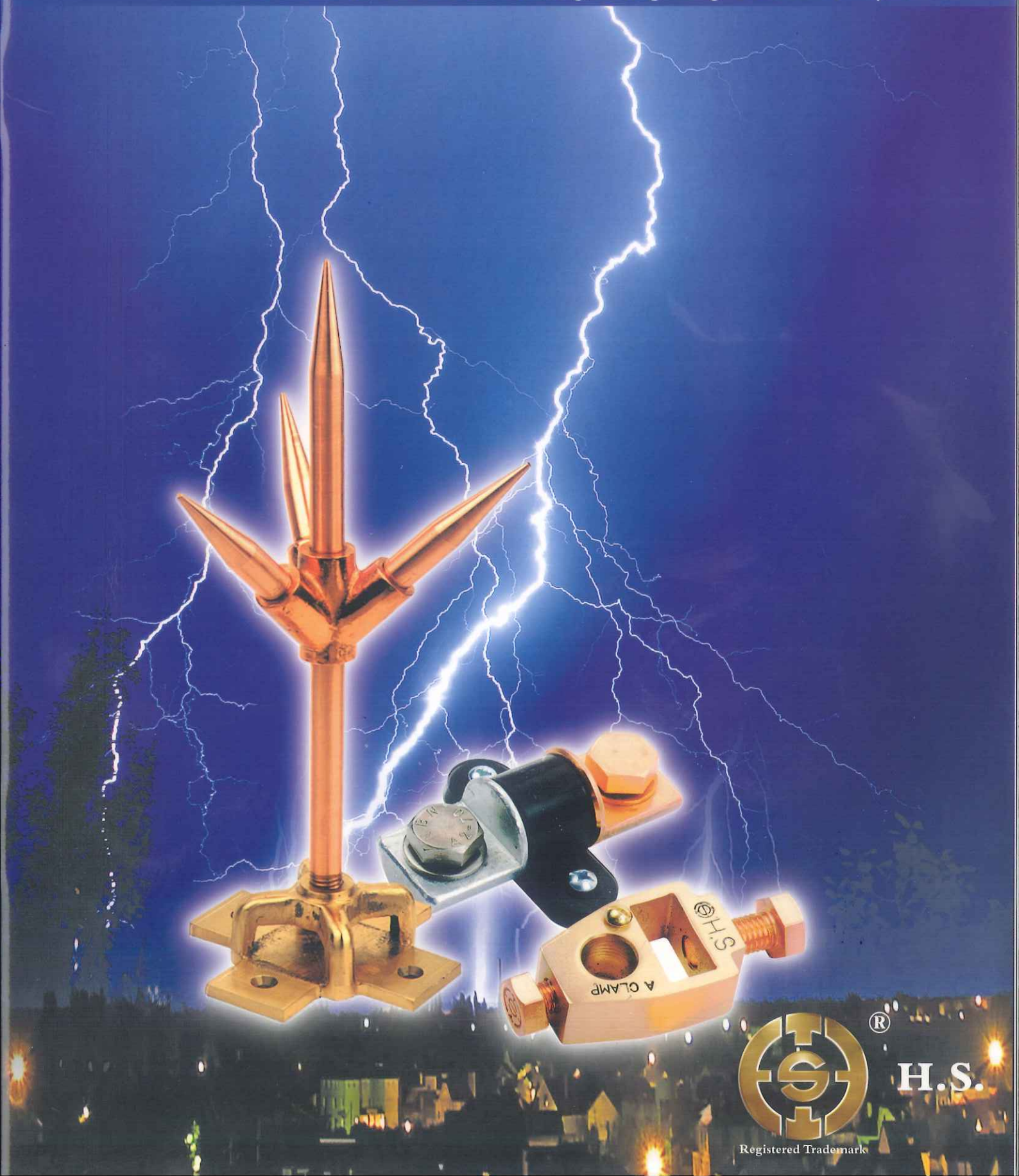
Hong Seng Industries Co.

Email: hsico@singnet.com.sg
Website: www.hongsengmfg.com

Registered Trademark

Catalogue 2015
Quality & Assurance.

Insist On Our Patented Earthing & Lighting Protection System



H.S.

Registered Trademark

Foreword

We are the manufacturer of earthing and lighting protection equipment and accessories and cable gland established since 1972. The high quality of our products has won us an excellent reputation in the market, and our products are tested by Singapore Productivity and Standards Board and approved by Housing and Development Board.

First of all, we would like to thank all our customers for their warm support, without which we would not be able to achieve today's status as a manufacturer specialising in this line and to bring this catalogue into the market as a quick reference to our products for our customers.

In a word, we will double our effort and use our good experience and knowledge as a specialist to produce higher and better quality products and services at a more competitive price to serve our customers in future.

本公司成立于1972年，是一间专门生产避雷与电缆接头器材的工厂。所生产的各种产品质量卓越，深受各方客户的赞许。不但获得新加坡工业标准与研究所的验证，以及得到建屋局的批准使用证书。

首先，本公司要感谢各方客户的拥戴与支持，才能使我们的业务取得长远的发展，进而才能将这一本产品手册推介给客户们，从而了解各种产品的类型，品质与规格。

今后，我们将竭尽所能，结合我们多年的累积经验与专业知识，为大家提供更物廉兼高质量的各类产品，以及更完善的服务。

HS Standard

STANDARDS

H.S. Earthing & Lighting Products are manufactured and tested to method of test adopted from BS 6651 : 1985 & SS CP 33 : 1996 or Singapore Standard SS 322 : 1987 'The Protection of Structures against Lighting'.

H.S. Cable Glands are manufactured and tested to the Standard of BS 6121 : 1973 that suit cable of standard BS 6346. Nominal diameters of cables that deviate from BS 6346 shall not be the responsibility of our company.

QUALITY

H.S. products are manufactured in high quality brass, aluminium, bronze and copper.

Our company is prepared to undertake die casting of aluminium alloy and brass products not printed in this catalogue, and products non-related to lightning.

The manufacturer has taken every effort to maintain and keep the standard and quality of all the products as contained in this catalogue, but will not accept any legal responsibility for any claims whatsoever for inaccuracy, errors or omissions, and reserves the right to modify and change the design of the products in this catalogue in term of PSB or HDB required and technical improvement.

REPUBLIC OF SINGAPORE
TRADE MARKS ACT (CHAPTER 332)
CERTIFICATE ISSUED UNDER SECTION 31

TRADE MARK NO.: 8448/94

TO:
TAN NGAK CHIANG AND LIM AH EE (ALL SINGAPOREANS)
TRADING AS HONG SENG INDUSTRIES CO.

I HEREBY CERTIFY that under the provisions of the Trade Marks Act, your name has been entered in Part A *of the Register as proprietor of the above numbered Trade Mark as from the* 29th day of September 1994 *in Class* 6 *in respect of the following:—*

Small items of metal hardware, metal clamps, metal connectors, metal clips, eyebolts, boxes of common metals, aluminimum strips, copper strips, aluminium sheets, copper sheets, metal glands; all included in Class 6.

A representation of the Trade Mark is affixed hereto.

Liew Woon Yin (Ms)
Registrar

REGISTRY OF TRADE MARKS
SINGAPORE

Registration is for a period of 10 years and may be renewed at the expiration of this period and upon the expiration of each succeeding period of 10 years.

Form TM18

TEST REPORT: 7191091414-CHM14-KPF

Date: 11 AUG 2014 Tel: +65 68851291 Fax: +65 67784301
Client's Ref: Email: huayi.chen@tuv-sud-psb.sg

PSB Singapore

Note: This report is issued subject to the Testing and Certification Regulations of the TÜV SÜD Group and the General Terms and Conditions of Business of TÜV SÜD PSB Pte Ltd. In addition, this report is governed by the terms set out within this report.

Choose certainty. Add value.

SUBJECT

Evaluation Test Of Bi-Metallic Connector

CLIENT

HONG SENG INDUSTRIES CO.
Blk 4003 Depot Lane
#01-77
Singapore 109757

Attn: Tan Ngak Chiang

SAMPLE SUBMISSION DATE

30 JUN 2014

DESCRIPTION OF SAMPLE

One sample of bi-metallic connector was received with the following details:

Brand	: HS
Model No.	: LPS-1
Quantity	: Five (5) unites
Manufacturer	: Hong Seng Industries Company
Country of Origin	: Singapore

METHOD OF TEST

The test methods follow Clause 56 of HDB Standard Specification for Building Works & Other Installation

1. Microscopic examination of friction weld surface
2. Electrical interface resistance
3. Tensile strength of joint

Laboratory:
TÜV SÜD PSB Pte. Ltd.
No 1 Science Park Drive
Singapore 118221

Phone: +65 6885 1333
Fax: +65 6776 6670
E-mail: testing@tuv-sud-psb.sg
www.tuv-sud-psb.sg
Co. Reg: 199002068R

Regional Head Office:
TÜV SÜD Asia Pacific Pte. Ltd.
3 Science Park Drive, #04-08/15
The Fronthe, Singapore 118223

TEST REPORT: 7191091423-CHM14-KPF-01

Date: 04 DEC 2014 Tel: +65 68851291 Fax: +65 67784301
Client's Ref: Email: huayi.chen@tuv-sud-psb.sg

PSB Singapore

Note: This report is issued subject to the Testing and Certification Regulations of the TÜV SÜD Group and the General Terms and Conditions of Business of TÜV SÜD PSB Pte Ltd. In addition, this report is governed by the terms set out within this report.

Choose certainty. Add value.

SUBJECT

Verification test on Earth rod clamp

CLIENT

HONG SENG INDUSTRIES CO.
Blk 4003 Depot Lane
#01-77
Singapore 109757

Attn: Tan Ngak Chiang

SAMPLE SUBMISSION DATE

30 JUN 2014

DESCRIPTION OF SAMPLE

One sample of copper earth rod clamp was received with the following details:

Trade Name	: HS
Model No.	: BZ 309
Material	: Phospher Bronze
Manufacturer	: Hong Seng Industries Company
Country of Origin	: Singapore

METHOD OF TEST

1. Documentation by photography
2. Copper and Lead content by Electrolytic Deposition Method
3. Other elements by Inductively Coupled Plasma – Atomic Emission Spectrometry
4. Tensile strength Test
5. Electrical Resistance Test

Laboratory:
TÜV SÜD PSB Pte. Ltd.
No 1 Science Park Drive
Singapore 118221

Phone: +65 6885 1333
Fax: +65 6776 6670
E-mail: testing@tuv-sud-psb.sg
www.tuv-sud-psb.sg
Co. Reg: 199002068R

Regional Head Office:
TÜV SÜD Asia Pacific Pte. Ltd.
3 Science Park Drive, #04-08/15
The Fronthe, Singapore 118223

TEST REPORT: 7191091423-CHM14-KPF-02

Date: 04 DEC 2014 Tel: +65 68851291 Fax: +65 67784301
Client's Ref: Email: huayi.chen@tuv-sud-psb.sg

PSB Singapore

Note: This report is issued subject to the Testing and Certification Regulations of the TÜV SÜD Group and the General Terms and Conditions of Business of TÜV SÜD PSB Pte Ltd. In addition, this report is governed by the terms set out within this report.

Choose certainty. Add value.

SUBJECT

Verification test on Earth rod clamp

CLIENT

HONG SENG INDUSTRIES CO.
Blk 4003 Depot Lane
#01-77
Singapore 109757

Attn: Tan Ngak Chiang

SAMPLE SUBMISSION DATE

30 JUN 2014

DESCRIPTION OF SAMPLE

One sample of copper earth rod clamp was received with the following details:

Trade Name	: HS
Model No.	: BZ 310
Material	: Phospher Bronze
Manufacturer	: Hong Seng Industries Company
Country of Origin	: Singapore

METHOD OF TEST

1. Documentation by photography
2. Copper and Lead content by Electrolytic Deposition Method
3. Other elements by Inductively Coupled Plasma – Atomic Emission Spectrometry
4. Tensile strength Test
5. Electrical Resistance Test

Laboratory:
TÜV SÜD PSB Pte. Ltd.
No 1 Science Park Drive
Singapore 118221

Phone: +65 6885 1333
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E-mail: testing@tuv-sud-psb.sg
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Co. Reg: 199002068R

Regional Head Office:
TÜV SÜD Asia Pacific Pte. Ltd.
3 Science Park Drive, #04-08/15
The Fronthe, Singapore 118223

我国常雷电交加！

每隔2天就打雷

每年2人遭雷劈死

▲我国常常雷电交加，公众必须时常当心祸从天降

我国过去5年打雷数次▼

●2004年	151天
●2005年	172天
●2006年	155天
●2007年	173天
●2008年	183天

（数据由国家环境局提供）

▲武吉知马上段一棵大树遭雷电劈中，裂开成花瓣状，散落一地木屑

我国常常雷电交加，平均两天就打雷一次，几乎每年都有1至2人被雷电击毙！

国家环境局气象署的记录显示，在1982年至2008年之间，我国平均每年有186天会打雷，算起来，几乎每两天就出现雷电交加的情况。

比起温带国家每年内只有10天至90天打雷的频率，我国是全世界雷雨天气最频繁的地区之一，因此，国人被雷殛的可能性也更大。

这是因为新加坡位于热带，陆地与海洋吸热的速度白天和夜晚不同，使得温度出现差距，造成空气对流现象。

再加上海洋的水汽，容易形成风暴或雷阵雨。而密度大、包含大量积雨云的风暴，是酝酿雷电的最佳场所。

据多次雷劈事件的发生来看，雷电似乎多偏西北区。

但国家环境局发言人说："新加坡任何地方都会遭雷劈。"

不过，据了解，我国西北区就曾在1996年4月至8月，发生至少6起雷电击人事件，造成6人身亡，可说是近年来雷电击人最多的季节。

我国虽然无四季之分，但每年的4月至5月，是发生较多雷阵雨的月份，其次就是年底雨季的11至12月。

而据本报的搜查，我国在过去15年，至少发生超过10起雷电夺命的事件，算起来，平均每年都会有一至两个人不幸被雷电击毙的事件。

◀离建筑物50米远的鱼尾狮，并不在避雷针的保护范围内

鱼尾狮为何不设避雷针？

我国自1979年起就规定所有建筑物、瞭望台、大厦、以及其他有人居住的建筑物都必须设置避雷针

由于鱼尾狮并非建筑物，也不像瞭望台一样，能让人进入参观，因此并不需设置避雷针

据《海峡时报》报道，一名来自国大电子与电脑工程系的雷电专家刘教授指出，鱼尾狮虽然毗邻浮尔顿1号（One Fullerton），而且该建筑物也依据规定设有避雷针，不过，由于避雷针的保护范围只能到达15.5米远，因此导致位于50米远的鱼尾狮，并不在避雷保护范围内

STRAITS TIMES 03/03/2009

The Merlion will undergo repairs after it was struck by lightning during a thunderstorm on Saturday. Workers have erected scaffolding around the statue, which now has a hole on top of its mane. The Singapore Tourism Board said it has already engaged contractors to carry out the repairs, and is waiting for a full assessment before deciding whether to install a lightning conductor on the statue. The area has been cordoned off after the incident. No one was injured.

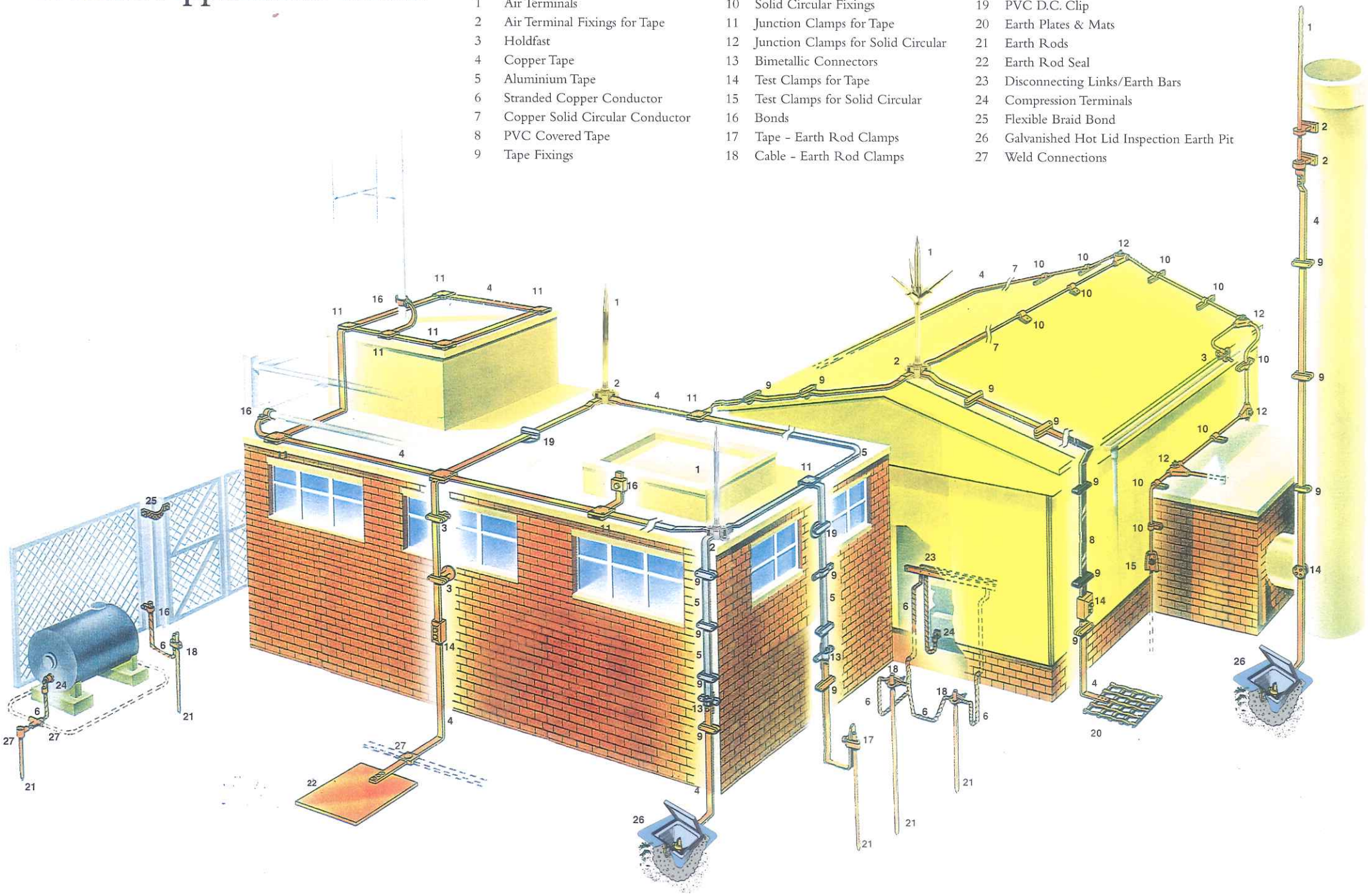
WEE TECK HIAN

Product Application Guide

No.	Description
1	Air Terminals
2	Air Terminal Fixings for Tape
3	Holdfast
4	Copper Tape
5	Aluminium Tape
6	Stranded Copper Conductor
7	Copper Solid Circular Conductor
8	PVC Covered Tape
9	Tape Fixings

