MEGADUCT

REVOLUTION SERIES

The Manufacturer & Designer of

BUSDUCT SYSTEM

CONTENT

MEGADUCT

Electbus
SUSTAINABLE POWER SYSTEMS

TECHNICAL FEATURES

MEGADUCT is a new series of busduct system developed by **LINKK Busway Systems (M) Sdn Bhd**. It is designed for commercial and industrial electrical distributions.

Standards

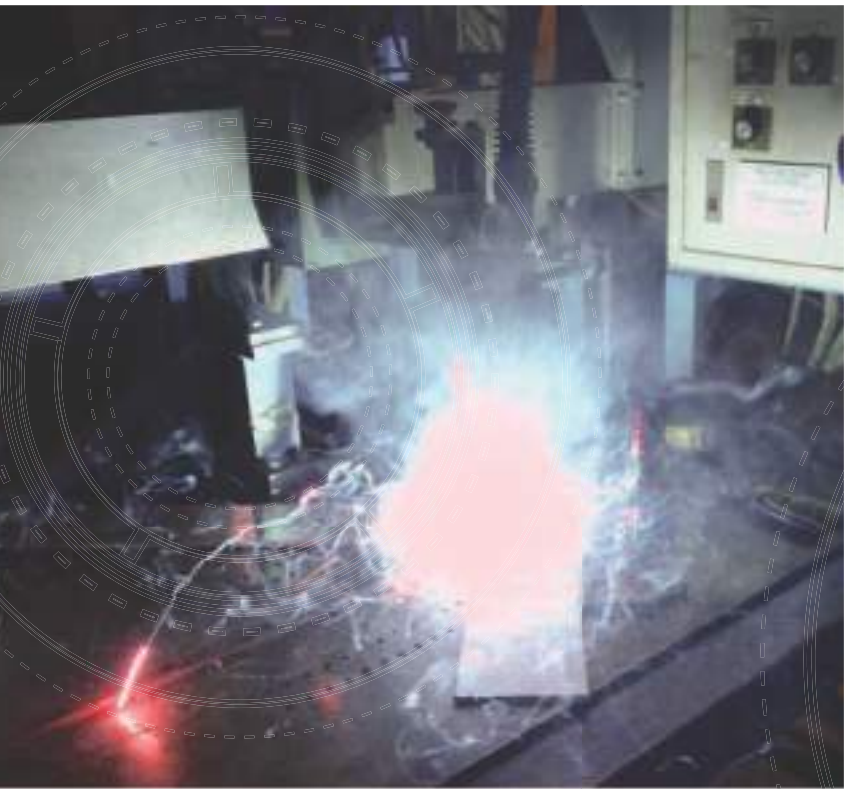
MEGADUCT systems are tested and certified by **KEMA**, **ASTA** and **UL** to comply with:

- BS 5486,Part 2,1990
- IEC 61439 Part 1:2011(Updated from IEC 60439 Part 1:2005)
- IEC 60439 Part 1:2011(Updated from IEC 60439 Part 2:2005)
- IEC 60331
- IEC 60529

Busduct types

MEGADUCT is light weight, low impedance, non-ventilated, naturally cooled and totally enclosed within the steel or aluminium housing for protection against mechanical damages and dust accumulation. It consists copper bars with purity >99.95%, or aluminium bars with conductivity >61%.

- Feeder and plug-in type busducts.
- Indoor protection IP40/IP42/IP54/IP55/IP65.
- Outdoor protection IP66/IP67/IP68.
- Tap-off units(plug-in) protection IP2X/IP40/IP42/IP54/IP55.
- Fire retardant protection conforms to IEC 60331 and CNS 14286.



System

Our busduct can be applied to different system configuration as below:

- 3P3W
- 3P3W+50%E
- 3P4W
- 3P4W+50%E
- 3P4W+100%E
- 3P4W(200%N)
- 3P4W(200%N)+50%E
- 3P4W(50%N)
- 3P4W(50%N)+50%E

Other type of configuration can be designed upon special request from customer.

Unique features

The latest MEGADUCT systems are incorporated with many improved designs/features to provide cost effective solutions for building a power system:

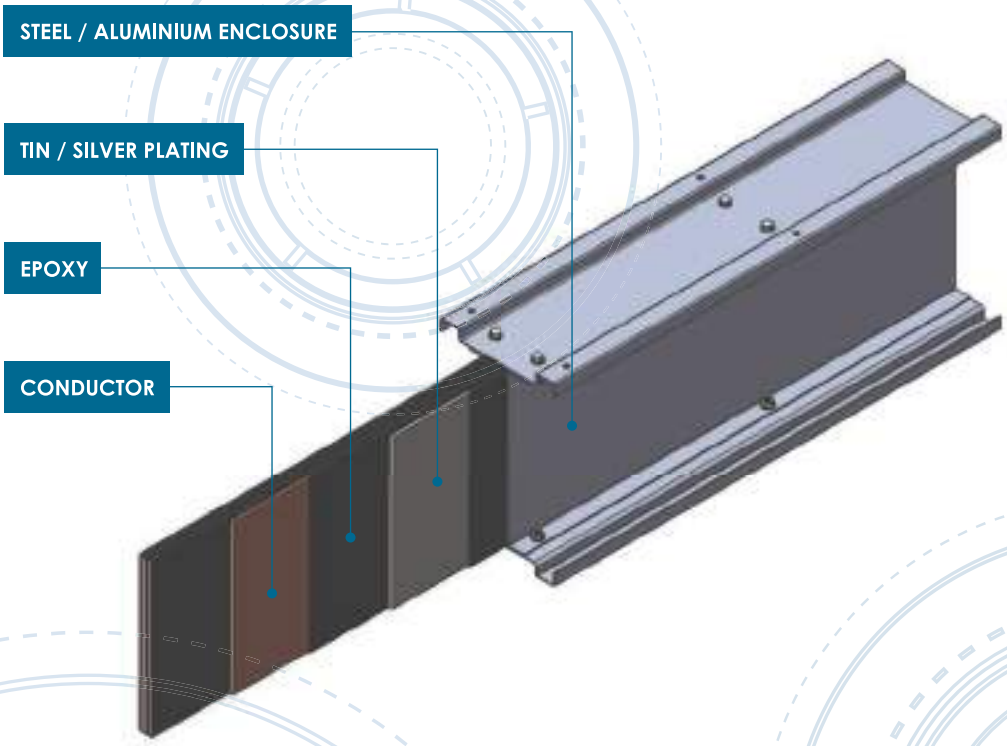
- Higher efficiency in power transmission/distribution.
- Lower installation cost.
- Easier maintenance.
- More compact and suitable for tight plan room space.
- Higher reliability.
- Longer life span.
- Higher flexibility for future expansion.
- Extremely flexible in installation.

MEGADUCT CONDUCTOR

All MEGADUCT conductor are high density and conductivity >100% IACS with a minimum purity of 99.95%. It is fabricated through a sophisticated thermal compression process developed by Megaduct which involves application of tremendous heat under high pressure. It can be fully tinned or silver-plated with epoxy powder coated as insulation giving 100% water and chemical resistance. Optional specifications can be designed and fabricated to customer requirement.

Advantage of using MEGADUCT conductor are:

- High electrical conductivity
- Low impurity
- Excellent fatigue resistance
- High thermal conductivity
- High mechanical strength
- Outstanding corrosion resistant



MEGADUCT EPOXY

Megaduct Epoxy System is the 3rd generation with own formulation. The class H-180°C standard epoxy coating provides 100% water proofing and high mechanical strength. It has been tested in accordance with IEC 61439-2 and BS 5486.

Advantages of using epoxy coating as insulations are:

- Design to withstand glitch and spikes in electrical system.
- Design to cater for expansion and contraction during peak and off-peak hours.
- Capable of withstanding heat shock.
- High reliability under static conditions.
- High mechanical strength against impact.
- High thermal conductivity.
- Water and chemical resistant.

OTHER INSULATION TYPE

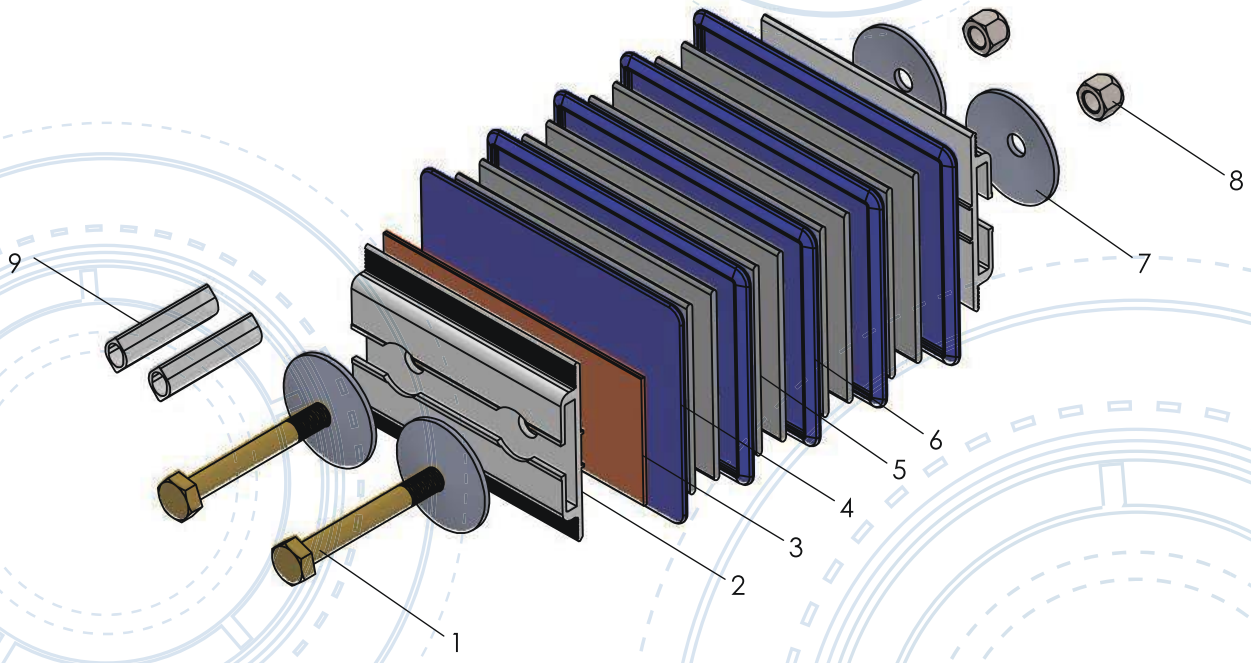
Besides epoxy insulation, we also provide other classes of insulation as below:

- Class B- It consists of two layers of Mylar(Polyester Film) which resists temperature up to 130°C.
- Fire Rated - It consists of 1 layer of mylar(polyester film) and 2 layers of Mica (mineral silicate sheet) which resist temperature up to 900°C.

