



Exothermic welding

Exo01/2023

Vision & Mission

A lightning strike or lightning bolt is a natural disaster that can cause enormous damage to our lives, properties, buildings, and various operating systems. As our world today is a modern society in adopting and integrating information and communication technologies at home, we need stability and high security to the electronics system which can prevent lightning strikes and electromagnetic waves that pose a threat to the operating system.

Vision

**Leader in Total Solution in Lightning Protection System and Safety Innovation
with the Strongest Global Brand and Sustainable Growth.**

Mission

- Create value of products and services to ensure customer satisfaction.
- Research and develop innovation to meet the market demand.
- Create soft power engagement by using sustainable goals with stakeholders under the Safety to Society – CSV (Creating Shared Value) project.
- Develop a management system toward high-performance organization.
- Support human assets by creating learning culture for lifelong learning.

Kumwell Corporation Public Company Limited operates as a manufacturer and distributor of Grounding systems such as ground rod, exothermic welding, more effective grounding (MEG), concrete inspection pit, etc. Lightning system such as air terminal, clamp connections, etc. Surge protection system, Lightning detection and warning system, and safety innovation. We have reached the national and international standards to serve security for people's lives, assets and operating systems in all sectors, especially in the electricity sector (generating system, transmission system, distribution system, solar power plant wind power plants, etc.), the transportation sector (high-speed trains, electric trains, subways, airports, ports, expressways, expressways, etc.), the telecommunication sector (radio stations, television stations, mobile phone transmission station, data center, etc.) industrial sector (Petrochemical plant oil refinery steel mills, automobiles, electronics, farms, etc.), office, residential sectors including the security sector (arsenals, radar stations, etc.) We are proud to introduce our innovations to reduce the risk of electromagnetic and lightning damage under the name "Kumwell" guarantee from 40 countries around the world exportation and distribution.

Quality Assurance

We are committed to providing high-quality products which is an important element to the efficient and effective system work. There are product policies that have to be tested and certified according to international standards UL, IEEE, IEC and Thai Industrial Standards (TIS), especially products in lightning protection systems; it must comply with the international standard IEC 62561, which can be divided into 8 sections according to the type of products.

1. Requirements for connection components
2. Requirements for conductors and earth electrodes
3. Requirements for isolating spark gaps (ISG)
4. Requirements for conductor fasteners
5. Requirements for earth electrode inspection housings and earth electrode seals
6. Requirements for lightning strike counters (LSC)
7. Requirements for earthing enhancing compounds
8. Requirements for components for isolated LPS



ISO/IEC 17025-2017
(Certificate Laboratory Accreditation)



Kumwell Test Report
(IEC 62561)



DEKRA Test Certificate
(IEC 62561)



VDE Test Certificate
(IEC 61643)



UL Test Certificate
(UL 467, UL 486)



UL Inspection Type R Service Report
(For UL Listed)

The company is concerned for every step starting with the design (Pattern and production process), the right material, mechanical strength and lightning resistance test as well as being resistant to weather conditions. We take into consideration the safety of people when installing and using our product. For example, Kumwell Metal Sheet Clamp has been tested according to the IEC 62561-4 standard with a tensile test which is 900 newtons, equivalent to a weight of 90 kilograms in order to be able to support the weight of the conductor on the roof, preventing damage to life and property also it prevents accidents that may occur during installation to operators as well. Therefore, to choose products that have been tested according to standards, is a prerequisite for effective lightning protection.

To comply with the standards in order to deliver quality products, the company therefore constructed a testing laboratory (Kumwell Laboratory), as a testing room for grounding equipment, lightning protection device, surge protection device and lightning alarm devices which was completed in 2013. Our laboratory is the one and only in Southeast Asia and has been accredited for the competence of the testing laboratory according to TIS 17025 - 2561 (ISO/IEC 17025: 2017) for the general requirements in the competence of testing and calibration laboratories in the electrical field, which is recognized by the ILAC organization (International Laboratory Accreditation Cooperation) in equivalent academic ability and able to perform tests by issuing a product test certificate (Test Report) to certify that Kumwell only provide high quality products.

Quality Assurance

Kumwell Laboratory can perform tests according to IEC 62561 and TIS 3024 standards such as Tensile Test, Electrical Resistivity Test, Load Test, Bending Test, Lightning Impulse Current / Surge Current, Environmental Test. Moreover, it is able to test equipment according to various standards such as UL 467: Grounding and Bonding Equipment, IEC 61643: Low-Voltages Surge Protective Device (SPD).



High Lightning Impulse Current Generator
10/350 μ s & 8/20 μ s



High Lightning Impulse Current
Combine Generator 8/20 μ s



TEMPERATURE (HUMIDITY) Test Chamber



SULFUR DIOXIDE Test Chamber



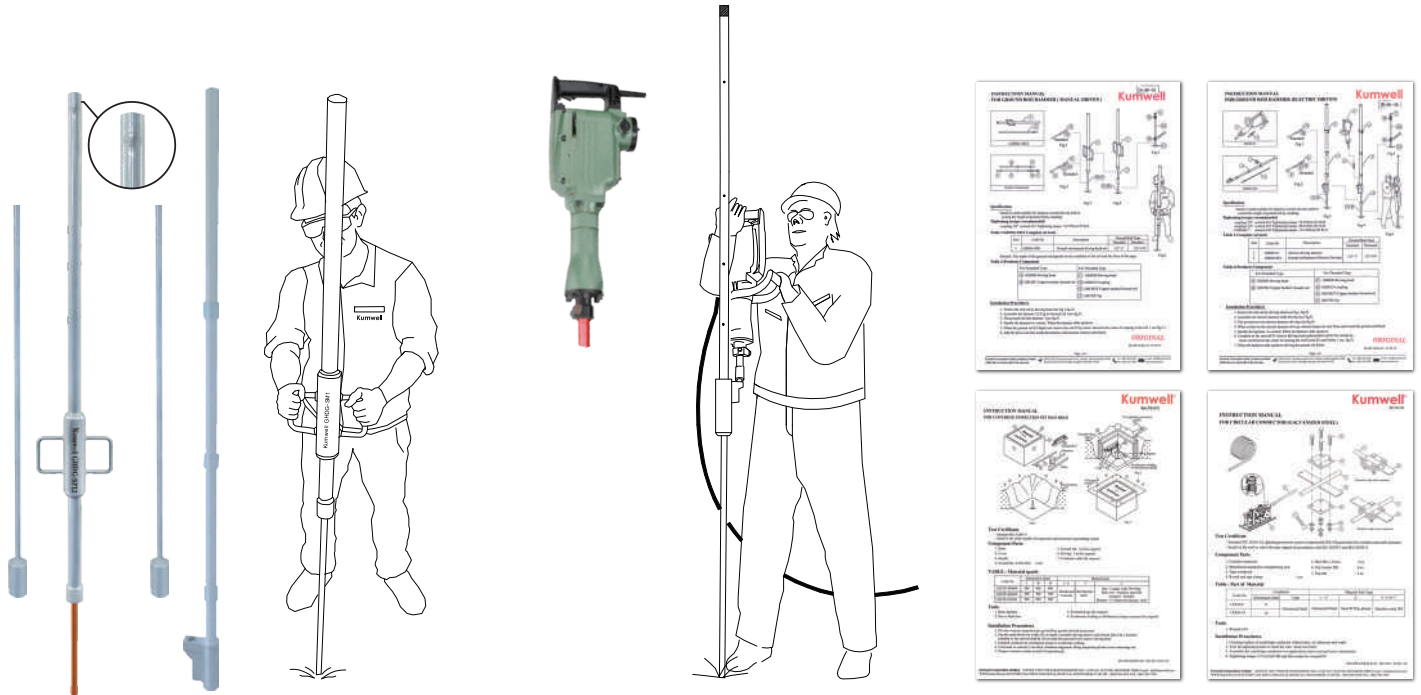
SALT SPRAY Test Chamber

- High lightning impulse current generator for Grounding system component & Lightning protection system components (LPSC) according to IEC 62561.
- Surge impulse current generator for Surge protective device (SPD) according to IEC 61643.
- Environment test chamber (Temperature / Humidity / Sulphur dioxide / Salt spray) for Grounding system component & LPSC according to IEC 62561.
- Universal mechanical testing machine (Tensile / Compressive) for Grounding system component & LPSC according to IEC 62561.

Quality Assurance

In addition, we intend to deliver high-quality system work that is user-friendly and worth the investment besides we create a system that is efficient and completely safe.

- **TOOLS & INSTRUCTION:** Develop products and installation tools that are easy to install such as ground rod driving hammer, conductor strengthener machines, 4P concrete inspection pits, etc.



- **INSTALL & DESIGN GUIDE:** Provide manuals and installation guides through various channels such as seminars to deliver knowledge; the Kumwell Metaverse Academy, Youtube Channel: Kumwell Official, on Facebook Page: Kumwell Official and Kumwell Brand, etc.

วันที่	หัวข้อ	เวลา
26 มกราคม	การออกแบบระบบสายดินและการติดตั้งอุปกรณ์ตามมาตรฐาน IEC 61634	09:00-16:30 น.
23 กุมภาพันธ์	การออกแบบระบบการต่อลงดิน (Grounding System Design)	09:00-16:30 น.
30 มีนาคม	การออกแบบระบบป้องกันแรงดันไฟฟ้าและการติดตั้ง SPD ตามมาตรฐาน IEC 61643	09:00-16:30 น.
27 เมษายน	การประเมินความเสี่ยงเพื่อเลือกขนาดของสายดินตามมาตรฐาน IEC 62305-2	09:00-16:30 น.
25 พฤษภาคม	การออกแบบระบบป้องกันแรงดันไฟฟ้าและการติดตั้ง SPD ตามมาตรฐาน IEC 61643	09:00-16:30 น.
29 มิถุนายน	การออกแบบระบบต่อลงดินสำหรับสถานีผลิตไฟฟ้า Substation Grounding Design according to IEEE 801	09:00-16:30 น.
27 กรกฎาคม	การออกแบบระบบป้องกันฟ้าผ่าสำหรับอาคารโรงงานและศูนย์ข้อมูลตามมาตรฐาน IEC 61634	09:00-16:30 น.
31 สิงหาคม	ความเข้าใจเกี่ยวกับแม่เหล็กไฟฟ้า (EMC) ที่ควรต้องรู้	09:00-16:30 น.
28 กันยายน	การออกแบบระบบสายดินและการติดตั้งอุปกรณ์ตามมาตรฐาน IEC 61634	09:00-16:30 น.
26 ตุลาคม	การออกแบบระบบป้องกันแรงดันไฟฟ้าและการติดตั้ง SPD ตามมาตรฐาน IEC 61643	09:00-16:30 น.
30 พฤศจิกายน	การออกแบบระบบป้องกันฟ้าผ่าและการติดตั้งอุปกรณ์ตามมาตรฐาน IEC 61634	09:00-16:30 น.
21 ธันวาคม	การออกแบบระบบสายดินและการติดตั้งอุปกรณ์ตามมาตรฐาน IEC 61634	09:00-16:30 น.

Innovation

Kumwell committed to research and development of products and innovations continuously and also creating collaborations with networks, partners and customers leading to the trial use and proven Technology.

Smart Lightning Management System (SLMS)

It is a smart innovation that can monitor the overall working status of the lightning protection system, the grounding system and the surge protection system. It can provide instant warning of threats from lightning and various electromagnetic fields to ensure the safety in life, working areas and public areas and to reduce damage.

The information will be report via Web User Interface (Client) and will be sent to the controller or central control system so it can be analyzed, examined, evaluated in order to formulate proactive maintenance measures and methods for the lightning protection system to be in perfect condition and ready to use at all times which have already been sold and installed for actual use, such as

- PTT Stadium
- PTT gas control station
- Srinagarind Dam (Characteristics of Dam & Power Plant)
- Joint research project with Electricity Generating Authority of Thailand Ubol Ratana Dam, Khon Kaen Province



cr: <https://panitip.com/topic/39348631>



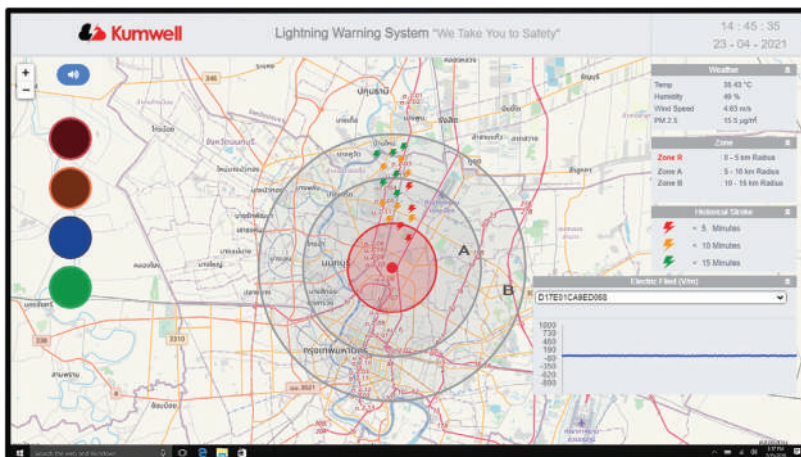
Innovation

Smart Lightning Warning System (SLWS)

The company has invested in lightning detection networks throughout Thailand and some parts of the ASEAN region and has researched, developed an outstanding lightning alarm innovation until being widely accepted.

Lightning detection network is a system that uses data from two types of IOT Sensors (High-Precision Lightning Detection Network System and E-Field Sensor). They are analyzed and processed together via the intelligent Alarm Viewer Software to alert with more than 95% accuracy. It is suitable for different types of projects in the field such as golf courses, power plants, oil refineries, mine area, airport, port, amusement park, school, etc., which has already been sold and installed for actual use, such as

- Bangkok Patana School
- PTT Stadium
- PTT Global Chemical (PTTGC)
- International School Ho Chi Minh City (ISHCMC)
- Joint research project with Electricity Generating Authority of Thailand Ubol Ratana Dam, Khon Kaen Province



Moving Forward

The company has established a process for business operations by taking into an account the whole working process to become a smart plant. Our aim is to expand business and reduce production costs, so we invested in developing factories. To become an unmanned plant, we use automation and robots in the process of production as well as improving and developing logistics systems to be Smart Logistic and applying the United Nations Global Compact (UNGC) and Bio Circular Green (BCG) model as a guideline for management. The company also installed solar power generation systems, wastewater treatment systems to reduce CO₂ and become a green industry (Green Industry).



Our new modern head office consists of sales and marketing, Research and Innovation, Department, Finance and Accounting, Warehouse Administration, Information and Communication Technology Department, Learning Center "Kumwell Metaverse Academy", Lightning Protection Testing Laboratory which complied the ISO/IEC 17025 and the Electromagnetic Compatibility (EMC) Testing Laboratory to make the testing practice more comprehensive and to strengthen the value of the organization's learning culture. The company has allocated space for exchanging information, knowledge, and brainstorming. We committed to a smart office that uses state-of-the-art ICT systems and stores important corporate assets in the Cloud for data security and to support the operations of employees in all forms and in all departments, such as operations outside the office, both domestically and internationally covering foreigners both short-term and long-term to support working from anywhere.

Awards

Best Company Performance Awards by the Stock Exchange of Thailand (SET) is an award given to listed companies with excellent performance in each group based on business performance, good corporate governance and compliance with the regulations of the Stock Exchange of Thailand. Kumwell received the Best Company Performance Awards in the category of Business Excellence for information disclosure and quality of financial statements and Sustainability Excellence in the Thai capital market's prestigious awards ceremony 2022 (SET Awards 2022) which emphasizes the strength of policies and effective business practices.



Best CEO Awards

Best Company Performance Awards

Sustainability



E: Environmental

- Invest in Solar Power, a clean alternative energy source instead of using thermal energy from gas which can cause greenhouse gasses.
- Invested in a Zero Liquid Discharge wastewater treatment system to eliminate effluents and reuse water from industrial processes.

S: Social

- Collaborate with the Council of Engineers to deliver knowledge and expertise on electromagnetic disaster risk reduction under Kumwell Academy.
- Create activities to deliver knowledge and help strengthen local economy such as the policy to employ people in the community nearby, organize training and practice financial management knowledge with Noburo, etc.

G: Governance

- To emphasize the efficient and effective in corporate governance practices of the company;
- Received prestigious SET Awards 2022
 - Setting up a sustainability, a risk management, and a good corporate governance committee, etc.






ESG risk consists of 3 aspects: environmental, social and governance. The company sets goals and action plans in each aspect for example;



SDGs – Sustainable Development Goals

There are 17 goals, divided into 5 dimensions: the environment dimension (planet), the social dimension (people), the economic dimension (prosperity), the Peace and institute dimension (Peace), and the development partnership dimension (Partnership). Our company has set goals and dimensions as follows: Planet dimension – 13th goal: Climate Action

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Planet dimension 13th goal: Climate Action
 - Propose solutions for disasters caused by electromagnetic waves such as lightning under 3rd approach: CSV.
- 
Prosperity dimension 11th goal: Sustainable cities and communities
 - MOU with various agencies in Research and development to create safety innovations for reducing disasters caused by electromagnetic waves.
- 
People dimension 4th goal: Quality Education
 - Kumwell has developed the value of human assets, both corporate inside and outside

Sustainability

CSV - Creating Shared Value is a way to drive value to society and business sector to achieve stable and sustainable growth. Kumwell has operated through the sustainability commitment "CSV - Safety to Society" project for more than 10 years in delivering knowledge and expertise to reduce life, property, and operating systems in all sectors damage and extending to cooperation with partners networks and clients such as



- Collaborate with the Council of Engineers under the project Kumwell Academy to upgrade the engineering profession and deliver safety to society.
- Sign a Memorandum of Understanding (MOU) with government and private agencies on lightning protection and safety innovations. In the test installation and create innovation to increase efficiency and effectiveness in the operating system. Reduce the risk of electromagnetic waves. Along with certifying the use of products (Proven Technology).



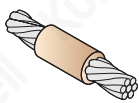
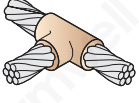


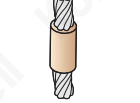
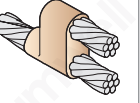
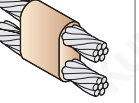


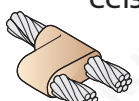
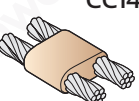













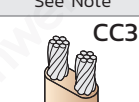
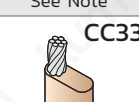
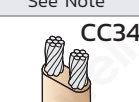



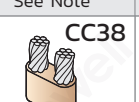

- Join the education sector to create an Engineering curriculum, system design handbook, and installation guide.

- Collaborate with the Thai Electrical and Mechanical Contractors Association (TEMCA) to implement a project "TEMCA Corporate Creating Shared Value (TEMCA C CSV)".

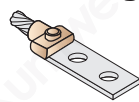
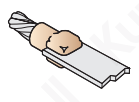
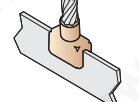
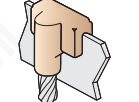

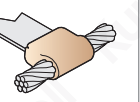
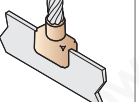
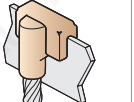


























Selection Chart

Cable to Cable

 CC1	 CC2	 CC3	 CC4	 CC5	 CC6	 CC7	 CC8
Page 5	Page 6	See Note	Page 7	See Note	Page 8	Page 9	See Note
 CC11	 CC13	 CC14	 CC17	 CC18	 CC19	 CC20	 CC22
Page 10	Page 11	Page 12	See Note	See Note	See Note	See Note	See Note
 CC23	 CC24	 CC25	 CC26	 CC27	 CC28	 CC29	 CC30
See Note	See Note	See Note	See Note	See Note	See Note	See Note	See Note
 CC31	 CC33	 CC34	 CC35	 CC36	 CC37	 CC38	 CC39
See Note	See Note	Page 13	See Note	See Note	See Note	See Note	See Note

Cable to Bus Bar

 CB1 (Lug)	 CB1	 CB2	 CB3	 CB4	 CB5	 CB6	 CB7
Page 14	Page 15	See Note	See Note	Page 16	Page 17	See Note	See Note
 CB8	 CB9	 CB11	 CB12	 CB15	 CB16	 CB17	 CB18
See Note	See Note	See Note	See Note	See Note	See Note	See Note	See Note
 CB19	 CB20	 CB21	 CB22	 CB23	 CB24	 CB25	 CB26
See Note	See Note	See Note	See Note	See Note	See Note	See Note	See Note
 CB27	 CB28	 CB29	 CB30	 CB31	 CB32	 CB34	 CB38
See Note	See Note	Page 18	See Note	See Note	See Note	Page 19	See Note



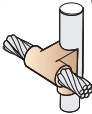


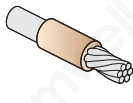
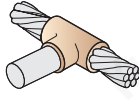
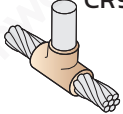
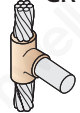

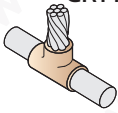


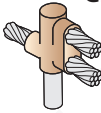



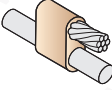
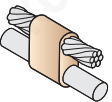
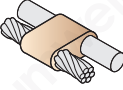
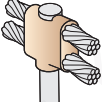
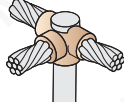
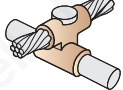
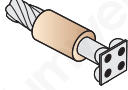
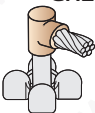



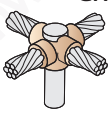
CB6, CB7 clearance behind bar 3/4" - 5"

CB34 used for signal reference ground grid copper strip ≤ 0.6 mm. thick.

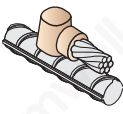
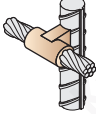
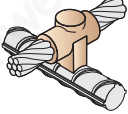
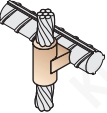

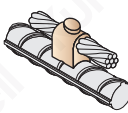
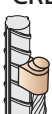


Note: Special requirement can be requested.

Selection Chart

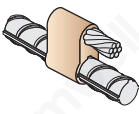
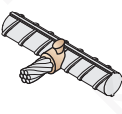



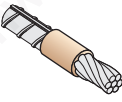

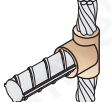
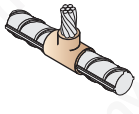
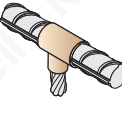
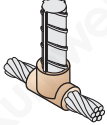
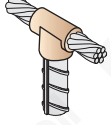
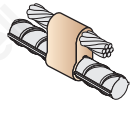


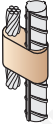
Cable to Ground Rod

 Page 20	 Page 21	 Page 22	 See Note	 See Note	 See Note	 See Note	 See Note
 See Note	 See Note	 See Note	 See Note	 See Note	 Page 23	 See Note	 See Note
 See Note	 See Note	 See Note	 See Note	 Page 24	 Page 25	 See Note	 See Note
 See Note	 See Note	 See Note	 See Note	 Page 26			

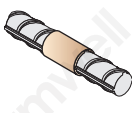

Cable to Rebar (Partially Wrapped)

 Page 27	 Page 28	 Page 29
 See Note	 Page 30	 Page 31
 Page 32	 Page 33	 Page 34

Cable to Rebar (Fully Wrapped)

 Page 35	 Page 36	 Page 37	 See Note
 See Note	 See Note	 See Note	 See Note
 See Note	 See Note	 See Note	 See Note
 Page 38	 Page 39	 Page 40	 Page 41

Rebar to Rebar

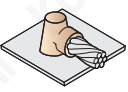
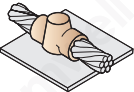
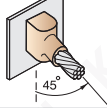
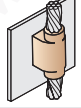

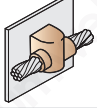
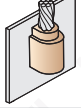
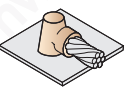

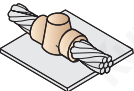
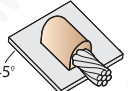


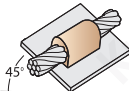









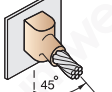



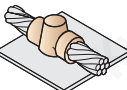

 Page 86	 Page 87
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CR should be used with Kumwell ground rod standard type without threaded.

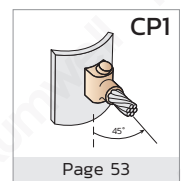
Note: Special requirement can be requested.

Selection Chart

Cable to Steel

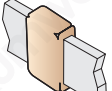





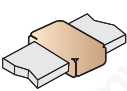
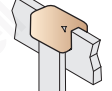


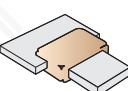



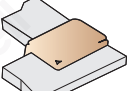

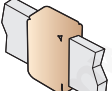

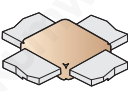
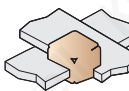

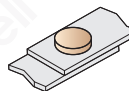

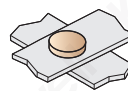
 Page 42	 Page 43	 Page 44	 Page 45	 See Note	 Page 46	 Page 47	 Page 48
 Page 49	 See Note	 See Note	 See Note	 See Note	 See Note	 See Note	 See Note
 See Note	 See Note	 Page 50	 See Note	 Page 51	 See Note	 Page 52	 See Note
 See Note	 See Note	 See Note	 See Note	 See Note			

Cable to Pipe











Note: CSn - None
C | Cast iron
N = On surface
F = Off surface

Bus Bar to Bus Bar

 Page 55	 Page 56	 Page 57	 See Note	 See Note	 See Note	 Page 57	 See Note
 See Note	 See Note	 Page 59	 See Note	 See Note	 See Note	 See Note	 See Note
 See Note	 See Note	 Page 60	 Page 61	 See Note	 See Note	 See Note	 See Note

Bus Bar to Ground Rod



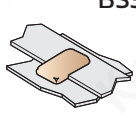
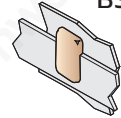

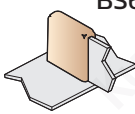
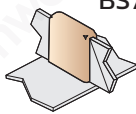
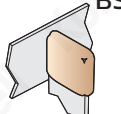

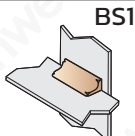
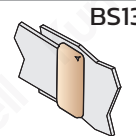
 Page 62	 Page 63	 Page 64	 Page 65	 See Note	 See Note	 See Note	 See Note
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BB8, BB11, BB28, BB29 clearance behind bar 3/4" - 5"
BB44, BB45, BB46 used for signal reference ground grid copper strip ≤ 0.6 mm. thick.
BR should be used with Kumwell ground rod standard type without threaded.

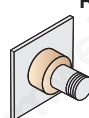
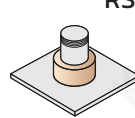
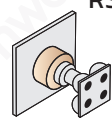
Note: Special requirement can be requested.

Selection Chart


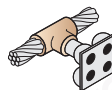
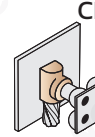
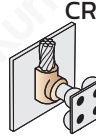
Cable to Steel

 BS1 Page 66	 BS2 Page 67	 BS3 Page 68	 BS4 Page 69
 BS5 See Note	 BS6 See Note	 BS7 See Note	 BS8 See Note
 BS9 See Note	 BS11 See Note	 BS13 See Note	



Copper or Steel Stud to Steel

 RS1 Page 70	 RS2 Page 71	 RS3 Page 72
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Ground Plates to Cable & Steel

 RC1 Page 73	 RC2 Page 74
 CRS1 Page 75	 CRS2 Page 76

CGR

 AC1 Page 77	 AC2 Page 78
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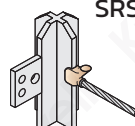
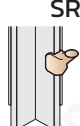
CGRG

 ACR1 Page 79	 ACR2 Page 80
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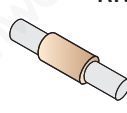
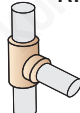
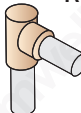
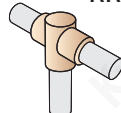
AR1






Steel Cable to Steel Rod

 SRS1 Page 89	 SRS2 See Note
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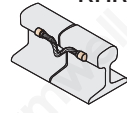
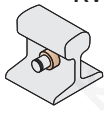
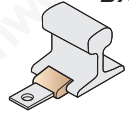

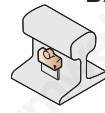

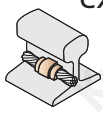
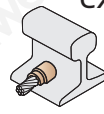
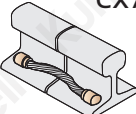
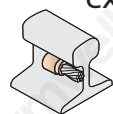
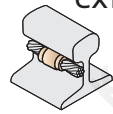
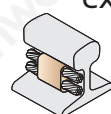
Ground Rod to Ground Rod

 RR1 Page 82	 RR2 Page 83	 RR3 Page 84	 RR4 Page 85	 RR5 Page 86
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Cathodic Protection

 CA1 Page 106	 CA2 Page 107
 CA3 Page 108	

Railway Application

 KWRT (R/L) Page 92	 KHRT Page 93	 KWS Page 94	 BX1 Page 95	 BX3 Page 96	 BX4 Page 97	
 CX1 Page 98	 CX2 Page 99	 CX5 Page 100	 CX7 Page 101	 CX8 Page 102	 CX10 See Note	 CX11 See Note

CGR = Cable to Grounding Receptacle

CGRG = Cable & Grounding Receptacle to Ground Rod

CGR, CGRG and RR should be used with Kumwell ground rod standard type without threaded.

Note: Special requirement can be requested.

How to Order

1. Search connection type in selection chart as your design

- Special connection can be requested

Selection Chart

Cable to Cable

CCI	CC2	CC3	CC4	CC5	CC6	CC7	CC8
Page 4	Page 5	See Note	Page 6	See Note	Page 7	Page 8	See Note
CC11	CC13	CC14	CC17	CC18	CC19	CC20	CC22
Page 9	Page 10	Page 11	See Note	See Note	See Note	See Note	See Note
CC23	CC24	CC25	CC26	CC27	CC28	CC29	CC30
See Note	See Note	See Note	See Note	See Note	See Note	See Note	See Note
CC31	CC33	CC34	CC35	CC36	CC37	CC38	CC39
See Note	See Note	Page 12	See Note	See Note	See Note	See Note	See Note

Cable to Bus Bar

CB1 (Lug)	CB1	CB2	CB3	CB4	CB5	CB6	CB7
Page 13	Page 14	See Note	See Note	Page 15	Page 16	See Note	See Note
CB8	CB9	CB11	CB12	CB15	CB16	CB17	CB18
See Note	See Note	See Note	See Note	See Note	See Note	See Note	See Note
CB19	CB20	CB21	CB22	CB23	CB24	CB25	CB26
See Note	See Note	See Note	See Note	See Note	See Note	See Note	See Note
CB27	CB28	CB29	CB30	CB31	CB32	CB34	CB38
See Note	See Note	Page 17	See Note	See Note	See Note	Page 18	See Note

CB1: CB7 clearance behind bar 3/4" - 5"
CB14 used for signal reference ground grid copper strip x .06 mm thick

Note: Special requirement can be requested.

2. Search application type and then go to the page number in the corner of picture box

- Special application can be requested

Selection Chart

Cable to Cable

CCI	CC2	CC3	CC4	CC5	CC6	CC7	CC8
Page 4	Page 5	See Note	Page 6	See Note	Page 7	Page 8	See Note
CC11	CC13	CC14	CC17	CC18	CC19	CC20	CC22
Page 9	Page 10	Page 11	See Note	See Note	See Note	See Note	See Note
CC23	CC24	CC25	CC26	CC27	CC28	CC29	CC30
See Note	See Note	See Note	See Note	See Note	See Note	See Note	See Note
CC31	CC33	CC34	CC35	CC36	CC37	CC38	CC39
See Note	See Note	Page 12	See Note	See Note	See Note	See Note	See Note

Cable to Bus Bar

CB1 (Lug)	CB1	CB2	CB3	CB4	CB5	CB6	CB7
Page 13	Page 14	See Note	See Note	Page 15	Page 16	See Note	See Note
CB8	CB9	CB11	CB12	CB15	CB16	CB17	CB18
See Note	See Note	See Note	See Note	See Note	See Note	See Note	See Note
CB19	CB20	CB21	CB22	CB23	CB24	CB25	CB26
See Note	See Note	See Note	See Note	See Note	See Note	See Note	See Note
CB27	CB28	CB29	CB30	CB31	CB32	CB34	CB38
See Note	See Note	Page 17	See Note	See Note	See Note	Page 18	See Note

CB1: CB7 clearance behind bar 3/4" - 5"
CB14 used for signal reference ground grid copper strip x .06 mm thick

Note: Special requirement can be requested.

How to Order

3. Search further details in the table which match to your requirement such as

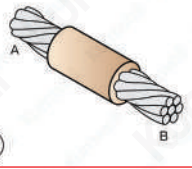
- The cable size, bus bar size, etc.
- The ground rod size, e.g., 5/8", 3/4", etc.
- The rebar size, e.g., 20 mm, 40 mm diameter, etc.


4. Special connection can be requested


- Heavy-duty type
- Cable
 - Special size, e.g., 140 mm², 200 mm², 630 mm², etc.
 - Special size, e.g., AWG, Flexible Braid, etc.
 - Special design for special connection.
- Ground rod
 - Special size, e.g., 14 mm, 20 mm, 40 mm, etc.
 - Special size, e.g., stainless steel rod, copper pipe, stainless steel pipe, etc.
- K-MAX
 - K-MAX System see page
- For special requirement, please contact our technical department

E-mail : info@kumwell.com
 Tel : (662)-954-3455
 Fax : (662)-591-7891

A **CC1**
Cable to Cable
Horizontal end to end

B 

C **Equipment**


D **Necessary Tools**


E **Recommended Tools**
• Butane torch
• Butane gas
• Gloves

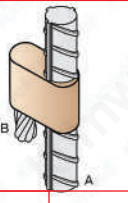
F **Note**
• "CC" means Solid Copper
• "100A" means to use 2 tubes of 100 g - metal powder for one connection
• "200A" means to use 2 tubes of 200 g - metal powder for one connection
• "L" means to meet UL Listed

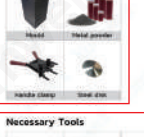
Conductor Size (Area) (mm ²)	Steel Size (Inch)	Metal Powder	Graphite Mold Type	Handle Clamp Type
10	1/8	KW55	CC1-C-10	HC000
16	1/8	KW52	CC1-C-16	HC000
25	3/16	KW53	CC1-C-25	HC000
35	3/16	KW54	CC1-C-35	HC000
50	1/4	KW51	CC1-C-50	HC000
70	1/4	KW45	CC1-C-70	HC000
95	5/16	KW46	CC1-C-95	HC000
120	5/16	KW47	CC1-C-120	HC000
150	3/8	KW48	CC1-C-150	HC000
185	7/16	KW49	CC1-C-185	HC000
240	1/2	KW50	CC1-C-240	HC000
300	5/8	KW56	CC1-C-300	HC000
360	3/4	KW57	CC1-C-360	HC000
400	7/8	KW58	CC1-C-400	HC000
500	1	KW59	CC1-C-500	HC000
630	1 1/8	KW60	CC1-C-630	HC000

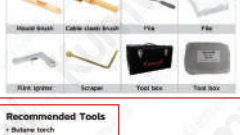
Note: Special requirement can be requested.

- A** Type of Connection
- B** Sample Connection
- C** Equipment
- D** Necessary Tools
- E** Recommended Tools
- F** Information
- G** Size of Rod or Rebar
- H** Size of Conductor
- I** Size of Weld Metal Powder
- J** Mould Type
- K** Handle Clamp Type

A **CRE18**
Cable to Rebar Fully Wrapped Connection
Vertical parallel down cable to vertical rebar

B 

C **Equipment**


D **Necessary Tools**


E **Recommended Tools**
• Butane torch
• Butane gas
• Gloves

F **Note**
• For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
• Kumwell CRE Mold provides ceramic fiber to prevent leakage

Steel Size (Inch)	Conductor Size (Area) (mm ²)	Metal Powder	Graphite Mold Type	Handle Clamp Type
10	16	KW18	CRE18-CL-16K18	HC000
16	25	KW19	CRE18-CL-25K18	HC000
16	35	KW20	CRE18-CL-35K18	HC000
16	50	KW21	CRE18-CL-50K18	HC000
16	70	KW22	CRE18-CL-70K18	HC000
16	95	KW23	CRE18-CL-95K18	HC000
16	120	KW24	CRE18-CL-120K18	HC000
16	150	KW25	CRE18-CL-150K18	HC000
16	185	KW26	CRE18-CL-185K18	HC000
16	240	KW27	CRE18-CL-240K18	HC000
16	300	KW28	CRE18-CL-300K18	HC000
16	360	KW29	CRE18-CL-360K18	HC000
16	400	KW30	CRE18-CL-400K18	HC000
16	500	KW31	CRE18-CL-500K18	HC000
16	630	KW32	CRE18-CL-630K18	HC000
20	16	KW33	CRE18-CL-16K20	HC000
20	25	KW34	CRE18-CL-25K20	HC000
20	35	KW35	CRE18-CL-35K20	HC000
20	50	KW36	CRE18-CL-50K20	HC000
20	70	KW37	CRE18-CL-70K20	HC000
20	95	KW38	CRE18-CL-95K20	HC000
20	120	KW39	CRE18-CL-120K20	HC000
20	150	KW40	CRE18-CL-150K20	HC000
20	185	KW41	CRE18-CL-185K20	HC000
20	240	KW42	CRE18-CL-240K20	HC000
20	300	KW43	CRE18-CL-300K20	HC000
20	360	KW44	CRE18-CL-360K20	HC000
20	400	KW45	CRE18-CL-400K20	HC000
20	500	KW46	CRE18-CL-500K20	HC000
20	630	KW47	CRE18-CL-630K20	HC000

Note: Special requirement can be requested.

Content

1-4	KW Type for Grounding & Lightning Protection
5 – 13	CC1 – CC34: Cable to Cable
14 – 19	CB1 – CB34: Cable to Bus Bar
20 – 26	CR1 – CR33: Cable to Ground Rod
27 – 34	CRE1P – CRE20P: Cable to Rebar Partially Wrapped Connection
35 – 41	CRE1 – CRE20: Cable to Rebar Fully Wrapped Connection (P.36)
42 – 52	CS1 – CS27: Cable to Steel
53 – 54	CPI: Cable to Pipe
55 – 61	BB1 – BB41: Bus Bar to Bus Bar
62 – 65	BR1 – BR7: Bus Bar to Ground Rod (P.64)
66 – 69	BS1 – BS4: Bus Bar to Steel Surface
70 – 72	RS1 – RS3: Stud to Steel (P.72)
73 – 74	RC1 – RC2: Ground Plates to Cable Steel
75 – 76	CRS1 – CRS2: Ground Plates to Cable & Steel
77 – 78	AC1 – AC2: Cable to Grounding Receptacle
79 – 80	ACR1 – ACR2: Cable and Grounding Receptacle to Ground Rod
81	AR1: Grounding Receptacle to Ground Rod
82 – 86	RR1 – RR5: Ground Rod to Ground Rod
87 – 88	RE1 – RE2: Rebar to Rebar
89	SRS1: Steel Cable to Steel Rod

Content

90 – 91	KR Type for Railway Signaling
92	KWRT: Cable to Web Rail
93	KHRT: Cable to Head Rail
94	KWS: Stud to Web Rail
95 – 97	BX1 – BX4: Bus Bar to Rail
98 – 102	CX1 – CX8: Cable to Rail
103	Conductors
104 – 105	KB Type for Cathodic Protection
106 – 108	CA1 – CA3: Cable to Cathodic Pipe
109 – 111	Elitor System
112 – 116	Handle Clamp
117 – 118	Tool & Accessories
119	Instruction Elitor
120	Instruction Exothermic Welding Mould
121 – 129	One Time System
130	Instruction One Time
131 – 138	International Project Reference

KW

Type for Grounding & Lightning Protection

Weld metal powder



Kumwell KW type's exothermic welding for grounding connection must maintain a low contact resistance often under adverse conditions, for the expected lifetime of the grounding system. Connections in grounding network are subjected to serve corrosion, high mechanical stress due to electromagnetic force, and rapid thermal heating due to high current magnitude during fault conditions.

Applications

Suitable for typical installation in grounding and lightning protection's connections their fore copper to copper, copper to steel, steel to steel, copper to stainless steel, and stainless steel to stainless steel.

Standards



- UL 467 - Standard for Grounding & Bonding Equipment.



- IEEE 837 - Standard for Qualifying Permanent Connections used in Substation Grounding.



- IEC 62561-1 - Lightning Protection Systems Component (LPSC) for connection components.

Criteria of Test Kumwell Exothermic welding connections have been successfully tested in accordance with;

• IEEE Std. 837 Standard for Qualifying Permanent Connection (For type test product)

1. Mechanical pullout test
2. Electromagnetic force
3. Sequential test group has 3 main procedures to test each if it passes the set standard of each procedure;
 - a. Current Temperature Cycling
 - b. Freeze Thaw Cycling
 - c. Corrosion Sequence Run: Salt Spray Test, Acid Test

• UL 467 Standard for Grounding & Bonding Equipment/UL Inspection Witness

1. Weld metal powder quality: Percentage of material, Particle size, Density of each composition, Starting powder and ignition
2. Reaction: Steady burn, No pop, No drastic color change, No porosity in the resulting copper, Consistency of color
3. Shot Time Current Test
4. Mechanical Sequence from UL 486

• American Railway Engineering and Maintenance-of-way Association (AREMA)

Test methods for tensile testing of metallic material evaluate the consistency chemistry and overall quality of KW, KB and KR Welding material resulting to the average of 43,000 psi tensile strength.

• IEC 62561-1 Lightning Protection Systems Component (LPSC) for connection component

1. Environmental Test: Salt Spray Test, Humid Sulphurous atmosphere test.
2. Electrical Test: Lightning Impulse Current Test, Contact Resistance Measurement
3. Static Mechanical Test: Tensile Test

KW

Type for Grounding & Lightning Protection

Weld metal powder



Quality Assurance

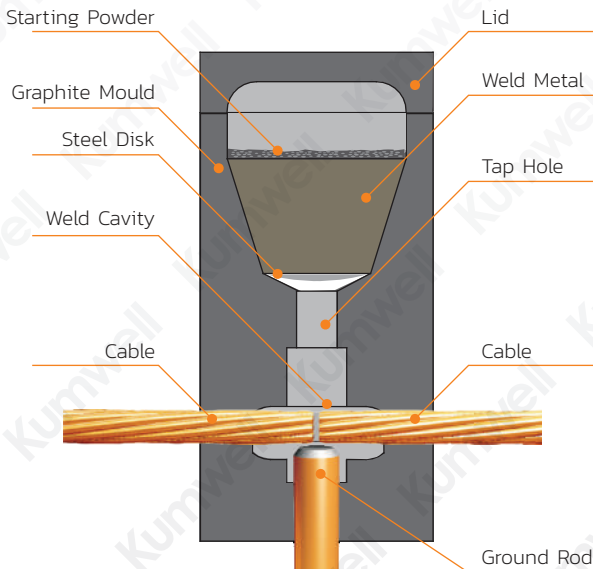


Kumwell also is internationally recognized for high standard of its graphite mould and the exothermic welding powder from successfully passed the control test in accordance with the UL467 Standard for Grounding and Bonding Equipment/UL Inspection Witness.



Process

Kumwell Exothermic Welding process is a molecular chemical reaction between copper oxide and aluminum, generating a tremendous superheat with molten metals reaching approximately temperatures of 2,537 °C (4,598 °F). The process can be completed itself automatically without external source of power or heat.



Completed Connection

KW

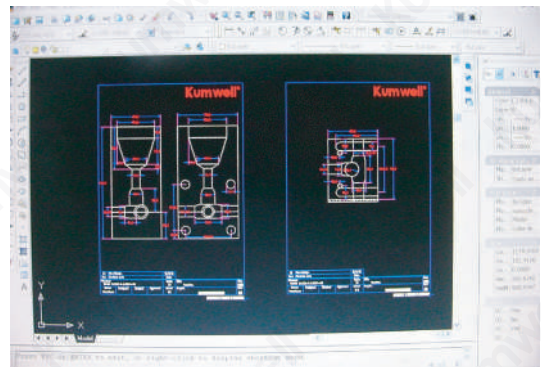
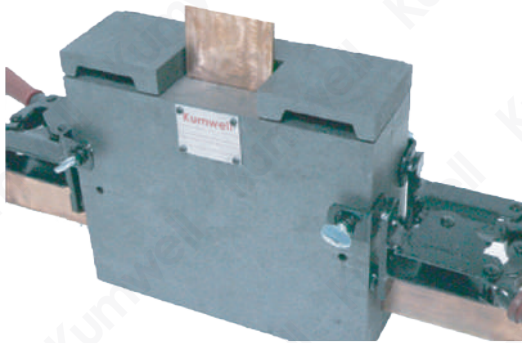
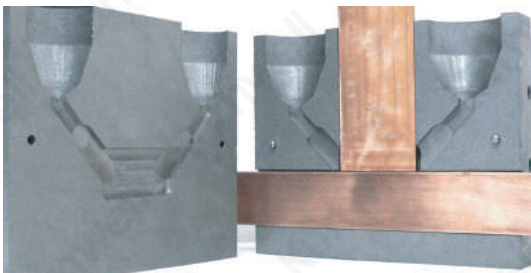
Type for Grounding & Lightning Protection

Weld metal powder

Graphite Mould

Kumwell's exothermic welding mould made from high quality graphite material. From expert engineering to accurate manufacturing process followed the UL International Standards result in earnest design for cavity and flow path, accurate tolerance, professional design and long service life. Moreover, Kumwell can customize mould made to order.