No.	Description
10	Solid Circular Fixings
11	Junction Clamps for Tape
12	Junction Clamps for Solid Circular
13	Bimetallic Connectors
14	Test Clamps for Tape
15	Test Clamps for Solid Circular
16	Bonds
17	Tape - Earth Rod Clamps
18	Cable - Earth Rod Clamps

No.	Description
19	PVC D.C. Clip
20	Earth Plates & Mats
21	Earth Rods
22	Earth Rod Seal
23	Disconnecting Links/Earth Bars
24	Compression Terminals
25	Flexible Braid Bond
26	Galvanished Hot Lid Inspection Earth Pit
27	Weld Connections



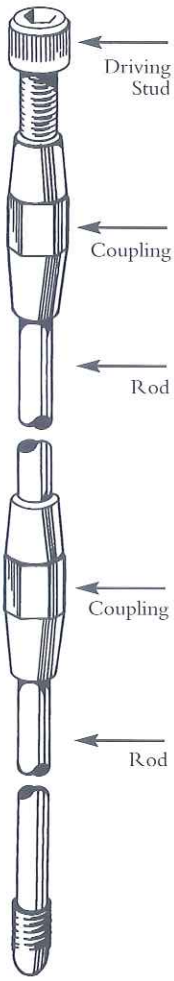
Contents

Earth Rod

Copper Rod

Rod Diameter	Length	Material	Cat.No.
5/8" & 3/4"	6 ft	Copper Cladded	H.S. CU 428
5/8" & 3/4"	8 ft	Steel Rod	
5/8" & 3/4"	10 ft		

All sizes available for manufacture



Fittings

Couplings for Copper Rods

Rod Diameter	Conductor Material	Cat.No.
5/8" or 3/4"	Brass	BR 329
5/8" or 3/4"	Phospher Bronze	BZ 229

Rod Driving Head for Copper Rods

Rod Diameter	Conductor Material	Cat.No.
5/8" or 3/4"	Brass	BR 230
5/8" or 3/4"	Leaded Gunmetal	BZ 330

Driving Studs for Copper Rods

Rod Diameter	Conductor Material	Cat.No.
5/8" or 3/4"	Steel	GI 502

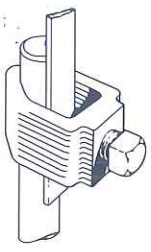
Rod End Cap

Rod Diameter	Conductor Material	Cat.No.
5/8" or 3/4"	Brass	BR 512

Earth Rod Clamp

Rod To Tape Clamp (Type A)

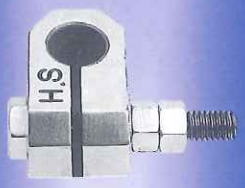
Tape Conductor Size (mm)	Rod Diameter	Conductor Material	Cat.No.
25 x 3 - 6	5/8" or 3/4"	Aluminium Alloy	AL 115
25 x 3 - 6	5/8" or 3/4"	Brass	BR 215
25 x 3 - 6	5/8" or 3/4"	Leaded Gunmetal	BZ 315



Earth Rod Clamp

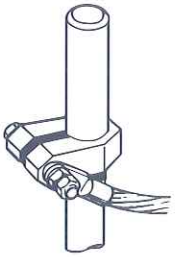
Rod to Cable Clamp

Tape Conductor Size (mm)	Rod Diameter	Conductor Material	Cat.No.
35 - 70	5/8"	Aluminium Alloy	AL 116
35 - 70	5/8"	Brass	BR 216
35 - 70	5/8"	Leaded Gunmetal	BZ 316



Rod to Cable Lug Clamp

Rod Diameter (mm)	Conductor Material	Cat.No.
16 or 20	Aluminium Alloy	AL 118
16 or 20	Brass	BR 218
16 or 20	Leaded Gunmetal	BZ 318



Cable or Wire Earth Clamp

Wire Conductor Size (mm)	Conductor Material	Cat.No.
6 - 25	Aluminium Alloy	AL 119
6 - 25	Brass	BR 219
6 - 25	Leaded Gunmetal	BZ 319

Two Side Tape to Rod Clamp

Tape Conductor Size (mm)	Rod Diameter	Conductor Material	Cat.No.
25 x 3 - 13	5/8" x 3/4"	Prospher Bronze	BZ 509

Rod to Cable to Tape Clamp

Tape Conductor Size (mm)	Rod Diameter	Conductor Material	Wire Conductor Size (mm)	Cat.No.
25 x 3 - 13	5/8" x 3/4"	Prospher Bronze	16 - 240	BZ 508

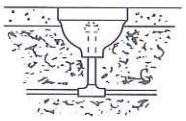
Earth Eyebolt

Rod Diameter	Conductor Material	Cat.No.
5/8" or 3/4"	Aluminium Alloy	AL 126
5/8" or 3/4"	Brass	BR 226
5/8" or 3/4"	Leaded Gunmetal	BZ 326

Earth Rod Clamp

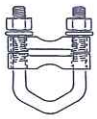
Static Earth Receptable

Rod Diameter	Conductor Material	Cat.No.
5/8" or 3/4"	Aluminium Alloy	AL 127
5/8" or 3/4"	Brass	BR 227
5/8" or 3/4"	Leaded Gunmetal	BZ 327



Copper Alloy U. Clamp

Nominal Rod Size	Max. No. & Conductor Size (mm²)	Cat.No.
5/8" or 3/4"	1 x 25/70	HS 217
5/8" or 3/4"	2 x 25 x 3 copper tape	HS 317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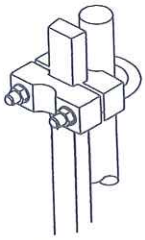
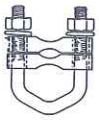


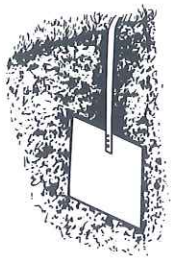

UCC301


UCC301A

Earth Plates

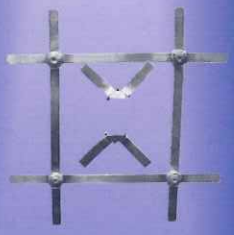
Copper Earth Plate

Conductor Size (mm)	Cat.No.
600 x 600 x 1.5	H.S. CU 426
600 x 600 x 3	
1000 x 1000 x 1.5	
1000 x 1000 x 3	



Copper Net Earth Plate

Conductor Size (mm)	Cat.No.
600 x 600 x 3	H.S. CU 427
1000 x 1000 x 3	



Equipotential Netting

Grid Size (mm)	Copper Tape Size	Cat.No.
600 x 600	13mm (W) x 1.6mm (T)	H.S. CU 618
1000 x 1000	25mm (W) x 3mm (T)	

Earth Pits

Galvanished Hot Lid Inspection Earth Pit

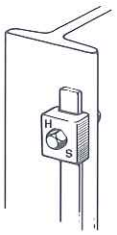
	Cat.No.
266mm(w) x 266mm(l) x 190mm(h)	H.S. CU 501
205mm(w) x 205mm(l) x 152mm(h)	H.S. CU 501A

Bonds & Clamps

Tape "B" Bond

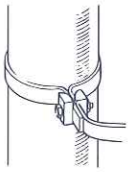
Tape Conductor Size (mm)	Conductor Material	Cat.No.
25 x 3	Aluminium	AL 123
25 x 3	Naval Brass	BR 223
25 x 3	Phospher Bronze	BZ 323

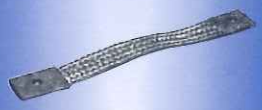
All sizes available for manufacture



TWP Bond

Tape Conductor Size (mm)	Conductor Material	Cat.No.
25 x 3	Aluminium Alloy	AL 124
25 x 3	Brass	BR 224
25 x 3	Leaded Gunmetal	BZ 324

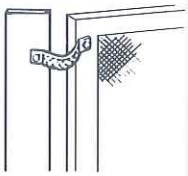




Copper Braid Tape Bond

Tape Conductor Size (mm)	Cat.No.
25(w) x 3(t) 100(l)	H.S. CU 425

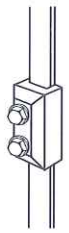
All sizes available for manufacture



Oblong Test Clamp

Tape Conductor Size (mm)	Conductor Material	Cat.No.
25 x 3 - 12	Aluminium Alloy	AL 106
25 x 3 - 12	Brass	BR 206
25 x 3 - 12	Leaded Gunmetal	BZ 306

All sizes available for manufacture



WT Test Junction Clamp

Tape Conductor Size (mm)	Wire Conductor Size (mm)	Conductor Material	Cat.No.
25 x 3	35 - 70	Aluminium Alloy	AL 107
25 x 3	35 - 70	Brass	BR 207
25 x 3	35 - 70	Bronze	BZ 307

Cable Saddle

Wire Conductor Size (mm)	Conductor Material	Cat.No.
35 - 120	Aluminium Alloy	AL 108
35 - 120	Brass	BR 208
35 - 120	Bronze	BZ 308

Heavy Duty Saddle

Wire Conductor Size (mm)	Conductor Material	Cat.No.
35 - 95	Brass	BR 500

Bonds & Clamps

TR Test Junction Clamp

Tape Conductor Size (mm)	Rod Diameter Size	Conductor Material	Cat.No.
25 x 3 - 12	5/8" or 3/4"	Aluminium Alloy	AL 109
25 x 3 - 12	5/8" or 3/4"	Brass	BR 209
25 x 3 - 12	5/8" or 3/4"	Phopher Bronze	BZ 309

DWR Test Junction Clamp

Wire Conductor Size (mm)	Rod Diameter Size	Conductor Material	Cat.No.
16 - 240	5/8" or 3/4"	Aluminium Alloy	AL 110
16 - 240	5/8" or 3/4"	Brass	BR 210
16 - 240	5/8" or 3/4"	Phopher Bronze	BZ 310

SWR Test Junction Clamp

Wire Conductor Size (mm)	Rod Diameter Size	Conductor Material	Cat.No.
16 - 240	5/8" or 3/4"	Aluminium Alloy	AL 111
16 - 240	5/8" or 3/4"	Brass	BR 211
16 - 240	5/8" or 3/4"	Phopher Bronze	BZ 311

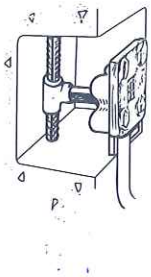
Conductors

Earth Point

Tape Conductor Size (mm)	Conductor Material	Cat.No.
25 x 3 - 12	Aluminium Alloy	AL 128
25 x 3 - 12	Brass	BR 228
25 x 3 - 12	Leaded Gunmetal	BZ 328

4 Holes

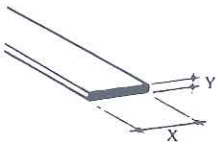
1 Hole



Conductors

Aluminium or Copper Tape

Tape Conductor Size (mm) XxY	Conductor Material	Cat.No.
20 x 3 or 25 x 3	Aluminium	AL 129
20 x 3 or 25 x 3 or 25 x 6	Copper	CU 429
40 x 3 or 40 x 6		
50 x 3 or 50 x 6		
50 x 0.05		

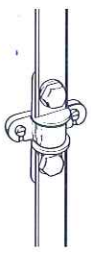


Conductor Material	Cat.No.
Tinned Copper	CU 429

Conductor Material	Cat.No.
Aluminium PVC Coated	AL 129
Copper PVC Coated	CU 429

Allum to Copper Bimetallic Connector & Copper to Copper

Tape Conductor Size (mm)	Conductor Material	Cat.No.
20 or 25 x 3 - 6	Aluminium & Copper	BC 005



Flat Air Terminal

Air Terminal and Fixings

Multiple Earth Point

Rod Diameter Size	Conductor Material	Cat.No.
5/8" & 3/4"	Aluminium	AL 101
5/8" & 3/4"	Brass	BR 201
5/8" & 3/4"	Copper	CU 422

Copper Multiple Earth Point C/W Base

Rod Diameter Size	Conductor Material	Cat.No.
5/8" & 3/4"	Copper	H.S. CU 423

All lengths available for manufacture

Air Terminal Flat Base

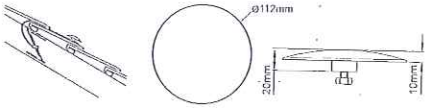
Rod Diameter Size	Conductor Material	Cat.No.
5/8" or 3/4"	Aluminium Alloy	AL 102
5/8" or 3/4"	Brass	BR 202
5/8" or 3/4"	Phospher Bronze	BZ 302

Air Terminal C/W Base

Rod Diameter	Rod Length (mm)	Conductor Material	Cat.No.
5/8" or 3/4"	300 - 3000	Aluminium Alloy	AL 104
5/8" or 3/4"	300 - 3000	Copper	CU 424

Strike Pad

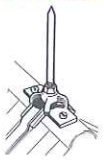
Conductor Material	Cat.No.
Aluminium Alloy	AL 400
Leaded Gunmetal	CU 401



This product is supplied with a set screw to enable the lightning conductors to be attached to the strike pad.

Flat Air Terminal

Air Terminal Slant Base



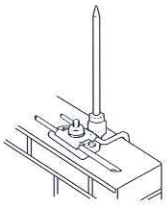
Rod Diameter Size	Conductor Material	Cat.No.
5/8" or 3/4"	Aluminium Alloy	AL 103
5/8" or 3/4"	Brass	BR 203
5/8" or 3/4"	Leaded Gunmetal	BZ 303

Taper Pointed Air Rod

Rod Diameter	Rod Length (mm)	Conductor Material	Cat.No.
5/8" or 3/4"	300 - 3000	Aluminium	AL 100
5/8" or 3/4"	300 - 3000	Copper	CU 200

Air Terminal Base

Rod Diameter	Rod Length (mm)	Conductor Material	Cat.No.
5/8" or 3/4"	300 - 3000	Aluminium	AL 114
5/8" or 3/4"	300 - 3000	Brass	BR 214
5/8" or 3/4"	300 - 3000	Leaded Gunmetal	BZ 314



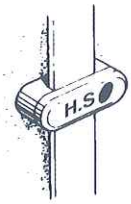
Flat Tape System

Tape Clip

Tape Conductor Size (mm)	Conductor Material	Cat.No.
25 x 3 - 6	Aluminium	AL 120
25 x 3 - 6	Naval Brass	BZ 220

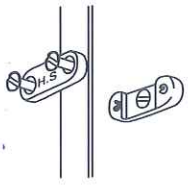
PVC D.C. Clip

Tape Conductor Size (mm)	D.C. Clip Colour	Cat.No.
25 x 3	Brown	PL 702C
25 x 3	Grey	PL 701A



DC Tape Clip

Tape Conductor Size (mm)		Conductor Material	Cat.No.
25 x 3 - 6	50 x 3 - 12	Aluminium Alloy	AL 121
25 x 3 - 6	50 x 3 - 12	Brass	BR 221
25 x 3 - 6	50 x 3 - 12	Phospher Bronze	BZ 321



Built In Tape Holdfast

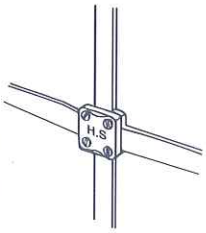
Tape Conductor Size (mm)		Conductor Material	Cat.No.
25 x 3 - 6	50 x 3 - 12	Aluminium Alloy	AL 122
25 x 3 - 6	50 x 3 - 12	Brass	BR 222
25 x 3 - 6	50 x 3 - 12	Leaded Gunmetal	BZ 322

Flat Tape System

Test and Junction Clamps

Square Test Clamp (Tape to Tape)

Tape Conductor Size (mm)	Cable Conductor Size (mm)	Conductor Material	Cat.No.
25 x 3 - 6		Aluminium Alloy	AL 105
25	50	Brass	BR 420
		Leaded Gunmetal	BZ 421



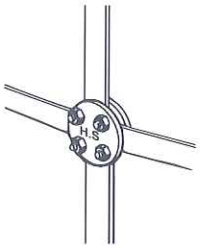
All sizes available for manufacture

Square Tape Clamp (Tape to Cable)

Tape Conductor Size (mm)	Conductor Material	Cat.No.
25 x 3 - 6	Brass	BR 205
25 x 3 - 6	Phosphor Bronze	BZ 305

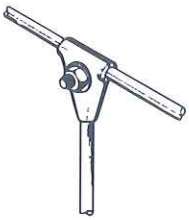
Rounded Tape Clamp

Tape Conductor Size (mm)	Conductor Material	Cat.No.
25 x 3 - 12	Brass	BR 204
25 x 3 - 12	Phosphor Bronze	BZ 304



Tee Junction Clamp

Wire Conductor Size (mm)	Conductor Material	Cat.No.
35 - 95	Aluminium Alloy	AL 112
35 - 95	Brass	BR 212
35 - 95	Leaded Gunmetal	BZ 312

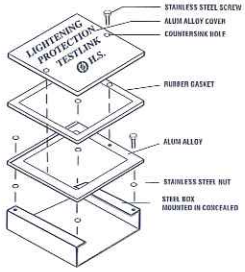


Jointing Junction Clamp

Wire Conductor Size (mm)	Conductor Material	Cat.No.
35 - 95	Aluminium Alloy	AL 113
35 - 95	Brass	BR 213
35 - 95	Leaded Gunmetal	BZ 313

Aluminium Test Link Box

Conductor Material	Size (mm)	Cat.No.
Aluminium Alloy	125 x 125 x 40	H.S AA 011



Other Products

Aluminium Tape Roof Clip

Size	Cat.No.
25 x 3	HS 519

'L' Bracket

Dimension Internal(mm)	Material	Cat.No.
60 x 27.3 60 x 30.6	Malleable Cast Iron	HS 516

All sizes available for manufacture

Roof Clip 90 °

Cat.No.
HS 614

Roof Clip Semi-Circle

Cat.No.
HS 613

'Z' Bracket

Cat.No.
HS 510

'U' Bracket

Size	Cat.No.
3" x 4" x 3"	HS 511
4" x 5" x 4"	
5' x 6" x 5"	

All sizes available for manufacture

Copper Earth Bars

Cat.No.
HS 514

All sizes available for manufacture
(Refer Page 52)

Aluminium Traffic-Light Box

Cat.No.
HS 517

Other Products

Earth Bonding Clamp

	Cat.No.
1/2" - 1 1/4" pipe	HS 515
1/2" - 2" pipe	
1/2" - 3" pipe	
1/2" - 5" pipe	

Epoputty

Cat.No.
HS 507

Solder Paste

Cat.No.
HS 506

Oxide Inhibiting Compound

Cat.No.
HS 505

Bi-Metallic Cable Lug

Size (mm)	Cat.No.
35 - 300	HS 504

Cable Marker

Cat.No.
HS 503

Steel Fan Hook

Cat.No.
HS 608

Other Products

Flexible Pipe

Size	Cat.No.
1/2"	HS 601
5/8"	
3/4"	
1"	
1 1/4"	
1 1/2"	
2"	

PVC Coated Flexible Pipe

Size (mm)	Cat.No.
12	HS 600
16	
20	
25	
32	
38	
50	

Brass Locknut / Lock Ring

Steel	Brass (mm)	Cat.No.
5/8"	16	HS 602
3/4"	20	
1"	25	
1 1/4"	32	
1 1/2"	40	
2"	50	
	63	
	75	
	90	
	110	

Brass Adaptor

Size (mm)	Cat.No.
20 x 12	HS 603
20 x 16	
20 x 20	
25 x 20	
25 x 25	
32 x 32	
38 x 38	
50 x 50	
63 x 63	

Ceiling Plate

Size (mm)	Cat.No.
3/4"	HS 616

Other Products

Brass Male Bush

Size	Brass (mm)	Cat.No.
3/4"	20mm	HS 604
1"	25mm	
1 1/4"	32mm	
1 1/2"	40mm	
2"	50mm	

Half Saddle

Size	Cat.No.
3/4" - 2"	HS 605

Full Saddle

Size	Cat.No.
3/4" - 2"	HS 606

Brass Female Bush

Size	Cat.No.
3/4" - 2"	HS 607

Conduit Accessories

Conduit Socket

Size
3/4" - 2"

PVC Shroud

Size (mm)	Cat.No.
16 - 88	HS 611

Aluminium or Brass Mounting Tape & Clip

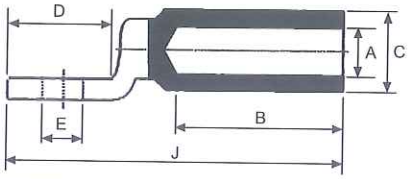
Cat.No.
HS 612

Other Products

ALUMINIUM - COPPER BI-METAL TERMINALS (WITH COPPER PALMS)

Cat.No. HS 504

Al-Cu Bi-metal terminals are used for connecting aluminium cables to copper busbars.



