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A large, white, stylized 'AAT' logo on an orange background.

**AZAR**

**FONOON**

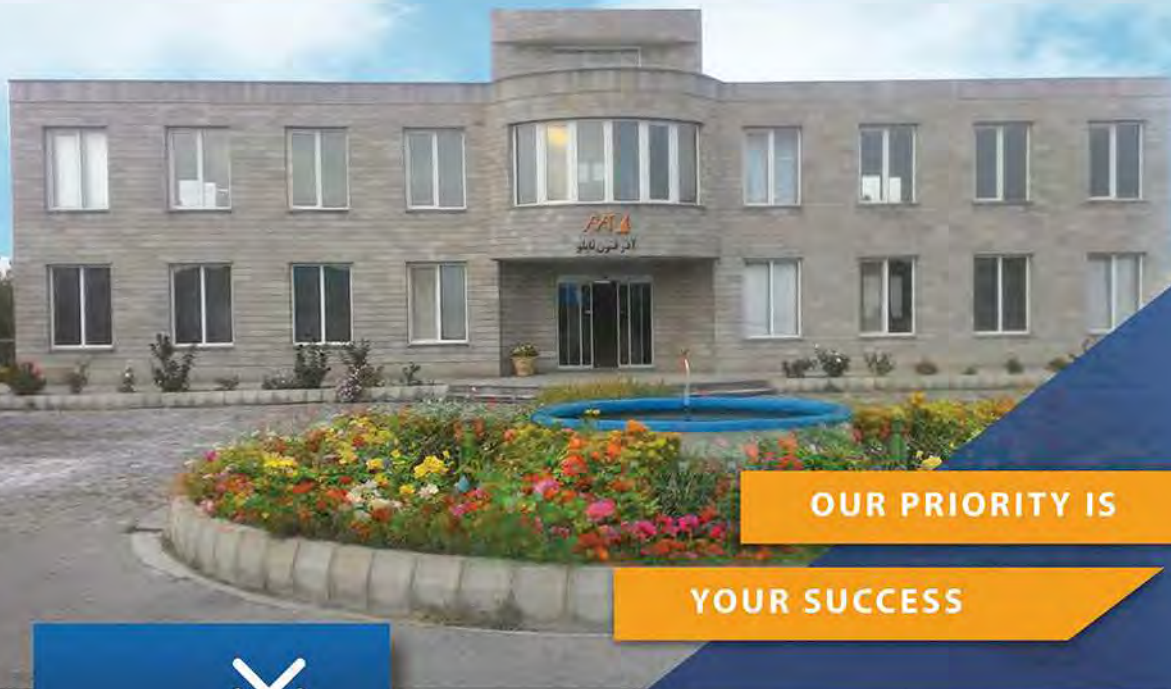
**TABLEAU**

[www.aftiran.ir](http://www.aftiran.ir)

AFT co. was established in 1992 by a group of experienced and expert engineers to manufacture different types of MV and LV electric panels.

March 2004 was a beginning of a new era for AFT.

In this year we moved to our New factory in Shahid Salimi Industrial Zone. This factory is Built in area of 16600 sqm White a 6500 sqm hall Equipped with modern manufacturing and testing facilities such as :



OUR PRIORITY IS

YOUR SUCCESS



### Manufacturing equipments as below:

- 01** Power frequency and impulse voltage test laboratory up to 36KV for testing switchgear and Busduct.
- 02** Painting lab
- 03** CNC, NC and other necessary machines
- 04** Electrostatic powder painting line 70KV, 230 °c
- 05** A full washing line including degreasing, phosphate and primitive drain unit.

Intgreated halls in 4000 sqm area to produce different types of electrical panels such as (fixed, draw-out, modular, compact, kiosk and protection suitable) to be used as PC, MCC and aims.

Second hall with 4000 sqm area to produce busduct in various voltage and current ranges up to 36kV and 4000A, using Copper or Aluminium conductor.

Busduct is one of the most advanced methods in electric power distribution in various applications. Busduct is comprised of two parts, bus and duct.



1. Bus: is a Copper or Aluminum conductor for electric current carrying.

2. Duct: is a pre-fabricated metal or resin enclosure containing buses with current.

Busduct is also called bus bar trunking or bus way. Busduct can be easily replaced with traditional system of ladder and cable tray and more importantly instead of cable.



In 1920 about 90 years ago for first time, the idea of Busduct was illustrated in America. Within this year, General Motors co was struggling with noticeable amount of problems. Multiplicity in electric equipment with high amperage together with the essentiality in transfer electric energy from electric panels to equipments, all these factors made up General Motors to propound this problem with General electric co. General Electric co, after a long term of analysis and different theories, introduced the air Busduct system with metal enclosure to General Motors co with the first time. With busduct Entrance to the industries and its replacement with cables huge amount of electric cables together with ladders, cable trays and many distributing electric panels were acordinaly eliminated and pre-fabricated modular cannels were replaced witch could ease the transportation and more capability in power transfer distribution in high capacities. After general electric co and by time passes, more well known and spot companies such as, Westinghouse, SQD in America, Telemecanique, Norma bar, SIM electro in French, Siemens and Muller in Germany started manufacturing busduct in different ranges of voltage and amperage Since 40 years ago busduct has become more recognized in Iran and during 3 years (1976-1979) More than 80 factories and institutions could benefit imported Busduct from GE company.



## Construction Features

### CONDUCTOR

AFT Busduct system comes with two types of Conductor - Copper or Aluminum.

Round Edge Type of Copper & Aluminum Bus Bars are specifically used as conducting elements to comply with IEC, JIS, BS, KS standards.

### PAINTING

AFT Busduct system is fully painted with Electro Static Epoxy Powder Coating, standard Color Code : Munsell 5Y7/1 or RAL7032

### ENCLOSURE

Made from 1.6mm thickness galvanised steel sheet with epoxy powder painting, in order to prevent corrosion.

### POWER DISTRIBUTION

AFT Busduct system will have plug in and tap off type of power distribution method. Rated current up to 250A shall be Plug in type while rated current from 700-2500A shall be Tap off type. All Plug in/Tap off units will have mechanically interlocked.

The Busduct System Provides Huge Advantage and Out Standing Features in an Electrical Installation System as Bellow.

- 1- Takes Up a Small Space due to its Compact Construction.
- 2- It is Able to Carry Huge Current Capacity to The system.
- 3- Unlike Cable System Busduct Has Out Standing Features for Future Expansion.
- 4- Unlike Cable System Busduct is Able to Distribute The Electricity Easily Through its Plug-in Box or Tap Off.
- 5- Busduct System Does not Need Attention During the Maintenance ( it is Maintenance Free).
- 6- High Ingress of Protection (IP) IP 54 Up to Ip 68.
- 7- Environmentally Friendly.
- 8- High Short Circuit Strength Capacity.
- 9- Simple and Easy to Installation.
- 10- Low Voltage Drop.
- 11- Fire Stop System ( has the Ability to Stop any Fire Propagation)
- 12- High Thermal And Heat Transfer Capability.
- 13- Withstand against Mechanical Impact.



BUSDUCT CATALOGUE

[www.aftiran.ir](http://www.aftiran.ir)