- Earnest design: cavity, flow path
- High quality raw material
- Accurate tolerance
- Duration: at least 50 times in normal usage



BB11-WC-508508: 50x8 mm² Copper bar to 50x8 mm² Copper bar

Graphite Mould designs by computer programs.

Safety starting and weld metal powder

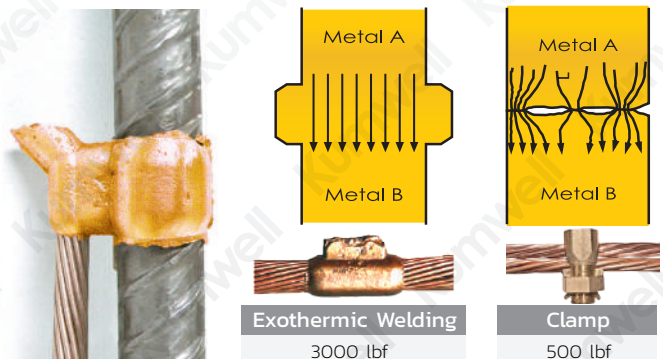
- Nontoxic and heavy metal
- Non self-ignite
- Ignition temperature at least 400°C
- Smooth reaction

Technical Comparison

Exothermic welding withstands about 5 times higher than clamp's connection in mechanical force.

Unlike compression and bolt clamp, exothermic welded joint become homogeneous metal.

- Steady burn without pop and fire out
- No slag and porosity
- Consistency of color
- High conductivity



KW

Type for Grounding & Lightning Protection

Weld metal powder

Packaging

Kumwell weld metal powder is contained a moisture-resistant plastic cartridge, packed in a paper box. Integral weld metal package is identified as to the weld metal powder's amount, type of metal powder to be connected, Lot No., the number of tubes to manufacturing date (MFD).

Code	KW15	KW25	KW32	KW45	KW65	KW90	KW115	KW150	KW200	KW250
Tubes/box	40	20	20	20	20	20	10	10	10	10

Storage

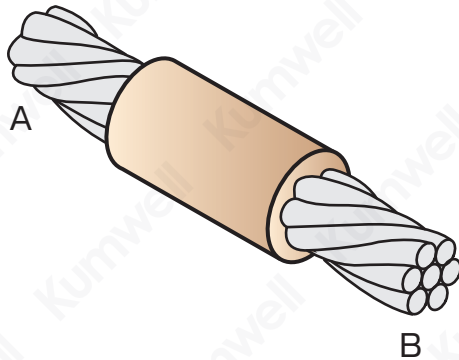
It should be stored at ambient temperature and kept away from moisture.



CC1

Cable to Cable

Horizontal end to end



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- SC means Solid Copper
- "*" means to meet UL Listed

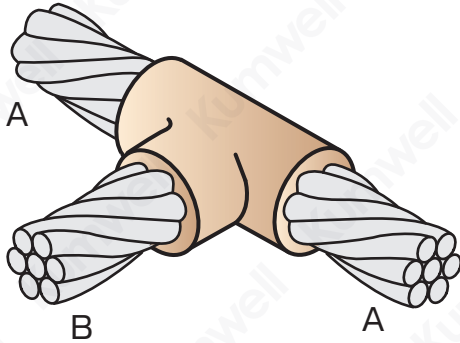
Conductor Size		Metal Powder	Graphite Mold Type	Handle Clamp Type	
A(mm ²)	B(mm ²)				
10	10	KW25	*CC1-C-10	HCC00	
16	16	KW32	*CC1-C-16	HCC00	
25	25	KW32	*CC1-C-25	HCC00	
35	35	KW32	*CC1-C-35	HCC00	
	25	KW32	CC1-C-3525	HCC00	
Ø 8 mm	Ø 8 mm	KW45	*CC1-C-8SC	HCC00	
	50	KW45	*CC1-C-50	HCC00	
	35	KW45	CC1-C-5035	HCC00	
50	25	KW32	CC1-C-5025	HCC00	
	Ø 10 mm	Ø 10 mm	KW65	*CC1-C-10SC	HCC00
	70	70	KW65	*CC1-C-70	HCC00
70	50	KW65	CC1-C-7050	HCC00	
	35	KW65	CC1-C-7035	HCC00	
	25	KW65	CC1-C-7025	HCC00	
	95	95	KW90	CC1-C-95	HCC00
95	70	KW90	CC1-C-9570	HCC00	
	50	KW65	CC1-C-9550	HCC00	
	35	KW65	CC1-C-9535	HCC00	
	25	KW65	CC1-C-9525	HCC00	
	107	107	KW90	*CC1-C-107	HCC00
120	120	KW115	CC1-C-120	HCC00	
	95	KW115	CC1-C-12095	HCC00	
	70	KW115	CC1-C-12070	HCC00	
	50	KW90	CC1-C-12050	HCC00	
	35	KW90	CC1-C-12035	HCC00	
150	150	KW115	CC1-C-150	HCC00	
	120	KW115	CC1-C-150120	HCC00	
	95	KW115	CC1-C-15095	HCC00	
	70	KW115	CC1-C-15070	HCC00	
	50	KW90	CC1-C-15050	HCC00	
	185	185	KW150	CC1-C-185	HCC00
185	150	KW150	CC1-C-185150	HCC00	
	120	KW150	CC1-C-185120	HCC00	
	95	KW115	CC1-C-18595	HCC00	
	70	KW115	CC1-C-18570	HCC00	
	240	240	KW200	CC1-C-240	HCC00
	240	185	KW200	CC1-C-240185	HCC00
150		KW200	CC1-C-240150	HCC00	
120		KW200	CC1-C-240120	HCC00	
95		KW150	CC1-C-24095	HCC00	
70		KW150	CC1-C-24070	HCC00	
300		300	KW250	CC1-C-300	HCC00
	240	KW250	CC1-C-300240	HCC00	
	185	KW250	CC1-C-300185	HCC00	
	150	KW200	CC1-C-300150	HCC00	
	120	KW200	CC1-C-300120	HCC00	
	95	KW200	CC1-C-30095	HCC00	
400	400	KW150x2	CC1-D-400	HCDOO	
	300	KW150x2	CC1-D-400300	HCDOO	
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	185	KW150x2	CC1-D-400185	HCDOO	
	150	KW150x2	CC1-D-400150	HCDOO	
	120	KW150x2	CC1-D-400120	HCDOO	
500	500	KW200x2	CC1-D-500	HCDOO	
	400	KW200x2	CC1-D-500400	HCDOO	
	300	KW200x2	CC1-D-500300	HCDOO	
	240	KW200x2	CC1-D-500240	HCDOO	
	185	KW200x2	CC1-D-500185	HCDOO	
	150	KW200x2	CC1-D-500150	HCDOO	

Note: Special requirement can be requested.

CC2

Cable to Cable

Horizontal cable tap to horizontal cable run



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- SC means Solid Copper
- "*" means to meet UL Listed

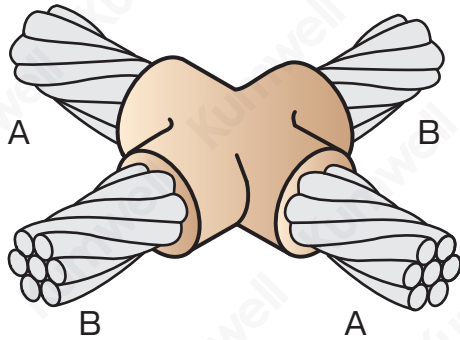
Conductor Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm ²)	B(mm ²)			
10	10	KW32	*CC2-C-1010	HCC00
16	16	KW45	*CC2-C-1616	HCC00
25	25	KW45	*CC2-C-2525	HCC00
Ø 5.6 mm	Ø 5.6 mm	KW45	*CC2-C-5.6SC5.6SC	HCC00
35	35	KW45	*CC2-C-3535	HCC00
	25	KW45	*CC2-C-3525	HCC00
Ø 8 mm	Ø 8 mm	KW65	*CC2-C-8SC8SC	HCC00
50	50	KW90	*CC2-C-5050	HCC00
	35	KW45	*CC2-C-5035	HCC00
	25	KW45	*CC2-C-5025	HCC00
Ø 10 mm	Ø 10 mm	KW90	*CC2-C-10SC10SC	HCC00
70	70	KW90	*CC2-C-7070	HCC00
	50	KW90	*CC2-C-7050	HCC00
	35	KW45	*CC2-C-7035	HCC00
	25	KW45	*CC2-C-7025	HCC00
95	95	KW115	*CC2-C-9595	HCC00
	70	KW90	*CC2-C-9570	HCC00
	50	KW90	*CC2-C-9550	HCC00
	35	KW90	*CC2-C-9535	HCC00
	25	KW90	*CC2-C-9525	HCC00
120	185	KW150	CC2-C-120185	HCC00
	120	KW150	*CC2-C-120120	HCC00
	95	KW150	*CC2-C-12095	HCC00
	70	KW90	*CC2-C-12070	HCC00
	50	KW90	*CC2-C-12050	HCC00
	35	KW90	*CC2-C-12035	HCC00
	25	KW90	*CC2-C-12025	HCC00
	16	KW90	CC2-C-12016	HCC00
150	150	KW200	CC2-C-150150	HCC00
	120	KW150	CC2-C-150120	HCC00
	95	KW150	CC2-C-15095	HCC00
	70	KW90	CC2-C-15070	HCC00
	50	KW90	CC2-C-15050	HCC00
	35	KW90	CC2-C-15035	HCC00
	25	KW90	CC2-C-15025	HCC00
	16	KW90	CC2-C-15016	HCC00
185	185	KW200	CC2-C-185185	HCC00
	150	KW200	CC2-C-185150	HCC00
	120	KW200	CC2-C-185120	HCC00
	95	KW150	CC2-C-18595	HCC00
	70	KW90	CC2-C-18570	HCC00
	50	KW90	CC2-C-18550	HCC00
	35	KW90	CC2-C-18535	HCC00
	25	KW90	CC2-C-18525	HCC00
240	240	KW150x2	CC2-C-240240	HCC00
	185	KW200	CC2-C-240185	HCC00
	150	KW200	CC2-C-240150	HCC00
	120	KW200	CC2-C-240120	HCC00
	95	KW150	CC2-C-24095	HCC00
	70	KW90	CC2-C-24070	HCC00
	50	KW90	CC2-C-24050	HCC00
	35	KW90	CC2-C-24035	HCC00
25	KW90	CC2-C-24025	HCC00	
300	300	KW200x2	CC2-D-300300	HCD00
	240	KW200x2	CC2-D-300240	HCD00
	185	KW250	CC2-C-300185	HCC00
	150	KW200	CC2-C-300150	HCC00
	120	KW150	CC2-C-300120	HCC00
	95	KW150	CC2-C-30095	HCC00
	70	KW150	CC2-C-30070	HCC00
	50	KW150	CC2-C-30050	HCC00
35	KW150	CC2-C-30035	HCC00	
25	KW150	CC2-C-30025	HCC00	

Note: Special requirement can be requested.

CC4

Cable to Cable

Horizontal to horizontal cable cross



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- SC means Solid Copper
- "*" means to meet UL Listed
- S means Galvanized steel wire stands.

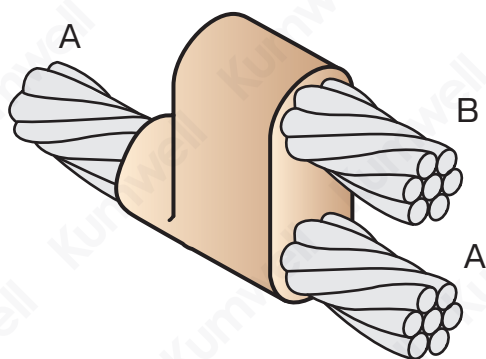
Conductor Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm ²)	B(mm ²)			
10	10	KW32	*CC4-C-1010	HCC00
16	16	KW45	*CC4-C-1616	HCC00
25	25	KW45	*CC4-C-2525	HCC00
35	35	KW65	*CC4-C-3535	HCC00
	25	KW65	*CC4-C-3525	HCC00
∅8 mm	∅8 mm	KW90	*CC4-C-8SC8SC	HCC00
50	50	KW90	*CC4-C-5050	HCC00
	35	KW90	*CC4-C-5035	HCC00
	25	KW90	*CC4-C-5025	HCC00
∅10 mm	∅10 mm	KW115	*CC4-C-10SC10SC	HCC00
70	70	KW115	*CC4-C-7070	HCC00
	50	KW115	*CC4-C-7050	HCC00
	35	KW115	*CC4-C-7035	HCC00
	25	KW115	*CC4-C-7025	HCC00
95	95	KW150	*CC4-C-9595	HCC00
	70	KW150	*CC4-C-9570	HCC00
	50	KW115	*CC4-C-9550	HCC00
	35	KW115	*CC4-C-9535	HCC00
	25	KW115	*CC4-C-9525	HCC00
	95	KW115	CC4-C-95S95S	HCC00
120	120	KW200	*CC4-C-120120	HCC00
	95	KW200	*CC4-C-12095	HCC00
	70	KW150	*CC4-C-12070	HCC00
	50	KW150	*CC4-C-12050	HCC00
	35	KW115	*CC4-C-12035	HCC00
	25	KW115	*CC4-C-12025	HCC00
150	150	KW250	CC4-C-150150	HCC00
	120	KW250	CC4-C-150120	HCC00
	95	KW200	CC4-C-15095	HCC00
	70	KW150	CC4-C-15070	HCC00
	50	KW150	CC4-C-15050	HCC00
	35	KW115	CC4-C-15035	HCC00
	25	KW115	CC4-C-15025	HCC00
	150	KW115	CC4-C-150S150S	HCC00
185	185	KW150x2	CC4-C-185185	HCC00
	150	KW250	CC4-C-185150	HCC00
	120	KW250	CC4-C-185120	HCC00
	95	KW200	CC4-C-18595	HCC00
	70	KW200	CC4-C-18570	HCC00
	50	KW200	CC4-C-18550	HCC00
	35	KW150	CC4-C-18535	HCC00
	25	KW150	CC4-C-18525	HCC00
	185	KW150	CC4-C-185S185S	HCC00
	185	KW150	CC4-C-185S185S	HCC00
240	240	KW250x2	CC4-D-240240	HCDOO
	185	KW200x2	CC4-D-240185	HCDOO
	150	KW200x2	CC4-D-240150	HCDOO
	120	KW150x2	CC4-C-240120	HCC00
	95	KW150x2	CC4-C-24095	HCC00
	70	KW250	CC4-C-24070	HCC00
	50	KW250	CC4-C-24050	HCC00
300	300	KW200x3	CC4-D-300300	HCDOO
	240	KW200x3	CC4-D-300240	HCDOO
	185	KW250x2	CC4-D-300185	HCDOO
	150	KW250x2	CC4-D-300150	HCDOO
	120	KW200x2	CC4-D-300120	HCDOO
	95	KW200x2	CC4-D-30095	HCDOO

Note: Special requirement can be requested.

CC6

Cable to Cable

Horizontal parallel cable tap



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

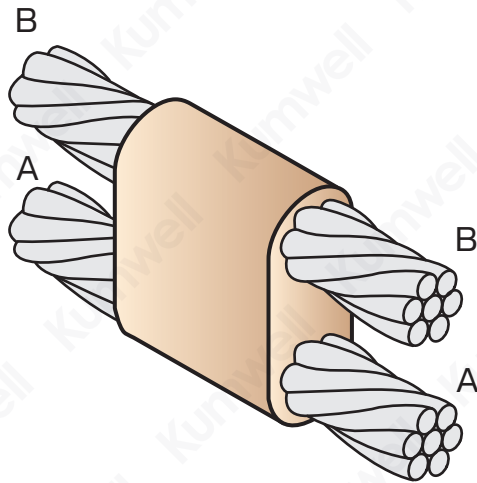
Conductor Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm ²)	B(mm ²)			
10	10	KW45	CC6-C-1010	HCC00
16	16	KW45	CC6-C-1616	HCC00
25	25	KW45	CC6-C-2525	HCC00
35	35	KW65	CC6-C-3535	HCC00
	25	KW65	CC6-C-3525	HCC00
50	50	KW90	CC6-C-5050	HCC00
	35	KW65	CC6-C-5035	HCC00
	25	KW65	CC6-C-5025	HCC00
70	70	KW115	CC6-C-7070	HCC00
	50	KW115	CC6-C-7050	HCC00
	35	KW90	CC6-C-7035	HCC00
	25	KW90	CC6-C-7025	HCC00
95	95	KW150	CC6-C-9595	HCC00
	70	KW115	CC6-C-9570	HCC00
	50	KW115	CC6-C-9550	HCC00
	35	KW115	CC6-C-9535	HCC00
120	120	KW200	CC6-C-120120	HCC00
	95	KW200	CC6-C-12095	HCC00
	70	KW150	CC6-C-12070	HCC00
	50	KW115	CC6-C-12050	HCC00
150	150	KW250	CC6-C-150150	HCC00
	120	KW250	CC6-C-150120	HCC00
	95	KW200	CC6-C-15095	HCC00
	70	KW150	CC6-C-15070	HCC00
185	185	KW150x2	CC6-D-185185	HCDOO
	150	KW150x2	CC6-D-185150	HCDOO
	120	KW250	CC6-C-185120	HCC00
	95	KW200	CC6-C-18595	HCC00
240	240	KW200	CC6-C-18570	HCC00
	240	KW200x2	CC6-D-240240	HCDOO
	185	KW150x2	CC6-D-240185	HCDOO
	150	KW150x2	CC6-D-240150	HCDOO
300	120	KW250	CC6-D-240120	HCDOO
	300	KW250x2	CC6-D-300300	HCDOO
	240	KW250x2	CC6-D-300240	HCDOO
	185	KW200x2	CC6-D-300185	HCDOO
150	KW150x2	CC6-D-300150	HCDOO	

Note: Special requirement can be requested.

CC7

Cable to Cable

Horizontal parallel through cables



Equipment

	
Mould	Metal powder
	
Handle clamp	Steel disk

Necessary Tools

		
Mould brush	Cable clean brush	File
		
Flint igniter	Scraper	Tool box

Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- SC means Solid Copper

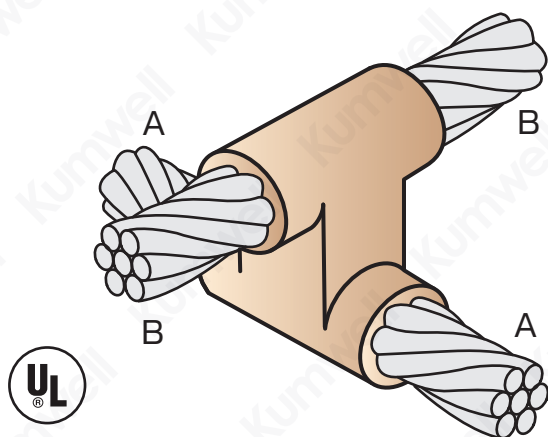
Conductor Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm ²)	B(mm ²)			
10	10	KW45	CC7-C-1010	HCC00
16	16	KW45	CC7-C-1616	HCC00
25	25	KW45	CC7-C-2525	HCC00
35	35	KW65	CC7-C-3535	HCC00
	25	KW65	CC7-C-3525	HCC00
∅8 mm	∅8 mm	KW90	CC7-C-8SC8SC	HCC00
50	50	KW90	CC7-C-5050	HCC00
	35	KW90	CC7-C-5035	HCC00
	25	KW65	CC7-C-5025	HCC00
∅10 mm	∅10 mm	KW115	CC7-C-10SC10SC	HCC00
	70	KW115	CC7-C-7070	HCC00
	50	KW115	CC7-C-7050	HCC00
	35	KW90	CC7-C-7035	HCC00
95	25	KW90	CC7-C-7025	HCC00
	95	KW150	CC7-C-9595	HCC00
	70	KW150	CC7-C-9570	HCC00
	50	KW115	CC7-C-9550	HCC00
120	35	KW115	CC7-C-9535	HCC00
	120	KW200	CC7-C-120120	HCC00
	95	KW200	CC7-C-12095	HCC00
	70	KW150	CC7-C-12070	HCC00
150	50	KW150	CC7-C-12050	HCC00
	150	KW150x2	CC7-D-150150	HCDOO
	120	KW250	CC7-C-150120	HCC00
	95	KW200	CC7-C-15095	HCC00
185	70	KW150	CC7-C-15070	HCC00
	185	KW150x2	CC7-D-185185	HCDOO
	150	KW150x2	CC7-C-185150	HCDOO
	120	KW250	CC7-C-185120	HCC00
240	95	KW200	CC7-C-18595	HCC00
	240	KW200x2	CC7-D-240240	HCDOO
	185	KW150x2	CC7-D-240185	HCDOO
	150	KW150x2	CC7-D-240150	HCDOO
300	120	KW250	CC7-C-240120	HCC00
	300	KW250x2	CC7-D-300300	HCDOO
	240	KW250x2	CC7-D-300240	HCDOO
	185	KW200x2	CC7-D-300185	HCDOO
150	KW150x2	CC7-D-300150	HCDOO	

Note: Special requirement can be requested.

CC11

Cable to Cable

Horizontal to horizontal cable cross



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- "*" means to meet UL Listed

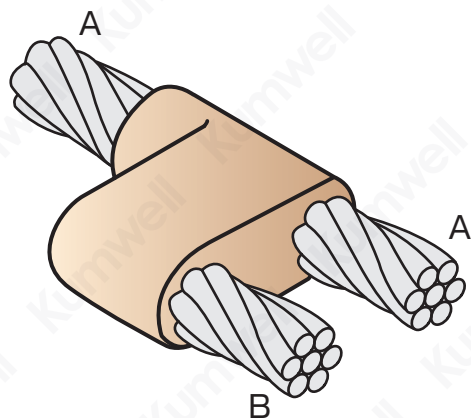
Conductor Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm ²)	B(mm ²)			
25	25	KW65	*CC11-M-2525	HCC00
35	35	KW90	*CC11-M-3535	HCC00
	25	KW90	CC11-M-3525	HCC00
50	50	KW150	*CC11-M-5050	HCC00
	35	KW115	CC11-M-5035	HCC00
	25	KW115	CC11-M-5025	HCC00
Ø95 mm	Ø95 mm	KW200	CC11-M-9.5SC9.5SC	HCC00
70	70	KW200	*CC11-M-7070	HCC00
	50	KW200	*CC11-M-7050	HCC00
	35	KW150	*CC11-M-7035	HCC00
95	95	KW250	CC11-M-9595	HCC00
	70	KW250	*CC11-M-9570	HCC00
	50	KW200	*CC11-M-9550	HCC00
	35	KW200	*CC11-M-9535	HCC00
107	107	KW250	*CC11-M-107107	HCC00
120	120	KW150x2	CC11-M-120120	HCC00
	95	KW150x2	CC11-M-12095	HCC00
	70	KW250	CC11-M-12070	HCC00
	50	KW250	CC11-M-12050	HCC00
	35	KW200	CC11-M-12035	HCC00
150	150	KW200x2	CC11-M-150150	HCC00
	120	KW200x2	CC11-M-150120	HCC00
	95	KW150x2	CC11-M-15095	HCC00
	70	KW250	CC11-M-15070	HCC00
	50	KW250	CC11-M-15050	HCC00
185	185	KW250x2	CC11-M-185185	HCC00
	150	KW250x2	CC11-M-185150	HCC00
	120	KW250x2	CC11-M-185120	HCC00
	95	KW200x2	CC11-M-18595	HCC00
	70	KW150x2	CC11-M-18570	HCC00
240	240	KW250x2	CC11-M-240240	HCC00
	185	KW250x2	CC11-M-240185	HCC00
	150	KW250x2	CC11-M-240150	HCC00
	120	KW250x2	CC11-M-240120	HCC00
	95	KW250x2	CC11-M-24095	HCC00
300	300	KW250x2	CC11-M-300300	HCC00
	240	KW250x2	CC11-M-300240	HCC00
	185	KW250x2	CC11-M-300185	HCC00
	150	KW250x2	CC11-M-300150	HCC00
	120	KW250x2	CC11-M-300120	HCC00
95	KW250x2	CC11-M-30095	HCC00	

Note: Special requirement can be requested.

CC13

Cable to Cable

Horizontal parallel cable tap (side by side)



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

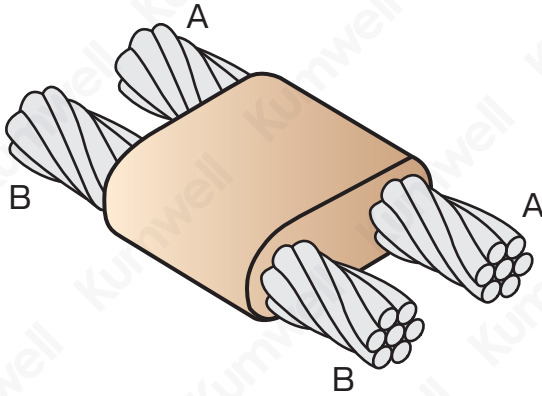
Conductor Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm ²)	B(mm ²)			
10	10	KW45	CC13-C-1010	HCC00
16	16	KW45	CC13-C-1616	HCC00
25	25	KW45	CC13-C-2525	HCC00
35	35	KW65	CC13-C-3535	HCC00
	25	KW65	CC13-C-3525	HCC00
50	50	KW90	CC13-C-5050	HCC00
	35	KW65	CC13-C-5035	HCC00
	25	KW65	CC13-C-5025	HCC00
70	70	KW115	CC13-C-7070	HCC00
	50	KW115	CC13-C-7050	HCC00
	35	KW90	CC13-C-7035	HCC00
	25	KW90	CC13-C-7025	HCC00
95	95	KW150	CC13-C-9595	HCC00
	70	KW115	CC13-C-9570	HCC00
	50	KW115	CC13-C-9550	HCC00
	35	KW115	CC13-C-9535	HCC00
120	120	KW200	CC13-C-120120	HCC00
	95	KW200	CC13-C-12095	HCC00
	70	KW150	CC13-C-12070	HCC00
	50	KW115	CC13-C-12050	HCC00
150	150	KW250	CC13-C-150150	HCC00
	120	KW250	CC13-C-150120	HCC00
	95	KW200	CC13-C-15095	HCC00
	70	KW150	CC13-C-15070	HCC00
185	50	KW115	CC13-C-15050	HCC00
	185	KW150x2	CC13-D-185185	HCDOO
	150	KW150x2	CC13-D-185150	HCDOO
	120	KW250	CC13-C-185120	HCC00
	95	KW200	CC13-C-18595	HCC00
240	70	KW200	CC13-C-18570	HCC00
	240	KW200x2	CC13-D-240240	HCDOO
	185	KW150x2	CC13-D-240185	HCDOO
	150	KW150x2	CC13-D-240150	HCDOO
300	120	KW250	CC13-C-240120	HCC00
	300	KW250x2	CC13-D-300300	HCDOO
	240	KW250x2	CC13-D-300240	HCDOO
	185	KW200x2	CC13-D-300185	HCDOO
	150	KW150x2	CC13-D-300150	HCDOO

Note: Special requirement can be requested.

CC14

Cable to Cable

Horizontal parallel through cables tap (side by side)



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- SC means Solid Copper

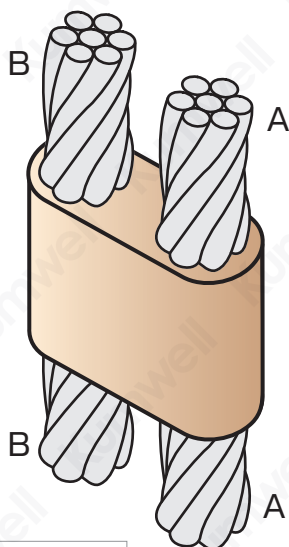
Conductor Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm ²)	B(mm ²)			
10	10	KW45	CC14-C-1010	HCC00
16	16	KW45	CC14-C-1616	HCC00
25	25	KW45	CC14-C-2525	HCC00
35	35	KW65	CC14-C-3535	HCC00
	25	KW65	CC14-C-3525	HCC00
∅8 mm	∅8 mm	KW90	CC14-C-8SC8SC	HCC00
50	50	KW90	CC14-C-5050	HCC00
	35	KW65	CC14-C-5035	HCC00
	25	KW65	CC14-C-5025	HCC00
∅10 mm	∅10 mm	KW115	CC14-C-10SC10SC	HCC00
	70	KW115	CC14-C-7070	HCC00
	50	KW115	CC14-C-7050	HCC00
	35	KW90	CC14-C-7035	HCC00
95	25	KW90	CC14-C-7025	HCC00
	95	KW150	CC14-C-9595	HCC00
	70	KW150	CC14-C-9570	HCC00
	50	KW115	CC14-C-9550	HCC00
120	35	KW115	CC14-C-9535	HCC00
	120	KW200	CC14-C-120120	HCC00
	95	KW200	CC14-C-12095	HCC00
	70	KW150	CC14-C-12070	HCC00
150	50	KW150	CC14-C-12050	HCC00
	150	KW250	CC14-C-150150	HCC00
	120	KW250	CC14-C-150120	HCC00
	95	KW200	CC14-C-15095	HCC00
185	70	KW150	CC14-C-15070	HCC00
	185	KW150x2	CC14-D-185185	HCDOO
	150	KW150x2	CC14-D-185150	HCDOO
	120	KW250	CC14-C-185120	HCC00
240	95	KW200	CC14-C-18595	HCC00
	240	KW200x2	CC14-D-240240	HCDOO
	185	KW150x2	CC14-D-240185	HCDOO
	150	KW150x2	CC14-D-240150	HCDOO
300	120	KW250	CC14-C-240120	HCC00
	300	KW250x2	CC14-D-300300	HCDOO
	240	KW250x2	CC14-D-300240	HCDOO
	185	KW200x2	CC14-D-300185	HCDOO
150	KW150x2	CC14-D-300150	HCDOO	

Note: Special requirement can be requested.

CC34

Cable to Cable

Vertical parallel through cables (side by side)



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- SC means Solid Copper

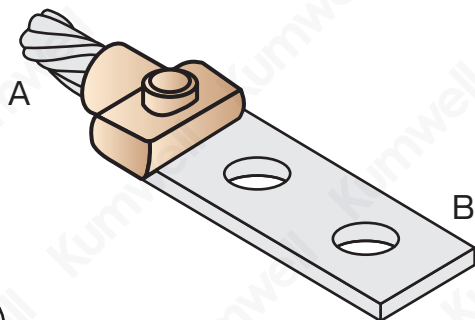
Conductor Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm ²)	B(mm ²)			
25	25	KW65	CC34-CR-2525	HCC00
35	35	KW115	CC34-CR-3535	HCC00
	25	KW90	CC34-CR-3525	HCC00
Ø 8 mm	Ø 8 mm	KW115	CC34-CR-8SC8SC	HCC00
	50	KW150	CC34-CR-5050	HCC00
	35	KW115	CC34-CR-5035	HCC00
50	50	KW150	CC34-CR-5050	HCC00
	35	KW115	CC34-CR-5035	HCC00
	25	KW115	CC34-CR-5025	HCC00
Ø 10 mm	Ø 10 mm	KW150	CC34-CR-10SC10SC	HCC00
	70	KW150	CC34-CR-7070	HCC00
	50	KW150	CC34-CR-7050	HCC00
70	70	KW150	CC34-CR-7070	HCC00
	50	KW150	CC34-CR-7050	HCC00
	35	KW150	CC34-CR-7035	HCC00
95	25	KW115	CC34-CR-7025	HCC00
	95	KW250	CC34-CR-9595	HCC00
	70	KW250	CC34-CR-9570	HCC00
95	50	KW200	CC34-CR-9550	HCC00
	35	KW200	CC34-CR-9535	HCC00
	25	KW150	CC34-CR-7025	HCC00
120	120	KW200x2	CC34-DR-120120	HCDOO
	95	KW250	CC34-CR-12095	HCC00
	70	KW250	CC34-CR-12070	HCC00
120	50	KW250	CC34-CR-12050	HCC00
	35	KW200	CC34-CR-12035	HCC00
	25	KW200	CC34-CR-12025	HCC00
150	150	KW200x2	CC34-DR-150150	HCDOO
	120	KW200x2	CC34-DR-150120	HCDOO
	95	KW150x2	CC34-DR-15095	HCDOO
185	185	KW250x2	CC34-DR-185185	HCDOO
	150	KW250x2	CC34-DR-185150	HCDOO
	120	KW200x2	CC34-DR-185120	HCDOO
185	95	KW150x2	CC34-DR-18595	HCDOO
	240	KW250x3	CC34-DR-240240	HCDOO
	185	KW250x3	CC34-DR-240185	HCDOO
240	150	KW250x3	CC34-DR-240150	HCDOO
	120	KW250x3	CC34-DR-240120	HCDOO
	300	KW250x3	CC34-DR-300300	HCDOO
300	240	KW250x3	CC34-DR-300240	HCDOO
	185	KW250x3	CC34-DR-300185	HCDOO
	150	KW250x3	CC34-DR-300150	HCDOO

Note: Special requirement can be requested.

CB1 (Lug)

Cable to Bus Bar

Horizontal cable tap to copper lug



Equipment

	
Mould	Metal powder
	
Handle clamp	Steel disk

Necessary Tools

		
Mould brush	Cable clean brush	Bus bar brush
		
Flint igniter	Scraper	Tool box

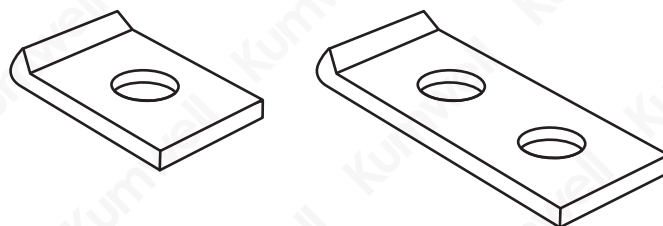
Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- This connection is used for cable conductor to 1 or 2-hole copper lug
- "*" means to meet UL Listed

Conductor Size	Metal Powder		Graphite Mold Type	Handle Clamp Type
	A(mm²)	B(mm×mm)		
10	25x3	KW32	*CB1-C-10253L	HCC00
		KW32	*CB1-C-16253L	HCC00
16	25x5	KW32	CB-C-16255L	HCC00
		KW32	*CB1-C-25253L	HCC00
25	25x6	KW32	CB1-C-25255L	HCC00
		KW32	CB1-C-25256L	HCC00
		KW65	CB1-C-25386L	HCC00
		KW32	*CB1-C-35253L	HCC00
35	25x6	KW32	CB1-C-35255L	HCC00
		KW32	CB1-C-35256L	HCC00
		KW65	CB1-C-35386L	HCC00
		KW45	*CB1-C-50253L	HCC00
50	38x6	KW45	CB1-C-50255L	HCC00
		KW45	CB1-C-50256L	HCC00
		KW65	CB1-C-50386L	HCC00
		KW45	*CB1-C-70253L	HCC00
70	38x6	KW65	CB1-C-70255L	HCC00
		KW65	CB1-C-70256L	HCC00
		KW115	CB1-C-70386L	HCC00
		KW65	*CB1-C-95253L	HCC00
95	38x6	KW65	*CB1-C-95255L	HCC00
		KW65	CB1-C-95256L	HCC00
		KW115	CB1-C-95386L	HCC00
		KW65	*CB1-C-120255L	HCC00
120	38x6	KW65	CB1-C-120256L	HCC00
		KW115	CB1-C-120386L	HCC00
		KW90	*CB1-C-150256L	HCC00
150	38x6	KW115	CB1-C-150386L	HCC00
		KW90	*CB1-C-185256L	HCC00
185	38x6	KW115	CB1-C-185386L	HCC00
		KW150	*CB1-C-240406L	HCC00
240	40x6	KW150		



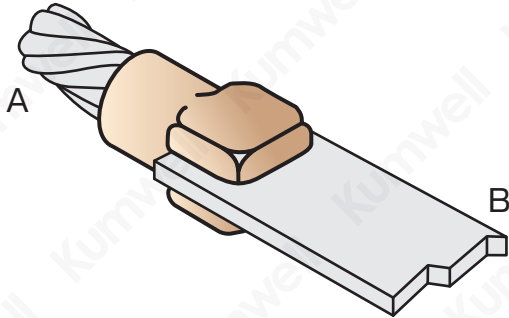
Kumwell L-Lug Series

Note: Special requirement can be requested.

CB1

Cable to Bus Bar

Horizontal cable tap to horizontal lug or bus bar



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- This connection is used for cable conductor to copper strip or tape
- "*" means to meet UL Listed

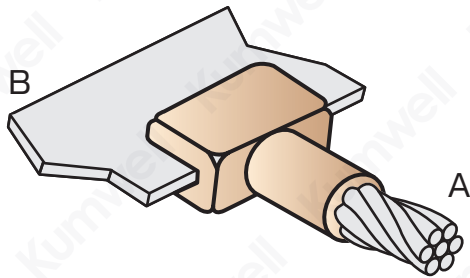
Conductor Size	Metal Powder		Graphite Mold Type	Handle Clamp Type
	A(mm²)	B(mm×mm)		
10	20x2	KW32	CB1-C-10202	HCC00
16	20x2	KW32	CB1-C-16202	HCC00
	20x3	KW32	CB1-C-16203	HCC00
16	20x3	KW45	CB1-C-16253	HCC00
	20x3	KW45	CB1-C-16253	HCC00
25	20x2	KW32	CB1-C-25202	HCC00
	20x3	KW45	CB1-C-25203	HCC00
25	20x3	KW45	CB1-C-25253	HCC00
	20x3	KW45	CB1-C-25253	HCC00
35	20x2	KW32	CB1-C-35202	HCC00
	20x3	KW45	CB1-C-35203	HCC00
35	20x3	KW45	CB1-C-35253	HCC00
	20x3	KW45	CB1-C-35253	HCC00
Ø 8 mm	20x3	KW45	CB1-C-8SC203	HCC00
	25x3	KW65	CB1-C-8SC253	HCC00
50	20x2	KW45	CB1-C-50202	HCC00
	20x3	KW45	CB1-C-50203	HCC00
50	20x3	KW65	CB1-C-50253	HCC00
	20x3	KW65	CB1-C-50253	HCC00
Ø10 mm	25x3	KW65	CB1-C-10SC253	HCC00
	25x4	KW65	CB1-C-10SC254	HCC00
Ø10 mm	25x6	KW65	CB1-C-10SC256	HCC00
	25x6	KW65	CB1-C-10SC256	HCC00
70	25x3	KW65	CB1-C-70253	HCC00
	25x4	KW90	CB1-C-70254	HCC00
70	25x6	KW90	CB1-C-70256	HCC00
	25x6	KW90	CB1-C-70256	HCC00
95	25x3	KW90	CB1-C-95253	HCC00
	25x4	KW90	CB1-C-95254	HCC00
95	25x5	KW90	CB1-C-95255	HCC00
	25x6	KW90	CB1-C-95256	HCC00
120	25x3	KW90	CB1-C-120253	HCC00
	25x4	KW90	CB1-C-120254	HCC00
120	25x5	KW115	CB1-C-120255	HCC00
	25x6	KW115	CB1-C-120256	HCC00
120	30x5	KW115	CB1-C-120305	HCC00
	50x3	KW115	CB1-C-120503	HCC00
120	50x6	KW150	CB1-C-120506	HCC00
	50x6	KW150	CB1-C-120506	HCC00
150	25x6	KW115	CB1-C-150256	HCC00
	30x5	KW115	CB1-C-150305	HCC00
150	40x5	KW150	CB1-C-150405	HCC00
	50x3	KW115	CB1-C-150503	HCC00
150	50x4	KW115	CB1-C-150504	HCC00
	50x6	KW150	CB1-C-150506	HCC00
185	30x5	KW150	CB1-C-185305	HCC00
	31x6	KW150	CB1-C-185316	HCC00
185	38x6	KW150	CB1-C-185386	HCC00
	40x5	KW150	CB1-C-185405	HCC00
185	50x4	KW150	CB1-D-185504	HCDOO
	50x5	KW200	CB1-D-185505	HCDOO
185	50x6	KW200	CB1-D-185506	HCDOO
	50x6	KW200	CB1-D-185506	HCDOO
240	50x3	KW200	CB1-D-240503	HCDOO
	50x4	KW200	CB1-D-240504	HCDOO
240	50x5	KW200	CB1-D-240505	HCDOO
	50x6	KW150x2	CB1-D-240506	HCDOO
300	50x6	KW150x2	CB1-D-300506	HCDOO
	50x8	KW200x2	CB1-D-300508	HCDOO

Note: Special requirement can be requested.

CB4

Cable to Bus Bar

Horizontal cable tap to horizontal bus bar



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- SC means Solid Copper

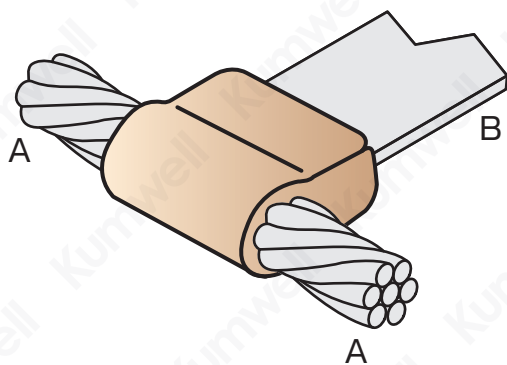
Conductor Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm²)	B(mmmmm)			
10	20x2	KW25	*CB4-C-10202	HCC00
16	20x2	KW32	*CB4-C-16202	HCC00
	20x3	KW32	*CB4-C-16203	HCC00
	25x3	KW32	*CB4-C-16253	HCC00
25	20x2	KW25	*CB4-C-25202	HCC00
	20x3	KW32	*CB4-C-25203	HCC00
	25x3	KW32	*CB4-C-25253	HCC00
35	20x2	KW32	*CB4-C-35202	HCC00
	20x3	KW45	*CB4-C-35203	HCC00
	25x3	KW45	*CB4-C-35253	HCC00
	25x6	KW65	*CB4-C-35256	HCC00
Ø8 mm	25x2	KW45	CB4-C-8SC252	HCC00
	25x3	KW45	CB4-C-8SC253	HCC00
50	20x3	KW45	*CB4-C-50203	HCC00
	25x2	KW45	*CB4-C-50252	HCC00
	25x3	KW45	*CB4-C-50253	HCC00
	25x4	KW65	*CB4-C-50254	HCC00
	25x6	KW65	*CB4-C-50256	HCC00
Ø10 mm	25x3	KW65	*CB4-C-10SC253	HCC00
	25x4	KW65	*CB4-C-10SC254	HCC00
70	25x3	KW65	*CB4-C-70253	HCC00
	25x4	KW65	*CB4-C-70254	HCC00
	25x6	KW90	*CB4-C-70256	HCC00
95	25x3	KW90	*CB4-C-95253	HCC00
	25x4	KW90	*CB4-C-95254	HCC00
	25x5	KW90	*CB4-C-95255	HCC00
	25x6	KW115	*CB4-C-95256	HCC00
120	25x3	KW90	*CB4-C-120253	HCC00
	25x5	KW90	*CB4-C-120255	HCC00
	25x6	KW115	*CB4-C-120256	HCC00
	30x5	KW115	*CB4-C-120305	HCC00
150	25x6	KW115	*CB4-C-150256	HCC00
	30x5	KW115	*CB4-C-150305	HCC00
	40x5	KW150	*CB4-C-150405	HCC00
185	25x3	KW150	*CB4-C-185253	HCC00
	30x5	KW150	CB4-C-185305	HCC00
	40x5	KW150	CB4-C-185405	HCC00
	50x5	KW150	*CB4-C-185505	HCC00
	50x6	KW150	*CB4-C-185506	HCC00
240	50x5	KW200	CB4-C-240505	HCC00
	50x6	KW250	CB4-C-240506	HCC00
300	50x6	KW150x2	*CB4-D-300506	HCD00
	50x8	KW200x2	*CB4-D-300508	HCD00

Note: Special requirement can be requested.

