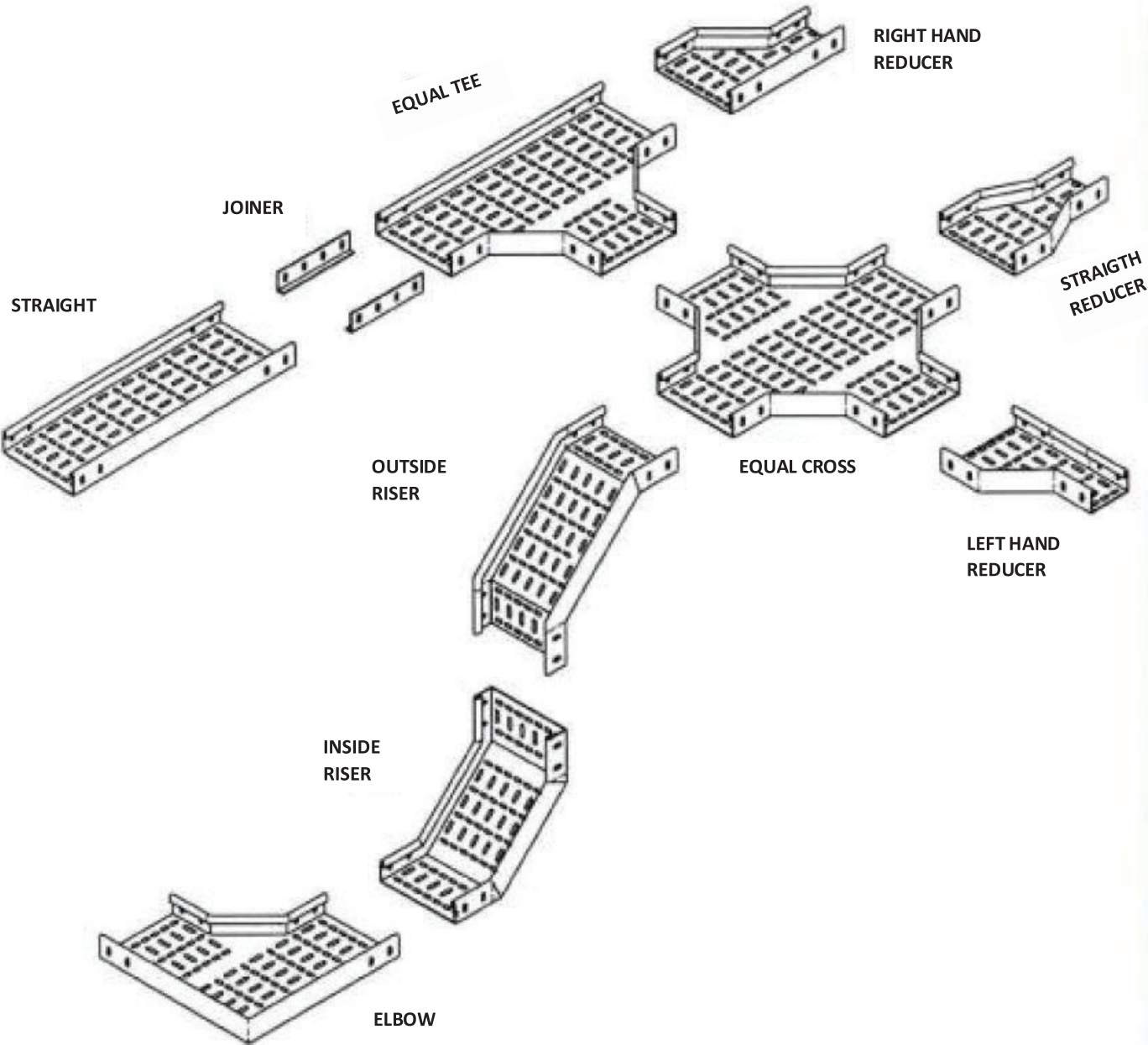


**NOTE:**  
 HDG PUNCHING PLATE C/W COVER & 6 PCS OF COVER CLIP (C TYPE)  
 WITH 6 PCS OF M6 X 12L PAN HEAD BOLT X 1 PCS OF STRAIGHT FISH PLATE X 4 SETS  
 OF SS M8 X 20L CARRIAGE BOLT, NUT, 1 FLAT WASHER & 1 SPRING WASHER.

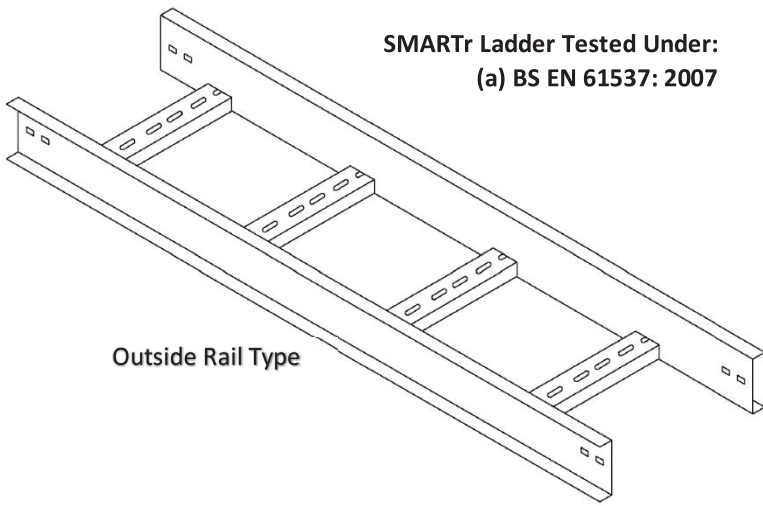
## CABLE TRAY WITH END PLATE



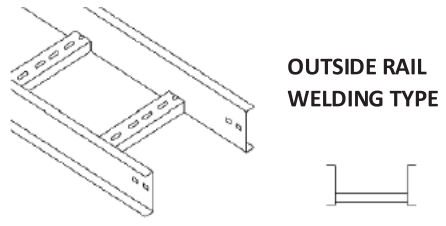
# Typical Cable Tray fittings Installation.



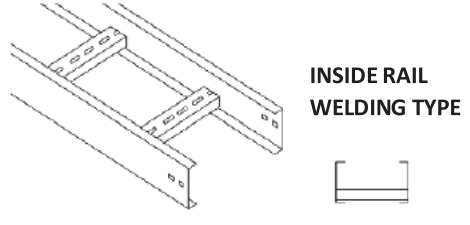
**SMARTr Ladder Tested Under:  
(a) BS EN 61537: 2007**



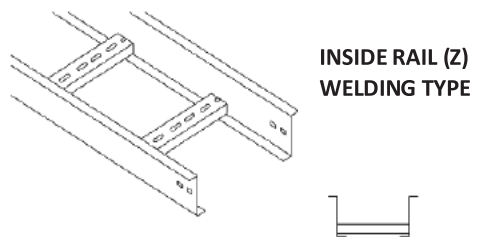
Outside Rail Type



**OUTSIDE RAIL  
WELDING TYPE**



**INSIDE RAIL  
WELDING TYPE**



**INSIDE RAIL (Z)  
WELDING TYPE**

Medium Duty			
Width (W)	Height (H)	Length (L)	Thickness
150	75-100	2440-3000	1.4-2.0
300	75-100	2440-3000	1.5-2.0
450	75-100	2440-3000	1.5-2.0
600	75-100	2440-3000	1.5-2.0
750	75-100	2440-3000	1.5-2.0
900	75-100	2440-3000	1.5-2.0
1000	75-100	2440-3000	1.5-2.0

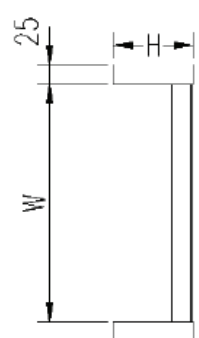
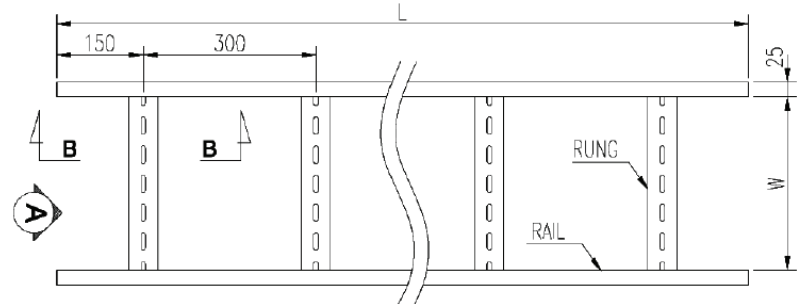
*All dimension is in mm & other sizes available on request*

Heavy Duty			
Width (W)	Height (H)	Length (L)	Thickness
150	125-150	2440-3000	1.5-2.0
300	125-150	2440-3000	1.5-2.0
450	125-150	2440-3000	2.0
600	125-150	2440-3000	2.0
750	125-150	2440-3000	2.0
900	125-150	2440-3000	2.0
1000	125-150	2440-3000	2.0