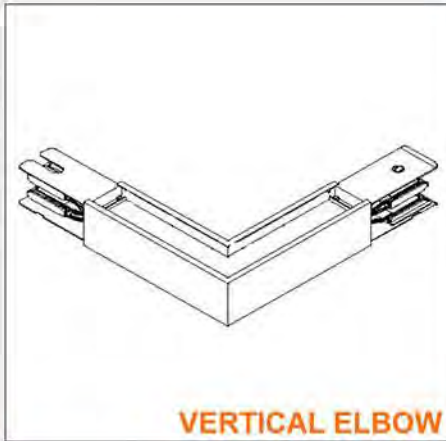
Madoben tower - Namakabroud

Morvarid tower -Tehran

Aseman Airline Tower -Tehran



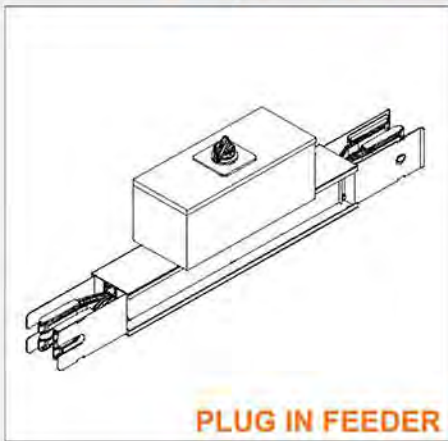
**STRAIGHT FEEDER**



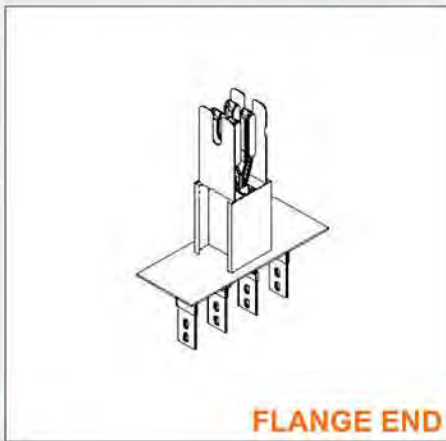
**VERTICAL ELBOW**



**HORIZONTAL ELBOW**



**PLUG IN FEEDER**



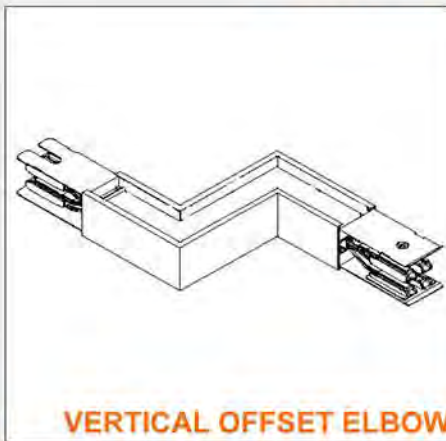
**FLANGE END**



**VERTICAL TEE ELBOW**



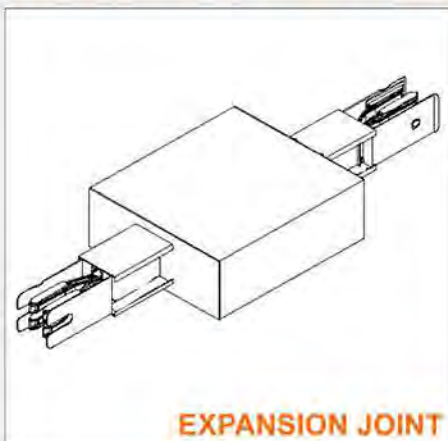
**HORIZONTAL OFFSET ELBOW**



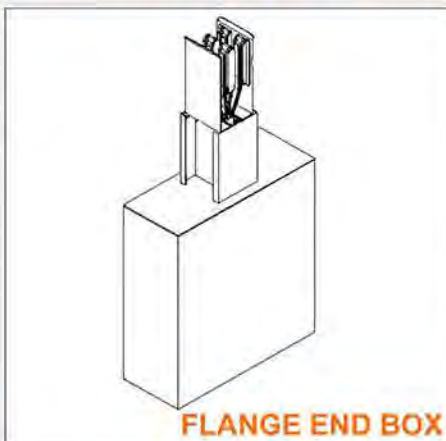
**VERTICAL OFFSET ELBOW**



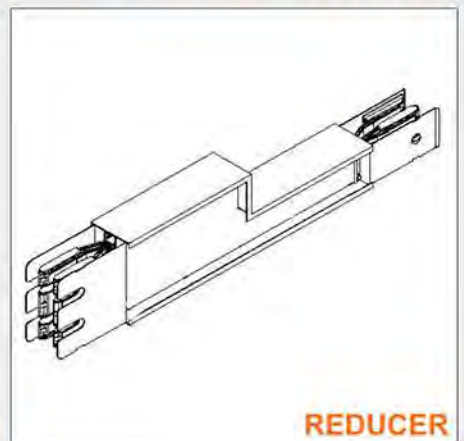
**COMBINATION ELBOW**



**EXPANSION JOINT**

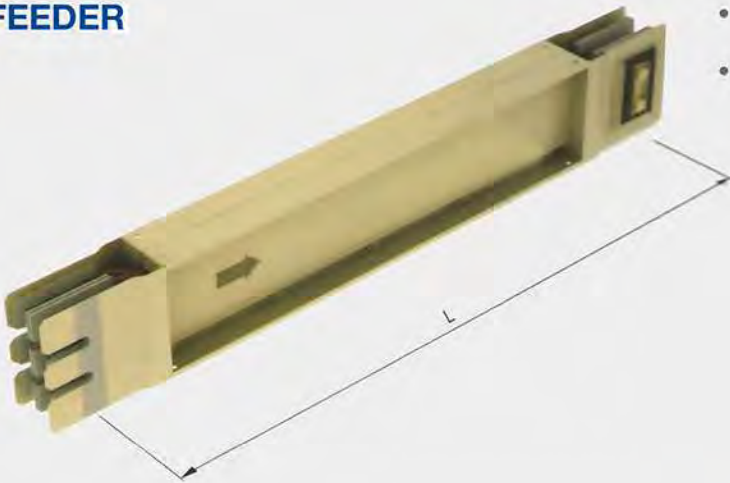


**FLANGE END BOX**



**REDUCER**

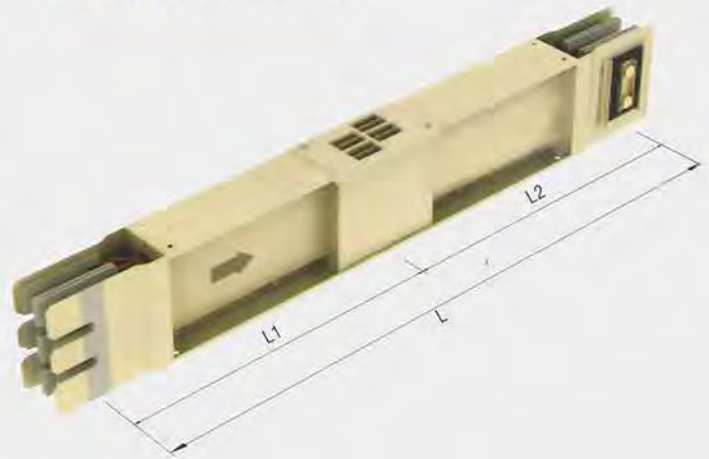
### FEEDER



- Standard length (L): 3000mm.
- Min. length (L): 500mm.

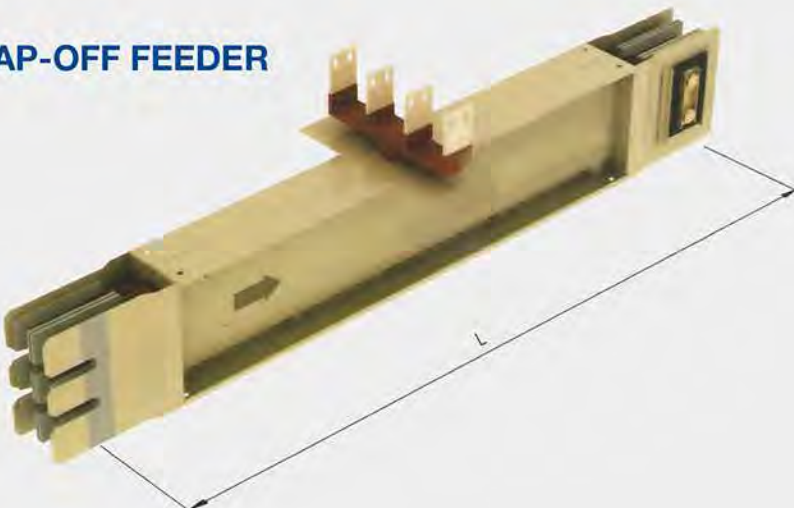
### PLUG-IN FEEDER

- Standard length (L): 3000mm.
- Plug-in holes can be provided on both side of the busduct.
- The hole position are determined by the space between the plug-in boxes and the length between the boxes and joint points.
- A branch exceeding 250A belongs to tap-off box type. Standard dimensions of Plug-in Busduct (Copper /Aluminum) are as follow:



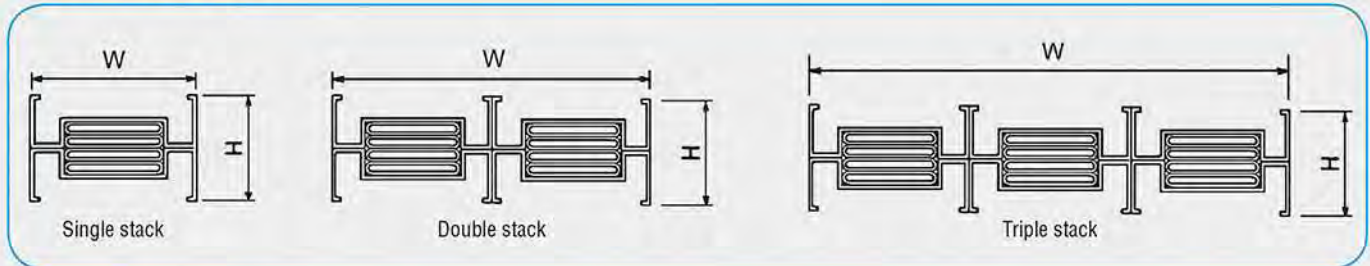
Conductor	L1 (mm)	L2 (mm)	Hole to Hole (mm)	Hole Qty
Copper/Aluminum	1500	1500	575	1

### TAP-OFF FEEDER



- Standard length (L): 3000mm.
- Min. length (L): 1200mm.
- Max. number of tap-off: 3 tap-offs in 3000mm.
- A branch of 400A & above belongs to a tap-off type.

## 1. DIMENSIONS



### Copper Conductor

Ampere (A)	Conductor	Width	Dimension(mm)						Weight(kg/m)					
			Height						Indoor Busduct			Outdoor Busduct		
			Indoor Busduct			Outdoor Busduct			Indoor Busduct			Outdoor Busduct		
3W	4W	5W	3W	4W	5W	3W	4W	5W	3W	4W	5W	3W	4W	5W
400	4x40-1	115	100	120	140	190	210	230	11.0	13.2	15.5	15.5	17.8	20.0
630	5x55-1	130	100	120	140	190	210	230	14.5	17.8	21.2	19.0	22.3	25.7
800	6x55-1	130	100	120	140	190	210	230	16.1	20.2	23.9	20.7	24.5	28.4
1000	6x75-1	150	100	120	140	190	210	230	20.1	25.1	30.1	24.6	29.6	34.6
1250	6x100-1	175	100	120	140	190	210	230	25.0	31.4	37.8	29.5	35.9	42.3
1500	6x125-1	200	100	120	140	190	210	230	29.8	37.7	45.5	34.4	42.2	50.0
1600	6x150-1	225	100	120	140	190	210	230	34.7	44.0	53.2	39.3	48.5	57.7
2000	6x185-1	260	100	120	140	190	210	230	41.5	52.8	64.0	46.1	57.3	68.5
2500	6x230-1	305	100	120	140	190	210	230	50.7	64.4	78.2	55.2	68.9	82.7
3200	6x150-2	450	100	120	140	190	210	230	69.5	87.9	106.4	74.0	92.5	110.9
3500	6x175-2	500	100	120	140	190	210	230	79.3	100.6	121.8	83.8	105.1	126.4
4000	6x185-2	520	100	120	140	190	210	230	83.2	105.6	128.0	87.7	110.1	132.5
4500	6x220-2	590	100	120	140	190	210	230	96.9	123.2	149.6	101.4	127.8	154.1
5000	6x230-2	610	100	120	140	190	210	230	101.3	128.8	156.3	105.9	133.3	160.8
6300	6x185-3	780	100	120	140	190	210	230	124.8	158.4	192.0	129.3	162.9	196.5

### Aluminum Conductor

Ampere (A)	Conductor	Width	Dimension(mm)						Weight(kg/m)					
			Height						Indoor Busduct			Outdoor Busduct		
			Indoor Busduct			Outdoor Busduct			Indoor Busduct			Outdoor Busduct		
3W	4W	5W	3W	4W	5W	3W	4W	5W	3W	4W	5W	3W	4W	5W
200	6x35-1	110	100	120	140	190	210	230	8.0	9.6	11.1	12.6	14.2	15.7
400	6x55-1	130	100	120	140	190	210	230	9.6	11.4	13.1	14.3	16.0	17.7
630	6x75-1	150	100	120	140	190	210	230	11.2	13.2	15.3	15.8	17.8	19.9
800	6x100-1	175	100	120	140	190	210	230	13.1	15.6	18.1	17.7	20.2	22.7
1000	6x125-1	200	100	120	140	190	210	230	15.1	18.0	20.9	19.7	22.6	25.5
1250	6x175-1	250	100	120	140	190	210	230	19.0	22.7	26.5	23.6	27.3	31.1
1500	6x185-1	260	100	120	140	190	210	230	19.7	23.7	27.6	24.3	28.3	32.2
1600	6x240-1	315	100	120	140	190	210	230	24.0	28.9	33.7	28.6	33.5	38.3
2000	6x150-2	450	100	120	140	190	210	230	34.0	40.7	47.3	38.6	45.3	51.9
2500	6x185-2	520	100	120	140	190	210	230	39.5	47.3	55.2	44.1	51.9	59.8
3200	6x220-2	590	100	120	140	190	210	230	44.9	53.9	63.0	49.5	58.5	67.6
3500	6x240-2	630	100	120	140	190	210	230	48.0	57.7	67.5	52.6	62.3	72.1
4000	6x185-3	780	100	120	140	190	210	230	59.2	71.0	82.7	63.8	75.6	87.4
4500	6x240-3	945	100	120	140	190	210	230	72.0	86.6	101.2	76.6	91.2	105.8



**Simple to Install  
with Less Cost**

AFT Busduct system is simple to install with "Single Bolt" joint system, whereby all the joint sections are to be tighten with MF double headed bolt. This design is mainly to ease the installation work and to reduce the cost of installation.

