INTRODUCTION

Lightning strikes and the dangerous surges and transients induced by lightning on to power and communications lines represent a direct threat to people, buildings and sensitive electronic equipment.
Earthing plays a vital role in all electrical systems.
The correctly designed and installed earthing system will safeguard both lives & equipment.
A Good Earth Connection should have:
Low electrical resistance to earth
Good corrosion resistance
Ability to cary high currents repeatedly
A reliable life of at least 30 years.
The most underground structures have been electrically bonded to reduce hazardous voltages associated with lightning and man-made fault currents in the earth.
A common grounding system provides an economical and lower resistance to remote earth than dose an individual earthing connection.
This tends to ensure a low resistance return path for power system earth return currents and fault currents.
An additional benefit is minimizing earth potential gradients around individual earthing electrodes or elements.
It also tends to reduce step and touch voltages at the surface of the earth.

SOIL CONDITIONS

Achieving a good earth will depend on local soil conditions.
A low soil resistivity is the main aim.
The factor affecting the resistivity are:
Moisture content of the soil
Chemical composition of the soil e.g.Salt Content
Temperature of the soil.
The moisture content in the soil decreases the resistivity of the soil. Similarly, increase in the salt content reduces the resistivity, while reduction in temperature of the soil increases the resistivity.

EARTING & LIGHTNING PROTECTION SYSTEMS

TAJHIZAT SYSTEM ZAMINco. Corporation offers complete engineering services for conventional lightning protection, earthing protection and point-discharge systems based on the validate standards,i.e.the National Fire Protection Association(NFPA), the Lightning Protection Institute(UL) the Institute of Electrical & Electronic Engineers(IEEE), the American National Standards Institute(ANSI) and British standards(BS).

COPPER BOND EARTH RODS & FITTINGS

Copper bonded earth rods or ground rods are the ideal driven earth electrodes, they offer the installer an economical and efficient earth rod grounding system .
Pure electrolytic copper is uniformly moleculary bonded on to a high tensile steel core to a thickness from 25-250 micron ,thus ensuring excellent corrosion resistance and eliminating electrolytic action .
The high tensile steel core ensures strength and hardness allowing the use of power hammers for deep driven systems.
coupling threads are formed by a rolling process to ensure thread strength and to maintain the integrity of the molecularly bonded copper.the universally used thread rolling technique raises the surface of the rod .

standard : BS 6651 /UL 467

Rod Details					Coupling	Driving Head
Nominal Dia.(mm)	L (mm)	Thread Diameter (inch)	Diameter (mm)	Ord.Code	Ord.Code	Ord.Code
16	1200	5/8	14.2	MR-C 16/1200	CO 16	DH 16
16	1500	5/8	14.2	MR-C 16/1500	CO 16	DH 16
16	2000	5/8	14.2	MR-C 16/2000	CO 16	DH 16
16	3000	5/8	14.2	MR-C 16/3000	CO 16	DH 16
20	1500	3/4	17.2	MR-C 20/1500	CO 20	DH 20
20	2000	3/4	17.2	MR-C 20/2000	CO 20	DH 20
20	3000	3/4	17.2	MR-C 20/3000	CO 20	DH 20

SOLID COPPER EARTH RODS & FITTING

standard : BS 2874 C 101

Rod Details			Driving Head	Dowel	Spike
Dia.(mm)	L (mm)	Ord.Code	Ord.Code	Ord.Code	Ord.Code
16	1200	MR-S 16/1200	DH-T 16	D-T 16	DHT 16
16	1500	MR-S 16/1500	DH-T 16	D-T 16	DHT 16
20	1200	MR-S 20/1200	DH-T 20	D-T 20	DHT 20
20	1500	MR-S 20/2000	DH-T 20	D-T 20	DHT 20

STAINLESS STEEL EARTH RODS & FITING

standard : BS 670,GRADE 316S12

Rod Details			Driving Head	Dowel	Spike
Dia.(mm)	L (mm)	Ord.Code	Ord.Code	Ord.Code	Ord.Code
16	1500	MR-SS 16/1500	DH-S 16	D-S 16	DHS 16
16	2000	MR-SS 16/2000	DH-S 16	D-S 16	DHS 16
20	1500	MR-SS 20/1500	DH-S 20	D-S 20	DHS 20
20	2000	MR-SS 20/2000	DH-S 20	D-S 20	DHS 20

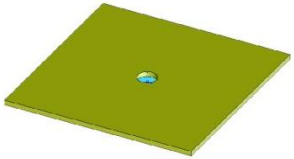
BARE STRANDED C OPPER CONDUCTOR
Standard:Din48201part1