*All dimension is in mm & other sizes available on request*

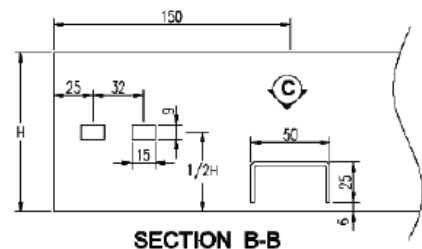
Extra Heavy Duty			
Width (W)	Height (H)	Length (L)	Thickness
150	175-200	2440-3000	2.0
300	175-200	2440-3000	2.0
450	175-200	2440-3000	2.0
600	175-200	2440-3000	2.0
750	175-200	2440-3000	2.0
900	175-200	2440-3000	2.0
1000	175-200	2440-3000	2.0

*All dimension is in mm & other sizes available on request*

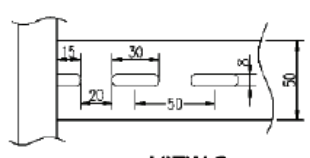


Material	Standards	Finishing
Pre-Galvanized Steel	BS EN 10346 - Former Standard: BS 2989: 1982 (Withdrawn in 1991)	Original
Hot-Rolled Steel	JIS G 3131 SPHC & HDG to ASTM A123, BS EN ISO 1461 - Former Standard: BS 729 (Withdrawn in 1999)	HDG
Mild Steel	JIS G 3131 SPHC	HDG
Electro-Galvanized	JIS G 3313 SECC, BS EN 10152	Epoxy Coated
Stainless Steel	AISI 304, 316 & 316L	Original

**VIEW A**

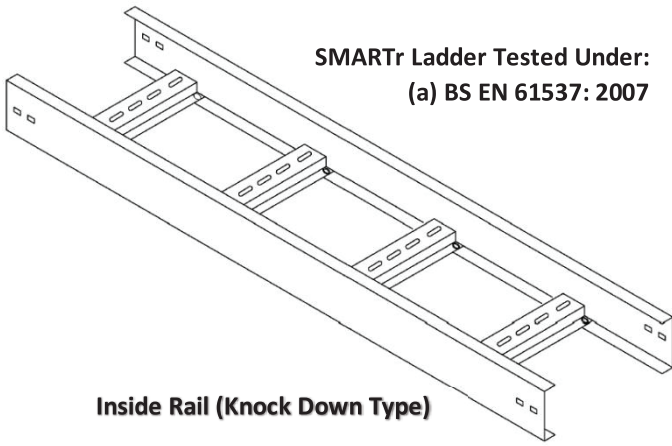


**SECTION B-B**

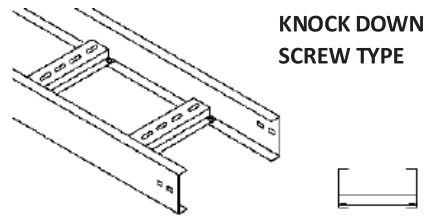


**VIEW C**

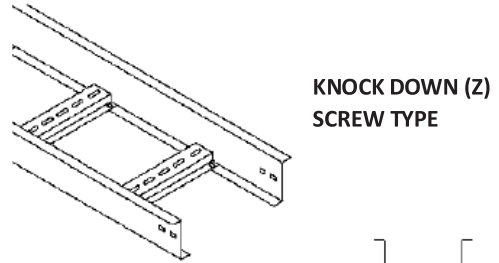
SMARTr Ladder Tested Under:  
(a) BS EN 61537: 2007



Inside Rail (Knock Down Type)



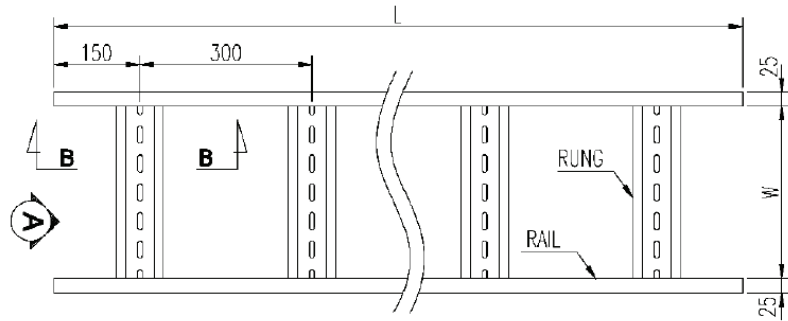
KNOCK DOWN  
SCREW TYPE



KNOCK DOWN (Z)  
SCREW TYPE

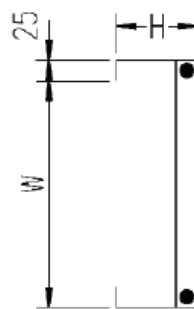
Medium Duty			
Width (W)	Height (H)	Length (L)	Thickness
150	75-100	2440-3000	1.4-2.0
300	75-100	2440-3000	1.5-2.0
450	75-100	2440-3000	1.5-2.0
600	75-100	2440-3000	1.5-2.0
750	75-100	2440-3000	1.5-2.0
900	75-100	2440-3000	1.5-2.0
1000	75-100	2440-3000	1.5-2.0

All dimension is in mm & other sizes available on request



Heavy Duty			
Width (W)	Height (H)	Length (L)	Thickness
150	125-150	2440-3000	2.0
300	125-150	2440-3000	2.0
450	125-150	2440-3000	2.0
600	125-150	2440-3000	2.0
750	125-150	2440-3000	2.0
900	125-150	2440-3000	2.0
1000	125-150	2440-3000	2.0

All dimension is in mm & other sizes available on request

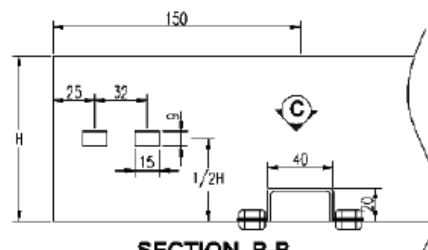


VIEW A

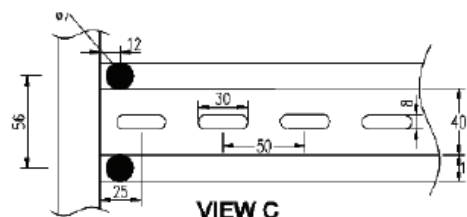
Material	Standards	Finishing
Pre-Galvanized Steel	BS EN 10346 - Former Standard: BS 2989: 1982 (Withdrawn in 1991)	Original
Hot-Rolled Steel	JIS G 3131 SPHC & HDG to ASTM A123, BS EN ISO 1461 - Former Standard: BS 729 (Withdrawn in 1999)	HDG
Mild Steel	JIS G 3131 SPHC	HDG
Electro-Galvanized	JIS G 3313 SECC, BS EN 10152	Epoxy Coated
Stainless Steel	AISI 304, 316 & 316L	Original

Extra Heavy Duty			
Width (W)	Height (H)	Length (L)	Thickness
150	175-200	2440-3000	2.0
300	175-200	2440-3000	2.0
450	175-200	2440-3000	2.0
600	175-200	2440-3000	2.0
750	175-200	2440-3000	2.0
900	175-200	2440-3000	2.0
1000	175-200	2440-3000	2.0

All dimension is in mm & other sizes available on request

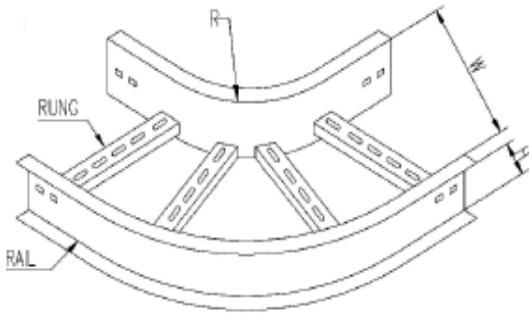


SECTION B-B



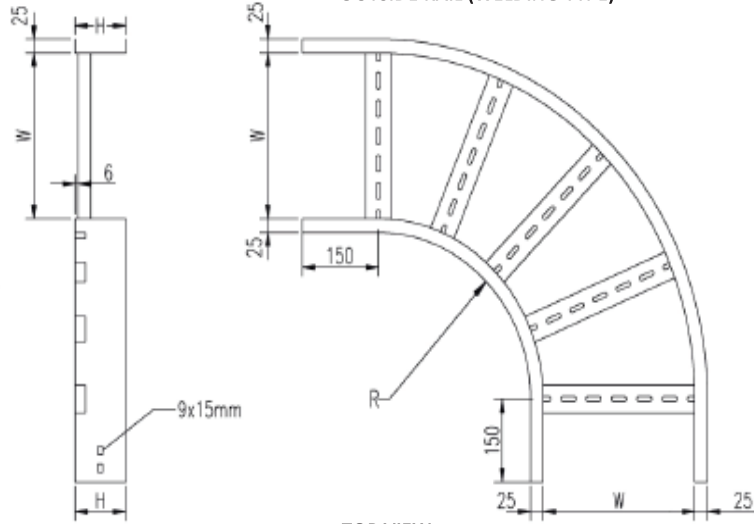
VIEW C

90° HORIZONTAL FLAT ELBOW



FRONT VIEW

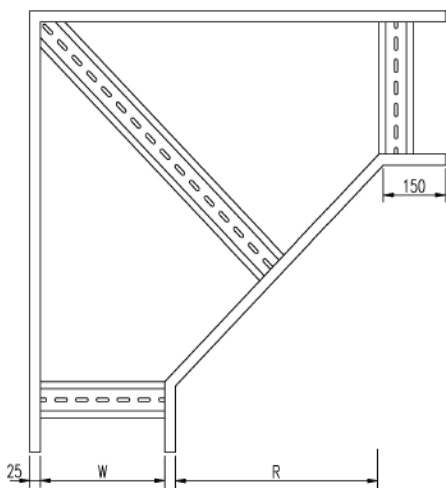
90° HORIZONTAL FLAT ELBOW  
OUTSIDE RAIL (WELDING TYPE)