CB5

Cable to Bus Bar

Horizontal bus bar tap to horizontal cable run



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- SC means Solid Copper

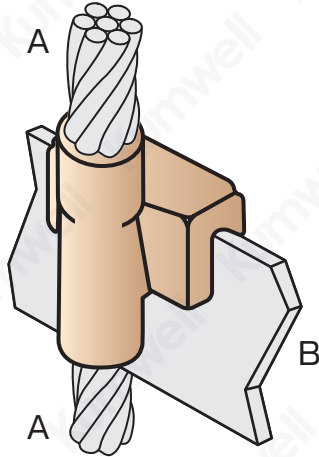
Conductor Size	Metal Powder		Graphite Mold Type	Handle Clamp Type
	A(mm²)	B(mmxmm)		
10	20x2	KW45	CB5-C-10202	HCC00
16	20x2	KW45	CB5-C-16202	HCC00
	20x3	KW45	CB5-C-16203	HCC00
	25x3	KW65	CB5-C-16253	HCC00
25	20x2	KW45	CB5-C-25202	HCC00
	20x3	KW45	CB5-C-25203	HCC00
	25x3	KW65	CB5-C-25253	HCC00
35	20x2	KW45	CB5-C-35202	HCC00
	20x3	KW45	CB5-C-35203	HCC00
	25x3	KW65	CB5-C-35253	HCC00
Ø 8 mm	25x2	KW65	CB5-C-8SC252	HCC00
	25x2	KW65	CB5-C-8SC253	HCC00
50	20x3	KW65	CB5-C-50203	HCC00
	25x2	KW65	CB5-C-50252	HCC00
	25x3	KW65	CB5-C-50253	HCC00
Ø 10 mm	25x3	KW115	CB5-C-10SC253	HCC00
	25x4	KW150	CB5-C-10SC254	HCC00
70	25x3	KW90	CB5-C-70253	HCC00
	25x4	KW115	CB5-C-70254	HCC00
	25x6	KW115	CB5-C-70256	HCC00
95	25x4	KW150	CB5-C-95254	HCC00
	25x5	KW150	CB5-C-95255	HCC00
	25x6	KW150	CB5-C-95256	HCC00
120	25x5	KW150	CB5-C-120255	HCC00
	25x6	KW150	CB5-C-120256	HCC00
	30x5	KW200	CB5-C-120305	HCC00
150	25x6	KW200	CB5-C-150256	HCC00
	30x5	KW200	CB5-C-150305	HCC00
	40x5	KW250	CB5-C-150405	HCC00
185	30x5	KW250	CB5-C-185305	HCC00
	40x5	KW250	CB5-C-185405	HCC00
	50x5	KW150x2	CB5-D-185505	HCDOO
240	30x5	KW250	CB5-D-240305	HCC00
	40x5	KW250	CB5-D-240405	HCC00
	50x5	KW150x2	CB5-D-240505	HCDOO
300	50x6	KW200x2	CB5-D-240506	HCDOO
	50x6	KW250x2	CB5-D-300506	HCDOO
	50x8	KW250x2	CB5-D-300508	HCDOO

Note: Special requirement can be requested.

CB29

Cable to Bus Bar

Vertical cable through horizontal bus bar on edge



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

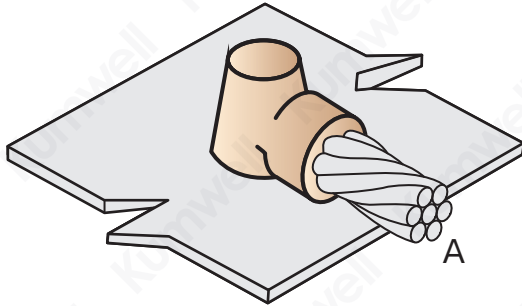
Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type	
				A(mm²)
35	40x5	KW200	CB29-E-35405	HCC00
	40x6	KW250	CB29-E-35406	HCC00
	50x6	KW250	CB29-E-35506	HCC00
	50x8	KW250	CB29-E-35508	HCC00
	50x12	KW150x2	CB29-J-355012	HCDOO
50	40x5	KW150x2	CB29-J-50405	HCDOO
	40x6	KW200x2	CB29-J-50406	HCDOO
	50x6	KW200x2	CB29-J-50506	HCDOO
	50x8	KW200x2	CB29-J-50508	HCDOO
	50x12	KW250x2	CB29-J-505012	HCDOO
70	40x5	KW150x2	CB29-J-70405	HCDOO
	40x6	KW200x2	CB29-J-70406	HCDOO
	50x6	KW200x2	CB29-J-70506	HCDOO
	50x8	KW200x2	CB29-J-70508	HCDOO
	50x12	KW250x2	CB29-J-705012	HCDOO
95	40x5	KW200x2	CB29-J-95405	HCDOO
	40x6	KW250x2	CB29-J-95406	HCDOO
	50x6	KW250x2	CB29-J-95506	HCDOO
	50x8	KW250x2	CB29-J-95508	HCDOO
	50x12	KW200x3	CB29-J-955012	HCDOO
120	40x5	KW200x2	CB29-J-120405	HCDOO
	40x6	KW250x2	CB29-J-120406	HCDOO
	50x6	KW250x2	CB29-J-120506	HCDOO
	50x8	KW250x2	CB29-J-120508	HCDOO
	50x12	KW200x3	CB29-J-1205012	HCDOO
150	40x5	KW200x2	CB29-J-150405	HCDOO
	40x6	KW250x2	CB29-J-150406	HCDOO
	50x6	KW250x2	CB29-J-150506	HCDOO
	50x8	KW250x2	CB29-J-150508	HCDOO
	50x12	KW200x3	CB29-J-1505012	HCDOO
185	40x5	KW200x2	CB29-J-185405	HCDOO
	40x6	KW250x2	CB29-J-185406	HCDOO
	50x6	KW250x2	CB29-J-185506	HCDOO
	50x8	KW250x2	CB29-J-185508	HCDOO
	50x12	KW200x3	CB29-J-1855012	HCDOO
240	40x5	KW200x2	CB29-J-240405	HCDOO
	40x6	KW250x2	CB29-J-240406	HCDOO
	50x6	KW250x2	CB29-J-240506	HCDOO
	50x8	KW250x2	CB29-J-240508	HCDOO
	50x12	KW200x3	CB29-J-2405012	HCDOO
300	40x5	KW250x2	CB29-J-300405	HCDOO
	40x6	KW200x3	CB29-J-300406	HCDOO
	50x6	KW200x3	CB29-J-300506	HCDOO
	50x8	KW200x3	CB29-J-300508	HCDOO
	50x12	KW250x3	CB29-J-3005012	HCDOO

Note: Special requirement can be requested.

CB34

Cable to Bus Bar

Horizontal cable to signal reference ground grid



Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm ²)			
16	KW25	CB34-C-16	HCC00
25	KW32	CB34-C-25	HCC00
35	KW32	CB34-C-35	HCC00

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

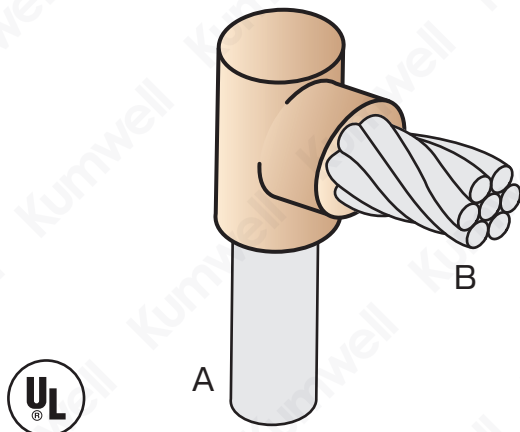
- This connection is recommend for copper cable to signal reference ground grid (0.5 mm thick copper strip) connection
- Before making connection, it need to preheat copper strip and conductor

Note: Special requirement can be requested.

CR1

Cable to Ground Rod

Horizontal cable terminal to ground rod



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- SC means solid copper
- For special rod size's requirement, please contact us
- "*" means to meet UL Listed

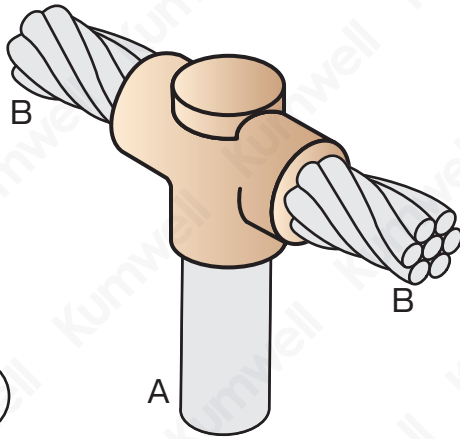
Rod Size		Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type		
A(mm.)	A(inch)	B(mm²)					
12.7	1/2	10	KW65	*CRI-C-12710	HCC00		
		16	KW65	*CRI-C-12716	HCC00		
		Ø 5.6 mm	KW65	*CRI-C-1275.6SC	HCC00		
		25	KW65	*CRI-C-12725	HCC00		
		35	KW65	*CRI-C-12735	HCC00		
		Ø 8 mm	KW65	*CRI-C-1278SC	HCC00		
		50	KW65	*CRI-C-12750	HCC00		
		Ø 10 mm	KW65	*CRI-C-12710SC	HCC00		
		70	KW90	*CRI-C-12770	HCC00		
		95	KW90	*CRI-C-12795	HCC00		
		120	KW90	*CRI-C-127120	HCC00		
		150	KW115	CRI-C-127150	HCC00		
		185	KW115	CRI-C-127185	HCC00		
		14.2	5/8	10	KW65	*CRI-C-14210	HCC00
				16	KW65	*CRI-C-14216	HCC00
				Ø 5.6 mm	KW65	*CRI-C-1425.6SC	HCC00
25	KW65			*CRI-C-14225	HCC00		
35	KW90			*CRI-C-14235	HCC00		
Ø 8 mm	KW90			*CRI-C-1428SC	HCC00		
50	KW90			*CRI-C-14250	HCC00		
70	KW90			*CRI-C-14270	HCC00		
95	KW90			*CRI-C-14295	HCC00		
120	KW90			*CRI-C-142120	HCC00		
150	KW115			CRI-C-142150	HCC00		
185	KW150			CRI-C-142185	HCC00		
240	KW150			CRI-C-142240	HCC00		
17.2	3/4			10	KW65	*CRI-C-17210	HCC00
		16	KW65	*CRI-C-17216	HCC00		
		25	KW65	*CRI-C-17225	HCC00		
		35	KW65	*CRI-C-17235	HCC00		
		Ø 8 mm	KW90	*CRI-C-1728SC	HCC00		
		50	KW90	*CRI-C-17250	HCC00		
		70	KW90	*CRI-C-17270	HCC00		
		95	KW90	*CRI-C-17295	HCC00		
		120	KW90	*CRI-C-172120	HCC00		
		150	KW115	CRI-C-172150	HCC00		
		185	KW150	CRI-C-172185	HCC00		
		240	KW150	CRI-C-172240	HCC00		
		300	KW200	CRI-C-172300	HCC00		
		23.1	1	16	KW150	CRI-C-23116	HCC00
				25	KW150	CRI-C-23125	HCC00
				35	KW150	CRI-C-23135	HCC00
50	KW150			CRI-C-23150	HCC00		
70	KW150			CRI-C-23170	HCC00		
95	KW150			CRI-C-23195	HCC00		
120	KW200			CRI-C-231120	HCC00		
150	KW200			CRI-C-231150	HCC00		
185	KW200			CRI-C-231185	HCC00		
240	KW250			CRI-C-231240	HCC00		

Note: Special requirement can be requested.

CR2

Cable to Ground Rod

Horizontal through cable to ground rod



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- SC means solid copper
- ** means to meet UL Listed

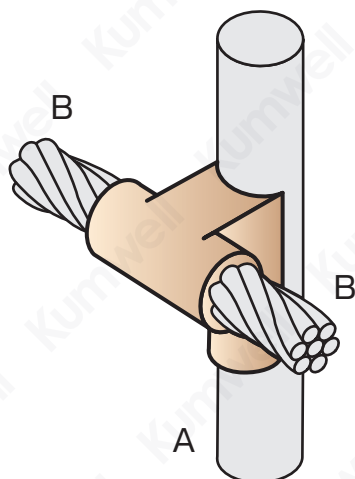
Rod Size		Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type		
A(mm.)	A(inch)	B(mm ²)					
12.7	1/2	10	KW90	*CR2-C-12710	HCC00		
		16	KW90	*CR2-C-12716	HCC00		
		Ø 5.6 mm	KW90	*CR2-C-1275.6SC	HCC00		
		25	KW90	*CR2-C-12725	HCC00		
		35	KW90	*CR2-C-12735	HCC00		
		Ø 8 mm	KW90	*CR2-C-1278SC	HCC00		
		50	KW90	*CR2-C-12750	HCC00		
		Ø 10 mm	KW90	*CR2-C-12710SC	HCC00		
		70	KW90	*CR2-C-12770	HCC00		
		95	KW115	*CR2-C-12795	HCC00		
		120	KW200	*CR2-C-127120	HCC00		
		150	KW200	CR2-C-127150	HCC00		
		185	KW200	CR2-C-127185	HCC00		
		14.2	5/8	10	KW65	*CR2-C-14210	HCC00
				16	KW65	*CR2-C-14216	HCC00
				Ø 5.6 mm	KW90	*CR2-C-1425.6SC	HCC00
25	KW90			*CR2-C-14225	HCC00		
35	KW90			*CR2-C-14235	HCC00		
Ø 8 mm	KW90			*CR2-C-1428SC	HCC00		
50	KW90			*CR2-C-14250	HCC00		
70	KW115			*CR2-C-14270	HCC00		
95	KW115			*CR2-C-14295	HCC00		
120	KW150			*CR2-C-142120	HCC00		
150	KW200			CR2-C-142150	HCC00		
185	KW200			CR2-C-142185	HCC00		
240	KW250			CR2-C-142240	HCC00		
17.2	3/4			10	KW65	*CR2-C-17210	HCC00
		16	KW65	*CR2-C-17216	HCC00		
		25	KW90	*CR2-C-17225	HCC00		
		35	KW90	*CR2-C-17235	HCC00		
		Ø 8 mm	KW115	*CR2-C-1728SC	HCC00		
		50	KW115	*CR2-C-17250	HCC00		
		70	KW115	*CR2-C-17270	HCC00		
		95	KW115	*CR2-C-17295	HCC00		
		120	KW150	*CR2-C-172120	HCC00		
		150	KW200	CR2-C-172150	HCC00		
		185	KW200	CR2-C-172185	HCC00		
		240	KW250	CR2-C-172240	HCC00		
		300	KW150x2	CR2-D-172300	HCDOO		
		23.1	1	16	KW150	CR2-C-23116	HCC00
25	KW150			CR2-C-23125	HCC00		
35	KW150			CR2-C-23135	HCC00		
50	KW150			CR2-C-23150	HCC00		
70	KW150			CR2-C-23170	HCC00		
95	KW150			CR2-C-23195	HCC00		
120	KW200			CR2-C-231120	HCC00		
150	KW200			CR2-C-231150	HCC00		
185	KW200			CR2-C-231185	HCC00		
240	KW150x2			CR2-D-231240	HCDOO		

Note: Special requirement can be requested.

CR3

Cable to Ground Rod

Horizontal through cable to side of ground rod



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- SC means solid copper

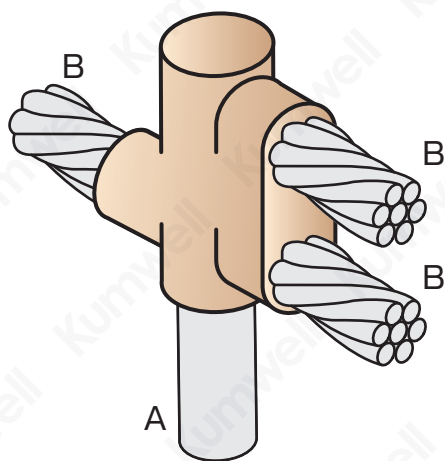
Rod Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type			
A(mm.)	A(inch)	B(mm ²)					
12.7	1/2	10	KW90	CR3-E-12710	HCC00		
		16	KW90	CR3-E-12716	HCC00		
		25	KW90	CR3-E-12725	HCC00		
		35	KW90	CR3-E-12735	HCC00		
		Ø 8 mm	KW115	CR3-E-1278SC	HCC00		
		50	KW115	CR3-E-12750	HCC00		
		Ø 10 mm	KW115	CR3-E-12710SC	HCC00		
		70	KW115	CR3-E-12770	HCC00		
		95	KW115	CR3-E-12795	HCC00		
		120	KW150	CR3-E-127120	HCC00		
		150	KW200	CR3-E-127150	HCC00		
		185	KW200	CR3-E-127185	HCC00		
		14.2	5/8	10	KW90	CR3-E-14210	HCC00
				16	KW90	CR3-E-14216	HCC00
25	KW90			CR3-E-14225	HCC00		
35	KW90			CR3-E-14235	HCC00		
Ø 8 mm	KW115			CR3-E-1428SC	HCC00		
50	KW115			CR3-E-14250	HCC00		
Ø 9.5 mm	KW115			CR3-E-1429.5SC	HCC00		
70	KW115			CR3-E-14270	HCC00		
95	KW115			CR3-E-14295	HCC00		
120	KW150			CR3-E-142120	HCC00		
150	KW200			CR3-E-142150	HCC00		
185	KW250			CR3-E-142185	HCC00		
240	KW200x2			CR3-J-142240	HCDOO		
17.2	3/4			10	KW90	CR3-E-17210	HCC00
		16	KW90	CR3-E-17216	HCC00		
		25	KW90	CR3-E-17225	HCC00		
		35	KW90	CR3-E-17235	HCC00		
		Ø 8 mm	KW115	CR3-E-1728SC	HCC00		
		50	KW115	CR3-E-17250	HCC00		
		Ø 9.5 mm	KW150	CR3-E-1729.5SC	HCC00		
		70	KW150	CR3-E-17270	HCC00		
		95	KW150	CR3-E-17295	HCC00		
		120	KW200	CR3-E-172120	HCC00		
		150	KW250	CR3-E-172150	HCC00		
		185	KW200x2	CR3-J-172185	HCDOO		
		240	KW200x2	CR3-J-172240	HCDOO		
		300	KW200x3	CR3-J-172300	HCDOO		

Note: Special requirement can be requested.

CR17

Cable to Ground Rod

Horizontal parallel cable tap to ground rod



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- SC means solid copper

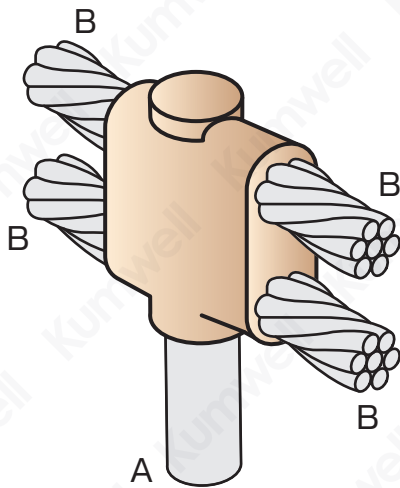
Rod Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type	
A(mm.)	A(inch)	B(mm ²)			
12.7	1/2	25	KW90	CR17-C-12725	HCC00
		35	KW90	CR17-C-12735	HCC00
		50	KW115	CR17-C-12750	HCC00
		70	KW150	CR17-C-12770	HCC00
		95	KW200	CR17-C-12795	HCC00
		120	KW200	CR17-C-127120	HCC00
14.2	5/8	25	KW90	CR17-C-14225	HCC00
		35	KW115	CR17-C-14235	HCC00
		50	KW150	CR17-C-14250	HCC00
		70	KW200	CR17-C-14270	HCC00
		95	KW250	CR17-CH-14295	HCC00
		120	KW150x2	CR17-D-142120	HCDOO
		150	KW200x2	CR17-DH-142150	HCDOO
		17.2	3/4	25	KW90
35	KW115	CR17-C-17235		HCC00	
50	KW150	CR17-C-17250		HCC00	
70	KW200	CR17-C-17270		HCC00	
95	KW250	CR17-CH-17295		HCC00	
120	KW150x2	CR17-D-172120		HCDOO	
150	KW200x2	CR17-DH-172150		HCDOO	
185	KW200x2	CR17-DH-172185		HCDOO	
240	KW200x3	CR17-DH-172240	HCDOO		
23.1	1	25	KW115	CR17-C-23125	HCC00
		35	KW150	CR17-C-23135	HCC00
		50	KW200	CR17-C-23150	HCC00
		70	KW250	CR17-CH-23170	HCC00
		95	KW150x2	CR17-D-23195	HCDOO
		120	KW200x2	CR17-DH-231120	HCDOO
		150	KW250x2	CR17-DH-231150	HCDOO
		185	KW250x2	CR17-DH-231185	HCDOO
240	KW250x3	CR17-DH-231240	HCDOO		

Note: Special requirement can be requested.

CR24

Cable to Ground Rod

Horizontal parallel through cables to ground rod



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For special rod size's requirement, please contact us

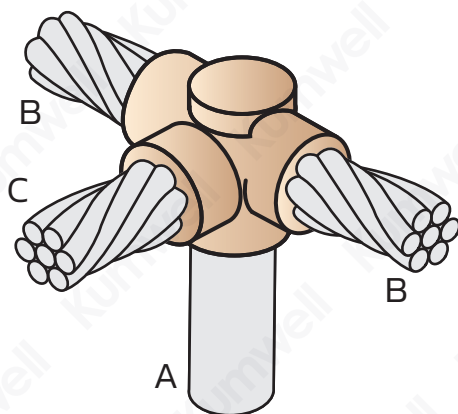
Rod Size		Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	A(inch)	B(mm ²)			
12.7	1/2	25	KW115	CR24-C-12725	HCC00
		35	KW115	CR24-C-12735	HCC00
		50	KW150	CR24-C-12750	HCC00
		70	KW200	CR24-C-12770	HCC00
		95	KW250	CR24-CH-12795	HCC00
		120	KW150x2	CR24-D-127120	HCDOO
14.2	5/8	25	KW115	CR24-C-14225	HCC00
		35	KW150	CR24-C-14235	HCC00
		50	KW200	CR24-C-14250	HCC00
		70	KW250	CR24-CH-14270	HCC00
		95	KW150x2	CR24-D-14295	HCDOO
		120	KW200x2	CR24-DH-142120	HCDOO
		150	KW250x2	CR24-DH-142150	HCDOO
		185	KW250x2	CR24-DH-142185	HCDOO
		240	KW250x3	CR24-DH-142240	HCDOO
17.2	3/4	25	KW115	CR24-C-17225	HCC00
		35	KW150	CR24-C-17235	HCC00
		50	KW200	CR24-C-17250	HCC00
		70	KW250	CR24-CH-17270	HCC00
		95	KW150x2	CR24-D-17295	HCDOO
		120	KW200x2	CR24-DH-172120	HCDOO
		150	KW250x2	CR24-DH-172150	HCDOO
		185	KW250x2	CR24-DH-172185	HCDOO
		240	KW250x2	CR24-DH-172240	HCDOO
23.1	1	25	KW150	CR24-C-23125	HCC00
		35	KW200	CR24-C-23135	HCC00
		50	KW250	CR24-CH-23150	HCC00
		70	KW150x2	CR24-D-23170	HCDOO
		95	KW200x2	CR24-DH-23195	HCDOO
		120	KW250x2	CR24-DH-231120	HCDOO
		150	KW200x3	CR24-DH-231150	HCDOO
185	KW200x3	CR24-DH-231185	HCDOO		

Note: Special requirement can be requested.

CR25

Cable to Ground Rod

Horizontal cable tap and run to ground rod



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For special rod size's requirement, please contact us
- For over 95 mm² conductor, we recommend to use handle clamp with cable clamp (Pls. see part tool and accessories) for perfect connection and long-lasting mould

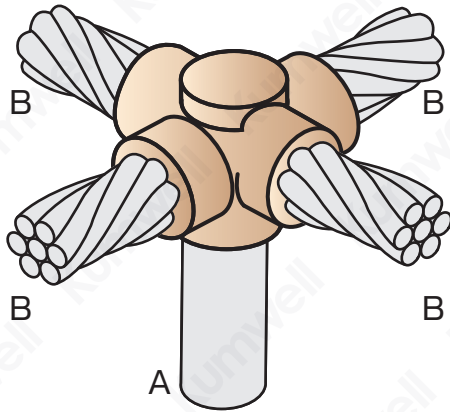
Rod Size		Conductor Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	A(inch)	B(mm ²)	C(mm ²)			
14.2	5/8	10	10	KW65	CR25-C-14210	HCCOO
		16	16	KW65	CR25-C-14216	HCCOO
		25	25	KW90	CR25-C-14225	HCCOO
		35	35	KW90	CR25-C-14235	HCCOO
		50	50	KW115	CR25-C-14250	HCCOO
		70	70	KW115	CR25-C-14270	HCCOO
		70	50	KW115	CR25-C-1427050	HCCOO
		95	95	KW150	CR25-C-14295	HCCOO
		95	95	KW150	CR25-C-142955	HCCOO
		95	70	KW150	CR25-C-1429570	HCCOO
		95	50	KW150	CR25-C-1429550	HCCOO
		120	120	KW150	CR25-C-142120	HCCOO
		120	95	KW150	CR25-C-14212095	HCCOO
		120	70	KW150	CR25-C-14212070	HCCOO
		120	50	KW115	CR25-C-14212050	HCCOO
		150	150	KW200	CR25-C-142150	HCCOO
		150	120	KW200	CR25-C-142150120	HCCOO
		150	95	KW200	CR25-C-14215095	HCCOO
		150	70	KW200	CR25-C-14215070	HCCOO
		17.2	3/4	10	10	KW65
16	16			KW65	CR25-C-17216	HCCOO
25	25			KW90	CR25-C-17225	HCCOO
35	35			KW90	CR25-C-17235	HCCOO
50	50			KW115	CR25-C-17250	HCCOO
70	70			KW115	CR25-C-17270	HCCOO
70	50			KW115	CR25-C-1727050	HCCOO
95	95			KW150	CR25-C-17295	HCCOO
95	70			KW150	CR25-C-1729570	HCCOO
95	50			KW150	CR25-C-1729550	HCCOO
120	120			KW200	CR25-C-172120	HCCOO
120	95			KW200	CR25-C-17212095	HCCOO
120	70			KW200	CR25-C-17212070	HCCOO
120	50			KW200	CR25-C-17212050	HCCOO
150	150			KW250	CR25-C-172150	HCCOO
150	95			KW250	CR25-C-17215095	HCCOO
150	70			KW200	CR25-C-17215070	HCCOO
150	50			KW200	CR25-C-17215050	HCCOO
185	185			KW150x2	CR25-D-172185	HCDOO
185	95			KW150x2	CR25-D-17218595	HCDOO
185	70	KW150x2	CR25-D-17218570	HCDOO		
240	240	KW200x2	CR25-D-172240	HCDOO		
240	95	KW200x2	CR25-D-17224095	HCDOO		
240	70	KW150x2	CR25-D-17224070	HCDOO		
23.1	1	16	16	KW200	CR25-C-23116	HCCOO
		25	25	KW200	CR25-C-23125	HCCOO
		35	35	KW200	CR25-C-23135	HCCOO
		50	50	KW250	CR25-C-23150	HCCOO
		70	70	KW250	CR25-C-23170	HCCOO
		95	95	KW250	CR25-C-23195	HCCOO
		120	120	KW250	CR25-C-231120	HCCOO
		150	150	KW250	CR25-C-231150	HCCOO
		185	185	KW200x2	CR25-D-231185	HCDOO
		240	240	KW200x2	CR25-D-231240	HCDOO

Note: Special requirement can be requested.

CR33

Cable to Ground Rod

Horizontal cable cross to ground rod



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For special rod size's requirement, please contact us
- For over 95 mm² conductor, we recommend to use handle clamp with cable clamp (Pls. see part tool and accessories) for perfect connection and long-lasting mould

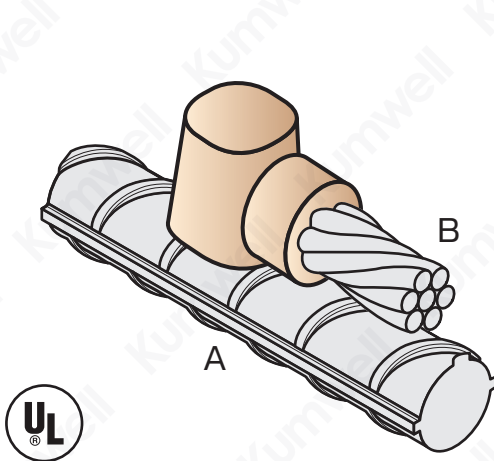
Rod Size		Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type		
A(mm.)	A(inch)	B(mm ²)					
14.2	5/8	10	KW90	CR33-C-14210	HCC00		
		16	KW90	CR33-C-14216	HCDOO		
		25	KW90	CR33-C-14225	HCC00		
		35	KW90	CR33-C-14235	HCC00		
		50	KW115	CR33-C-14250	HCC00		
		70	KW115	CR33-C-14270	HCC00		
		95	KW150	CR33-C-14295S	HCC00		
		95	KW150	CR33-C-14295	HCC00		
		120	KW200	CR33-C-142120	HCC00		
		150	KW250	CR33-C-142150	HCC00		
		185	KW200x2	CR33-D-142185	HCC00		
		240	KW250x2	CR33-D-142240	HCDOO		
		17.2	3/4	10	KW90	CR33-C-17210	HCC00
				16	KW90	CR33-C-17216	HCDOO
25	KW90			CR33-C-17225	HCC00		
35	KW90			CR33-C-17235	HCC00		
50	KW115			CR33-C-17250	HCC00		
70	KW115			CR33-C-17270	HCC00		
95	KW150			CR33-C-17295	HCC00		
120	KW200			CR33-C-172120	HCC00		
150	KW250			CR33-C-172150	HCC00		
185	KW200x2			CR33-D-172185	HCC00		
240	KW250x2	CR33-D-172240	HCDOO				
23.1	1	16	KW200	CR33-C-23116	HCC00		
		25	KW200	CR33-C-23125	HCC00		
		35	KW200	CR33-C-23135	HCC00		
		50	KW250	CR33-C-23150	HCC00		
		70	KW250	CR33-C-23170	HCC00		
		95	KW250	CR33-C-23195	HCC00		
		120	KW250	CR33-C-231120	HCC00		
		150	KW150x2	CR33-D-231150	HCDOO		
		185	KW250x2	CR33-D-231185	HCDOO		
		240	KW250x2	CR33-D-231240	HCDOO		

Note: Special requirement can be requested.

CRE1P

Cable to Rebar Partially Wrapped Connection

Horizontal parallel cable tap to rebar



Steel Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm)	B(mm ²)			
20 to 40	16	KW45	*CREIP-C-16	HCCOO-Z
20 to 40	25	KW45	*CREIP-C-25	HCCOO-Z
20 to 40	35	KW45	*CREIP-C-35	HCCOO-Z
20 to 40	50	KW90	*CREIP-C-50	HCCOO-Z
20 to 40	70	KW90	*CREIP-C-70	HCCOO-Z
20 to 40	95	KW90	*CREIP-C-95	HCCOO-Z
20 to 40	120	KW90	*CREIP-C-120	HCCOO-Z
25 to 40	150	KW150	CREIP-C-150	HCCOO-Z
28 to 40	185	KW200	CREIP-C-185	HCCOO-Z
32 to 40	240	KW200	CREIP-C-240	HCCOO-Z
32 to 40	300	KW250	CREIP-C-300	HCCOO-Z

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

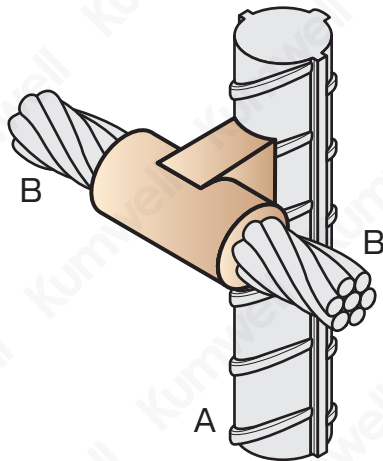
- For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- Kumwell CRE Mold provides ceramic fiber to prevent leakage
- "HCAOO" Type A-Handle clamp is built-in graphite mould
- "*" means to meet UL Listed

Note: Special requirement can be requested.

CRE3P

Cable to Rebar Partially Wrapped Connection

Horizontal through cable to vertical rebar



Steel Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm)	B(mm ²)			
20 to 40	16	KW45	CRE3P-C-16	HCCOO-U
20 to 40	25	KW45	CRE3P-C-25	HCCOO-U
20 to 40	35	KW45	CRE3P-C-35	HCCOO-U
20 to 40	50	KW90	CRE3P-C-50	HCCOO-U
20 to 40	70	KW90	CRE3P-C-70	HCCOO-U
20 to 40	95	KW90	CRE3P-C-95	HCCOO-U
20 to 40	120	KW90	CRE3P-C-120	HCCOO-U
25 to 40	150	KW115	CRE3P-C-150	HCCOO-U
28 to 40	185	KW150	CRE3P-CR-185	HCCOO-U
32 to 40	240	KW150	CRE3P-CR-240	HCCOO-U
32 to 40	300	KW250	CRE3P-CR-300	HCCOO-U

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

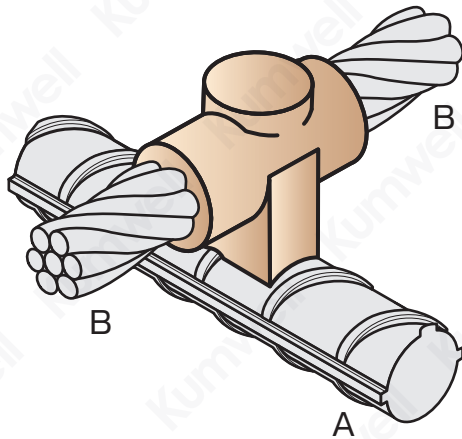
- For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- Kumwell CRE Mold provides ceramic fiber to prevent leakage

Note: Special requirement can be requested.

CRE4P

Cable to Rebar Partially Wrapped Connection

Horizontal cable cross to horizontal rebar



Steel Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm)	B(mm ²)			
20 to 40	16	KW65	CRE4P-C-16	HCA00-V
20 to 40	25	KW65	CRE4P-C-25	HCA00-V
20 to 40	35	KW90	CRE4P-C-35	HCA00-V
20 to 40	50	KW115	CRE4P-C-50	HCA00-V
20 to 40	70	KW115	CRE4P-C-70	HCA00-V
20 to 40	95	KW150	CRE4P-C-95	HCA00-V
20 to 40	120	KW150	CRE4P-C-120	HCA00-V
25 to 40	150	KW200	CRE4P-C-150	HCA00-V
28 to 40	185	KW250	CRE4P-C-185	HCA00-V
32 to 40	240	KW200x2	CRE4P-D-240	HCA00-V
32 to 40	300	KW200x2	CRE4P-D-300	HCA00-V

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

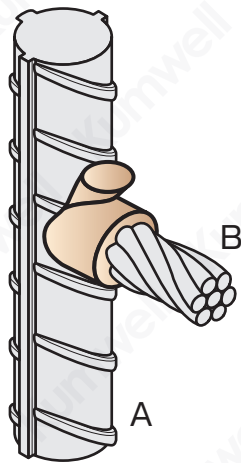
- For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- Kumwell CRE Mold provides ceramic fiber to prevent leakage

Note: Special requirement can be requested.

CRE6P

Cable to Rebar Partially Wrapped Connection

Horizontal cable tap to vertical rebar



Steel Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm)	B(mm ²)			
20 to 40	16	KW45	CRE6P-C-16	HCCOO-X
20 to 40	25	KW45	CRE6P-C-25	HCCOO-X
20 to 40	35	KW45	CRE6P-C-35	HCCOO-X
20 to 40	50	KW90	CRE6P-C-50	HCCOO-X
20 to 40	70	KW90	CRE6P-C-70	HCCOO-X
20 to 40	95	KW90	CRE6P-C-95	HCCOO-X
20 to 40	120	KW90	CRE6P-C-120	HCCOO-X
25 to 40	150	KW115	CRE6P-CR-150	HCCOO-X
28 to 40	185	KW150	CRE6P-CR-185	HCCOO-X
32 to 40	240	KW200	CRE6P-CR-240	HCCOO-X
32 to 40	300	KW250	CRE6P-CR-300	HCCOO-X

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

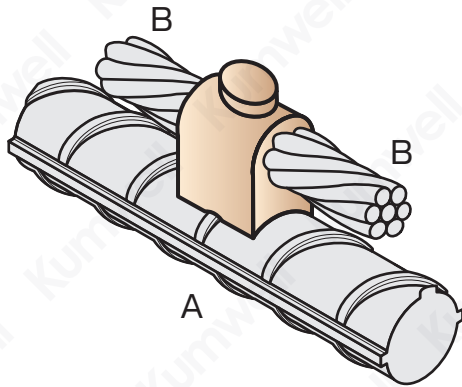
- For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- Kumwell CRE Mold provides ceramic fiber to prevent leakage

Note: Special requirement can be requested.

CRE17P

Cable to Rebar Partially Wrapped Connection

Horizontal parallel thru cable to horizontal rebar



Steel Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm)	B(mm ²)			
20 to 40	16	KW45	CRE17P-C-16	HCCOO-V
20 to 40	25	KW45	CRE17P-C-25	HCCOO-V
20 to 40	35	KW45	CRE17P-C-35	HCCOO-V
20 to 40	50	KW65	CRE17P-C-50	HCCOO-V
20 to 40	70	KW90	CRE17P-C-70	HCCOO-V
20 to 40	95	KW90	CRE17P-C-95	HCCOO-V
20 to 40	120	KW90	CRE17P-C-120	HCCOO-V
25 to 40	150	KW115	CRE17P-C-150	HCCOO-V
28 to 40	185	KW250	CRE17P-C-185	HCCOO-V
32 to 40	240	KW150x2	CRE17P-D-240	HCCOO-Z
32 to 40	300	KW200x2	CRE17P-D-300	HCCOO-Z

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

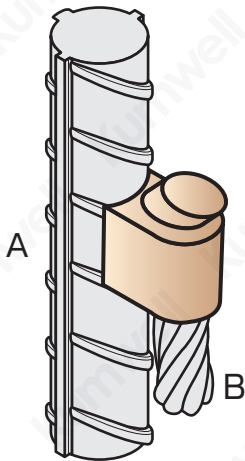
- For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- Kumwell CRE Mold provides ceramic fiber to prevent leakage

Note: Special requirement can be requested.

CRE18P

Cable to Rebar Partially Wrapped Connection

Vertical parallel down cable to vertical rebar



Steel Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm)	B(mm ²)			
20 to 40	16	KW90	CRE18P-C-16	HCCOO-X
20 to 40	25	KW90	CRE18P-C-25	HCCOO-X
20 to 40	35	KW115	CRE18P-C-35	HCCOO-X
20 to 40	50	KW115	CRE18P-C-50	HCCOO-X
20 to 40	70	KW150	CRE18P-CR-70	HCCOO-X
20 to 40	95	KW200	CRE18P-CR-95	HCCOO-X
20 to 40	120	KW250	CRE18P-CR-120	HCCOO-X
25 to 40	150	KW250	CRE18P-CR-150	HCCOO-X
28 to 40	185	KW150x2	CRE18P-DR-185	HCCOO-X
32 to 40	240	KW150x2	CRE18P-DR-240	HCCOO-X
32 to 40	300	KW200x2	CRE18P-DR-300	HCCOO-X

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

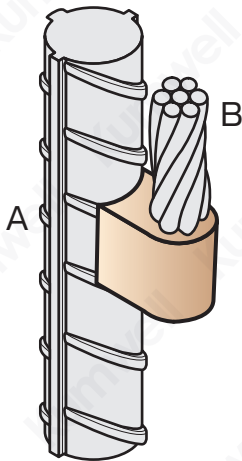
- For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- Kumwell CRE Mold provides ceramic fiber to prevent leakage

Note: Special requirement can be requested.

CRE19P

Cable to Rebar Partially Wrapped Connection

Horizontal parallel thru cable to horizontal rebar



Steel Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm)	B(mm ²)			
20 to 40	16	KW90	CRE19P-C-16	HCCOO-X
20 to 40	25	KW90	CRE19P-C-25	HCCOO-X
20 to 40	35	KW115	CRE19P-CR-35	HCCOO-X
20 to 40	50	KW115	CRE19P-CR-50	HCCOO-X
20 to 40	70	KW150	CRE19P-CR-70	HCCOO-X
20 to 40	95	KW200	CRE19P-CR-95	HCCOO-X
20 to 40	120	KW250	CRE19P-CR-120	HCCOO-X
25 to 40	150	KW250	CRE19P-CR-150	HCCOO-X
28 to 40	185	KW150x2	CRE19P-DR-185	HCDOO-X
32 to 40	240	KW150x2	CRE19P-DR-240	HCDOO-X
32 to 40	300	KW200x2	CRE19P-DR-300	HCDOO-X

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

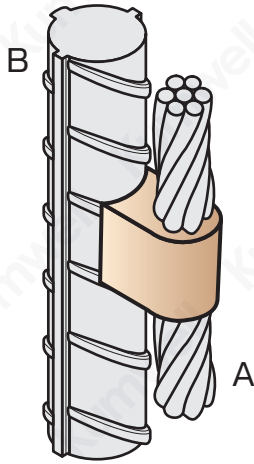
- For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- Kumwel CRE Mold provides ceramic fiber to prevent leakage

Note: Special requirement can be requested.

CRE20P

Cable to Rebar Partially Wrapped Connection

Vertical parallel thru cable to vertical rebar



Steel Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	B(mm ²)			
20 to 40	16	KW90	CRE20P-C-16	HCCOO-X
20 to 40	25	KW90	CRE20P-C-25	HCCOO-X
20 to 40	35	KW115	CRE20P-CR-35	HCCOO-X
20 to 40	50	KW115	CRE20P-CR-50	HCCOO-X
20 to 40	70	KW150	CRE20P-CR-70	HCCOO-X
20 to 40	95	KW200	CRE20P-CR-95	HCCOO-X
20 to 40	120	KW250	CRE20P-CR-120	HCCOO-X
25 to 40	150	KW250	CRE20P-CR-150	HCCOO-X
28 to 40	185	KW150x2	CRE20P-DR-185	HCDOO-X
32 to 40	240	KW150x2	CRE20P-DR-240	HCDOO-X
32 to 40	300	KW200x2	CRE20P-DR-300	HCDOO-X

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

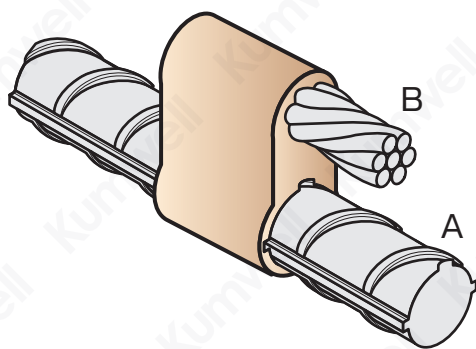
- For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- Kumwell CRE Mold provides ceramic fiber to prevent leakage

Note: Special requirement can be requested.