Nominal Corss - Section (mm^2)	Construction Of Wire NO. Of Strands Diameter mm	Diameter Of Wire D mm	Theoretical Breaking Load KN	Weight Of Wire Kg/m	Weight Force/ Length N/M	Normal added Load N/M	Resistance at 20C Ω/Km	Ord. No.
10.02	7 x 1.35	4.1	4.02	0.090	0.882	5.41	1.8055	CBW 6
15.89	7 x 1.70	5.1	6.37	0.143	1.402	5.51	1.1385	CBW 10
24.25	7 x 2.10	6.3	9.72	0.218	2.138	5.63	0.7461	CBW 16
34.36	7 x 2.50	7.5	13.77	0.310	3.041	5.75	0.5265	CBW 25
49.48	7 x 3.00	9.0	19.38	0446	4.375	5.90	0.3656	CBW 35
48.35	19 x 2.10	9.5	19.38	0.437	4.286	5.90	0.3760	CBW 50
65.81	19 x 2.10	10.5	26.38	0.596	5.846	5.05	0.2762	CBW 70
93.27	19 x 2.50	12.5	37.89	0.845	8.289	6.25	0.1950	CBW 95
116.99	19 x 2.80	14.0	46.90	1.060	10.398	6.40	0.1554	CBW 120
147.11	37 x 2.25	15.8	58.98	1.337	13.115	6.58	0.1238	CBW 150
181.62	37 x 2.80	17.5	72.81	1.649	16.176	6.75	0.1003	CBW 185
242.54	61 x 2.25	20.2	97.23	2.209	21.670	7.02	0.0753	CBW 240
299.43	61 x 2.50	22.5	120.04	2.725	26.732	7.25	0.610	CBW 300

Y/G PVC COVERED STRANDED COPPER CONDUCTORS
ISIRI 607-3 IEC60227-3

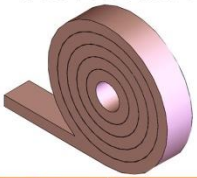
Nominal Corss - Section (mm)	Insulation Thickness (mm)	External Diameter (mm)	Weight Of Wire Kg/Km	Allowable flow (A)	Electrical resistance of the conductor in C20	Electrical resistance of the conductor in C70	Voltage (V)	Standard Length (m)	Ord. Cod.
1*16	1	8	180	98	1/21	1/45	450 / 750	100	PCW 16
1*25	1/2	9/8	280	129	0/780	0/933	450 / 750	100	PCW 25
1*35	1/2	11/4	380	158	0/554	0/663	450 / 750	100	PCW 35
1*50	1/4	12/8	540	198	0/386	0/462	450 / 750	1000	PCW 50
1*70	1/4	15/3	740	245	0/272	0/325	450 / 750	1000	PCW 70
1*95	1/6	18/2	1000	292	0/206	0/246	450 / 750	1000	PCW 95
1*120	1/6	19/7	1240	344	0/161	0/193	450 / 750	500	PCW 120
1*150	1/8	21/1	1500	391	0/129	0/154	450 / 750	500	PCW 150
1*185	2	25	1905	448	0/106	0/1250	450 / 750	500	PCW 185
1*240	2/2	27/8	2460	528	0/0801	0/0963	450 / 750	500	PCW 240

SOLID COPPER EARTH PLATES



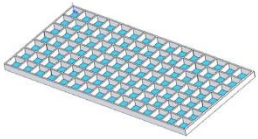
Size (mm)	Ord.Code
660x660x4	SM 664
660x660x5	SM 665
700x700x4	SM 774
500x500x4	SM 554

COPPER TAPE



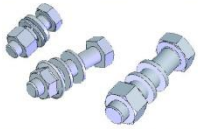
Conductor Size (mm)	Ord.Code
20x3	TTC 20x3
25x3	TTC 25x3
30x3	TTC 30x3
40x5	TTC 40x5
50x5	TTC 50x5

GROUNDING EQUIPOTENTIAL MATS



Size (mm)	Ord.Code
1000x500x20	EM 152
1000x500X30	EM 153
1000x600x40	EM 164
1000X800X30	EM 183
1200X800X30	EM 1283

HOT DIP GOLVANIZE BRASS . COPPER



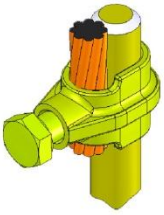
Size	Brass	Stanles Steel	Hot Deep Galvanized
M6	M 6 B	M 6 SS	M 6 HDG
M8	M 8 B	M 8 SS	M 8 HDG
M10	M 10 B	M 10 SS	M 10 HDG
M12	M 12 B	M 12 SS	M 12 HDG
M14	M 14 B	M 14 SS	M 14 HDG
M16	M 16 B	M 16 SS	M 16 HDG

CABLE LUG (CABLE SHOE)

Conductor Range (sqmm²)	10	16	25	35	50	70	95	120	150	185	240
OneHoles Ord.Code	KL10	KL16	KL25	KL35	KL50	KL70	KL95	KL120	KL150	KL 185	KL 240
TwoHoles Ord.Code	2KL10	2KL16	2KL25	2KL35	2KL50	2KL70	2KL95	2KL120	2KL150	2KL 185	2KL 240

ROD TO CABLE CLAMP

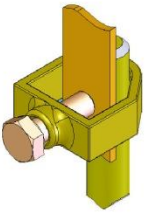
standard :BS1400/BS2874



Nominal Rod Dia. (mm)	Conductor Range ($sqmm^2$)	Ord. Code
16	16-95	CWTR 16
20	50-120	CWTR 20