**Compact & Lightweight**

The construction of AFT Busduct system is totally different from the conventional type of busways (air insulated type) whereby it is fully insulated based on compact design and lightweight.

**Ingress of Protection (IP)**

The housing is totally enclosed with it's fully insulated conductor to provide dust, water & insect protection, as according to IEC 529 standard. Thus the degree of protection shall be min. IP 54 and up to max. IP68, which is widely applicable to power plants, petrochemical, LNG, oil & gas plants.

**Fast Delivery**

AFT Busduct system comes in standard design which always comply to customers' fast delivery requirement.

The insulation for the entire conductor of AFT Busduct system was made from High Voltage (HV) insulation by extruding process, enable to withstand Class F 155 deg. Celcius which provides high electrical and mechanical properties.

#### Insulation Material

AFT Busduct system has higher short circuit strength capacity whereby it can withstand more than twice the rated short circuit current specified by IEC standards without any mechanical default.

#### Short Circuit Strength

AFT Busduct system has excellent low voltage drop values, due to its high technology design and compact type of construction with non-magnetic housing and low resistance.

#### Low Voltage Drop

The housing is fully enclosed based on compact type of construction that provides a stable temperature throughout the entire AFT Busduct system, no matter with horizontal or vertical type of installation.

#### Housing Construction

AFT BUSWAY system has the ability to stop any fire propagation, due to its compact design which provides un-circulated air inside the AFT BUSWAY.

#### Fire Stop System

## STANDARD APPLICATION

IEC 6043142 JIS C 8364 / KS C 8450 / BS 5486 AC rated voltage : up to AC 1000V, 5Q/60Hz DC rated voltage : up to DC 1000V Rated current: up to 6300A

Configuration : 1PH2W, 1PH3W, 3PH3W, 3PH4W, 3PH5W and 3PH6W


## SERVICE CONDITION

Temperature : -15 ~ 50 deg. Celcius

Suitable for loading to full load current without deration, for an ambient temperature up to 50 deg. C.

## QUALITY

AFT Busduct system was fully tested and verified by a qualified testing team as according to the Quality Control Management System, in order to meet customer's stringent requirements. Further more, AFT Busduct system was also certified by other external independent test authorities.



Labkhand Tower-tehran

Setareh Baran Tower - Tabriz

Blour Tower - Tehran

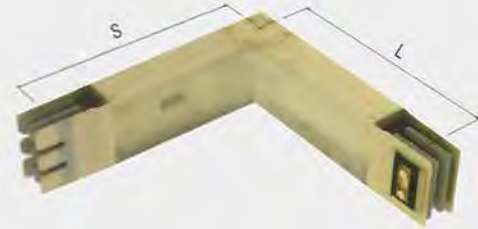
Baran Tower - Tehran

**VERTICAL ELBOW**



Amper (A)	Standard (mm) S * L	Minimum (mm) S * L
200	500 x 500	325 x 325
400	500 x 500	330 x 330
630	500 x 500	330 x 330
800	500 x 500	340 x 340
1000	500 x 500	353 x 353
1250	500 x 500	365 x 365
1500	500 x 500	378 x 378
1600	500 x 500	395 x 395
2000	500 x 500	423 X 423
2500	500 x 500	490 x 490
3200	700 x 700	515 x 515
3500	700 x 700	525 x 525
4000	700 x 700	580 x 580
4500	700 x 700	580 x 580
5000	700 x 700	670 x 670

**HORIZONTAL ELBOW**



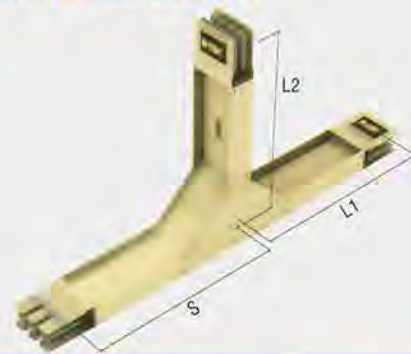
Amper (A)	Standard (mm) S * L	Minimum (mm) S * L
200	500 x 500	300 x 300
400	500 x 500	300 x 300
630	500 x 500	300 x 300
800	500 x 500	300 x 300
1000	500 x 500	300 x 300
1250	500 x 500	300 x 300
1500	500 x 500	300 x 300
1600	500 x 500	300 x 300
2000	500 x 500	300 x 300
2500	500 x 500	300 x 300
3200	500 x 500	300 x300
3500	500 x 500	300 x 300
4000	500 x 500	300 x 300
4500	500 x 500	300 x 300
5000	500 x 500	300 x 300

**VERTICAL TEE ELBOW**



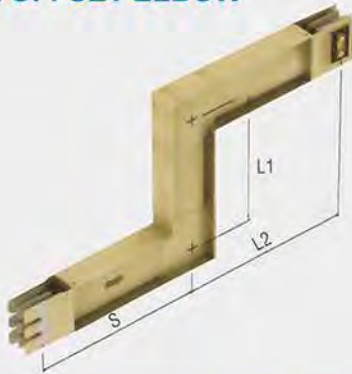
Amper (A)	Standard (mm) S * L1 * L2	Minimum (mm) S * L1 * L2
200	500 x 500 x 500	293 x 293 x 293
400	500 x 500 x 500	300 x 300 x 300
630	500 x 500 x 500	300 x 300 x 300
800	500 x 500 x 500	310 x 310 x 310
1000	500 x 500 x 500	323 x 323 x 323
1250	500 x 500 x 500	335 x 335 x 335
1500	500 x 500 x 500	348 x 348 x 348
1600	500 x 500 x 500	365 x 365 x 365
2000	500 x 500 x 500	393 x 393 x 393
2500	500 x 500 x 500	460 x 460 x 460
3200	750 x 750 x 750	485 x 485 x 485
3500	750 x 750 x 750	530 x 530 x 530
4000	750 x 750 x 750	530 x 530 x 530
4500	750 x 750 x 750	550 x 550 x 550
5000	750 x 750 x 750	670 x 670 x 670

**HORIZONTAL TEE ELBOW**



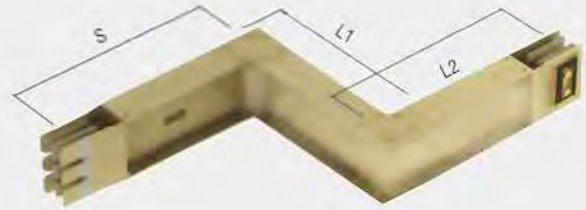
Amper (A)	Standard (mm) S * L1 * L2	Minimum (mm) S * L1 * L2
200	500 x 500 x 500	350 x 350 x 350
400	500 x 500 x 500	360 x 360 x 360
630	500 x 500 x 500	360 x 360 x 360
800	500 x 500 x 500	380 x 380 x 380
1000	500 x 500 x 500	400 x 400 x 400
1250	500 x 500 x 500	300 x 210 x 300
1500	600 x 600 x 600	460 x 460 x 460
1600	600 x 600 x 600	500 x 500 x 500
2000	600 x 600 x 600	560 x 560 x 560
2500	600 x 600 x 600	460 x 460 x 460
3200	500 x 500 x 500	300 x 210 x 300
3500	600 x 600 x 600	500 x 500 x 500
4000	500 x 500 x 500	300 x 210 x 300
4500	600 x 600 x 600	560 x 560 x 560
5000	600 x 600 x 600	500 x 500 x 500

**VERTICAL OFFSET ELBOW**



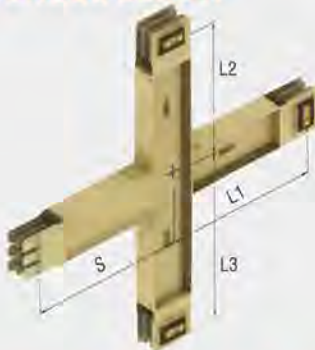
Amper (A)	Standard (mm) S * L1 * L2	Minimum (mm) S * L1 * L2
200	500 x 500 x 500	323 x 260 x 323
400	500 x 500 x 500	300 x 275 x 330
630	500 x 500 x 500	330 x 275 x 330
800	500 x 500 x 500	340 x 295 x 340
1000	500 x 500 x 500	353 x 320 x 353
1250	500 x 500 x 500	365 x 345 x 365
1500	500 x 500 x 500	378 x 370 x 378
1600	500 x 500 x 500	395 x 405 x 395
2000	500 x 500 x 500	423 x 460 x 423
2500	500 x 500 x 500	490 x 370 x 490
3200	750 x 750 x 750	515 x 395 x 515
3500	750 x 750 x 750	525 x 405 x 525
4000	750 x 750 x 750	560 x 440 x 560
4500	750 x 750 x 750	580 x 460 x 580
5000	750 x 750 x 750	670 x 450 x 670

**HORIZONTAL OFFSET ELBOW**



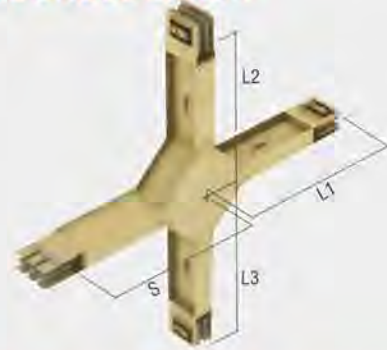
Amper (A)	Standard (mm) S * L1 * L2	Minimum (mm) S * L1 * L2
200	500 x 500 x 500	300 x 210 x 300
400	500 x 500 x 500	300 x 210 x 300
630	500 x 500 x 500	300 x 210 x 300
800	500 x 500 x 500	300 x 210 x 300
1000	500 x 500 x 500	300 x 210 x 300
1250	500 x 500 x 500	300 x 210 x 300
1500	500 x 500 x 500	300 x 210 x 300
1600	500 x 500 x 500	300 x 210 x 300
2000	500 x 500 x 500	300 x 210 x 300
2500	500 x 500 x 500	300 x 210 x 300
3200	500 x 500 x 500	300 x 210 x 300
3500	500 x 500 x 500	300 x 210 x 300
4000	500 x 500 x 500	300 x 210 x 300
4500	500 x 500 x 500	300 x 210 x 300
5000	500 x 500 x 500	300 x 210 x 300