JOINT SYSTEM

In order to overcome extreme rugged conditions at site, the new MEGADUCT joint has been designed precisely and manufactured using the highest quality of materials to minimize all possible problems and enhance system performance. This special design provides outstanding features as follows:

- Incorporates a 5mm thermal expansion and movement at every joint.
- Allow ±15mm of lateral adjustment(total 30mm) to correct site measurement inaccuracy.
- Able to tilt an angle of ±5°(total 10° along single axis).
- Bolt and nuts can be stainless steel, galvanized or chromed black high tensile steel.
- Degree of protection of IP40/IP54/IP66/IP67/IP68.
- Easy installation and removal of any joint in a run without disturbing the two adjacent busduct sections.
- Water/chemical resistance BMC insulation plates.



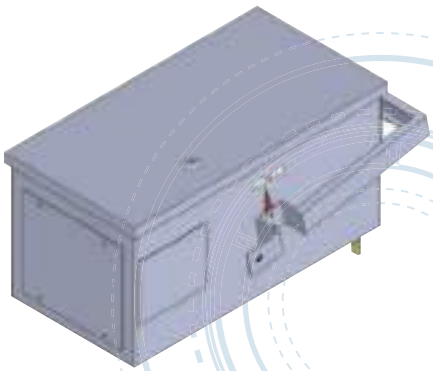
1.Joint bolt
2.Joint backing plate
3.Joint Earth Bar
4.Joint end insulator
5.Joint conductor bar
6.Joint phase insulator
7.Belleville disc
8.Nylon lock nut
9.Fiber tube

TAP-OFF UNITS(PLUG-IN UNITS)

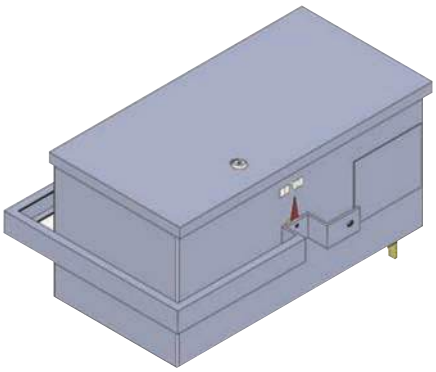
Tap-off unit with moulded case circuit breaker or fused-switch breakers of various current ratings are available to cater for most installations. Maximum 5 tap-off units per side can be installed, total 10 nos per length of 3m busduct subject to the size of MCCBs.

- All tap-off unit are designed with interlocking safety features to prevent removal when tap-off unit in 'On' position.
- When tap-off unit cover is open, automatically MCCB cannot be turned 'On'

On/off handle design

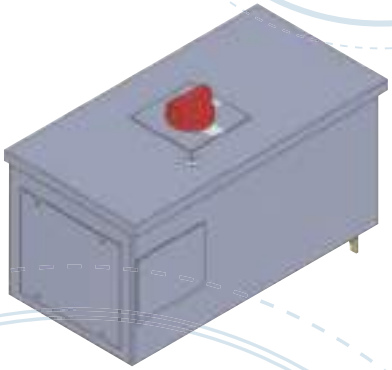


Bottom entry cable design

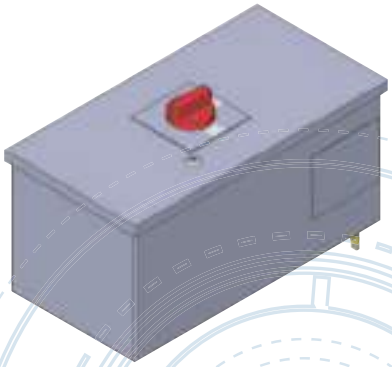


Top entry cable design

Rotary handle design

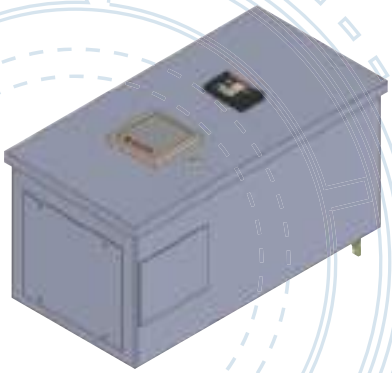


Bottom entry cable design

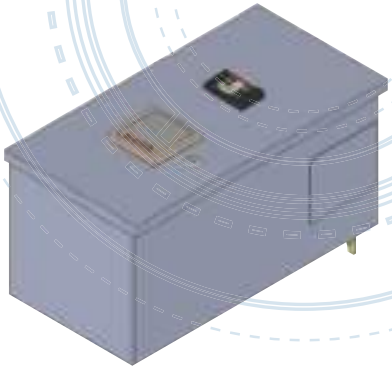


Top entry cable design

Outlet design



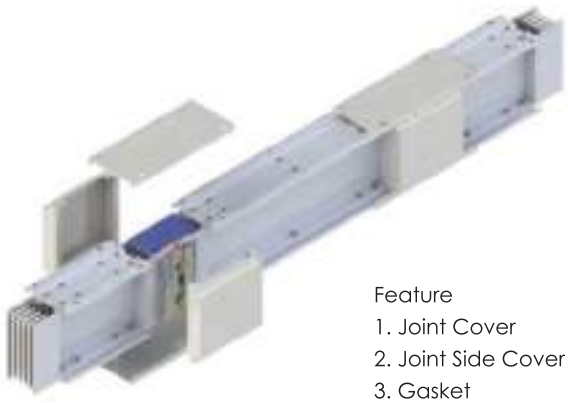
Bottom entry cable design



Top entry cable design

IP BUSDUCT

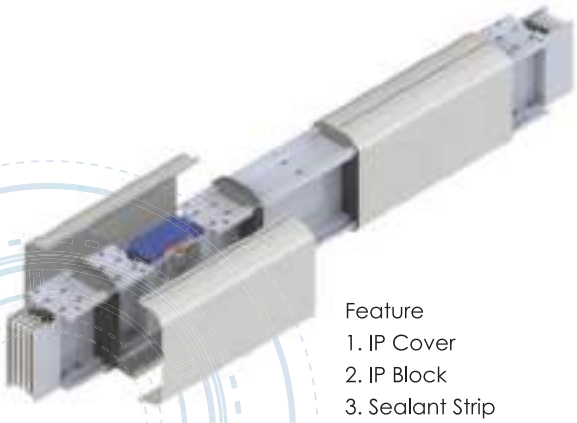
IP 54 to IP66 (Indoor)



Feature
1. Joint Cover
2. Joint Side Cover
3. Gasket
4. Silicon

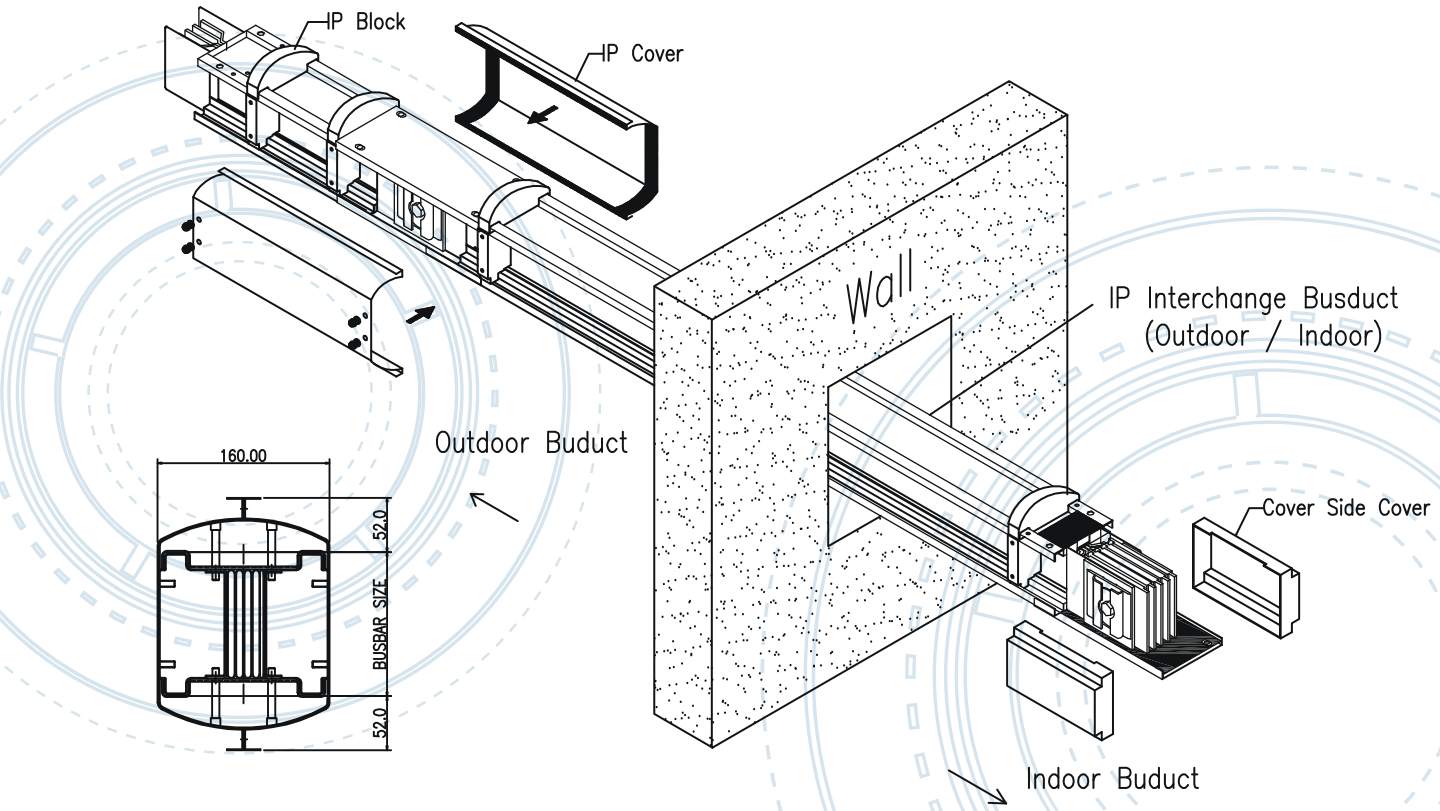
** IP 42 does not have Joint Side Cover*

IP 66 (Outdoor)



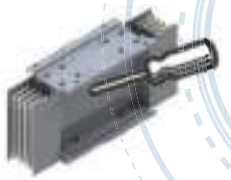
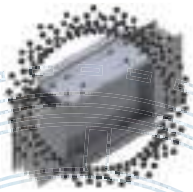
Feature
1. IP Cover
2. IP Block
3. Sealant Strip

IP Interchange Busduct

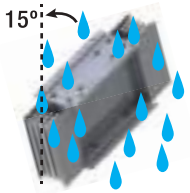
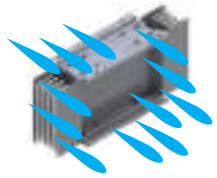
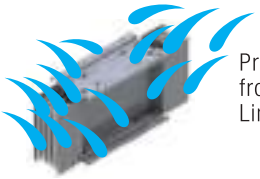
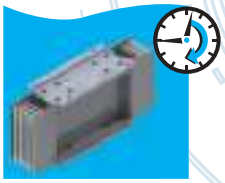


IP (INGRESS PROTECTION RATING GUIDE)

SOLIDS

1		Protection against a solid object greater than 50mm such as a hand.
2		Protection against a solid object greater than 12.5mm such as a finger.
3		Protection against a solid object greater than 2.5mm such as a screwdriver.
4		Protection against a solid object greater than 1mm such as a wire.
5		Dust Protected. Limited ingress of dust permitted. Will not interfere with operation of the equipment. Two to eight hours.
6		Dust tight. No ingress of dust. Two to eight hours.