CRE1

Cable to Rebar Fully Wrapped Connection

Horizontal parallel cable to horizontal rebar



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- Kumwell CRE Mold provides ceramic fiber to prevent leakage

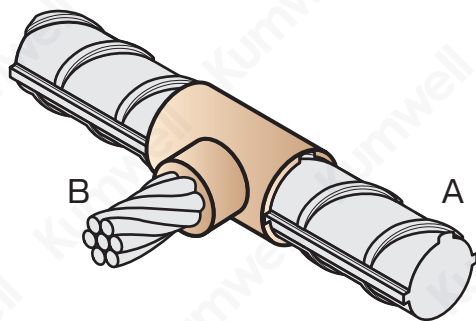
Steel Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	B(mm ²)			
10	16	KW115	CRE1-C-1610R	HCC00
	25	KW115	CRE1-C-2510R	HCC00
	35	KW115	CRE1-C-3510R	HCC00
	50	KW150	CRE1-C-5010R	HCC00
	70	KW150	CRE1-C-7010R	HCC00
	95	KW200	CRE1-CH-9510R	HCC00
12	16	KW115	CRE1-C-1612R	HCC00
	25	KW115	CRE1-C-2512R	HCC00
	35	KW115	CRE1-C-3512R	HCC00
	50	KW150	CRE1-C-5012R	HCC00
	70	KW150	CRE1-C-7012R	HCC00
	95	KW200	CRE1-CH-9512R	HCC00
16	16	KW115	CRE1-C-1616R	HCC00
	25	KW115	CRE1-C-2516R	HCC00
	35	KW115	CRE1-C-3516R	HCC00
	50	KW150	CRE1-C-5016R	HCC00
	70	KW200	CRE1-CH-7016R	HCC00
	95	KW200	CRE1-CH-9516R	HCC00
20	16	KW150	CRE1-C-1620R	HCC00
	25	KW150	CRE1-C-2520R	HCC00
	35	KW150	CRE1-C-3520R	HCC00
	50	KW200	CRE1-CH-5020R	HCC00
	70	KW200	CRE1-CH-7020R	HCC00
	95	KW250	CRE1-CH-9520R	HCC00
25	16	KW150	CRE1-CH-1625R	HCC00
	25	KW150	CRE1-CH-2525R	HCC00
	35	KW200	CRE1-CH-3525R	HCC00
	50	KW200	CRE1-CH-5025R	HCC00
	70	KW250	CRE1-CH-7025R	HCC00
	95	KW250	CRE1-CH-9525R	HCC00
30	16	KW200	CRE1-CH-1630R	HCC00
	25	KW200	CRE1-CH-2530R	HCC00
	35	KW200	CRE1-CH-3530R	HCC00
	50	KW250	CRE1-CH-5030R	HCC00
	70	KW250	CRE1-CH-7030R	HCC00
	95	KW250	CRE1-CH-9530R	HCC00
	120	KW250	CRE1-CH-12030R	HCC00

Note: Special requirement can be requested.

CRE2

Cable to Rebar Fully Wrapped Connection

Horizontal cable tap to horizontal rebar



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- Kumwell CRE Mold provides ceramic fiber to prevent leakage

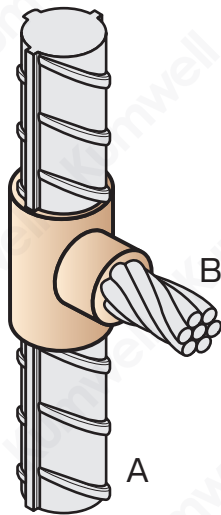
Steel Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	B(mm ²)			
10	16	KW45	CRE2-C-1610R	HCC00
	25	KW45	CRE2-C-2510R	HCC00
	35	KW65	CRE2-C-3510R	HCC00
	50	KW90	CRE2-C-5010R	HCC00
	70	KW90	CRE2-C-7010R	HCC00
	95	KW115	CRE2-C-9510R	HCC00
	120	KW115	CRE2-C-12010R	HCC00
	150	KW150	CRE2-C-15010R	HCC00
	185	KW150	CRE2-C-18510R	HCC00
	240	KW200	CRE2-C-24010R	HCC00
12	300	KW200	CRE2-C-30010R	HCC00
	16	KW45	CRE2-C-1612R	HCC00
	25	KW45	CRE2-C-2512R	HCC00
	35	KW65	CRE2-C-3512R	HCC00
	50	KW90	CRE2-C-5012R	HCC00
	70	KW90	CRE2-C-7012R	HCC00
	95	KW115	CRE2-C-9512R	HCC00
	120	KW115	CRE2-C-12012R	HCC00
	150	KW150	CRE2-C-15012R	HCC00
	185	KW150	CRE2-C-18512R	HCC00
16	240	KW200	CRE2-C-24012R	HCC00
	300	KW200	CRE2-C-30012R	HCC00
	16	KW90	CRE2-C-1616R	HCC00
	25	KW90	CRE2-C-2516R	HCC00
	35	KW90	CRE2-C-3516R	HCC00
	50	KW115	CRE2-C-5016R	HCC00
	70	KW115	CRE2-C-7016R	HCC00
	95	KW150	CRE2-C-9516R	HCC00
	120	KW150	CRE2-C-12016R	HCC00
	150	KW200	CRE2-C-15016R	HCC00
20	185	KW200	CRE2-C-18516R	HCC00
	240	KW250	CRE2-C-24016R	HCC00
	300	KW150x2	CRE2-D-30016R	HCDOO
	16	KW115	CRE2-C-1620R	HCC00
	25	KW115	CRE2-C-2520R	HCC00
	35	KW115	CRE2-C-3520R	HCC00
	50	KW150	CRE2-C-5020R	HCC00
	70	KW150	CRE2-C-7020R	HCC00
	95	KW200	CRE2-C-9520R	HCC00
	120	KW200	CRE2-C-12020R	HCC00
25	150	KW200	CRE2-C-15020R	HCC00
	185	KW250	CRE2-C-18520R	HCC00
	240	KW150x2	CRE2-D-24020R	HCDOO
	300	KW200x2	CRE2-D-30020R	HCDOO
	16	KW200	CRE2-C-1625R	HCC00
	25	KW200	CRE2-C-2525R	HCC00
	35	KW200	CRE2-C-3525R	HCC00
	50	KW200	CRE2-C-5025R	HCC00
	70	KW250	CRE2-C-7025R	HCC00
	95	KW250	CRE2-C-9525R	HCC00
30	120	KW250	CRE2-C-12025R	HCC00
	150	KW150x2	CRE2-D-15025R	HCDOO
	185	KW150x2	CRE2-D-18525R	HCDOO
	240	KW200x2	CRE2-D-24025R	HCDOO
	300	KW200x2	CRE2-D-30025R	HCDOO
	16	KW250	CRE2-C-1630R	HCC00
	25	KW250	CRE2-C-2530R	HCC00
	35	KW250	CRE2-C-3530R	HCC00
	50	KW150x2	CRE2-D-5030R	HCDOO
	70	KW150x2	CRE2-D-7030R	HCDOO
30	95	KW150x2	CRE2-D-9530R	HCDOO
	120	KW200x2	CRE2-D-12030R	HCDOO
	150	KW200x2	CRE2-D-15030R	HCDOO
	185	KW250x2	CRE2-D-18530R	HCDOO
	240	KW200x3	CRE2-D-24030R	HCDOO
	300	KW200x3	CRE2-D-30030R	HCDOO

Note: Special requirement can be requested.

CRE6

Cable to Rebar Fully Wrapped Connection

Horizontal cable tap to vertical rebar



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- Kumwell CRE Mold provides ceramic fiber to prevent leakage

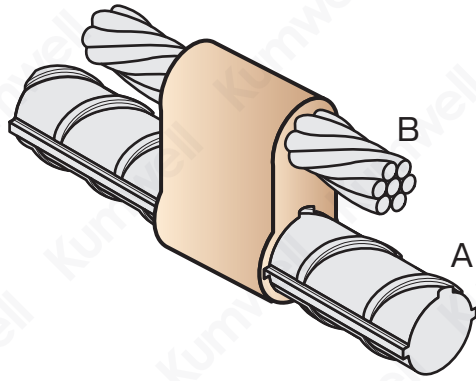
Steel Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	B(mm ²)			
10	16	KW65	CRE6-CL-1610R	HCC00
	25	KW65	CRE6-CL-2510R	HCC00
	35	KW65	CRE6-CL-3510R	HCC00
	50	KW115	CRE6-CL-5010R	HCC00
	70	KW115	CRE6-CL-7010R	HCC00
	95	KW150	CRE6-CL-9510R	HCC00
	120	KW150	CRE6-CL-12010R	HCC00
12	16	KW65	CRE6-CL-1612R	HCC00
	25	KW65	CRE6-CL-2512R	HCC00
	35	KW65	CRE6-CL-3512R	HCC00
	50	KW115	CRE6-CL-5012R	HCC00
	70	KW115	CRE6-CL-7012R	HCC00
	95	KW150	CRE6-CL-9512R	HCC00
	120	KW150	CRE6-CL-12012R	HCC00
16	16	KW65	CRE6-CL-1616R	HCC00
	25	KW65	CRE6-CL-2516R	HCC00
	35	KW65	CRE6-CL-3516R	HCC00
	50	KW115	CRE6-CL-5016R	HCC00
	70	KW115	CRE6-CL-7016R	HCC00
	95	KW150	CRE6-CL-9516R	HCC00
	120	KW150	CRE6-CL-12016R	HCC00
20	16	KW65	CRE6-CL-1620R	HCC00
	25	KW65	CRE6-CL-2520R	HCC00
	35	KW65	CRE6-CL-3520R	HCC00
	50	KW115	CRE6-CL-5020R	HCC00
	70	KW115	CRE6-CL-7020R	HCC00
	95	KW150	CRE6-CL-9520R	HCC00
	120	KW150	CRE6-CL-12020R	HCC00
25	16	KW65	CRE6-CL-1625R	HCC00
	25	KW65	CRE6-CL-2525R	HCC00
	35	KW65	CRE6-CL-3525R	HCC00
	50	KW115	CRE6-CL-5025R	HCC00
	70	KW115	CRE6-CL-7025R	HCC00
	95	KW150	CRE6-CL-9525R	HCC00
	120	KW150	CRE6-CL-12025R	HCC00
30	16	KW65	CRE6-CL-1630R	HCC00
	25	KW65	CRE6-CL-2530R	HCC00
	35	KW65	CRE6-CL-3530R	HCC00
	50	KW115	CRE6-CL-5030R	HCC00
	70	KW115	CRE6-CL-7030R	HCC00
	95	KW150	CRE6-CL-9530R	HCC00
	120	KW150	CRE6-CL-12030R	HCC00

Note: Special requirement can be requested.

CRE17

Cable to Rebar Fully Wrapped Connection

Horizontal parallel thru cable to horizontal rebar



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- Kumwell CRE Mold provides ceramic fiber to prevent leakage

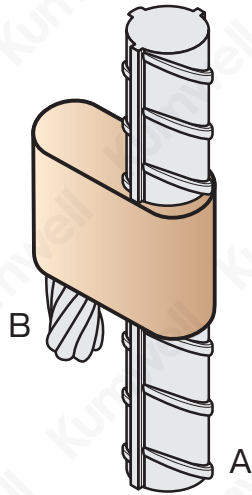
Steel Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	B(mm ²)			
10	16	KW115	CRE17-C-1610R	HCC00
	25	KW115	CRE17-C-2510R	HCC00
	35	KW115	CRE17-C-3510R	HCC00
	50	KW150	CRE17-C-5010R	HCC00
	70	KW150	CRE17-C-7010R	HCC00
	95	KW200	CRE17-CH-9510R	HCC00
12	16	KW115	CRE17-C-1612R	HCC00
	25	KW115	CRE17-C-2512R	HCC00
	35	KW115	CRE17-C-3512R	HCC00
	50	KW150	CRE17-C-5012R	HCC00
	70	KW150	CRE17-C-7012R	HCC00
	95	KW200	CRE17-CH-9512R	HCC00
16	16	KW115	CRE17-C-1616R	HCC00
	25	KW115	CRE17-C-2516R	HCC00
	35	KW115	CRE17-C-3516R	HCC00
	50	KW150	CRE17-C-5016R	HCC00
	70	KW200	CRE17-CH-7016R	HCC00
	95	KW200	CRE17-CH-9516R	HCC00
20	16	KW150	CRE17-C-1620R	HCC00
	25	KW150	CRE17-C-2520R	HCC00
	35	KW150	CRE17-C-3520R	HCC00
	50	KW200	CRE17-CH-5020R	HCC00
	70	KW200	CRE17-CH-7020R	HCC00
	95	KW250	CRE17-CH-9520R	HCC00
25	16	KW150	CRE17-C-1625R	HCC00
	25	KW150	CRE17-C-2525R	HCC00
	35	KW200	CRE17-CH-3525R	HCC00
	50	KW200	CRE17-CH-5025R	HCC00
	70	KW250	CRE17-CH-7025R	HCC00
	95	KW250	CRE17-CH-9525R	HCC00
30	16	KW200	CRE17-CH-1630R	HCC00
	25	KW200	CRE17-CH-2530R	HCC00
	35	KW200	CRE17-CH-3530R	HCC00
	50	KW250	CRE17-CH-5030R	HCC00
	70	KW250	CRE17-CH-7030R	HCC00
	95	KW250	CRE17-CH-9530R	HCC00
	120	KW250	CRE17-CH-12030R	HCC00

Note: Special requirement can be requested.

CRE18

Cable to Rebar Fully Wrapped Connection

Vertical parallel down cable to vertical rebar



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- Kumwell CRE Mold provides ceramic fiber to prevent leakage

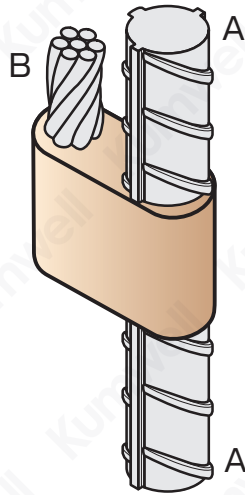
Steel Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	B(mm ²)			
10	16	KW115	CRE18-CL-1610R	HCC00
	25	KW115	CRE18-CL-2510R	HCC00
	35	KW115	CRE18-CL-3510R	HCC00
	50	KW150	CRE18-CL-5010R	HCC00
	70	KW150	CRE18-CL-7010R	HCC00
	95	KW200	CRE18-CL-9510R	HCC00
	120	KW200	CRE18-CL-12010R	HCC00
12	16	KW115	CRE18-CL-1612R	HCC00
	25	KW115	CRE18-CL-2512R	HCC00
	35	KW115	CRE18-CL-3512R	HCC00
	50	KW150	CRE18-CL-5012R	HCC00
	70	KW150	CRE18-CL-7012R	HCC00
	95	KW200	CRE18-CL-9512R	HCC00
	120	KW200	CRE18-CL-12012R	HCC00
16	16	KW115	CRE18-CL-1616R	HCC00
	25	KW115	CRE18-CL-2516R	HCC00
	35	KW115	CRE18-CL-3516R	HCC00
	50	KW150	CRE18-CL-5016R	HCC00
	70	KW200	CRE18-CL-7016R	HCC00
	95	KW200	CRE18-CL-9516R	HCC00
	120	KW200	CRE18-CL-12016R	HCC00
20	16	KW150	CRE18-CL-1620R	HCC00
	25	KW150	CRE18-CL-2520R	HCC00
	35	KW150	CRE18-CL-3520R	HCC00
	50	KW200	CRE18-CL-5020R	HCC00
	70	KW200	CRE18-CL-7020R	HCC00
	95	KW250	CRE18-CL-9520R	HCC00
	120	KW250	CRE18-CL-12020R	HCC00
25	16	KW150	CRE18-CL-1625R	HCC00
	25	KW150	CRE18-CL-2525R	HCC00
	35	KW200	CRE18-CL-3525R	HCC00
	50	KW200	CRE18-CL-5025R	HCC00
	70	KW250	CRE18-CL-7025R	HCC00
	95	KW250	CRE18-CL-9525R	HCC00
	120	KW250	CRE18-CL-12025R	HCC00
30	16	KW200	CRE18-CL-1630R	HCC00
	25	KW200	CRE18-CL-2530R	HCC00
	35	KW200	CRE18-CL-3530R	HCC00
	50	KW250	CRE18-CL-5030R	HCC00
	70	KW250	CRE18-CL-7030R	HCC00
	95	KW250	CRE18-CL-9530R	HCC00
	120	KW250	CRE18-CL-12030R	HCC00

Note: Special requirement can be requested.

CRE19

Cable to Rebar Fully Wrapped Connection

Vertical parallel up cable to vertical rebar



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- Kumwell CRE Mold provides ceramic fiber to prevent leakage

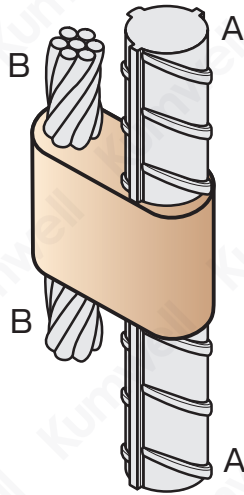
Steel Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	B(mm ²)			
10	16	KW115	CRE19-CL-1610R	HCC00
	25	KW115	CRE19-CL-2510R	HCC00
	35	KW115	CRE19-CL-3510R	HCC00
	50	KW150	CRE19-CL-5010R	HCC00
	70	KW150	CRE19-CL-7010R	HCC00
	95	KW200	CRE19-CL-9510R	HCC00
12	16	KW115	CRE19-CL-1612R	HCC00
	25	KW115	CRE19-CL-2512R	HCC00
	35	KW115	CRE19-CL-3512R	HCC00
	50	KW150	CRE19-CL-5012R	HCC00
	70	KW150	CRE19-CL-7012R	HCC00
	95	KW200	CRE19-CL-9512R	HCC00
16	16	KW115	CRE19-CL-1616R	HCC00
	25	KW115	CRE19-CL-2516R	HCC00
	35	KW115	CRE19-CL-3516R	HCC00
	50	KW150	CRE19-CL-5016R	HCC00
	70	KW200	CRE19-CL-7016R	HCC00
	95	KW200	CRE19-CL-9516R	HCC00
20	16	KW150	CRE19-CL-1620R	HCC00
	25	KW150	CRE19-CL-2520R	HCC00
	35	KW150	CRE19-CL-3520R	HCC00
	50	KW200	CRE19-CL-5020R	HCC00
	70	KW200	CRE19-CL-7020R	HCC00
	95	KW250	CRE19-CL-9520R	HCC00
25	16	KW150	CRE19-CL-1625R	HCC00
	25	KW150	CRE19-CL-2525R	HCC00
	35	KW200	CRE19-CL-3525R	HCC00
	50	KW200	CRE19-CL-5025R	HCC00
	70	KW250	CRE19-CL-7025R	HCC00
	95	KW250	CRE19-CL-9525R	HCC00
30	16	KW200	CRE19-CL-1630R	HCC00
	25	KW200	CRE19-CL-2530R	HCC00
	35	KW200	CRE19-CL-3530R	HCC00
	50	KW250	CRE19-CL-5030R	HCC00
	70	KW250	CRE19-CL-7030R	HCC00
	95	KW250	CRE19-CL-9530R	HCC00
	120	KW250	CRE19-CL-12030R	HCC00

Note: Special requirement can be requested.

CRE20

Cable to Rebar Fully Wrapped Connection

Vertical parallel thru cable to vertical rebar



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- Kumwell CRE Mold provides ceramic fiber to prevent leakage

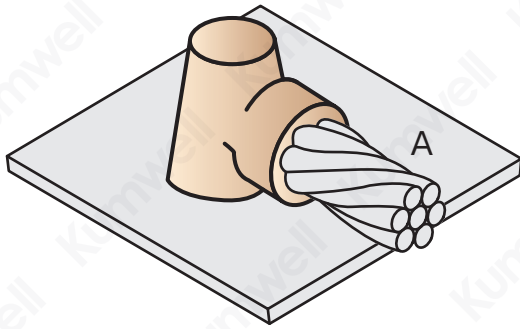
Steel Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	B(mm ²)			
10	16	KW115	CRE20-CL-1610R	HCC00
	25	KW115	CRE20-CL-2510R	HCC00
	35	KW115	CRE20-CL-3510R	HCC00
	50	KW150	CRE20-CL-5010R	HCC00
	70	KW150	CRE20-CL-7010R	HCC00
	95	KW200	CRE20-CL-9510R	HCC00
12	16	KW115	CRE20-CL-1612R	HCC00
	25	KW115	CRE20-CL-2512R	HCC00
	35	KW115	CRE20-CL-3512R	HCC00
	50	KW150	CRE20-CL-5012R	HCC00
	70	KW150	CRE20-CL-7012R	HCC00
	95	KW200	CRE20-CL-9512R	HCC00
16	16	KW115	CRE20-CL-1616R	HCC00
	25	KW115	CRE20-CL-2516R	HCC00
	35	KW115	CRE20-CL-3516R	HCC00
	50	KW150	CRE20-CL-5016R	HCC00
	70	KW200	CRE20-CL-7016R	HCC00
	95	KW200	CRE20-CL-9516R	HCC00
20	16	KW150	CRE20-CL-1620R	HCC00
	25	KW150	CRE20-CL-2520R	HCC00
	35	KW150	CRE20-CL-3520R	HCC00
	50	KW200	CRE20-CL-5020R	HCC00
	70	KW200	CRE20-CL-7020R	HCC00
	95	KW250	CRE20-CL-9520R	HCC00
25	16	KW150	CRE20-CL-1625R	HCC00
	25	KW150	CRE20-CL-2525R	HCC00
	35	KW200	CRE20-CL-3525R	HCC00
	50	KW200	CRE20-CL-5025R	HCC00
	70	KW250	CRE20-CL-7025R	HCC00
	95	KW250	CRE20-CL-9525R	HCC00
30	16	KW250	CRE20-CL-1630R	HCC00
	25	KW250	CRE20-CL-2530R	HCC00
	35	KW250	CRE20-CL-3530R	HCC00
	50	KW250	CRE20-CL-5030R	HCC00
	70	KW250	CRE20-CL-7030R	HCC00
	95	KW250	CRE20-CL-9530R	HCC00
	120	KW250	CRE20-CL-12030R	HCC00

Note: Special requirement can be requested.

CS1

Cable to Steel

Horizontal cable to horizontal steel surface (off surface)



Conductor Size A(mm ²)	Metal Powder	Graphite Mold Type	Handle Clamp Type
10	KW45	CS1-A-10	HCA00
16	KW45	CS1-A-16	HCA00
25	KW45	CS1-A-25	HCA00
35	KW45	CS1-A-35	HCA00
∅ 8 mm	KW90	CS1-C-8SC	HCC00
50	KW90	CS1-C-50	HCC00
∅ 9.5 mm	KW90	CS1-C-9.5SC	HCC00
∅ 10 mm	KW90	CS1-C-10SC	HCC00
70	KW90	CS1-C-70	HCC00
95	KW115	CS1-C-95	HCC00
120	KW115	CS1-C-120	HCC00
150	KW150	CS1-C-150	HCC00
185	KW200	CS1-C-185	HCC00
240	KW200	CS1-C-240	HCC00
300	KW250	CS1-C-300	HCC00

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

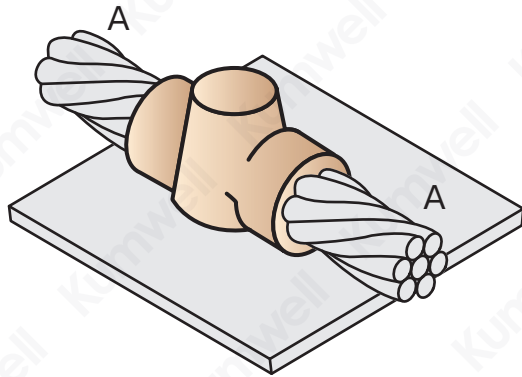
- SC means Solid Copper
- For perfect welding, between conductor and flat steel, making connection need to remove moisture, oxide and galvanized metal
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required
- "HCA00" Type A-Handle clamp is built-in graphite mould
- "Off surface" means that the cable is higher than steel surface

Note: Special requirement can be requested.

CS2

Cable to Steel

Horizontal thru cable to horizontal steel surface (off surface)



Conductor Size A(mm ²)	Metal Powder	Graphite Mold Type	Handle Clamp Type
10	KW45	CS2-A-10	HCA00
16	KW45	CS2-A-16	HCA00
25	KW45	CS2-A-25	HCA00
35	KW45	CS2-A-35	HCA00
∅ 8 mm	KW90	CS2-C-8SC	HCC00
50	KW90	CS2-C-50	HCC00
∅ 10 mm	KW115	CS2-C-10SC	HCC00
70	KW115	CS2-C-70	HCC00
95	KW115	CS2-C-95	HCC00
120	KW150	CS2-C-120	HCC00
150	KW200	CS2-C-150	HCC00
185	KW250	CS2-C-185	HCC00
240	KW150x2	CS2-D-240	HCDOO
300	KW200x2	CS2-D-300	HCDOO

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

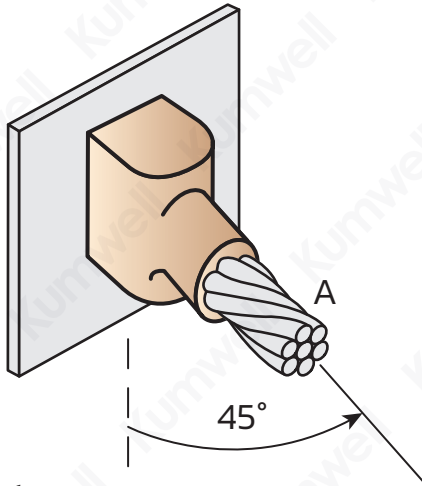
- SC means Solid Copper
- For perfect welding, between conductor and flat steel, making connection need to remove moisture, oxide and galvanized metal
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required
- "HCA00" Type A-Handle clamp is built-in graphite mould
- "Off surface" means that the cable is higher than steel surface

Note: Special requirement can be requested.

CS3

Cable to Steel

Angular cable drop to vertical steel surface



Conductor Size A(mm ²)	Metal Powder	Graphite Mold Type	Handle Clamp Type
10	KW45	CS3-C-10	HCCOO-Y
16	KW45	CS3-C-16	HCCOO-Y
25	KW45	CS3-C-25	HCCOO-Y
35	KW45	CS3-C-35	HCCOO-Y
∅ 8 mm	KW90	CS3-C-8SC	HCCOO-Y
50	KW90	CS3-C-50	HCCOO-Y
∅ 10 mm	KW115	CS3-C-10SC	HCCOO-Y
70	KW90	CS3-C-70	HCCOO-Y
95	KW115	CS3-C-95	HCCOO-Y
120	KW115	CS3-C-120	HCCOO-Y
150	KW150	CS3-C-150	HCCOO-Y
185	KW200	CS3-C-185	HCCOO-Y
240	KW200	CS3-C-240	HCCOO-Y
300	KW250	CS3-C-300	HCCOO-Y

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

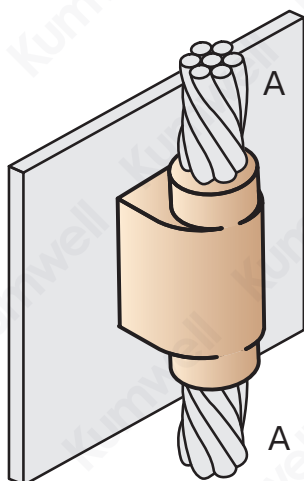
- SC means Solid Copper
- For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required

Note: Special requirement can be requested.

CS4

Cable to Steel

Vertical thru cable to vertical steel surface (off surface)



Conductor Size A(mm ²)	Metal Powder	Graphite Mold Type	Handle Clamp Type
25	KW90	CS4-C-25	HCCOO-Y
35	KW115	CS4-CR-35	HCCOO-Y
50	KW200	CS4-CR-50	HCCOO-Y
70	KW200	CS4-CR-70	HCCOO-Y
95	KW250	CS4-CR-95	HCCOO-Y
120	KW250	CS4-CR-120	HCCOO-Y
150	KW250	CS4-CR-150	HCCOO-Y
185	KW150x2	CS4-DR-185	HCD00-Y
240	KW200x2	CS4-DR-240	HCD00-Y
300	KW250x2	CS4-DR-300	HCD00-Y

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

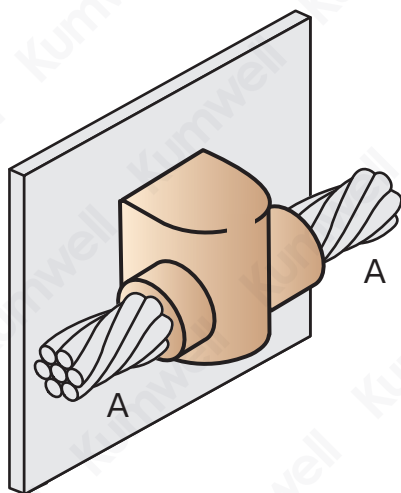
- For perfect welding, between conductor and flat steel, making connection need to remove moisture, oxide and galvanized metal
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required
- "HCA00" Type A-Handle clamp is built-in graphite mould
- "Off surface" means that the cable is higher than steel surface

Note: Special requirement can be requested.

CS6

Cable to Steel

Horizontal thru cable to vertical steel surface (off surface)



Conductor Size A(mm ²)	Metal Powder	Graphite Mold Type	Handle Clamp Type
25	KW65	CS6-C-25	HCCOO-W
35	KW65	CS6-C-35	HCCOO-W
50	KW115	CS6-C-50	HCCOO-W
70	KW115	CS6-C-70	HCCOO-W
95	KW150	CS6-C-95	HCCOO-W
120	KW150	CS6-C-120	HCCOO-W
150	KW250	CS6-C-150	HCCOO-W
185	KW150x2	CS6-DR-185	HCD00-W
240	KW200x2	CS6-DR-240	HCD00-W
300	KW250x2	CS6-DR-300	HCD00-W

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

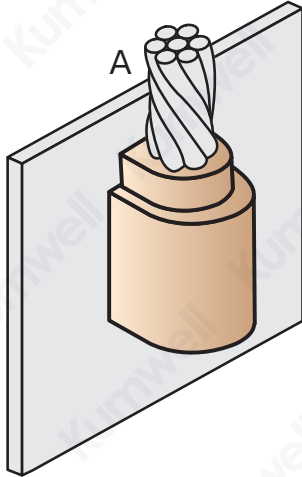
- SC means Solid Copper
- For perfect welding, between conductor and flat steel, making connection need to remove moisture, oxide and galvanized metal
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required
- "Off surface" means that the cable is higher than steel surface

Note: Special requirement can be requested.

CS7

Cable to Steel

Overhead vertical tap cable to vertical steel surface (on surface)



Conductor Size A(mm ²)	Metal Powder	Graphite Mold Type	Handle Clamp Type
10	KW65	CS7-C-10	HCCOO-Y
16	KW65	CS7-C-16	HCCOO-Y
25	KW65	CS7-C-25	HCCOO-Y
35	KW65	CS7-C-35	HCCOO-Y
∅ 8 mm	KW90	CS7-C-8SC	HCCOO-Y
50	KW90	CS7-C-50	HCCOO-Y
∅10 mm	KW150	CS7-CR-10SC	HCCOO-Y
70	KW150	CS7-CR-70	HCCOO-Y
95	KW150	CS7-CR-95	HCCOO-Y
120	KW200	CS7-CR-120	HCCOO-Y
150	KW250	CS7-CR-150	HCCOO-Y
185	KW150x2	CS7-DR-185	HCCOO-Y
240	KW200x2	CS7-DR-240	HCCOO-Y
300	KW250x2	CS7-DR-300	HCCOO-Y

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

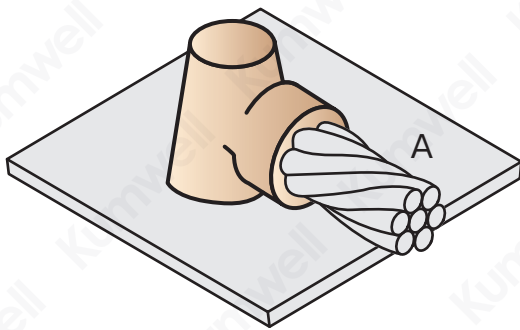
- SC means Solid Copper
- For perfect welding, between conductor and flat steel, making connection need to remove moisture, oxide and galvanized metal
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required
- "On surface" means that the cable is closed to steel surface

Note: Special requirement can be requested.

CS8

Cable to Steel

Horizontal cable to horizontal steel surface (on surface)



Conductor Size A(mm ²)	Metal Powder	Graphite Mold Type	Handle Clamp Type
10	KW45	CS8-A-10	HCA00
16	KW45	CS8-A-16	HCA00
25	KW45	CS8-A-25	HCA00
35	KW45	CS8-A-35	HCA00
∅ 8 mm	KW45	CS8-A-8SC	HCA00
50	KW65	CS8-A-50	HCA00
∅10 mm	KW65	CS8-A-10SC	HCA00
70	KW90	CS8-C-70	HCC00
95	KW115	CS8-C-95	HCC00
120	KW115	CS8-C-120	HCC00
150	KW150	CS8-C-150	HCC00
185	KW200	CS8-C-185	HCC00
240	KW200	CS8-C-240	HCC00
300	KW250	CS8-C-300	HCC00

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

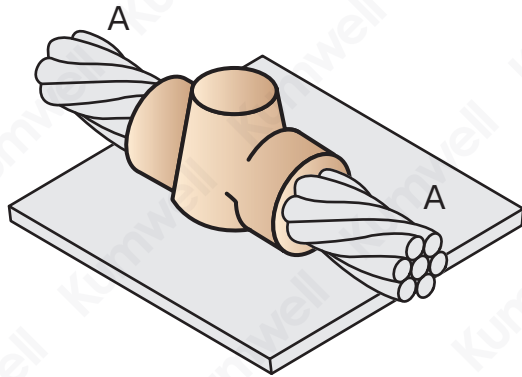
- SC means Solid Copper
- For perfect welding, between conductor and flat steel, making connection need to remove moisture, oxide and galvanized metal
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required
- "HCA00" Type A-Handle clamp is built-in graphite mould
- "On surface" means that the cable is closed to steel surface

Note: Special requirement can be requested.

CS9

Cable to Steel

Horizontal thru cable to horizontal steel surface (on surface)



Conductor Size A(mm ²)	Metal Powder	Graphite Mold Type	Handle Clamp Type
10	KW45	CS9-A-10	HCA00
16	KW45	CS9-A-16	HCA00
25	KW45	CS9-A-25	HCA00
35	KW45	CS9-A-35	HCA00
∅ 8 mm	KW90	CS9-C-8SC	HCC00
50	KW90	CS9-C-50	HCC00
∅ 10 mm	KW115	CS9-C-10SC	HCC00
70	KW115	CS9-C-70	HCC00
95	KW115	CS9-C-95	HCC00
120	KW150	CS9-C-120	HCC00
150	KW200	CS9-C-150	HCC00
185	KW250	CS9-C-185	HCC00
240	KW150x2	CS9-D-240	HCDOO
300	KW200x2	CS9-D-300	HCDOO

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

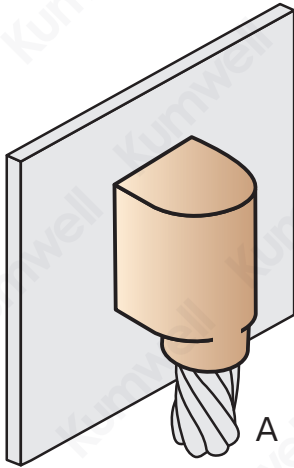
- SC means Solid Copper
- For perfect welding, between conductor and flat steel, making connection need to remove moisture, oxide and galvanized metal
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required
- "HCA00" Type A-Handle clamp is built-in graphite mould
- "On surface" means that the cable is closed to steel surface

Note: Special requirement can be requested.

CS23

Cable to Steel

Vertical cable down to vertical steel surface (off surface)



Conductor Size A(mm ²)	Metal Powder	Graphite Mold Type	Handle Clamp Type
25	KW65	CS23-C-25	HCCOO-Y
35	KW65	CS23-C-35	HCCOO-Y
50	KW115	CS23-C-50	HCCOO-Y
70	KW115	CS23-C-70	HCCOO-Y
95	KW150	CS23-C-95	HCCOO-Y
120	KW200	CS23-C-120	HCCOO-Y
150	KW200	CS23-C-150	HCCOO-Y
185	KW250	CS23-C-185	HCCOO-Y
240	KW150x2	CS23-CR-240	HCCOO-Y
300	KW200x2	CS23-DR-300	HCCOO-Y

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

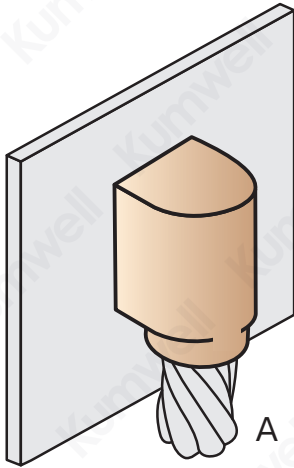
- For perfect welding, between conductor and flat steel, making connection need to remove moisture, oxide and galvanized metal
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required
- "Off surface" means that the cable is higher than steel surface

Note: Special requirement can be requested.

CS25

Cable to Steel

Vertical cable drop to vertical steel surface (on surface)



Conductor Size A(mm ²)	Metal Powder	Graphite Mold Type	Handle Clamp Type
10	KW45	CS25-C-10	HCCOO-Y
16	KW45	CS25-C-16	HCCOO-Y
25	KW45	CS25-C-25	HCCOO-Y
35	KW45	CS25-C-35	HCCOO-Y
50	KW65	CS25-C-50	HCCOO-Y
70	KW90	CS25-C-10	HCCOO-Y
95	KW115	CS25-C-10	HCCOO-Y
120	KW115	CS25-C-10	HCCOO-Y
150	KW150	CS25-C-10	HCCOO-Y
185	KW200	CS25-CR-185	HCCOO-Y
240	KW200	CS25-CR-240	HCCOO-Y
300	KW250	CS25-CR-300	HCCOO-Y

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

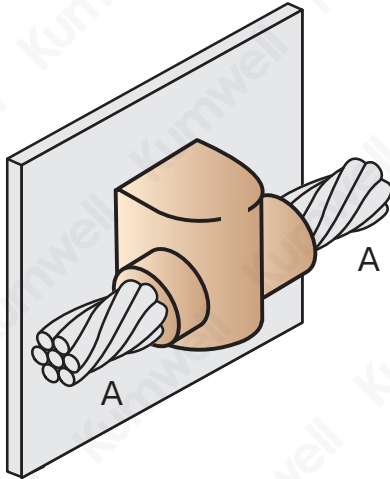
- For perfect welding, between conductor and flat steel, making connection need to remove moisture, oxide and galvanized metal
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required
- "On surface" means that the cable is closed to steel surface

Note: Special requirement can be requested.

CS27

Cable to Steel

Horizontal thru cable to vertical steel surface (on surface)



Conductor Size A(mm ²)	Metal Powder	Graphite Mold Type	Handle Clamp Type
10	KW45	CS27-C-10	HCCOO-Y
16	KW45	CS27-C-16	HCCOO-Y
25	KW45	CS27-C-25	HCCOO-Y
35	KW45	CS27-C-35	HCCOO-Y
∅ 8 mm	KW65	CS27-C-8SC	HCCOO-Y
50	KW115	CS27-C-50	HCCOO-Y
∅10 mm	KW115	CS27-C-10SC	HCCOO-Y
70	KW115	CS27-C-70	HCCOO-Y
95	KW150	CS27-C-95	HCCOO-Y
120	KW150	CS27-C-120	HCCOO-Y
150	KW200	CS27-CR-150	HCCOO-Y
185	KW250	CS27-CR-185	HCCOO-Y
240	KW150x2	CS27-D-240	HCCOO-Y
300	KW200x2	CS27-D-300	HCCOO-Y

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

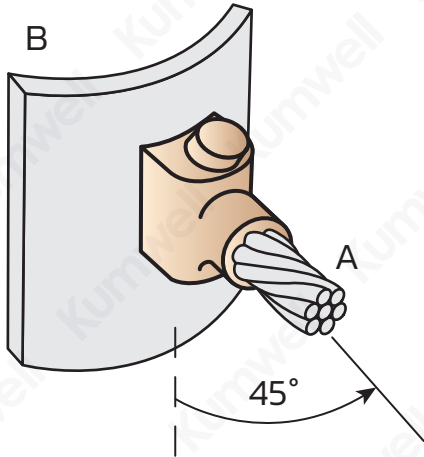
- For perfect welding, between conductor and flat steel, making connection need to remove moisture, oxide and galvanized metal
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required
- "On surface" means that the cable is closed to steel surface

Note: Special requirement can be requested.

CP1

Cable to Pipe

Angular cable drop to vertical pipe



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- Pipe diameter must be inform
- SC means Solid Copper
- For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required

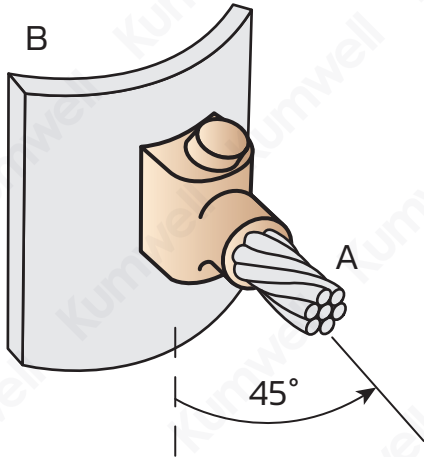
Conductor Size A(mm ²)	Conductor Size B(Inch)	Metal Powder	Graphite Mold Type	Handle Clamp Type
10	2	KW45	CPI-C-102D	HCC00-X
	2.5	KW45	CPI-C-102.5D	HCC00-X
	3	KW45	CPI-C-103D	HCC00-X
	4	KW45	CPI-C-104D	HCC00-X
	5	KW45	CPI-C-105D	HCC00-X
	6	KW45	CPI-C-106D	HCC00-X
16	2	KW45	CPI-C-162D	HCC00-X
	2.5	KW45	CPI-C-162.5D	HCC00-X
	3	KW45	CPI-C-163D	HCC00-X
	4	KW45	CPI-C-164D	HCC00-X
	5	KW45	CPI-C-165D	HCC00-X
	6	KW45	CPI-C-166D	HCC00-X
25	2	KW45	CPI-C-252D	HCC00-X
	2.5	KW45	CPI-C-252.5D	HCC00-X
	3	KW45	CPI-C-253D	HCC00-X
	4	KW45	CPI-C-254D	HCC00-X
	5	KW45	CPI-C-255D	HCC00-X
	6	KW45	CPI-C-256D	HCC00-X
35	2	KW45	CPI-C-352D	HCC00-X
	2.5	KW45	CPI-C-352.5D	HCC00-X
	3	KW45	CPI-C-353D	HCC00-X
	4	KW45	CPI-C-354D	HCC00-X
	5	KW45	CPI-C-355D	HCC00-X
	6	KW45	CPI-C-356D	HCC00-X
Ø 8 mm	2	KW90	CPI-C-8SC2D	HCC00-X
	2.5	KW90	CPI-C-8SC2.5D	HCC00-X
	3	KW90	CPI-C-8SC3D	HCC00-X
	4	KW90	CPI-C-8SC4D	HCC00-X
	5	KW90	CPI-C-8SC5D	HCC00-X
	6	KW90	CPI-C-8SC6D	HCC00-X
50	2	KW90	CPI-C-502D	HCC00-X
	2.5	KW90	CPI-C-502.5D	HCC00-X
	3	KW90	CPI-C-503D	HCC00-X
	4	KW90	CPI-C-504D	HCC00-X
	5	KW90	CPI-C-505D	HCC00-X
	6	KW90	CPI-C-506D	HCC00-X
Ø10 mm	2	KW115	CPI-C-10SC2D	HCC00-X
	2.5	KW115	CPI-C-10SC2.5D	HCC00-X
	3	KW115	CPI-C-10SC3D	HCC00-X
	4	KW115	CPI-C-10SC4D	HCC00-X
	5	KW115	CPI-C-10SC5D	HCC00-X
	6	KW115	CPI-C-10SC6D	HCC00-X
70	2	KW90	CPI-C-702D	HCC00-X
	2.5	KW90	CPI-C-702.5D	HCC00-X
	3	KW90	CPI-C-703D	HCC00-X
	4	KW90	CPI-C-704D	HCC00-X
	5	KW90	CPI-C-705D	HCC00-X
	6	KW90	CPI-C-706D	HCC00-X

Note: Special requirement can be requested.

