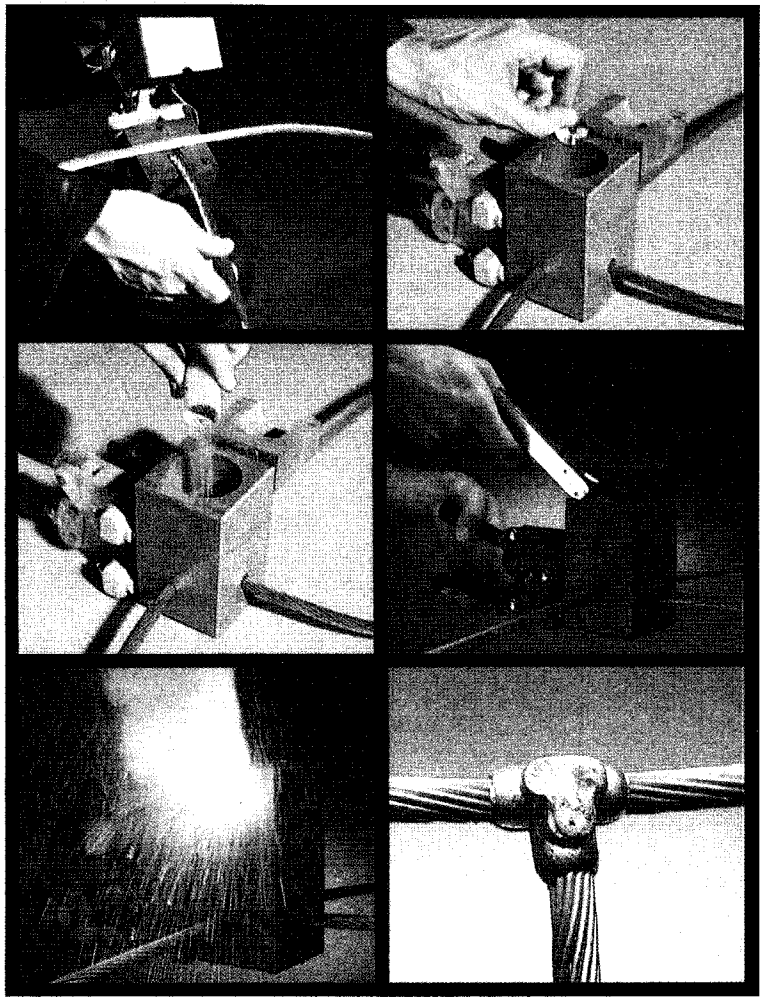
JW 000417-EWS

J-Weld

Exothermic Welding System

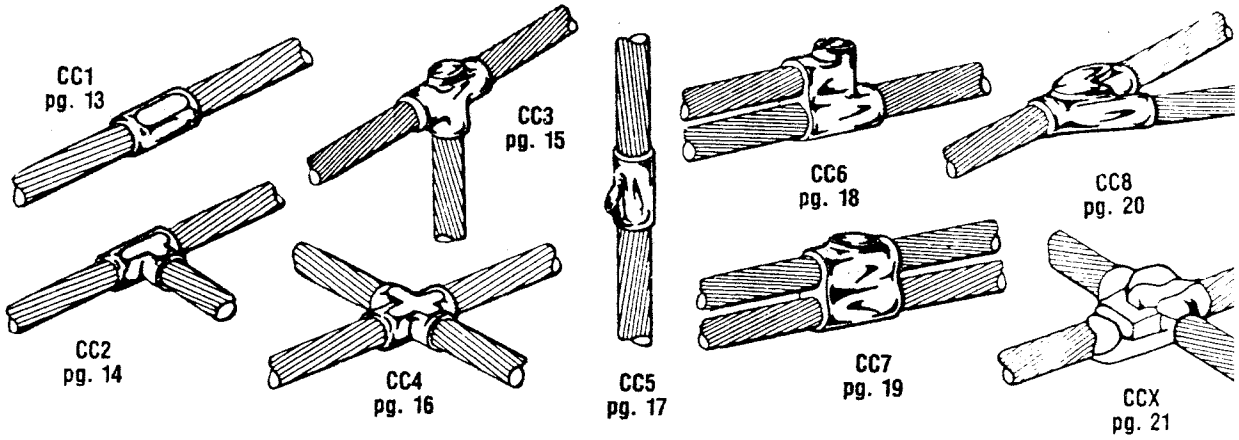


JIWOONG
Electric Co., Ltd.