TOP VIEW

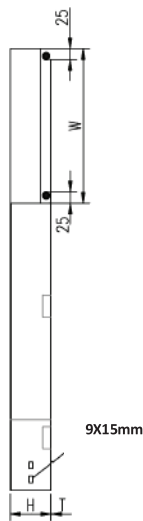
Type (1)

90° HORIZONTAL FLAT ELBOW  
KNOCK DOWN (SCREW TYPE)

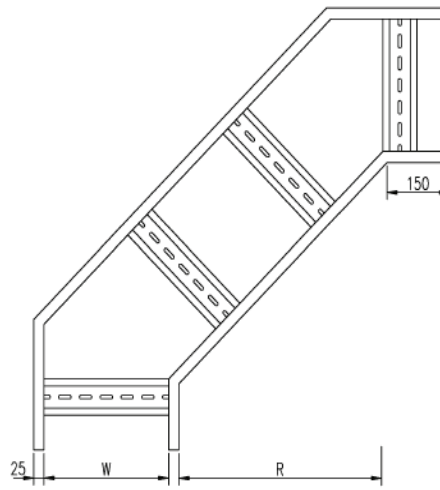


TOP VIEW

Type (2)

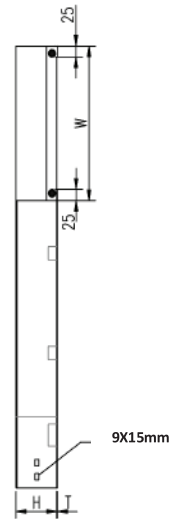


SIDE VIEW



TOP VIEW

Type (3)



SIDE VIEW

Medium Duty			
Width (W)	Height (H)	Radius	Thickness
150	75-100	300	1.4-2.0
300	75-100	300	1.5-2.0
450	75-100	300	1.5-2.0
600	75-100	300	1.5-2.0
750	75-100	300	1.5-2.0
900	75-100	300	1.5-2.0
1000	75-100	300	1.5-2.0

All dimension is in mm & other sizes available on request

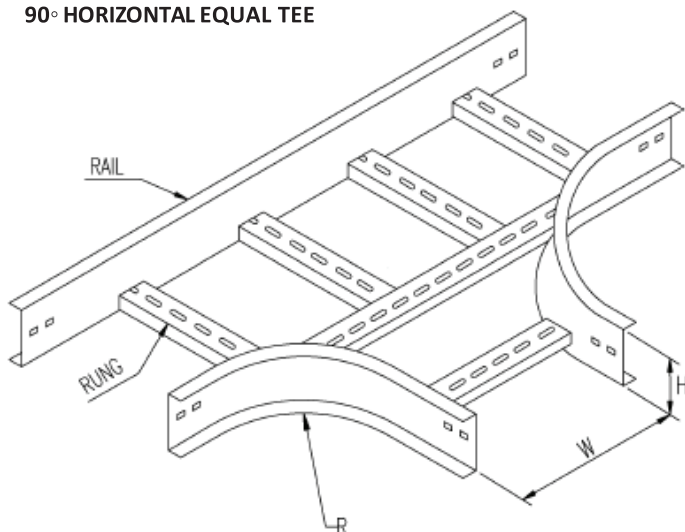
Heavy Duty			
Width (W)	Height (H)	Radius	Thickness
150	125-150	300-600	2.0
300	125-150	300-600	2.0
450	125-150	300-600	2.0
600	125-150	300-600	2.0
750	125-150	300-600	2.0
900	125-150	300-600	2.0
1000	125-150	300-600	2.0

All dimension is in mm & other sizes available on request

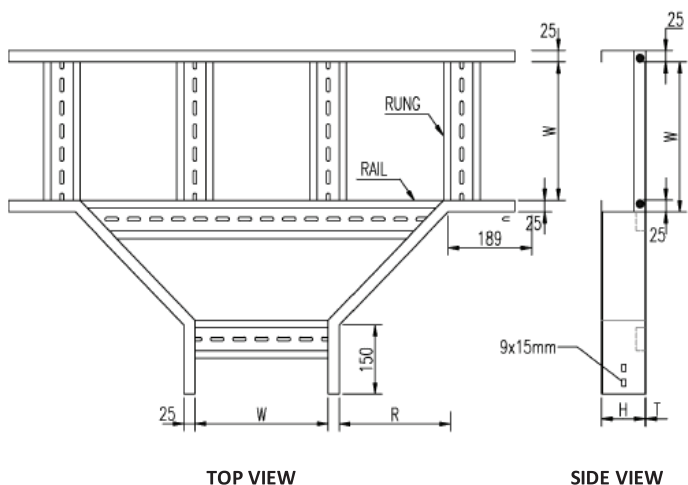
Extra Heavy Duty			
Width (W)	Height (H)	Radius	Thickness
150	175-200	300-900	2.0
300	175-200	300-900	2.0
450	175-200	300-900	2.0
600	175-200	300-900	2.0
750	175-200	300-900	2.0
900	175-200	300-900	2.0
1000	175-200	300-900	2.0

All dimension is in mm & other sizes available on request

## 90° HORIZONTAL EQUAL TEE



### 90° HORIZONTAL EQUAL TEE KNOCK DOWN (SCREW TYPE)

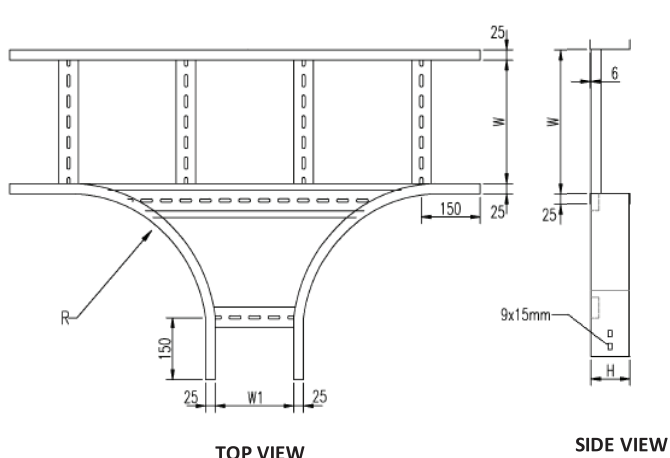


TOP VIEW

SIDE VIEW

### Type (1)

### 90° HORIZONTAL EQUAL TEE OUTSIDE RAIL (WELDING TYPE)



TOP VIEW

SIDE VIEW

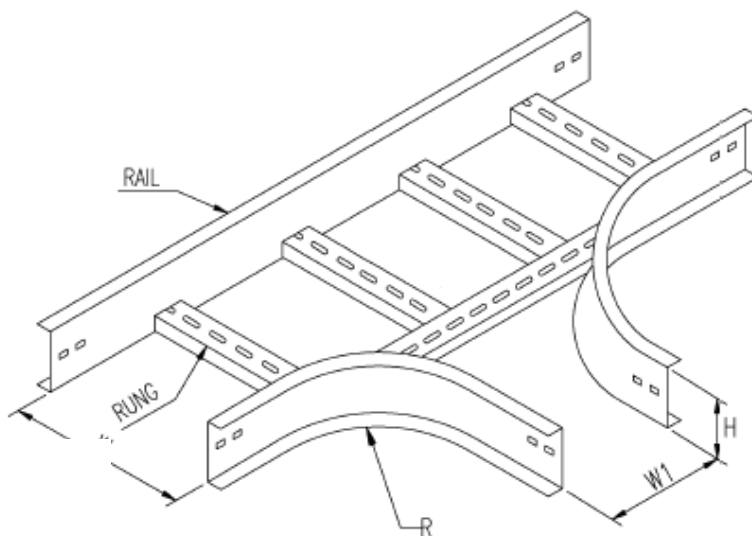
### Type (2)

Medium Duty			
Width (W)	Height (H)	Radius	Thickness
150	75-100	300	1.4-2.0
300	75-100	300	1.5-2.0
450	75-100	300	1.5-2.0
600	75-100	300	1.5-2.0
750	75-100	300	1.5-2.0
900	75-100	300	1.5-2.0
1000	75-100	300	1.5-2.0

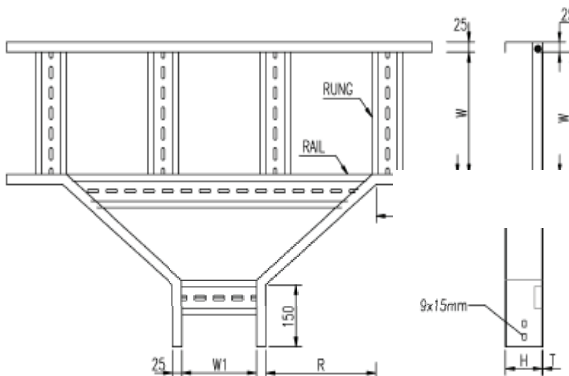
Heavy Duty			
Width (W)	Height (H)	Radius	Thickness
150	125-150	300-600	1.5-2.0
300	125-150	300-600	1.5-2.0
450	125-150	300-600	2.0
600	125-150	300-600	2.0
750	125-150	300-600	2.0
900	125-150	300-600	2.0
1000	125-150	300-600	2.0