ROD TO TAPE CLAMP

Nominal Rod Dia. (mm)	Tape Width (mm)	Ord. Code
16-20	20-2	CBTR 20
16-25	25-3	CBTR 30
16-25	40-5	CBTR 50



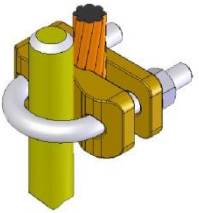
FLEXIBLE COPPER EARTH BOND

Tape Size (mm)	Length (mm)	Ord. Code
20x3	200	TE 1
25x3	200	TE 2

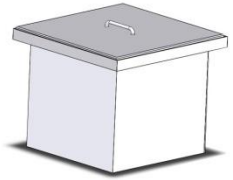
TAPE & CABLE TO PIPE CLAMP

standard :BS1400/BS2874

Conductor Range ($sqmm^2$)	Ord.Code
16-70	CPC 70
70-120	CPC 120
120-240	CPC 240



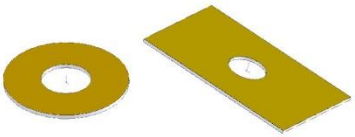
GALVANIZDE AND CONCRETE EARTH PIT



Type	Size	Ord.Code
Concrete Earth Pit	30 * 30	EPC 33
	40 *40	EPC 44
Hot Deep Galvanized Earth Pit	30 * 30	EPH 33
	40 *40	EPH 44

BIMETALLIC WASHER

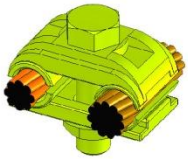
This washer with one side aluminium and in the other side copper,protect galvanic corrosion



CABLE-SUPPORT CLAMP

Conductor Range (mm^2)	Ord. Code
150-240	CWE 240

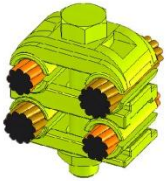
GROUNDING WIRE CLAMP (2WAY)



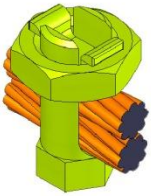
Conductor Range (mm^2)	Ord.Code
35-120	2WC 120
150-300	2WC 300

GROUNDING WIRE CLAMP (4WAY)

Conductor Range (mm^2)	Ord.Code
35-120	4WC 120
150-300	4WC 300



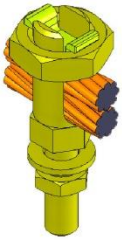
CONNECTOR CLAMP



Conductor Range ($sqmm^2$)	Ord.Code
25-35	C2W 35
50-70	C2W 70
95-120	C2W 120
150-185	C2W 185

CABLE-SUPPORT CLAMP

Conductor Range (mm^2)	Ord.Code	Screw Range (mm)
25-35	C2WE 35	M6
50-70	C2WE 70	M10
95-120	C2WE 120	M12
150-185	C2WE 185	M14



C CLAMP

Branch / Main	6	10	16	25	35	50	70	95	120	150	185	240	300
6	T-11												
10	T-16	T-20											
16	T-20	T-26	T-44										
25	T-44	T-44	T-44	T-44									
35	T-44	T-44	T-60	T-60	T-75								
50	T-60	T-76	T-76	T-76	T-98	T-122							
70	T-76	T-76	T-98	T-98	T-122	T-122	T-154						
95	T-98	T-98	T-122	T-122	T-122	T-154	T-154	T-190					
120	T-154	T-154	T-154	T-154	T-190	T-190	T-240	T-240	T-288				
150	T-190	T-190	T-190	T-190	T-190	T-240	T-240	T-240	T-288	T-365			
185	T-190	T-190	T-240	T-240	T-240	T-240	T-288	T-288	T-365	T-365	T-365		
240	T-240	T-240	T-240	T-240	T-240	T-288	T-288	T-288	T-365	T-365	T-450	T-450	
300	T-365	T-365	T-365	T-365	T-365	T-365	T-450	T-450	T-450	T-560	T-560	T-560	T-700
400				T-450	T-450	T-560	T-540	T-560	T-560	T-560	T-700	T-700	
500					T-560	T-700	T-700	T-700	T-700	T-700	T-700	T-700	

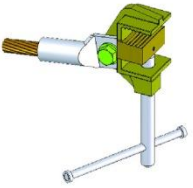
TEMPORARY EARTHING DEVICES

standard : *Bs1400 GRADE Lm6*
standard : *IEC 61235*

HIGH VOLTAGE CONDUCTOR SCREW CLAMP

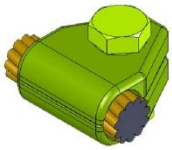
EARTHING CABLE

PENETRATING EARTHING CLAMP



for other dimentions and shapes contact our office

TOWER EARTH CLAMP



Conductor Range (sqmm²)	Ord. Code
50	CTW50
70	CTW70

CABLE CLIP

standard : BS1400/BS1471/BS2874/BS2897

Conductor Range (sqmm²)	Ord. Code
16-50	CWF 50
70-120	CWF 120

WIRE CROSS

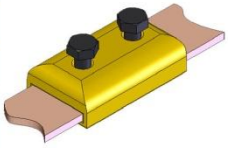
standard : BS1400/BS1471/BS2874/BS1471

Conductor Range (sqmm²)	Ord. Code
50	CWW 50
70	CWW 70

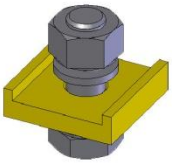
STRAIGHT TEST CLAMP

standard : BS1400/BS1471/BS2874/BS1471

Tape (mm)	Ord. Code
25x3	BBT (25x3)
30x3	BBT (30x3)
50x5	BBT (50x5)