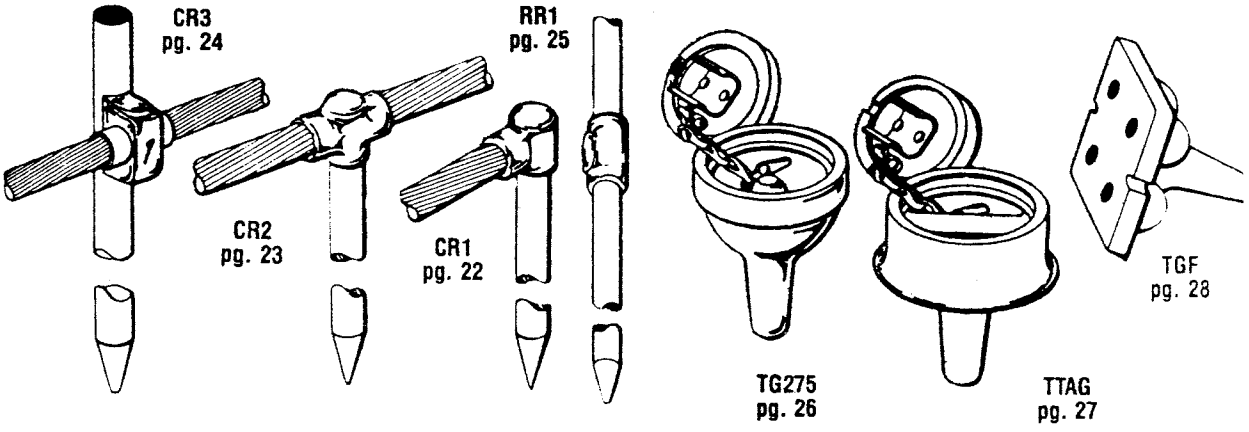
J - WELD

Selector Chart

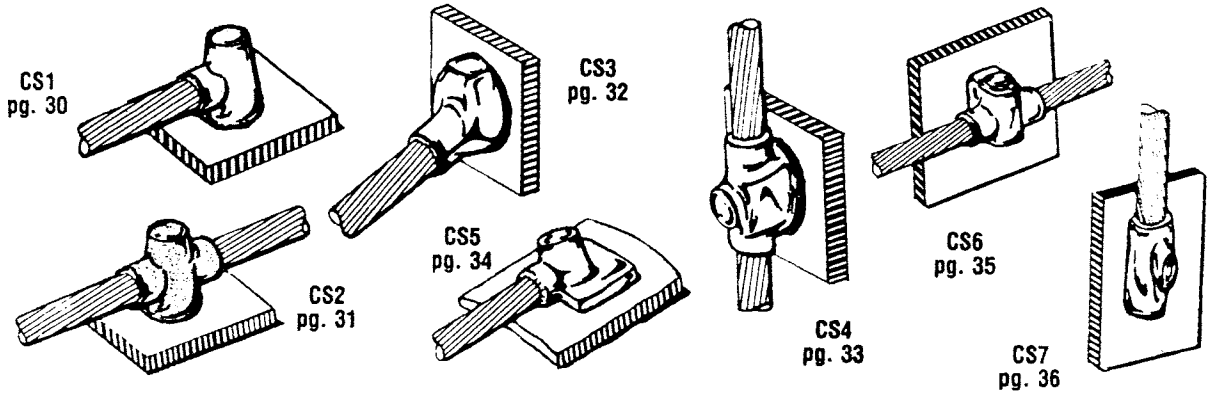
Cable to Cable



Cabl to Ground Rod



Cable to Surface



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