Extra Heavy Duty			
Width (W)	Height (H)	Radius	Thickness
150	175-200	300-900	2.0
300	175-200	300-900	2.0
450	175-200	300-900	2.0
600	175-200	300-900	2.0
750	175-200	300-900	2.0
900	175-200	300-900	2.0
1000	175-200	300-900	2.0

## 90° HORIZONTAL UNEQUAL TEE



### 90° HORIZONTAL UNEQUAL TEE KNOCK DOWN (SCREW TYPE)

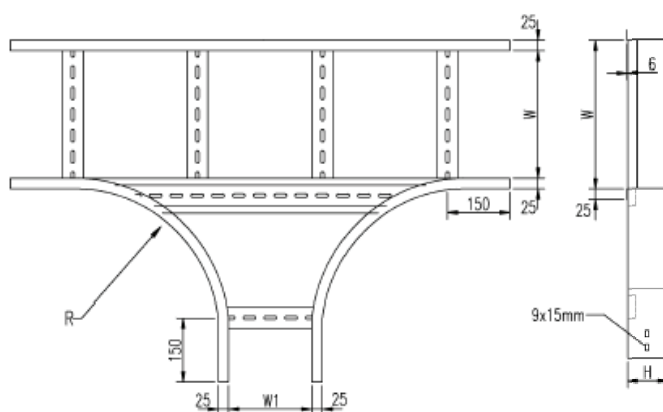


TOP VIEW

SIDE VIEW

Type (1)

### 90° HORIZONTAL UNEQUAL TEE OUTSIDE RAIL (WELDING TYPE)



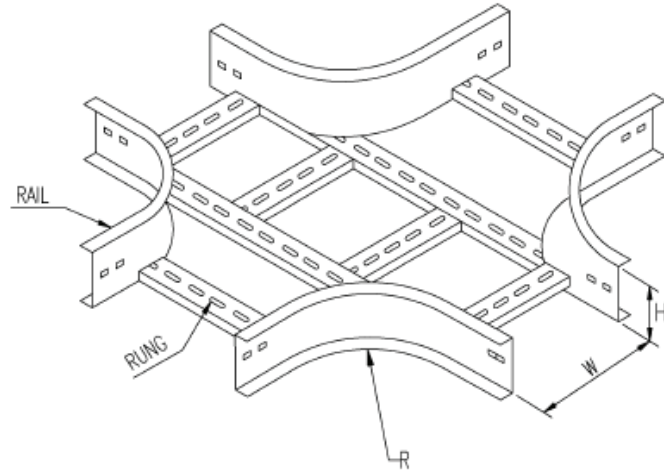
TOP VIEW

SIDE VIEW

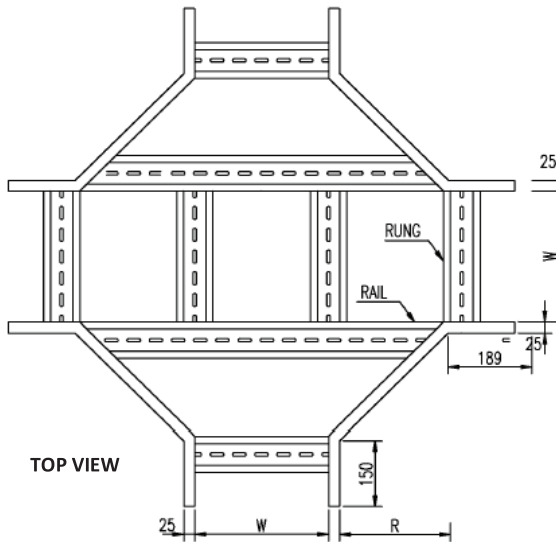
Type (2)

Medium Duty					Heavy Duty					Extra Heavy Duty				
Width (W)	Height (H)	W1	Radius	Thickness	Width (W)	Height (H)	W1	Radius	Thickness	Width (W)	Height (H)	W1	Radius	Thickness
150	75-100	150	300	1.4-2.0	150	125-150	150	300	1.5-2.0	150	175-200	150	300	2.0
300	75-100	300	300	1.5-2.0	300	125-150	300	300	1.5-2.0	300	175-200	300	300	2.0
450	75-100	450	300	1.5-2.0	450	125-150	450	300	2.0	450	175-200	450	300	2.0
600	75-100	600	300	1.5-2.0	600	125-150	600	300	2.0	600	175-200	600	300	2.0
750	75-100	750	300	1.5-2.0	750	125-150	750	300	2.0	750	175-200	750	300	2.0
900	75-100	900	300	1.5-2.0	900	125-150	900	300	2.0	900	175-200	900	300	2.0
1000	75-100	1000	300	1.5-2.0	1000	125-150	1000	300	2.0	1000	175-200	1000	300	2.0

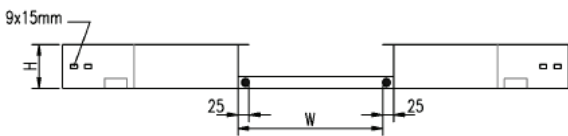
## 90° HORIZONTAL EQUAL CROSS



### 90° HORIZONTAL EQUAL CROSS KNOCK DOWN (SCREW TYPE)



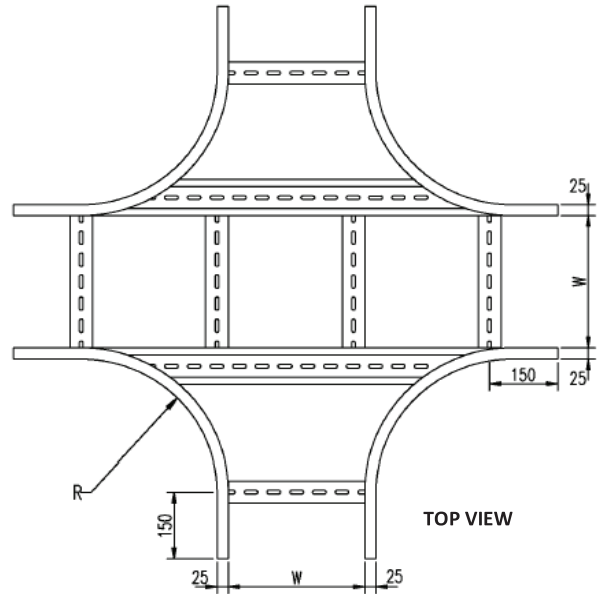
TOP VIEW



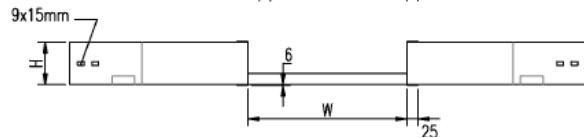
SIDE VIEW

Type (1)

### 90° HORIZONTAL EQUAL CROSS OUTSIDE RAIL (WELDING TYPE)



TOP VIEW



SIDE VIEW

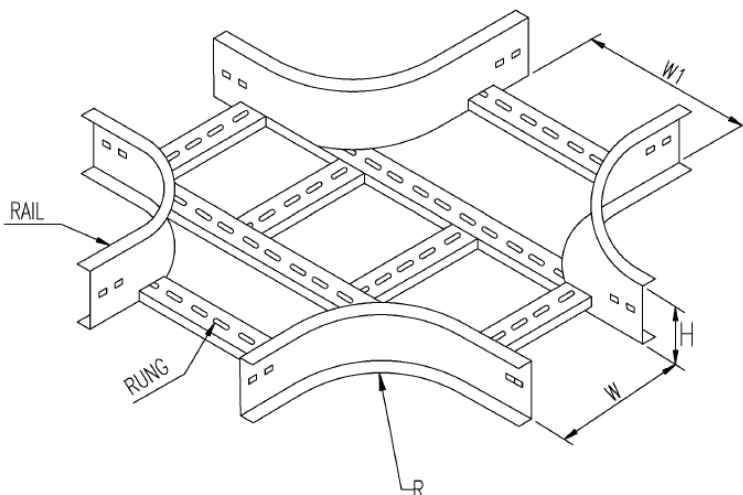
Type (2)

Medium Duty			
Width (W)	Height (H)	Radius	Thickness
150	75-100	300	1.4-2.0
300	75-100	300	1.5-2.0
450	75-100	300	1.5-2.0
600	75-100	300	1.5-2.0
750	75-100	300	1.5-2.0
900	75-100	300	1.5-2.0
1000	75-100	300	1.5-2.0