TAPE BOND



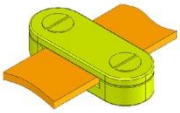
Max. Tape (mm)	Ord. Code
30x3	BB (30x3)
25x3	BB (25x3)
20x3	BB (20x3)

TAPE CLIP

Tape Size (mm)	Ord.Code
20x3	TD 20x3
25x3	TD 25x3
30x3	TD 30x3
40x5	TD 40x5

TAPE CLAMP

standard : BS1400/BS1471



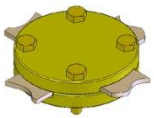
Tape Size (mm)	Ord. Code
20x3	2TD 20x3
25x3	2TD 25x3
30x3	2TD 30x3
50x5	2TD 50x5

ONE HOLE CABLE CLIP

Tape Size (mm)	Ord.Code
16	BCWD 16
25	BCWD 25
35	BCWD 35
50	BCWD 50
70	BCWD 70
95	BCWD 95
120	BCWD 120

CROSS TAPE CLAMP

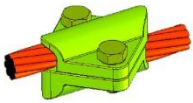
standard : BS1400/BS2874/BS1471



Tape Size (mm)	Ord. Code
25x3	TXT 25x3
30x3	TXT 30x3
50x5	TXT 50x5

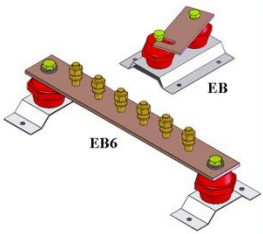
CABLE TO CABLE TEST CLAMP

Conductor Size(sqmm²)	Ord. Code
50	CTWW 50
70	CTWW 70
95	CTWW 95

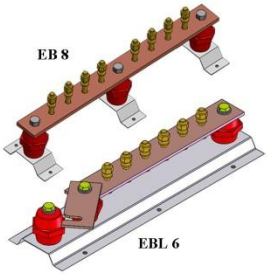


EARTH BARS & DISCONNECTING LINKS

standard : BS1433/BS2874 C101



Type Size (mm)	L*W*H (mm)	Ord. Code
DISCONNECTING LINK	130x50x5	EB
6 WAY EARTH BAR	300x50x5	EB 6
6 WAY EARTH BAR WITH SINGLE DISCONNECTING LINKS	400x50x5	EBL 6
8 WAY EARTH BAR	400x50x5	EB 8



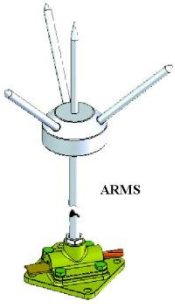
AIR ROD DIRECTING

standard : BS1400/BS1491/BS2897

Size (mm)	Rad Length (mm)	Ord. Code
M 16	1000-2000	CDT 16
M 20	1000-2000	CDT 20

STRIP & CONDUCTOR AIR ROD BASE

standard : (AIR RODS)BS1432 C101/BS2897



Rod Dia. (mm)	Conductor Size (sqmm²)	Max. Tape Width (mm)	Length (mm)	Air Rod Simple	Air Rod Moulti Point	Air Rod Saddle
				Ord. Code	Ord. Code	Ord. Code
16	50-70	25x3	500-1500	ARS16	ARMS16	PBWT 16
20	50-95	25x3	500-1500	ARS20	ARMS20	PBWT 20

EARLY STREAMER EMISSION AIRTERMINAL (ESE)

FOREND PETEX-L

Ref. NO: **F10115**
Material: **Chromium Plated Copper**
Acc.to NFC-17 102 △T:60μs
Weight = 2,5 kg
Height = 50 cm

Réf. No: F10115
Matériel : Cuivre Chromé
Conf. à NFC-17 102 △T: 60μs
Poids = 2,5 kg
Hauteur = 50 cm

Ref. No: F10115
Material : Cobre Cromo Plateado
NFC-17 102 △T:60μs
Peso = 2,5 kg
Altura = 50 cm

Код: F10115
Материал: Хромированная медь
ΔT:NFC 17102: ΔT=60μs
Вес (кг): 2,5
Высота (см): 50

FOREND EU

Ref. NO: **F10110**
Material: **Stainless Steel**
Acc.to NFC-17 102 △T:60μs
Weight = 4,4 kg
Height = 63 cm

Réf. No: F10110
Matériel : Acier Inoxydable
Conf. à NFC-17 102 △T: 60μs
Poids = 4,4 kg
Hauteur = 63 cm

Ref. No: F10110
Material : Acero Inoxidable
NFC-17 102 △T:60μs
Peso =4,4kg
Altura= 63cm

Код: F10110
Материал: Нержавеющая сталь
NFC 17102 ΔT:60μs
Вес (кг): 4,4
Высота (см): 63