**VERTICAL CROSS ELBOW**



Amper (A)	Standard (mm) S * L1 * L2 * L3	Minimum (mm) S * L1 * L2 * L3
200	500 x 500 x 500 x 500	293 x 293 x 293 x 293
400	500 x 500 x 500 x 500	300 x 300 x 300 x 300
630	500 x 500 x 500 x 500	300 x 300 x 300 x 300
800	500 x 500 x 500 x 500	310 x 310 x 310 x 310
1000	500 x 500 x 500 x 500	323 x 323 x 323 x 323
1250	500 x 500 x 500 x 500	335 x 335 x 335 x 335
1500	500 x 500 x 500 x 500	348 x 348 x 348 x 348
1600	500 x 500 x 500 x 500	365 x 365 x 365 x 365
2000	500 x 500 x 500 x 500	393 x 393 x 393 x 393
2500	500 x 500 x 500 x 500	460 x 460 x 460 x 460
3200	750 x 750 x 750 x 750	485 x 485 x 485 x 485
3500	750 x 750 x 750 x 750	530 x 530 x 530 x 530
4000	750 x 750 x 750 x 750	530 x 530 x 530 x 530
4500	750 x 750 x 750 x 750	550 x 550 x 550 x 550
5000	750 x 750 x 750 x 750	670 x 670 x 670 x 670

**HORIZONTAL CROSS ELBOW**



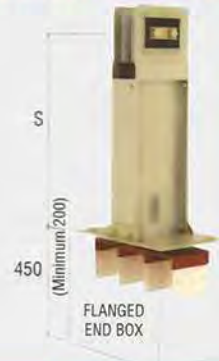
Amper (A)	Standard (mm) S * L1 * L2 * L3	Minimum (mm) S * L1 * L2 * L3
200	500 x 500 x 500 x 500	420 x 420 x 420 x 420
400	500 x 500 x 500 x 500	450 x 450 x 450 x 450
630	500 x 500 x 500 x 500	450 x 450 x 450 x 450
800	600 x 600 x 600 x 600	490 x 490 x 490 x 490
1000	600 x 600 x 600 x 600	540 x 540 x 540 x 540
1250	500 x 500 x 500 x 500	430 x 430 x 430 x 430
1500	800 x 800 x 800 x 800	630 x 630 x 630 x 630
1600	800 x 800 x 800 x 800	700 x 700 x 700 x 700
2000	800 x 800 x 800 x 800	800 x 800 x 800 x 800
2500	800 x 800 x 800 x 800	630 x 630 x 630 x 630
3200	600 x 600 x 600 x 600	495 x 495 x 495 x 495
3500	800 x 800 x 800 x 800	700 x 700 x 700 x 700
4000	600 x 600 x 600 x 600	530 x 530 x 530 x 530
4500	800 x 800 x 800 x 800	800 x 800 x 800 x 800
5000	800 x 800 x 800 x 800	700 x 700 x 700 x 700

**COMBINATION ELBOW**



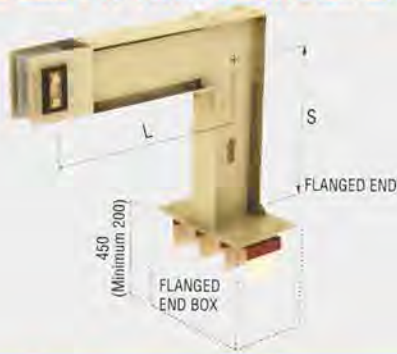
Amper (A)	Standard (mm) S * L1 * L2	Minimum (mm) S * L1 * L2
200	500 x 500 x 500	300 x 233 x 323
400	500 x 500 x 500	300 x 240 x 330
630	500 x 500 x 500	300 x 240 x 330
800	500 x 500 x 500	300 x 250 x 340
1000	500 x 500 x 500	300 x 263 x 353
1250	500 x 500 x 500	300 x 275 x 365
1500	500 x 500 x 500	300 x 288 x 378
1600	500 x 500 x 500	300 x 305 x 395
2000	500 x 500 x 500	300 x 333 x 423
2500	500 x 500 x 500	300 x 400 x 490
3200	700 x 700 x 700	300 x 425 x 515
3500	700 x 700 x 700	300 x 435 x 525
4000	700 x 700 x 700	300 x 470 x 560
4500	700 x 700 x 700	300 x 490 x 580
5000	700 x 700 x 700	300 x 580 x 670

**FEEDER WITH FLANGED END**



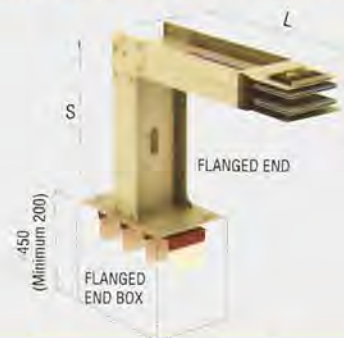
Amper (A)	Standard (mm) S	Minimum (mm) S
200	500	250
400	500	250
630	500	250
800	500	250
1000	500	250
1250	500	250
1500	500	250
1600	500	250
2000	500	250
2500	500	250
3200	500	250
3500	500	250
4000	500	250
4500	500	250
5000	500	250

**VERTICAL ELBOW WITH FLANGED END**



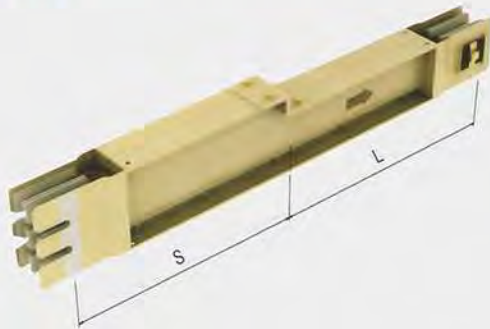
Amper (A)	Standard (mm) S * L	Minimum (mm) S * L
200	500 x 500	178 x 323
400	500 x 500	185 x 330
630	500 x 500	185 x 330
800	500 x 500	195 x 340
1000	500 x 500	208 x 353
1250	500 x 500	220 x 365
1500	500 x 500	233 x 378
1600	500 x 500	278 x 423
2000	500 x 500	320 x 465
2500	500 x 500	345 x 490
3200	700 x 700	370 x 515
3500	700 x 700	378 x 525
4000	700 x 700	415 x 560
4500	700 x 700	435 x 580
5000	700 x 700	520 x 670

**HORIZONTAL ELBOW WITH FLANGED END**



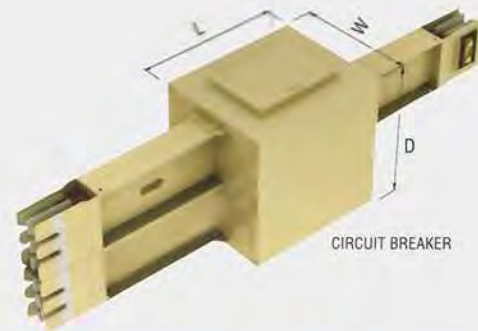
Amper (A)	Standard (mm) S * L	Minimum (mm) S * L
200	500 x 500	180 x 300
400	500 x 500	180 x 300
630	500 x 500	180 x 300
800	500 x 500	180 x 300
1000	500 x 500	180 x 300
1250	500 x 500	180 x 300
1500	500 x 500	180 x 300
1600	500 x 500	180 x 300
2000	500 x 500	180 x 300
2500	500 x 500	180 x 300
3200	500 x 500	180 x 300
3500	500 x 500	180 x 300
4000	500 x 500	180 x 300
4500	500 x 500	180 x 300
5000	500 x 500	180 x 300

**REDUCER**



Ampere (A)	Standard (mm) S x L	Minimum (mm) S x L
200	500 x 500	300 x 300
400	500 x 500	300 x 300
630	500 x 500	300 x 300
800	500 x 500	300 x 300
1000	500 x 500	300 x 300
1250	500 x 500	300 x 300
1500	500 x 500	300 x 300
1600	500 x 500	300 x 300
2000	700 x 700	450 x 450
2500	700 x 700	450 x 450
3200	700 x 700	450 x 450
3500	700 x 700	450 x 450
4000	700 x 700	450 x 450
4500	700 x 700	450 x 450
5000	700 x 700	450 x 450

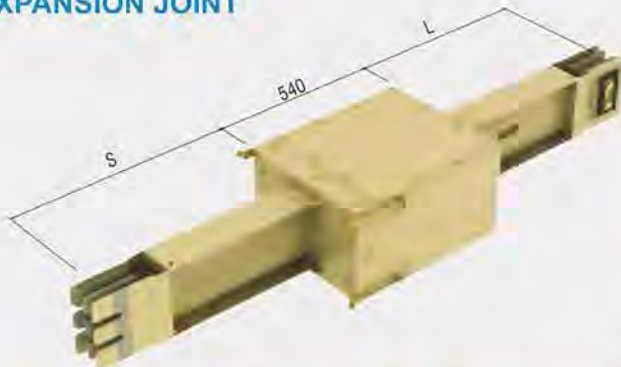
**REDUCER WITH CIRCUIT BREAKER**



Ampere (A)	Minimum (mm) W x L x D
200	450 x 1180 x 250
400	450 x 1180 x 250
630	450 x 1180 x 250
800	450 x 1340 x 270
1000	450 x 1340 x 295
1250	450 x 1365 x 320
1500	450 x 1365 x 345
1600	450 x 1425 x 380
2000	540 x 1425 x 520
2500	540 x 1500 x 570
3200	540 x 1500 x 570
3500	
4000	
4500	
5000	

Dimension is subject to different circuit breaker

**EXPANSION JOINT**



Ampere (A)	Standard (mm) S x L	Minimum (mm) S x L
200	500 x 500	300 x 300
400	500 x 500	300 x 300
630	500 x 500	300 x 300
800	500 x 500	300 x 300
1000	500 x 500	300 x 300
1250	500 x 500	300 x 300
1500	500 x 500	300 x 300
1600	500 x 500	300 x 300
2000	500 x 500	300 x 300
2500	500 x 500	300 x 300
3200	500 x 500	300 x 300
3500	500 x 500	300 x 300
4000	500 x 500	300 x 300
4500	500 x 500	300 x 300
5000	500 x 500	300 x 300

**NECESSITY OF EXPANSION**

The busduct expands and contracts due to the heat by current loading and the ambient temperature. The elongation of the busduct is approximately  $1.8 \times 10^{-2} \text{mm/m/}^\circ\text{C}$ . For example, when the ambient temperature is  $30^\circ\text{C}$  and the temperature rise of busduct is  $40^\circ\text{C}$ , we have the below result of elongation for the busduct is as follows.