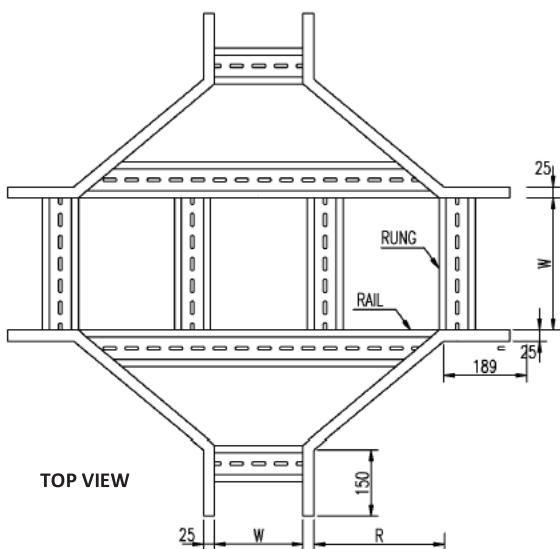
Heavy Duty			
Width (W)	Height (H)	Radius	Thickness
150	125-150	300-600	1.5-2.0
300	125-150	300-600	2.0
450	125-150	300-600	2.0
600	125-150	300-600	2.0
750	125-150	300-600	2.0
900	125-150	300-600	2.0
1000	125-150	300-600	2.0

Extra Heavy Duty			
Width (W)	Height (H)	Radius	Thickness
150	175-200	300-900	2.0
300	175-200	300-900	2.0
450	175-200	300-900	2.0
600	175-200	300-900	2.0
750	175-200	300-900	2.0
900	175-200	300-900	2.0
1000	175-200	300-900	2.0

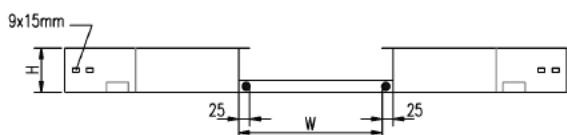
## 90° HORIZONTAL UNEQUAL CROSS



## 90° HORIZONTAL UNEQUAL CROSS KNOCK DOWN (SCREW TYPE)



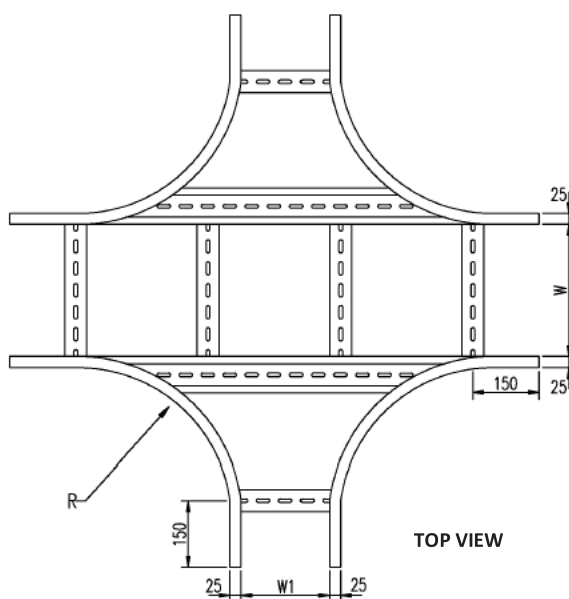
TOP VIEW



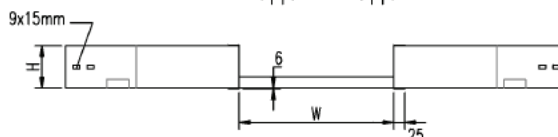
SIDE VIEW

Type (1)

## 90° HORIZONTAL UNEQUAL CROSS OUTSIDE RAIL (WELDING TYPE)



TOP VIEW



SIDE VIEW

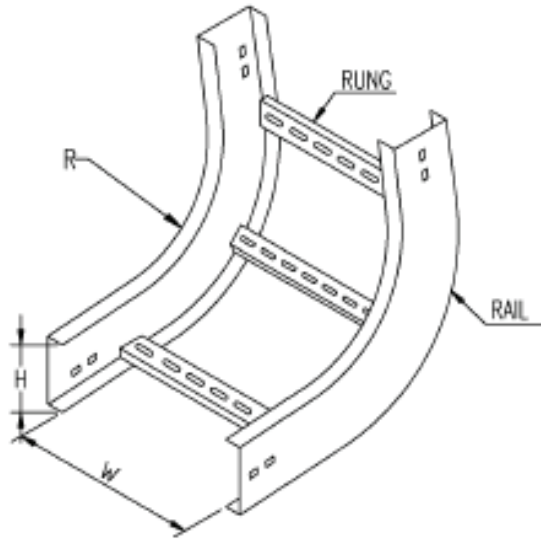
Type (2)

Medium Duty				
Width (W)	Height (H)	W1	Radius	Thickness
300	75-100	150	300	1.4-2.0
450	75-100	150	300	1.5-2.0
600	75-100	150	300	1.5-2.0
450	75-100	300	300	1.5-2.0
600	75-100	300	300	1.5-2.0
750	75-100	300	300	1.5-2.0
900	75-100	300	300	1.5-2.0

Heavy Duty				
Width (W)	Height (H)	W1	Radius	Thickness
300	125-150	150	300	1.5-2.0
450	125-150	150	300	2.0
450	125-150	300	300	2.0
600	125-150	300	300	2.0
750	125-150	300	300	2.0
900	125-150	300	300	2.0
900	125-150	450	300	2.0

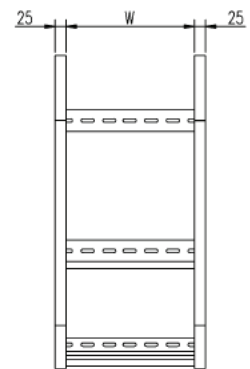
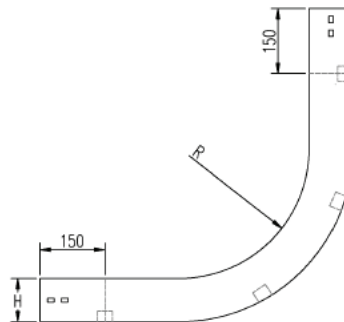
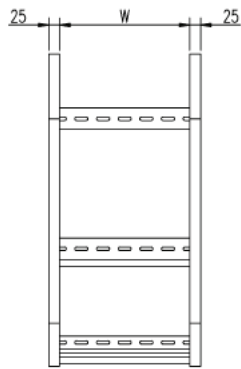
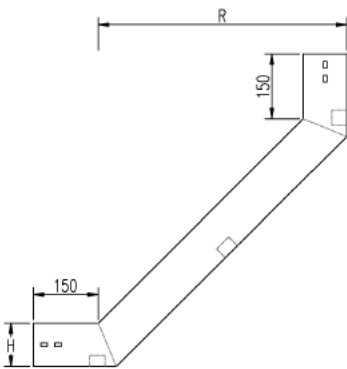
Extra Heavy Duty				
Width (W)	Height (H)	W1	Radius	Thickness
450	175-200	150	300	2.0
450	175-200	300	300	2.0
600	175-200	300	300	2.0
750	175-200	300	300	2.0
750	175-200	450	300	2.0
900	175-200	450	300	2.0
1000	175-200	450	300	2.0

## 90° VERTICAL INSIDE RISER



### 90° VERTICAL INSIDE RISER KNOCK DOWN (SCREW TYPE)

### 90° VERTICAL INSIDE RISER OUTSIDE RAIL (WELDING TYPE)



SIDE VIEW

TOP VIEW

SIDE VIEW

TOP VIEW

Type (1)

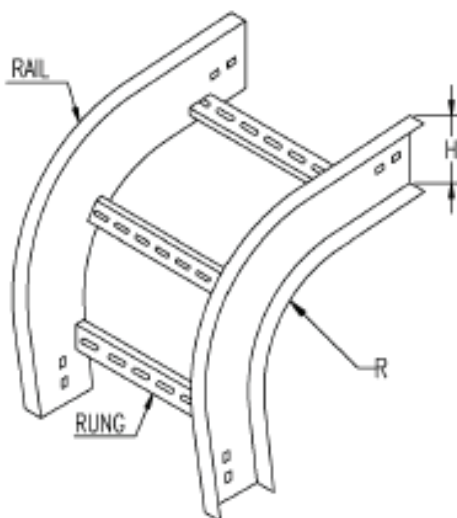
Type (2)

Medium Duty			
Width (W)	Height (H)	Radius	Thickness
150	75-100	300	1.4-2.0
300	75-100	300	1.5-2.0
450	75-100	300	1.5-2.0
600	75-100	300	1.5-2.0
750	75-100	300	1.5-2.0
900	75-100	300	1.5-2.0
1000	75-100	300	1.5-2.0

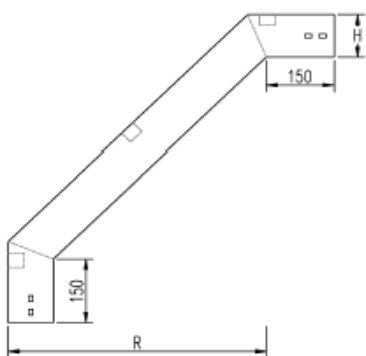
Heavy Duty			
Width (W)	Height (H)	Radius	Thickness
150	125-150	300-600	1.5-2.0
300	125-150	300-600	1.5-2.0
450	125-150	300-600	2.0
600	125-150	300-600	2.0
750	125-150	300-600	2.0
900	125-150	300-600	2.0
1000	125-150	300-600	2.0

Extra Heavy Duty			
Width (W)	Height (H)	Radius	Thickness
150	175-200	300-900	2.0
300	175-200	300-900	2.0
450	175-200	300-900	2.0
600	175-200	300-900	2.0
750	175-200	300-900	2.0
900	175-200	300-900	2.0
1000	175-200	300-900	2.0