CP1

Cable to Pipe

Angular cable drop to vertical pipe



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- Pipe diameter must be inform
- SC means Solid Copper
- For perfect welding, clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required

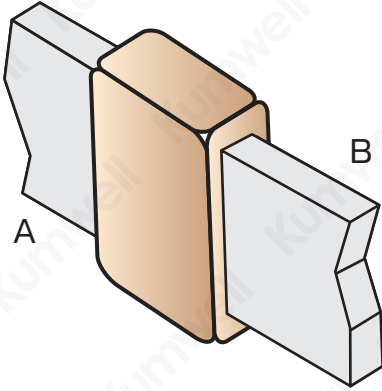
Conductor Size A(mm ²)	Conductor Size B(Inch)	Metal Powder	Graphite Mold Type	Handle Clamp Type
95	2	KW115	CPI-C-952D	HCC00-X
	2.5	KW115	CPI-C-952.5D	HCC00-X
	3	KW115	CPI-C-953D	HCC00-X
	4	KW115	CPI-C-954D	HCC00-X
	5	KW115	CPI-C-955D	HCC00-X
	6	KW115	CPI-C-956D	HCC00-X
120	2	KW115	CPI-C-1202D	HCC00-X
	2.5	KW115	CPI-C-1202.5D	HCC00-X
	3	KW115	CPI-C-1203D	HCC00-X
	4	KW115	CPI-C-1204D	HCC00-X
	5	KW115	CPI-C-1205D	HCC00-X
	6	KW115	CPI-C-1206D	HCC00-X
150	2	KW150	CPI-C-1502D	HCC00-X
	2.5	KW150	CPI-C-1502.5D	HCC00-X
	3	KW150	CPI-C-1503D	HCC00-X
	4	KW150	CPI-C-1504D	HCC00-X
	5	KW150	CPI-C-1505D	HCC00-X
	6	KW150	CPI-C-1506D	HCC00-X
185	2	KW200	CPI-C-1852D	HCC00-X
	2.5	KW200	CPI-C-1852.5D	HCC00-X
	3	KW200	CPI-C-1853D	HCC00-X
	4	KW200	CPI-C-1854D	HCC00-X
	5	KW200	CPI-C-1855D	HCC00-X
	6	KW200	CPI-C-1856D	HCC00-X
240	2	KW200	CPI-C-2402D	HCC00-X
	2.5	KW200	CPI-C-2402.5D	HCC00-X
	3	KW200	CPI-C-2403D	HCC00-X
	4	KW200	CPI-C-2404D	HCC00-X
	5	KW200	CPI-C-2405D	HCC00-X
	6	KW200	CPI-C-2406D	HCC00-X
300	2	KW250	CPI-C-3002D	HCC00-X
	2.5	KW250	CPI-C-3002.5D	HCC00-X
	3	KW250	CPI-C-3003D	HCC00-X
	4	KW250	CPI-C-3004D	HCC00-X
	5	KW250	CPI-C-3005D	HCC00-X
	6	KW250	CPI-C-3006D	HCC00-X

Note: Special requirement can be requested.

BB1

Bus Bar to Bus Bar

Horizontal bus bar end to end (vertical flat side)



Conductor Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.xmm.)	B(mm.xmm.)			
20x2	20x2	KW45	BB1-C-202	HCC00
20x3	20x3	KW45	BB1-C-203	HCC00
20x4	20x4	KW65	BB1-C-204	HCC00
20x5	20x5	KW90	BB1-C-205	HCC00
25x2	25x2	KW65	BB1-C-252	HCC00
25x3	25x3	KW65	BB1-C-253	HCC00
25x4	25x4	KW90	BB1-C-254	HCC00
25x5	25x5	KW90	BB1-C-255	HCC00
25x6	25x6	KW115	BB1-C-256	HCC00
25x8	25x8	KW150	BB1-C-258	HCC00
25x12	25x12	KW200	BB1-C-2512	HCC00
30x2	30x2	KW65	BB1-C-302	HCC00
30x3	30x3	KW65	BB1-C-303	HCC00
30x4	30x4	KW115	BB1-C-304	HCC00
30x5	30x5	KW115	BB1-C-305	HCC00
30x6	30x6	KW150	BB1-C-306	HCC00
31x3	31x3	KW65	BB1-C-313	HCC00
31x6	31x6	KW115	BB1-C-316	HCC00
38x3	38x3	KW150	BB1-C-383	HCC00
38x5	38x5	KW150	BB1-C-385	HCC00
38x6	38x6	KW200	BB1-C-386	HCC00
38x8	38x8	KW200	BB1-C-388	HCC00
40x3	40x3	KW115	BB1-C-403	HCC00
40x4	40x4	KW150	BB1-C-404	HCC00
40x5	40x5	KW150	BB1-C-405	HCC00
40x6	40x6	KW200	BB1-C-406	HCC00
50x3	50x3	KW90	BB1-C-503	HCC00
50x4	50x4	KW115	BB1-C-504	HCC00
50x5	50x5	KW200	BB1-C-505	HCC00
50x6	50x6	KW250	BB1-C-506	HCC00
50x8	50x8	KW150x2	BB1-D-508	HCDOO
50x10	50x10	KW200x2	BB1-D-5010	HCDOO
60x6	60x6	KW200x2	BB1-D-606	HCDOO
60x8	60x8	KW200x2	BB1-D-608	HCDOO
60x10	60x10	KW250x2	BB1-D-6010	HCDOO
80x6	80x6	KW200x2	BB1-D-806	HCDOO
80x8	80x8	KW250x2	BB1-D-808	HCDOO
80x10	80x10	KW200x3	BB1-D-8010	HCDOO

Equipment

	
Mould	Metal powder
	
Handle clamp	Steel disk

Necessary Tools

		
Mould brush	Bus bar brush	File
		
Flint igniter	Scraper	Tool box

Recommended Tools

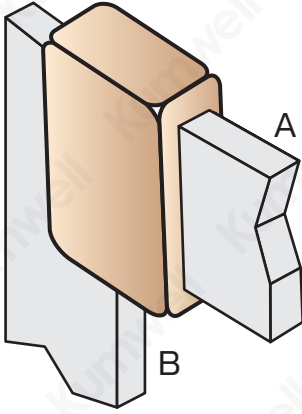
- Butane torch
- Butane gas
- Gloves

Note: Special requirement can be requested.

BB2

Bus Bar to Bus Bar

Horizontal bus bar tap to vertical bus bar down



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

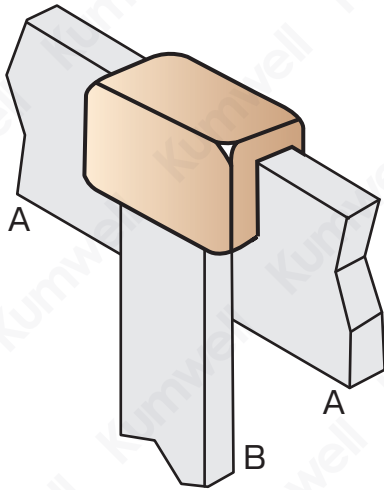
Conductor Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.xmm.)	B(mm.xmm.)			
20x2	20x2	KW45	BB2-C-202	HCC00
20x3	20x3	KW45	BB2-C-203	HCC00
20x4	20x4	KW65	BB2-C-204	HCC00
20x5	20x5	KW90	BB2-C-205	HCC00
25x2	25x2	KW45	BB2-C-252	HCC00
25x3	25x3	KW65	BB2-C-253	HCC00
25x4	25x4	KW90	BB2-C-254	HCC00
25x5	25x5	KW90	BB2-C-255	HCC00
25x6	25x6	KW115	BB2-C-256	HCC00
25x8	25x8	KW150	BB2-C-258	HCC00
25x12	25x12	KW250	BB2-C-2512	HCC00
30x2	30x2	KW65	BB2-C-302	HCC00
30x3	30x3	KW65	BB2-C-303	HCC00
30x4	30x4	KW90	BB2-C-304	HCC00
30x5	30x5	KW115	BB2-C-305	HCC00
30x6	30x6	KW150	BB2-C-306	HCC00
31x3	31x3	KW65	BB2-C-313	HCC00
31x6	31x6	KW150	BB2-C-316	HCC00
38x3	38x3	KW115	BB2-C-383	HCC00
38x5	38x5	KW115	BB2-C-385	HCC00
38x6	38x6	KW200	BB2-C-386	HCC00
38x8	38x8	KW250	BB2-C-388	HCC00
40x3	40x3	KW90	BB2-C-403	HCC00
40x4	40x4	KW115	BB2-C-404	HCC00
40x5	40x5	KW150	BB2-C-405	HCC00
40x6	40x6	KW200	BB2-C-406	HCC00
50x3	50x3	KW90	BB2-C-503	HCC00
50x4	50x4	KW115	BB2-C-504	HCC00
50x5	50x5	KW200	BB2-C-505	HCC00
50x6	50x6	KW250	BB2-C-506	HCC00
50x8	50x8	KW150x2	BB2-D-508	HCDOO
50x10	50x10	KW200x2	BB2-D-5010	HCDOO
60x6	60x6	KW150x2	BB2-D-606	HCDOO
60x8	60x8	KW200x2	BB2-D-608	HCDOO
60x10	60x10	KW250x2	BB2-D-6010	HCDOO
80x6	80x6	KW150x2	BB2-D-806	HCDOO
80x8	80x8	KW200x2	BB2-D-808	HCDOO
80x10	80x10	KW250x2	BB2-D-8010	HCDOO

Note: Special requirement can be requested.

BB3

Bus Bar to Bus Bar

Vertical bus bar drop tap to horizontal bus run



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

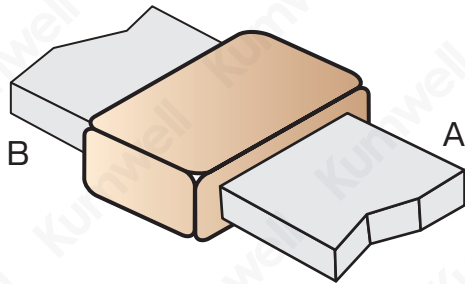
Conductor Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.xmm.)	B(mm.xmm.)			
20x2	20x2	KW45	BB3-C-202202	HCC00
20x3	20x3	KW65	BB3-C-203203	HCC00
20x4	20x4	KW65	BB3-C-204204	HCC00
20x5	20x5	KW65	BB3-C-205205	HCC00
25x2	25x2	KW65	BB3-C-252252	HCC00
25x3	25x3	KW65	BB3-C-253253	HCC00
25x4	25x4	KW90	BB3-C-254254	HCC00
25x5	25x5	KW115	BB3-C-255255	HCC00
25x6	25x6	KW150	BB3-C-256256	HCC00
25x8	25x8	KW250	BB3-C-258258	HCC00
25x12	25x12	KW150x2	BB3-C-25122512	HCC00
30x2	30x2	KW65	BB3-C-302302	HCC00
30x3	30x3	KW90	BB3-C-303303	HCC00
30x4	30x4	KW115	BB3-C-304304	HCC00
30x5	30x5	KW150	BB3-C-305305	HCC00
30x6	30x6	KW200	BB3-C-306306	HCC00
31x3	31x3	KW115	BB3-C-313313	HCC00
31x6	31x6	KW200	BB3-C-316316	HCC00
38x3	38x3	KW115	BB3-C-383383	HCC00
38x5	38x5	KW150	BB3-C-385385	HCC00
38x6	38x6	KW200	BB3-C-386386	HCC00
38x8	38x8	KW250	BB3-C-388388	HCC00
40x3	40x3	KW115	BB3-C-403403	HCC00
40x4	40x4	KW150	BB3-C-404404	HCC00
40x5	40x5	KW150	BB3-C-405405	HCC00
40x6	40x6	KW200	BB3-C-406406	HCC00
50x3	50x3	KW200	BB3-C-503503	HCC00
50x4	50x4	KW200	BB3-C-504504	HCC00
50x5	50x5	KW200	BB3-C-505505	HCC00
50x6	50x6	KW250	BB3-C-506506	HCC00
50x8	50x8	KW150x2	BB3-D-508508	HCDOO
50x10	50x10	KW250x2	BB3-D-50105010	HCDOO
60x6	60x6	KW150x2	BB3-D-606606	HCDOO
60x8	60x8	KW200x2	BB3-D-608608	HCDOO
60x10	60x10	KW250x2	BB3-D-60106010	HCDOO
80x6	80x6	KW200x2	BB3-D-806806	HCDOO
80x8	80x8	KW250x2	BB3-D-808808	HCDOO
80x10	80x10	KW200x3	BB3-D-80108010	HCDOO

Note: Special requirement can be requested.

BB7

Bus Bar to Bus Bar

Horizontal flat bus bar end to end



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

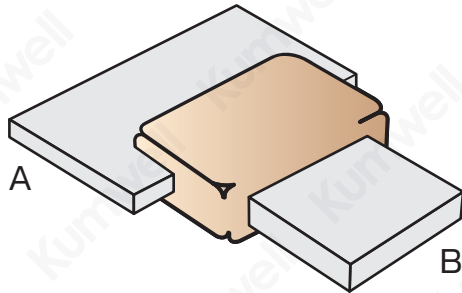
Conductor Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.xmm.)	B(mm.xmm.)			
20x2	20x2	KW45	BB7-C-202	HCC00
20x3	20x3	KW45	BB7-C-203	HCC00
20x4	20x4	KW65	BB7-C-204	HCC00
20x5	20x5	KW90	BB7-C-205	HCC00
25x2	25x2	KW45	BB7-C-252	HCC00
25x3	25x3	KW65	BB7-C-253	HCC00
25x4	25x4	KW90	BB7-C-254	HCC00
25x5	25x5	KW90	BB7-C-255	HCC00
25x6	25x6	KW115	BB7-C-256	HCC00
25x8	25x8	KW150	BB7-C-258	HCC00
25x12	25x12	KW200	BB7-C-2512	HCC00
30x2	30x2	KW65	BB7-C-302	HCC00
30x3	30x3	KW65	BB7-C-303	HCC00
30x4	30x4	KW90	BB7-C-304	HCC00
30x5	30x5	KW115	BB7-C-305	HCC00
30x6	30x6	KW150	BB7-C-306	HCC00
31x3	31x3	KW65	BB7-C-313	HCC00
31x6	31x6	KW150	BB7-C-316	HCC00
38x3	38x3	KW90	BB7-C-383	HCC00
38x5	38x5	KW150	BB7-C-385	HCC00
38x6	38x6	KW200	BB7-C-386	HCC00
38x8	38x8	KW250	BB7-C-388	HCC00
40x3	40x3	KW90	BB7-C-403	HCC00
40x4	40x4	KW115	BB7-C-404	HCC00
40x5	40x5	KW150	BB7-C-405	HCC00
40x6	40x6	KW200	BB7-C-406	HCC00
50x3	50x3	KW150	BB7-D-503	HCDOO
50x4	50x4	KW200	BB7-D-504	HCDOO
50x5	50x5	KW200	BB7-D-505	HCDOO
50x6	50x6	KW250	BB7-D-506	HCDOO
50x8	50x8	KW150x2	BB7-D-508	HCDOO
50x10	50x10	KW200x2	BB7-D-5010	HCDOO
60x6	60x6	KW150x2	BB7-D-606	HCDOO
60x8	60x8	KW200x2	BB7-D-608	HCDOO
60x10	60x10	KW250x2	BB7-D-6010	HCDOO
80x6	80x6	KW200x2	BB7-D-806	HCDOO
80x8	80x8	KW250x2	BB7-D-808	HCDOO
80x10	80x10	KW200x3	BB7-D-8010	HCDOO

Note: Special requirement can be requested.

BB14

Bus Bar to Bus Bar

Horizontal flat bus bar run and tap



Equipment

	
Mould	Metal powder
	
Handle clamp	Steel disk

Necessary Tools

		
Mould brush	Bus bar brush	File
		
Flint igniter	Scraper	Tool box

Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- "*" means to meet UL Listed

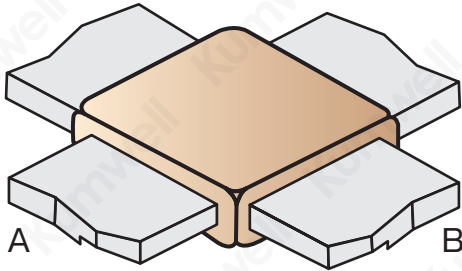
Conductor Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.xmm.)	B(mm.xmm.)			
20x2	20x2	KW45	*BB14-C-202202	HCC00
20x3	20x3	KW45	*BB14-C-203203	HCC00
20x4	20x4	KW65	*BB14-C-204204	HCC00
20x5	20x5	KW90	*BB14-C-205205	HCC00
25x2	25x2	KW45	*BB14-C-252252	HCC00
25x3	25x3	KW65	*BB14-C-253253	HCC00
25x4	25x4	KW90	*BB14-C-254254	HCC00
25x5	25x5	KW90	*BB14-C-255255	HCC00
25x6	25x2	KW115	*BB14-C-256256	HCC00
25x6	25x6	KW90	*BB14-C-256252	HCC00
25x6	50x6	KW250	BB14-D-256506	HCDOO
25x8	25x8	KW150	BB14-C-258258	HCC00
25x12	25x12	KW250	BB14-C-25122512	HCC00
30x2	30x2	KW65	*BB14-C-302302	HCC00
30x3	30x3	KW65	*BB14-C-303303	HCC00
30x4	30x4	KW90	*BB14-C-304304	HCC00
30x5	30x5	KW115	*BB14-C-305305	HCC00
30x6	30x6	KW150	BB14-C-306306	HCC00
31x3	31x3	KW90	*BB14-C-313313	HCC00
31x6	31x6	KW150	*BB14-C-316316	HCC00
38x3	38x3	KW90	*BB14-C-383383	HCC00
38x5	38x5	KW150	*BB14-C-385385	HCC00
38x6	38x6	KW200	*BB14-C-386386	HCC00
38x8	38x8	KW250	BB14-C-388388	HCC00
40x3	40x3	KW90	*BB14-C-403403	HCC00
40x4	40x4	KW115	*BB14-C-404404	HCC00
40x5	40x5	KW150	*BB14-C-405405	HCC00
40x6	40x6	KW200	*BB14-C-406406	HCC00
50x3	50x3	KW150	*BB14-D-503503	HCDOO
50x4	50x4	KW200	*BB14-D-504504	HCDOO
50x5	50x5	KW200	*BB14-D-505505	HCDOO
50x6	25x6	KW115	BB14-C-506256	HCC00
50x6	50x6	KW250	*BB14-D-506506	HCDOO
50x8	50x8	KW150x2	BB14-D-508508	HCDOO
50x10	50x10	KW200x2	BB14-D-50105010	HCDOO
60x6	60x6	KW150x2	BB14-D-606606	HCDOO
60x8	60x8	KW200x2	BB14-D-608608	HCDOO
60x10	60x10	KW250x2	BB14-D-60106010	HCDOO
80x6	80x6	KW200x2	BB14-D-806806	HCDOO
80x8	80x8	KW250x2	BB14-D-808808	HCDOO
80x10	80x10	KW200x3	BB14-D-80108010	HCDOO

Note: Special requirement can be requested.

BB40

Bus Bar to Bus Bar

Horizontal flat bus bar cross (Uncut)



Conductor Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.xmm.)	B(mm.xmm.)			
20x2	20x2	KW65	BB40-C-202202	HCC00
20x3	20x3	KW90	BB40-C-203203	HCC00
20x5	20x5	KW115	BB40-C-205205	HCC00
25x2	25x2	KW90	BB40-C-252252	HCC00
25x3	25x3	KW90	BB40-C-253253	HCC00
25x4	25x4	KW115	BB40-C-254254	HCC00
25x5	25x5	KW150	BB40-C-255255	HCC00
25x6	25x6	KW150	BB40-C-256256	HCC00
25x8	25x8	KW200	BB40-C-258258	HCC00
25x12	25x12	KW200	BB40-C-25122512	HCC00
30x2	30x2	KW150	BB40-C-302302	HCC00
30x3	30x3	KW200	BB40-C-303303	HCC00
30x4	30x4	KW250	BB40-C-304304	HCC00
30x5	30x5	KW250	BB40-C-305305	HCC00
30x6	30x6	KW250	BB40-C-306306	HCC00
31x3	31x3	KW200	BB40-C-313313	HCC00
31x6	31x6	KW250	BB40-C-316316	HCC00
38x3	38x3	KW250	BB40-D-383383	HCDOO
38x5	38x5	KW150x2	BB40-D-385385	HCDOO
38x6	38x6	KW150x2	BB40-D-386386	HCDOO
38x8	38x8	KW200x2	BB40-D-388388	HCDOO
40x3	40x3	KW200x2	BB40-D-403403	HCDOO
40x4	40x4	KW200x2	BB40-D-404404	HCDOO
40x5	40x5	KW200x2	BB40-D-405405	HCDOO
40x6	40x6	KW200x2	BB40-D-406406	HCDOO
50x3	50x3	KW250x2	BB40-D-503503	HCDOO
50x4	50x4	KW250x2	BB40-D-504504	HCDOO
50x5	50x5	KW250x2	BB40-D-505505	HCDOO
50x6	50x6	KW250x2	BB40-D-506506	HCDOO
50x8	50x8	KW250x3	BB40-D-508508	HCDOO
50x10	50x10	KW250x4	BB40-DR-50105010	HCDOO
60x6	60x6	KW200x4	BB40-DR-606606	HCDOO
60x8	60x8	KW250x4	BB40-DR-608608	HCDOO
60x10	60x10	KW250x5	BB40-DR-60106010	HCDOO

Equipment



Necessary Tools



Recommended Tools

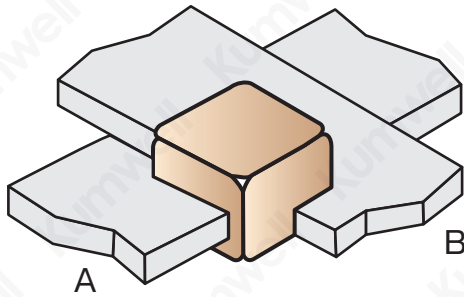
- Butane torch
- Butane gas
- Gloves

Note: Special requirement can be requested.

BB41

Bus Bar to Bus Bar

Horizontal flat bus bar cross



Conductor Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.xmm.)	B(mm.xmm.)			
20x2	20x2	KW65	BB41-C-202202	HCC00
20x3	20x3	KW65	BB41-C-203203	HCC00
20x4	20x4	KW90	BB41-C-204204	HCC00
20x5	20x5	KW90	BB41-C-205205	HCC00
25x2	25x2	KW65	BB41-C-252252	HCC00
25x3	25x3	KW65	BB41-C-253253	HCC00
25x4	25x4	KW90	BB41-C-254254	HCC00
25x5	25x5	KW90	BB41-C-255255	HCC00
25x6	25x6	KW115	BB41-C-256256	HCC00
25x8	25x8	KW250	BB41-C-258258	HCC00
25x12	25x12	KW250	BB41-C-25122512	HCC00
30x2	30x2	KW90	BB41-C-302302	HCC00
30x3	30x3	KW115	BB41-C-303303	HCC00
30x4	30x4	KW115	BB41-C-304304	HCC00
30x5	30x5	KW115	BB41-C-305305	HCC00
30x6	30x6	KW200	BB41-C-306306	HCC00
31x3	31x3	KW115	BB41-C-313313	HCC00
31x6	31x6	KW115	BB41-C-316316	HCC00
38x3	38x3	KW150	BB41-C-383383	HCC00
38x5	38x5	KW150	BB41-C-385385	HCC00
38x6	38x6	KW200	BB41-C-386386	HCC00
38x8	38x8	KW250	BB41-C-388388	HCC00
40x3	40x3	KW150	BB41-C-403403	HCC00
40x4	40x4	KW200	BB41-C-404404	HCC00
40x5	40x5	KW200	BB41-C-405405	HCC00
40x6	40x6	KW200	BB41-C-406406	HCC00
50x3	50x3	KW200	BB41-D-503503	HCDOO
50x4	50x4	KW200	BB41-D-504504	HCDOO
50x5	50x5	KW200	BB41-D-505505	HCDOO
50x6	50x6	KW200	BB41-D-506506	HCDOO
50x8	50x8	KW250	BB41-D-508508	HCDOO
50x10	50x10	KW150x2	BB41-D-50105010	HCDOO
60x6	60x6	KW200	BB41-D-606606	HCDOO
60x8	60x8	KW250	BB41-D-608608	HCDOO
60x10	60x10	KW150x2	BB41-D-60106010	HCDOO
80x6	80x6	KW200	BB41-D-806806	HCDOO
80x8	80x8	KW250	BB41-D-808808	HCDOO
80x10	80x10	KW150x2	BB41-D-80108010	HCDOO

Equipment



Necessary Tools



Recommended Tools

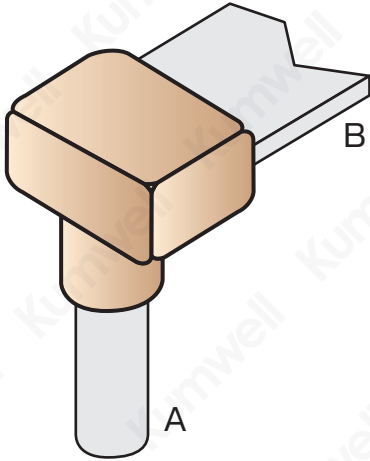
- Butane torch
- Butane gas
- Gloves

Note: Special requirement can be requested.

BR1

Bus Bar to Ground Rod

Horizontal bus end to ground rod



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For special rod size's requirement, please contact us

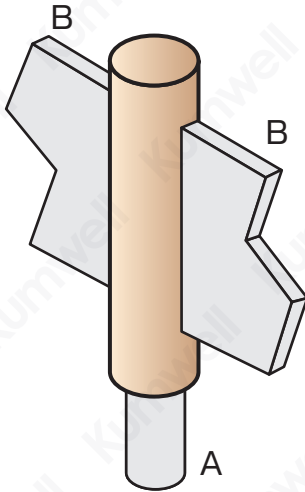
Rod Size		Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type		
A(mm.)	A(inch)	B(mm²)					
12.7	1/2	20x2	KW65	BR1-C-127202	HCC00		
		20x3	KW90	BR1-C-127203	HCC00		
		20x4	KW90	BR1-C-127204	HCC00		
		25x2	KW65	BR1-C-127252	HCC00		
		25x3	KW90	BR1-C-127253	HCC00		
		25x4	KW90	BR1-C-127254	HCC00		
		30x2	KW90	BR1-C-127302	HCC00		
		30x3	KW90	BR1-C-127303	HCC00		
		40x3	KW90	BR1-C-127403	HCC00		
		50x3	KW115	BR1-C-127503	HCC00		
		14.2	5/8	20x3	KW90	BR1-C-142203	HCC00
				20x4	KW90	BR1-C-142204	HCC00
				25x3	KW90	BR1-C-142253	HCC00
				25x4	KW115	BR1-C-142254	HCC00
25x5	KW115			BR1-C-142255	HCC00		
25x6	KW115			BR1-C-142256	HCC00		
30x2	KW115			BR1-C-142302	HCC00		
30x3	KW115			BR1-C-142303	HCC00		
30x5	KW150			BR1-C-142305	HCC00		
30x6	KW150			BR1-C-142306	HCC00		
31x3	KW115			BR1-C-142313	HCC00		
31x6	KW150			BR1-C-142316	HCC00		
38x3	KW115			BR1-C-142383	HCC00		
38x5	KW150			BR1-C-142385	HCC00		
38x6	KW200			BR1-C-142386	HCC00		
40x3	KW115			BR1-C-142403	HCC00		
40x4	KW150			BR1-C-142404	HCC00		
40x5	KW150			BR1-C-142405	HCC00		
40x6	KW200			BR1-C-142406	HCC00		
50x3	KW150			BR1-C-142503	HCC00		
50x4	KW200	BR1-C-142504	HCC00				
50x5	KW200	BR1-C-142505	HCC00				
50x6	KW200	BR1-C-142506	HCC00				
17.2	3/4	20x3	KW115	BR1-C-172203	HCC00		
		20x4	KW150	BR1-C-172204	HCC00		
		25x3	KW150	BR1-C-172253	HCC00		
		25x4	KW150	BR1-C-172254	HCC00		
		25x5	KW150	BR1-C-172255	HCC00		
		25x6	KW200	BR1-C-172256	HCC00		
		30x2	KW150	BR1-C-172302	HCC00		
		30x3	KW150	BR1-C-172303	HCC00		
		30x5	KW200	BR1-C-172305	HCC00		
		30x6	KW250	BR1-C-172306	HCC00		
		31x3	KW150	BR1-C-172313	HCC00		
		31x6	KW250	BR1-C-172316	HCC00		
		38x3	KW200	BR1-C-172383	HCC00		
		38x5	KW200	BR1-C-172385	HCC00		
		38x6	KW150x2	BR1-C-172386	HCC00		
		40x3	KW200	BR1-C-172403	HCC00		
		40x4	KW200	BR1-C-172404	HCC00		
		40x5	KW150x2	BR1-D-172405	HCDOO		
		40x6	KW150x2	BR1-D-172406	HCDOO		
		50x3	KW150x2	BR1-D-172503	HCDOO		
50x4	KW150x2	BR1-D-172504	HCDOO				
50x5	KW150x2	BR1-D-172505	HCDOO				
50x6	KW200x2	BR1-D-172506	HCDOO				

Note: Special requirement can be requested.

BR2

Bus Bar to Ground Rod

Horizontal thru bus to ground rod



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For special rod size's requirement, please contact us
- "*" means to meet UL Listed

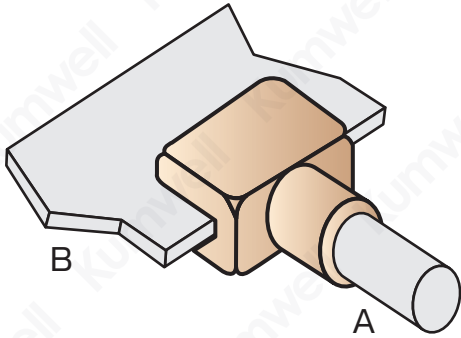
Rod Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type		
A(mm.)	A(inch)	B(mm ²)				
12.7	1/2	20x2	*BR2-C-127202	HCC00		
		20x3	*BR2-C-127203	HCC00		
		20x4	*BR2-C-127204	HCC00		
		25x2	*BR2-C-127252	HCC00		
		25x3	*BR2-C-127253	HCC00		
		25x4	*BR2-C-127254	HCC00		
		30x2	*BR2-C-127302	HCC00		
		30x3	*BR2-C-127303	HCC00		
		40x3	*BR2-C-127403	HCC00		
		50x3	*BR2-C-127503	HCC00		
		14.2	5/8	20x3	*BR2-C-142203	HCC00
				20x4	*BR2-C-142204	HCC00
				25x2	BR2-C-142252	HCC00
				25x3	*BR2-C-142253	HCC00
25x4	*BR2-C-142254			HCC00		
25x5	BR2-C-142255			HCC00		
25x6	BR2-C-142256			HCC00		
30x2	*BR2-C-142302			HCC00		
30x3	*BR2-C-142303			HCC00		
30x5	BR2-C-142305			HCC00		
30x6	BR2-C-142306			HCC00		
31x3	*BR2-C-142313			HCC00		
31x6	BR2-C-142316			HCC00		
38x3	*BR2-C-142383			HCC00		
38x5	BR2-C-142385			HCC00		
38x6	BR2-C-142386			HCC00		
40x3	*BR2-C-142403			HCC00		
40x4	BR2-C-142404			HCC00		
40x5	BR2-C-142405			HCC00		
40x6	BR2-C-142406			HCC00		
50x3	BR2-C-142503			HCC00		
50x4	BR2-C-142504			HCC00		
50x5	BR2-C-142505			HCC00		
50x6	BR2-C-142506			HCC00		
17.2	3/4	20x3	*BR2-C-172203	HCC00		
		20x4	*BR2-C-172204	HCC00		
		25x2	*BR2-C-172252	HCC00		
		25x3	*BR2-C-172253	HCC00		
		25x4	*BR2-C-172254	HCC00		
		25x5	*BR2-C-172255	HCC00		
		25x6	*BR2-C-172256	HCC00		
		30x2	*BR2-C-172302	HCC00		
		30x3	*BR2-C-172303	HCC00		
		30x5	*BR2-C-172305	HCC00		
		30x6	BR2-C-172306	HCC00		
		31x3	*BR2-C-172313	HCC00		
		31x6	BR2-C-172316	HCC00		
		38x3	*BR2-C-172383	HCC00		
		38x5	BR2-C-172385	HCC00		
		38x6	BR2-C-172386	HCC00		
		40x3	*BR2-C-172403	HCC00		
		40x4	BR2-C-172404	HCC00		
		40x5	BR2-C-172405	HCC00		
		40x6	BR2-C-172406	HCC00		
		50x3	KW150x2	BR2-D-172503	HCDOO	
		50x4	KW150x2	BR2-D-172504	HCDOO	
		50x5	KW150x2	BR2-D-172505	HCDOO	
		50x6	KW150x2	BR2-D-172506	HCDOO	

Note: Special requirement can be requested.

BR4

Bus Bar to Ground Rod

Horizontal ground rod tap to horizontal busbar



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- SC means Solid Copper

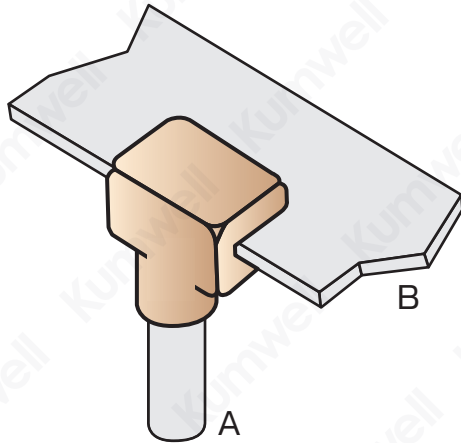
Rod Size		Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type		
A(mm.)	A(inch)	B(mm ²)					
12.7	1/2	20x2	KW90	BR4-C-127202	HCC00		
		20x3	KW90	BR4-C-127203	HCC00		
		20x4	KW90	BR4-C-127204	HCC00		
		25x2	KW90	BR4-C-127252	HCC00		
		25x3	KW90	BR4-C-127253	HCC00		
		25x4	KW90	BR4-C-127254	HCC00		
		30x2	KW90	BR4-C-127302	HCC00		
		30x3	KW90	BR4-C-127303	HCC00		
		40x3	KW90	BR4-C-127403	HCC00		
		50x3	KW90	BR4-C-127503	HCC00		
		14.2	5/8	20x3	KW90	BR4-C-142203	HCC00
				20x4	KW90	BR4-C-142204	HCC00
				25x3	KW90	BR4-C-142253	HCC00
				25x4	KW90	BR4-C-142254	HCC00
25x5	KW90			BR4-C-142255	HCC00		
25x6	KW115			BR4-C-142256	HCC00		
30x2	KW90			BR4-C-142302	HCC00		
30x3	KW90			BR4-C-142303	HCC00		
30x6	KW115			BR4-C-142306	HCC00		
31x3	KW90			BR4-C-142313	HCC00		
31x6	KW115			BR4-C-142316	HCC00		
38x3	KW90			BR4-C-142383	HCC00		
38x5	KW90			BR4-C-142385	HCC00		
38x6	KW115			BR4-C-142386	HCC00		
38x8	KW150			BR4-C-142388	HCC00		
40x3	KW90			BR4-C-142403	HCC00		
40x4	KW90			BR4-C-142404	HCC00		
40x5	KW90			BR4-C-142405	HCC00		
40x6	KW115			BR4-C-142406	HCC00		
17.2	3/4			50x3	KW90	BR4-C-142503	HCC00
		50x4	KW90	BR4-C-142504	HCC00		
		50x5	KW90	BR4-C-142505	HCC00		
		50x6	KW115	BR4-C-142506	HCC00		
		20x3	KW115	BR4-C-172203	HCC00		
		20x4	KW150	BR4-C-172204	HCC00		
		25x3	KW115	BR4-C-172253	HCC00		
		25x4	KW150	BR4-C-172254	HCC00		
		25x5	KW150	BR4-C-172255	HCC00		
		25x6	KW150	BR4-C-172256	HCC00		
		30x2	KW115	BR4-C-172302	HCC00		
		30x3	KW115	BR4-C-172303	HCC00		
		30x6	KW150	BR4-C-172306	HCC00		
		31x3	KW115	BR4-C-172313	HCC00		
		31x6	KW150	BR4-C-172316	HCC00		
		38x3	KW115	BR4-C-172383	HCC00		
		38x5	KW150	BR4-C-172385	HCC00		
		38x6	KW150	BR4-C-172386	HCC00		
		38x8	KW200	BR4-C-172388	HCC00		
		40x3	KW115	BR4-C-172403	HCC00		
40x4	KW150	BR4-C-172404	HCC00				
40x5	KW150	BR4-C-172405	HCC00				
40x6	KW150	BR4-C-172406	HCC00				
50x3	KW115	BR4-C-172503	HCC00				
50x4	KW150	BR4-C-172504	HCC00				
50x5	KW150	BR4-C-172505	HCC00				
50x6	KW150	BR4-C-172506	HCC00				

Note: Special requirement can be requested.

BR7

Bus Bar to Ground Rod

Horizontal flat bar thru to ground rod



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For special rod size's requirement, please contact us

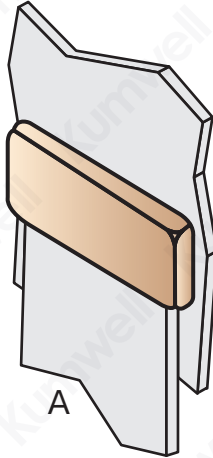
Rod Size		Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type		
A(mm.)	A(inch)	B(mm²)					
12.7	1/2	20x2	KW65	BR7-C-127202	HCC00		
		20x3	KW65	BR7-C-127203	HCC00		
		20x4	KW90	BR7-C-127204	HCC00		
		25x2	KW65	BR7-C-127252	HCC00		
		25x3	KW90	BR7-C-127253	HCC00		
		25x4	KW90	BR7-C-127254	HCC00		
		30x2	KW65	BR7-C-127302	HCC00		
		30x3	KW65	BR7-C-127303	HCC00		
		40x3	KW65	BR7-C-127403	HCC00		
		50x3	KW65	BR7-C-127503	HCC00		
		14.2	5/8	20x3	KW90	BR7-C-142203	HCC00
				20x4	KW115	BR7-C-142204	HCC00
25x3	KW90			BR7-C-142253	HCC00		
25x4	KW115			BR7-C-142254	HCC00		
25x5	KW150			BR7-C-142255	HCC00		
25x6	KW150			BR7-C-142256	HCC00		
30x2	KW90			BR7-C-142302	HCC00		
30x3	KW90			BR7-C-142303	HCC00		
30x5	KW150			BR7-C-142305	HCC00		
30x6	KW150			BR7-C-142306	HCC00		
40x3	KW90			BR7-C-142403	HCC00		
40x5	KW150			BR7-C-142405	HCC00		
40x6	KW150			BR7-C-142406	HCC00		
50x3	KW90			BR7-C-142503	HCC00		
50x4	KW150			BR7-C-142504	HCC00		
50x5	KW150			BR7-C-142505	HCC00		
50x6	KW150			BR7-C-142506	HCC00		
17.2	3/4			20x3	KW115	BR7-C-172203	HCC00
		20x4	KW115	BR7-C-172204	HCC00		
		25x3	KW115	BR7-C-172253	HCC00		
		25x4	KW150	BR7-C-172254	HCC00		
		25x6	KW200	BR7-C-172256	HCC00		
		30x2	KW115	BR7-C-172302	HCC00		
		30x3	KW115	BR7-C-172303	HCC00		
		30x5	KW200	BR7-C-172305	HCC00		
		30x6	KW200	BR7-C-172306	HCC00		
		40x3	KW115	BR7-C-172403	HCC00		
		40x5	KW200	BR7-C-172405	HCC00		
		40x6	KW200	BR7-C-172406	HCC00		
50x3	KW115	BR7-C-172503	HCC00				
50x5	KW200	BR7-C-172505	HCC00				
50x6	KW200	BR7-C-172506	HCC00				

Note: Special requirement can be requested.

BS1

Bus Bar to Steel Surface

Vertical bus bar tap to vertical steel surface



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For perfect welding, making connection need to remove moisture, oxide and galvanized metal
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required

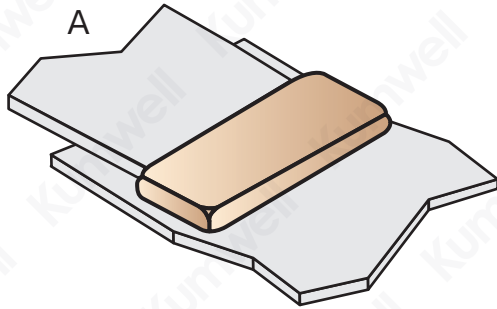
Conductor Size A(mm.xmm.)	Metal Powder	Graphite Mold Type	Handle Clamp Type
20x2	KW65	BS1-C-202	HCCOO-Y
20x3	KW65	BS1-C-203	HCCOO-Y
20x4	KW90	BS1-C-204	HCCOO-Y
20x5	KW115	BS1-C-205	HCCOO-Y
25x2	KW90	BS1-C-252	HCCOO-Y
25x3	KW90	BS1-C-253	HCCOO-Y
25x4	KW90	BS1-C-254	HCCOO-Y
25x5	KW150	BS1-C-255	HCCOO-Y
25x6	KW150	BS1-C-256	HCCOO-Y
25x8	KW200	BS1-C-258	HCCOO-Y
25x12	KW250	BS1-C-2512	HCCOO-Y
30x2	KW90	BS1-C-302	HCCOO-Y
30x3	KW90	BS1-C-303	HCCOO-Y
30x4	KW115	BS1-C-304	HCCOO-Y
30x5	KW150	BS1-C-305	HCCOO-Y
30x6	KW200	BS1-C-306	HCCOO-Y
31x3	KW90	BS1-C-313	HCCOO-Y
31x6	KW200	BS1-C-316	HCCOO-Y
38x3	KW150	BS1-C-383	HCCOO-Y
38x5	KW200	BS1-C-385	HCCOO-Y
38x6	KW250	BS1-C-386	HCCOO-Y
38x8	KW250	BS1-C-388	HCCOO-Y
40x3	KW150	BS1-C-403	HCCOO-Y
40x4	KW200	BS1-C-404	HCCOO-Y
40x5	KW200	BS1-C-405	HCCOO-Y
40x6	KW250	BS1-C-406	HCCOO-Y
50x3	KW200	BS1-C-503	HCCOO-Y
50x4	KW250	BS1-C-504	HCCOO-Y
50x5	KW250	BS1-C-505	HCCOO-Y
50x6	KW150x2	BS1-D-506	HCD00-Y
50x8	KW200x2	BS1-D-508	HCD00-Y
50x10	KW200x2	BS1-D-5010	HCD00-Y
60x6	KW200x2	BS1-D-606	HCD00-Y
60x8	KW250x2	BS1-D-608	HCD00-Y
60x10	KW200x3	BS1-D-6010	HCD00-Y
80x6	KW250x2	BS1-D-806	HCD00-Y
80x8	KW200x3	BS1-D-808	HCD00-Y
80x10	KW250x3	BS1-D-8010	HCD00-Y

Note: Special requirement can be requested.

BS2

Bus Bar to Steel Surface

Horizontal bus bar tap to horizontal steel surface



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For perfect welding, making connection need to remove moisture, oxide and galvanized metal
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required

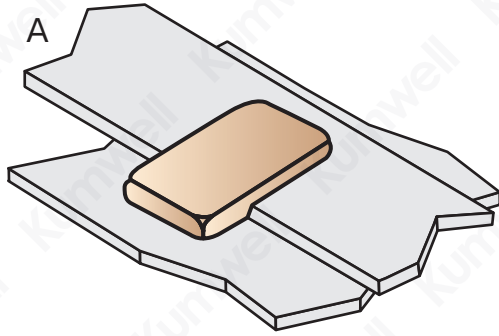
Conductor Size A(mm.xmm.)	Metal Powder	Graphite Mold Type	Handle Clamp Type
20x2	KW65	BS2-C-202	HCC00
20x3	KW90	BS2-C-203	HCC00
20x4	KW90	BS2-C-204	HCC00
20x5	KW115	BS2-C-205	HCC00
25x2	KW90	BS2-C-252	HCC00
25x3	KW90	BS2-C-253	HCC00
25x4	KW90	BS2-C-254	HCC00
25x5	KW150	BS2-C-255	HCC00
25x6	KW150	BS2-C-256	HCC00
25x8	KW200	BS2-C-258	HCC00
25x12	KW250	BS2-C-2512	HCC00
30x2	KW115	BS2-C-302	HCC00
30x3	KW115	BS2-C-303	HCC00
30x4	KW150	BS2-C-304	HCC00
30x5	KW200	BS2-C-305	HCC00
30x6	KW200	BS2-C-306	HCC00
31x3	KW115	BS2-C-313	HCC00
31x6	KW200	BS2-C-316	HCC00
38x3	KW150	BS2-C-383	HCC00
38x5	KW200	BS2-C-385	HCC00
38x6	KW200	BS2-C-386	HCC00
38x8	KW250	BS2-C-388	HCC00
40x3	KW115	BS2-C-403	HCC00
40x4	KW200	BS2-C-404	HCC00
40x5	KW200	BS2-C-405	HCC00
40x6	KW250	BS2-C-406	HCC00
50x3	KW200	BS2-D-503	HCDOO
50x4	KW250	BS2-D-504	HCDOO
50x5	KW250	BS2-D-505	HCDOO
50x6	KW150x2	BS2-D-506	HCDOO
50x8	KW200x2	BS2-D-508	HCDOO
50x10	KW200x2	BS2-D-5010	HCDOO
60x6	KW200x2	BS2-D-606	HCDOO
60x8	KW250x2	BS2-D-608	HCDOO
60x10	KW200x3	BS2-D-6010	HCDOO
80x6	KW250x2	BS2-D-806	HCDOO
80x8	KW200x3	BS2-D-808	HCDOO
80x10	KW250x3	BS2-D-8010	HCDOO

Note: Special requirement can be requested.