	FOREND PETEX - S (Δ L=30m)				FOREND EU-M and FOREND PETEX-M (Δ L=45m)				FOREND EU and FOREND PETEX-L (Δ L=60m)			
Rp (m)	(ΔT=30μs)				(ΔT=45μs)				(ΔT=60μs)			
h(m)	Level I Niveau I Nivel I СТЕПЕНЬ I	Level II Niveau II Nivel II СТЕПЕНЬ II	Level III Niveau III Nivel III СТЕПЕНЬ III	Level IV Niveau IV Nivel IV СТЕПЕНЬ IV	Level I Niveau I Nivel I СТЕПЕНЬ I	Level II Niveau II Nivel II СТЕПЕНЬ II	Level III Niveau III Nivel III СТЕПЕНЬ III	Level IV Niveau IV Nivel IV СТЕПЕНЬ IV	Level I Niveau I Nivel I СТЕПЕНЬ I	Level II Niveau II Nivel II СТЕПЕНЬ II	Level III Niveau III Nivel III СТЕПЕНЬ III	Level IV Niveau IV Nivel IV СТЕПЕНЬ IV
2	19	22	25	28	25	28	32	36	31	35	39	43
4	38	44	51	57	51	57	64	72	63	69	78	85
5	48	55	63	71	63	71	81	89	79	86	97	107
6	48	55	64	72	63	71	81	90	79	87	97	107
8	49	56	65	73	64	72	82	91	79	87	98	108
10	49	57	66	75	64	72	83	92	79	88	99	109
20	50	59	71	81	65	74	86	97	80	89	102	113
30	50	60	73	85	65	75	89	101	80	90	104	116
60	50	60	75	90	65	75	90	105	80	90	105	120

LIGHTNTNG STRIKE COUNTER
-Produced according to IP65
-Nonresetable

EXOTHERMIC WELDING SYSTEMS
Requirements of Electrcal Connection

Poor connecetions beetween conductors are often the cause of electrical failures.
An ideal connection should process the following qualities :
1- Maintains contact inegrity and electrical continuity
2- When conducting electrical current, connector temperature should remain lower than that of the conductor.
3-Able to withstand overload conditioin without melting, burning of failing.
4-Long service life, will not deteriorate, loosen or corrode when subjected to weather over time.

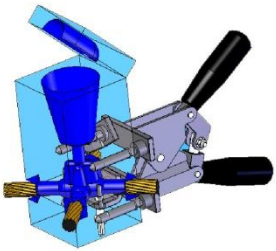
Beetween all the varirties of electrical connectors can meet above criteria exothermic welding is the best choice where :

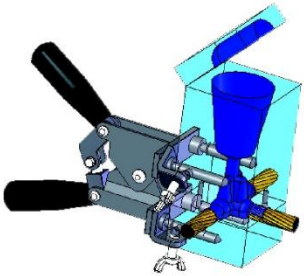
1-Safety
2-Reliability
3-Current caring capacity
4-Long lifetime

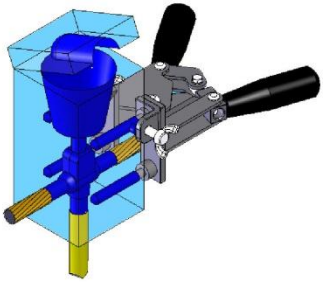
As recommended by IEC standards all grounding system connections should be made by exothermic weld.

Connection should include
But not be limited to:

All cable to cable splices
TA, XA etc
All cable to ground rods
Ground rod splices
Cable to steel and cast iron
Cable lug termination







Tool Kits

A flint gun is required to start the reaction , a set of cleaning tools clean the conductors and mould.
The tool kit comprises :
File card brush for cleaning conductors.

Mould brush for removing slag left in the cruible, after a joint has been made.

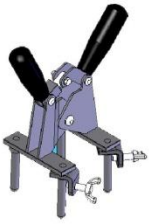
Flint gun for starting the reaction.

Mould scraper for removing slag left
In the crucible after a joint has been made.

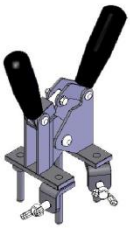
Glove.

Mould handle clamp

3 or 4 types of handle clamps are designed and manufactured for use with moulds to fastening of moulds during proccess.



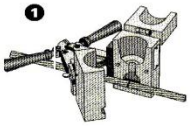
Hc100



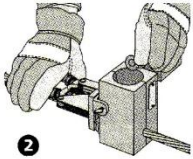
Hc80

Hc50

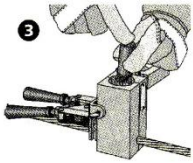
FOUR SIMPLE STEPS



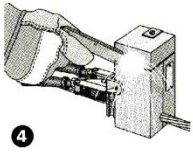
STEP 1. Prepare conductor ends with a wire brush for welding.Place cable ends into open mould



STEP 2. Close handles to lock mould halves together. Drop metal disk into crucible ensuring it is correctly seated,covering tap hole.