WATER

1		Protection against vertically falling drops of water. Limited ingress permitted.
2		Protection against vertically falling drops of water with enclosure tilted up to 15 degrees from the vertical. Limited ingress permitted.
3		Protection against sprays of water up to 60 degrees from the vertical. Limited ingress permitted for three minutes.
4		Protection against splashed from all directions. Limited ingress permitted.
5		Protection against jets of water. Limited ingress permitted.
6		Water from heavy seas or water projected in powerful jets shall not enter the enclosure in harmful quantities.
7		Protection against the effects of immersion in water between 15cm and 1m for 30 minutes
8		Protection against the effects of immersion in water under pressure for long periods.

Rating Example:

CONFIGURATION OF MEGADUCT BUSWAY TRUNKING

Electrical Characteristics For Copper & Aluminium in 50Hz

Copper - 50Hz

Rated Current (A)	Impedance (10^{-6} Ω/m)			Line to line voltage drop in (mV/m) at rated current and various power factors									
	R	X	Z	1.00	0.90	0.80	0.70	0.60	0.50	0.40	0.30	0.20	0.10
400	124.94	98.67	159.20	86.56	107.70	110.27	109.41	106.63	102.48	97.28	91.18	84.29	76.67
630	74.90	93.31	119.65	81.73	117.94	126.48	129.92	130.49	129.04	126.01	121.65	116.11	109.48
800	54.66	75.48	93.19	75.74	113.75	123.34	127.71	129.11	128.45	126.15	122.49	117.62	111.64
1000	45.24	25.40	51.88	78.36	89.70	89.08	86.27	82.21	77.28	71.66	65.48	58.78	51.61
1250	40.08	19.38	44.52	86.78	96.39	94.60	90.71	85.63	79.73	73.17	66.06	58.47	50.43
1600	26.81	15.35	30.89	74.30	85.41	84.96	82.39	78.61	73.99	68.71	62.87	56.54	49.76
2000	22.98	12.10	25.97	79.61	89.92	88.83	85.66	81.30	76.10	70.26	63.87	56.99	49.67
2500	18.38	10.30	21.07	79.59	91.07	90.43	87.56	83.43	78.42	72.71	66.42	59.62	52.34
3200	13.79	7.21	15.56	76.43	86.21	85.12	82.04	77.83	72.82	67.20	61.05	54.44	47.40
4000	11.28	4.67	12.21	78.15	84.44	81.93	77.81	72.77	67.10	60.91	54.31	47.33	40.01
5000	9.57	3.75	10.28	82.88	88.75	85.79	81.21	75.71	69.56	62.92	55.84	48.40	40.60

Aluminium - 50Hz

Rated Current (A)	Impedance (10^{-6} Ω/m)			Line to line voltage drop in (mV/m) at rated current amd various power factors									
	R	X	Z	1.00	0.90	0.80	0.70	0.60	0.50	0.40	0.30	0.20	0.10
400	134.25	82.12	157.37	93.01	108.51	108.55	105.74	101.32	95.78	89.35	82.18	74.35	65.91
630	101.19	62.42	118.89	110.42	129.07	129.20	125.93	120.74	114.20	106.59	98.10	88.82	78.81
800	73.80	20.16	76.50	102.26	104.21	98.57	91.53	83.70	75.32	66.51	57.33	47.82	38.02
1000	52.50	15.68	54.79	90.93	93.68	89.04	83.05	76.29	68.99	61.26	53.19	44.80	36.12
1250	47.33	11.26	48.65	102.47	102.85	96.61	89.14	80.99	72.35	63.33	54.00	44.38	34.50
1600	35.75	9.76	37.06	99.07	100.96	95.49	88.67	81.08	72.96	64.42	55.52	46.32	36.82
2000	29.87	7.97	30.92	103.47	105.16	99.34	92.15	84.17	75.65	66.69	57.38	47.75	37.82
2500	23.04	6.75	24.01	99.77	102.53	97.35	90.71	83.24	75.20	66.69	57.81	48.59	39.06
3200	18.46	5.02	19.13	102.32	104.21	98.55	91.49	83.65	75.25	66.43	57.24	47.72	37.92
4000	11.92	2.32	12.14	82.58	81.33	75.71	69.29	62.41	55.21	47.77	40.11	32.27	24.25
5000	7.85	1.24	7.95	67.98	65.87	60.83	55.26	49.38	43.29	37.04	30.64	24.12	17.48

Note: For the 60Hz calculation, divide the reactance (X) by 0.83. And the resistance (R) remains unchanged due to the negligible difference in frequency.

Voltage Drop Calculation

As per IEC 61439-6:2012

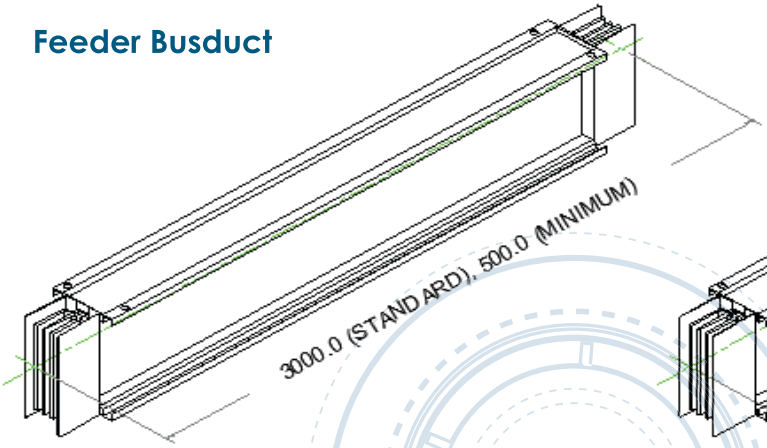
$$DV = k \times (\sqrt{3}) \times I (R \cos\varnothing + X \sin\varnothing)$$

where,

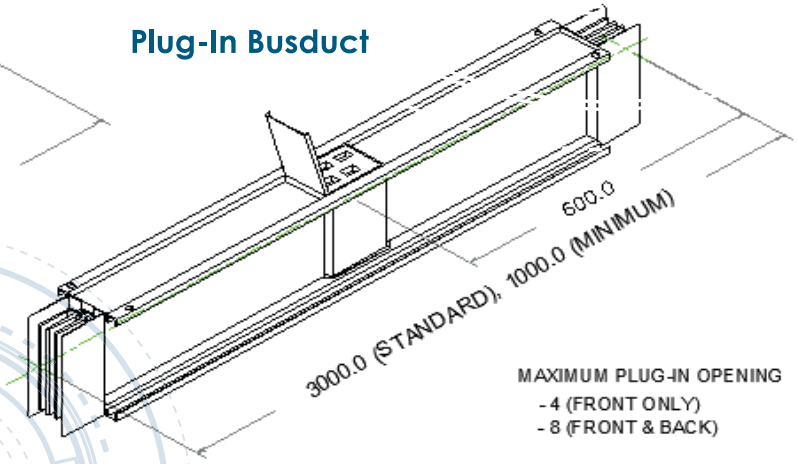
DV	=	Line to line voltage drop per meter (to be calculated)
I	=	Load curent
CosØ	=	Load Power Factor
SinØ	=	SinØ = Sq. Root (1 - $\cos^2\varnothing$)
R	=	Resistance
X	=	Reactanc
k	=	The load distribution factor
	*	1 if the load is concentred at the end of the BT run;
	*	(n+1) / (2 x n) if the load is uniformly spread between n branches (where n = no. of TOU)

MEGADUCT STANDARD COMPONENTS

Feeder Busduct

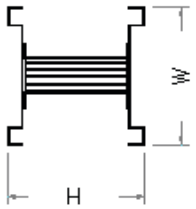


Plug-In Busduct

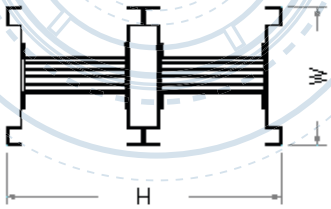


MAXIMUM PLUG-IN OPENING
- 4 (FRONT ONLY)
- 8 (FRONT & BACK)

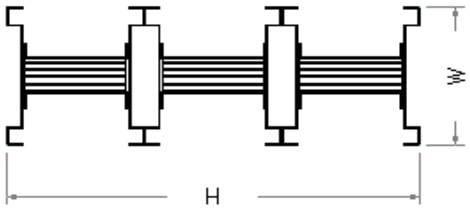
PLUG-IN OPENING INTERVAL
- 600mm (STANDARD)



[Fig.L1-1]



[Fig.L1-2]



[Fig.L1-3]

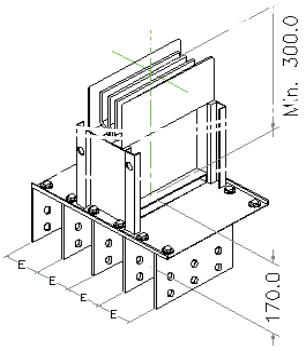
Copper

Ampere (A)	W	x	H	Weight (kg/m)		Fig.
	(mm)			3P4W	3P4W+50%E	
400	150	x	74	14	15	L1-1
630	150	x	64	16	17	L1-1
800	150	x	74	17	18	L1-1
1000	150	x	94	21.5	23	L1-1
1250	150	x	109	25.5	27.5	L1-1
1600	150	x	124	28.5	31	L1-1
2000	150	x	188	42.5	46	L1-2
2500	150	x	218	51	55	L1-2
3200	150	x	288	71	77	L1-2
4000	150	x	348	59.5	92	L1-2
5000	150	x	468	129	140	L1-2

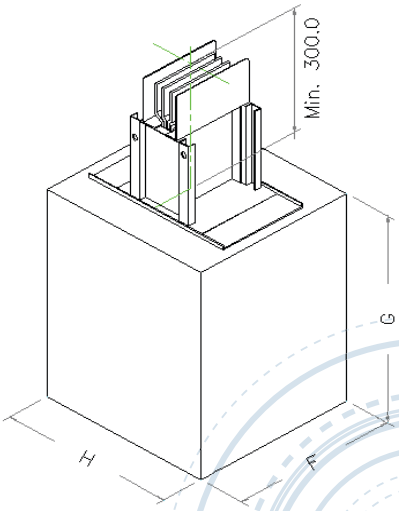
Aluminium

Ampere (A)	W	x	H	Weight (kg/m)		Fig.
	(mm)			3P4W	3P4W+50%E	
400	150	x	59	9.7	10	L1-1
630	150	x	74	10.6	11	L1-1
800	150	x	84	11.5	12	L1-1
1000	150	x	114	14.3	15	L1-1
1250	150	x	144	17	18	L1-1
1600	150	x	184	21.7	23	L1-1
2000	150	x	234	26.3	28	L1-1
2500	150	x	288	24	36	L1-2
3200	150	x	368	43.5	46	L1-2
4000	150	x	468	52.5	56	L1-2
5000	150	x	582	71	75	L1-3