Cable mm²	Dimension (mm)						Product Code No.
	A	C	D	E	J	B	
16	5.5	16	20	10.3	79	43	HBT 16 - 10
25	6.5	16	20	10.3	79	43	HBT 25 - 10
35	8	16	20	10.3	79	43	HBT 35 - 10
50	9	20	25	12.8	85	43	HBT 50 - 12
70	11	20	25	12.8	85	43	HBT 70 - 12
95	12.5	20	25	12.8	85	43	HBT 95 - 12
120	13.7	25	30	12.8	108	59	HBT 120 - 12
150	15.5	25	30	12.8	108	59	HBT 150 - 12
185	17	32	35	14.5	115	59	HBT 185 - 14
240	19.5	32	35	14.5	115	59	HBT 240 - 14
300	23.3	40	36	16.5	137	85	HBT 300 - 16
400	26	40	36	16.5	153.5	85	HBT 400 - 16
500*	29.1	47	60 x 60	16.5	196	95	HBT 500 - 16
630*	33.5	47	60 x 60	4 ø 9	196	95	HBT 630 4 x 9
800*	37.5	53	80 x 80	4 ø 9	232	100	HBT 800 4 x 9
1000*	42	60	80 x 80	4 ø 9	256	126	HBT 1000 4 x 9
1300*	46.5	65	80 x 80	4 ø 11	267	136	HBT 1300 4 x 11

* Square Palm

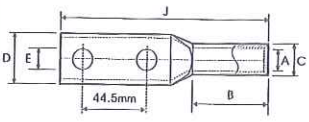
Note : All dimensions in mm

CABLE LUG (2 HOLE)

Cat.No. HS 627

MATERIAL : E - COPPER • FINISH : ELECTRO TINNED

Cable mm²	Stud Hole E	Dimensions					Product Code
		A	C	D	B	J	
16	10.5	5.4	7.6	14.5	16	100	HT16 2E - 10
25	10.5	6.8	8.8	15	16	100	HT25 2E - 10
35	10.5	8.2	10.6	16.5	16	100	HT35 2E - 10
50	10.5	9.5	12.4	17	25	109	HT50 2E - 10
	13.7	9.5	12.4	17	25	109	HT50 2E - 12
70	10.5	11.3	14.7	21	30	114	HT70 2E - 10
	13.7	11.3	14.7	21	30	114	HT70 2E - 12
95	10.5	13.5	17.4	25	30	116	HT95 2E - 10
	13.7	13.5	17.4	25	30	116	HT95 2E - 12
120	10.5	15	19.4	27.5	35	122	HT120 2E - 10
	13.7	15	19.4	27.5	35	122	HT120 2E - 12
150	10.5	16.5	21.2	30	40	126	HT150 2E - 10
	13.7	16.5	21.2	30	40	126	HT150 2E - 12
185	10.5	18.5	23.5	33.5	42	132	HT185 2E - 10
	13.7	18.5	23.5	33.5	42	132	HT185 2E - 12
240	10.5	21	26.5	38.5	50	143	HT240 2E - 10
	13.7	21	26.5	38.5	50	143	HT240 2E - 12
300	13.7	23.5	30	43	55	144	HT300 2E - 12
400	13.7	28.5	36.5	52.5	60	149	HT400 2E - 12
500	13.7	30	39	56	65	160	HT500 2E - 12
630	13.7	35	45	36.8	75	160	HT630 2E - 12
800	13.7	39	50.6	72	78	214	HT800 2E - 12
1000	13.7	43	56.2	78.5	90	244	HT1000 2E - 12



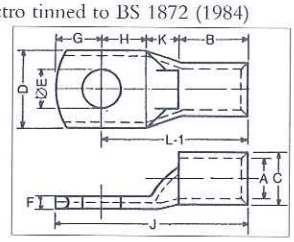
Also available with Blank Palm (without hole)
Also available with inspection hole

Other Products

Cable Lug

Cat.No.
HS 610

Material:
Copper to BS 1977
Copper conductivity 99.25% I.A.C.S.
Finish:
Electro tinned to BS 1872 (1984)

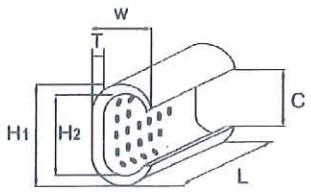


Cable Sq.mm.	Stud Hole E	A	C	D	F	G	H	K	B	L-1	J	Product Code No.
	Dimension (mm)											
1.5	5.2	1.8	3.7	8	1	4	5	2	5	12	16	HT1.5 - 5
1.5	6.5	1.8	3.7	10	0.8	4	5	2	5	13	18	HT1.5 - 6
2.5	4.2	2.4	4	8	1	5	6	2	7	14	18	HT2.5 - 4
2.5	5.2	2.4	4	10	0.8	5	6	2	7	15	20	HT2.5 - 5
2.5	6.5	2.4	4	10	0.8	5	6	2	7	15	20	HT2.5 - 6
4	5.2	3.1	4.8	10	1	5	6	2	7	15	20	HT4 - 5
4	6.5	3.1	4.8	10	1	5	6	2	7	15	20	HT4 - 6
6	5.2	3.8	5.5	10	1.2	5	6	3	9	18	23	HT6 - 5
6	6.5	3.8	5.5	12	1	6	9	3	9	21	27	HT6 - 6
6	8.4	3.8	5.5	12	1	6	9	3	9	21	27	HT6 - 8
10	6.5	4.5	6.2	12	1.2	6	7	3	9	19	25	HT10 - 6
10	8.4	4.5	6.2	12	1.2	6	9	3	9	21	27	HT10 - 8
16	6.5	5.4	7.1	12	1.4	7	7	4	12	23	30	HT16 - 6
16	8.4	5.4	7.1	12	1.4	7	7	4	12	25	32	HT16 - 8
20	8.4	6	7.7	12	1.7	7	9	4	12	25	32	HT20 - 8
25	6.5	6.8	8.8	13	2	7	7	4	12	23	30	HT25 - 6
25	8.4	6.8	8.8	16	2	7	7	4	12	27	37	HT25 - 8
25	10.5	6.8	8.8	18	1.4	10	11	4	12	27	37	HT25 - 10
35	6.5	8.2	10.6	15.3	2.4	9	9	5	12	26	35	HT35 - 6
35	8.4	8.2	10.6	15.3	2.4	.9	9	5	12	26	35	HT35 - 8
35	10.5	8.2	10.6	18	2	10	11	5	12	28	38	HT35 - 10
50	8.4	9.5	12.4	17.8	2.9	10	11	6	16	33	43	HT50 - 8
50	10.5	9.5	12.4	17.8	2.9	10	11	6	16	33	43	HT50 - 10
70	8.4	11.2	14.7	21	3.5	12	13	7	18	28	50	HT70 - 8
70	10.5	11.2	14.7	21	3.5	12	13	7	18	38	50	HT70 - 10
70	13	11.2	14.7	21	3.5	12	13	7	18	38	50	HT70 - 12
95	10.5	13.5	17.4	25	3.9	13	13	9	20	42	55	HT95 - 10
95	13	13.5	17.4	25	3.9	13	13	9	20	42	55	HT95 - 12
120	13	15	19.4	28	4.4	14	14	10	22	46	60	HT120 - 12
120	17	15	19.4	28	4.4	16	16	10	22	48	64	HT120 - 16
150	13	16.5	21.2	30	4.7	16	16	11	26	53	69	HT150 - 12
150	17	16.5	21.2	3.0	4.7	16	16	11	26	53	69	HT150 - 16
185	17	18.5	23.5	34	5	17	17	12	32	61	78	HT185 - 16
240	-	21	26.5	38	5.5	-	-	14	38	-	92	HT240 - BL
240	17	21	26.5	38	5.5	20	20	14	38	72	92	HT240 - 16
240	21	21	26.5	38	5.5	20	20	14	38	72	92	HT240 - 20
300	-	23.5	30	43	6.5	-	-	15	42	-	101	HT300 - BL
300	17	23.5	30	43	6.5	22	22	15	42	97	101	HT300 - 16
300	21	23.5	30	43	6.5	22	22	15	42	79	101	HT300 - 20
400	-	28.5	36.5	50.1	8	-	-	18	44	-	114	HT400 - BL
400	17	28.5	36.5	50.1	8	26	26	18	44	88	114	HT400 - 16
400	21	28.5	36.5	50.1	8	26	26	18	44	88	114	HT400 - 20
500	-	30	39	56	9	-	-	20	48	-	124	HT500 - BL
500	17	30	39	56	9	28	28	20	48	96	124	HT500 - 16
500	21	30	39	56	9	28	28	20	48	96	124	HT500 - 20
630	-	35	45	65	10	-	-	22	56	-	144	HT630 - BL
630	21	35	45	65	10	33	33	22	56	111	144	HT630 - 20
800	-	39	50.6	73.5	11.6	-	-	17	78	-	170	HT800 - BL
1000	-	43	56.2	81	13.2	-	-	20	90	-	200	HT1000 - BL

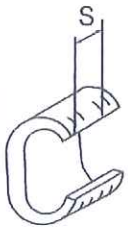
Other Products

TAP-OFF CONNECTOR (C-CONNECTOR)

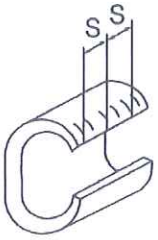
The range of C-CONNECTORS are manufactured in 'C' shaped copper section for connection of main and tap copper conductors.



- Approved by NTT corporation
- Reliability is ensured by passing tests specified by JIS C 2810
- Suitable for connecting copper conductors in both indoor and outdoor such as wiring in building or wiring in tunnel
- Tin plated to avoid rusting



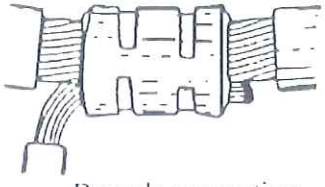
(T-11 ~ T-122)



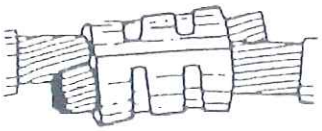
(T-154 ~ T-700)

except T-20, T-26, T-44

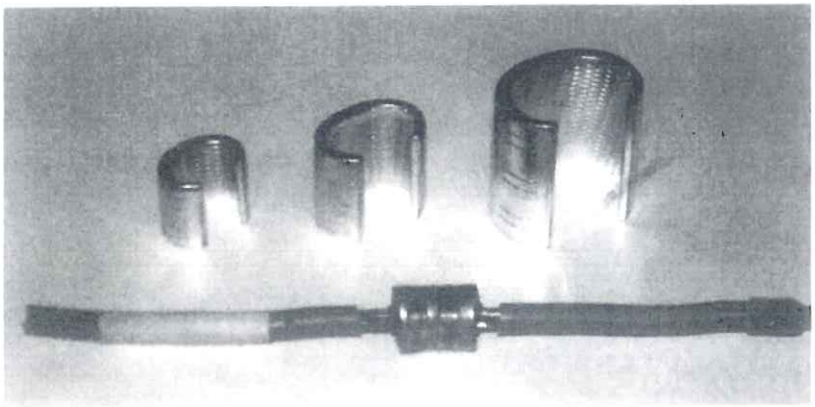
Connector Size	Dimensions (mm)						Installation		Total Sectional area of applicable wire
	H1	H2	W	L	T	C	# of crimps	S	
T-11	9.5	6.3	6.2	12	1.6	4.0	2	7	7.5~11mm²
T-16	11.8	7.8	7.8	13	2.0	5.0	2	8	11.5~16
T-20	12.8	8.4	9.7	13	2.9	5.1	1		14~20
T-26	14.7	10.2	10.9	16	3.2	6.5	1		21~26
T-44	19.0	13.4	14.4	20	4.0	8.5	1		27~44
T-60	21.0	15.4	15.1	22	4.0	9.7	2	11	45~60
T-76	24.4	17.3	17.6	22	5.0	10.8	2	11	61~76
T-98	27.8	20.8	18.8	25	5.0	13.8	2	11	77~98
T-122	29.8	22.1	21.2	26	5.5	13.5	2	12	99~122
T-154	34.0	25.7	24.4	28	6.0	17.0	3	8.5	123~154
T-190	37.0	28.5.	25.4	35	6.0	17.4	3	10.5	155~190
T-240	40.0	30.2	28.5	40	7.0	19.0	3	13	191~240
T-288	44.5	34.7	31.1	45	7.0	22.3	3	14.5	241~288
T-365	47.5	37.7	34.0	50	7.0	24.8	3	16	289~365
T-450	57.0	42.5	41.0	60	10.0	28.0	3	18.5	366~450
T-560	62.0	46.0	45.0	65	11.0	31.0	3	20	451~560
T-700	68.0	51.0	49.5	70	12.0	34.0	3	21	561~700



Branch connection



Parallel connection



Other Products

LINE TAPS / SPLIT BOLTS

Material : Brass Finishing : Copper / Tinned

HEX manufactures a vast range of line taps to meet the materials and dimensional specifications laid by different international standards. Brass line taps are made with high tensile brass as per BS 2874 - CZ 112. Threads are formed by rolling process giving the nut extra clamping force. Pressure pads are made from extruded bars (not cast), preventing the pads from cracking. Brass line taps are manufactured in passivated natural Brass with electro tinned finish. They are also supplied in high conductivity Copper.

Size	J	C	B a/f	D a/f	F
6MM^2	24.00	3.20	10.00	12.70	6.50
10MM^2	27.30	5.50	12.70	19.00	5.60
16MM^2	27.30	5.50	12.70	19.00	5.60
25MM^2	28.90	6.90	15.00	19.00	5.60
35MM^2	34.80	8.10	18.00	24.00	7.10
50MM^2	42.00	9.60	23.00	27.30	9.40
70MM^2	47.50	11.17	23.00	30.00	9.40
95MM^2	53.00	14.00	25.40	34.30	9.40
120MM^2	59.00	16.00	30.00	35.55	12.20
150MM^2	59.00	16.00	30.00	35.55	12.20
185MM^2	59.00	18.00	32.00	38.10	12.20
240MM^2	76.20	22.20	39.00	48.25	14.60
300MM^2	76.20	23.00	39.00	48.25	14.60
400MM^2	76.50	26.00	48.00	56.00	16.00
500MM^2	80.00	30.00	55.00	65.00	16.00

SPLIT BOLT CONNECTOR WITH ROUND HEAD

HEX has a complete range of split bolts which are used for joining aerial hard drawn Copper Conductors or insulated Copper conductors. Split bolts are made from a high conductivity Copper alloy with captive saddle which applies a distributed pressure to conductors. The head of split bolt is suitable for standard spanner to fit in. They can be supplied in natural Copper alloy or electro tinned.