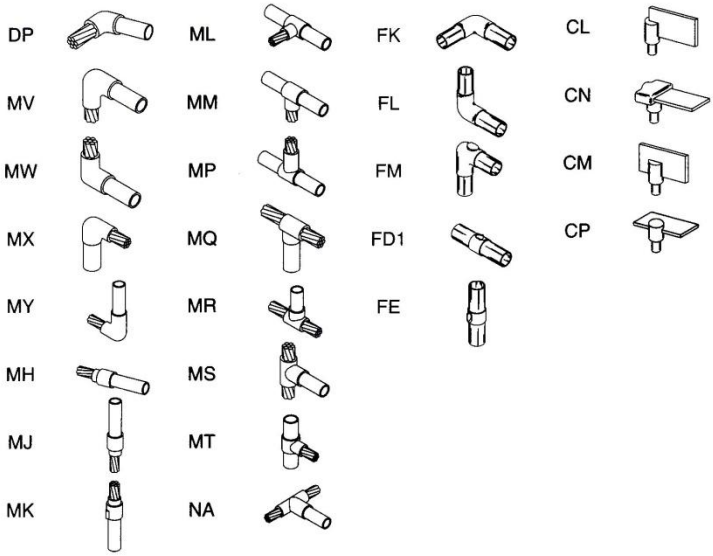


STEP 3.Deposit weld metal into curcible.Tap bottom of container to release starting material.Spread a little starting material on top of mould.



STEP 4.Close the cover and ignite with flint gun.Open the mould after 10 seconds, when metal has solidified.

DIFFERENT TYPE OF CONNECTIONS



DIFFERENT TYPE OF CONNECTIONS

PH
PJ
PK
PM
PN
PA
PB
PC
PD
PG
PP
PQ
PR
SC
SD
SE
SV

VH
VJ
VK
VL
VR
HF
HG
VA
VC
VE
HE
HH
HJ
HK
VX
FN
FP
EW

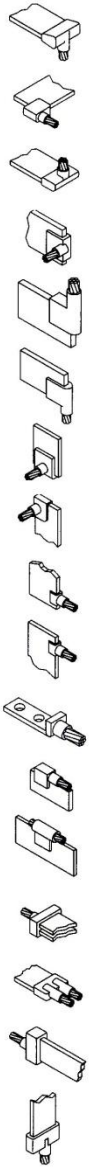
GG
GH
GJ
GK
GM
GN
GX
NB
NC
ND
VW
FK
FL
FM
FD1
FE

GQ
GS
DQ
GP
GW
GD
GE
GF
GV
HB
VN
HC
HT
VF
VB
VG
VT
VV

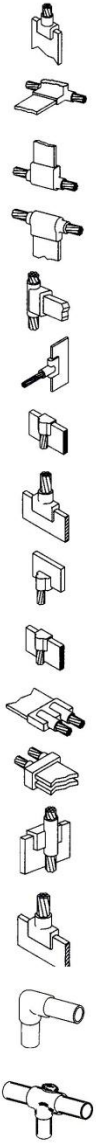
TC
TD
TE
TF
TL
TV
XC
XD
XF
XG
YC
YD
YE
FR
FS

DIFFERENT TYPE OF CONNECTIONS

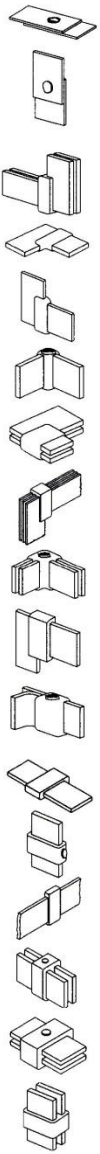
DN LX LY MA MB MC MD ME MF MG PL LV LW DM DS LB LC



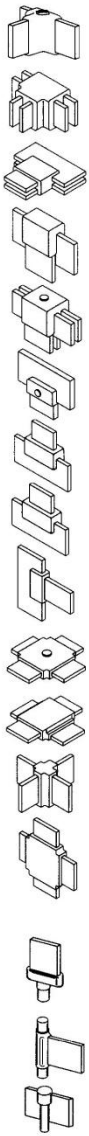
LD LE LF LG LH LK LL LM LN LP LS LT LQ LR FT FV



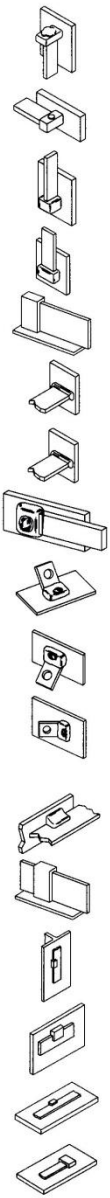
TW TX DJ EN EQ ER ES ET EV EP BJ BB BC BD BF BG BH

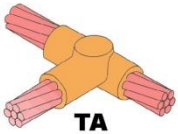


BK BL BN BR BS BT BV DE EE EA EB EC ED CS CQ CR



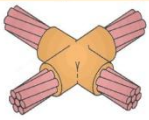
BX BY CA CB CJ DC DD DF HL HM HN CD CK CF CC CH CG