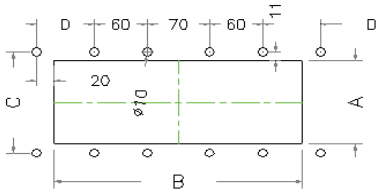
Flange End



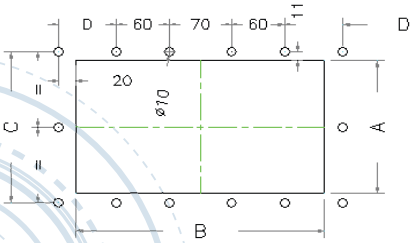
End Feed Cable Box



Mounting Cut Out



[Fig.L2-1]



[Fig.L2-2]

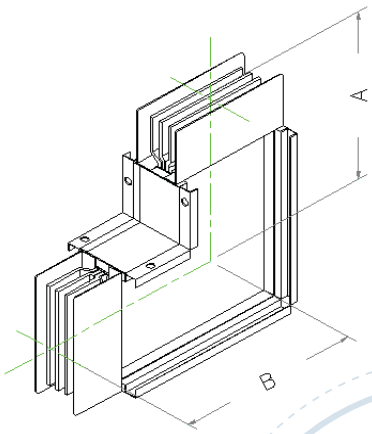
Copper

Ampere (A)	Mounting Cut Out (mm)				Interval (mm)	End Feed Box Size (mm)			Fig.
	A	B	C	D	E	F	G	H	
400	50	280	72	65	80	330	500	400	L2-1
630	40		62						
800	50		72						
1000	65		87						
1250	80		102						
1600	100		122						
2000	164	340	186	95	100	400	650	450	L2-2
2500	194		216						
3200	264		286						
4000	324		346						
5000	444		466			500			

Aluminium

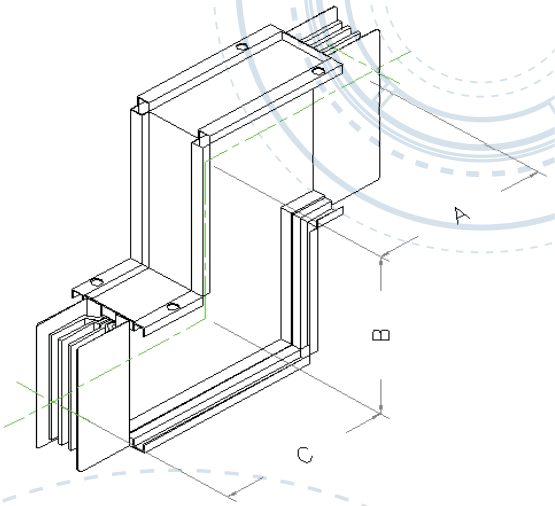
Ampere (A)	Mounting Cut Out (mm)				Interval (mm)	End Feed Box Size (mm)			Fig.
	A	B	C	D	E	F	G	H	
400	35	280	57	65	80	330	500	400	L2-1
630	50		72						
800	60		82						
1000	90		112						
1250	120		142						
1600	160	340	182	95	100				
2000	210		232				650	450	L2-2
2500	264		286						
3200	344		366			400			
4000	444		466			600	700		
5000	558		420						

Flatwise Elbow



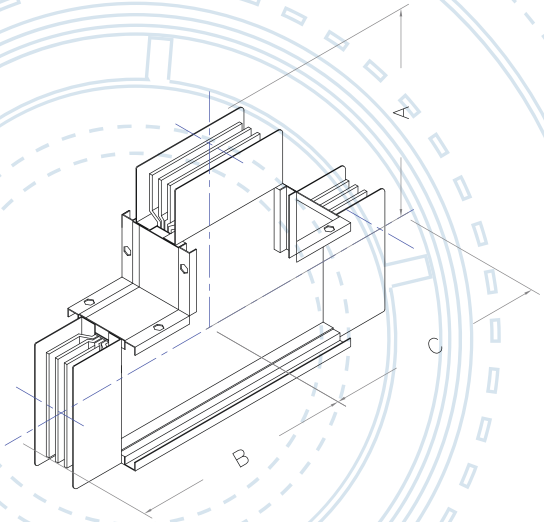
Ampere (A)	Copper	Aluminium
	Standard (mm) A x B	
400	330 x 330	330 x 330
630	330 x 330	330 x 330
800	330 x 330	340 x 340
1000	340 x 340	355 x 355
1250	350 x 350	370 x 370
1600	360 x 360	390 x 390
2000	390 x 390	415 x 415
2500	405 x 405	440 x 440
3200	440 x 440	480 x 480
4000	470 x 470	530 x 530
5000	530 x 530	590 x 590

Flatwise Offset



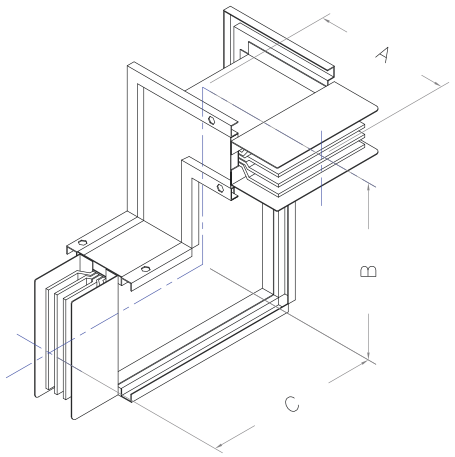
Ampere (A)	Copper	Aluminium
	Standard (mm) A x B x C	
400	330 x 300 x 330	330 x 300 x 330
630	330 x 300 x 330	330 x 300 x 330
800	330 x 300 x 330	340 x 300 x 340
1000	340 x 300 x 340	355 x 300 x 355
1250	350 x 300 x 350	370 x 300 x 370
1600	360 x 300 x 360	390 x 300 x 390
2000	390 x 300 x 390	415 x 300 x 415
2500	405 x 300 x 405	440 x 300 x 440
3200	440 x 300 x 440	480 x 300 x 480
4000	470 x 300 x 470	530 x 300 x 530
5000	530 x 300 x 530	590 x 300 x 590

Flatwise Tee



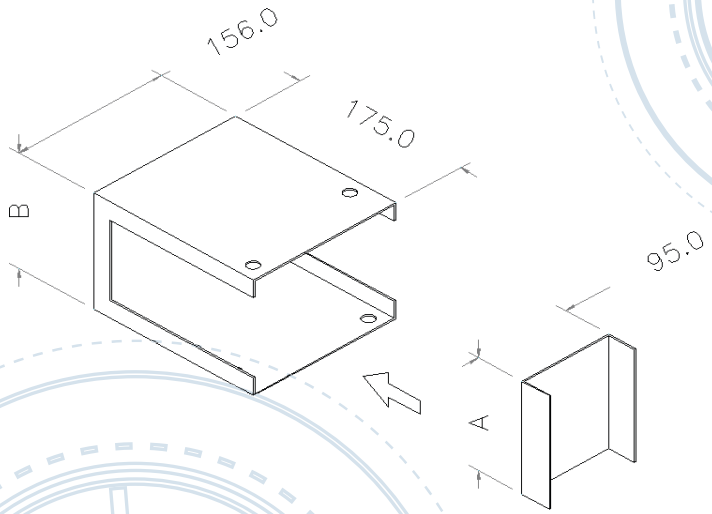
Ampere (A)	Copper	Aluminium
	Standard (mm) A x B x C	
400	330 x 330 x 330	330 x 330 x 330
630	330 x 330 x 330	330 x 330 x 330
800	330 x 330 x 330	340 x 340 x 340
1000	340 x 340 x 340	355 x 355 x 355
1250	350 x 350 x 350	370 x 370 x 370
1600	360 x 360 x 360	390 x 390 x 390
2000	390 x 390 x 390	415 x 415 x 415
2500	405 x 405 x 405	440 x 440 x 440
3200	440 x 440 x 440	480 x 480 x 480
4000	470 x 470 x 470	530 x 530 x 530
5000	530 x 530 x 530	590 x 590 x 590

Combination Elbow



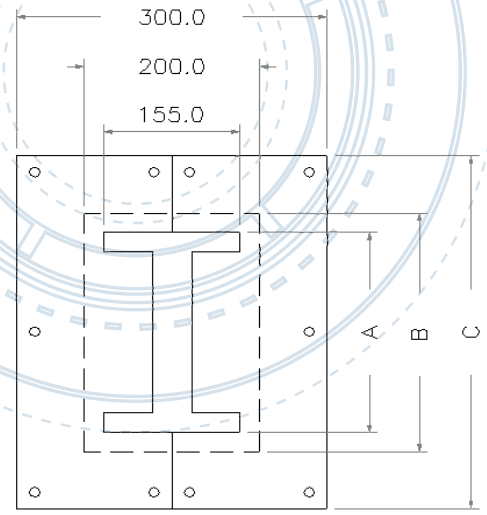
Ampere (A)	Copper	Aluminium
	Standard (mm) A x B x C	
400	310 x 300 x 330	310 x 300 x 330
630	310 x 300 x 330	310 x 300 x 330
800	310 x 300 x 330	310 x 300 x 340
1000	310 x 300 x 340	310 x 300 x 355
1250	310 x 300 x 350	310 x 300 x 370
1600	310 x 300 x 360	310 x 300 x 390
2000	310 x 300 x 390	310 x 300 x 415
2500	310 x 300 x 405	310 x 300 x 440
3200	310 x 300 x 440	310 x 300 x 480
4000	310 x 350 x 470	310 x 350 x 530
5000	310 x 350 x 530	310 x 350 x 590

End Cover



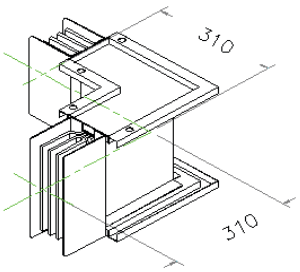
Ampere (A)	Copper	Aluminum
	Standard (mm) A x B	
400	75 x 80	60 x 65
630	65 x 70	75 x 80
800	75 x 80	85 x 90
1000	90 x 95	115 x 120
1250	105 x 110	145 x 150
1600	125 x 130	185 x 190
2000	190 x 195	235 x 240
2500	220 x 225	290 x 295
3200	290 x 295	370 x 375
4000	350 x 355	470 x 475
5000	470 x 475	585 x 590