Technical Data:

Conductive Material

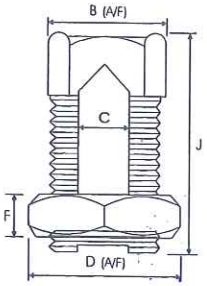
Copper alloy

Operating Temperature

-55°C to 100°C

Electroplating Material

Tin 99.7% pure



Max Cond. Size (mm2)	Slot Width mm2	Cross Reference	Natural Brass	Electro Tinned
25	6.6	-	HSBC-12	HSBC-12T
16	5.3	Type A	HSBC-22	HSBC-22T
35	8.3	Type B	HSBC-24	HSBC-24T
70	10.9	Type C	HSBC-25	HSBC-25T
95	12.9	Type D	HSBC-26	HSBC-26T
185	18.5	Type E	HSBC-28	HSBC-28T

Other Products

Brand: COT, PUM, Horizon, AR & Superlec Conduit Accessories Products

(Suitable for BS 4568/BS 31 where applicable)

Conduit Pipe

Model
BS 31

4568 (Class 4)

Terminal Box (One Way) - 3/4"

Size	Internal Dimension (mm)	Fixing Centre
1"	57.5 x 23 deep	50.5mm tapped 2BA or 5/32" with tapped hole in base for earthing screw
1 1/4"		
1 1/2"		
2"		

Through Box (Two Ways) - 3/4"

Size	Internal Dimension (mm)	Fixing Centre
1"	57.5 x 23 deep	50.5mm tapped 2BA or 5/32" with tapped hole in base for earthing screw
1 1/4"		
1 1/2"		
2"		

Angle Box - 3/4"

Size	Internal Dimension (mm)	Fixing Centre
1"	57.5 x 23 deep	50.5mm tapped 2BA or 5/32" with tapped hole in base for earthing screw
1 1/4"		
1 1/2"		
2"		

Tee Box (Three Ways) - 3/4"

Size	Internal Dimension (mm)	Fixing Centre
1"	57.5 x 23 deep	50.5mm tapped 2BA or 5/32" with tapped hole in base for earthing screw
1 1/4"		
1 1/2"		
2"		

Intersection (Four Ways) - 3/4"

Size	Internal Dimension (mm)	Fixing Centre
1"	57.5 x 23 deep	50.5mm tapped 2BA or 5/32" with tapped hole in base for earthing screw
1 1/4"		
1 1/2"		
2"		

Other Products

Inspection Elbow - 3/4"

Size	Supplied With	Cover Plate
1"	Cover and Fixing Screws	0.35mm (G28) supplied with 5/32" x 1/4" brass screws
1 1/4"		
1 1/2"		
2"		

Inspection Tee - 3/4"

Size	Supplied With	Cover Plate
1"	Cover and Fixing Screws	0.35mm (G28) supplied with 5/32" x 1/4" brass screws
1 1/4"		
1 1/2"		
2"		

Inspection Bend - 3/4"

Size	Supplied With	Cover Plate
1"	Cover and Fixing Screws	0.35mm (G28) supplied with 5/32" x 1/4" brass screws
1 1/4"		
1 1/2"		
2"		

Screw Reducer

Size
3/4" x 1"
3/4" x 1 1/4"
1" x 1 1/4"

Dome Cover - 3/4"

Size	Internal Dimension (mm)	Fixing Centre
3/4"	62.5 x 21 deep	50.5mm tapped 2BA or 5/32" with tapped hole in base for earthing screw
1"		

Lock Nut - Natural

Size
3/4"
1"
1 1/4"
1 1/2"
2"

Other Products

Flexible Adaptor

Size	Internal Dimension (mm)
1/2" x 3/4"	Nature supplied c/w
5/8" x 3/4"	Brass Retaining Screw
3/4 x 3/4"	
1" x 1"	
1 1/4" x 1 1/4"	
1 1/2" x 1 1/2"	
2" x 2"	

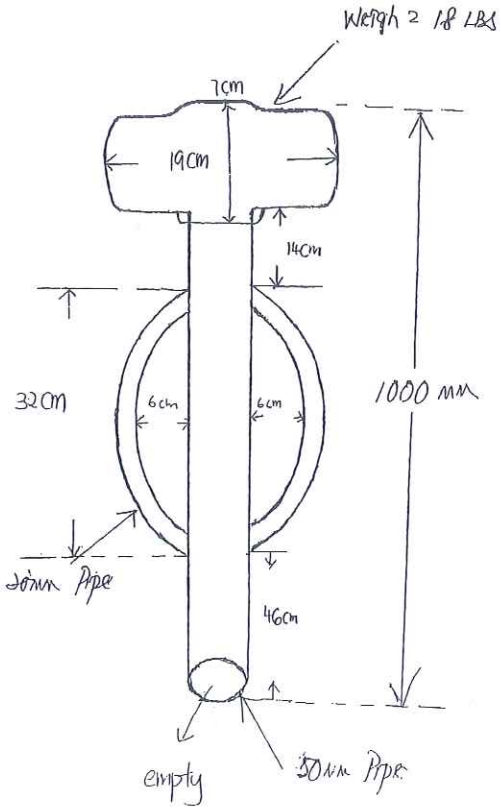
Full Looping Box - 1"

Internal Dimension (mm)	Fixing Centre
59 x 29.5 deep	50.5mm tapped 2BA or 5/32" with tapped hole in base for earthing screw

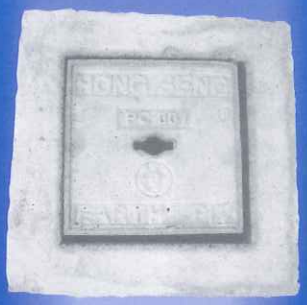
Extension Ring

Internal Dimension (mm)	Fixing Centre
57.5 x 31 deep	50.5mm tapped 2BA or 5/32" with tapped hole in base for earthing screw

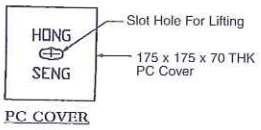
Monkey Lamp Cat. No. ML 001



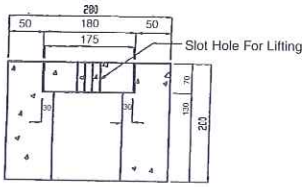
Other Products



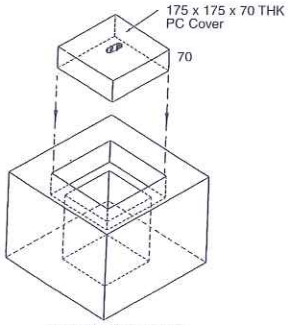
Heavy Duty Earth Chamber (Square) Cat. No. PC 001



PC COVER

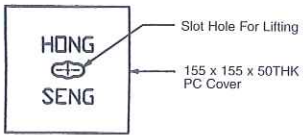


SECTION A-A

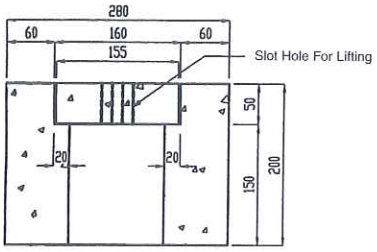


ISOMETRIC VIEW

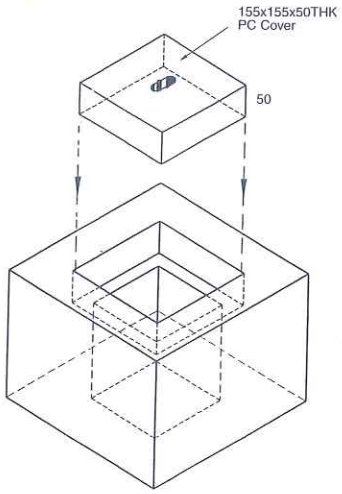
Heavy Duty Earth Chamber (Square) Cat. No. PC 001A



PC COVER

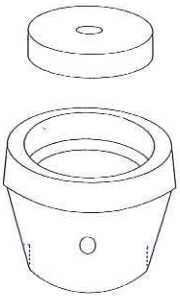


SECTION A-A

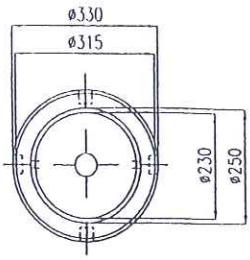


ISOMETRIC VIEW

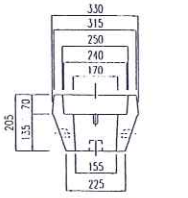
Heavy Duty Earth Chamber (Round) Cat. No. PC 002



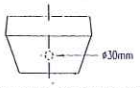
ISOMETRIC VIEW
(NTS)



PLAN VIEW

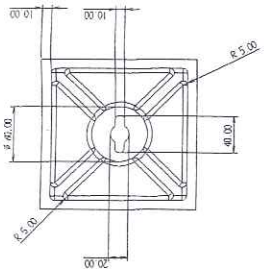


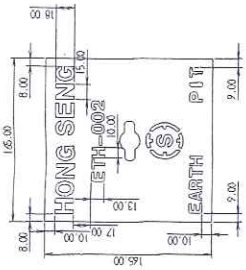
INTERNAL FRONT VIEW

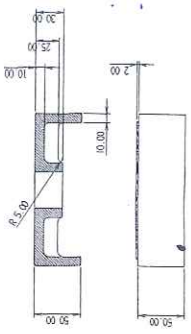


EXTERNAL FRONT VIEW

Cast-Iron Heavy Duty Earth Chamber (Square) Cat. No. CI 001

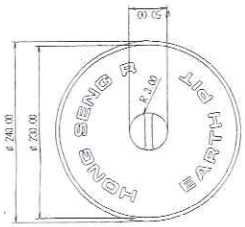


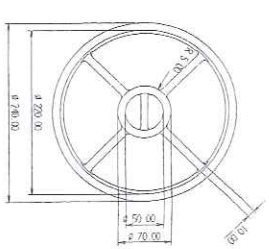


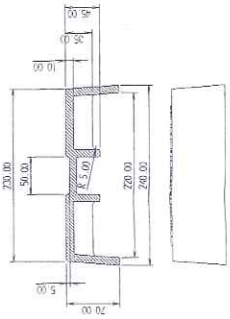


Other Products

Cast-Iron Heavy Duty Earth Chamber (Round) Cat. No. CI 002

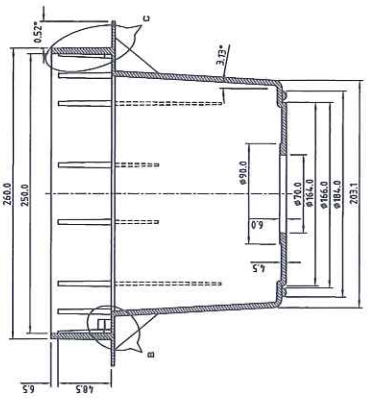


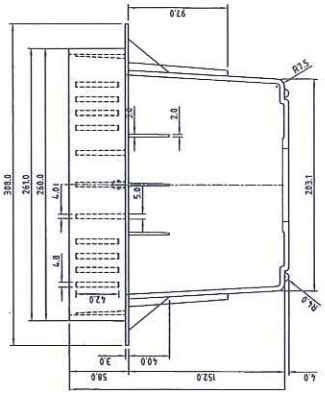


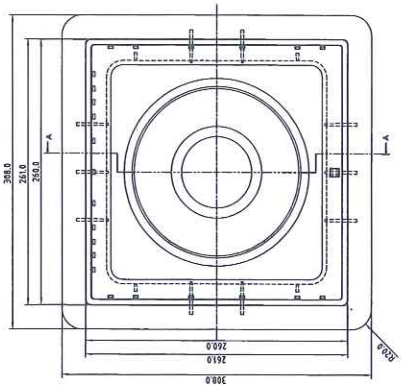


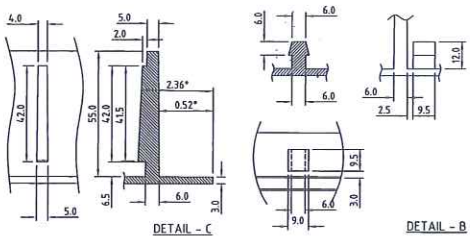
Water Proof Earth Seal Cat. No. PEC 520

PVC Earth Pit Cat. No. PEC 521





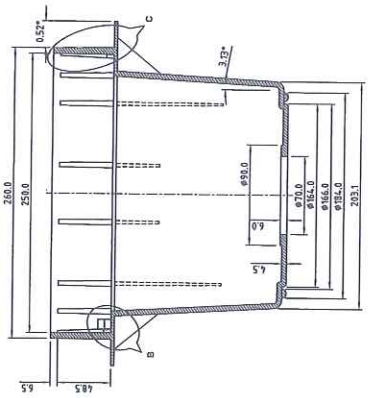


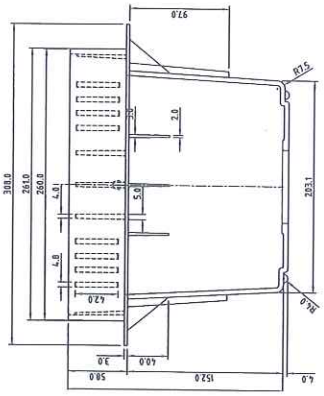


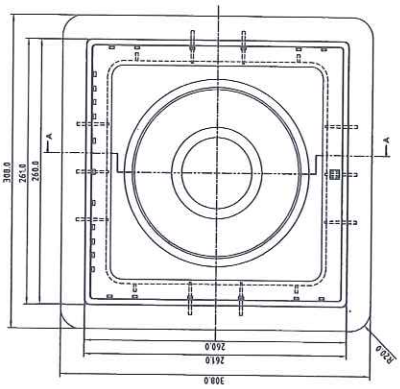
Other Products

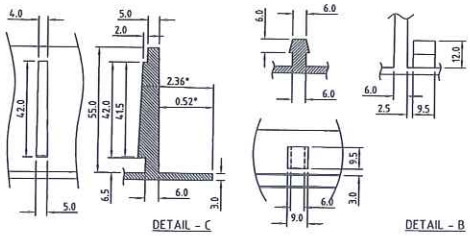
PVC Water Proof Earth Pit

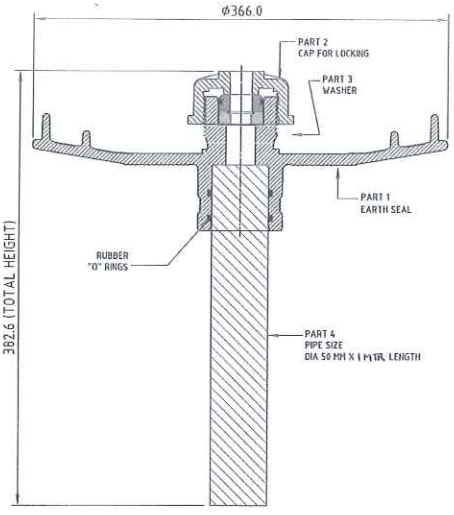
Cat.No.
HS PEC 521A

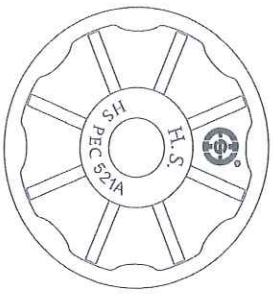


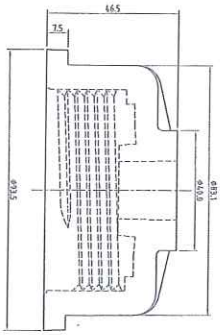


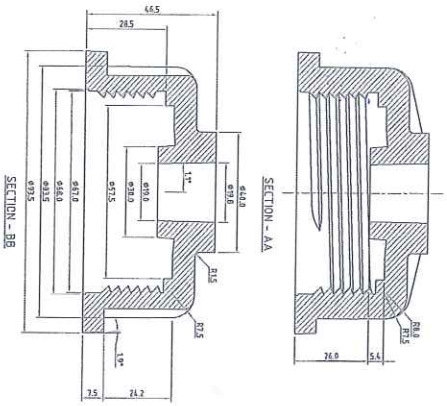










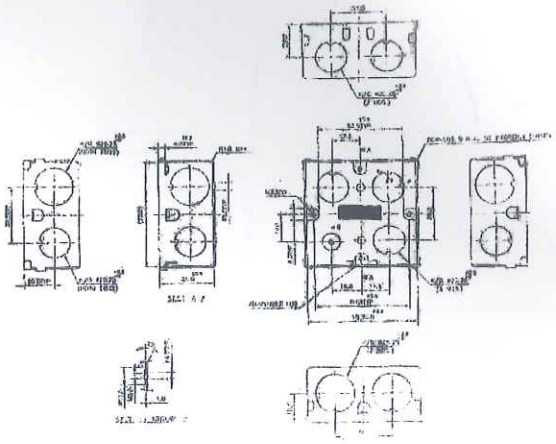


Other Products

1 Gang K.O.Box

Size (mm)
3" x 3"

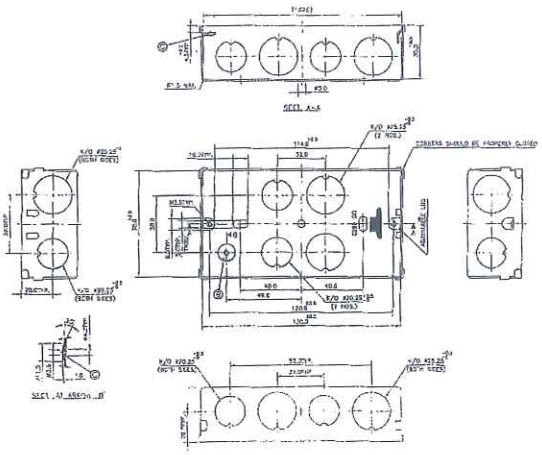
Cat.No.
HS 625



2 Gang K.O.Box

Size (mm)
6" x 3"

Cat.No.
HS 626



Galvanised Hot Dip 1 Gang K.O Box c/w Bracket

Size (mm)
3" x 3"

Cat.No.
HS 619

Galvanised Hot Dip 2 Gang K.O Box c/w Bracket

Size (mm)
3" x 6"

Cat.No.
HS 620

PROJECT REFERENCE

Hong Seng Project References for Hot Dip K.O.Box

1. Holland Road - Taman Warna
2. The Waterfront Key @ Bedok Reservoir Road
3. The Reflection @ Bukit Panjang Road
4. The Reflection @ Keppel Bay
5. HDB - Seng Kang
6. HDB - Sembawang
7. Sky @ Eleven Condominium
8. St. Thomas Walk Condominium
9. Capsian Condominium - Lake Side
10. Alexandra - Metropolitan Condominium
11. Orchard - Anderson Condominium
12. Site - Volari Condominium
13. Centro Residences - Site AMK Ave 8 (Electrical Work)

Other Products

Earth Boss

Size (mm)	Cat.No.
25mm x 30mm x M8 Thread	HS 622
30mm x 40mm x M10 Thread	
40mm x 30mm x M10 Thread	
50mm x 50mm x M10 Thread	

All size available for manufacture

Insulator

Size (mm)	Cat.No.
32mm x M8 Hole	HS 623
50mm x M8 Hole	
32mm x M10 Hole	

Brass Reducer

Size (mm)	Cat.No.
25mm x 20mm	HS 624
32mm x 25mm	
40mm x 32mm	
40mm x 50mm	
50mm x 32mm	
50mm x 40mm	
63mm x 50mm	
75mm x 63mm	