## 90° VERTICAL OUTSIDE RISER

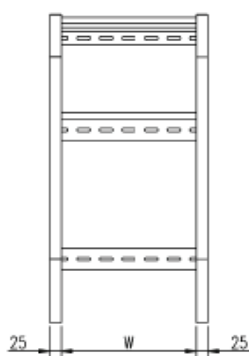


### 90° VERTICAL OUTSIDE RISER KNOCK DOWN (SCREW TYPE)



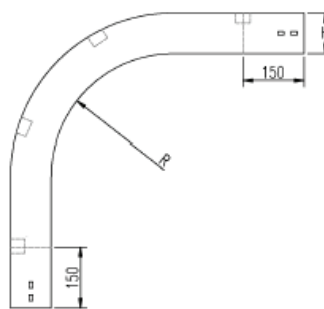
SIDE VIEW

Type (1)



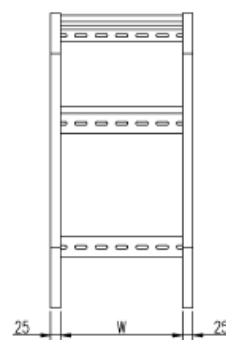
TOP VIEW

### 90° VERTICAL OUTSIDE RISER OUTSIDE RAIL (WELDING TYPE)



SIDE VIEW

Type (2)



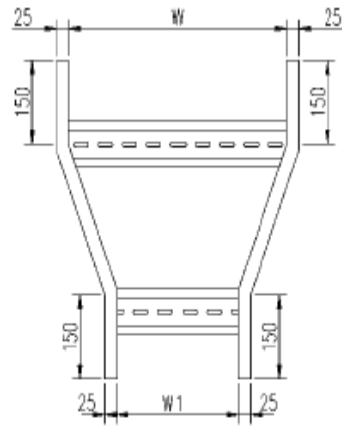
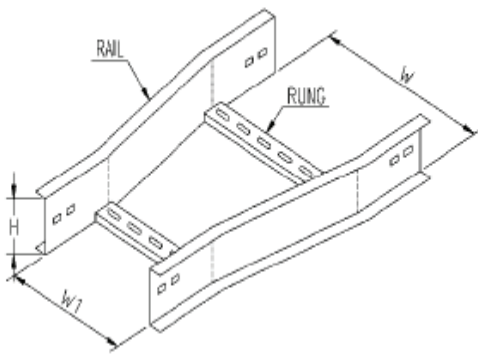
TOP VIEW

Medium Duty			
Width (W)	Height (H)	Radius	Thickness
150	75-100	300	1.4-2.0
300	75-100	300	1.5-2.0
450	75-100	300	1.5-2.0
600	75-100	300	1.5-2.0
750	75-100	300	1.5-2.0
900	75-100	300	1.5-2.0
1000	75-100	300	1.5-2.0

Heavy Duty			
Width (W)	Height (H)	Radius	Thickness
150	125-150	300-600	1.5-2.0
300	125-150	300-600	1.5-2.0
450	125-150	300-600	2.0
600	125-150	300-600	2.0
750	125-150	300-600	2.0
900	125-150	300-600	2.0
1000	125-150	300-600	2.0

Extra Heavy Duty			
Width (W)	Height (H)	Radius	Thickness
150	175-200	300-900	2.0
300	175-200	300-900	2.0
450	175-200	300-900	2.0
600	175-200	300-900	2.0
750	175-200	300-900	2.0
900	175-200	300-900	2.0
1000	175-200	300-900	2.0

## OFFSET STRAIGHT REDUCER

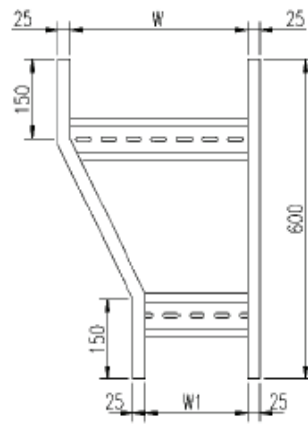
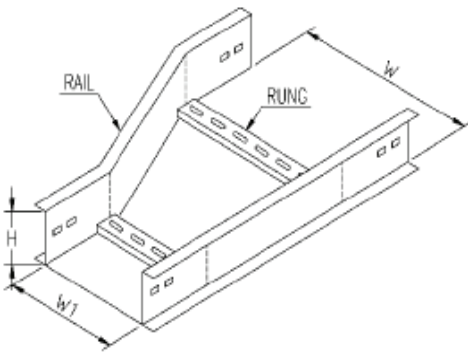


TOP VIEW



SIDE VIEW

## OFFSET LEFT HAND REDUCER

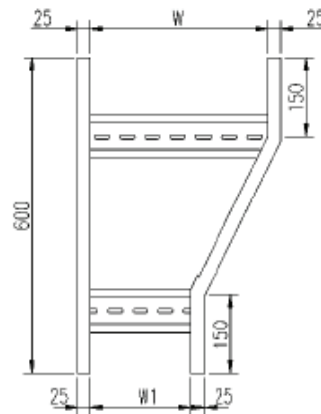
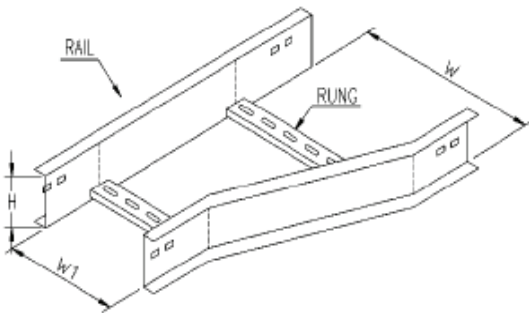


TOP VIEW



SIDE VIEW

## OFFSET RIGHT HAND REDUCER



TOP VIEW

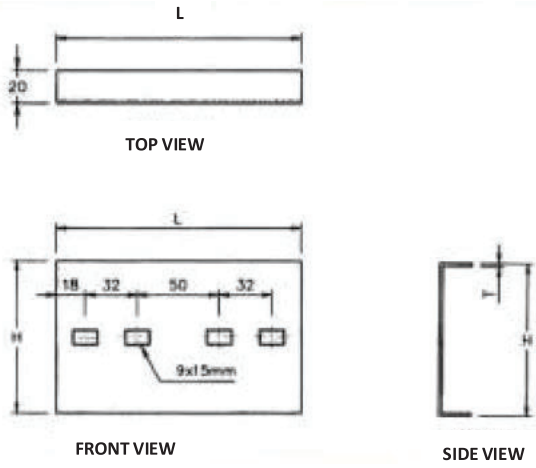


SIDE VIEW

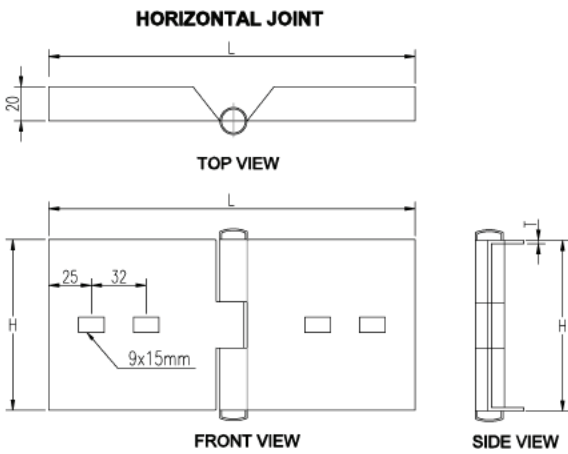
Medium Duty			
Width (W)	Height (H)	W1	Thickness
150	75-100	100	1.4-2.0
300	75-100	100	1.5-2.0
450	75-100	100	1.5-2.0
600	75-100	100	1.5-2.0
700	75-100	100	1.5-2.0
900	75-100	100	1.5-2.0
1000	75-100	100	1.5-2.0

Heavy Duty			
Width (W)	Height (H)	W1	Thickness
150	125-150	100	1.5-2.0
300	125-150	100	1.5-2.0
450	125-150	100	2.0
600	125-150	100	2.0
700	125-150	100	2.0
900	125-150	100	2.0
1000	125-150	100	2.0

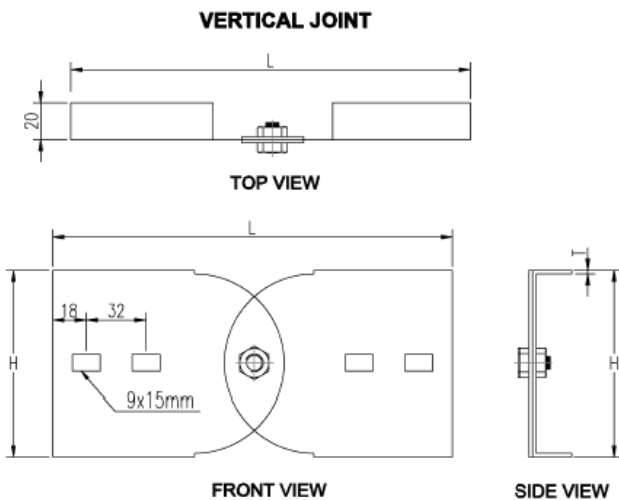
Extra Heavy Duty			
Width (W)	Height (H)	W1	Thickness
150	175-200	100	2.0
300	175-200	100	2.0
450	175-200	100	2.0
600	175-200	100	2.0
700	175-200	100	2.0
900	175-200	100	2.0
1000	175-200	100	2.0