Wall Flange

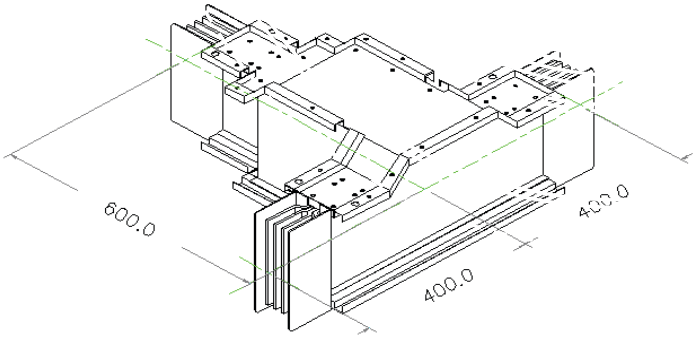


Ampere (A)	Copper	Aluminium
	Standard (mm) A x B x C	
400	85 x 130 x 170	70 x 115 x 165
630	75 x 120 x 160	85 x 130 x 180
800	85 x 130 x 170	95 x 140 x 190
1000	100 x 145 x 185	125 x 170 x 220
1250	115 x 160 x 200	155 x 200 x 250
1600	135 x 180 x 220	195 x 240 x 290
2000	200 x 245 x 285	245 x 290 x 340
2500	230 x 275 x 315	300 x 345 x 395
3200	300 x 345 x 385	380 x 425 x 475
4000	360 x 405 x 445	480 x 525 x 575
5000	480 x 525 x 565	595 x 640 x 690

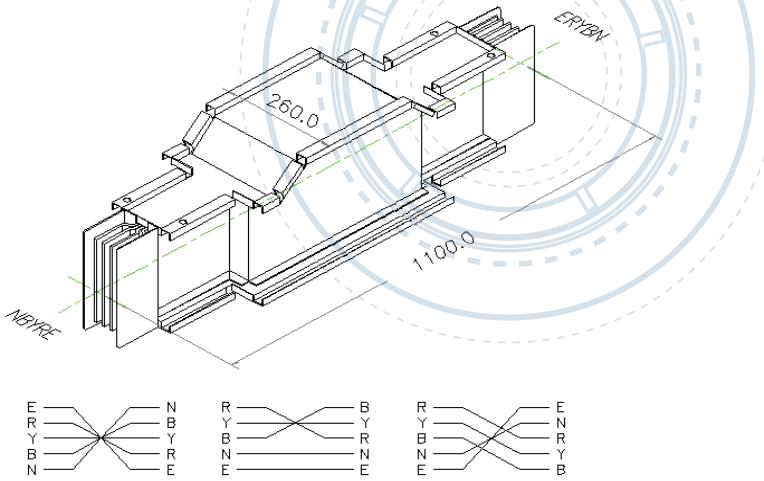
Edgewise Elbow



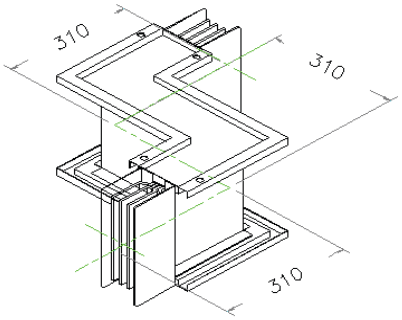
Edgewise Tee



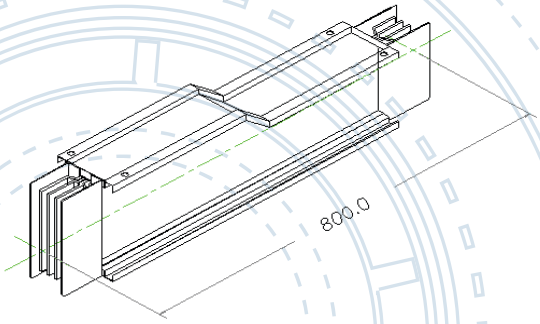
Phase Transposition Unit



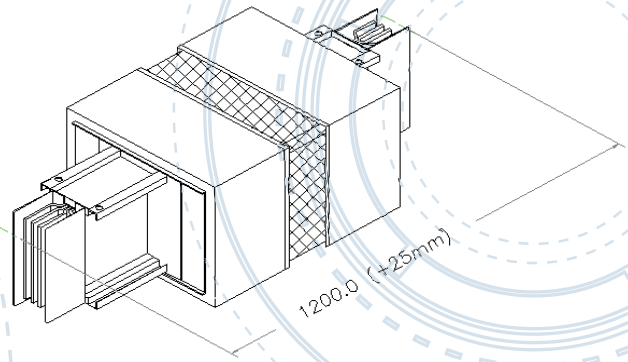
Edgewise Offset



Reducer

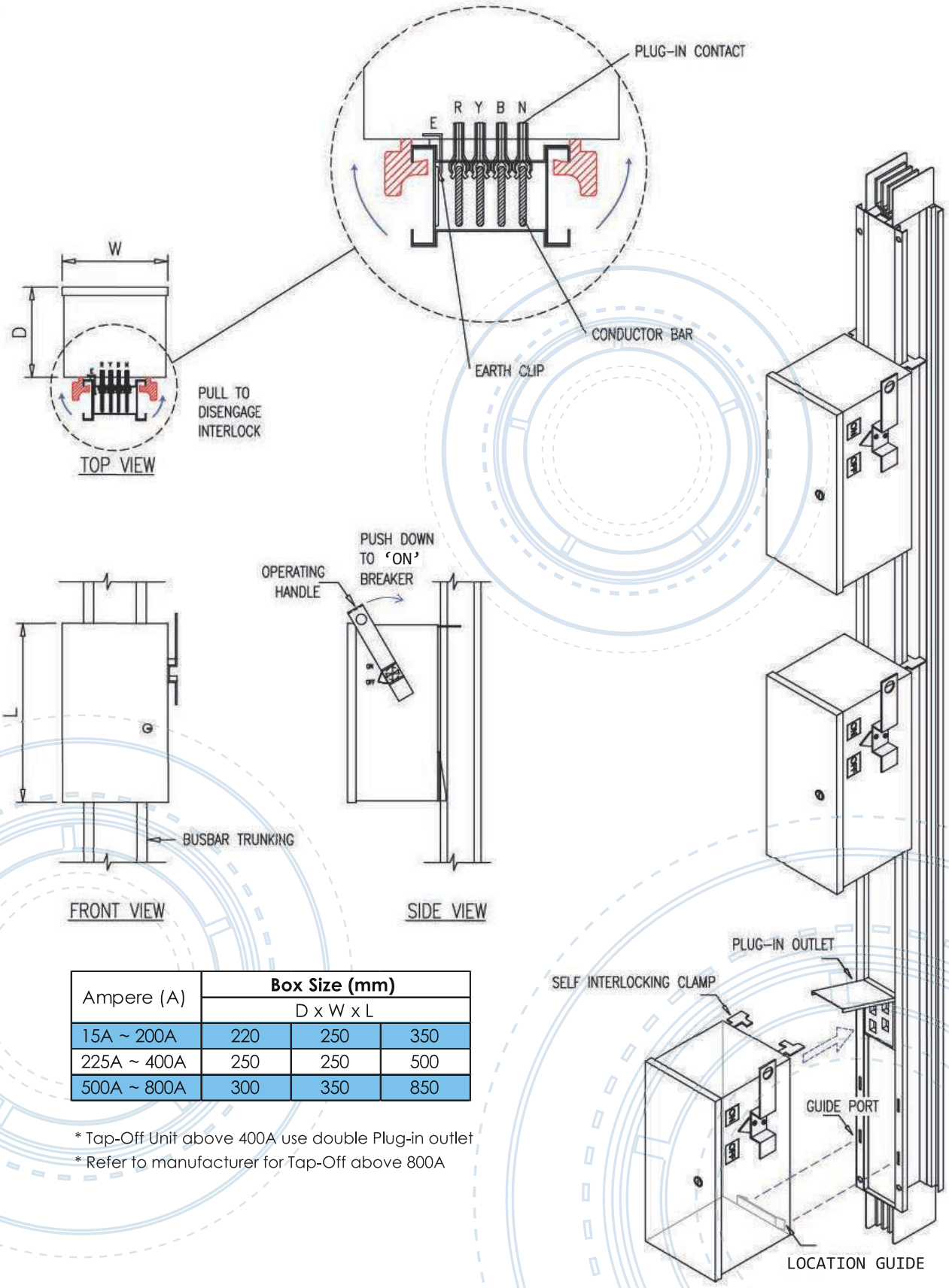


Expansion Unit



Noted: * Edgewise Elbow = Horizontal Elbow
* Flatwise Elbow = Vertical Elbow
* Refer to manufacturer for SPECIAL degree Elbow

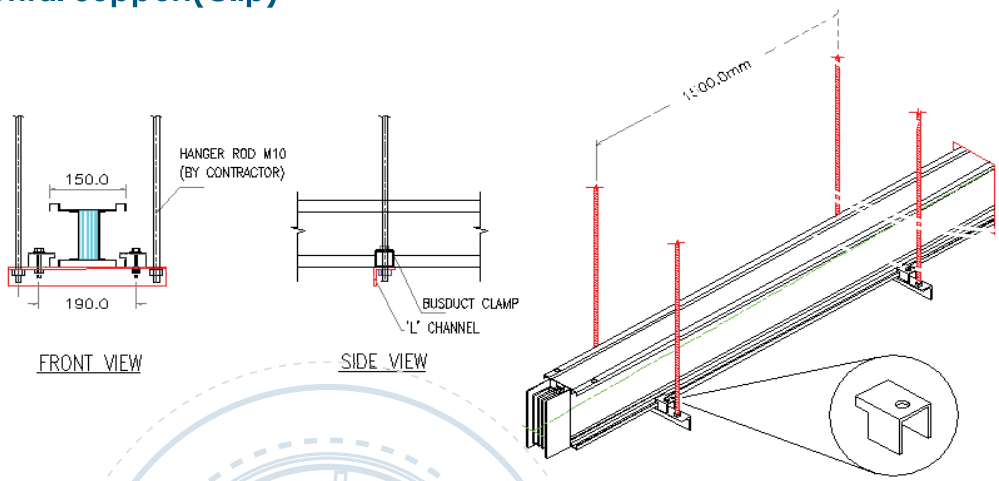
Tap-Off Unit



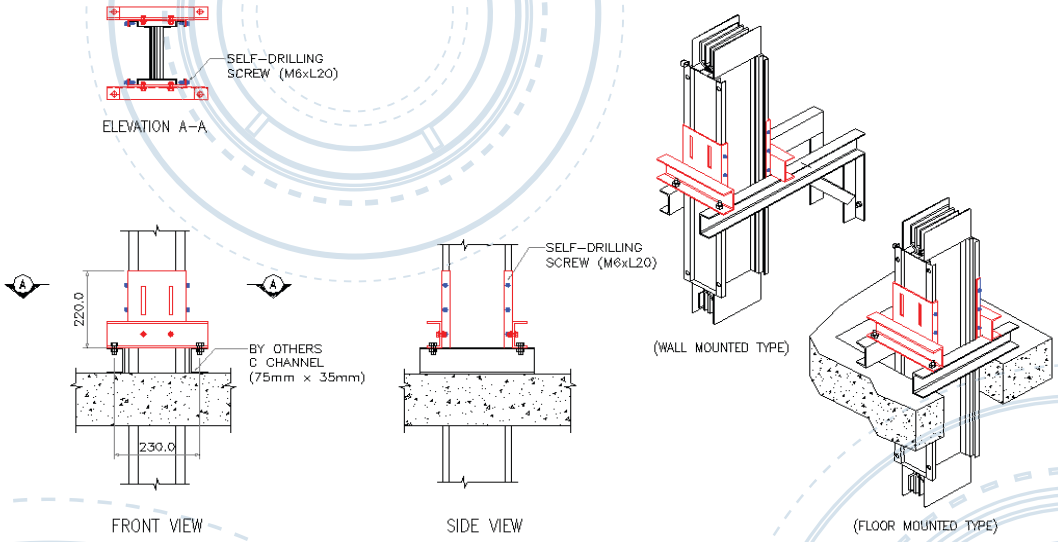
Ampere (A)	Box Size (mm)		
	D x W x L		
15A ~ 200A	220	250	350
225A ~ 400A	250	250	500
500A ~ 800A	300	350	850