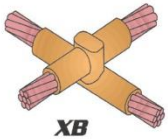
TA

Section sqmm²		Tap Conductor									
		25,16 10	35	50	70	95	120	150	185	240	300
Main Conductor	25,16 10	C – 45 HC-50									
	35	C – 45 HC-50	C – 45 HC-50								
	50	C – 65 HC-50	C – 65 HC-50	C-90 HC-50							
	70	C – 65 HC-80	C – 65 HC-80	C – 90 HC-80	C – 90 HC-80						
	95	C – 90 HC-80	C – 90 HC-80	C – 90 HC-80	C – 90 HC-80	C –115 HC-80	C – 115 HC-80				
	120	C – 90 HC-80	C – 90 HC-80	C – 90 HC-80	C – 90 HC-80	C-115 HC-80	C-150 HC-80	C-150 HC-80	C-150 HC-80		
	150		C-115 HC-80	C-115 HC-80	C-115 HC-80	C-150 HC-80	C-150 HC-80	C-200 HC-80	C-200 HC-80	C-200 HC-80	
	185		C-115 HC-80	C-150 HC-80	C-150 HC-80	C-150 HC-80	C-200 HC-80	C-200 HC-80	C-200 HC-80	C-250 HC-80	
	240			C-150 HC-80	C-150 HC-80	C-150 HC-80	C-200 HC-80	C-200 HC-80	C-250 HC-80	2*C-150 HC-100	
	300			C-200 HC-80	C-200 HC-80	C-200 HC-80	C-250 HC-80	C-250 HC-80	2*C-150 HC-100	2*C-200 HC-100	2*C-200 HC-100



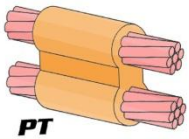
XA

Section sqmm²		Tap Conductor									
		25,16 10	35	50	70	95	120	150	185	240	300
Main Conductor	25,16 10	C – 45 HC-80									
	35	C – 65 HC-80	C – 65 HC-80								
	50	C – 90 HC-80	C – 90 HC-80	C-90 HC-80							
	70		C-115 HC-80	C-115 HC-80	C-115 HC-80						
	95		C-115 HC-80	C-115 HC-80	C –150 HC-80	C –150 HC-80					
	120		C-115 HC-80	C –150 HC-80	C –150 HC-80	C-200 HC-80	C-200 HC-80				
	150		C –150 HC-80	C –150 HC-80	C –150 HC-80	C-200 HC-80	C-250 HC-80	C-250 HC-80			
	185			C-200 HC-80	C-200 HC-80	C-200 HC-80	C-250 HC-80	C-250 HC-80	C-250 HC-80		
	240				C-250 HC-80	2*C-150 HC-100	2*C-150 HC-100	2*C-200 HC-80	2*C-200 HC-80	2*C-250 HC-100	
	300				2*C-150 HC-80	2*C-150 HC-80	2*C-200 HC-80	2*C-200 HC-80	2*C-200 HC-100	2*C-250 HC-100	2*C-250 HC-100



XB

Section sqmm²		Tap Conductor							
		25,16 10	35	50	70	95	120	150	185
Main Conductor	25,16 10	C – 45 / HC-50							
	35	C – 90 / HC-50	C – 90 / HC-50						
	50		C – 115 / HC-80	C-150 / HC-80					
	70		C-150 / HC-80	C – 200 / HC-80	C –200 / HC-80				
	95		C –200 / HC-80	C –200 / HC-80	C –250 / HC-80	C –250 / HC-80			
	120			C –250 / HC-80	C –250 / HC-80	2*C-150 / HC-100	C-250 / HC-100		
	150				C –250 / HC-80	2*C-150 / HC-100	2*C-200 / HC-100	2*C-150 / HC-100	
	185				2*C-200 / HC-100	2*C-200 / HC-100	2*C-250 / HC-100	2*C-250 / HC-100	2*C-200 / HC-100

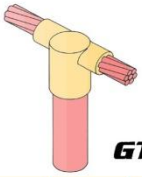


PT

Section (sqmm²)		Main Conductor									
		25,16 10	35	50	70	95	12	150	185	240	300
Main Conductor	25,16 10	C – 65 / HC-80									
	35	C – 65 / HC-80	C – 65 / HC-80								
	50	C – 65 / HC-80	C – 90 / HC-80	C – 115 / HC-80							
	70		C – 90 / HC-50	C – 115 / HC-80	C –115 / HC-80						
	95		C – 115 / HC-80	C – 115 / HC-80	C-150 / HC-80	C-150 / HC-80					
	120		C – 150 / HC-80	C -150 / HC-80	C-150 / HC-80	C-200 / HC-80	C-250 / HC-80				
	150		C – 150 / HC-80	C -150 / HC-80	C-150 / HC-80	C-200 / HC-80	C-250 / HC-80	2*C-150 / HC-100			
	185		C – 150 / HC-80	C -150 / HC-80	C-150 / HC-80	C-200 / HC-80	C-250 / HC-80	2*C-150 / HC-80	2*C-150 / HC-80		
	240			C -200 / HC-80	C-200 / HC-80	C-250 / HC-80	C-250 / HC-80	2*C-150 / HC-80	2*C-200 / HC-100	2*C-200 / HC-100	
	300			C -250 / HC-80	C-250 / HC-80	C-250 / HC-80	2*C-150 / HC-80	2*C-150 / HC-80	2*C-200 / HC-100	2*C-250 / HC-100	2*C-250 / HC-100