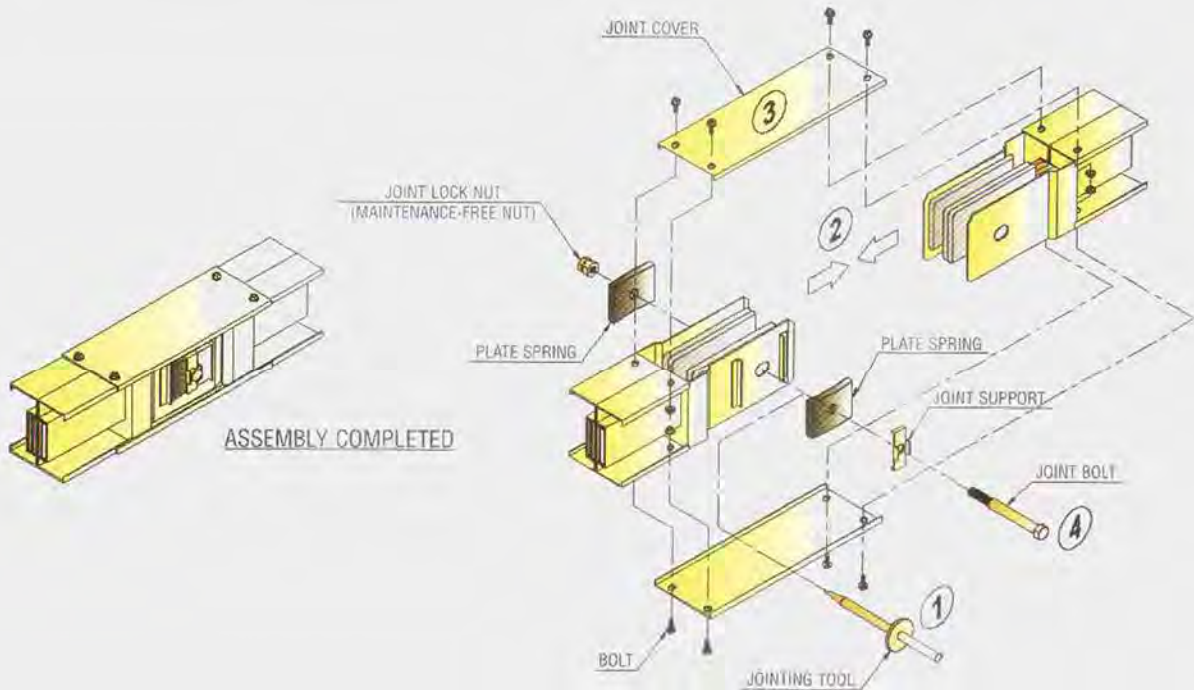
►  $1.8 \times 10^{-2} \times (30 + 40) = 1.26 \text{mm/m}$

Moreover, there is a substance in respect to the busduct elongation by temperature rise, where the difference in the elongation between the conductor and the housing will result from a difference in their coefficients of expansion and temperature.

\* This fitting is designed to absorb 25mm longitudinal expansion.

## JOINTING METHOD

The most important section of the busduct system is the jointing part in order to avoid heating, voltage drop and etc. The following procedures are to ensure a continuous satisfactory operation and integrity of the busduct system.

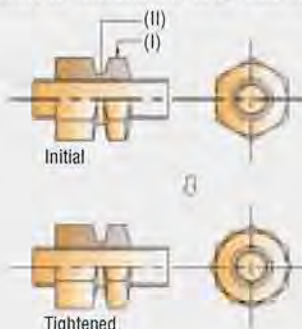


- 3.1 Ensure the jointing direction of load and supply sides are confronting each other before jointing. Place the inserting tool in order to make sure that both holes of the busbar conductor are aligned with each other.
- 3.2 Make sure the contact surfaces of the busbar conductor are smooth and clean to ensure a good electrical contact.
- 3.3 Insert the joint bolt completely with the joint support and plate spring. Once through the busduct jointing, the hole will be closed with plate spring and maintenance free nut.
- 3.4 Make sure that the bolts have a complete and proper fastening in order to get enough tightening. Revolve the outer nut clockwise until the neck part of the bolt breaks.
- 3.5 Fix the joint covers at the front and the back of the jointing part with bolt and nut. The joint covers have four housing mounting holes that contain twist-outs that would permit the expansion or contraction of the joint.

## MAINTENANCE FREE NUTS

AFTSCM Busduct System provides a reliable and complete fastening of joint bolts, with a maintenance-free nut system. The maintenance-free nut system, as shown in the below diagram, consists of an inner Thread and Torque Limited Neck.

When a MF NUT is fastened by the torque wrench with the requirement torque of 1500kg•cm and simultaneously. Later, the outer NUT head, which can be tightened with any long-handle wrench until the neck is twisted off and reaches the locked nut prerequisite.



## SAFETY POINT

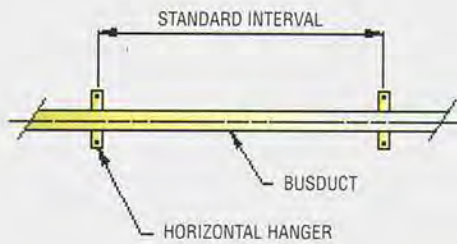
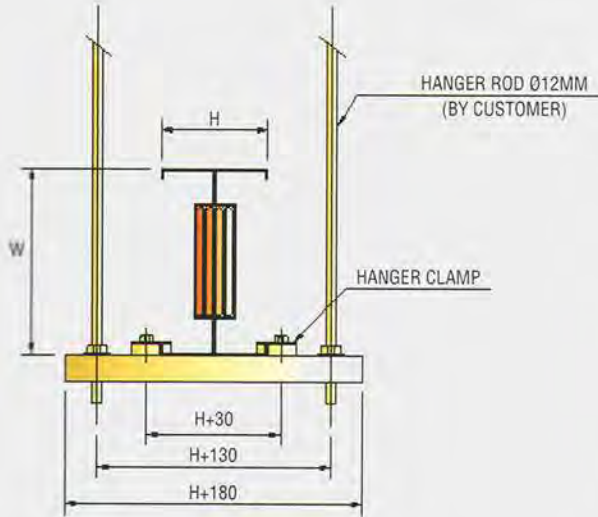
1. Upon fastening and locking of joint bolts, Nut (I) will either be taken off or dropped. This indicates a proper safety of a fastened locked Nut.
2. Lock with twisted force will remain even though Neck (II) is broken in the process.



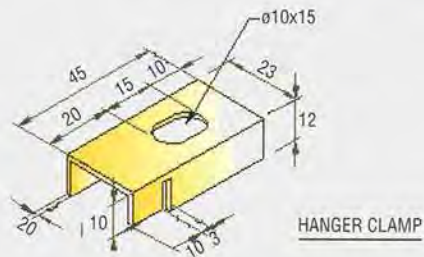
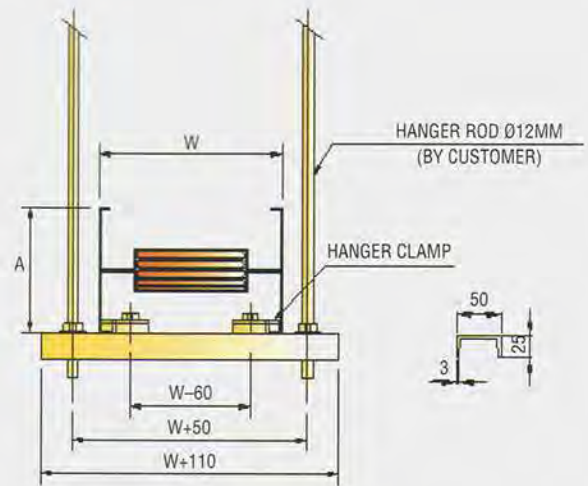


## HORIZONTAL HANGER

### Edgewise Installation



### Flatwise Installation



Ampere (A)		Stack	Dimension (mm)			
Copper	Aluminum		W	H		
				3W	4W	5W
630	200	1	110	100	120	140
800	400	1	130	100	120	140
1000	630	1	150	100	120	140
1250	800	1	175	100	120	140
1500	1000	1	200	100	120	140
-	1250	1	250	100	120	140
1600	-	1	225	100	120	140
2000	1500	1	260	100	120	140
-	1600	1	315	100	120	140
2500	-	1	305	100	120	140
3200	2000	2	450	100	120	140
3500	-	2	500	100	120	140
4000	2500	2	520	100	120	140
4500	3200	2	590	100	120	140
-	3500	2	630	100	120	140
5000	-	2	610	100	120	140
6300	4000	3	780	100	120	140
-	4500	3	945	100	120	140