All size available for manufacture

KLIPS Put Conventional Fasteners in the Shade

A. Girder / Purlin

B. Rod

C. Conduit

D. Cable

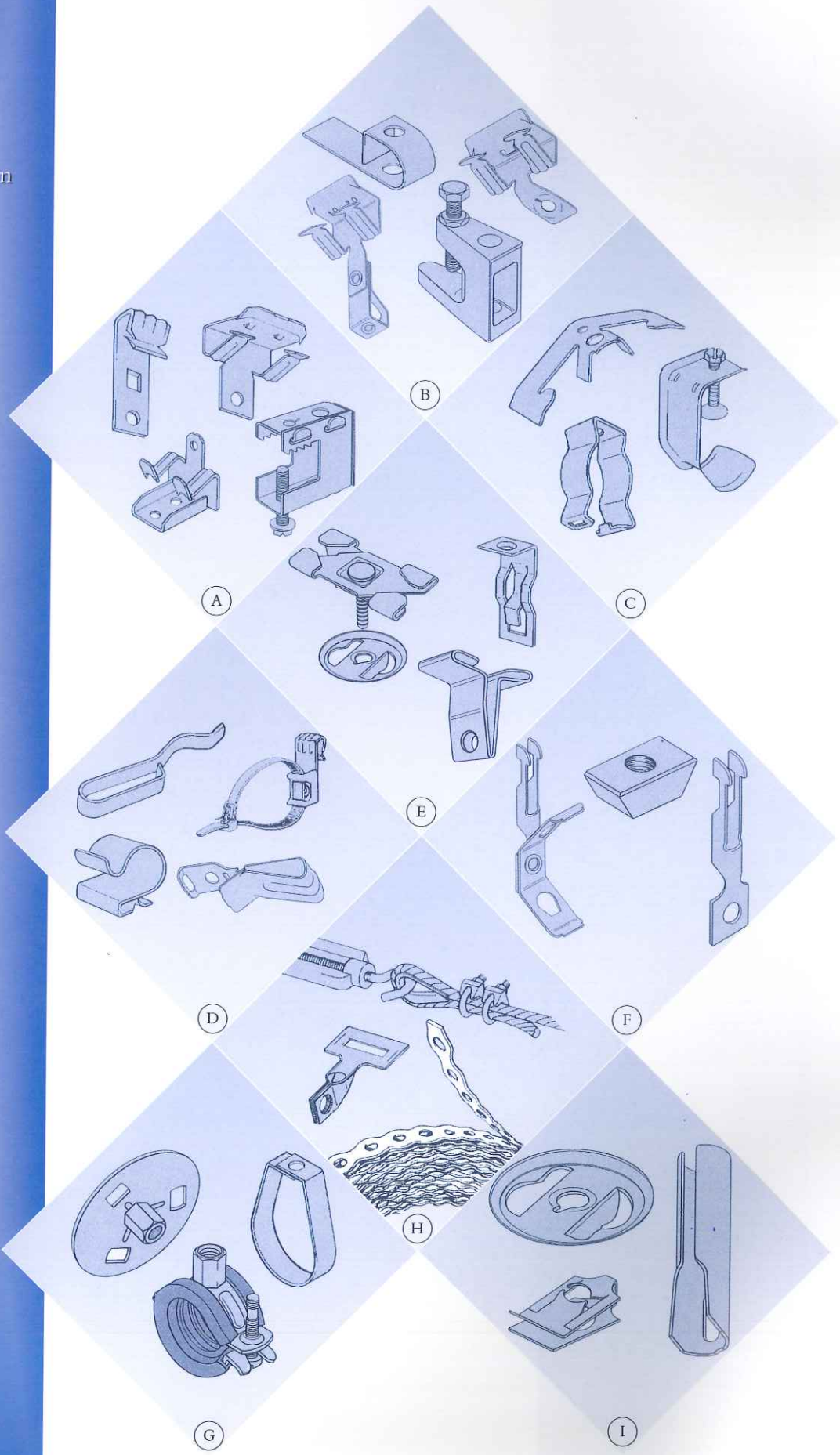
E. Ceiling

F. Decking

G. Pipe

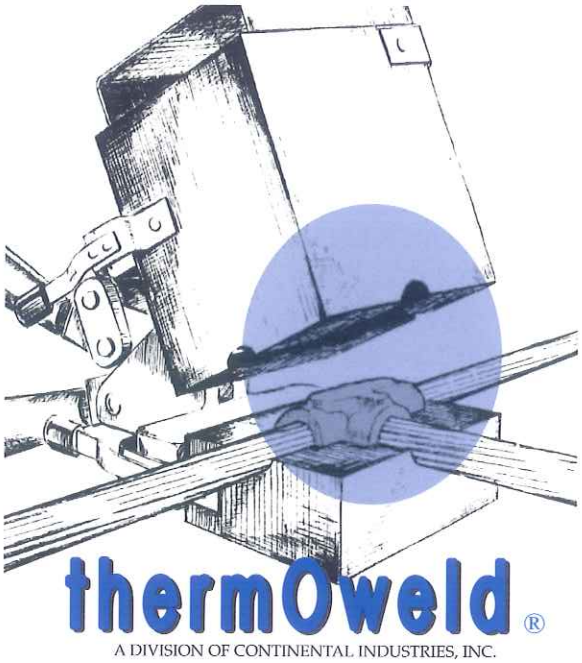
H. Suspension

I. Miscellaneous



thermOweld® - Electrical Connections

PRODUCT REFERENCE - EQUIPOTENTIAL COPPER GROUNDING MESH



1. **thermOweld** Exothermic welding system provides 100% connections. Unlike the conventional clamp systems for grounding, thermOweld exhibits an easy to use, cost effective and long lasting bond.

2. With separation of the main weld metal powder and the ignition materials, **thermOweld** is preferred for it's reliability and cost savings.

EQUIPOTENTIALITY

The Equipotential Grid must:

3. Primarily, establish an equipotential ground plane to minimize step and touch potentials.

4. Concurrently, its complement the Lightning Protection Systems (LPS) that will be connected to it.

INTEGRATED SYSTEM

5. **HONG SENG INDUSTRIES** offers an integrated system package that utilizes **HONG SENG** for reliability and quality together with **thermOweld®** for a 100% result.

6. **HONG SENG** Industries Co. Copper materials are of the highest possible quality. (PSB, HDB approved.)

Registered Trademark

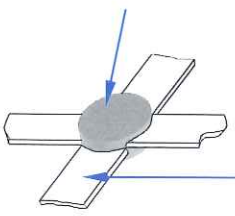
7. **thermOweld®** molds for other variety of connections can also be used depending on site requirements.

8. Other copper products may also be supplied as per site requirements.

MESH SPECIFICATIONS

thermOweld

9. Material used is 13mm x 1.6 (20.8mm²) copper conductor of>99.8% purity.
10. Grid spacing for mesh to be 1m x 1m intervals throughout
11. All grid squares are bonded using **thermOweld** exothermic bonding process.
12. Meets CP 33 standards for lightning Protection.
13. Comes in pre-fabricated piece of 3m x 4m or larger for easy installation on site



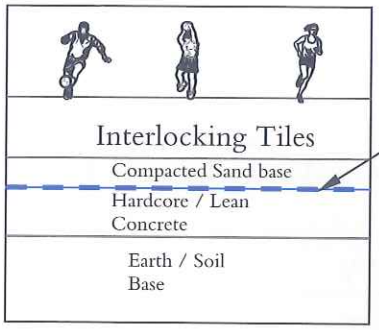
HONG SENG

Copper Tape

thermOweld® - Electrical Connections

PRODUCT REFERENCE - EQUIPOTENTIAL COPPER GROUNDING MESH

LAYING THE MESH

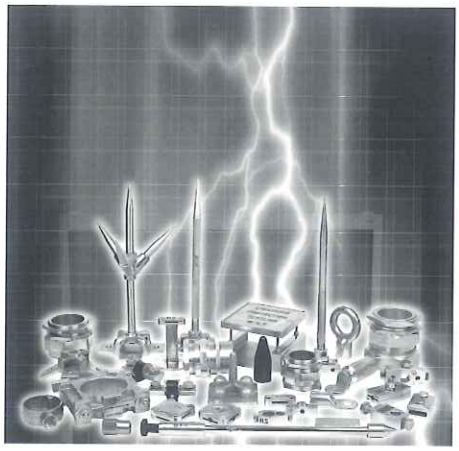


15. Ideal depth for laying is 300-500mm.
16. Ensure all metallic structures and hazardous materials within reach whilst in the protected area is bonded to the system.
17. **HONG SENG INDUSTRIES** can provide installation services if required. Charges will be based on area of coverage and other related grounding materials included.

COMPLETION

18. Inspection of all materials on site to ensure complete coverage of specified area.
19. Inspection of all **thermOweld** connections for detectable visual defects.
20. Ensure all earth pits are connected and building LPS (Lightning Protection System) are connected where possible.
21. Test equipotentiality of system earth pits. Test Resistance reading of overall result should be <10 ohms.

Other Grounding Products Available:

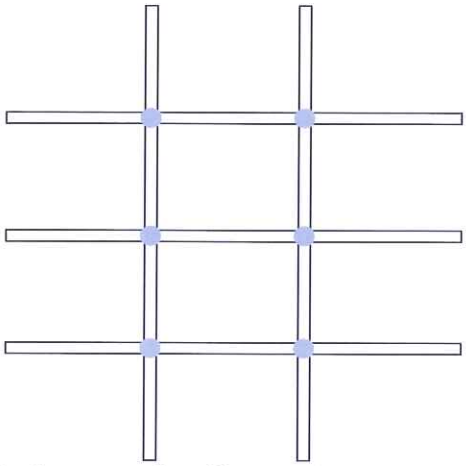


For a full range of grounding accessories, **HONG SENG** provides a top down approach. We provide a complete supply solution from the air terminal down to the earth rod, all configurations of clamps and grounding parts in between are either readily available in stock or can also be customized to your specific requirement.

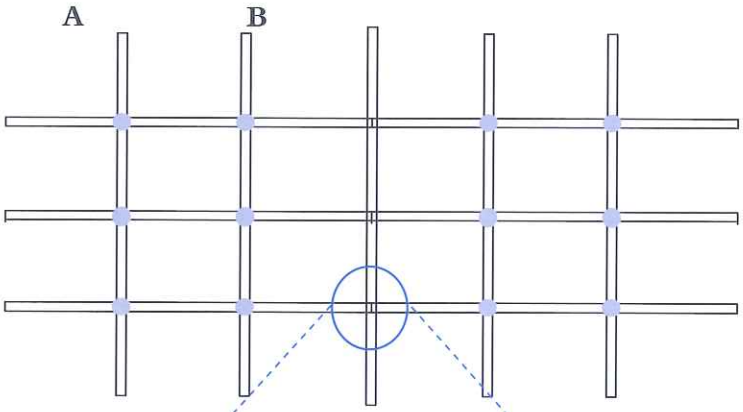
Please refer to individual product catalogs for complete range of available items.

Other Products

Installation using **thermOweld** Prefabricated equipotential mesh



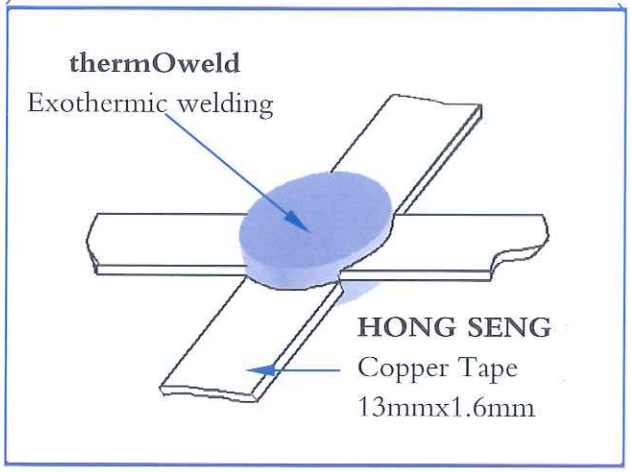
E.g. if 1 single piece of prefabricated mesh



Step 1
To connect together, 2 piece to be place side by side.

Step 2
Piece A and B are then joint using connecting strip.

Step 3
Proceed with inter connection using thermOweld exothermic connection to attach sections of mesh.



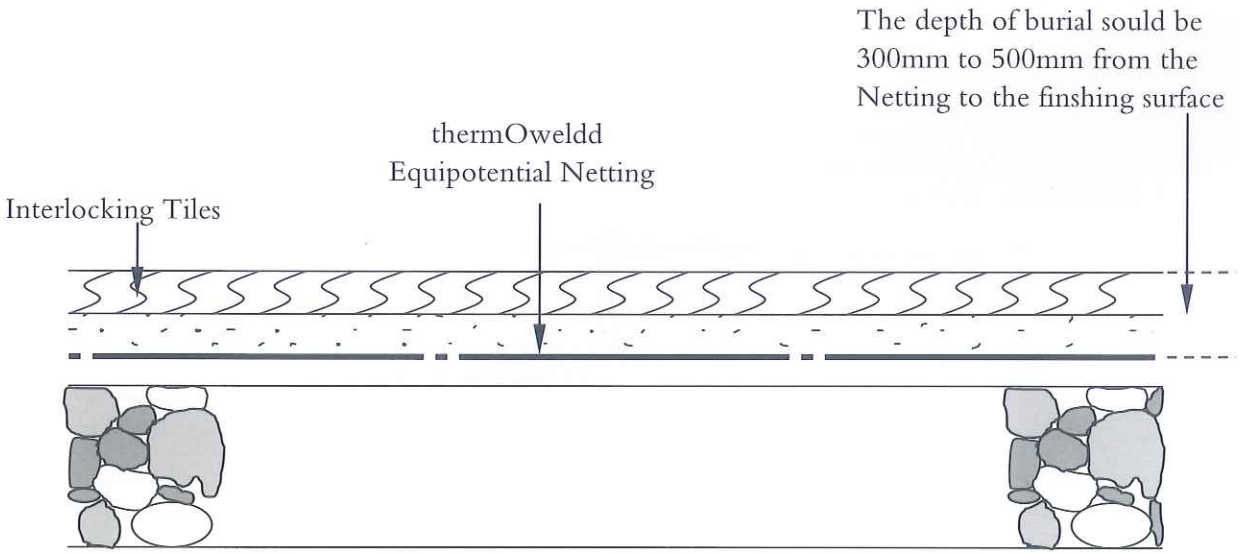
1. Prefabricated square of 3m x 4m or larger to be laid to cover the entire area required

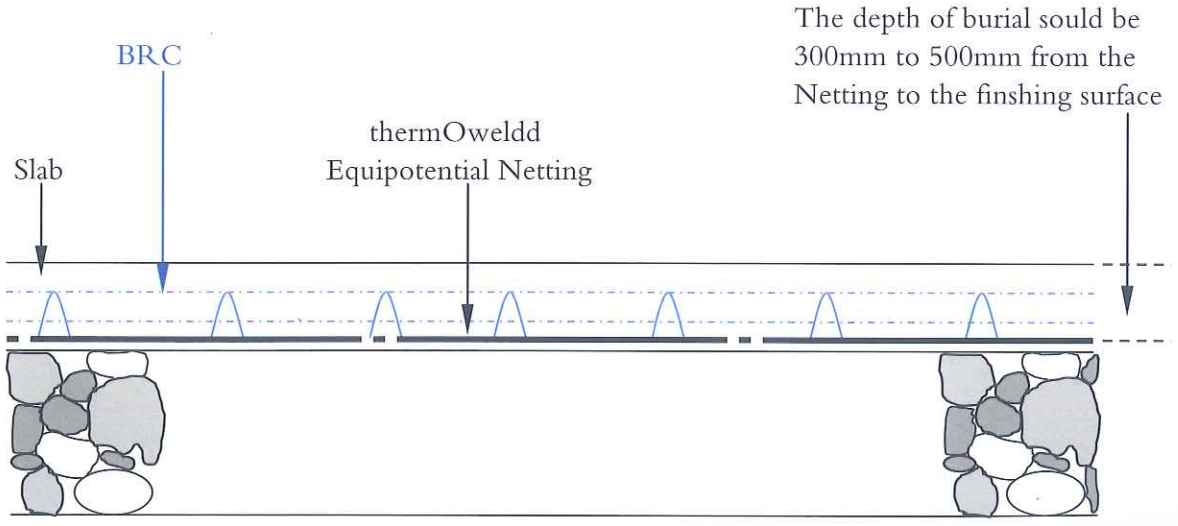
2. thermOweld will be done at intersection throughout the mesh system.

3. Once completed the system will be ground to the earth point.

4. Upon completion, visual inspection of each joint is required.

DETAIL LAYOUT FOR thermOweld EQUIPOTENTIAL NETTING SYSTEM IN OPEN SPACE AREA





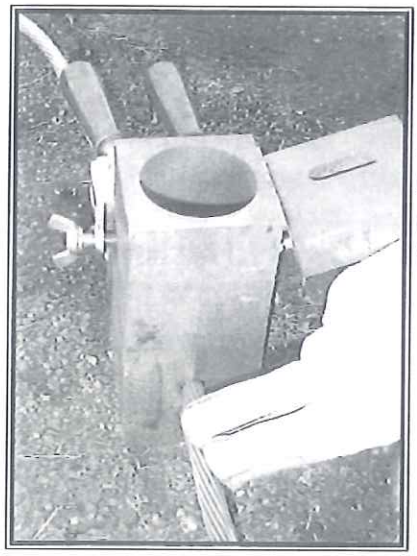
Note

This drawing may comply to the site's condition, as each intervigle Builder has their own mated of perpairing the ground. But the depth of burial for the equipotential netting should be 300-500mm from the finishing surface. Due to any site condition or changes should the depth of burial not meet to the specification, the Consultant's approval is needed.

thermOweld

The Contractors Choice

Making a thermOweld® Connection

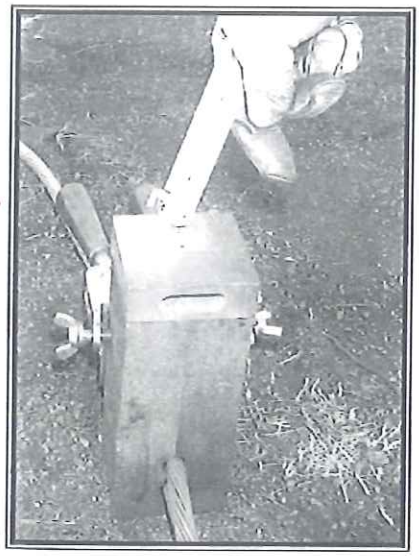


1 Position cleaned conductors in mold after making sure mold is dry, by pre-heating or making a test joint.

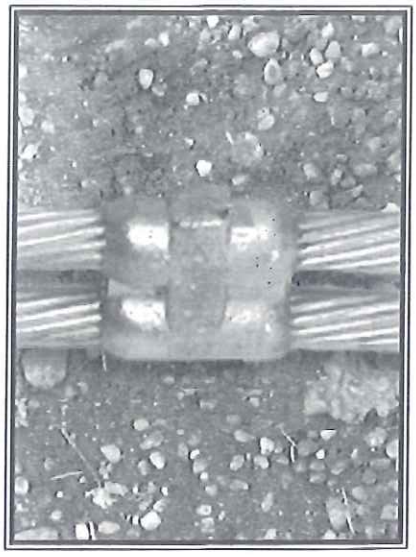
2 Place metal disc in bottom of mold crucible

3 Dump powder into crucible, being careful not to loosen all the starting powder.

4 Close lid and place a small amount of starting powder in the ignition pocket.



5 Ignite the starting powder with the Flint Ignitor.



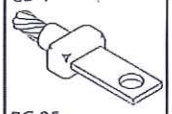
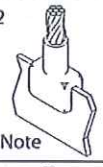
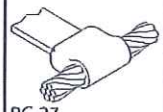
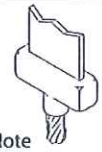
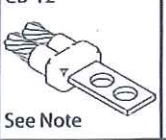
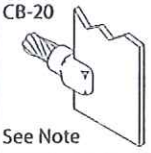
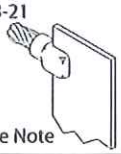
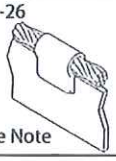
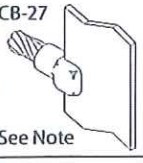
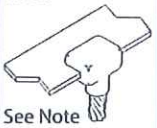
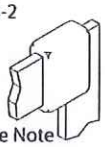
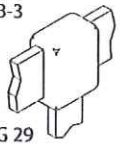
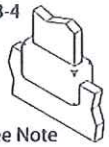
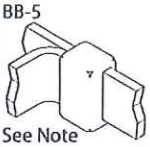
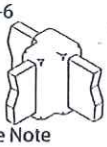
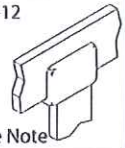
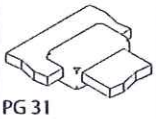
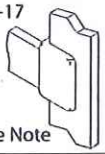
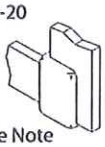
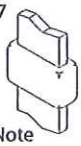
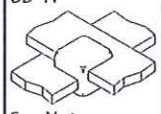
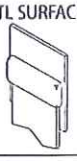
6 Remove weld and clean mold before making next connection.