BS3

Bus Bar to Steel Surface

Horizontal bus bar tap to horizontal steel surface



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For perfect welding, making connection need to remove moisture, oxide and galvanized metal
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required

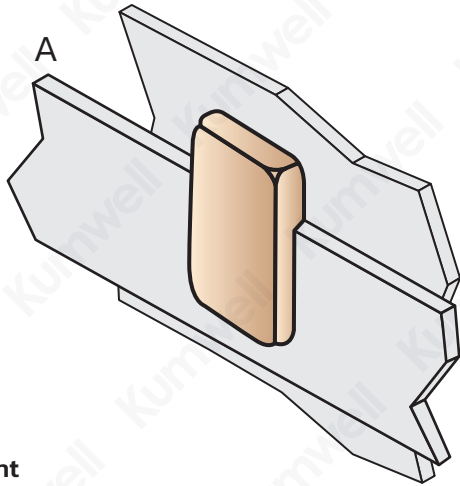
Conductor Size A(mm.xmm.)	Metal Powder	Graphite Mold Type	Handle Clamp Type
20x2	KW65	BS3-C-202	HCC00
20x3	KW90	BS3-C-203	HCC00
20x4	KW115	BS3-C-204	HCC00
20x5	KW115	BS3-C-205	HCC00
25x2	KW90	BS3-C-252	HCC00
25x3	KW115	BS3-C-253	HCC00
25x4	KW115	BS3-C-254	HCC00
25x5	KW115	BS3-C-255	HCC00
25x6	KW150	BS3-C-256	HCC00
25x8	KW200	BS3-C-258	HCC00
25x12	KW250	BS3-C-2512	HCC00
30x2	KW115	BS3-C-302	HCC00
30x3	KW115	BS3-C-303	HCC00
30x4	KW150	BS3-C-304	HCC00
30x5	KW200	BS3-C-305	HCC00
30x6	KW200	BS3-C-306	HCC00
31x3	KW115	BS3-C-313	HCC00
31x6	KW200	BS3-C-316	HCC00
38x3	KW150	BS3-C-383	HCC00
38x5	KW200	BS3-C-385	HCC00
38x6	KW200	BS3-C-386	HCC00
38x8	KW250	BS3-C-388	HCC00
40x3	KW150	BS3-C-403	HCC00
40x4	KW200	BS3-C-404	HCC00
40x5	KW250	BS3-C-405	HCC00
40x6	KW250	BS3-C-406	HCC00
50x3	KW200	BS3-D-503	HCDOO
50x4	KW250	BS3-D-504	HCDOO
50x5	KW250	BS3-D-505	HCDOO
50x6	KW150x2	BS3-D-506	HCDOO
50x8	KW150x2	BS3-D-508	HCDOO
50x10	KW200x2	BS3-D-5010	HCDOO
60x6	KW200x2	BS3-D-606	HCDOO
60x8	KW150x2	BS3-D-608	HCDOO
60x10	KW200x2	BS3-D-6010	HCDOO
80x6	KW150x2	BS3-D-806	HCDOO
80x8	KW200x2	BS3-D-808	HCDOO
80x10	KW250x2	BS3-D-8010	HCDOO

Note: Special requirement can be requested.

BS4

Bus Bar to Steel Surface

Horizontal thru bus to vertical steel surface



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For perfect welding, making connection need to remove moisture, oxide and galvanized metal
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required

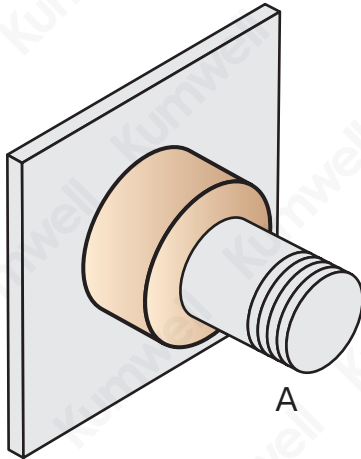
Conductor Size A(mm.xmm.)	Metal Powder	Graphite Mold Type	Handle Clamp Type
20x2	KW90	BS4-C-202	HCCOO-Y
20x3	KW90	BS4-C-203	HCCOO-Y
20x4	KW115	BS4-C-204	HCCOO-Y
20x5	KW150	BS4-C-205	HCCOO-Y
25x2	KW115	BS4-C-252	HCCOO-Y
25x3	KW115	BS4-C-253	HCCOO-Y
25x4	KW150	BS4-C-254	HCCOO-Y
25x5	KW150	BS4-C-255	HCCOO-Y
25x6	KW150	BS4-C-256	HCCOO-Y
25x8	KW200	BS4-C-258	HCCOO-Y
25x12	KW250	BS4-C-2512	HCCOO-Y
30x2	KW115	BS4-C-302	HCCOO-Y
30x3	KW115	BS4-C-303	HCCOO-Y
30x4	KW115	BS4-C-304	HCCOO-Y
30x5	KW200	BS4-C-305	HCCOO-Y
30x6	KW200	BS4-C-306	HCCOO-Y
31x3	KW150	BS4-C-313	HCCOO-Y
31x6	KW200	BS4-C-316	HCCOO-Y
38x3	KW150	BS4-C-383	HCCOO-Y
38x5	KW200	BS4-C-385	HCCOO-Y
38x6	KW250	BS4-C-386	HCCOO-Y
38x8	KW250	BS4-C-388	HCCOO-Y
40x3	KW150	BS4-C-403	HCCOO-Y
40x4	KW200	BS4-C-404	HCCOO-Y
40x5	KW200	BS4-C-405	HCCOO-Y
40x6	KW250	BS4-C-406	HCCOO-Y
50x3	KW200	BS4-C-503	HCCOO-Y
50x4	KW250	BS4-C-504	HCCOO-Y
50x5	KW250	BS4-C-505	HCCOO-Y
50x6	KW150x2	BS4-D-506	HCD00-Y
50x8	KW200x2	BS4-D-508	HCD00-Y
50x10	KW200x2	BS4-D-5010	HCD00-Y
60x6	KW200x2	BS4-D-606	HCD00-Y
60x8	KW250x2	BS4-D-608	HCD00-Y
60x10	KW250x3	BS4-D-6010	HCD00-Y
80x6	KW150x2	BS4-D-806	HCD00-Y
80x8	KW200x2	BS4-D-808	HCD00-Y
80x10	KW250x2	BS4-D-8010	HCD00-Y

Note: Special requirement can be requested.

RS1

Stud to Steel

Horizontal stud to vertical steel surface



Stud Size A(mm.)	Metal Powder	Graphite Mold Type	Handle Clamp Type
M6	KW25	RS1-C-M6	HCCOO-Y
M8	KW32	RS1-C-M8	HCCOO-Y
M10	KW45	RS1-C-M10	HCCOO-Y
M12	KW65	RS1-C-M12	HCCOO-Y
M16	KW115	RS1-C-M16	HCCOO-Y

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

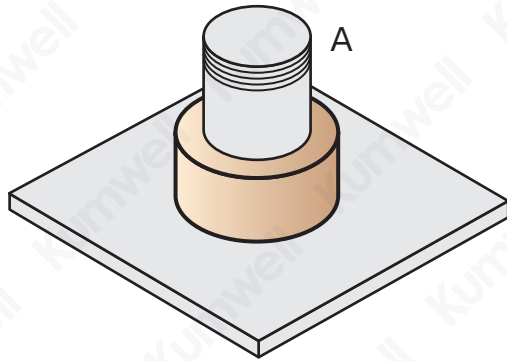
- For special rod size's requirement, please contact us

Note: Special requirement can be requested.

RS2

Stud to Steel

Vertical stud to horizontal steel surface



Stud Size A(mm.)	Metal Powder	Graphite Mold Type	Handle Clamp Type
M6	KW25	RS2-CL-M6	HCC00
M8	KW32	RS2-CL-M8	HCC00
M10	KW45	RS2-CL-M10	HCC00
M12	KW65	RS2-CL-M12	HCC00
M16	KW115	RS2-CL-M16	HCC00

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For perfect welding, between conductor and flat steel, making connection need to remove moisture, oxide and galvanized metal
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required

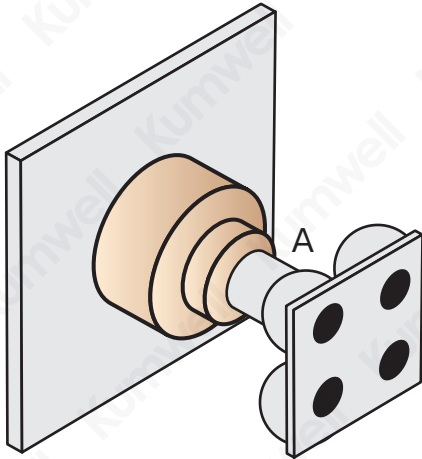
Note: Special requirement can be requested.

RS3

Stud to Steel

Ground plates to vertical steel

Rod Size A(mm.)	Metal Powder	Graphite Mold Type	Handle Clamp Type
12.7	KW150	RS3-C-127	HCCOO-Y



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

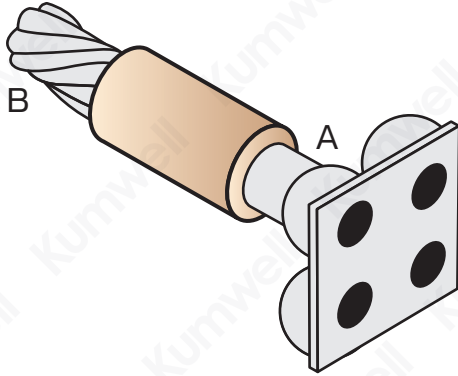
- For perfect welding, between conductor and flat steel, making connection need to remove moisture, oxide and galvanized metal
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required

Note: Special requirement can be requested.

RC1

Ground Plates to Cable & Steel

Ground plates to horizontal steel cable end



Rod Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	B(mm ²)			
12.7	50	KW65	RC1-C-12750	HCC00
	70	KW90	RC1-C-12770	HCC00
	95	KW90	RC1-C-12795	HCC00
	120	KW115	RC1-C-127120	HCC00
	150	KW115	RC1-C-127150	HCC00
	185	KW150	RC1-C-127185	HCC00
	240	KW200	RC1-C-127240	HCC00
	300	KW250	RC1-C-127300	HCC00

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

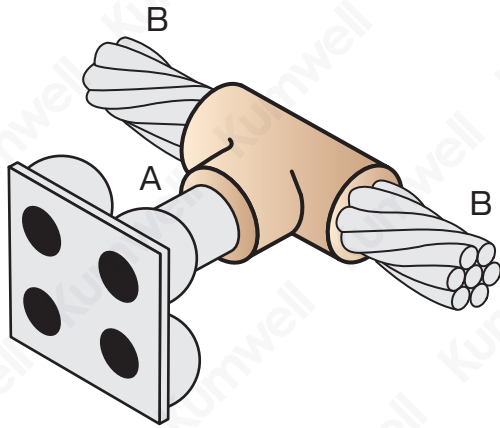
- For perfect connection, Remove oxide and moisture where making connection

Note: Special requirement can be requested.

RC2

Ground Plates to Cable & Steel

Ground plates to horizontal cable thru



Rod Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	B(mm ²)			
12.7	50	KW90	RC2-C-12750	HCC00
	70	KW90	RC2-C-12770	HCC00
	95	KW90	RC2-C-12795	HCC00
	120	KW115	RC2-C-127120	HCC00
	150	KW115	RC2-C-127150	HCC00
	185	KW115	RC2-C-127185	HCC00
	240	KW150	RC2-C-127240	HCC00
	300	KW150	RC2-C-127300	HCC00

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

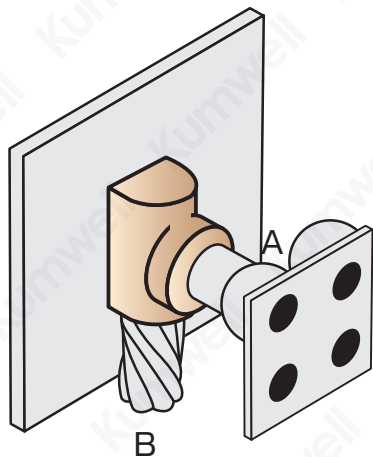
- For perfect connection, Remove oxide and moisture where making connection

Note: Special requirement can be requested.

CRS1

Ground Plates to Cable & Steel

Ground plates to vertical steel and cable down



Rod Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	B(mm ²)			
12.7	50	KW200	CRS1-C-12750	HCCOO-Y
	70	KW200	CRS1-C-12770	HCCOO-Y
	95	KW250	CRS1-C-12795	HCCOO-Y
	120	KW250	CRS1-C-127120	HCCOO-Y

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

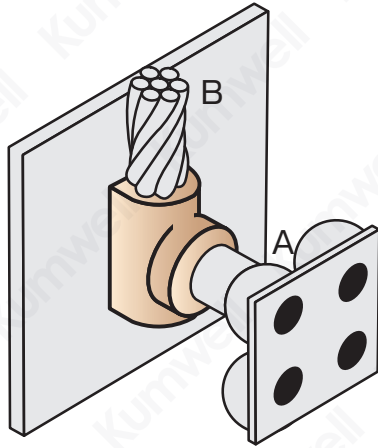
- For perfect welding, between conductor and flat steel, making connection need to remove moisture, oxide and galvanized metal
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required

Note: Special requirement can be requested.

CRS2

Ground Plates to Cable & Steel

Ground plates to vertical steel and cable up



Rod Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	B(mm ²)			
12.7	50	KW200	CRS2-C-12750	HCCOO-Y
	70	KW200	CRS2-C-12770	HCCOO-Y
	95	KW250	CRS2-C-12795	HCCOO-Y
	120	KW250	CRS2-C-127120	HCCOO-Y

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

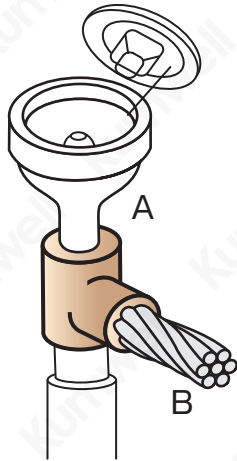
- For perfect welding, between conductor and flat steel, making connection need to remove moisture, oxide and galvanized metal
- After welding process, coating steel's surface and connection by Rust-Oleum cold galvanizing is required

Note: Special requirement can be requested.

AC1

Cable to Grounding Receptacle

Horizontal cable to ground receptacle



For GYSER 663

Rod Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	B(mm ²)			
12.7	35	KW90	AC1-C-12735663	HCC00
	50	KW90	AC1-C-12750663	HCC00
	70	KW90	AC1-C-12770663	HCC00
	95	KW115	AC1-C-12795663	HCC00
	120	KW115	AC1-C-127120663	HCC00

For GYSER 993

Rod Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	B(mm ²)			
12.7	35	KW90	AC1-C-12735993	HCC00
	50	KW90	AC1-C-12750993	HCC00
	70	KW90	AC1-C-12770993	HCC00
	95	KW115	AC1-C-12795993	HCC00
	120	KW115	AC1-C-127120993	HCC00

Equipment



Necessary Tools



Recommended Tools

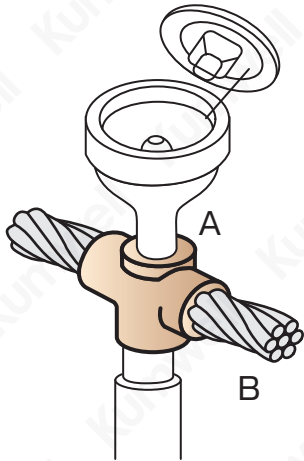
- Butane torch
- Butane gas
- Gloves

Note: Special requirement can be requested.

AC2

Cable to Grounding Receptacle

Horizontal tru cable to ground receptacle



For GYSER 663

Rod Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	B(mm ²)			
12.7	35	KW115	AC2-C-12735663	HCC00
	50	KW115	AC2-C-12750663	HCC00
	70	KW115	AC2-C-12770663	HCC00
	95	KW150	AC2-C-12795663	HCC00
	120	KW150	AC2-C-127120663	HCC00

For GYSER 993

Rod Size	Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	B(mm ²)			
12.7	35	KW115	AC2-C-12735993	HCC00
	50	KW115	AC2-C-12750993	HCC00
	70	KW115	AC2-C-12770993	HCC00
	95	KW150	AC2-C-12795993	HCC00
	120	KW150	AC2-C-127120993	HCC00

Equipment

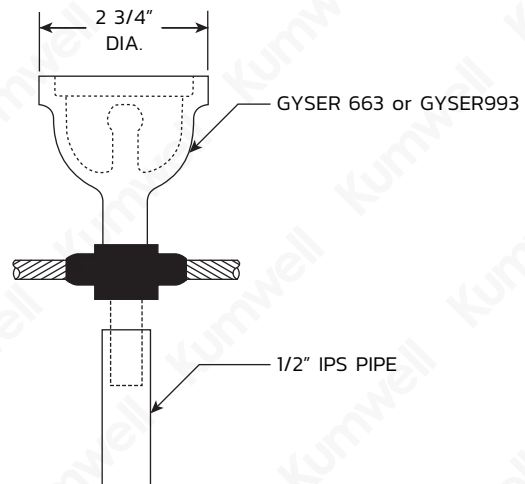


Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

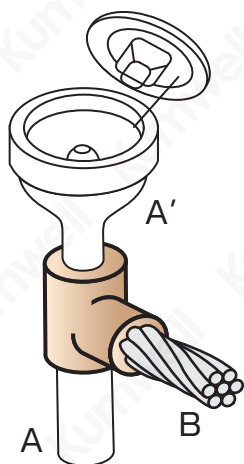


Note: Special requirement can be requested.

ACR1

Cable and Grounding Receptacle to Ground Rod

Horizontal cable and ground receptacle to the top of ground rod



For GYSER 663

Rod Size			Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	A(inch)	A'(mm.)	B(mm ²)			
14.2	5/8	12.7	50	KW200x2	ACR1-J-14212750663	HCDOO
			70	KW200x2	ACR1-J-14212770663	HCDOO
			95	KW200x2	ACR1-J-14212795663	HCDOO
			120	KW200x2	ACR1-J-142127120663	HCDOO
17.2	3/4	12.7	50	KW200x2	ACR1-J-17212750663	HCDOO
			70	KW200x2	ACR1-J-17212770663	HCDOO
			95	KW200x2	ACR1-J-17212795663	HCDOO
			120	KW200x2	ACR1-J-172127120663	HCDOO
23.1	1	12.7	50	KW250x2	ACR1-J-23112750663	HCDOO
			70	KW250x2	ACR1-J-23112770663	HCDOO
			95	KW250x2	ACR1-J-23112795663	HCDOO
			120	KW250x2	ACR1-J-231127120663	HCDOO

Equipment



For GYSER 993

Rod Size			Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	A(inch)	A'(mm.)	B(mm ²)			
14.2	5/8	12.7	50	KW200x2	ACR1-J-14212750993	HCDOO
			70	KW200x2	ACR1-J-14212770993	HCDOO
			95	KW200x2	ACR1-J-14212795993	HCDOO
			120	KW200x2	ACR1-J-142127120993	HCDOO
17.2	3/4	12.7	50	KW200x2	ACR1-J-17212750993	HCDOO
			70	KW200x2	ACR1-J-17212770993	HCDOO
			95	KW200x2	ACR1-J-17212795993	HCDOO
			120	KW200x2	ACR1-J-172127120993	HCDOO
23.1	1	12.7	50	KW250x2	ACR1-J-23112750993	HCDOO
			70	KW250x2	ACR1-J-23112770993	HCDOO
			95	KW250x2	ACR1-J-23112795993	HCDOO
			120	KW250x2	ACR1-J-231127120993	HCDOO

Necessary Tools



Recommended Tools

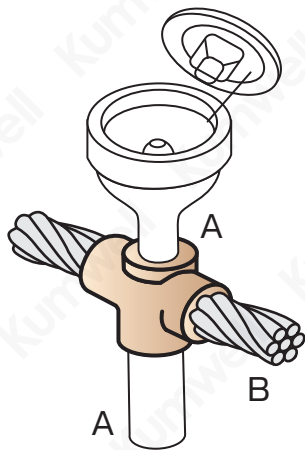
- Butane torch
- Butane gas
- Gloves

Note: Special requirement can be requested.

ACR2

Cable and Grounding Receptacle to Ground Rod

Horizontal cable thru and ground receptacle to the top of ground rod



For GYSER 663

Rod Size			Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	A'(inch)	A'(mm.)	B(mm ²)			
14.2	5/8	12.7	50	KW200x2	ACR2-J-14212750663	HCDOO
			70	KW200x2	ACR2-J-14212770663	HCDOO
			95	KW200x2	ACR2-J-14212795663	HCDOO
			120	KW200x2	ACR2-J-142127120663	HCDOO
17.2	3/4	12.7	50	KW200x2	ACR2-J-17212750663	HCDOO
			70	KW200x2	ACR2-J-17212770663	HCDOO
			95	KW200x2	ACR2-J-17212795663	HCDOO
			120	KW200x2	ACR2-J-172127120663	HCDOO
23.1	1	12.7	50	KW250x2	ACR2-J-23112750663	HCDOO
			70	KW250x2	ACR2-J-23112770663	HCDOO
			95	KW250x2	ACR2-J-23112795663	HCDOO
			120	KW250x2	ACR2-J-231127120663	HCDOO

Equipment



For GYSER 993

Rod Size			Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	A'(inch)	A'(mm.)	B(mm ²)			
14.2	5/8	12.7	50	KW200x2	ACR2-J-14212750993	HCDOO
			70	KW200x2	ACR2-J-14212770993	HCDOO
			95	KW200x2	ACR2-J-14212795993	HCDOO
			120	KW200x2	ACR2-J-142127120993	HCDOO
17.2	3/4	12.7	50	KW200x2	ACR2-J-17212750993	HCDOO
			70	KW200x2	ACR2-J-17212770993	HCDOO
			95	KW200x2	ACR2-J-17212795993	HCDOO
			120	KW200x2	ACR2-J-172127120993	HCDOO
23.1	1	12.7	50	KW250x2	ACR2-J-23112750993	HCDOO
			70	KW250x2	ACR2-J-23112770993	HCDOO
			95	KW250x2	ACR2-J-23112795993	HCDOO
			120	KW250x2	ACR2-J-231127120993	HCDOO

Necessary Tools



Recommended Tools

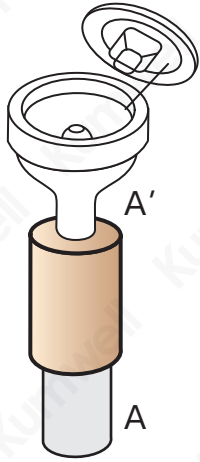
- Butane torch
- Butane gas
- Gloves

Note: Special requirement can be requested.

AR1

Grounding Receptacle to Ground Rod

Ground receptacle to the top of ground rod



For GYSER 663

Rod Size			Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	A(inch)	A'(mm.)			
14.2	5/8	12.7	KW150x2	ARI-CL-142663	HCCOO
17.2	3/4	12.7	KW150x2	ARI-CL-172663	HCCOO
23.1	1	12.7	KW200x2	ARI-DL-231663	HCDOO

For GYSER 993

Rod Size			Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	A(inch)	A'(mm.)			
14.2	5/8	12.7	KW150x2	ARI-CL-142993	HCCOO
17.2	3/4	12.7	KW150x2	ARI-CL-172993	HCCOO
23.1	1	12.7	KW200x2	ARI-DL-231993	HCDOO

Equipment



Necessary Tools



Recommended Tools

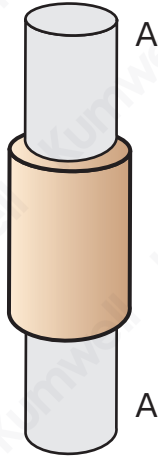
- Butane torch
- Butane gas
- Gloves

Note: Special requirement can be requested.

RR1

Ground Rod to Ground Rod

Vertical ground rod end to end



Rod Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	A(inch)			
12.7	1/2	KW150	RR1-CL-127127	HCCOO
14.2	5/8	KW200	RR1-CL-142142	HCCOO
17.2	3/4	KW200	RR1-CL-172172	HCCOO
23.1	1	KW250	RR1-CL-231231	HCCOO

Equipment



Necessary Tools



Recommended Tools

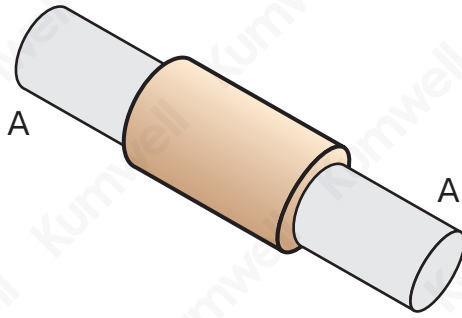
- Butane torch
- Butane gas
- Gloves

Note: Special requirement can be requested.

RR2

Ground Rod to Ground Rod

Horizontal ground rod end to end



Rod Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	A(inch)			
12.7	1/2	KW150	RR2-CL-127127	HCCOO
14.2	5/8	KW200	RR2-CL-142142	HCCOO
17.2	3/4	KW200	RR2-CL-172172	HCCOO
23.1	1	KW250	RR2-CL-231231	HCCOO

Equipment

	
Mould	Metal powder
	
Handle clamp	Steel disk

Necessary Tools

		
Mould brush	Cable clean brush	File
		
Flint igniter	Scraper	Tool box

Recommended Tools

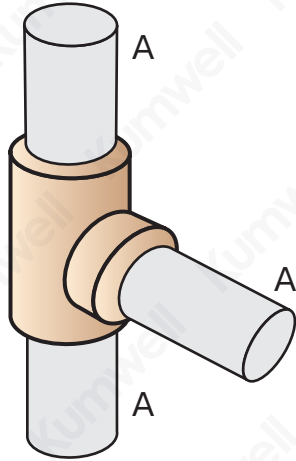
- Butane torch
- Butane gas
- Gloves

Note: Special requirement can be requested.

RR3

Ground Rod to Ground Rod

Horizontal ground rod tap to vertical ground rod



Rod Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	A(inch)			
12.7	1/2	KW200	RR3-CL-127127	HCCOO
14.2	5/8	KW200	RR3-CL-142142	HCCOO
17.2	3/4	KW250	RR3-CL-172172	HCCOO
23.1	1	KW150x2	RR3-DL-231231	HCCOO

Equipment



Necessary Tools



Recommended Tools

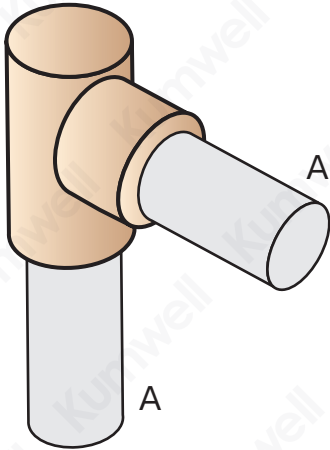
- Butane torch
- Butane gas
- Gloves

Note: Special requirement can be requested.

RR4

Ground Rod to Ground Rod

Horizontal ground rod to ground rod



Rod Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	A(inch)			
12.7	1/2	KW200	RR4-C-127127	HCCOO
14.2	5/8	KW200	RR4-C-142142	HCCOO
17.2	3/4	KW250	RR4-C-172172	HCCOO
23.1	1	KW150x2	RR4-D-231231	HCCOO

Equipment



Necessary Tools



Recommended Tools

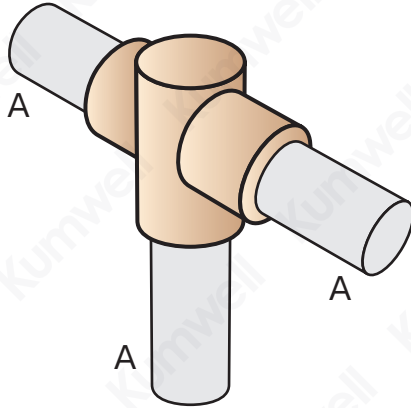
- Butane torch
- Butane gas
- Gloves

Note: Special requirement can be requested.

RR5

Ground Rod to Ground Rod

Horizontal ground rod thru to ground rod



Rod Size		Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)	A(inch)			
12.7	1/2	KW200	RR5-C-127127	HCCOO
14.2	5/8	KW200	RR5-C-142142	HCCOO
17.2	3/4	KW250	RR5-C-172172	HCCOO
23.1	1	KW150x2	RR5-D-231231	HCCOO

Equipment



Necessary Tools



Recommended Tools

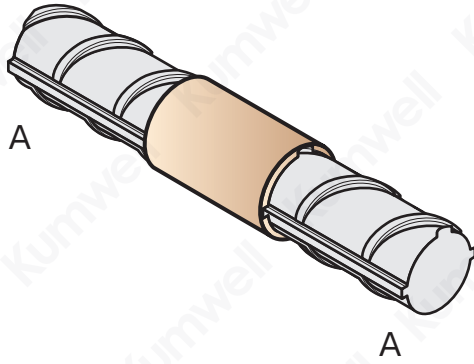
- Butane torch
- Butane gas
- Gloves

Note: Special requirement can be requested.

RE1

Rebar to Rebar

Horizontal rebar end to end



Rod Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)			
10	KW90	RE1-C-1010	HCCOO
12	KW115	RE1-C-1212	HCCOO
16	KW200	RE1-C-1616	HCCOO
20	KW250	RE1-C-2020	HCCOO
25	KW200x2	RE1-D-2525	HCDOO

Equipment

	
Mould	Metal powder
	
Handle clamp	Steel disk

Necessary Tools

			
Mould brush	Cable clean brush	File	Ceramic fiber
			
Flint igniter	Scraper	Tool box	Duct seal

Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

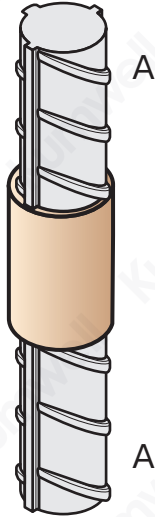
- For perfect welding, it need to clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- Kumwell RE Mould provides ceramic fiber to prevent leakage

Note: Special requirement can be requested.

RE2

Rebar to Rebar

Vertical rebar end to end



Rod Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm.)			
10	KW90	RE2-CL-1010	HCCOO
12	KW115	RE2-CL-1212	HCCOO
16	KW200	RE2-CL-1616	HCCOO
20	KW250	RE2-CL-2020	HCCOO
25	KW200x2	RE2-DL-2525	HCDOO

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

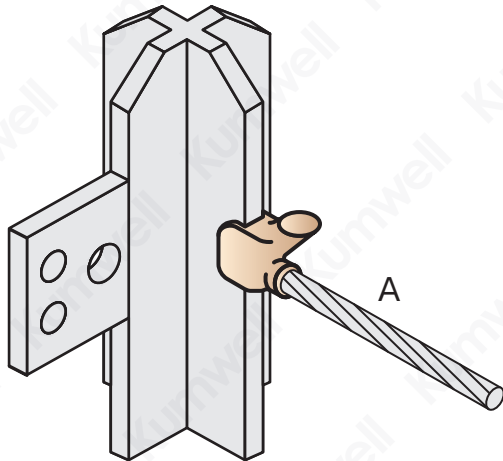
- For perfect welding, it need to clean and remove oxide and moisture from reinforcement steel and conductor before making connection
- Kumwell RE Mould provides ceramic fiber to prevent leakage

Note: Special requirement can be requested.

SRS1

Steel Cable to Steel Rod

Vertical steel rod tap to horizontal



Conductor Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm ²)			
50	KW45	SRS1-C-50	HCCOO-X
50	KW45	SRS1-C-50S	HCCOO-X

Equipment



Necessary Tools

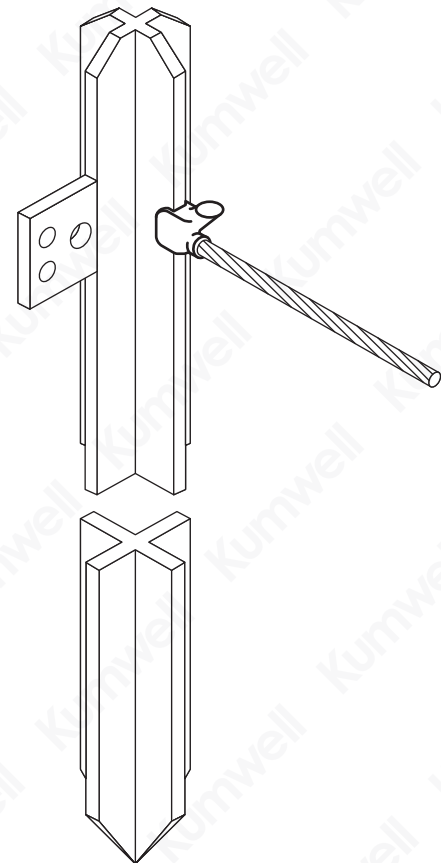


Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For perfect connection, Remove oxide and moisture where making connection



Note: Special requirement can be requested.

KR

Type for Railway

Weld metal powder



Kumwell KR type's exothermic welding powder for railway signaling is tin free that can prevent metallurgical damage to the rail. Weld material provides a final joint to the average of 43,000 psi tensile strength tested by ASTM E8M (Test Methods for Tension Testing of Metallic Material). KR Type has been complied with the standards of American Railway Engineering and Maintenance-of-way Association (AREMA C&S Manual Recommendation Part 8.134)

Applications

Suitable for Signaling bond's connections, that is, Horizontal cable end tap to web rail, Horizontal cable end tap to head rail, Stud tap to web rail.

Standards

- American Railway Engineering and Maintenance-of-way Association (AREMA C&S Manual Recommendation Part 8.134)
- Test Method for Tension Testing of Metallic Material (ASTME8M)

Storage

It should be stored in an ambient temperature and avoid moisture.

Criteria of Test

- Kumwell Exothermic welding connections have been successfully tested in accordance with;
- UL 467 Standard for Grounding & Bonding Equipment/UL Inspection Witness (except yield copper)
 - American Railway Engineering and Maintenance-of-way Association (AREMA ASTM E8M) the weld material shall not contain tin and phosphorous or caustic, toxic, or explosive substance.



Signaling cable to head rail



Signaling cable to web rail



Stud to rail

KR

Type for Railway

Railway Signaling

Quality Assurance

Kumwell is also internationally recognized for high standard graphite mould and the exothermic welding powder from successfully passed the control test in accordance with the UL467 Standard for Grounding and Bonding Equipment/UL Inspection Witness (except yield copper).

Process

Kumwell Exothermic Welding process is a molecular chemical reaction between copper oxide and aluminum, generating a tremendous superheat with molten metals reaching at high temperatures. The process can be completed itself automatically without external source of power or heat.

Graphite Mould

- Earnest design: cavity, flow path
- High quality raw material
- Accurate tolerance

Safety starting and weld metal powder

- No Tin and Phosphorus
- Nontoxic and heavy metal
- Non self-ignite
- Ignition temperature at least 400°C
- Smooth reaction
- Steady burn without pop and fire out
- No slag and porosity
- Consistency of color
- High conductivity with at least 93% Cu
- No affect to rail

Packaging

Kumwell weld metal powder is contained a moisture-resistant plastic cartridge, packed in a paper box. Integral weld metal package is identified as to the weld metal powder's amount, type of metal powder to be connected, Lot No., the number of tubes to manufacturing date (MFD).

Code	KR25	KR32	KR45	KR65	KR90	KR115	KR150	KR200	KR250
Tubes/box	50	20	20	20	20	10	10	10	10

Storage

It should be stored at ambient temperature and kept away from moisture.

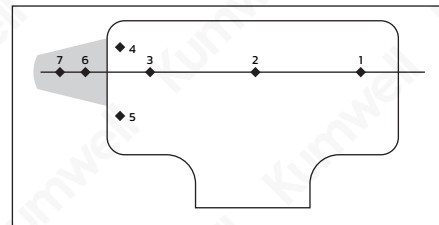
Heat-Affected Zone (HAZ)

Railway signaling is a system used to control traffic safety, essentially to prevent trains from colliding.

Exothermic welding is one of the most popular methods of railway signaling bond. In welding process, the martensite is formed by rapid cooling, quenching, of austenite which traps carbon atoms that do not have enough time to diffuse out of the crystal structure.

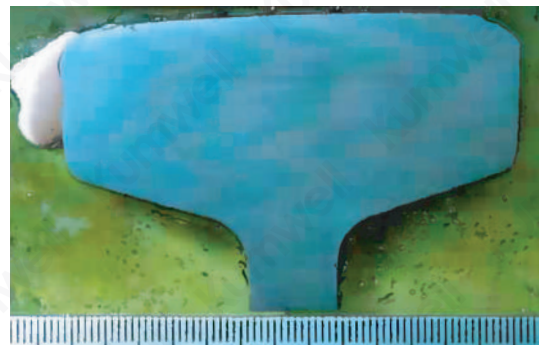
When viewed in cross-section, the lenticular (lens-shaped) crystal grains appear acicular (needle-shaped).

Martensite affect to the rail with increasing risk of cracking and brittle.



Point	1	2	3	4	5	6	7
Specimen							
Railway Signaling bond	240	245	240	276	287	118	124

Hardness survey location of vickers hardness test (HV10) of railway signaling bond



Microstructure of a cross-section of exothermic welding for railway signaling bond

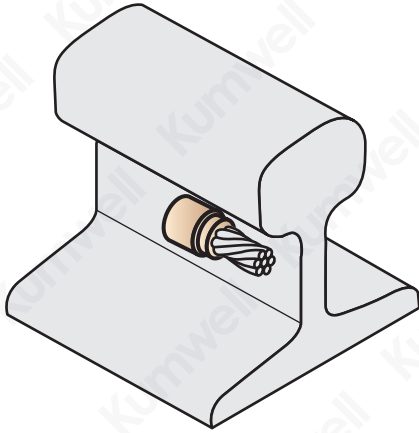


Macrostructure of a cross-section of exothermic welding for railway signaling bond

KWRT (R/L)

Cable to Web Rail

Horizontal ground rod thru to ground rod



Application for Connection Railway

Suitable for railway signaling cable for rail size 3/16" or 5/16" on web rail completed with graphite mould No. KWRT3R, KWRT3L, KWRT5R, KWRT5L and handle clamp No. HCM00

Signaling Cable	Metal Powder	Graphite Mold Type	Handle Clamp Type
Diameter(inch)			
3/16	KR25	KWRT3R	HCM00
3/16	KR25	KWRT3L	HCM00
5/16	KR32	KWRT5R	HCM00
5/16	KR32	KWRT5L	HCM00

Equipment

	
Mould	Metal powder
	
Handle clamp	Steel disk

Necessary Tools

		
Mould brush	Cable clean brush	Bus bar brush
		
Flint igniter	Scraper	Tool box

Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

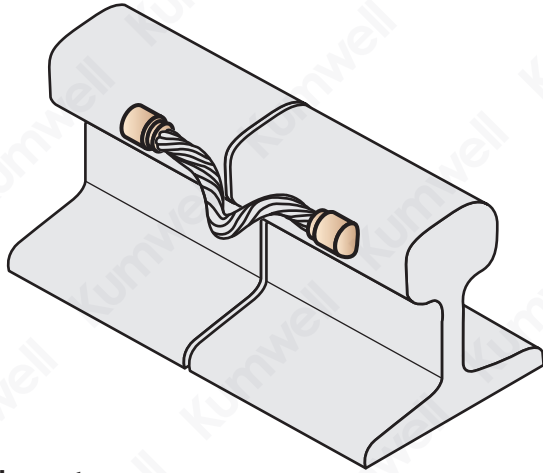
- For perfect connection, Remove oxide and moisture where making connection
- "L" for Left connection "R" for Right connection

Note: Special requirement can be requested.

KHRT

Cable to Head Rail

Horizontal cable end tap to head rail



Application for Connection Railway

Suitable for connection railway signaling cable for rail size 3/16"x7/12" or 5/16"x7-1/2" on head rail completed with graphite mould No. KHRT3R, KHRT3L, KHRT5R, KHRT5L and handle clamp No. HCHOO

Signaling Cable		Metal Powder	Graphite Mold Type	Handle Clamp Type
Diameter (inch)	Length (inch)			
3/16	7-1/2	KR25	KHRT3R	HCHOO
3/16	7-1/2	KR25	KHRT3L	HCHOO
5/16	7-1/2	KR32	KHRT5R	HCHOO
5/16	7-1/2	KR32	KHRT5L	HCHOO

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

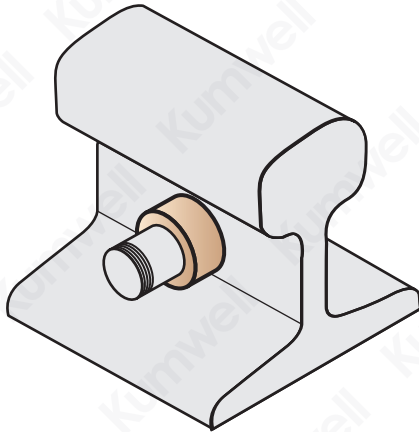
- For perfect connection, Remove oxide and moisture where making connection
- "L" for Left connection "R" for Right connection

Note: Special requirement can be requested.

KWS

Stud to Web Rail

Stud tap to web rail



Application for Connection Railway

Suitable for joint stud tap to web rail completed with handle clamp
No. HCW00

Stud	Metal Powder	Graphite Mold Type	Handle Clamp Type
M6	KR45	KWS6	HCW00
M8	KR45	KWS8	HCW00
M10	KR65	KWS10	HCW00
M12	KR90	KWS12	HCW00
M16	KR115	KWS16	HCW00

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

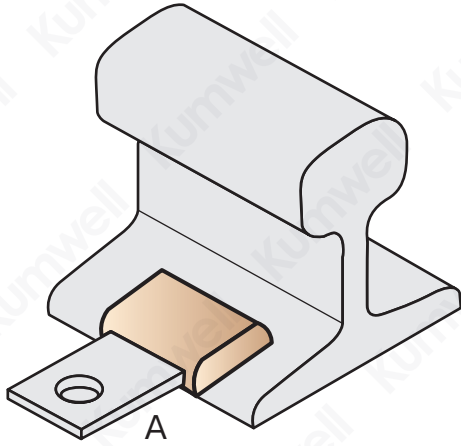
- For perfect connection, Remove oxide and moisture where making connection

Note: Special requirement can be requested.

BX1

Bus Bar to Rail

Bar to foot of rail at angle 90°



Rod Size	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mmxmm)			
25x3	KR65	BX1-CL-253	HCFOO

Equipment

	
Mould	Metal powder
	
Handle clamp	Steel disk

Necessary Tools

		
Mould brush	Bus bar brush	File
		
Flint igniter	Scraper	Tool box

Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

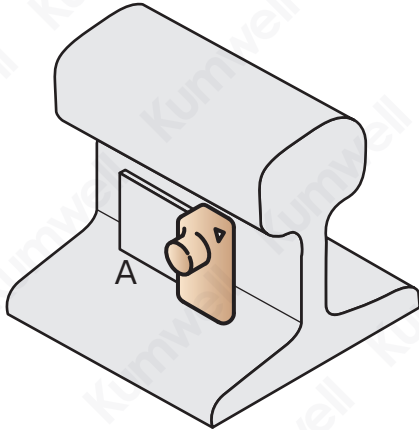
- For perfect connection, Remove oxide and moisture where making connection

Note: Special requirement can be requested.