* Tap-Off Unit above 400A use double Plug-in outlet
* Refer to manufacturer for Tap-Off above 800A

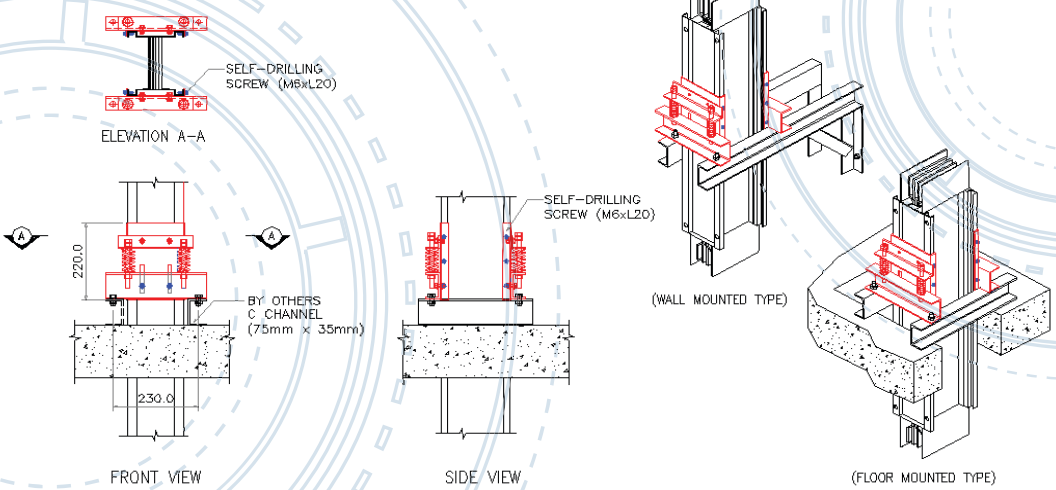
Horizontal Support(Clip)



Vertical Fixed Support



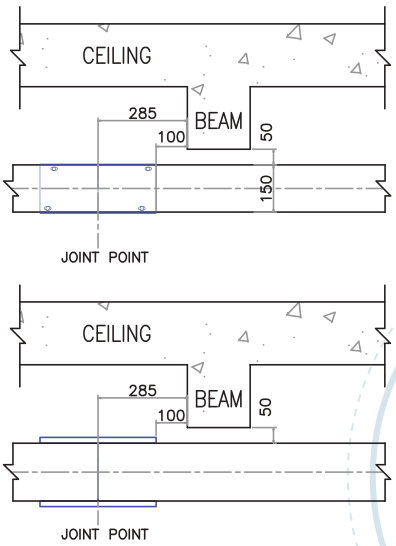
Vertical Spring Hanger



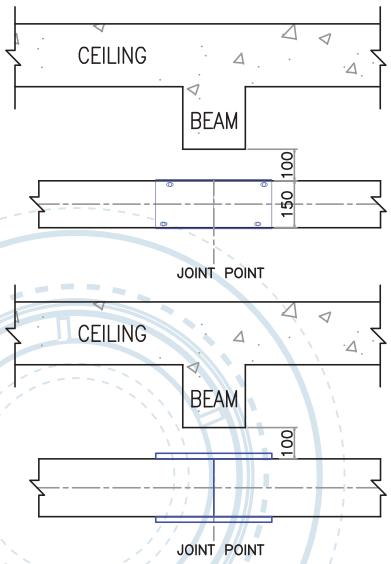
BUSDUCT LAYOUT DESIGN CONSIDERATION

Minimum Distance From Beam

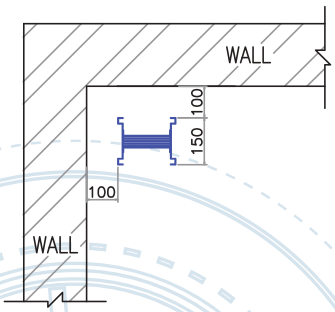
(BUSDUCT UNDER BEAM WITHOUT JOINT POINT)



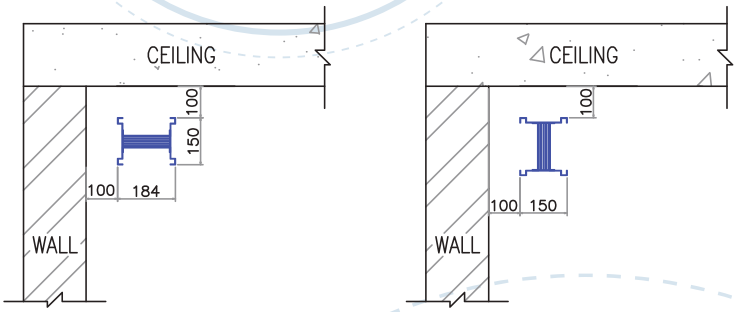
(BUSDUCT UNDER BEAM WITH JOINT POINT)



Minimum Distance From Wall

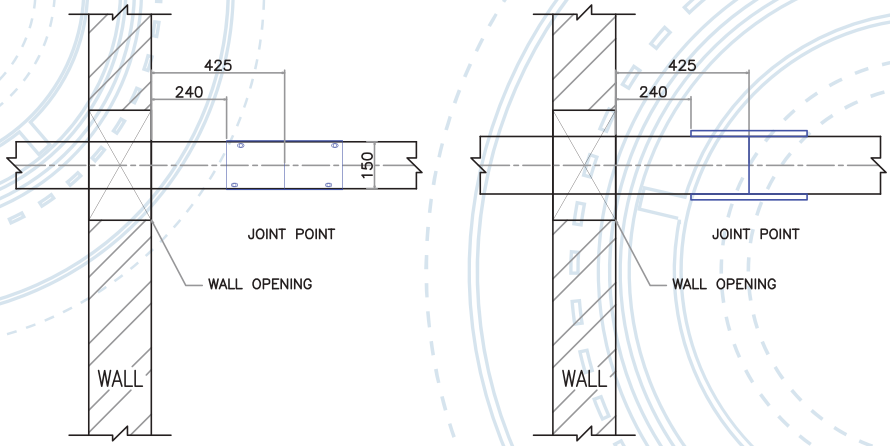


Minimum Distance From Wall And Ceiling



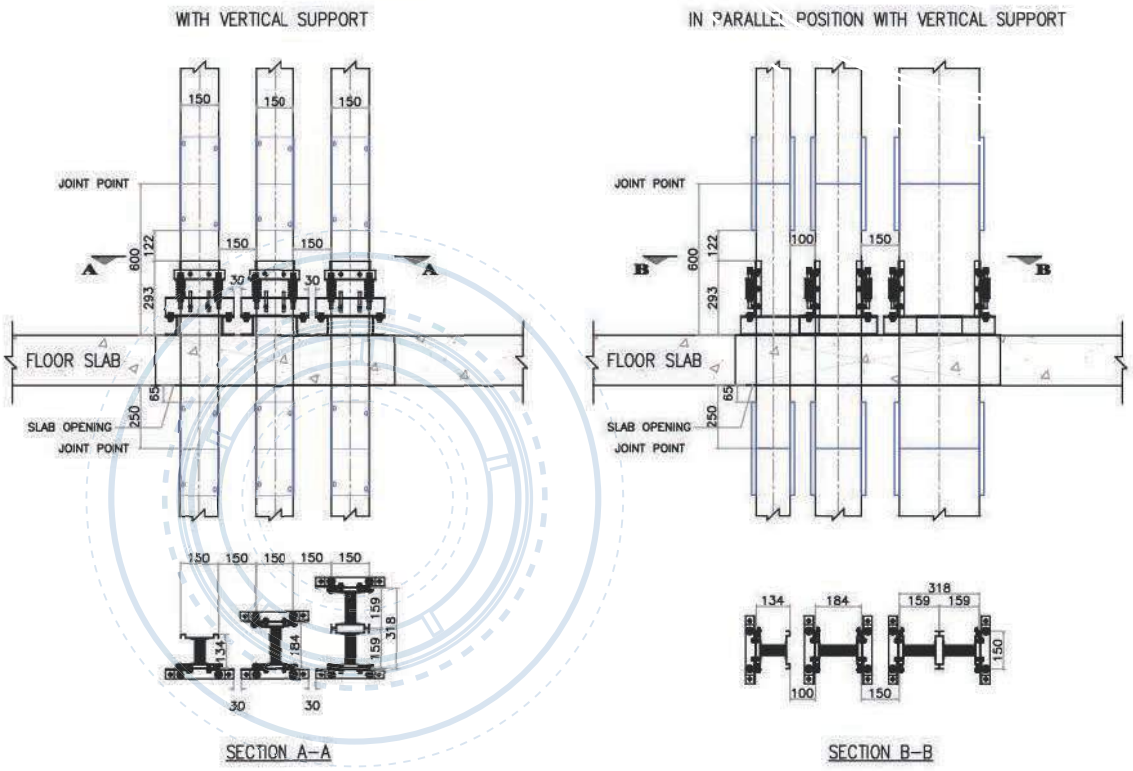
Busduct Jointing Point Through Wall Opening Installation

(Joints Should Not Be Installed Inside Walls)