The Contractors Choice

thermOweld®

Selector Chart

If you cannot find the necessary connection please contact thermOweld® at +1-918-627-5210 for assistance or visit our web site at www.thermOweld.com.

CB-1  PG 25	CB-2  See Note	CB-3  See Note	CB-4  PG 26	CB-5  PG 27	CB-6  See Note	CB-7  See Note	CB-8  See Note
CB-9  See Note	CB-11  See Note	CB-12  See Note	CB-15  See Note	CB-16  See Note	CB-17  See Note	CB-18  See Note	CB-19  See Note
CB-20  See Note	CB-21  See Note	CB-22  See Note	CB-25  See Note	CB-26  See Note	CB-27  See Note	CB-29  See Note	CB-38  See Note
BB-1  PG 28	BB-2  See Note	BB-3  PG 29	BB-4  See Note	BB-5  See Note	BB-6  See Note	BB-7  PG 30	BB-12  See Note
BB-14  PG 31	BB-17  See Note	BB-20  See Note	BB-21  See Note	BB-22  See Note	BB-27  See Note	BB-41  See Note	BS-1 (STL SURFACE)  PG 32
BS-2 (STL SURFACE) PG 33	BS-3 (STL SURFACE) PG 33	BS-4 (STL SURFACE) See Note	BS-5 (STL SURFACE) See Note	BS-6 (STL SURFACE) See Note	BS-7 (STL SURFACE) See Note	BS-13 (STL SURFACE) See Note	BS-14 See Note
BS-15 (STL SURFACE) See Note	BBS-16 (STL SURFACE) See Note	BS-17 (STL SURFACE) See Note	BS-18 (STL SURFACE) See Note	BS-19 (STL SURFACE) See Note	BR-1 PG 34	BR-2 PG 35	CRE-1 See Note
CRE-2 See Note	CRE-3 See Note	CRE-4 See Note	CRE-5 See Note	CRE-6 See Note	CRE-7 See Note	CRE-8 See Note	CRE-9 See Note
CRE-11 See Note	CRE-12 See Note	CRE-13 See Note	CRE-14 See Note	CRE-15 See Note	CRE-16 See Note	CRE-17 See Note	CRE-18 See Note
CRE-19 See Note	CRE-20 See Note	CRE-21 See Note	AC-1 PG 37	AC-2 PG 37	AR-1 PG 37	ACR-1 PG 37	ACR-2 PG 37

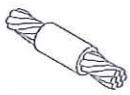
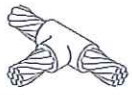
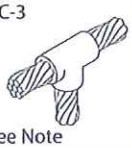
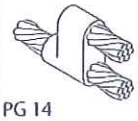
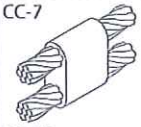
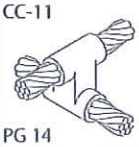
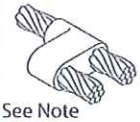
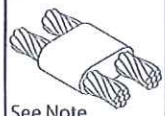
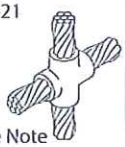
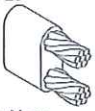
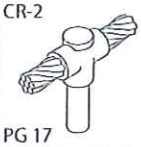
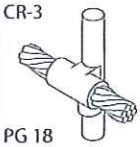
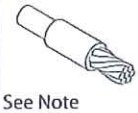
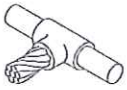
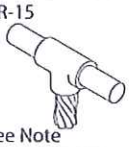
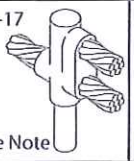
Note: Contact thermoweld® for information about these and other weld types not listed.

thermOweld®

The Contractors Choice

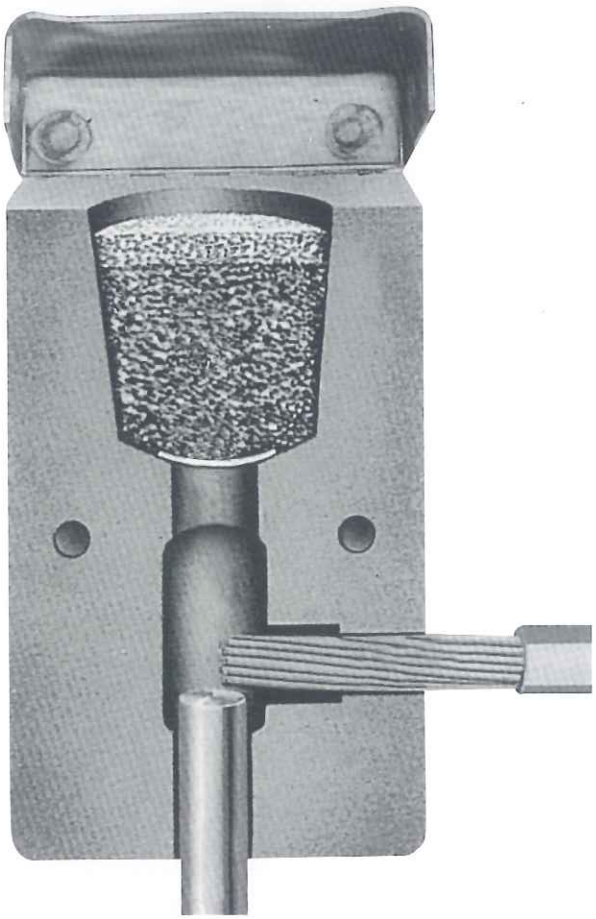
Selector Chart

If you cannot find the necessary connection please contact thermOweld® at +1-918-627-5210 for assistance or visit our web site at www.thermOweld.com.

CC-1  PG 11	CC-2  PG 12	CC-3  See Note	CC-4  PG 13	CC-5  See Note	CC-6  PG 14	CC-7  PG 15	CC-11  PG 14
CC-13  See Note	CC-14  See Note	CC-21  See Note	CC-23  See Note	CC-24  See Note	CC-25  See Note	CC-26  See Note	CC-27  See Note
CC-28  See Note	CC-29  See Note	CC-30  See Note	CC-31  See Note	CC-33  See Note	CC-34  See Note	CC-35  See Note	CC-36  See Note
CR-1  PG 16	CR-2  PG 17	CR-3  PG 18	CR-4  See Note	CR-5  See Note	CR-6  See Note	CR-7  See Note	CR-9  See Note
CR-12  See Note	CR-13  See Note	CR-14  See Note	CR-15  See Note	CR-16  See Note	CR-17  See Note	CR-18  See Note	CR-19  See Note
CR-20 See Note	CR-22 See Note	CR-24 See Note	CR-25 See Note	CR-27 See Note	CR-30 See Note	CR-31 See Note	CR-32 See Note
CR-35 See Note	CR-36 See Note	RR-1 PG 18	RR-2 See Note	RS-1 (STL SURFACE) PG 21	RS-2 (STL SURFACE) PG 21	CS-1 (STL SURFACE) PG 19	CS-2 (STL SURFACE) PG 20
CS-3 (STL SURFACE) PG 21	CS-4 (STL SURFACE) See Note	CS-5 (CI SURFACE) See Note	CS-6 (STL SURFACE) See Note	CS-7 (STL SURFACE) PG 22	CS-8 (STL SURFACE) PG 19	CS-9 (STL SURFACE) PG 20	CS-12 (STL SURFACE) See Note
CS-13 (STL SURFACE) See Note	CS-14 (STL SURFACE) See Note	CS-15 (STL SURFACE) See Note	CS-18 (STL SURFACE) See Note	CS-23 (STL SURFACE) See Note	CS-27 (STL SURFACE) PG 22	CS-28 (CI SURFACE) See Note	CS-32 (STL SURFACE) PG 23
CS-33 (CI SURFACE) PG 23	CS-34 (STL SURFACE) PG 24	CS-35 (CI SURFACE) PG 24	CS-43 (CI SURFACE) See Note	CS-46 (CI SURFACE) See Note	RS-3 (STL SURFACE) PG 36	CRS-1 (STL SURFACE) PG 36	CRS-2 (STL SURFACE) PG 36

Note: Contact thermoweld® for information about these and other weld types not listed.

Weld Process



The Furseweld Thermoweld & Cadweld exothermic welding process is a simple, self contained method of forming high quality electrical connections.

The compact process requires no external power or heat source, making it completely portable.

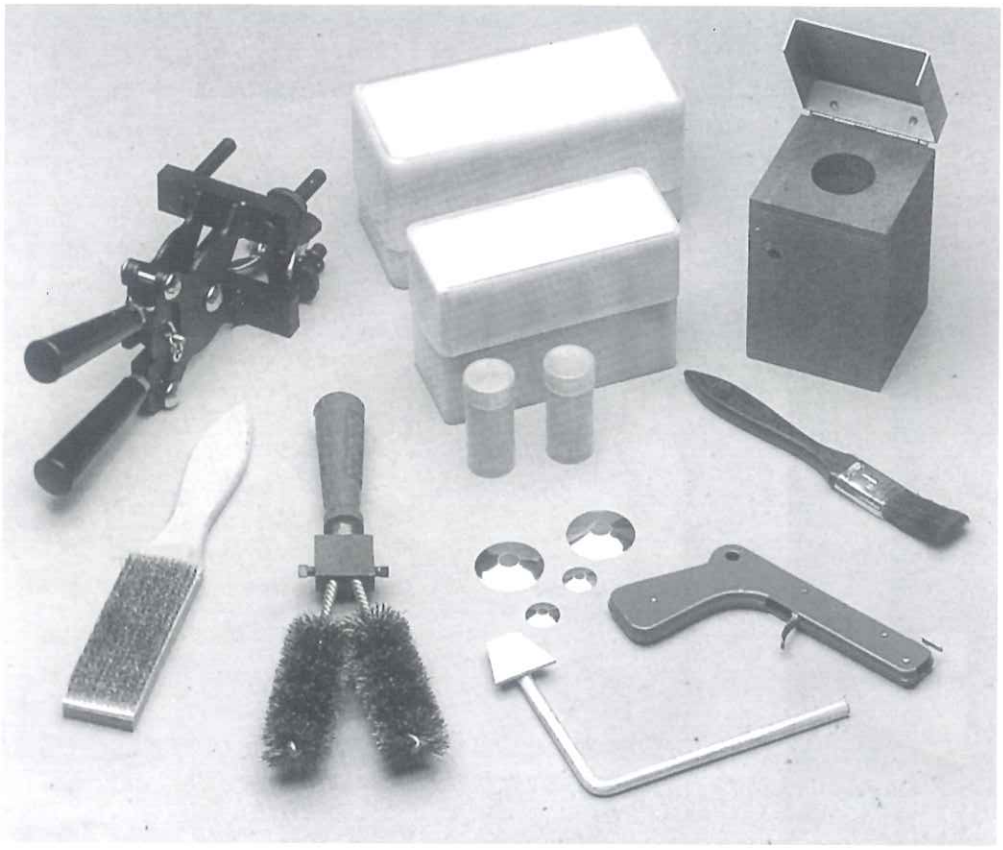
Connections are made inside a semi-permanent graphite mould using the high temperature reaction of powdered copper oxide and aluminium.

This is how it works:

The Mould (1) features a Crucible (2), a Tap Hole (3) and a Weld Cavity (4). The conductors (5) and (6) to be joined, are located in the weld cavity as shown, and the mould is closed. A steel Retaining Disc (7) is located in the bottom of the crucible, to retain the Weld Powder (8) and Starting Powder (9) which are poured in on top.

Ignited with a spark gun, the starting powder sets off an exothermic reaction in the weld powder, reducing it to molten copper alloy. This instantaneously melts the retaining disc, and flows down the tap hole, to the weld cavity, where it partially melts the conductors, before cooling to leave a fusion weld of great mechanical and electrical integrity.

Weld Equipment & Accessories



From left anti-clockwise:
Handle Clamp, File Card Brush, Cable Brush, Mould Scraper, Retaining Discs, Flint Gun, Mould Brush, Mould, Powder Boxes, Cartridges

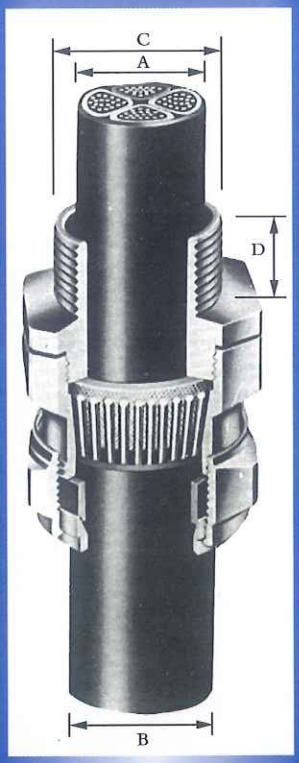
Furseweld Thermoweld & Cadweld weld powders are contained in plastic cartridges, and are packed in plastic boxes of 10 or 20, depending on their size.

Different joints require different powder sizes, and the size relates to the powders nominal weight in grams.

The weld powder packaging also contains the retaining discs and the starting powder. The retaining discs are located underneath the cartridge caps, on top of the powder, or are contained in a separate bag within the box. The starting powder is compacted into the bottom of the cartridge, underneath the weld powder, and is released by tapping the cartridge base firmly.

Furseweld Thermoweld & Cadweld weld powders are suitable, for making connections from copper to copper and from copper to steel.

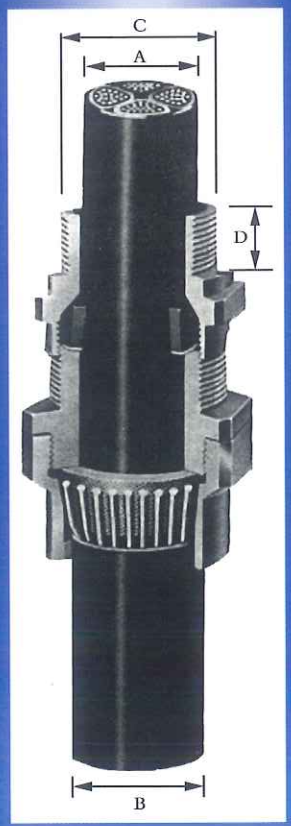
Cable Gland BS 6121



CW Industrial Gland

Application
For use with all types of SWA cable and where it is essential to produce an IP66 seal onto the outer sheath.

Gland Ref & Size	Termination Thread Size "C"		Minimum Length of Thread "D"	Cable Diameter Dia. Inner Sheath Max. "A"	Cable Diameter Dia. Outer Sheath Max. "B"
	Metric	Imp.			
CW	16L	5/8	10	9.0	14.5
CW	20S	3/4	10	12.0	18.0
CW	20L	3/4	10	15.0	20.8
CW	25S	1	10	17.0	23.0
CW	25L	1	10	20.0	28.0
CW	32L	1 1/4	10	26.0	34.0
CW	40S	1 1/2	15	29.0	37.0
CW	40L	1 1/2	15	32.5	41.5
CW	50S	2	20	38.0	46.5
CW	50L	2	20	40.0	51.0
CW	63S	2 1/2	20	45.0	57.0
CW	63L	2 1/2	20	48.0	59.0
CW	75S	3	20	54.0	66.0
CW	75L	3	20	62.0	72.0
CW	88S	3 1/2	25	67.0	80.0
CW	88L	3 1/2	25	73.0	86.0

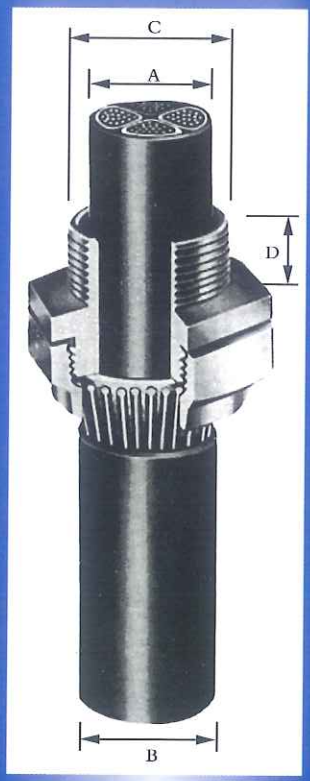


D1W Industrial Gland

Application
For use with all types of SWA extruder bedding cable where it is essential to produce IP66 or explosion proof seal on inner sheath.

Gland Ref & Size	Termination Thread Size "C"		Minimum Length of Thread "D"	Cable Diameter Dia. Inner Sheath Max "A"	Cable Diameter Dia. Outer Sheath Max "B"
	Metric	Imp.			
D1W	16L	5/8	10	9.0	14.5
D1W	20S	3/4	10	12.0	18.0
D1W	20L	3/4	10	15.0	20.8
D1W	25S	1	10	17.0	23.0
D1W	25L	1	10	20.0	28.0
D1W	32L	1 1/4	10	26.0	34.0
D1W	40S	1 1/2	15	29.0	37.0
D1W	40L	1 1/2	15	32.5	41.5
D1W	50S	2	20	38.0	46.5
D1W	50L	2	20	40.0	51.0
D1W	63S	2 1/2	20	45.0	57.0
D1W	63L	2 1/2	20	48.0	59.0
D1W	75S	3	20	54.0	66.0
D1W	75L	3	20	62.0	72.0
D1W	88S	3 1/2	25	67.0	80.0
D1W	88L	3 1/2	25	73.0	86.0

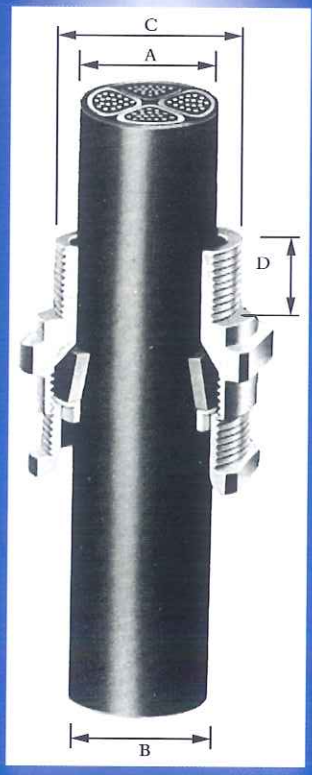
Cable Gland BS 6121



BW Light Duty Industrial Gland

Application
For use with all types of SWA cable where no seal is required on to cables inner or outer sheathing.