Straight Joint			
Height Ladder	Height (H)	Length (L)	Thickness
75	70	150	1.5-2.0
100	94	150	1.5-2.0
125	120	190	2.0
150	144	190	2.0
175	170	190	2.0
200	194	210	2.0

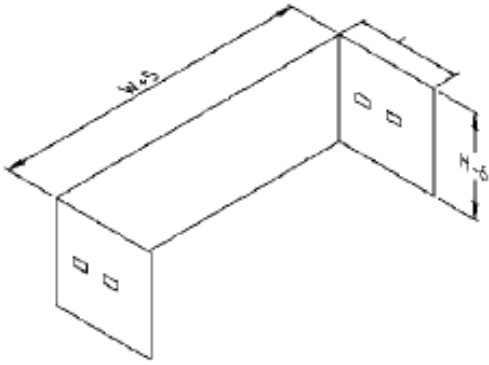


Horizontal Joint			
Height Ladder	Height (H)	Length (L)	Thickness
75	70	190	1.5-2.0
100	94	190	1.5-2.0
125	120	210	2.0
150	144	210	2.0
175	170	210	2.0
200	194	250	2.0

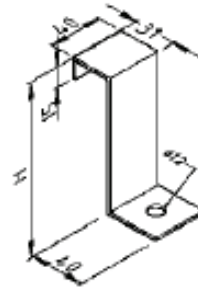


Vertical Joint			
Height Ladder	Height (H)	Length (L)	Thickness
75	70	190	1.5-2.0
100	94	210	1.5-2.0
125	120	250	2.0
150	144	290	2.0
175	170	290	2.0
200	194	290	2.0

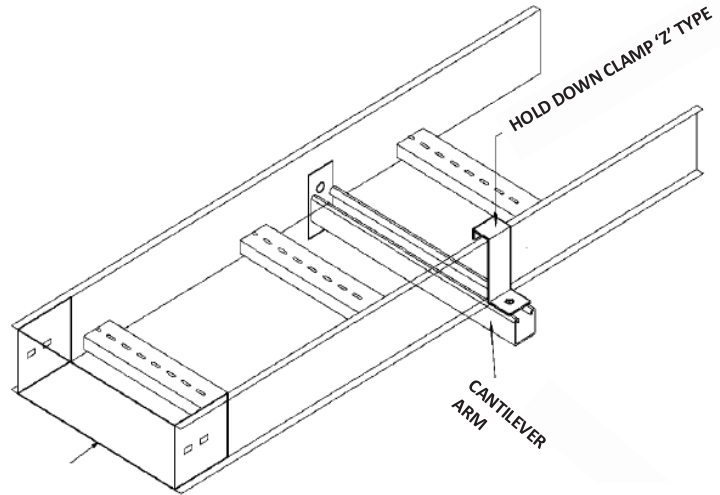
**END PLATE**



**HOLD DOWN CLAMP 'Z' TYPE**

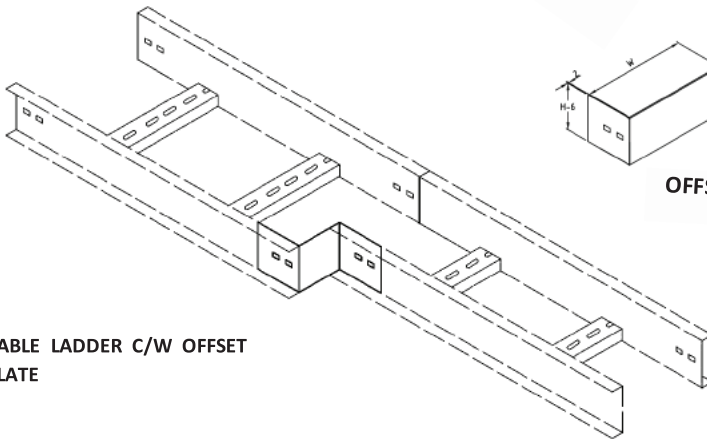


End Plate			
Width (W)	Height (H)	Length (L)	Thickness
150	75-200	100	1.5-2.0
100	75-200	100	1.5-2.0
450	75-200	100	2.0
600	75-200	100	2.0
750	75-200	100	2.0
900	75-200	100	2.0

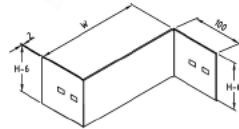


**CABLE LADDER C/W END PLATE**

**END PLATE**

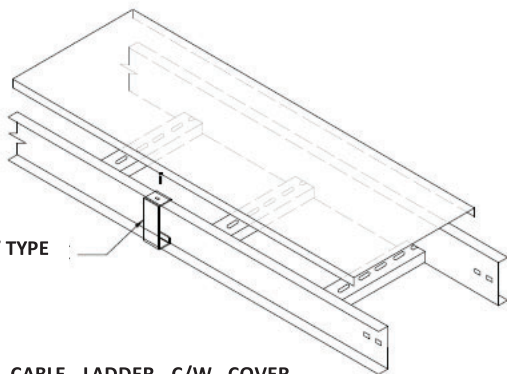


**CABLE LADDER C/W OFFSET PLATE**



**OFFSET PLATE**

Offset Plate			
Width (W)	Height (H)	Length (L)	Thickness
150	75-200	100	1.5-2.0
100	75-200	100	1.5-2.0
450	75-200	100	2.0
600	75-200	100	2.0
750	75-200	100	2.0
900	75-200	100	2.0

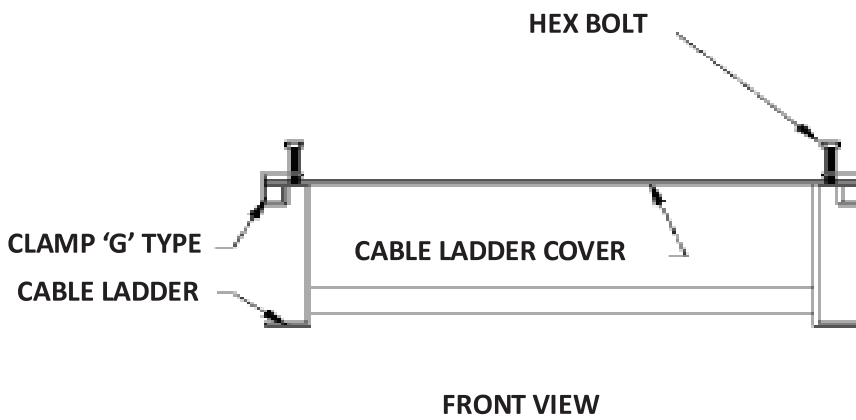
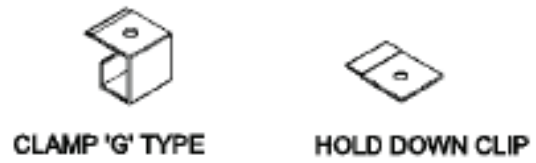
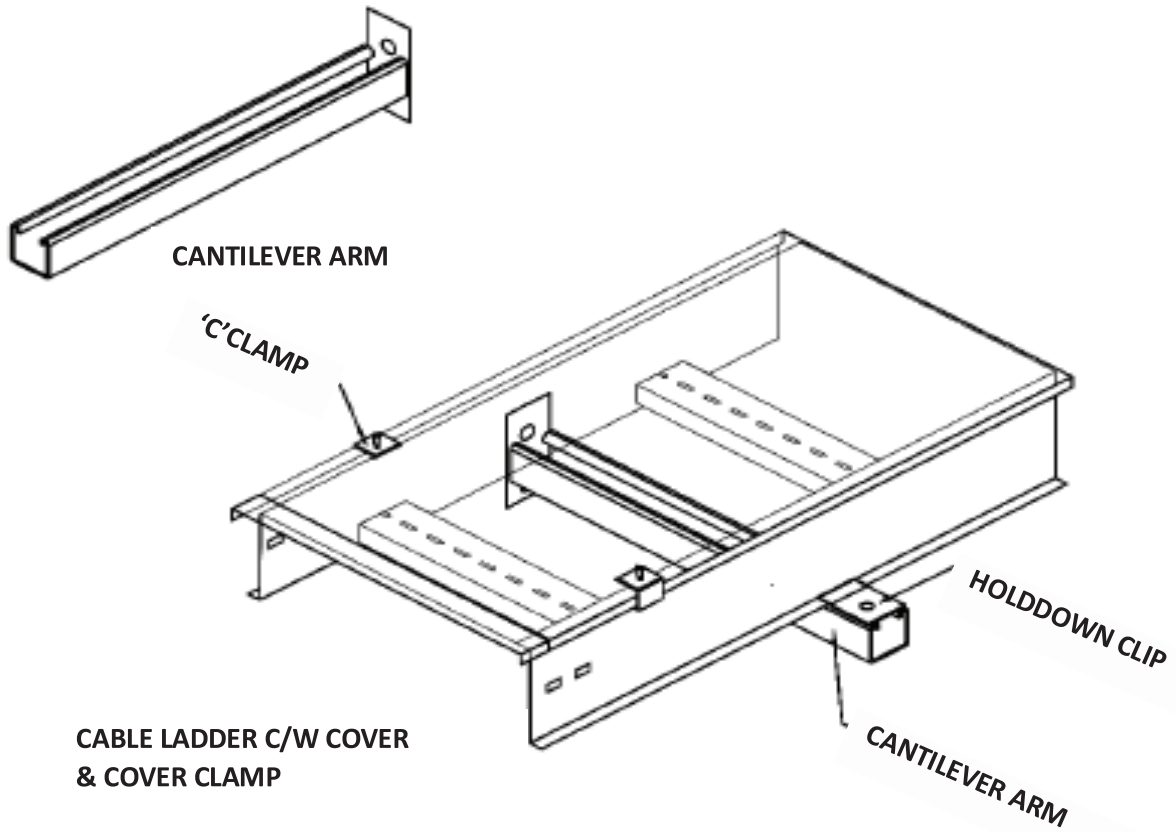