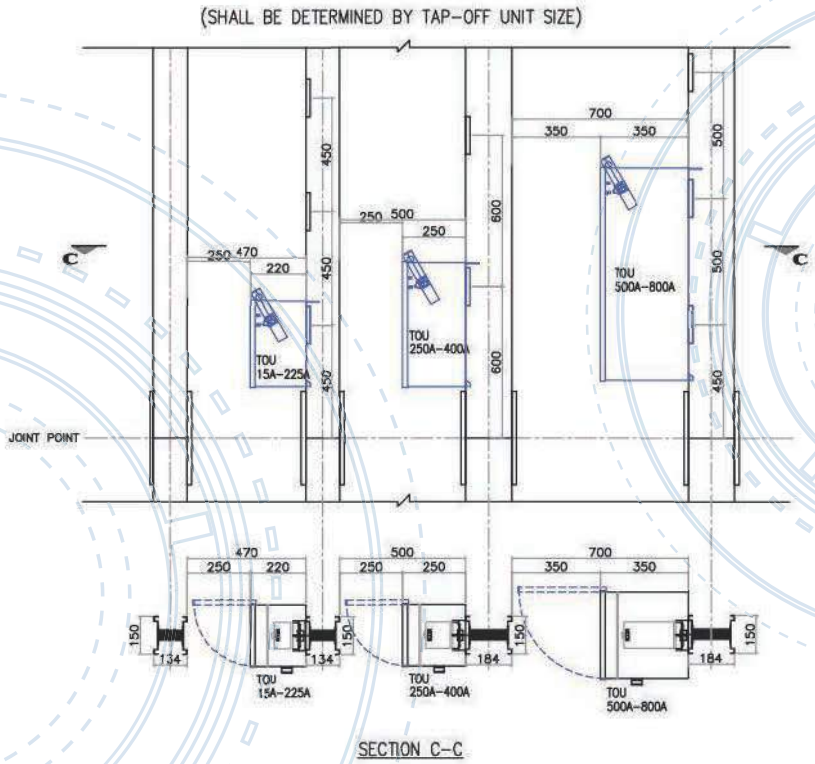


BUSDUCT LAYOUT DESIGN CONSIDERATION

Minimum Clearance Of Vertical Feeder Busduct Joints Side By Side

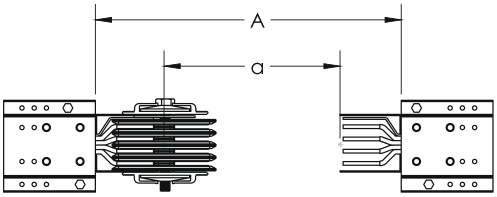


Minimum Clearance Of Plug-In Busducts With Tap-Off Unit Installed Flat In Parallel Position



MEASUREMENT GUIDELINE

Feeder

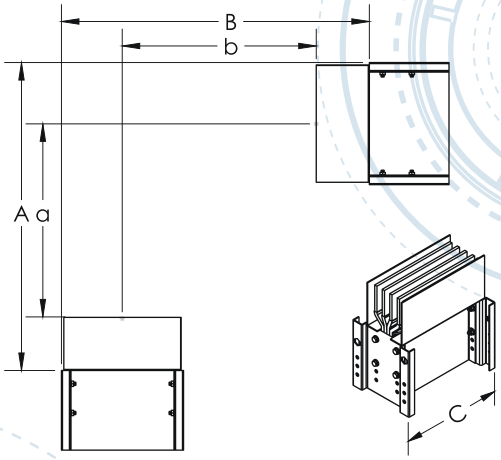


a=A-115mm-115mm

Example:
A=800mm

a=800-115-115
a=570mm

Flatwise Elbow



a= A-115mm-C/2

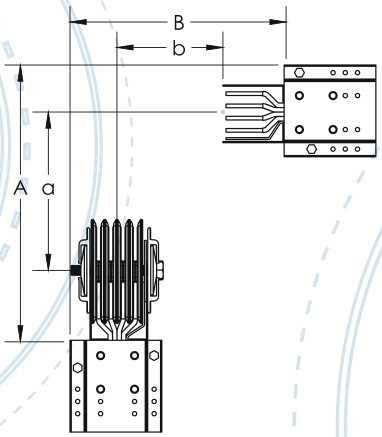
b= B-115mm-C/2

Example:
A=800mm, B=1000mm, C=180mm

a=800-115-180/2
a=595mm

b=1000-115-180/2
b=795mm

Edgewise Elbow



a=A-115mm-75mm

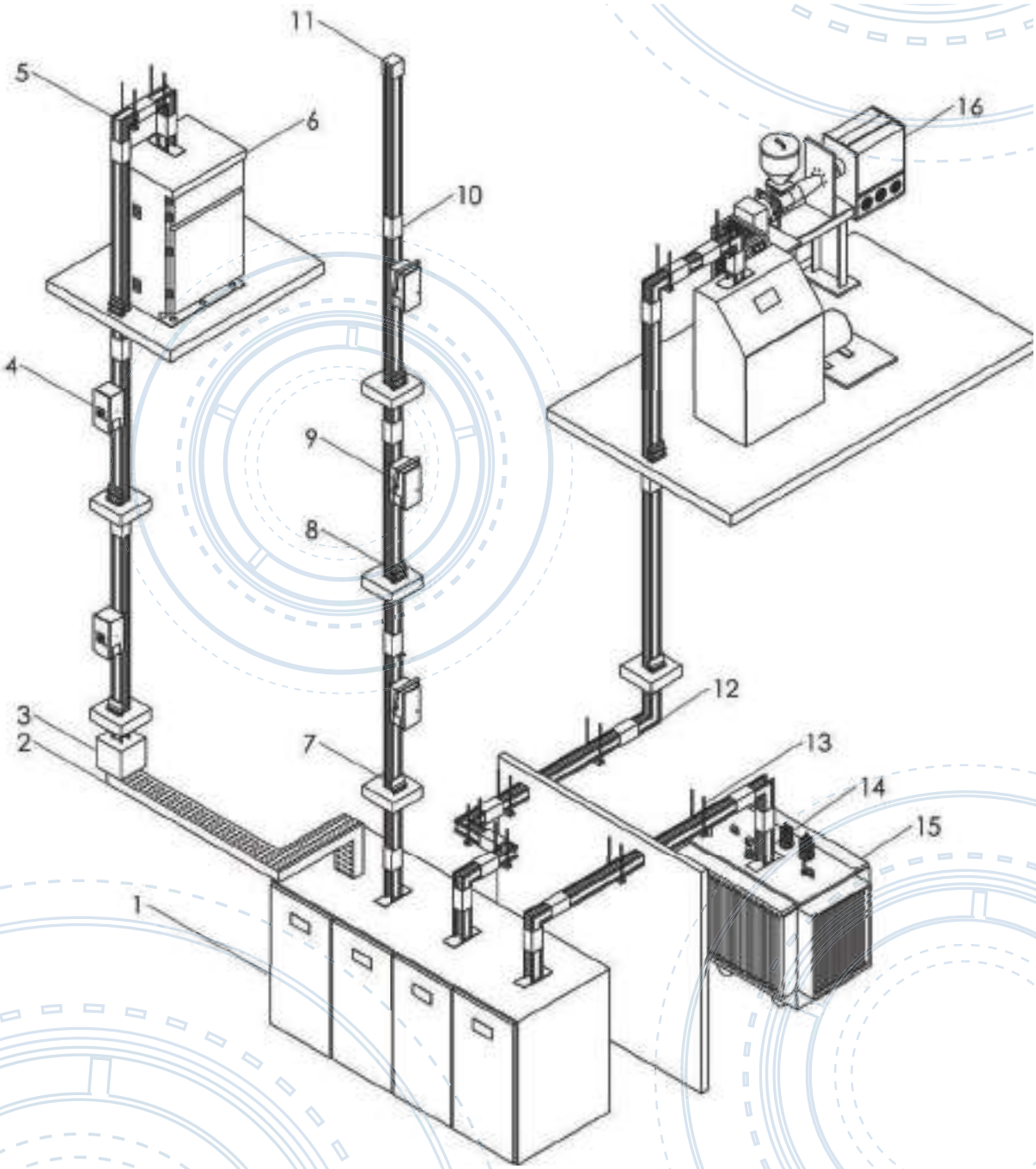
b=B-115mm-75mm

Example:
a=800mm, B=1000mm

a=800-115-75
a=610

b=1000-115-75
b=810

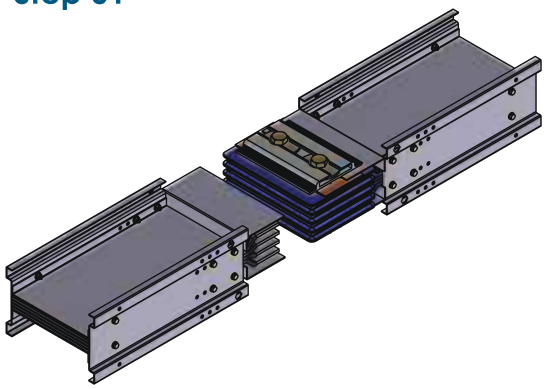
ILLUSTRATIONS OF MEGADUCT BUSDUCT TRUNKING SYSTEM



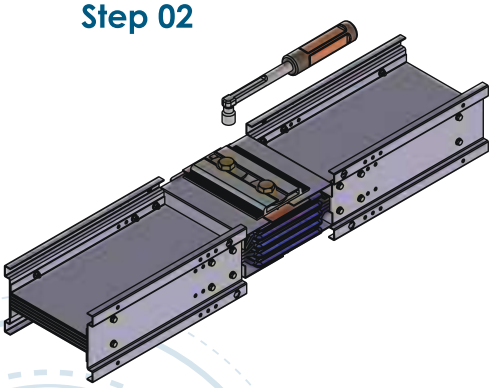
1. Main Switch Board
2. Cable Tray
3. End Feed Cable Box
4. Tap-Off Unit (Rotary Design)
5. Flatwise Elbow
6. Sub Switch Board
7. Vertical Fixed Support
8. Vertical Spring Support
9. Tap-Off Unit (Handle Design)
10. Joint
11. End Cover
12. Edgewise Elbow
13. Horizontal Support
14. Flange End
15. Transformer
16. Plastic Extruder Machine

INSTALLATION

Step 01



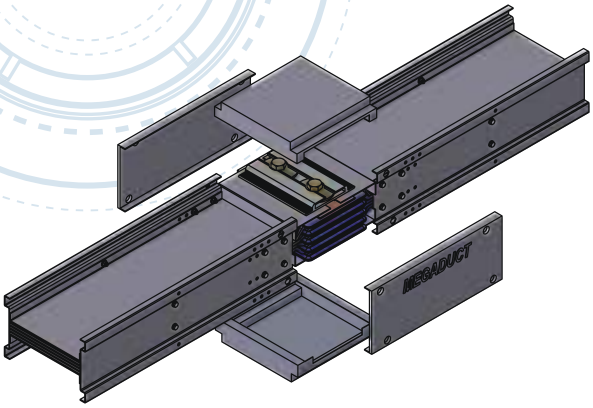
Step 02



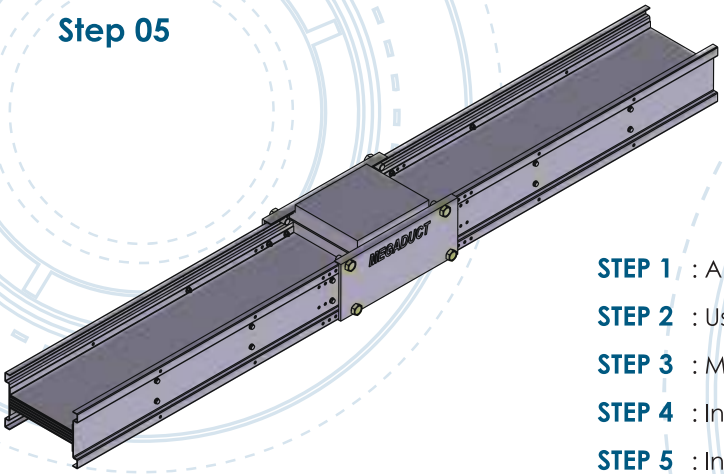
Step 03

(Side View)

Step 04



Step 05



STEP 1 : Align busduct with joint properly. Push busduct into joint.