BX3

Bus Bar to Rail

Horizontal bus bar to web rail



Conductor	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mmxmm)			
40x5	KR150x2	BX3R-CL-405	HCWOO
40x5	KR150x2	BX3L-CL-405	HCWOO
40x6	KR150x2	BX3R-CL-406	HCWOO
40x6	KR150x2	BX3L-CL-406	HCWOO
50x6	KR200x2	BX3R-DL-506	HDWCOO
50x6	KR200x2	BX3L-DL-506	HDWCOO

Equipment

Mould	Metal powder
Handle clamp	Steel disk

Necessary Tools

Mould brush	Bus bar brush	File
Flint igniter	Scraper	Tool box

Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

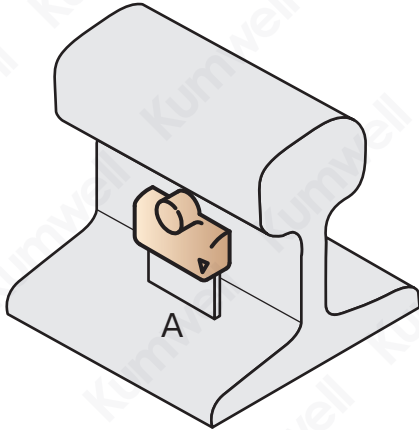
- For perfect connection, Remove oxide and moisture where making connection
- "L" for Left connection "R" for Right connection

Note: Special requirement can be requested.

BX4

Bus Bar to Rail

Horizontal bus bar to web rail



Conductor	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mmxmm)			
40x5	KR150x2	BX4-CL-405	HCWOO
40x6	KR150x2	BX4-CL-406	HCWOO
50x6	KR200x2	BX4-DL-506	HDWOO

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

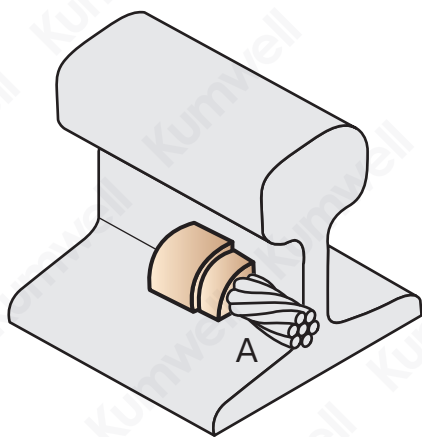
- For perfect connection, Remove oxide and moisture where making connection

Note: Special requirement can be requested.

CX1

Cable to Rail

Horizontal cable to rail termination (fillet)



Conductor A(mm ²)	Metal Powder	Graphite Mold Type	Handle Clamp Type
50	KR115	CXIL-CL-50	HCFOO
50	KR115	CXIR-CL-50	HCFOO
70	KR115	CXIL-CL-70	HCFOO
70	KR115	CXIR-CL-70	HCFOO
95	KR150	CXIL-CL-95	HCFOO
95	KR150	CXIR-CL-95	HCFOO
120	KR150	CXIL-CL-120	HCFOO
120	KR150	CXIR-CL-120	HCFOO
150	KR200	CXIL-CL-150	HCFOO
150	KR200	CXIR-CL-150	HCFOO
185	KR200	CXIL-CL-185	HCFOO
185	KR200	CXIR-CL-185	HCFOO
240	KR200	CXIL-CL-240	HCFOO
240	KR200	CXIR-CL-240	HCFOO

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

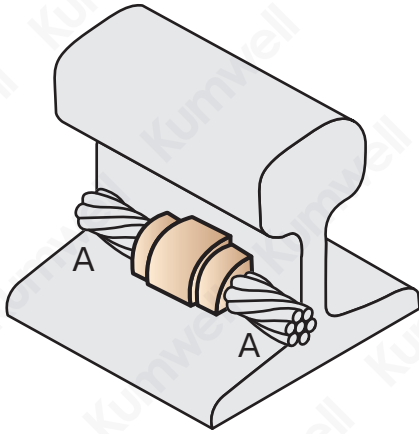
- For perfect connection, Remove oxide and moisture where making connection
- "L" for Left connection "R" for Right connection

Note: Special requirement can be requested.

CX2

Cable to Rail

Horizontal thru cable to rail termination (Fillet)



Conductor	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm ²)			
50	KR150	CX2-CL-50	HCFOO
70	KR150	CX2-CL-70	HCFOO
95	KR200	CX2-CL-95	HCFOO
120	KR200	CX2-CL-120	HCFOO
150	KR250	CX2-CL-150	HCFOO

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

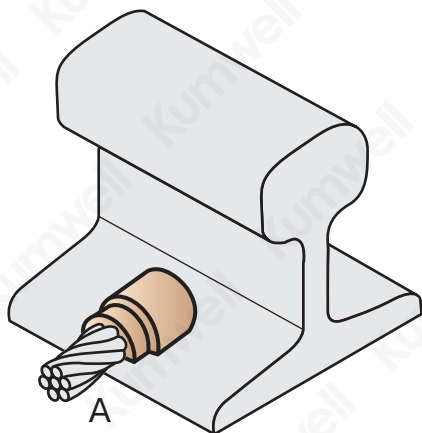
- For perfect connection, Remove oxide and moisture where making connection

Note: Special requirement can be requested.

CX5

Cable to Rail

Horizontal cable end tap to rail (foot)



Conductor	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm ²)			
16	KR25	CX5-A-16	HCA00
25	KR25	CX5-A-25	HCA00
35	KR32	CX5-A-35	HCA00
50	KR32	CX5-A-50	HCA00
70	KR65	CX5-A-70	HCA00
95	KR65	CX5-CL-95	HCFO0
120	KR90	CX5-CL-120	HCFO0
150	KR115	CX5-CL-150	HCFO0

Equipment

	
Mould	Metal powder
	
Handle clamp	Steel disk

Necessary Tools

		
Mould brush	Cable clean brush	Bus bar brush
		
Flint igniter	Scraper	Tool box

Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

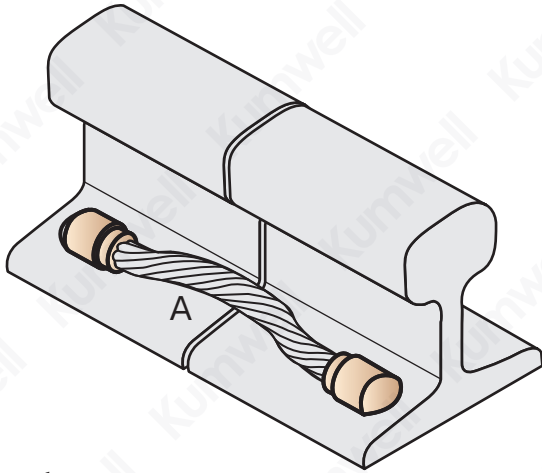
- "HCA00" Type A-Handle clamp is built-in graphite mould
- For perfect connection, Remove oxide and moisture where making connection

Note: Special requirement can be requested.

CX7

Cable to Rail

Bond to base of rail (foot)



Conductor	Metal Powder	Graphite Mold Type	Handle Clamp Type
A(mm ²)			
50	KR45	CX7L-CL-50	HCFOO
50	KR45	CX7R-CL-50	HCFOO
70	KR45	CX7L-CL-70	HCFOO
70	KR45	CX7R-CL-70	HCFOO
120	KR65	CX7L-CL-120	HCFOO
120	KR65	CX7R-CL-120	HCFOO
150	KR90	CX7L-CL-150	HCFOO
150	KR90	CX7R-CL-150	HCFOO

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

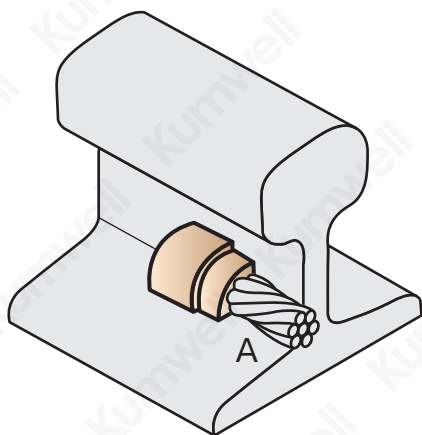
- For perfect connection, Remove oxide and moisture where making connection
- "L" for Left connection "R" for Right connection

Note: Special requirement can be requested.

CX8

Cable to Rail

Horizontal cable end tap to web rail



Conductor A(mm ²)	Metal Powder	Graphite Mold Type	Handle Clamp Type
25	KR25	CX8R-BL-25	HCMOO
25	KR25	CX8L-BL-25	HCMOO
35	KR45	CX8R-CL-35	HCWOO
35	KR45	CX8L-CL-35	HCWOO
50	KR45	CX8R-CL-50	HCWOO
50	KR45	CX8L-CL-50	HCWOO
70	KR45	CX8R-CL-70	HCWOO
70	KR45	CX8L-CL-70	HCWOO
95	KR90	CX8R-CL-95	HCWOO
95	KR90	CX8L-CL-95	HCWOO
120	KR115	CX8R-CL-120	HCWOO
120	KR115	CX8L-CL-120	HCWOO
150	KR150	CX8R-CL-150	HCWOO
150	KR150	CX8L-CL-150	HCWOO
185	KR200	CX8R-CL-185	HCWOO
185	KR200	CX8L-CL-185	HCWOO
240	KR200	CX8R-CL-240	HCWOO
240	KR200	CX8L-CL-240	HCWOO

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For perfect connection, Remove oxide and moisture where making connection
- "L" for Left connection "R" for Right connection

Note: Special requirement can be requested.

Conductors

Exothermic Welding

Cadmium Bronze Wire with Tin Plating for Rail Head Bond



Code No.	Length (inch)	Overall Diameter (inch)
KWSBS 37.5	7-1/2"	3/16"

Material

Sinaling wire - Cadmium bronze with tin
Sleeves - Copper

Cadmium Bronze Wire with Tin Plating for Switch Bond



Code No.	Length (inch)	Overall Diameter (inch)
KSBTBS 318T	18"	3/16"

Material

Sinaling wire - Cadmium bronze with tin
Sleeves - Copper

Cadmium Bronze Wire with Tin Plating for Jumper Bond



Code No.	Length (inch)	Overall Diameter (inch)
KSBTBJ 318T	18"	3/16"

Material

Sinaling wire - Cadmium bronze with tin
Sleeves - Copper

Cadmium Bronze Wire with Tin Plating for Web Bond



Code No.	Length (inch)	Overall Diameter (inch)
KSBW 34T	4-1/8"	3/16"

Material

Sinaling wire - Cadmium bronze with tin
Sleeves - Copper
Lug - Copper with tin

Cadmium Bronze Wire with Tin Plating



Code No.	Length (inch)	Overall Diameter (inch)
SB3T	On Request	3/16"

Material

Sinaling wire - Cadmium bronze with tin

PVC Covered Galvanized Steel Wire



Code No.	Length (inch)	Overall Diameter (inch)
KWBTG 4-0	100	3/16"

Material

Sinaling wire - Galvanized Steel Ø 4 mm.
PVC Cover - Orange PVC UV Stabiliser

KB

Type for Cathodic Protection

Weld metal powder



Kumwell KB type's exothermic welding process for cable to piping's steel surface provides perfect connections with corrosion resistance and no effect in welding process on pipeline such as martensite at Heat-Affected Zone (Haz). High conductivity of high copper composition withstands repeated fault current without loosening up.

Applications

Suitable for Cathodic Protection's connections, that is, Horizontal through cable to horizontal pipe, Angular cable drop to vertical pipe surface.

Standards

- ANSI/ASME B 31.4 Pipeline Transportation System for Liquid.
- ANSI/ASME B 31.8 Gas Transmission and Distribution Piping System.

Criteria of Test

Kumwell Exothermic welding connections have been successfully tested in accordance with;

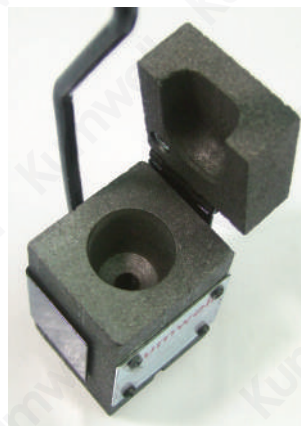
- UL 467 Standard for Grounding & Bonding Equipment/UL Inspection Witness (except yield copper)

Quality Assurance

Kumwell is also internationally recognized for high standard graphite mould and the exothermic welding powder from successfully passed the control test in accordance with the UL467 Standard for Grounding and Bonding Equipment/UL Inspection Witness (except yield copper).

Process

Kumwell Exothermic Welding process is a molecular chemical reaction between copper oxide and aluminum, generating a tremendous superheat with molten metals reaching at high temperatures. The process can be completed itself automatically without external source of power or heat.



KB

Type for Cathodic Protection

Weld metal powder

Graphite Mould

- Earnest design: cavity, flow path
- High quality raw material
- Accurate tolerance

Safety starting and weld metal powder

- No Tin and Phosphorus
- Nontoxic and heavy metal
- Non self-ignite
- Ignition temperature at least 400°C
- Smooth reaction
- Steady burn without pop and fire out
- No slag and porosity
- Consistency of color
- High conductivity with at least 93% Cu

Packaging

Kumwell weld metal powder contains a moisture-resistant plastic cartridge, packed in a paper box. Integral weld metal package is identified as to the weld metal powder's amount, type of metal powder to be connected, Lot No., the number

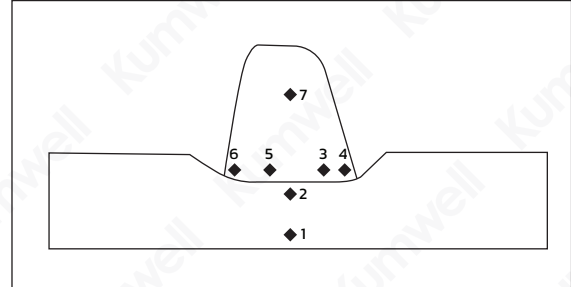
Code	KB15	KB25	KB32	KB45	KB65
Tubes/box	40	20	20	20	20

Storage

It should be stored at ambient temperature and kept away from moisture.

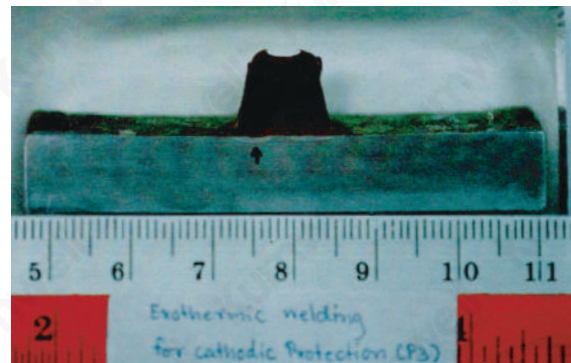
Heat-Affected Zone (HAZ)

Cathodic Protection is a method for controlling the corrosion deterioration of metallic structures in contact with most forms of electrolytically conducting environments such as soils, seawater and basically all natural waters. Cathodic Protection has grown to have many uses in marine and underground structures, water storage tanks, gas pipelines, oil platform supports, and many other facilities exposed to a corrosive environment. In welding process, we shall ensure that there is no effect to welding area in term of inside pressure and martensite, which is formed by rapid cooling, quenching, of austenite can be affected to the pipe with increasing risk of penetration.

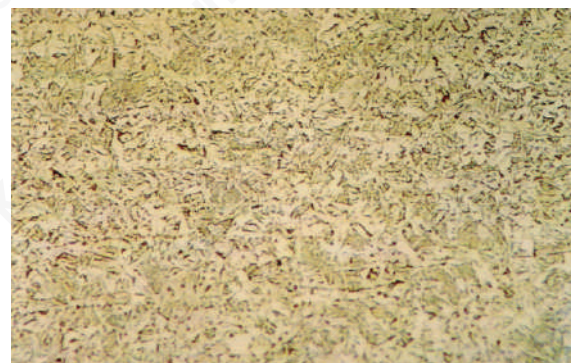


Point	1	2	3	4	5	6	7
Specimen							
Cathodic protection	147	145	173	150	164	153	121

Hardness survey location of vickers hardness test (HV10) of cathodic protection



Microstructure of a cross-section of exothermic welding for cathodic protection

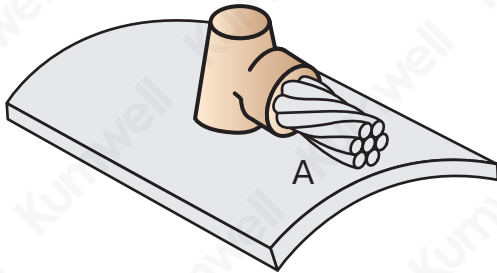


Macrostructure of a cross-section of exothermic welding for cathodic protection

CA1

Cathodic Protection

Horizontal thru cable to horizontal pipe



Conductor A(mm ²)	Metal Powder	Graphite Mold Type	Handle Clamp Type
2.5	KB15	CA1-A-2.5	HCA00
4	KB15	CA1-A-4	HCA00
6	KB15	CA1-A-6	HCA00
10	KB15	CA1-A-10	HCA00
16	KB15	CA1-A-16	HCA00
25	KB15	CA1-A-25	HCA00
35	KB32	CA1-A-35	HCA00
50	KB65	CA1-A-50	HCA00
70	KB65	CA1-A-70	HCA00

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

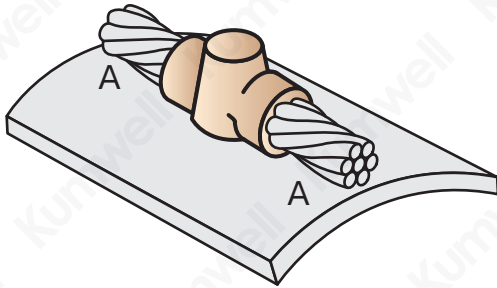
- For perfect connection, Remove oxide and moisture where making connection coat surfaces of steel and connection by rust-oleum cold galvanizing
- KB weld metal powder is special design for cathodic protection
- "HCA00" Type A-Handle clamp is built-in graphite mold

Note: Special requirement can be requested.

CA2

Cathodic Protection

Horizontal thru cable to horizontal pipe



Conductor A(mm ²)	Metal Powder	Graphite Mold Type	Handle Clamp Type
2.5	KB25	CA2-A-2.5	HCA00
4	KB25	CA2-A-4	HCA00
6	KB25	CA2-A-6	HCA00
10	KB25	CA2-A-10	HCA00
16	KB25	CA2-A-16	HCA00
25	KB25	CA2-A-25	HCA00
35	KB45	CA2-A-35	HCA00
50	KB65	CA2-A-50	HCA00
70	KB65	CA2-A-70	HCA00

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

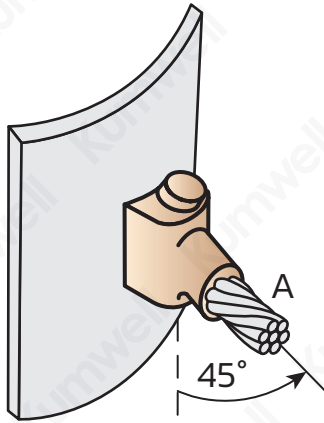
- For perfect connection, Remove oxide and moisture where making connection coat surfaces of steel and connection by rust-oleum cold galvanizing
- KB weld metal powder is special design for cathodic protection
- "HCA00" Type A-Handle clamp is built-in graphite mold

Note: Special requirement can be requested.

CA3

Cathodic Protection

Angular cable drop to vertical pipe surface



Conductor A(mm ²)	Metal Powder	Graphite Mold Type	Handle Clamp Type
2.5	KB15	CA3-B-2.5	HCBOO-XB
4	KB15	CA3-B-4	HCBOO-XB
6	KB15	CA3-B-6	HCBOO-XB
10	KB15	CA3-B-10	HCBOO-XB
16	KB15	CA3-B-16	HCBOO-XB
25	KB15	CA3-B-25	HCBOO-XB
35	KB32	CA3-B-35	HCBOO-XB
50	KB65	CA3-B-50	HCBOO-XB
70	KB65	CA3-B-70	HCBOO-XB

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

Note

- For perfect connection, Remove oxide and moisture where making connection coat surfaces of steel and connection by rust-oleum cold galvanizing
- KB weld metal powder is special design for cathodic protection

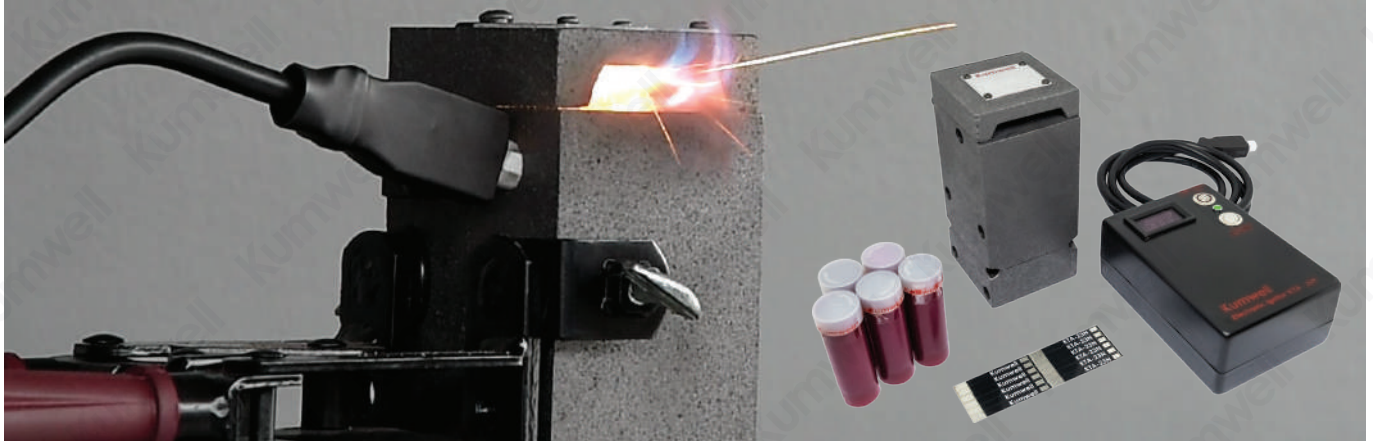
Note: Special requirement can be requested.

Elitor

Elitor System

More safety and quick operation

Kumwell Exothermic welding process with remote ignition in critical areas: underground construction projects such as subway, tunnel, underground transmission lines, including smoke sensitivity area or highly flammable area such as data center, chemical storage, document storage.



There are two types of the Elitor System:

- Elitor System With Starting Powder
- Elitor System Without Starting Powder (Low Smoke)

Elitor

Elitor System

with starting powder



Graphite Mould
Type xx-x-xxSP

Elitor System with starting powder is an innovation for Remote ignition and designed to simplify and safety operation for exothermic welding process.

- Safe to work in restricted or closed area.
- Rechargeable battery with LED display.
- Quick operation and easy to handle.
- Safety warning sound before ignition.

Order Procedure

- To order mould for use with Elitor System with starting powder please insert SP after Graphite Mould Type. (Example CC1-C-70SP)
- To order Ignitor Strip for Elitor System with starting powder, order code KTA023SP
- To order weld metal powder for Elitor System with starting powder, please order standard powder code KW, KR, KB



Electronic Ignitor



Ignitor Strip SP

Elitor

Elitor System

More safety and quick operation



Elitor System without starting powder is an innovation for remote ignition designed to simplify and safety operation while reduce smoke emission for exothermic welding process. Recommend using in a confined space with restricted airflow, limited smoke emission and flameable area.

- No starting powder required and resulting less smoke.
- Rechargeable battery with LED display.
- Quick operation and easy to handle.
- Warning sound before ignition for safety operation.
- Special Graphite Mould Type xx-x-xxPLUS requires for Low Smoke process.

Order Procedure

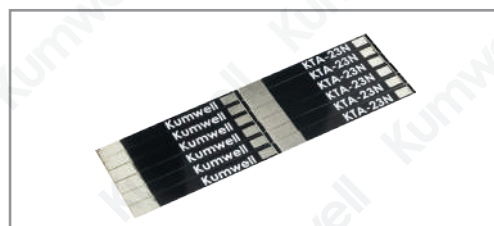
- To order mould for use with Elitor System without starting powder (Low Smoke) please insert PLUS after Graphite Mould Type. (Example CCI-C-70PLUS)
- To order Ignitor Strip for Elitor System without starting powder (Low Smoke), order code KTA023PLUS
- To order weld metal powder for Elitor System without starting powder (Low Smoke), please order standard powder code KWxxL, KRxxL, KBxxL. (Example KW65L)



Graphite Mould
Type xx-x-xxPLUS



Electronic Ignitor



Ignitor Strip PLUS

Handle Clamp

Handle clamp, Handle clamp support & Standard tools

Kumwell Handle Clamp is used for handling clamping the mould fit to the right position and tightening, without leakage during the exothermic welding process.

Kumwell Handle Clamp Support is designed to use with standard handle clamp to increase the capability of usage in all applications such as cable to steel pipe connection, cable to flat surface, etc.



Standards Tools

Kumwell Standard Tools are dedicated to use with the main equipments in exothermic welding connection process.

- **Flint Igniter** – for starting the reaction.
- **Cable Clean Brush** – for cleaning cables and other circular conductor.
- **Mould Brush** – for cleaning mould.
- **Busbar Brush** – for cleaning metal flat surface.
- **Scraper** – for remove slag from mould's crucible after finishing the connection.



Kumwell Tool Box is a special designed steel case suitable storing of exothermic welding equipments before and after process.



Handle Clamp

Handle clamp & Handle clamp support

Kumwell Handle Clamp has only 3 type differences; HCB00, HCC00 and HCD00, which is adequate to assort with many different size and types of graphite mould.

	<p>HCB00</p> <p>HCB00 HCB00 type handle clamp assorting with 2"x2" sized mould.</p>
	<p>HCC00 and HCD00</p> <p>HCC00 and HCD00 HCC00 type handle clamp assorting with 3-1/8"x3-1/8" sized mould and 2-5/16" distance between prongs. HCD00 type handle clamp assorting with 4"x4" sized mould and 3" distance between prongs.</p>
	<p>HCB00-XB or HCB00-XB-12D</p> <p>HCB00-XB or HCB00-XB-12D Handle clamp with chain support for cathodic mould HCB00-XB is used to hold a mould fit at its horizontal and vertical position on up to 4" pipe's diameter and HCB00-XB-12D special chain support for 5" to 12" pipe's diameter.</p> <p style="text-align: right;"><i>*Assembly handle clamp with KTA-XB.</i></p>
	<p>HCC00-X or HCD00-X</p> <p>HCC00-X or HCD00-X Handle clamp with chain support "X" It is used to hold a mould fit at its horizontal and vertical position on up to 4" pipe's diameter. Special chain support can be requested. HCC00-X and HCD00-X suit to collaborate with CRE6P, CRE18P, CRE19P, CRE20P, CPI mould's types.</p> <p style="text-align: right;"><i>*Assembly handle clamp with KTA-X.</i></p>

Note: Special requirement can be requested.

Handle Clamp

Handle clamp & Handle clamp support

	<p>HCC00-Y or HCD00-Y</p> <p>HCC00-Y or HCD00-Y Handle clamp with vertical beam support "Y" It is used to hold a mould fit at its vertical position O steel beam or column. HCC00-Y and HCD00-Y suit to collaborate with CS3, CS4, CS7, CS18, CS21, CS22, CS23, CS24, CS25, CS26, CS27, CS28, CS29, CS30, BS1, BS4, BS5, BS8, BS13 mould's types.</p> <p><i>*Assembly handle clamp with KTA-Y.</i></p>
	<p>HCC00-Z or HCD00-Z</p> <p>HCC00-Z or HCD00-Z Handle clamp with chain support "Z" It is used to hold a mould fit in its position on top of rebar. HCC00-Z and HCD00-Z suit to collaborate with CRE1P, CRE17P, CA1, CA2 mould's types.</p> <p><i>*Assembly handle clamp with KTA-Z.</i></p>
	<p>HCC00-V or HCD00-V</p> <p>HCC00-V or HCD00-V Handle clamp with chain support "V" This type is recommended to CRE4P, CS16.</p> <p><i>*Assembly handle clamp with KTA-V.</i></p>
	<p>HCC00-V1 or HCD00-V1</p> <p>HCC00-V1 or HCD00-V1 Handle clamp with chain support "V1" This type is recommended to CRE5P.</p> <p><i>*Assembly handle clamp with KTA-V1.</i></p>

Note: Special requirement can be requested.

Handle Clamp

Handle clamp & Handle clamp support

	<p>HCC00-U or HCD00-U</p> <p>HCC00-U or HCD00-U Handle clamp with chain support "U" This type is recommended to CRE3P.</p> <p><i>*Assembly handle clamp with KTA-U.</i></p>
	<p>HCC00-W or HCD00-W</p> <p>HCC00-W or HCD00-W Handle clamp with beam support "W" This type is recommended to CS6, CS31, CS43, BS9, BS11.</p> <p><i>*Assembly handle clamp with KTA-W.</i></p>
	<p>HCC00-M or HCD00-M</p> <p>HCC00-M or HCD00-M Handle clamp with vertical magnetic support "M" It is used to hold a mould fit at its position on vertical steel surface especially on a large size H-beam that another chain or beam support cannot be used. HCC00-M and HCD00-M suit to collaborate with CS-type mould.</p> <p><i>*Assembly handle clamp with KTA-M.</i></p>

Handle Clamp








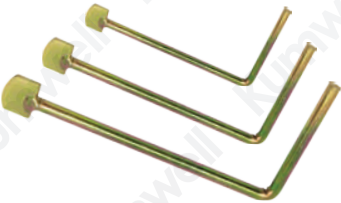
Handle clamp & Handle clamp support

Kumwell Handle Clamp has 3 type different type for rail way; HCM00, HCW00 and HCF00, which is adequate to assort with many different sizes and types of graphite mould.

	<p>HCM00</p> <p>HCM00 Handle clamp for railway (Web rail) This type is recommended to KWRT</p>
	<p>HCW00</p> <p>HCW00 Handle clamp for railway (Web rail) This type is recommended to BX3, BX4, CX8, KWS</p>
	<p>HCF00</p> <p>HCF00 Handle clamp for railway (Foot of rail / Rail termination (fillet)) This type is recommended to BX1, CX1, CX2, CX7</p>

Tool & Accesories

Tool & Accesories

	<p>KTA001</p> <p>KTA001 Tool box is a special designed steel case, suitable for storing of exothermic welding equipments before and after process.</p>
	<p>KTA002</p> <p>File is used for rubbing metal surface smooth before making connection.</p>
	<p>KTA003</p> <p>Bus bar Brush is used for cleaning metal flat surface before making connection.</p>
	<p>KTA004</p> <p>Princers are used to facilitate in making connection.</p>
	<p>KTA005</p> <p>Screwdriver is used to facilitate in making connection.</p>
	<p>KTA006</p> <p>Cable Clean Brush is used for cleaning cable only before making connection.</p> <p>Note: Cacle Clean Brush is made from brass, thus do not use for cleaning mould.</p>
	<p>KTA007</p> <p>Mould Brush is used for cleaning crucible and graphite mould's surface by its soft brush.</p>
	<p>KTA008-KTA011</p> <p>Scraper is used for removing slag from the mould crucible after finishing the connection.</p> <p>Code No. KTA008 is recommended for metal powder size 15-32 g Code No. KTA009 is recommended for metal powder size 45-90 g Code No. KTA0010 is recommended for metal powder size 115-250 g Code No. KTA0011 is recommended for metal powder size 300 g</p>

Tool & Accesories

Tool & Accesories

	<p>KTA014U</p> <p>Flint Igniter is used for starting the reaction.</p>
	<p>KTA014SU</p> <p>Flint Stone is used for spare part of flint igniter.</p>
	<p>KTA015</p> <p>Disk Container is used to store the steel disk and prevent possible damage.</p>
	<p>KTA016</p> <p>Cable Clamp is used for tightening a large-size cable conductor up to 95 mm².</p>
	<p>KTA017-KTA018</p> <p>KTA017 – Butane Torch KTA018 – Butane Gas Butane Torch and Gas is used for removing moisture from mould and conductor to ensure they are totally dry.</p>
	<p>KTA019</p> <p>Gloves can help prevent your hands from possible damage.</p>
	<p>KTA020</p> <p>Ceramic Fiber is used to prevent leakage from mould and conductors to complete connection.</p>
	<p>KTA-23N</p> <p>Strip</p>
	<p>KTA-24N</p> <p>Electronic Ignitor</p>
	<p>WE-DS</p> <p>Duct seal is used to protect the leak of exothermic welding process.</p>

Instruction

Electronic Ignitor

KTA-23N & KTA-24N



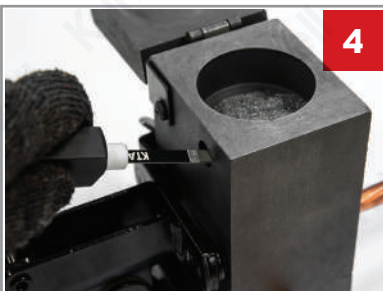
1
Place retaining disk ensuring the disk sits well at the bottom of the weld metal cavity.



2
Pour a recommended size of weld metal powder into the mould crucible. Check for any leaks, repeat step 1 in case of leaks.



3
Insert the Ignitor Strip (KTAO23PLUS) into the ELITOR connector.



4
Insert the connector with Ignitor Strip (KTAO23PLUS) to the side hole of the mould lid.



5
Switch the power button to the "ON".



6
Press the "IGNITOR" button on hold until alarm 5 seconds an exothermic reaction is initiated. Press the "OFF" button.




7
After completed reaction, wait 2-3 minutes to cool down before removing welded connection.



8
Gently scrape clean the crucible and weld cavity with a mould cleaning brush only to endure the mould.

Instruction

1



Kumwell
CAT.NO
CR2-C-5/84/0-115
CABLE TO GROUND ROD
CABLE 4/0 AWG. TAP
GROUND ROD DIA. 5/8 INCH RUN
POWDER HANDLE CLAMP
KW 115 HCC00
LOT 211006003

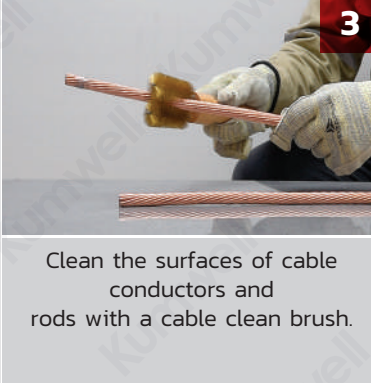
Inspect a nameplate on top of the graphite mould.

2



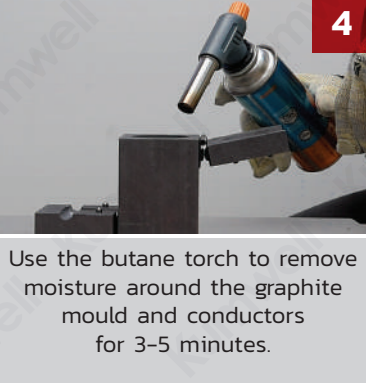
Assemble mould with a handle clamp.

3




Clean the surfaces of cable conductors and rods with a cable clean brush.

4



Use the butane torch to remove moisture around the graphite mould and conductors for 3-5 minutes.

5



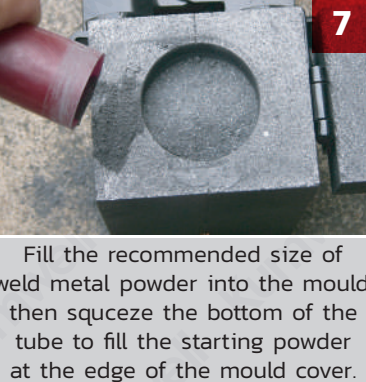
Put the conductors at the connection point, contacting each other, then fasten the handle clamp tightly.

6



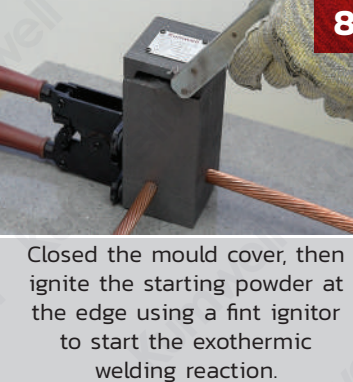
Open the mould cover, then put the steel disk at the base of weld metal cavity.

7




Fill the recommended size of weld metal powder into the mould, then squeeze the bottom of the tube to fill the starting powder at the edge of the mould cover.

8



Closed the mould cover, then ignite the starting powder at the edge using a fint ignitor to start the exothermic welding reaction.

9



Wait for the exothermic welding reaction until finished and leave the graphite mould to cool down for 30 seconds.

10



Remove the mould from the weld connection. Then, gently rub slag from the crucible with a scrapper and a mould brush until the dirt is gone.

11



Inspect the weld connection to be non-porous, and the color is according to standard. Also, the weld connection must be completely bonded.

12



After finishing the exothermic welding, always keep equipment & necessary tools in the "Kumwell Tools Box"

Remark : Recommend using cable clamp for tightening a large-size cable conductor > 95mm².

One Time

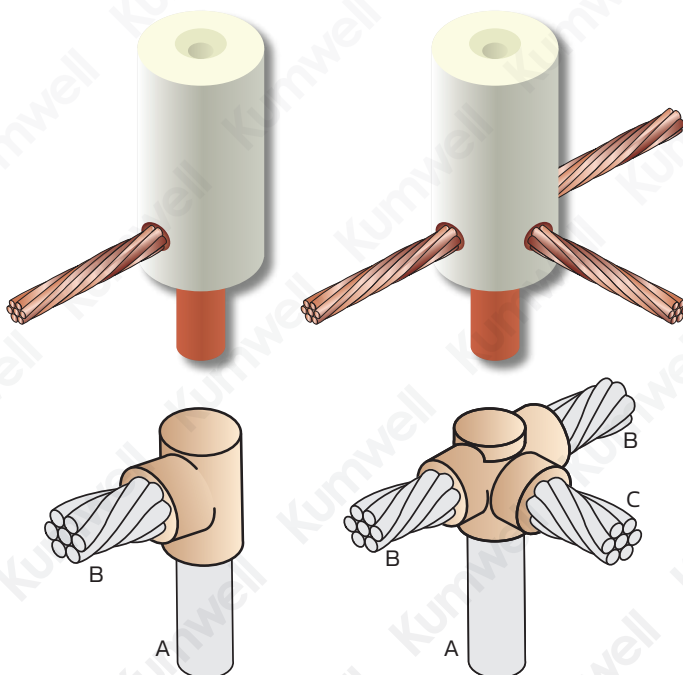
One Time System

Solution for simplicity and savings



"One Time kit" is a Single use exothermic welding kit. Used less equipment. But it can be used only one exothermic welding joint in each set. 1-set of "One Time kit" contains with one number of white ceramic cylindrical shape mould with "slip" (to hold the wires for avoid to splitting during the exothermic welding process), weld metal powder, steel disk, and flint gun (to ignite the weld metal powder)

"One Time kit" is one of the most popular in Kumwell product. less equipment and easy to install, we would like to offer this Single use exothermic welding product kit is a best solution for small size projects. "Pay low Get more" – low cost, less equipment, easy to install



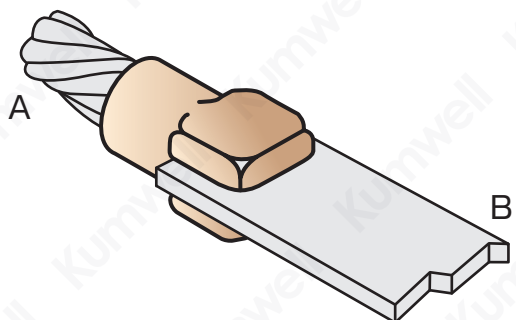
Benefits

- low price
- easy to install
- for a small project

CB1

Cable to Bus Bar

One time unit cable to bar



Conductor Size		Code
A(mm ²)	B(mmxmm)	
16	25x3	CB135-16
25	25x3	CB135-25
35	25x3	CB135-35
50	25x3	CB135-50
70	25x3	CB135-70
95	25x3	CB135-95
120	25x3	CB135-120
150	25x3	CB135-150
185	25x3	CB135-185
240	25x3	CB135-240
300	25x3	CB135-300

Equipment



Necessary Tools



Recommended Tools

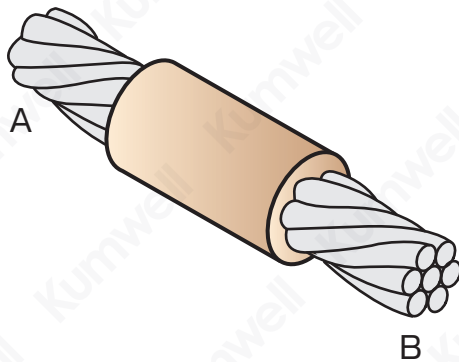
- Butane torch
- Butane gas
- Gloves

Note: Special requirement can be requested.

CC2

Cable to Cable

One time unit two way cable



Conductor Size		Code
A(mm ²)	B(mm ²)	
10	10	CC235-10
16	16	CC235-16
25	25	CC235-25
35	35	CC235-35
50	50	CC235-50
50	50	CC250-50
70	70	CC2120-70
70	16	CC2120-70/16
70	25	CC2120-70/25
70	35	CC2120-70/35
70	50	CC2120-70/50
95	95	CC2120-95
95	16	CC2120-95/16
95	50	CC2120-95/50
95	70	CC2120-95/70
120	120	CC2120-120
120	70	CC2120-120/70
150	150	CC2185-150
185	185	CC2185-185
185	150	CC2185-185/150
185	70	CC2185-185/70
185	95	CC2185-185/95
240	240	CC2300-240
240	70	CC2300-240/70
300	300	CC2300-300
300	120	CC2300-300/120

Equipment



Necessary Tools



Recommended Tools

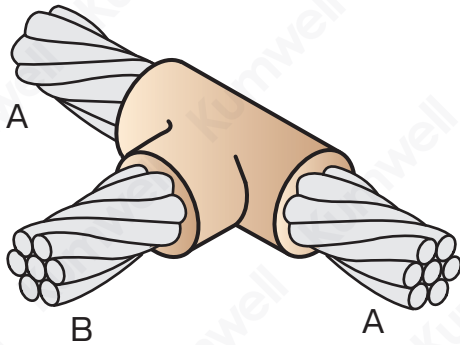
- Butane torch
- Butane gas
- Gloves

Note: Special requirement can be requested.

CC3

Cable to Cable

One time unit three way cable



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

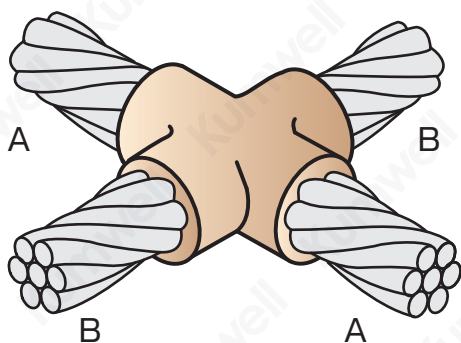
Conductor Size		Code
A(mm ²)	B(mm ²)	
10	10	CC335-10
10	4	CC335-10/4
16	16	CC335-16
16	50	CC335-16/50
25	25	CC335-25
35	35	CC335-35
35	35	CC350-35
50	50	CC350-50
50	16	CC350-50/16
50	25	CC350-50/25
50	35	CC350-50/35
50	6	CC350-50/6
25	70	CC3120-25/70
35	120	CC3120-35/120
50	70	CC3120-50/70
50	95	CC3120-50/95
50	120	CC3120-50/120
70	70	CC3120-70
70	10	CC3120-70/10
120	120	CC3120-70/120
70	16	CC3120-70/16
70	25	CC3120-70/25
70	35	CC3120-70/35
70	50	CC3120-70/50
70	95	CC3120-70/95
95	95	CC3120-95
95	4	CC3120-95/4
95	6	CC3120-95/6
95	10	CC3120-95/10
95	16	CC3120-95/16
95	25	CC3120-95/25
95	35	CC3120-95/35
95	50	CC3120-95/50
95	70	CC3120-95/70
95	120	CC3120-95/120
120	120	CC3120-120
120	16	CC3120-120/16
120	35	CC3120-120/35
120	50	CC3120-120/50
120	70	CC3120-120/70
120	95	CC3120-120/95
150	150	CC3185-150
150	25	CC3185-150/25
150	35	CC3185-150/35
150	50	CC3185-150/50
150	70	CC3185-150/70
150	90	CC3185-150/95
185	185	CC3185-185
185	50	CC3185-185/50
185	95	CC3185-185/95
50	185	CC3185-50/185
50	240	CC3300-50/240
70	240	CC3300-70/240
120	240	CC3300-120/240
120	300	CC3300-120/300
240	240	CC3300-240
240	35	CC3300-240/35
240	70	CC3300-240/70
240	95	CC3300-240/95
300	70	CC3300-300/70

Note: Special requirement can be requested.