### VERTICAL FIX HANGER

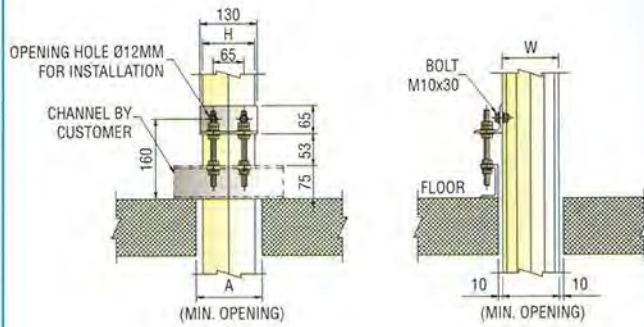


Figure 1.1

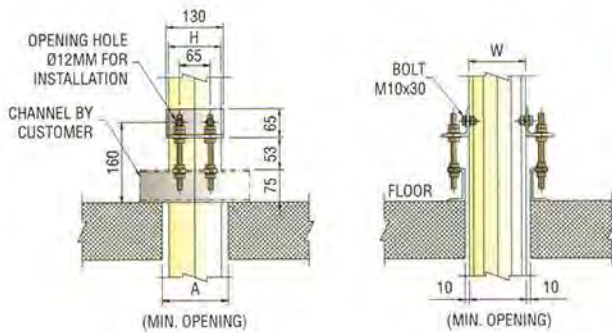


Figure 2.1

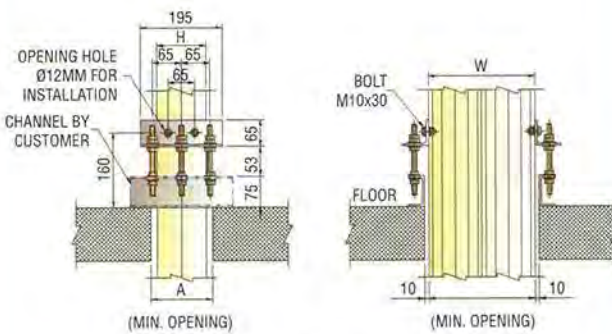


Figure 3.1

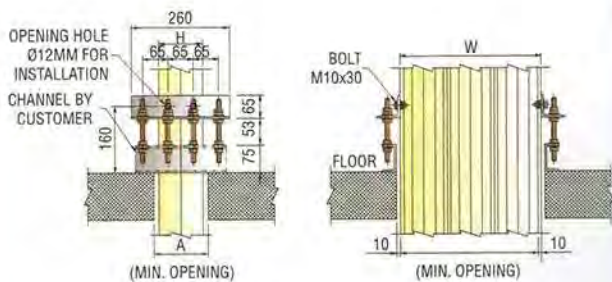


Figure 4.1

### VERTICAL SPRING HANGER

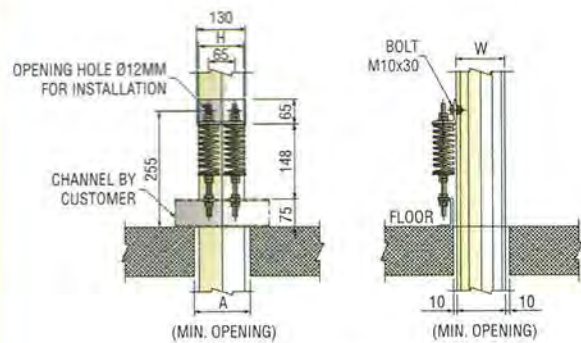


Figure 1.2

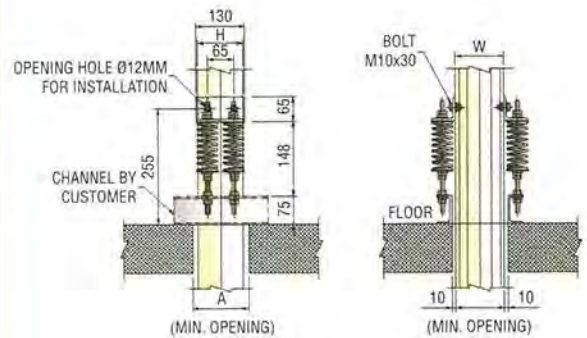


Figure 2.2

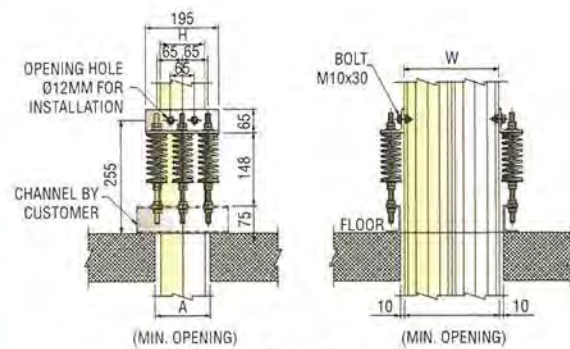


Figure 3.2

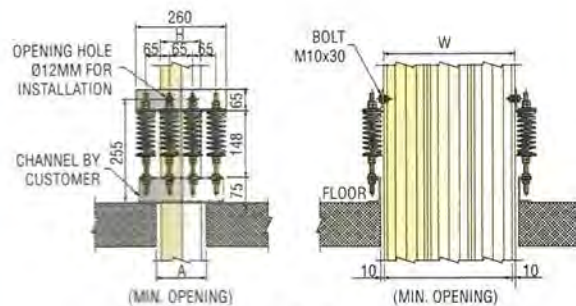
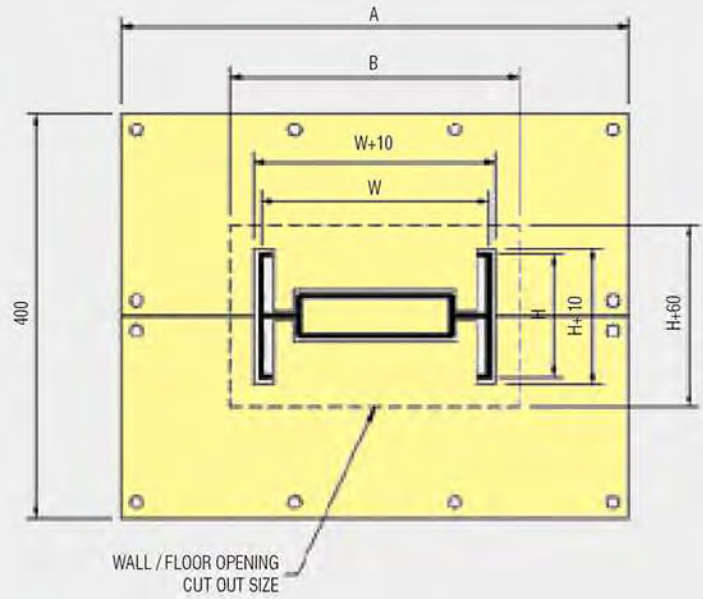


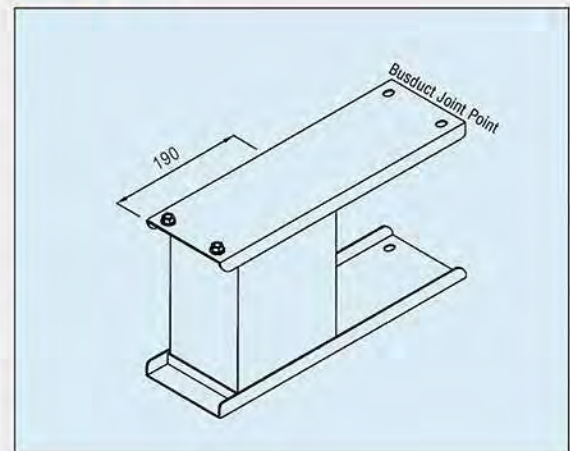
Figure 4.2

### WALL FLANGE / FLOOR FLANGE



Amper (A)		Stack	Dimension (mm)		
Copper	Aluminum		W	A	B
400	-	1	115	380	175
630	200	1	130	400	190
800	400	1	130	400	190
1000	630	1	150	420	210
1250	800	1	175	450	235
1500	1000	1	200	470	260
-	1250	1	250	520	310
1600	-	1	225	500	285
2000	1600	1	260	530	320
-	2000	1	315	590	375
2500	-	1	305	580	365
3200	2500	2	450	720	510
3500	-	2	500	770	560
4000	2500	2	520	790	580
4500	3200	2	590	860	650
-	3500	2	630	900	690
5000	-	2	610	880	670
6300	4000	3	780	1050	840
-	4500	3	945	1230	1005

### END CLOSURE

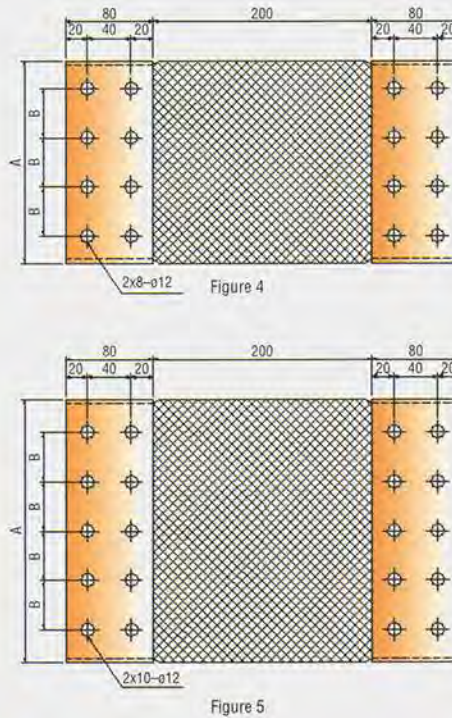
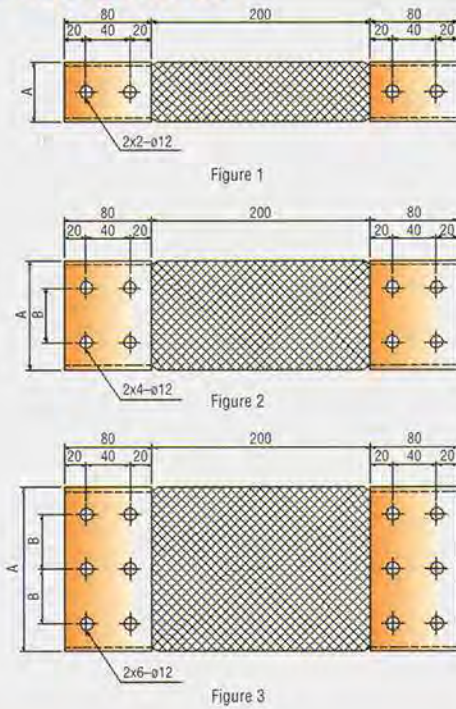


Ampere (A)		Fig.	Dimension (mm)						
Copper	Aluminum		W	H			A		
400	-	1.1	115	100	120	140	130	150	170
630	200		130	100	120	140	130	150	170
800	400	1.2	130	100	120	140	130	150	170
1000	630	1.2	150	100	120	140	130	150	170
1250	800		175	100	120	140	130	150	170
1500	1000	1.2	200	100	120	140	130	150	170
-	1250		250	100	120	140	130	150	170
1600	-	2.1	225	100	120	140	130	150	170
2000	1500	2.2	260	100	120	140	130	150	170
-	1600	2.2	315	100	120	140	130	150	170
2500	-		305	100	120	140	130	150	170

Ampere (A)		Fig.	Dimension (mm)						
Copper	Aluminum		W	H			A		
3200	2000	3.1	450	100	120	140	130	150	170
-	2500		520	100	120	140	130	150	170
-	3200	3.2	590	100	120	140	130	150	170
-	3500		630	100	120	140	130	150	170
-	4000	3.2	780	100	120	140	130	150	170
-	4500		945	100	120	140	130	150	170
3500	-	4.1	500	100	120	140	130	150	170
4000	-		520	100	120	140	130	150	170
4500	-	4.2	590	100	120	140	130	150	170
5000	-		610	100	120	140	130	150	170
6300	-	4.2	780	100	120	140	130	150	170

\* Vertical spring hanger is installed to support busduct in each floor. When the height between the stories exceeds 4meters, a middle support is required.