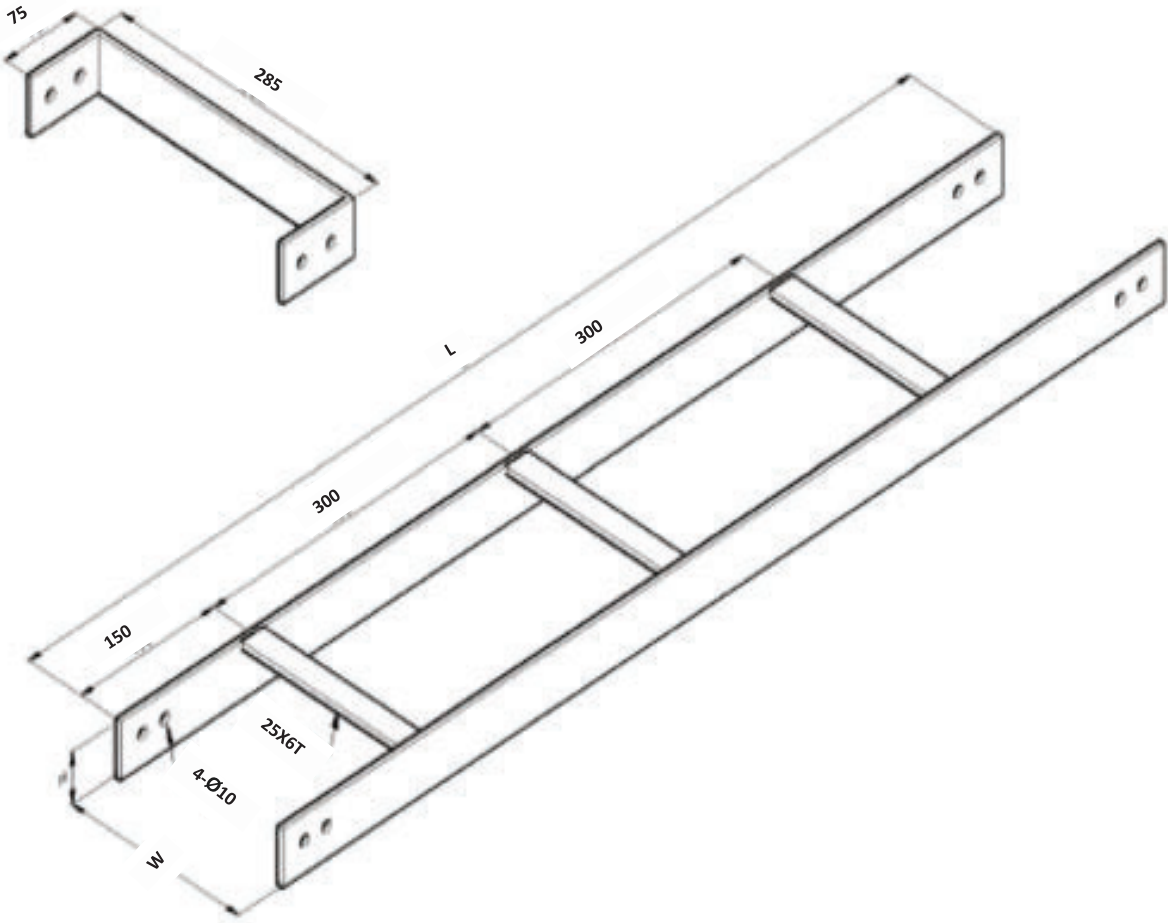
**COVER CLAMP 'C' TYPE**



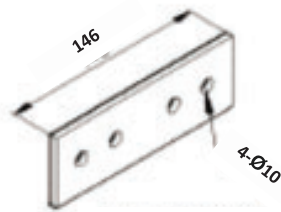
**COVER CLAMP 'C' TYPE**

**CABLE LADDER C/W COVER, CLAMP & BOLT**

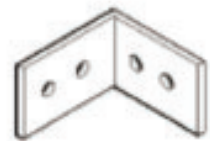




Flat Bar Ladder			
Width (W)	Height (H)	Length (L)	Thickness
150	32-50	2440-3000	1.5-2.0
300	32-50	2440-3000	1.5-2.0
450	32-50	2440-3000	2.0
600	32-50	2440-3000	2.0
750	32-50	2440-3000	2.0
900	32-50	2440-3000	2.0

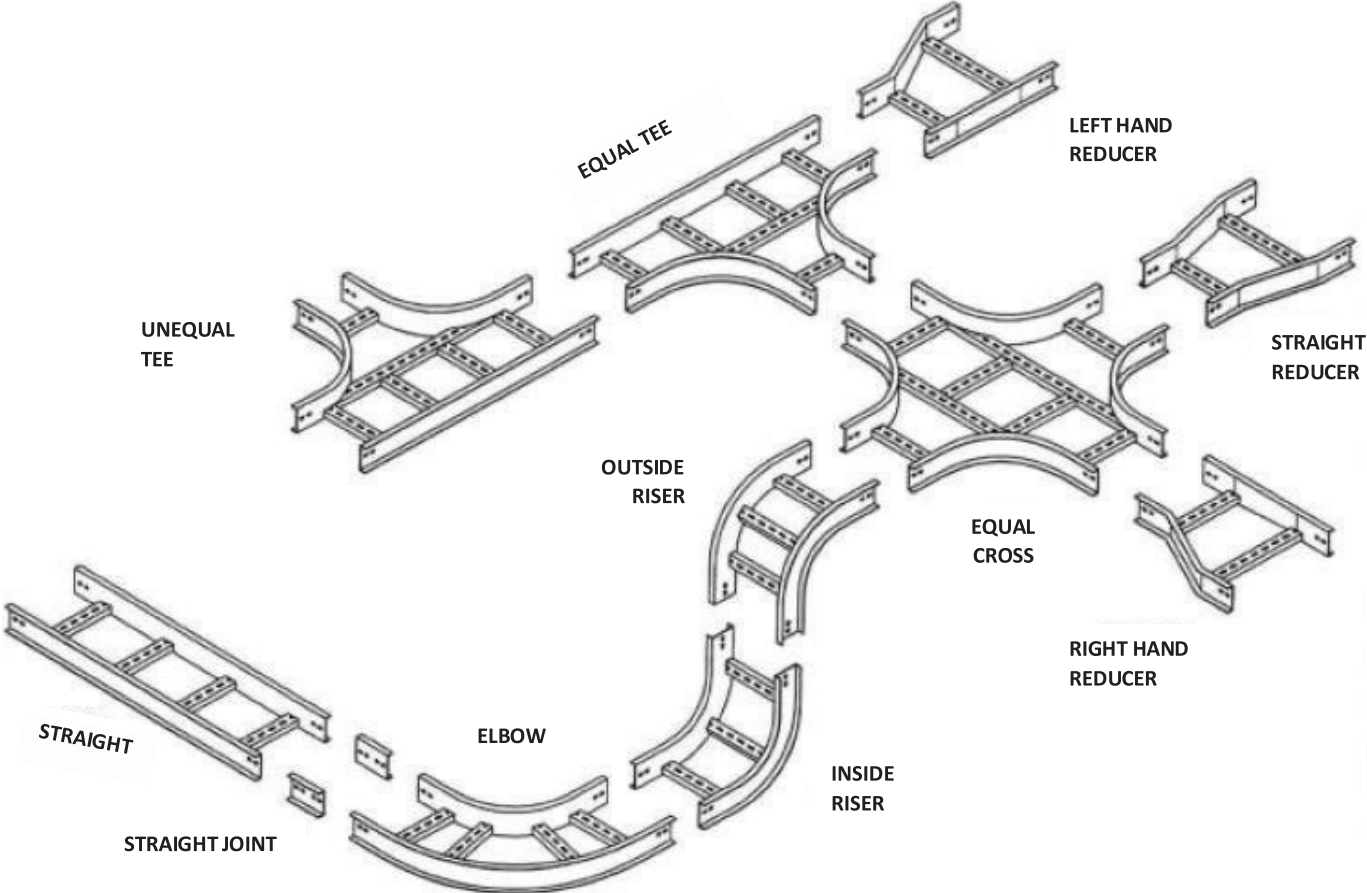


FLAT BAR JOINT



'L' FLAT BAR JOINT

# Typical Cable Ladder Fitting Installation



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