Gland Ref & Size	Termination Thread Size "C"		Minimum Length of Thread "D"	Cable Diameter Dia. Inner Sheath Max "A"	Cable Diameter Dia. Outer Sheath Max "B"
	Metric	Imp.			
BW	16L	5/8	10	9.0	14.5
BW	20S	3/4	10	12.0	18.0
BW	20L	3/4	10	15.0	20.8
BW	25S	1	10	17.0	23.0
BW	25L	1	10	20.0	28.0
BW	32L	1 1/4	10	26.0	34.0
BW	40S	1 1/2	15	29.0	37.0
BW	40L	1 1/2	15	32.5	41.5
BW	50S	2	20	38.0	46.5
BW	50L	2	20	40.0	51.0
BW	63S	2 1/2	20	45.0	57.0
BW	63L	2 1/2	20	48.0	59.0
BW	75S	3	20	54.0	66.0
BW	75L	3	20	62.0	72.0
BW	88S	3 1/2	25	67.0	80.0
BW	88L	3 1/2	25	73.0	86.0
BW	100	4	25	89.0	100.0

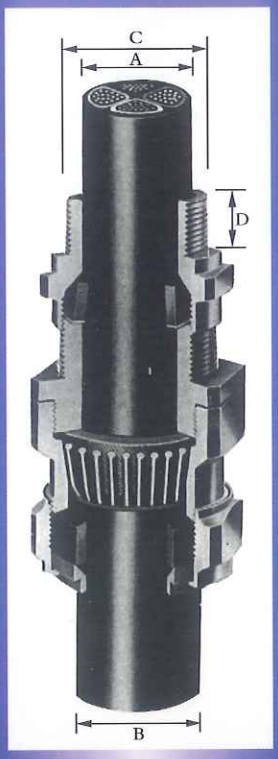


A2 Industrial Gland / A2 Flameproof Gland

Application
For use with all types of unarmoured and PVC cable where it is essential to produce IP66 or explosion proof seal on inner sheath.

Gland Ref & Size	Termination Thread Size "C"		Minimum Length of Thread "D"	Cable Range Max. "A"	Cable Range Max. "B"
	Metric	Imp.			
A2	16L	5/8	15	8.7	3.5
A2	20S	3/4	15	11.7	8.0
A2	20L	3/4	15	14.0	11.0
A2	25S	1	15	17.0	12.0
A2	25L	1	15	20.0	13.0
A2	32S	1 1/4	15	23.0	16.5
A2	32L	1 1/4	15	26.3	19.0
A2	40S	1 1/2	20	29.0	23.0
A2	40L	1 1/2	20	33.0	25.0
A2	50S	2	20	38.2	31.5
A2	50L	2	20	46.0	36.5
A2	63S	2 1/2	20	50.1	42.5
A2	63L	2 1/2	20	56.0	44.5
A2	75S	3	25	62.0	54.5
A2	75L	3	25	68.0	60.5
A2	88L	3 1/2	25	77.0	66.0
A2	100	4	25	88.0	80.0
A2	110	4 1/2	25	95.0	89.0

Cable Gland BS 6121



E1W Industrial Gland / E1FW Flameproof "D" Gland

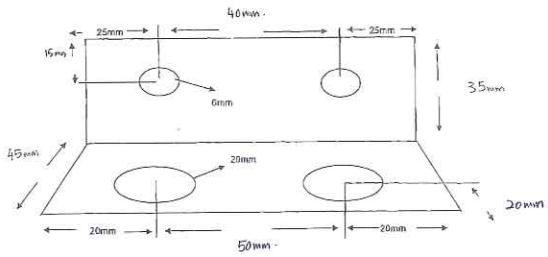
Application
For use with all types of unarmoured cables where it is essential to provide an IP66 or explosion proof seal on to the outer sheath.

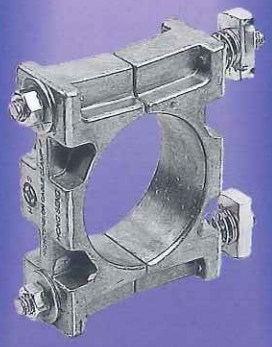
Gland Ref & Size	Termination Thread Size "C"		Minimum Length of Thread "D"	Cable Diameter Dia. Inner Sheath Max "A"	Cable Diameter Dia. Outer Sheath Max "B"
	Metric	Imp.			
E1W	16L	5/8	10	9.0	14.5
E1W	20S	3/4	10	12.0	18.0
E1W	20L	3/4	10	15.0	20.8
E1W	25S	1	10	17.0	23.0
E1W	25L	1	10	20.0	28.0
E1W	32L	1 1/4	10	26.0	34.0
E1W	40S	1 1/2	15	29.0	37.0
E1W	40L	1 1/2	15	32.5	41.5
E1W	50S	2	20	38.0	46.5
E1W	50L	2	20	40.0	51.0
E1W	63S	2 1/2	20	45.0	57.0
E1W	63L	2 1/2	20	48.0	59.0
E1W	75S	3	20	54.0	66.0
E1W	75L	3	20	62.0	72.0
E1W	88S	3 1/2	25	67.0	80.0
E1W	88L	3 1/2	25	73.0	86.0

2 Hole Lamp Pole Bracket

Size (mm)
20
25
32

Cat.No.
HS 621



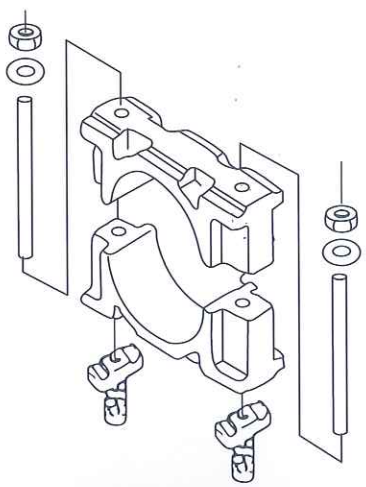


High-Tension Cable Clamp

Material: Aluminium Alloy BS 1490

Diameter Size: (30-40mm)
Diameter Size: (40-50mm)
Diameter Size: (50-60mm)
Diameter Size: (60-70mm)
Diameter Size: (70-80mm)
Diameter Size: (80-90mm)
Diameter Size: (90-100mm)
Diameter Size: (100-110mm)
Diameter Size: (110-120mm)
Made to measure

Cat.No. HS 900



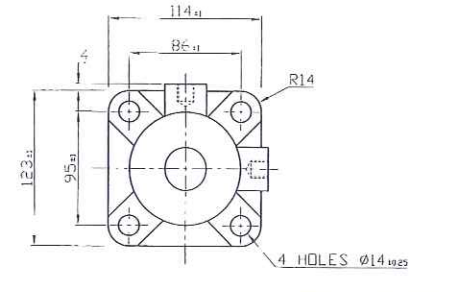
Cable Gland

Cast Iron & Aluminium Alloy High Tension Cable Clamp

Size	Cat.No.
40-50	HS 513
50-60	
60-70	
70-80	
80-90	
90-100	
100-110	

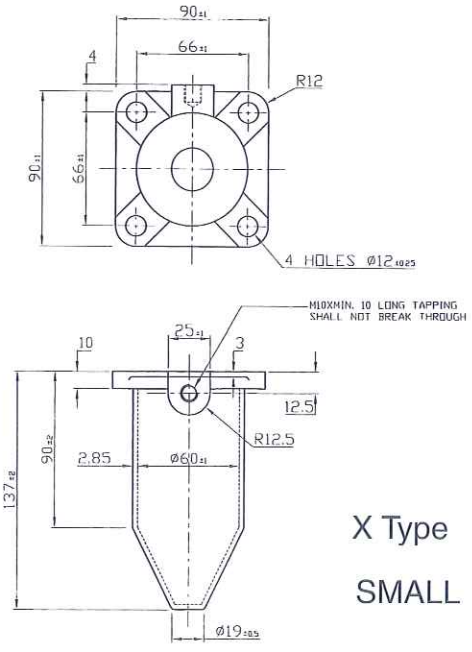
Wiping Gland

Cat.No.
HS 518



Y Type

BIG



X Type

SMALL

GEM

Gem Stone

Part. No.
GM H.S. 555

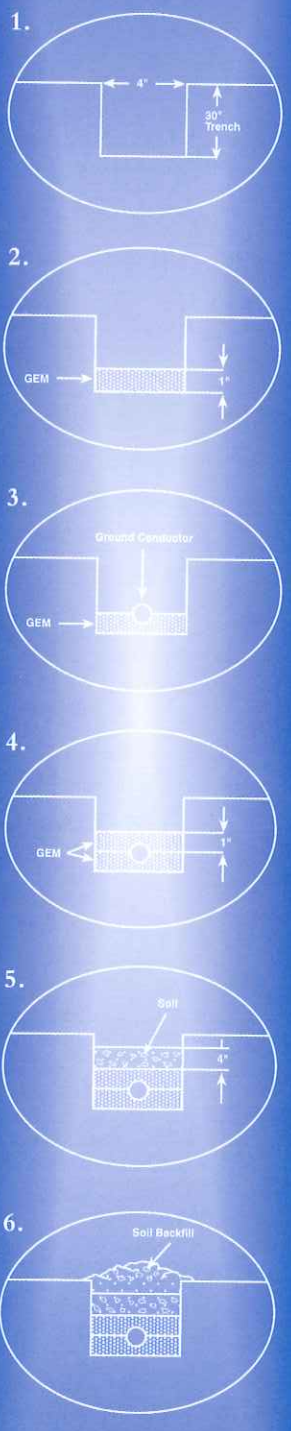
Conducrete

Part. No.
GM H.S. 556

Earth Con

Part. No.
GM H.S. 557

How To Install GEM



Trench Installation

1. Dig a trench at least 4 inches wide x 30 inches deep or below the frost line, whichever is deeper.

2. Spread out enough GEM to uniformly cover bottom of trench - about 1 inch deep.

3. Place conductor on top of GEM. Use earth staples (see below) to hold conductor in place.

4. Spread more GEM on top of conductor to completely cover conductor - about 1 inch deep.

5. Carefully cover the GEM with soil to a depth of about 4 inches, making sure not to expose the conductor.

6. Tamp down the soil, then fill in the trench. For various trench widths and GEM thickneses, see the table below.

Estimated bags of GEM for backfilling around ground rods to a density of 90lb/cu ft

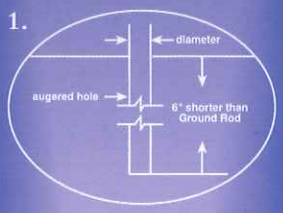
Trench Width (inches)	Total Thickness of GEM (inches)			
	1	2	3	4
4	14.0	7.0	4.7	3.5
6	9.3	4.7	3.1	2.3
8	7.0	3.5	2.3	1.8
10	5.6	2.8	1.9	1.4
12	4.7	2.3	1.6	1.2

A 25-pound bag of GEM will cover 7 linear feet of conductor length for a 4-inch-wide, 2-inch-thick covering (1 inch below and 1 inch above conductor), based on 63.5lb/cu ft.

How To Install GEM

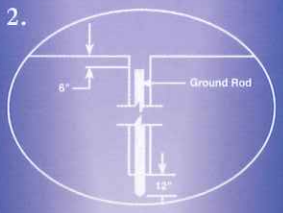
Ground Rod Backfill Installation

1.



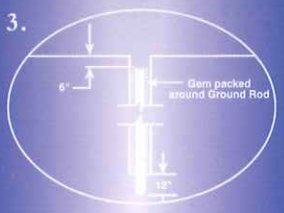
1. Auger a 3 inch or larger diameter hole to a depth of 6 inches less than the length of the ground rod.

2.



2. Place ground rod into augered hole and drive one foot (if possible) into bottom of the hole. The top of the ground rod will be approximately 6 inches below grade. At this time, make any connections to ground rod using CADWELD® connections.

3.



3. Pour the appropriate amount of GEM (see below) around the ground rod. To ensure the GEM material completely fills the hole, tamp around the ground rod with a pole.

4.

4. Fill remainder of augered hole with soil removed during augering. For various augered-hole diameters and depths, see the table below.

Note: Excess standing water must be removed from the hole.

Estimated bags of GEM for backfilling around ground rods to a density of 90lb/cu ft

Dia. of hole (inches)	Depth of hole (feet)*						
	6	7	8	9	17	19	20
3	2	2	2	2	4	4	4
4	2	3	3	3	6	7	7
5	3	4	4	5	9	10	10
6	5	5	6	7	13	14	15
7	6	7	8	9	17	19	20
8	8	9	11	12	22	25	26
9	10	12	13	15	28	31	32
10	12	14	16	18	34	38	40

* 8-foot minimum rod length required to be in contact with the soil (or GEM), per NEC 250-83C.

Note: If premixing GEM into a slurry form, use a standard cement mixer or hard-mix in a mixing box, wheelbarrow, etc. Use 1 1/2 to 2 gallons of clean water per bag of GEM.

Ground Enhancement Material

GEM advantages pay off in better cost efficiency.

Here's why:-

GEM is effective.

- It reduces resistance to earth.
- It maintains constant resistance for the life of the system once in its set form.
- It performs in all soil conditions even during dry spells.

GEM is permanent.

- It does not dissolve or decompose with time.
- Freezing increases its resisivity less than 10%.
- It does not require periodic charging treatments or replacements.
- It does not require maintenance.
- It does not depend on the continuous presence of water to maintain its conductivity.

GEM is environmentally friendly.

- It does not adversely affect soil.
- It does not contaminate ground water.
- It meets all EPA requirements for landfill.
- Material Safety Data Sheet (MSDS) available on request.

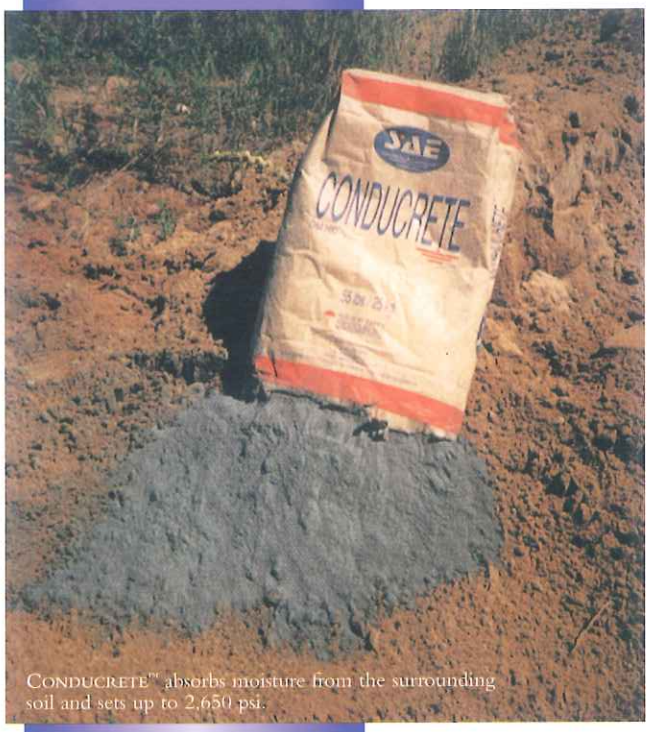
GEM is easy to use.

- It comes in easy-to-handle 25-pound bags.
- It takes just one person to install.
- It can be installed wet or dry.
- It can be easily mixed into a slurry.
- It requires no mixing when used dry: just open and pour.
- It quickly absorbs moisture from the soil when used dry and sets into a hardened state.
- It may reduce the size of the grounding system where conventional methods are unsatisfactory.

Bag for bag, job for job, GEM gives you more for you electrical grounding dollar.

nancement Material

CONDUCRETE™ Conductive Concrete for Grounding Applications



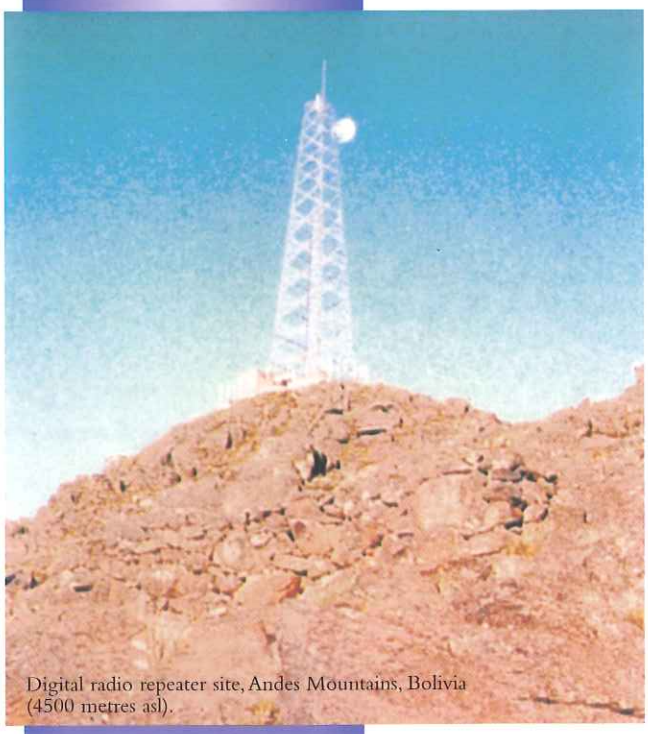
CONDUCRETE™ absorbs moisture from the surrounding soil and sets up to 2,650 psi.

CONDUCRETE™ is a conductive cementitious product used in the construction of ground electrodes.

For horizontal or vertical installations, CONDUCRETE™ electrodes offer superior performance.

CONDUCRETE™ electrodes are:

- Permanenet and maintenance free,
- Cost effective
- Easy to install
- Environmentally safe
- Suitable for all terrain


Digital radio repeater site, Andes Mountains, Bolivia (4500 metres asl).

For All Grounding Requirements...

- Computer Systems
- Industrial
- Mining
- Power
- Residential
- Telecommunications
- Utilities

CONDUCRETE™ Horizontal Electrodes... Take Charge of Lightning

Triggered lightning test, Sandia labs, 1993, grounded using vertical ground rods.

This picture shows the results of a triggered lightning test (with a current of 29.5 kiloamps) by Sandia National Laboratories in 1993. The **vertical ground rods** used to ground the rocket launching platform **were ineffective** in lowering the ground potential rise. As a result, a flashover occurred forming a radial pattern in the horizontal plane.

In 1996, at the suggestion of SAE Inc., Sandia used a horizontal radial system to ground the launching platform. This configuration was hit repeatedly by triggered lightning and no flashover occurred. The Sandia tests demonstrate that **horizontal grounding systems effectively dissipate lightning energy**.