### FLEXIBLE CONDUCTOR



Amper (A)		Fig.	A (mm)	B (mm)	Thickness (mm)	Length (mm)
Copper	Aluminum					
400	-	1	40-1	-	8	360
630	200	1	55-1	-	8	360
800	400	1	55-1	-	8	360
1000	630	2	75-1	40	10	360
1250	800	2	100-1	50	10	360
1500	1000	3	125-1	40	10	360
-	1250	4	175-1	40	10	360
1600	-	3	150-1	50	10	360
2000	1500	4	185-1	45	10	360
-	1600	5	240-1	45	10	360

Amper (A)		Fig.	A (mm)	B (mm)	Thickness (mm)	Length (mm)
Copper	Aluminum					
2500	-	5	230-1	45	10	360
3200	2000	3	150-2	50	10	360
3500	-	4	175-2	40	10	360
4000	2500	4	185-2	45	10	360
4500	3200	5	220-2	45	10	360
-	3500	5	240-2	45	10	360
5000	-	5	230-2	45	10	360
6300	4000	4	185-3	45	10	360
-	4500	5	240-3	45	10	360

**Copper Conductor**

(Unit:  $10^{-5}\Omega/m$ )

Ampere Conductor (A)	Conductor (mm)	RDC	50Hz			60Hz		
			RAC	X	Z	RAC	X	Z
400	4x40-1	13.952	14.133	3.318	14.517	14.175	3.981	14.723
630	5x55-1	8.117	8.328	3.275	8.949	8.398	3.925	9.270
800	6x55-1	6.764	6.998	3.002	7.615	7.062	3.603	7.928
1000	6x75-1	4.961	5.214	2.354	5.721	5.278	2.825	5.986
1250	6x100-1	3.720	4.006	1.853	4.414	4.094	2.224	4.659
1500	6x125-1	2.976	3.291	1.527	3.628	3.370	1.833	3.836
1600	6x150-1	2.480	2.807	1.298	3.093	2.879	1.557	3.273
2000	6x185-1	2.011	2.342	1.071	2.575	2.405	1.285	2.727
2500	6x230-1	1.618	1.943	0.875	2.131	1.999	1.039	2.253
3200	6x150-2	1.240	1.404	0.667	1.554	1.439	0.801	1.647
3500	6x175-2	1.063	1.228	0.578	1.357	1.261	0.694	1.439
4000	6x185-2	1.006	1.171	0.549	1.293	1.203	0.658	1.371
4500	6x220-2	0.846	1.009	0.465	1.111	1.038	0.558	1.178
5000	6x230-2	0.809	0.972	0.456	1.074	1.000	0.546	1.139
6300	6x185-3	0.670	0.781	0.369	0.864	0.802	0.443	0.916

**Aluminum Conductor**

(Unit:  $10^{-5}\Omega/m$ )

Ampere Conductor (A)	Conductor (mm)	RDC	50Hz			60Hz		
			RAC	X	Z	RAC	X	Z
200	5x55-1	13.384	13.567	2.804	13.854	13.608	3.365	14.018
400	6x55-1	11.154	11.340	3.002	11.731	11.377	3.603	11.934
630	6x75-1	8.179	8.389	2.354	8.713	8.459	2.825	8.918
800	6x100-1	6.134	6.377	1.853	6.641	6.438	2.224	6.811
1000	6x125-1	4.908	5.162	1.527	5.383	5.228	1.883	5.557
1250	6x175-1	3.505	3.800	1.127	3.964	3.884	1.353	4.113
1500	6x185-1	3.316	3.618	1.071	3.773	3.699	1.285	3.916
1600	6x240-1	2.556	2.878	0.838	2.998	2.949	1.005	3.116
2000	6x150-2	2.045	2.178	0.667	2.278	2.224	0.801	2.364
2500	6x185-2	1.658	1.809	0.549	1.890	1.850	0.658	1.964
3200	6x220-2	1.394	1.553	0.465	1.621	1.590	0.558	1.685
3500	6x240-2	1.278	1.439	0.428	1.501	1.475	0.513	1.562
4000	6x185-3	1.105	1.206	0.369	1.261	1.233	0.443	1.310
4500	6x240-3	0.852	0.959	0.288	1.001	0.983	0.345	1.042



**FLANGED END**

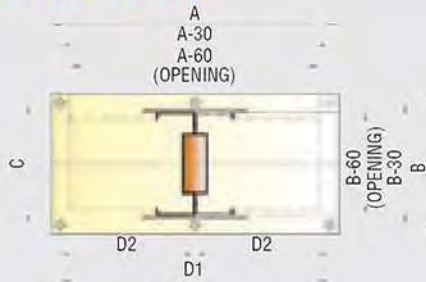


Figure 1

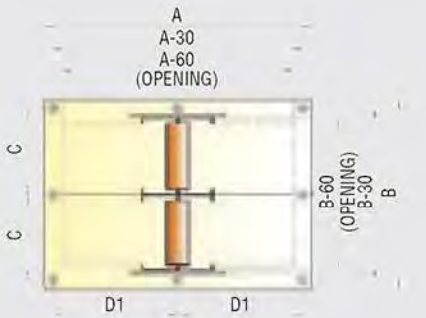


Figure 2

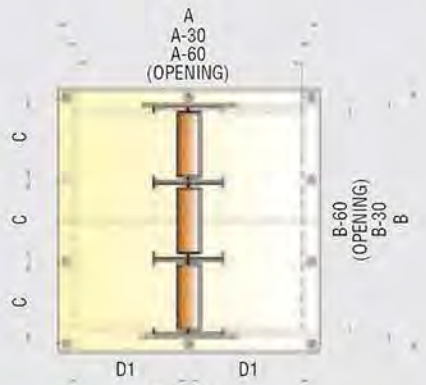
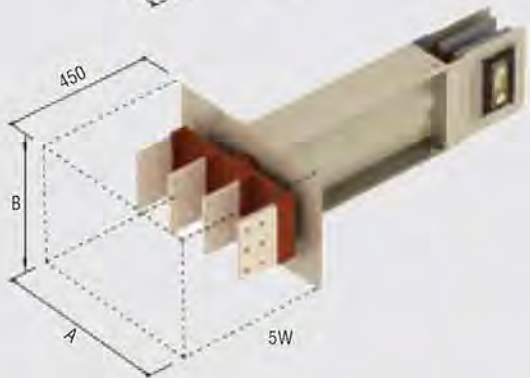
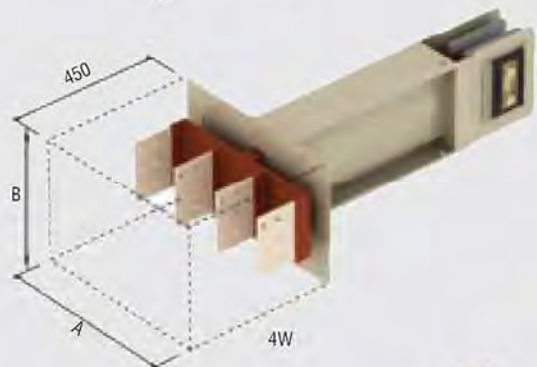
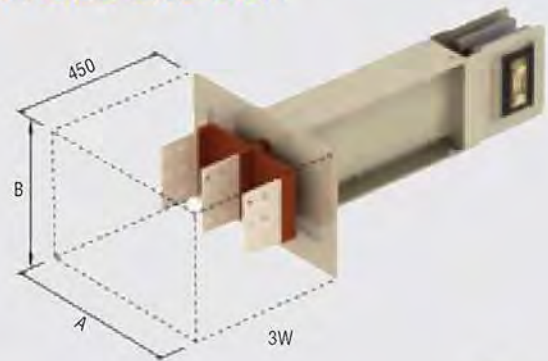


Figure 3

**FLANGED END BOX**



Ampere(A)		Fig.	3W					4W					5W				
Copper	Aluminum		A	B	C	D1	D2	A	B	C	D1	D2	A	B	C	D1	D2
400	-	1	350	175	145	320	-	450	175	145	-	210	540	175	145	-	255
630	200	1	350	190	160	320	-	450	170	140	-	210	540	190	160	-	255
800	400	1	350	190	160	320	-	450	190	160	-	210	540	190	160	-	255
1000	630	1	350	210	180	320	-	450	210	180	-	210	540	210	180	-	255
1250	800	1	350	235	205	320	-	450	235	205	-	210	540	235	205	-	255
1500	1000	1	350	260	230	320	-	450	260	230	-	210	540	260	230	-	255
-	1250	1	350	310	280	320	-	450	310	280	-	210	540	310	280	-	255
1600	-	1	350	285	255	320	-	450	285	255	-	210	540	285	255	-	255
2000	1500	1	350	320	290	320	-	450	320	290	-	210	540	320	290	-	255
-	1600	1	350	375	345	320	-	450	375	345	-	210	540	375	345	-	255
2500	-	1	350	365	335	320	-	450	365	335	-	210	540	365	335	-	255
3200	2000	2	410	510	240	190	-	540	510	240	255	-	540	510	240	255	-
3500	-	2	410	560	265	190	-	540	560	265	255	-	540	560	265	255	-
4000	2500	2	410	580	275	190	-	540	580	275	255	-	540	580	275	255	-
4500	3200	2	410	650	310	190	-	540	650	310	255	-	540	650	310	255	-
-	3500	2	410	690	330	190	-	540	690	330	255	-	540	690	330	255	-
5000	-	2	410	670	320	190	-	540	670	320	255	-	540	670	320	255	-
6300	4000	3	410	840	270	190	-	540	840	270	255	-	540	840	405	255	-
-	4500	3	410	1005	325	190	-	540	1005	325	255	-	540	1005	488	255	-

## PLUG-IN / TAP-OFF BOX

### A high degree of safety design

AFT Busduct System's plug-in box is designed for a high degree of safety and is available in internal and external operation.

The plug-in / tap-off box comes with the following features:

- A built-in interlock system that prevents opening of the cover when the device inside is in "ON" position.
- A safety provision that will prevent the installation or removal of a plug-in box when turned to "ON" position.
- Plug-in hole is equipped with Class H insulation block which is fixed to the busbar to prevent any vibration which may cause any humming sound.
- Around the handle, there will be indication of colour codes and international "ON" and "OFF" switches.

### Type of plug-in / tap-off box in a neutral position

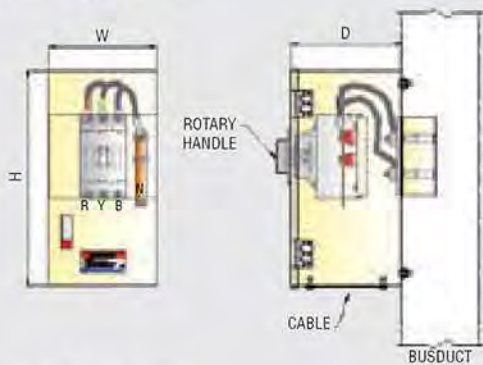
The neutral terminal alignment is provided on the right side of the standard plug-in box.

### Grounding

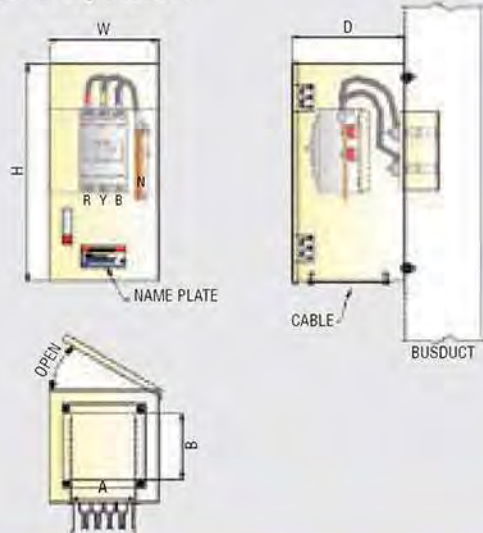
Before the jaws make contact with the busbar, the plug-in box enclosure shall make positive ground connection to the busduct housing.