CC4

Cable to Cable

One time unit four way cable



Conductor Size		Code
A(mm ²)	B(mm ²)	
10	10	CC435-10
16	16	CC435-16
25	25	CC435-25
35	35	CC435-35
50	16	CC435-50/16
50	50	CC470-50
50	16	CC470-50/16
50	25	CC470-50/25
50	35	CC470-50/35
50	70	CC470-50/70
70	70	CC470-70
70	16	CC470-70/16
70	35	CC470-70/35
70	50	CC470-70/50
95	95	CC4150-95
95	16	CC4150-95/16
95	35	CC4150-95/35
95	50	CC4150-95/50
95	70	CC4150-95/70
120	120	CC4150-120
120	50	CC4150-120/50
120	70	CC4150-120/70
120	95	CC4150-120/95
150	150	CC4150-150
150	50	CC4150-150/50
150	70	CC4150-150/70
150	185	CC4300-150/185
150	240	CC4300-150/240
185	185	CC4300-185
185	70	CC4300-185/70
185	95	CC4300-185/95
240	240	CC4300-240
240	70	CC4300-240/70
240	95	CC4300-240/95
300	300	CC4300-300

Equipment



Necessary Tools



Recommended Tools

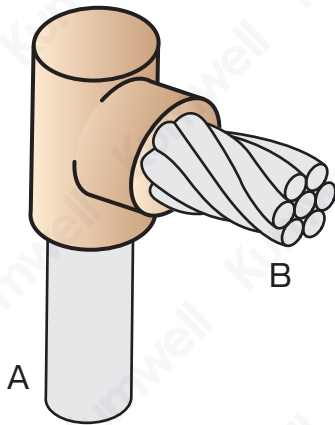
- Butane torch
- Butane gas
- Gloves

Note: Special requirement can be requested.

CR1

Cable to Ground Rod

One time unit one way cable to ground rod



Rod Size		Conductor Size	Code
A(mm)	A(inch)	B(mm ²)	
14.2	5/8	6	CR135-6
		10	CR135-10
		16	CR135-16
		25	CR135-25
		35	CR135-35
		50	CR150-50
		70	CR1120-70
		95	CR1120-95
		120	CR1120-120
		150	CR1185-150
		185	CR1185-185
		240	CR1300-240
		300	CR1300-300
		17.2	3/4
16	CR135-16-3/4		
25	CR135-25-3/4		
35	CR135-35-3/4		
50	CR150-50-3/4		
70	CR1120-70-3/4		
95	CR1120-95-3/4		
120	CR1120-120-3/4		
150	CR1185-150-3/4		
185	CR1185-185-3/4		
240	CR1300-240-3/4		
300	CR1300-300-3/4		

Equipment



Necessary Tools



Recommended Tools

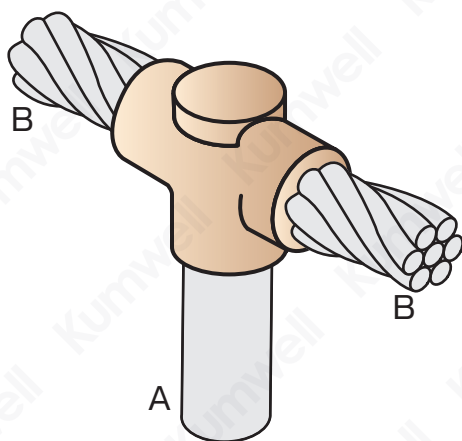
- Butane torch
- Butane gas
- Gloves

Note: Special requirement can be requested.

CR2

Cable to Ground Rod

One time unit two way cable to ground rod



Rod Size		Conductor Size		Code		
A(mm)	A(inch)	B(mm ²)	C(mm ²)			
14.2	5/8	6	6	CR235-6		
		10	10	CR235-10		
		16	16	CR235-16		
		25	25	CR235-25		
		35	35	CR235-35		
		50	50	CR235-50		
		50	50	CR250-50		
		70	70	CR2120-70		
		70	16	CR2120-70/16		
		95	95	CR2120-95		
		95	25	CR2120-95/25		
		95	50	CR2120-95/50		
		95	70	CR2120-95/70		
		120	120	CR2120-120		
		150	150	CR2185-150		
		185	185	CR2185-185		
		185	185	CR2185-185/50		
		185	185	CR2185-185/95		
		240	240	CR2300-240		
		240	50	CR2300-240/95		
		300	300	CR2300-300		
		17.2	3/4	10	10	CR235-10-3/4
				16	16	CR235-16-3/4
				25	25	CR235-25-3/4
35	35			CR235-35-3/4		
25	25			CR250-25-3/4		
50	50			CR250-50-3/4		
70	70			CR2120-70-3/4		
95	95			CR2120-95-3/4		
95	25			CR2120-95/25-3/4		
95	70			CR2120-95/70-3/4		
120	120			CR2120-120-3/4		
150	150			CR2185-150-3/4		
185	185			CR2185-185-3/4		
185	95			CR2185-185/95-3/4		
240	240			CR2300-240-3/4		
240	95			CR2300-240/95-3/4		
300	300	CR2300-300-3/4				

Equipment



Necessary Tools



Recommended Tools

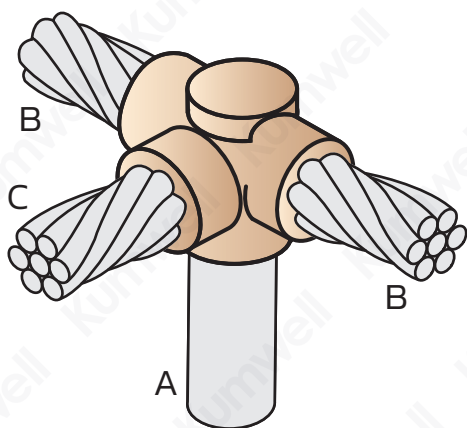
- Butane torch
- Butane gas
- Gloves

Note: Special requirement can be requested.

CR3

Cable to Ground Rod

One time unit three way cable to ground rod



Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

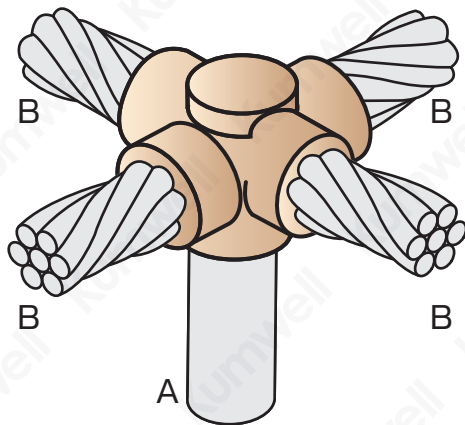
Rod Size		Conductor Size		Code
A(mm)	A(inch)	B(mm ²)	C(mm ²)	
14.2	5/8	6	6	CR350-6
		10	10	CR350-10
		16	16	CR350-16
		25	25	CR350-25
		35	35	CR350-35
		50	50	CR350-50
		50	16	CR350-50/16
		50	35	CR350-50/35
		95	95	CR350-95
		95	95	CR395-95
		16	70	CR395-16/70
		50	25	CR395-50/25
		50	70	CR395-50/70
		50	95	CR395-50/95
		70	70	CR395-70
		70	10	CR395-70/10
		70	16	CR395-70/16
		70	25	CR395-70/25
		70	35	CR395-70/35
		70	50	CR395-70/50
		70	95	CR395-70/95
		95	95	CR395-95/16
		95	50	CR395-95/50
		95	70	CR395-95/70
		120	120	CR3150-120
		120	16	CR3150-120/16
		120	35	CR3150-120/35
		120	70	CR3150-120/70
		150	150	CR3150-150
		70	120	CR3150-70/120
		70	240	CR3300-70/240
		95	300	CR3300-95/300
		185	185	CR3300-185
		185	95	CR3300-185/95
		240	240	CR3300-240
		240	95	CR3300-240/95
300	300	CR3300-300		
17.2	3/4	10	10	CR350-10-3/4
		16	16	CR350-16-3/4
		25	25	CR350-25-3/4
		35	35	CR350-35-3/4
		50	50	CR350-50-3/4
		70	25	CR395-70/25-3/4
		70	35	CR395-70/35-3/4
		70	50	CR395-70/50-3/4
		70	95	CR395-70/95-3/4
		70	70	CR395-70-3/4
		95	16	CR395-95/16-3/4
		95	50	CR395-95/50-3/4
		95	70	CR395-95/70-3/4
		95	95	CR395-95-3/4
		120	120	CR3150-120-3/4
		150	150	CR3150-150-3/4
		185	185	CR3300-185-3/4
		240	240	CR3300-240-3/4
300	300	CR3300-300-3/4		

Note: Special requirement can be requested.

CR4

Cable to Ground Rod

One time unit four way cable to ground rod



Rod Size		Conductor Size		Code
A(mm)	A(inch)	B(mm ²)	C(mm ²)	
14.2	5/8	10	10	CR435-10
		16	16	CR435-16
		25	25	CR435-25
		35	35	CR435-35
		50	50	CR470-50
		70	70	CR470-70
		95	95	CR4150-95
		120	120	CR4150-120
		150	150	CR4150-150
		185	185	CR4300-185
		240	240	CR4300-240
		240	70	CR4300-240/70
		300	300	CR4300-300
		17.2	3/4	10
16	16			CR435-16-3/4
25	25			CR435-25-3/4
35	35			CR435-35-3/4
50	50			CR470-50-3/4
70	70			CR470-70-3/4
95	95			CR4150-95-3/4
120	120			CR4150-120-3/4
150	150			CR4150-150-3/4
185	185			CR4300-185-3/4
240	240			CR4300-240-3/4
300	300			CR4300-300-3/4

Equipment



Necessary Tools



Recommended Tools

- Butane torch
- Butane gas
- Gloves

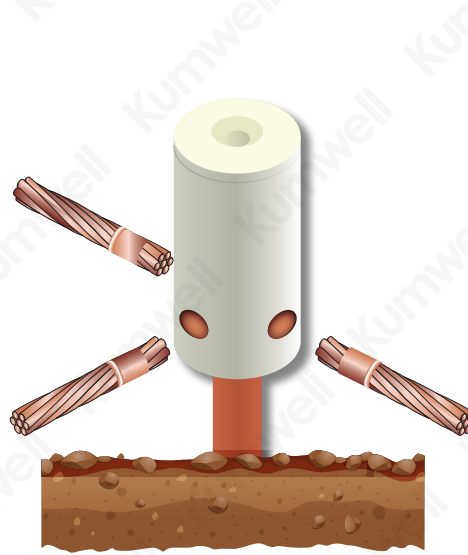
Note: Special requirement can be requested.

Instruction

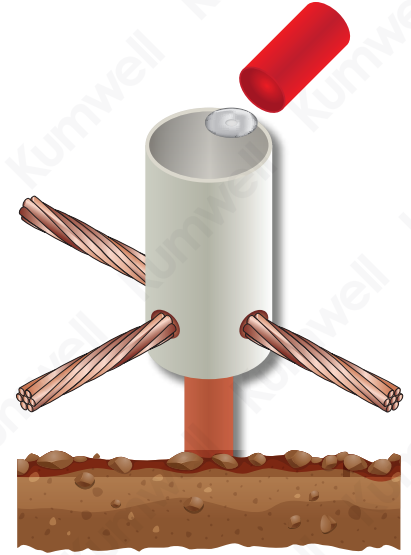
One Time System



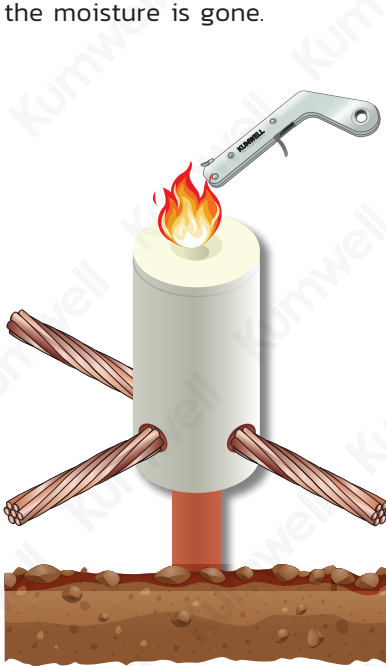
1. Prepare and clean the surface of the conductor and rod by cable clean brush then remove the moisture from mould and conductor by butane torch until the moisture is gone.



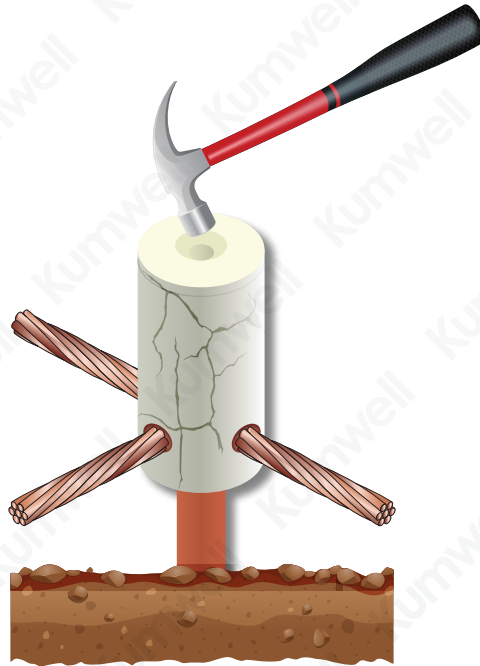
2. Wear the slip into the cable or ground rod then put it into the ceramic hole by keeping the connection point to the center of the ceramic cup.



3. put the steel disk at the center of the ceramic cup then pour recommended size of weld metal powder into the ceramic cup.



4. Closed the mould cover then squeeze the bottom of the tube to pour a starting powder around the mould cover, after that ignite with flint gun.



5. Wait for the reaction 30-60 seconds until finish then break the ceramic cup.



6. Complete connection.

References

Owner	Project Name	Distributor	Period
Thailand	● South Bangkok Combined Cycle Power Plant	Sino - Thai Engineering & Construction Co.,Ltd	2009
	● 500 kV GIS At On Nuch Substation Under BLUK Power Supply For The Greater Bangkok Area Phase 2	Sri-u-thong Co.,Ltd.	2009
	● Mitr Phuluang Sugar Mill At Loei	K.M.L. International Co.,Ltd	2012
	● Belle Condominium	K.M.L. International Co.,Ltd	2012
	● Chana Power Plant	K.M.L. International Co.,Ltd	2012
	● Wangnoi Power Plant	K.M.L. International Co.,Ltd	2012
	● Lopburi Solar Power Plant	K.M.L. International Co.,Ltd	2012
	● TOT 3 G	K.M.L. International Co.,Ltd	2012
	● Bang Pa - In Power Plant	K.M.L. International Co.,Ltd	2012
	● Nongsang Power Plant	K.M.L. International Co.,Ltd	2012
	● Central Plaza Suratthani	K.M.L. International Co.,Ltd	2012
	● Amata B - Grimm At Rayong	K.M.L. International Co.,Ltd	2012
	● Boonthavorn Rama ii	K.M.L. International Co.,Ltd	2012
	● Solar Thermal Power Plant At Kanchanaburi	K.M.L. International Co.,Ltd	2012
	● Hatyai Submarine Cable	K.M.L. International Co.,Ltd	2012
	● 115 KV Bang Pa - In 2 - Ayutthaya 1	K.M.L. International Co.,Ltd	2012
	● P/j The Siam On The River Hotel	K.M.L. International Co.,Ltd	2012
	● 115 KV Xekong Ss&kekhamane3 - Xekong TI, Laos	K.M.L. International Co.,Ltd	2012
	● Bang Pa - In Solar Plant	K.M.L. International Co.,Ltd	2012
	● Ubonratchathani Bioeternal Substation	K.M.L. International Co.,Ltd	2012
	● The International Convention And Exhibition Center Commemorating His Majesty's 7th Cycle Birthday Anniversary	K.M.L. International Co.,Ltd	2012
	● Central Rama 9	K.M.L. International Co.,Ltd	2012
	● Central Festival Samui	Elmec Engineering Co.,Ltd	2013
	● S One Perspective Department Store At Kadrincome	Precise Corporation Co.,Ltd	2013
	● Boonthavorn Rama 2	Secco Co.,Ltd	2013
	● MRTA Purple Line	Sino - Thai Engineering & Construction Co.,Ltd	2013
	● Central Hatyai Project	205 Engineering Co.,Ltd	2013
	● Phuket Airport Development Project	Sino - Thai Engineering & Construction Co.,Ltd	2013
	● Solar Power Plant Nakhonsawan	Aod Supply Co.,Ltd	2013
	● Nong Sang Power Plant Nakhonsawan	Sino - Thai Engineering & Construction Co.,Ltd	2013
	● Kanom Power Substation	Siemens Co.,Ltd	2013
	● Tesco Lotus Rdc	Prosper Engineering Co.,Ltd	2013
	● BTS Bangwa Station	Suvis Co.,Ltd	2013
	● Chana Power Plant Development	Siemens Co.,Ltd	2013

Remark : The aforementioned project is some of the domestic project references

References

Owner	Project Name	Distributor	Period	
EGAT	● Lam Takong Wind Turbine Generation	Hydrochina Corporation	2017	
	● 230 kV Ayuthaya 4 – Sikhiu 2	C.H.C. Engineering	2017	
	● 230 kV Mae Moh, Pha Yao	Globaltronic Intertrade Co., Ltd.	2017	
	● 500 kV Tha Tako Substation Expansion	Sri U-thong Co., Ltd.	2017	
	● Mae Moh Generation Plant	Globaltronic Intertrade Co., Ltd.	2017	
	● Transmission Lines 115 kV Nakhon Phanom – Sakon Nakhon 2	Sri U-thong	2017	
	● Transmission Lines 115 kV Amnat Charoen Mukdahan	Sri U-thong	2017	
	● 115 kV Substation Lan Krabu – Phisanulok	Loxley Power System Co., Ltd.	2017	
	● Transmission System Expansion And Renovation Project Phase 2	Kinden	2017	
	● Fire Protection System Phase 3	Kinden	2017	
	● T2 Wind Farm	Italthai Engineering	2017	
	● T3 Wind Farm	Italthai Engineering	2017	
	● Solar Farm	Tns Instrument And Engineering Co., Ltd.	2017	
	Ramathibodi Hospital	● Ramathibodi Hospital Rama 6 Building	P. S. Power Lines Company Limited	2017
	Genesis	● Genesis Data Center	Prosper Engineering	2017
PTT	● PTT Khao Hin Son, Chachoeng Sao	Rk3 Engineering & Development	2017	
	● PTT Lng	Royaltec International	2017	
Cambodia	● Celti 150MW Coal Power Plant, Si Hanoukville	Globaltronic Intertrade	2017	
AOT	● Suvarnabhumi Airport	Italian-thai Development	2017	
EGCO	● Rayong Generation Plant, Amata City	Globaltronic Intertrade	2017	
Malaysia	● Scc Rapid (Petronas)	Royaltec International	2017	
PEA	● 8.965MW Vsp-pa	Italthai Engineering	2017	
	● Bang Phai Substation	Royaltec International	2017	
	● Lamphun Substation, Northern Region Industrial Estate	Interlink Communication Public Co., Ltd.	2017	
	● 115 kV Transmission Line Mae Hon Son	Eastern Technical Engineering Public Company Limited	2017	
Sea Gate	● Siri Plaza	Aka Co., Ltd.	2017	
IDEO Ananda Development	● Ideo O2 Bang Na	N.R.Engineering Co., Ltd.	2017	
Central	● Central Festival Phuket	Power Line Engineering Public Company Limited	2017	
	● Central Mahachai	Elmech Engineering Co., Ltd.	2017	
	● Central Nakhon Ratchasima	Inwire Engineering Company Limited	2017	
Chulalongkorn University	● Cu Centennial Park	Syntec Construction Public Company Limited	2017	
Makro	● Makro Pathumthani	Entecon Company Limited	2017	
	● Makro Kalasin	Entecon Company Limited	2017	
Thai Government	● Paliament House Of Thailand	Power Line Engineering Public Company Limited	2017	
	● Thai Supreme Court Building	Power Line Engineering Public Company Limited	2017	
	● Office Of Court Of Justice	Power Line Engineering Public Company Limited	2017	
Royal Thai Navy	● Royal Thai Navy Armory	Winning System Engineering Limited Partnership	2017	
Mass Rapid Transit Authority of Thailand	● MRTA Blue Line	Sino-thai Engineering & Construction Public Company Limited	2017	
	● MRTA Green Line	Power Line Engineering Public Company Limited	2017	
	● MRTA Red Line	Italian-thai Development	2017	
Charoen Pokphand	● CP Ram Khon Khen	Christiani & Nielsen (Thai) Public Company Limited	2017	
Department of Highways	● Motorway Chonburi	Entecon Company Limited	2017	
MQDC	● Whizdom Condo Sukhumvit 101	Tri-en Solution Co., Ltd.	2017	
Royal Thai Army	● โครงการพัฒนาและปรับปรุงกองบัญชาการกองทัพไทย (แจ้งวัฒนะ-งานปรับปรุงระบบป้องกันไฟฟ้า อาคารหมายเลข ๑ สท.ทท.)	Gentrade Engineering Co., Ltd.	2017	
Myanmar	● Minjar Power Plant	Demco Public Company Ltd.	2017	

Remark : The aforementioned project is some of the domestic project references

References

Owner	Project Name	Distributor	Period
Boonthavorn	● Boonthavorn Udon Thani	Boonthavorn Development Co., Ltd.	2017
Tesco Lotus	● Tesco Lotus Fang District	Thanacha Co., Ltd.	2017
	● Tesco Lotus Prakhon Chai District	Prosper Engineering	2017
IKEA	● Ikea Bang Yai	Thai Semcon Co., Ltd.	2017
MEA	● MEA Feeder Remote Terminal Unit (FRTU)	Precise Electro-mechanical Works Co., Ltd.	2017
	● Substation Prawet	Sb Powertech Co., Ltd.	2017
	● Substation Pra Nakorn Tai	Transec Power Services Co., Ltd.	2017
	● Substation Prachachun	Klang Faifa Rog-ngan Co., Ltd.	2017
CP ALL	● CP All Buriram	Royaltec International	2017
ENSYS	● Biomass Power Plant Ensys	N.R.Engineering Co., Ltd.	2017
PEA	● 115 kV Transmission Line Rojana, Ayutthaya	Rss 2016 Co., Ltd.	2017
Supalai	● Supalai Elite Surawong	Secco Engineering & Construction Co.,Ltd.	2017
	● Supalai Elite Phayathai	Secco Engineering & Construction Co.,Ltd.	2017
	● Supalai Veranda Ratchavipha	Secco Engineering & Construction Co.,Ltd.	2017
	● Supalai Wellington 2	Secco Engineering & Construction Co.,Ltd.	2017
	● Supalai Loft Chaeng Watthana	Secco Engineering & Construction Co.,Ltd.	2017
	● Supalai Elite Phayathai	Secco Engineering & Construction Co.,Ltd.	2017
TESCO LOTUS	● โฉดัส ฤๅนารายณ์ จ.ภาพลันธุ์ Tesco Lotus Kuchinarai	Prosper Engineering	2017
B.Grimm Power	● 115 kV Terminal Sub Abpr5	Demco Public Company Ltd.	2017
PEA	● สถานีไฟฟ้าพืทยกลาง Central Pattaya Substation	Secco H.V. Co Ltd	2017
	● 115 kV Khao Mai Kaeo, Chonburi	Demco Public Company Ltd.	2017
TFG	● Tfg-further Product Factory	V Neramit Co., Ltd.	2017
JWS Construction	● The Garden 9 (Lat Krabang)	V Neramit Co., Ltd.	2017
มหาวิทยาลัยแม่ฟ้าหลวง จังหวัดเชียงราย	● Mae Fah Luang University	Vars Co., Ltd.	2017
	● Bang Kruai Hospital 2	Royaltec International	2017
	● Gymnasium Chitralada School	Italhai Engineering Co., Ltd.	2017
Platinum Market	● The Market By Platinum	First Technology Co., Ltd.	2017
Vietnam	● Thai Binh 1 Thermal Power Plant	Globaltronic Intertrade	2017
AP (THAILAND)	● Aspire Sathorn-ratchapruek	Tri-en Solution Co., Ltd.	2017
	● Aspire Erawan	Prosper Engineering	2017
TAKATA	● Takata Industrial Plant	Bania Engineering Co., Ltd.	2017
Laos	● Hydroelectric Power Nam Ngiep	R C R Co., Ltd.	2017
	● The Saint Residences Vibhavadi Rangsit	Secco Engineering & Construction Co.,Ltd.	2017
เทอร์พอส 2	● Aec Market Building	Power Line Engineering Public Company Limited	2017
EGAT	● 500 kV Chaeng Watthana Substation	Demco Public Company Ltd.	2017
	● 500 kV Transmission Line Chaiyapoom	Demco Public Company Ltd.	2017
Phuket Sirinath Property	● The Terminal Phuket	Engnue Technology Co., Ltd.	2017
EGAT	● Supply Grounding Material	Kumwell	2018
	● Transmission Lines 230 kV Chachoengsao 2 - Prachinburi 2	Demco Public Company Limited	2018
	● Transmission Lines 550 kV Bang Saphan 2 - Surat Thani 2	Kalpataru Limited	2018
	● Underground Transmission Line 230kV South Bangkok	TEDA Company Limited	2018
	● Transmission Lines 500kV Bang Saphan 2 - Surat Thani 2	Larsen & Toubro Limited	2018
	● 230/115 kV Ao Phai Substation (GIS)	Sinohydro (Thailand) Co., Ltd.	2018
	● Transmission Lines 500kV Ubon Ratchathani 3 - Roi Et 2	RCR	2018
	● Transmission Lines 500kV Bang Saphan 2 - Surat Thani 2	Loxley Public Company Limited	2018
	● Supply of Miscellaneous Equipment Bulk Power Supply for the Greater Bangkok and Vicinity Area Phase 3	Maclean - Dulhunty Power (Thailand) Limited	2018

Remark : The aforementioned project is some of the domestic project references

References

Owner	Project Name	Distributor	Period
EGAT	● 115 kV Phatthalung Substation (GIS)	Italthai Engineering Co., Ltd.	2018
	● South Bangkok Power Plant	Marubeni Corporation	2018
PEA	● Substation Phuket	Siemens	2018
	● 115 kV Substation Songkhla	IGEN Engineering	2018
	● 115/33 kV Hanuman Wind Farm	ABB	2018
GULF	● Sikhui 3&5 Wind Farm Substation	Grid Solution	2018
	● Gulf Sriracha Substation	Mitsubishi Electric Asia	2019
	● 500 kV Surat Thani Substation	Larsen &Toubrø Limited	2019
EGAT	● 230 kV Ao Phai Substation	Sino Hydro	2019
	● Bangpakong Power Plant	Royaltech International	2019
	● 230 kV Khlong Dan Substation	Larsen &Toubrø Limited	2019
	● 500 kV Pluak Daeng Substation	KEC International Limited	2019
SRT	● Bangsue – Rangsit Redline	Italianthai Development	2019
	● Red Line Grand Station	Unique Engineering	2019
MRTA	● Orange Line	Italthai Engineering	2019
	● Green Line	Italianthai Development	2019
ICON SIAM	● Gold Line	Italianthai Development	2019
AOT	● Suvarnabhumi Airport Phase2	Power Line Engineering	2019
AEROTHAI	● VOR / DME Betong Airport	Pornpian Co., Ltd	2019
EGAT	● 500 kV Bang Saphan 2 – Surat Thani 2	Kalpataru Power Transmission Limited (KPTL)	2019
	● 230 kV Chatuchak	Globaltronic Intertrade Co.,Ltd.	2019
PEA	● 115 kV สฟ. อรัญประเทศ	Demco Public Company Limited	2019
	● สถานีไฟฟ้า คลองเขื่อน	U Services	2019
MEA	● สย. คลอง ๕ สย.แพร่ษา	TEDA Co., Ltd	2019
	● Chandrakasem, SuanSom, Rungpracha Substation	Siemens	2019
EGAT	● EGAT: Saraburi 6 Substation	Italthai Engineering	2019
	● EGAT: 115 kV Khon-Khaen	Italthai Engineering	2019
	● EGAT: Phuket Substation	Italianthai Development	2019
PEA	● LPWP 8.965 MW (โครงการนาเกลือ)	Italthai Engineering	2019
	● 115 / 22 kV GIS Substation	ABB	2019
SUPALAI	● Varena Phasicharoen	Secco	2019
	● Oriental Sukhumvit 39	Secco	2019
	● Riva Grand	Secco	2019
โรงพยาบาลจุฬาลงกรณ์	● อาคาร กปส.	Quesco	2019
NARAI PROPERTY	● Park Land จรัญ-ปิ่นเกล้า	Secco	2019
CP	● CP Tower 2	Syntec	2019
SINGHA	● SINGHA Complex	Secco	2019
THAI OIL	● Main Building Sriracha	Prosper Engineering	2019

Remark : The aforementioned project is some of the domestic project references

References

Owner	Project Name	Distributor	Period
OMAN	● Al Kamil Power Plant	Gulf Radiant Electrical & Trading L.L.C.	2001 – 2002
U.A.E	● Dewa Project	Gulf Radiant Electrical & Trading L.L.C.	2001 – 2002
	● Adwea Project	Gulf Radiant Electrical & Trading L.L.C.	2001 – 2002
QATAR	● Qatar Petroleum Gas	Gulf Radiant Electrical & Trading L.L.C.	2003
SUDAN	● Melut Basin Oil	Gulf Radiant Electrical & Trading L.L.C.	2003
INDIA	● Purula-hydro Power Plant	Taisei Corporation	2003 – 2004
VIETNAM	● Binh Trieu-hcm 110KV, Phu Tho-hcm 110KV	V.T.E.C.H. Electrical Technology Co.,Ltd.	2004
CHINA	● Shanghai Power Plant	Nova Technology Co.,Ltd.	2004
PAKISTAN	● Lpg Extraction Plant	ABB PVT.Ltd	2004
	● 500kV/220 Ntoc-kekcc	Pacific Engineering Co.,Ltd.	2005
MALAYSIA	● 500kV T/L Transmission Lines For 1400mw Jimah Power Project	Fujikura Ltd.	2005
LAOS	● Nam Theun 2 Hydro Power Project Em2 Transmission Line	J-Power System Corporation	2005
VIETNAM	● Cu Mau Combine Cycle Power Plant Petro	V.T.E.C.H. Electrical Technology Co.,Ltd.	2006 – 2007
CHINA	● Shantou 500KV Substation	Nova Technology Co.,Ltd.	2007
	● Shi Hua Yang Zhuang River Project	Nova Technology Co.,Ltd.	2008
MALAYSIA	● Hospital Petronas (Klcc Health Care Center)	Hellerman Letrik Sdn. Bhd.	2008
	● Kuala Lumpur International Airport (Klia)	Hellerman Letrik Sdn. Bhd.	2008
	● Cu Mau Combine Cycle Power Plant Petro	Hellerman Letrik Sdn. Bhd.	2008
	● Maxis Telecom Malaysia	Hellerman Letrik Sdn. Bhd.	2008
PAKISTAN	● Gas Turbine Power Plant	Pacific Engineering Co.,Ltd.	2008
U.A.E	● Dewa-d.f.o. Pipeline	Gulf Radiant Electrical & Trading L.L.C.	2009
	● Abu-dhabi International Airport 2k Runway Project	Gulf Radiant Electrical & Trading L.L.C.	2009
	● Du Telecom Tower Civil Works	Gulf Radiant Electrical & Trading L.L.C.	2009
EGYPT	● Ezz-steel Plant, Suez	DANIELI	2009
IRAQ	● Us Army JIsc-doha, Project Iraq/afghanistan	Gulf Radiant Electrical & Trading L.L.C.	2009
	● Pier & Seawall Project, Umm Qasr, Basra-iraq	CCI Inc.	2009
VIETNAM	● Main Gas Filling Station	V.T.E.C.H. Electrical Technology Co.,Ltd.	2009
CHINA	● Yinnan Province Xiao Wan Hydro-power Plant	Nova Technology Co.,Ltd.	2009
	● Shangdong Province Dezhou 500 kV Substation	Nova Technology Co.,Ltd.	2009
INDONESIA	● Sengkang		2008
TRINIDAD AND TOBAGO	● Brechin Castle Substation	Petrotrin, Petroleum Company of Trinidad and Tobago Limited.	2010
	● EPC Refinery Substation Project : 2312	Petrotrin, Petroleum Company of Trinidad and Tobago Limited.	2010
VIETNAM	● Da Nang Internation Airport-danang City	CNA-HTE / Middle Airports Corporation-MAC	2010
COLOMBIA	● Santa Marta Substation Project 2365	HMV Ingenieros Ltda	2010
	● LLC Barrancabermeja-el Centro, Oil Industrial Complex	Occidental De Colombia Inc.	2010 – 2013
INDONESIA	● Tanjung Tabalong		2011
COLOMBIA	● Pacific Rubiales Corporation Oil Industrial Complax.	CAM Colombia (Compania Americana De Multiservicios)	2011 – 2012
VENEZUELA	● Tocoma Hydroelectric Project (2000 Mva) Rio Caroni Pto. Ordaz	Consorcio Oiv Tocoma Odebrecht – Imoregilo – Vincler	2011 – 2013
INDONESIA	● KDL 120mw Combined Cycle Power Plant Project	Kratatau Daya Listrik	2013
LAO PDR	● Nong Deun – Seno – Meuang Phine 115kV Transmission Project	China-East Resources Import & Export Co.	2014 – 2016
	● Xayaburi Hydroelectric Power Project : Package 4 : 500KV Transmission Line	China-East Resources Import & Export Co.	2014 – 2016
SINGAPORE	● Exxon	Alstom Grid Pte Ltd (Singapore)	2016

Remark : The aforementioned project is some of the international project references

References

Owner	Project Name	Distributor	Period
MYANMAR	● Ese Project	Arkarthit Enterprise Co.,Ltd.	2014 - 2016
	● Mepe Project	Arkarthit Enterprise Co.,Ltd.	2014 - 2016
	● 66kV Kyaukphyu Substation Switchbay	Arkarthit Enterprise Co.,Ltd.	2015
	● 66/11kV, 10 Mva Kyaukkayate Substation	Arkarthit Enterprise Co.,Ltd.	2015
	● 230kV Switchbay Extension At Thaketa Substation	Arkarthit Enterprise Co.,Ltd.	2015
	● 66/11kV, 5 Mva Shardaw Substation	Arkarthit Enterprise Co.,Ltd.	2015
	● 66kV Moegoke Ss Switchbay	Arkarthit Enterprise Co.,Ltd.	2015
	● Mandalay Project	Arkarthit Enterprise Co.,Ltd.	2016
	● Mawlamyng Ss Extention	Arkarthit Enterprise Co.,Ltd.	2016
	● 43T / MEPE (PTP)	Arkarthit Enterprise Co.,Ltd.	2016
	● New Life Myanmar Hotel Project	Arkarthit Enterprise Co.,Ltd.	2016
BANGLADESH	● 230 kV Extension In Existing 230/132 kV Substation At Khulna South On Turnkey Basis	N.R. Engineering Co.,Ltd.	2016
LAO PDR	● Xe Namnoy And Xe Katam Hydropower Project	B.Grimm Power Public Company Limited	2016
INDONESIA	● Jawa 2 Coal Fired Power Plant	PT. Promindo	2016
	● Kalsel-1 Coal Fired Power Plant	PT. Raj Prima	2016
PAKISTAN	● K Electric Rehabilitation (Tpi00 Project)	Siemens	2016
	● PABCL Project	Descon	2016
VIETNAM	● Ha Noi Metro Project	V.T.E.C.H. Electrical Technology Co.,Ltd.	2015
	● Nghi Son Refinery Project	V.T.E.C.H. Electrical Technology Co.,Ltd.	2015-2016
	● Npk Phu My Power Plant Project	V.T.E.C.H. Electrical Technology Co.,Ltd.	2016
	● Nestle Hung Yen Project	V.T.E.C.H. Electrical Technology Co.,Ltd.	2016
	● Thai Binh 1 Thermal Power Plant	V.T.E.C.H. Electrical Technology Co.,Ltd.	2016
	● "Ground Improvement : 220kV & 500kV Transmission Tower of PTC1 & PTC2"	V.T.E.C.H. Electrical Technology Co., Ltd.	2016-2017
	● Metro Linie Nhon - Ha Noi Station	V.T.E.C.H. Electrical Technology Co., Ltd.	2017
INDONESIA	● Lumut Balai Geo Thermal	PT.Raj Prima	2017
	● Solar Photovoltaic Electricit	PT.Raj Prima	2017
	● 150kV Bekasi Substation	PT.Raj Prima	2017
	● Tangguh Expension Project	PT.Raj Prima	2017
	● Petrokimia Butadiene Indonesia Extraction Plant	PT.Raj Prima	2017
	● 150kV BSD Substation	PT.Raj Prima	2017
	● 150kV Pasar Kermis Substation	PT.Raj Prima	2017
	● PLTMG Package 4 Project	PT.Raj Prima	2017
	● Kalsel 1- CFPP Project Power Plant	PT.Raj Prima	2017
	● MRT Jakarta Project	PT.Raj Prima	2017
	● PLTMG Package 3 Project	PT.Raj Prima	2017
	● Lumut Balai Geo Thermal - 2nd MTO	PT.Raj Prima	2017
MYANMAR	● 51T / MEPE (PTP) - AMM	Arkarthit Enterprise Co., Ltd.	2017
	● Boxpak Factory Project - CAM	Arkarthit Enterprise Co., Ltd.	2017
	● Shan State Project - MPD	Arkarthit Enterprise Co., Ltd.	2017
MALAYSIA	● Muram to Samalaju 2 - 275kV Transmission Line Project - SEB	KEC Internation Limited	2017
BANGLADESH	● 230/132kV GIS Dhamrai - Shampur PGCG	Siemens Limited	2017
DUBAI, UAE	● TAKREER ADH	Gulf Radiant Electrical & Trading L.L.C.	2017
VIETNAM	● COCOBAY	V.T.E.C.H. Electrical Technology Co., Ltd.	2017
	● Cam Ranh International Airport	V.T.E.C.H. Electrical Technology Co., Ltd.	2017
	● THE ESTELLA HEIGHTS - PHASE 2	V.T.E.C.H. Electrical Technology Co., Ltd.	2017 - 2018
PAKISTAN	● Zorlu OFS T-3428	Siemens Pakistan Engineering Co., Ltd.	2017 - 2018

Remark : The aforementioned project is some of the international project references

References

Owner	Project Name	Distributor	Period
PAKISTAN	● KETP 1000	Siemens Pakistan Engineering Co., Ltd.	2017 - 2018
	● DABS O10	Siemens Pakistan Engineering Co., Ltd.	2017 - 2018
	● CEL - Chanar	Siemens Pakistan Engineering Co., Ltd.	2017 - 2018
VIETNAM	● FIRST SOLAR - PHASE 2	V.T.E.C.H. Electrical Technology Co., Ltd.	2017 - 2018
	● METRO LINE BEN THANH - SUOI TIEN	V.T.E.C.H. Electrical Technology Co., Ltd.	2017 - 2018
	● RIVIERA POINT - PHASE 1B	V.T.E.C.H. Electrical Technology Co., Ltd.	2017 - 2018
	● Vinh Tan 4 Thermal Power Plant	V.T.E.C.H. Electrical Technology Co., Ltd.	2018
	● Heineken Vietnam Brewery - Da Nang	V.T.E.C.H. Electrical Technology Co., Ltd.	2018
	● Long Phu 1 Thermal Power Plant - OUTDOOR BAY	V.T.E.C.H. Electrical Technology Co., Ltd.	2018
	● LDS System Renting Service for PTC1	V.T.E.C.H. Electrical Technology Co., Ltd.	2018
INDONESIA	● KALSELTENG-2 COAL FIRED STEAM POWER PLANT	PT.Raj Prima	2018
	● CAP NPE	PT.Raj Prima	2018
	● 500kV Delta Mas Substation	PT.Raj Prima	2018
	● 150kV Sinar Sahabat Substation	PT.Raj Prima	2018
	● 150kV Pandaan Baru Substation	PT.Raj Prima	2018
	● 150kV Sukatani Extension Substation	PT.Raj Prima	2018
	● 150kV Nganjuk II Substation	PT.Raj Prima	2018
	● PLTMG Package 3 Project - Extension	PT.Raj Prima	2018
	● PLTMG Package 4 Project - Extension	PT.Raj Prima	2018
	MYANMAR	● 46T/MEPE (PTP) - FSI	Arkarthit Enterprise Co., Ltd.
● Private Project - CAM		Arkarthit Enterprise Co., Ltd.	2018
● LV-047 LP2 PROJECT - CAM		Arkarthit Enterprise Co., Ltd.	2018
● EE-032 PROJECT - CAM		Arkarthit Enterprise Co., Ltd.	2018
● Nestle Factory Project - KKST		Arkarthit Enterprise Co., Ltd.	2018
● YGN-MDY Railways Improvement Project - BFE		Arkarthit Enterprise Co., Ltd.	2018
● 43T/MEPE (PTP)_Mawlamyng SS Extension - MPS		Arkarthit Enterprise Co., Ltd.	2018
● Thilawa Project - KST		Arkarthit Enterprise Co., Ltd.	2018
● Myanmar Beer Factory Project - PKM		Arkarthit Enterprise Co., Ltd.	2018
BANGLADESH	● Augmentation & Rehabilitation of 33KV GIS Switchgears at Tongi 230/132/33KV Grid Sub-Station	Siemens Bangladesh Ltd.	2019
	● Naveena Steel Mills Project	Pacific Engineering	2019 - 2020
PAKISTAN	● Sahiwal 220KV Grid Stations	Pacific Engineering	2019 - 2020
	● Sahiwal 500KV Grid Stations	Pacific Engineering	2019 - 2020
	● MULTIFAB GI 150KV AMPEL	PT. RAJ Prima	2019
INDONESIA	● IKPT-AYNIO05 NSI i-III	PT. RAJ Prima	2019
	● GI MUARA WAHAU	PT. RAJ Prima	2019
	● Muara Karang Power Station	PT. RAJ Prima	2019
	● MULTIFAB GI 150KV ULEE KARENG	PT. RAJ Prima	2020
	● BESS PHILIPPINES (I)	PT. RAJ Prima	2020
PHILIPPINE	● BESS PHILIPPINES (I)	PT. RAJ Prima	2020
	● 66kV Kalewa-Mawleik TL/18-19 (16.7 Miles) -ZLE	Arkarthit Enterprise Co.,Ltd.	2018 - 2019
	● Private Project/19-20 - TTM	Arkarthit Enterprise Co.,Ltd.	2019 - 2020
	● Private Project/2019-20-ERL	Arkarthit Enterprise Co.,Ltd.	2019 - 2020
	● PTTEP Myanmar Project/2019-20 - OSES	Arkarthit Enterprise Co.,Ltd.	2019 - 2020
	● Makro Myanmar Project 19-20 -NLM	Arkarthit Enterprise Co.,Ltd.	2019 - 2020
DUBAI	● Peninsula Hotel Yangon Project/2019-2020	Arkarthit Enterprise Co.,Ltd.	2019 - 2020
	● DEWA 132/11kV Substation	Gulf Radiant Electrical & Trading LLC	2020
	● DEWA IV 700MW CSP	Gulf Radiant Electrical & Trading LLC	2019 - 2020

Remark : The aforementioned project is some of the international project references

CHINA : 6100 MW YANGJIAN NUCLEAR POWER PLANT



DUBAI : BARZAN ONSHORE FACILITIES PROJECT IN RAS LAFFAN, QATAR



VENEZUELA : TOCOMA HIDROELECTRIC PROJECT (2000 MVA) RIO CARONI PTO. ORDAZ



THAILAND : PTT GASSEPARATION PLANT



COLOMBIA : CENTRAL 20MW EPM-EPC SE MALENA SUBSTATION 230 KV



MALAYSIA : KUALA LUMPUR INTERNATIONAL AIRPORT - KLIA (MALAYSIA)



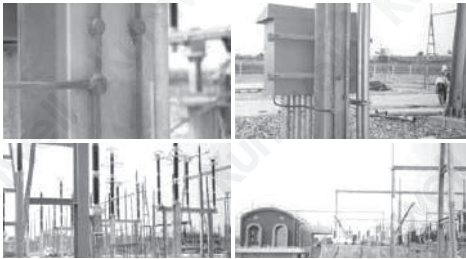
VIETNAM : 500KV TAN DINH - SONG MAY POWER LINE



INDIA : INDIA RAILWAYS



THAILAND : 230/500kV, PLUAK DAENG ELECTRICITY GENERATING AUTHORITY OF THAILAND, (EGAT)



CHINA : HIGH SPEED TRAIN





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