STEP 2 : Use torque wrench to tighten for about 70~75Nm.

STEP 3 : Make sure busduct and joint are aligned properly.

STEP 4 : Insert joint cover and joint side cover on the joint system.

STEP 5 : Insert and fasten joint cover bolt.

GENERAL PRECAUTION

Storage

1. Verify the type and quantity of all part of busduct from delivery order. Inspect whether any damage or scratch during transportation.
2. Keep away busduct from wet and moisture place. Cover with water proof material for extra protection of busduct.
3. Place the stack of busduct on top of 2 pieces of wood. Make sure busduct in horizontal position.
4. To prevent the joint of the busway from being soiled,wrap them with vinyl sheet until immediate installation.

Preparation & Installation

1. Ensure equipment are strong enough for lifting and transportation.
2. Thoroughly check the laying route of the busduct to ensure it free from any obstacle, heat source and water leakage.
3. The installation usually start by connecting busduct to the transformer or switchboard.
4. Ensure to check the description and identification of each piece before installing.
5. Remove dirt and dust at joint area before installing busduct joint.
6. Ensure to test insulation resistance by merger test. The test must be performed for every joint connection.

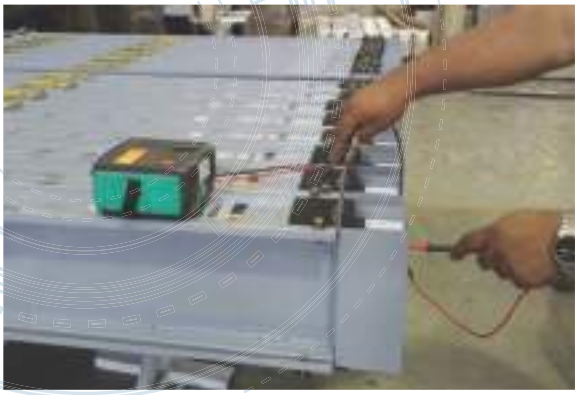
QUALITY CONTROL

Temperature Rise

Dielectric Test

Pinhole Detector

Conductivity Test



Megger Test

Epoxy Thickness Test

MEGADUCT

CERTIFICATES

UL

KEMA KEUR

ISO

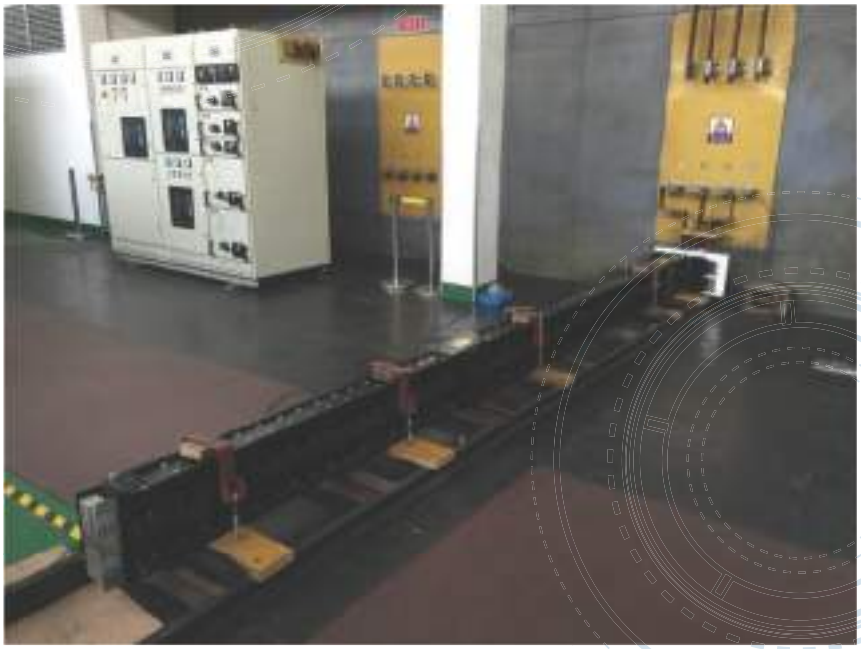
SGS

CE

Electbus
SUSTAINABLE POWER SYSTEMS

STANDARD & TESTING

LINKK provides a good structure short circuit protection design which had been certified by ASTA, KEMA & UL



Megaduct Busduct is capable of carrying full rated current continuously in ambient condition of 95% related humidity and also ambient temperature in 50°C.

Busduct design verification according to IEC 61439.

10.2 Strength of material and parts.
10.3 Degree of protection of enclosure.
10.4 Clearance and creepage distances.
10.5 Protection against electric shock an integrity of protective circuits.
10.7 Internal electrical circuit and connections.
10.8 Terminals for external conductors.
10.9 Dielectric properties.
10.10 Verification of temperature-rise.
10.11 Short-circuit withstand strength.
10.12 Electromagnetic compatibility(EMC).
10.13 Mechanical operating.

PROJECT REFERENCES

PROJECT REFERENCES

Residences


AEQUA Sukhumvit 49, Thailand


Marina Bay Central, UAE


Forest City, Malaysia


Binh Khanh, Vietnam

Hotels


Shangri-La Hotel, China

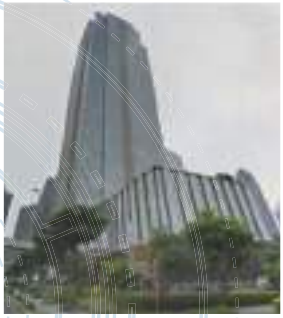

Langham Places, Hong Kong


1 Borneo, Malaysia


Novotel Manila Araneta, Philippines

Commercial Complex / Business Premises


Oriental Plaza, Vietnam

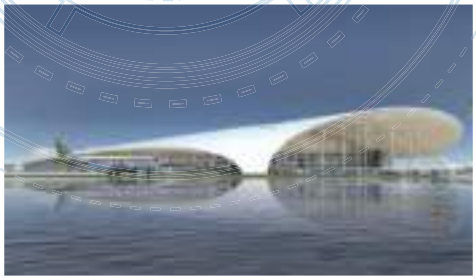

Equity Tower, Indonesia


Saigon M&C Tower, Vietnam


Telekom Tower, Malaysia


Al Shoumoukh Tower, Qatar

Airport / High Speed Rail Station


Male International Airport, Maldives


MRT, Singapore


HSR Zuoying Station, Taiwan

PROJECT REFERENCES

Hospitals


Lantau Hospital, Hong Kong

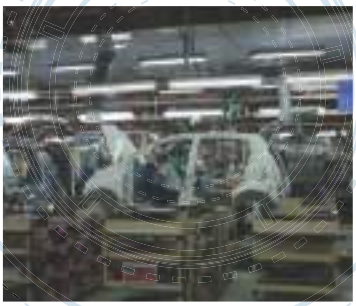

Belfast City Hospital, Northern Ireland


Bhumibol Adulyadej Hospital, Thailand


Selayang Hospital, Malaysia

Industries / Assembly Lines


Proton Factory, Shah Alam, Malaysia


Perodua Assembly Plant, Malaysia


Singpost Logistics Hub, Singapore

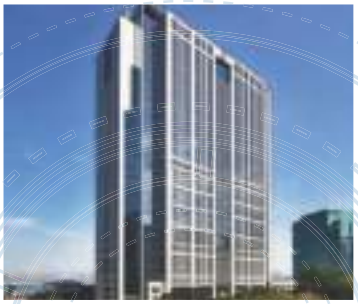

Galtronics, Vietnam

Public Centres


Changi Prison, Singapore


Garden By The Bay, Singapore


Chiang Mai Convention Centre, Thailand


Customs Headquarters Building, Hong Kong

Information Technology


Microsoft Office, India

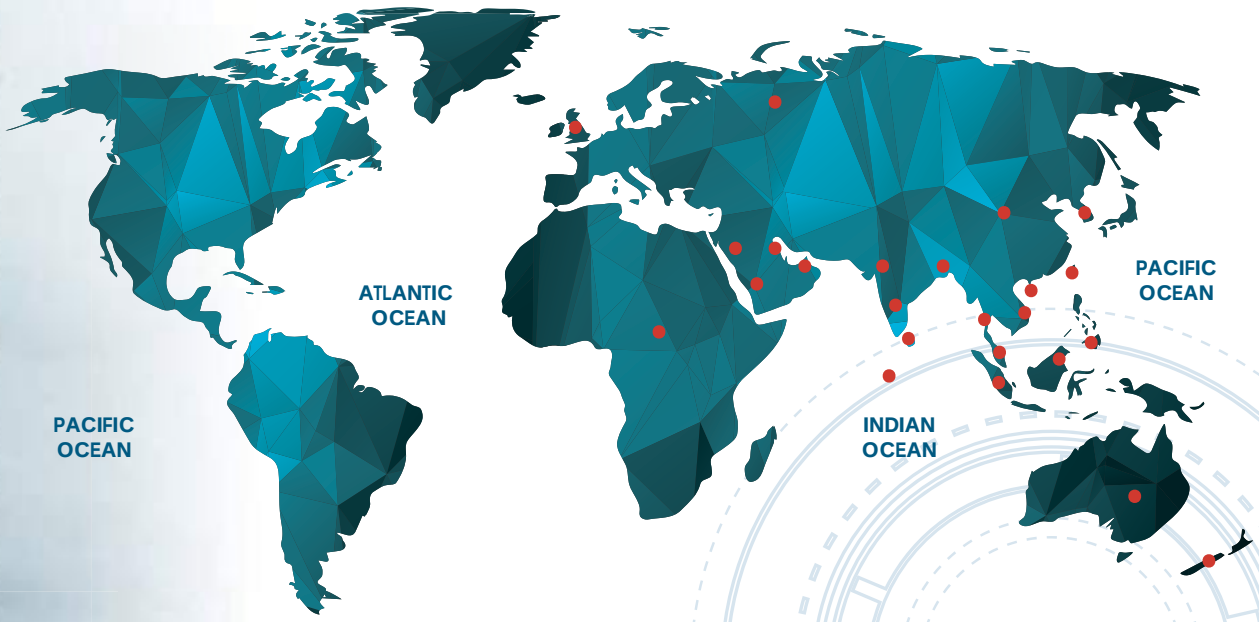

PCCW, Hong Kong


Globe Avatar Data Centre, Philippines

Electbus
SUSTAINABLE POWER SYSTEMS

MEGADUCT

Marina 101 Dubai is the tallest residential building in the world which is 426.5m (1399ft) tall. There are total 16 runs of busways (3400m) in the building from 1200A to 4000A. The skyscraper will have 5-star hotel, residential apartment and restaurant in the hotel tower. The 101st floor of the skyscraper will feature a club lounge, restaurant and merchandise store.



MEGADUCT

REVOLUTION SERIES

Sales & Marketing contact:

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