CONDUCRETE™ Enhanced Grounding Systems... Are Superior To Conventional Systems

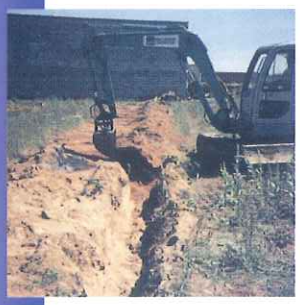
- CONDUCRETE™ is **highly capacitive** and, as a result, CONDUCRETE™ electrodes are an excellent absorber of high rise time surges.
- CONDUCRETE™ electrodes have a larger conductive surface area than conventional systems and, therefore, **lower surge impedance and ground resistance**.
- CONDUCRETE™ **reduces copper conductor electrolytic corrosion** by up to 90%.
- CONDUCRETE™ electrodes have **far less seasonal R value fluctuations** than conventional systems.
- CONDUCRETE™ electrodes are **virtually theft proof**.

CONDUCRETE™ Installations...


Horizontal Electrodes

- Dig trench 0.5 m (20") wide, 0.6 m (24") deep and to designed length. (The length of the trench is determined by the soil resistivity at the site and the required system R value.) Smooth out bottom of trench. Lay copper wire in center of trench.


- Cover wire to 4 cm (1.5") depth with CONDUCRETE™. 25 kg (55 lb) of CONDUCRETE™ covers 3.5 - 5.0 m (11.5 - 16.5") of trench.

- Hand shovel 10 cm (4") of loose backfill over CONDUCRETE™. Backfill trench with excavated material. CONDUCRETE™ absorbs moisture from the surrounding soil and sets up to 2,650 psi.

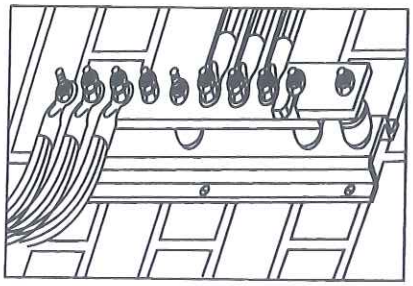

Vertical Electrodes

- Drill hole designed depth and diameter. (Depth and diameter are determined by the soil resistivity at the site and the required system R value.)
- Place copper wire or ground rod in center of hole.
- Place CONDUCRETE™ in hole in either a slurry or dry format.

Lightning Protection

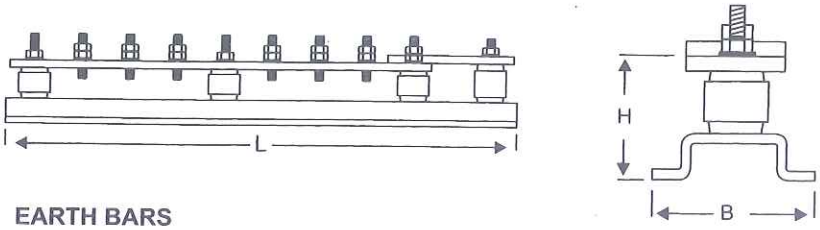
Cat. No. H.S. 514

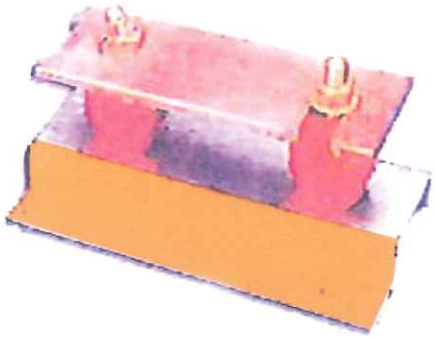
CIRCULAR CONDUCTOR SYSTEM

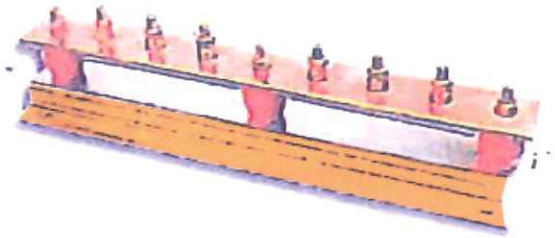


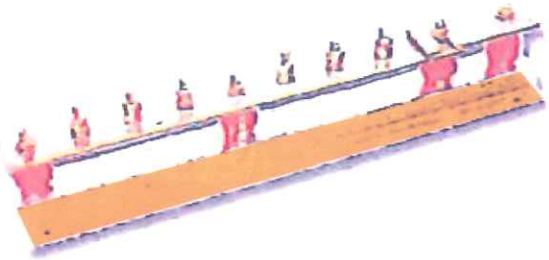
EARTH BARS

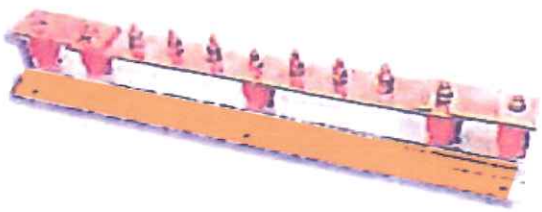
Earth Bars which are made of hard drawn copper conforming to BS1432 with brass / Stainless Steel fittings a supported by re-inforced polyester insulators fitted on channel base of zinc plated mild steel. Available in various sizes and specification with or without disconnecting links.











EARTH BARS

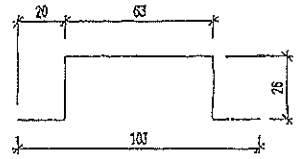
Description	L	W	H	Cat #
6 way	400 mm	90 mm	90 mm	EB - 06
8 way	500 mm	90 mm	90 mm	EB - 08
10 way	650 mm	90 mm	90 mm	EB - 10
12 way	750 mm	90 mm	90 mm	EB - 12
14 way	850 mm	90 mm	90 mm	EB - 14
16 way	950 mm	90 mm	90 mm	EB - 16
18 way	1050 mm	90 mm	90 mm	EB - 18
20 way	1200 mm	90 mm	90 mm	EB - 20
22 way	1300 mm	90 mm	90 mm	EB - 22
24 way	1400 mm	90 mm	90 mm	EB - 24
26 way	1500 mm	90 mm	90 mm	EB - 26
28 way	1650 mm	90 mm	90 mm	EB - 28
30 way	1750 mm	90 mm	90 mm	EB - 30

EARTH BARS WITH SINGLE DISCONNECTING

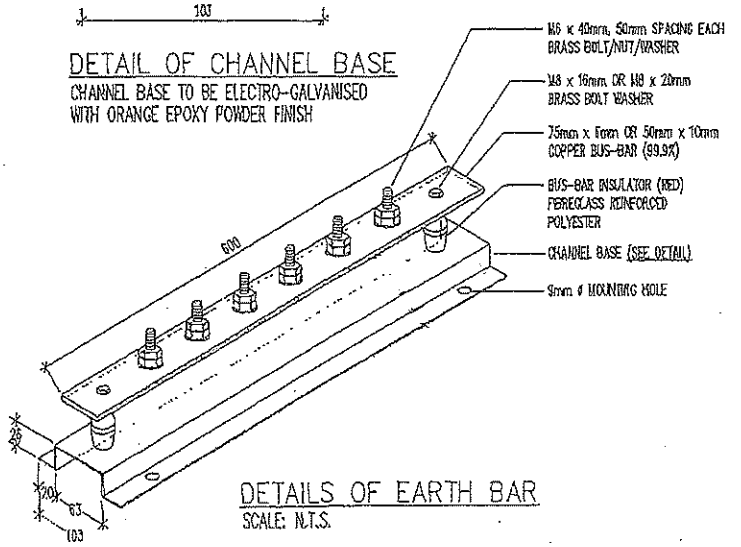
Description	L	W	H	Cat #
6 way	475 mm	90 mm	96 mm	EBSD - 06
8 way	575 mm	90 mm	96 mm	EBSD - 08
10 way	725 mm	90 mm	96 mm	EBSD - 10
12 way	825 mm	90 mm	96 mm	EBSD - 12
14 way	925 mm	90 mm	96 mm	EBSD - 14
16 way	1025 mm	90 mm	96 mm	EBSD - 16
18 way	1125 mm	90 mm	96 mm	EBSD - 18
20 way	1275 mm	90 mm	96 mm	EBSD - 20
22 way	1375 mm	90 mm	96 mm	EBSD - 22
24 way	1475 mm	90 mm	96 mm	EBSD - 24
26 way	1575 mm	90 mm	96 mm	EBSD - 26
28 way	1725 mm	90 mm	96 mm	EBSD - 28
30 way	1825 mm	90 mm	96 mm	EBSD - 30

EARTH BARS WITH TWIN DISCONNECTING LINKS

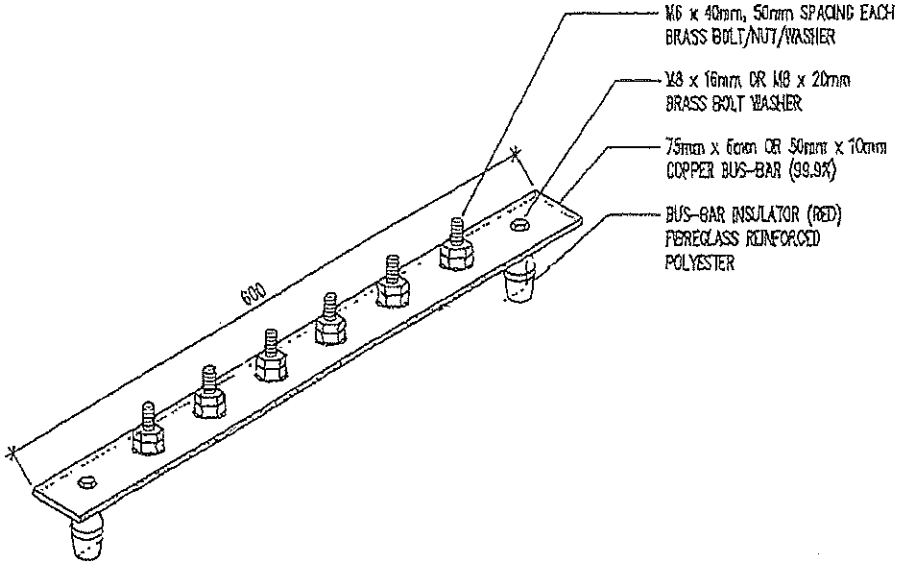
Description	L	W	H	Cat #
6 way	550 mm	90 mm	96 mm	EBTD - 06
8 way	650 mm	90 mm	96 mm	EBTD - 08
10 way	800 mm	90 mm	96 mm	EBTD - 10
12 way	900 mm	90 mm	96 mm	EBTD - 12
14 way	1000 mm	90 mm	96 mm	EBTD - 14
16 way	1100 mm	90 mm	96 mm	EBTD - 16
18 way	1200 mm	90 mm	96 mm	EBTD - 18
20 way	1350 mm	90 mm	96 mm	EBTD - 20
22 way	1450 mm	90 mm	96 mm	EBTD - 22
24 way	1550 mm	90 mm	96 mm	EBTD - 24
26 way	1650 mm	90 mm	96 mm	EBTD - 26
28 way	1800 mm	90 mm	96 mm	EBTD - 28
30 way	1900 mm	90 mm	96 mm	EBTD - 30



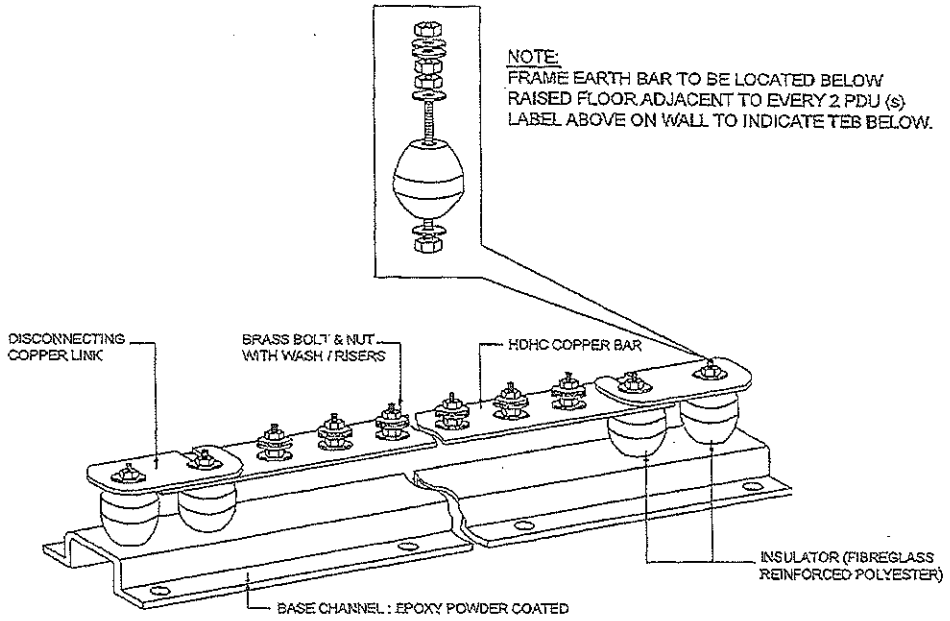
DETAIL OF CHANNEL BASE
CHANNEL BASE TO BE ELECTRO-GALVANISED
WITH ORANGE EPOXY POWDER FINISH



DETAILS OF EARTH BAR
SCALE: N.T.S.



DETAILS OF EARTH BAR
SCALE: N.T.S.



TYPICAL EARTH BAR ARRANGEMENT

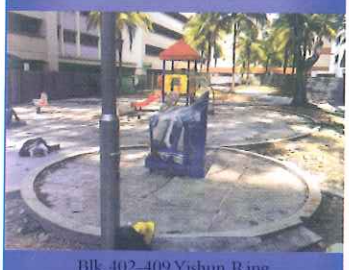
Project Reference

Law Enforcement Academy at Old Choa Chu Kang Road

Millennium Institute (Parade Square) at Bukit Batok West Avenue 3 & 8

Playground & Fitness Corner at Block 107 to 112, Aljunied Crescent

Rooftop Basketball Court at Hong San Terrence & Tennis Court at Urbana Condominium



Blk 402-409 Yishun Ring (Playground)

Hong Seng Project References for Thermoweld Equipotential Netting.

1. Changi Water Reclamation Plant C4C Thermoweld Prefabricated Wire Mesh (Low Noise Earthing System)
2. Changi Water Reclamation Plant C4B Thermoweld Prefabricated Wire Mesh (Low Noise Earthing System)
3. Changi Water Reclamation Plant C2B Thermoweld Prefabricated Wire Mesh (Low Noise Earthing System)
4. Changi Water Reclamation Plant C4A Thermoweld Prefabricated Wire Mesh (Low Noise Earthing System)
5. Changi Water Reclamation Plant C5A Thermoweld Prefabricated Wire Mesh (Low Noise Earthing System)
6. Mayflower Secondary School Thermoweld Equipotential Netting
7. Catholic Primary School Thermoweld Equipotential Netting
8. Yang Zheng Primary School Thermoweld Equipotential Netting
9. Bishan Park Secondary School Thermoweld Equipotential Netting
10. Raffles Girl's School Thermoweld Equipotential Netting
11. Changkat Primary School Thermoweld Equipotential Netting
12. Cathoolic High School Thermoweld Equipotential Netting
13. Ahmad Ibrahim Secondary School Thermoweld Equipotential Netting
14. Kua Chuan Presbyterian Secondary School Thermoweld Equipotential Netting
15. West Spring Secondary School Thermoweld Equipotential Netting
16. RadinMas Primary School Thermoweld Equipotential Netting
17. Woodlands Secondary School Thermoweld Equipotential Netting
18. Singapore Management University Thermoweld Exothermic Welding Materials
19. Le Crecendor Condominium Thermoweld Exothermic Welding Materials
20. One North MRT Station Thermoweld Exothermic Welding Materials
21. Blk 616 HDB A&A Works Project Outdoor Equipment Area Thermoweld Equipotential Netting
22. Blk 444 to 450 Tampines St 42 Children Playground End New Ball Court Thermoweld Equipotential Netting
23. Blk 619 & 617 Hougang Ave 8 A&A Project Outdoor Children Playground Thermoweld Equipotential Netting
24. Kovan Estate Children Playground, Exercises Corner & New Basketball Court Thermoweld Equipotential Netting
25. Law Enforcement Academy Thermoweld Equipotential Netting
26. Nanyang Junior College Thermoweld Equipotential Netting
27. Gurkha Camp Extension Thermoweld Equipotential Netting
28. Nan Hua Secondary School Thermoweld Equipotential Netting
29. Anglican High School Thermoweld Equipotential Netting
30. Park View Primary School Thermoweld Equipotential Netting
31. Tampines North Primary School Thermoweld Equipotential Netting
32. Raffles Junior College Thermoweld Equipotential Netting
33. Pioneer Junior College Thermoweld Equipotential Netting
34. ITE Macpherson Thermoweld Equipotential Netting
35. Zhong Hua Primary School Thermoweld Equipotential Netting

→ Continued

36. Fairfield Methodist Primary School Thermoweld Equipotential Netting
37. Paya Lebar Methodist Thermoweld Equipotential Netting
38. Banyan Avenue Jurong Island 66/22Kv Substation Thermoweld Exothermic Welding Materials
39. Changi Coast 66/22Kv Substation Thermoweld Exothermic Welding Materials
40. US Navy Pacific Division @ Middle East ~ 100 ft Lightning Protection Mast @ Pier
41. Millennia Institute Thermoweld Equipotential Netting,
42. Blk 108 to 112 Aljunied Crescent A Basketball Court, 3 Playgrounds & a Fitness Corner Thermoweld Equipotential Netting
43. Blk 330 To 333 Serangoon Ave 3, 3 Children Playground Thermoweld Equipotential Netting
44. Lakeside Primary School Thermoweld Equipotential Netting
45. Urbana Condominium Thermoweld Equipotential Netting
46. Blk 225A Compassvale Walk Gate Ball Court Thermoweld Equipotential Netting
47. Home @ Sunbeam Place Rooftop Basketball Court Hong San Terrence Thermoweld Equipotential Netting
48. Rivervale Plaza, 118 Rivervale Drive Hard Court Thermoweld Equipotential Netting
49. Blk 158 Hougang Street 11 Hard Court Thermoweld Equipotential Netting
50. Blk 572 Hougang Street 51 Badminton Court Thermoweld Equipotential Netting
51. Hua Chong Junior College Thermoweld Equipotential Netting
52. Nanyang Polytechnic Thermoweld Equipotential Netting
53. Blk 614 Ang Mo Kio Thermoweld Equipotential Netting
54. Blk 118 Aljunied Crescent Hard Court 3D Thermoweld Equipotential Netting
55. Bukit Batok Fitness Corner Thermoweld Equipotential Netting
56. National Junior College Thermoweld Equipotential Netting
57. Jalan Senang Park Thermoweld Equipotential Netting
58. Chong Fu Primary School Thermoweld Equipotential Netting

® 豐盛工業公司

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