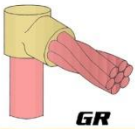
SS

Conductor Section ($sqmm^2$)	25,16 10	35	50	70	95	120	150	185	240	300
Cartridge Clamp	C – 32 HC-80	C – 45 HC-80	C – 45 HC-80	C – 65 HC-80	C – 90 HC-80	C – 115 HC-80	C – 115 HC-80	C – 150 HC-80	C – 200 HC-80	C – 250 HC-80



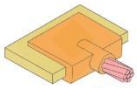
GT

Cable sec $sqmm^2$ / Rod Dia.mm	16/25	35	50	70	95	120	150	185	240	300
MR-C16	C – 65 HC-80	C – 90 HC-80	C – 90 HC-80	C – 115 HC-80	C – 115 HC-80	C – 150 HC-80	C – 200 HC-80	C – 200 HC-80	C – 250 HC-80	2*C – 150 HC-80
MR-C20	C – 90 HC-80	C – 90 HC-80	C – 90 HC-80	C – 115 HC-80	C – 150 HC-80	C – 150 HC-80	C – 200 HC-80	C – 250 HC-80	C –2* 150 HC-80	C –2* 150 HC-80



GR

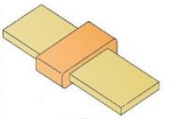
Cable sec $sqmm^2$ / Rod Dia.mm	16/25	35	50	70	95	120	150	185	240	300
MR-C16	C – 65 HC-80	C – 65 HC-80	C – 90 HC-80	C – 90 HC-80	C – 90 HC-80	C – 90 HC-80	C – 115 HC-80	C – 115 HC-80	C – 150 HC-80	C – 200 HC-80
MR-C20	C – 65 HC-80	C – 65 HC-80	C – 90 HC-80	C – 90 HC-80	C – 115 HC-80	C – 115 HC-80	C – 150 HC-80	C – 150 HC-80	C – 200 HC-80	C – 200 HC-80



LJ

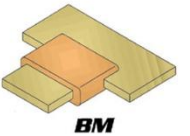
Section mm^2 / Thick mm	16,25	35	50	70	95	120	150	185	240
...*3	C – 45 HC-80	C – 45 HC-80	C – 45 HC-80	C – 65 HC-80	C – 95 HC-80				
...*5	C – 65 HC-80	C – 65 HC-80	C – 65 HC-80	C – 95 HC-80	C – 115 HC-80				
...*10					C – 150 HC-80	C – 150 HC-80	C – 150 HC-80	C – 200 HC-80	C – 250 HC-80

Main & Tap	20*2 20*3	20*5 25*3	25*5	30*5	30*5	40*3	40*5	40*10	50*5	50*10	60*5	60*10	80*5	80*10
Cartridge Clamp	C – 45 HC-80	C – 65 HC-80	C – 90 HC-80	C – 65 HC-80	C – 115 HC-80	C – 90 HC-80	C-150 HC-80	2*C-150 HC-80	C-200 HC-80	2*C-200 HC-80	2*C-150 HC-80	2*C-200 HC-80	2*C-250 HC-100	3*C-200 HC-100



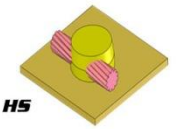
BB

Main & Tap	20*2 20*3	20*5 25*3	25*5	30*5	30*5	40*3	40*5	40*10	50*5	50*10	60*5	60*10	80*5	80*10
Cartridge Clamp	C – 45 HC-80	C – 65 HC-80	C – 90 HC-80	C – 65 HC-80	C – 115 HC-80	C – 90 HC-80	C-150 HC-80	2*C-150 HC-80	C-200 HC-80	C-250 HC-80	2*C-150 HC-80	2*C-150 HC-100	2*C-200 HC-100	2*C-250 HC-100



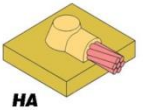
BM

Section (mm^2)	25,16 10	35	50	70	95	120	150	185	240	300
Cartrige Clamp	C-65 HC-50	C-90 HC-80	C-115 HC-80	C-115 HC-80	C-150 HC-80	C-150 HC-80	C-200 HC-80	C-250 HC-80	2*C-150 HC-100	2*C-150 HC-100



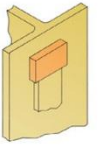
HS

Section (mm^2)	25,16 10	35	50	70	95	120	150	185	240	300
Cartrige	C-65	C-65	C-90	C-90	C-115	C-115	C-150	C-150	C-200	C-250



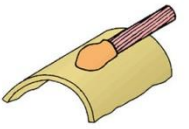
HA

Section (mm^2)	20*3	25*3	30*3	30*5	50*3	50*5
Cartrige Clamp	C-90 HC-80	C-90 HC-80	C-115 HC-80	C-150 HC-80	C-150 HC-80	C-250 HC-80



BW

Section (mm^2)	16,10	25	35	50	70	95
Cartrige	C-15	C-25	C-32	C-45	C-65	C-115



VP