#### Plug-in Box

##### • External Operation

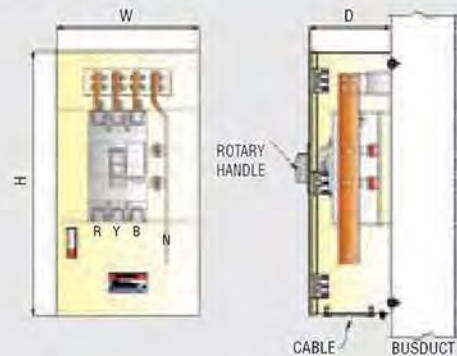


##### • Internal Operation

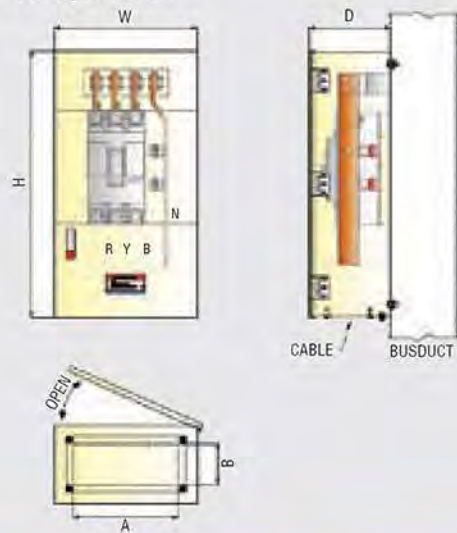


#### Tap-off Box

##### • External Operation



##### • Internal Operation



Frame	Dimension (mm)		
	W	H	D
30A ~ 100A	230	340	190
125A ~ 225A	230	370	230
250A ~ 400A	250	540	250
500A ~ 800A	360	840	250
1000A ~ 1250A	400	1000	300

Frame	Cable Hole (mm)	
	A	B
30A ~ 100A	120	60
125A ~ 225A	160	80
250A ~ 400A	180	120
500A ~ 800A	270	120
1000A ~ 1250A	300	150

Note: 1) Plug-in / Tap-off Box can be equipped with any brand of fused switches, MCCBs and etc, as per customer's requirement.  
 2) All dimensions are subjects to change without prior notice.

### Voltage Drop: Line to Line in Copper Conductor

(Unit : Volt/100m)

Ampere (A)	Conductor (mm)	RDC		50Hz					60Hz				
				RAC	X	Z	RAC	X	Z				
400	4x40-1	9.79	9.81	9.53	9.21	8.50	7.71	9.82	10.04	9.80	9.51	8.84	8.10
630	5x55-1	8.65	9.27	9.15	8.97	8.49	7.92	8.73	9.63	9.57	9.43	9.02	8.50
800	6x55-1	9.70	10.54	10.43	10.25	9.76	9.15	9.79	10.98	10.95	10.82	10.42	9.87
1000	6x75-1	9.03	9.91	9.82	9.67	9.23	8.68	9.14	10.36	10.35	10.25	9.89	9.40
1250	6x100-1	8.33	9.17	9.11	8.97	8.58	8.08	8.51	9.67	9.67	9.58	9.26	8.80
1500	6x125-1	8.55	9.42	9.36	9.22	8.82	8.30	8.76	9.96	9.95	9.86	9.53	9.06
1600	6x150-1	7.78	8.57	8.51	8.38	8.01	7.55	7.98	9.06	9.05	8.97	8.67	8.24
2000	6x185-1	8.11	8.92	8.85	8.72	8.33	7.84	8.33	9.44	9.43	9.34	9.01	8.56
2500	6x230-1	8.41	9.22	9.15	9.00	8.60	8.08	8.66	9.75	9.73	9.62	9.27	8.79
3200	6x150-2	7.78	8.62	8.56	8.44	8.09	7.63	7.98	9.11	9.12	9.04	8.75	8.34
3500	6x175-2	7.44	8.23	8.17	8.06	7.71	7.27	7.64	8.71	8.71	8.64	8.36	7.95
4000	6x185-2	8.11	8.96	8.90	8.77	8.40	7.91	8.33	9.49	9.49	9.40	9.09	8.65
4500	6x220-2	7.86	8.66	8.59	8.47	8.09	7.62	8.09	9.18	9.17	9.08	8.77	8.33
5000	6x230-2	8.42	9.30	9.24	9.10	8.71	8.21	8.66	9.86	9.85	9.77	9.44	8.98
6300	6x185-3	8.52	9.43	9.36	9.23	8.84	8.33	8.75	9.98	9.99	9.90	9.58	9.12

### Voltage Drop: Line to Line in Aluminum Conductor

(Unit : Volt/100m)

Ampere (A)	Conductor (mm)	RDC		50Hz			60Hz						
				RAC	X	Z	RAC	X	Z				
200	6x35-1	9.40	9.31	9.01	8.69	7.97	7.19	9.43	9.50	9.24	8.94	8.26	7.52
400	6x55-1	11.78	11.97	11.66	11.30	10.48	9.57	11.82	12.27	12.02	11.71	10.95	10.09
630	6x75-1	11.62	11.88	11.60	11.26	10.47	9.58	11.72	12.26	12.03	11.73	11.00	10.16
800	6x100-1	11.05	11.34	11.08	10.76	10.02	9.19	11.15	11.71	11.51	11.23	10.56	9.77
1000	6x125-1	10.73	11.04	10.79	10.49	9.78	8.98	10.87	11.49	11.30	11.04	10.40	9.65
1250	6x175-1	9.87	10.16	9.93	9.65	9.00	8.27	10.09	10.61	10.43	10.18	9.57	8.87
1500	6x185-1	10.03	10.32	10.09	9.80	9.14	8.39	10.25	10.78	10.59	10.34	9.72	9.00
1600	6x240-1	9.97	10.24	10.00	9.72	9.05	8.30	10.22	10.71	10.52	10.26	9.64	8.91
2000	6x150-2	9.43	9.75	9.54	9.28	8.66	7.97	9.63	10.18	10.01	9.79	9.22	8.55
2500	6x185-2	10.03	10.35	10.13	9.85	9.19	8.45	10.25	10.82	10.64	10.39	9.78	9.07
3200	6x220-2	9.41	9.70	9.49	9.22	8.60	7.90	9.64	10.15	9.97	9.74	9.16	8.49
3500	6x240-2	9.97	10.27	10.04	9.75	9.10	8.35	10.22	10.75	10.56	10.31	9.69	8.97
4000	6x185-3	9.40	9.71	9.50	9.25	8.63	7.94	9.61	10.15	9.99	9.76	9.19	8.53
4500	6x240-3	8.31	8.56	8.37	8.14	7.59	6.98	8.51	8.96	8.81	8.60	8.09	7.50

### Voltage Drop Calculation Formulas

$$\Delta V = \sqrt{3} \cdot I (R \cos \theta + X \sin \theta)$$

where  $\Delta V$ : Line-to-line voltage drop

$I$ : Load Current

$\cos \theta$ : Load power factor

$$\sin \theta = \sqrt{1 - \cos^2 \theta}$$

$R$ : AC resistance at load current ( $\Omega/m$ )

$$R = R_{95} \times \frac{1 + \alpha (55 \times (I/I_0)^2 + 20)}{1 + 75\alpha}$$

$R_{95}$ : AC resistance at rated current ( $I_0$ ) ( $\Omega/m$ )  
(Shown in the above table)

$\alpha$ : Temperature coefficient of conductor at 20°C  
3.93 x 10<sup>-3</sup> (copper), 4.03 x 10<sup>-3</sup> (aluminum)

$I_0$ : Rated Current

$X$ : Reactance (shown in the above table) ( $\Omega/m$ )

Note: It is not applicable to single phase & DC busduct.



**FEEDER**



**VERTICAL ELBOW**



**PHASE TRANSPOSITION UNIT**



**HORIZONTAL ELBOW**



**1. 3.6KV CLASS 3 WAY**

Ampere (A)	Dimension(mm)						Weight(Kg/m)	
	Indoor			Outdoor			Indoor	Outdoor
	S	W	H	S	W	H		
400	150	600	400	150	600	400	59	62
630	150	600	400	150	600	400	61	64
800	150	600	400	150	600	400	62	65
1000	165	650	400	165	650	400	68	71
1250	180	700	400	180	700	400	74	77
1500	180	700	400	180	700	400	85	89
1600	180	700	400	180	700	400	91	95
2000	165	650	425	165	650	425	110	115
2500	180	700	425	180	700	425	115	120
3200	200	750	425	200	750	425	145	152
3500	230	850	425	230	850	425	168	176
4000	200	750	450	200	750	450	189	198
4500	230	850	450	230	850	450	220	230
5000	250	900	450	250	900	450	243	254

**2. 7.2KV CLASS 3 WAY**

Ampere (A)	Dimension(mm)						Weight(Kg/m)	
	Indoor			Outdoor			Indoor	Outdoor
	S	W	H	S	W	H		
400	160	650	400	160	650	400	62	65
630	160	650	400	160	650	400	64	67
800	175	700	400	175	700	400	68	71
1000	175	700	400	175	700	400	70	74
1250	190	750	400	190	750	400	77	80
1500	190	750	400	190	750	400	88	92
1600	190	750	400	190	750	400	93	98
2000	175	700	425	175	700	425	112	118
2500	190	750	450	190	750	450	118	124
3200	225	850	425	225	850	425	151	158
3500	240	900	425	240	900	425	170	178
4000	225	850	450	225	850	450	194	203
4500	240	900	450	240	900	450	222	233
5000	275	1000	450	275	1000	450	248	260

### 3. 12KV CLASS 3 WAY

Ampere (A)	Dimension(mm)						Weight(Kg/m)	
	Indoor			Outdoor			Indoor	Outdoor
	S	W	H	S	W	H		
400	200	800	500	200	800	500	75	78
630	200	800	500	200	800	500	76	80
800	225	900	500	225	900	500	83	87
1000	230	900	500	230	900	500	86	90
1250	250	950	500	250	950	500	92	96
1500	250	950	500	250	950	500	103	108
1600	250	950	500	250	950	500	109	114
2000	230	900	550	230	900	550	129	135
2500	250	950	550	250	950	550	134	140
3200	275	1050	550	275	1050	550	167	175
3500	300	1100	550	300	1100	550	187	196
4000	275	1050	550	275	1050	550	209	219
4500	300	1100	550	300	1100	550	237	249
5000	315	1150	550	315	1150	550	260	273

### 4. 24KV CLASS 3 WAY

Ampere (A)	Dimension(mm)						Weight(Kg/m)	
	Indoor			Outdoor			Indoor	Outdoor
	S	W	H	S	W	H		
400	275	1150	650	275	1150	650	100	105
630	275	1150	650	275	1150	650	102	106
800	300	1200	650	300	1200	650	106	111
1000	300	1200	650	300	1200	650	108	114
1250	315	1250	650	315	1250	650	115	120
1500	325	1300	650	325	1300	650	128	135
1600	325	1300	650	325	1300	650	134	141
2000	300	1250	700	300	1250	700	154	161
2500	325	1300	650	325	1300	650	157	164
3200	350	1350	700	350	1350	700	190	199
3500	375	1450	700	375	1450	700	212	222
4000	350	1350	700	350	1350	700	232	243
4500	375	1450	700	375	1450	700	263	275
5000	390	1500	700	390	1500	700	286	300