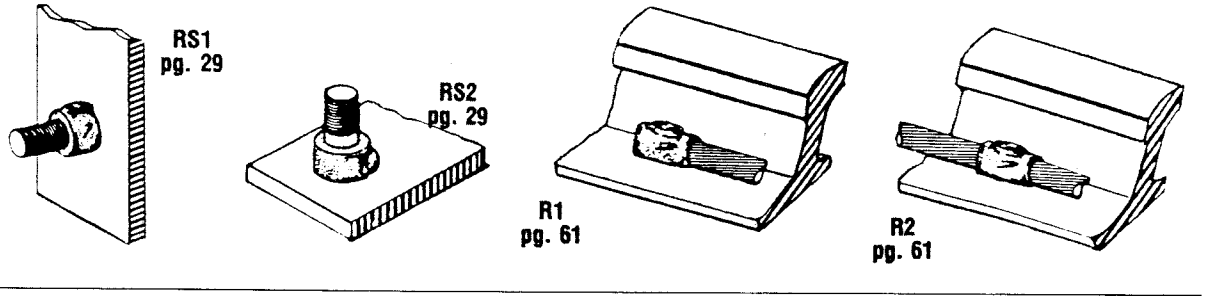

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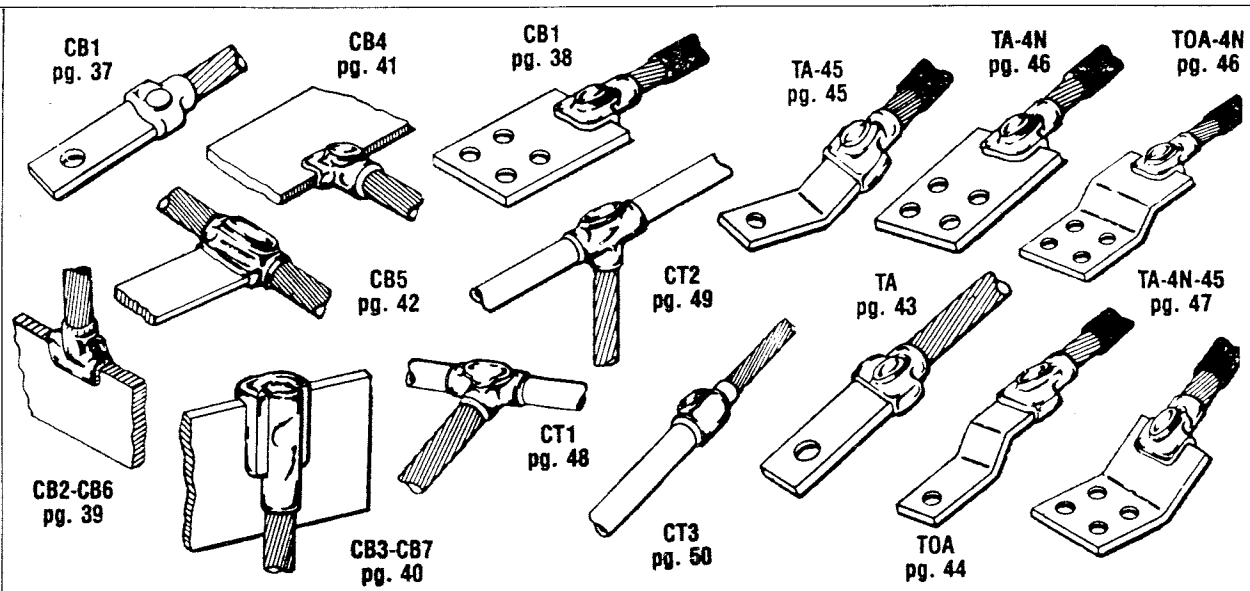

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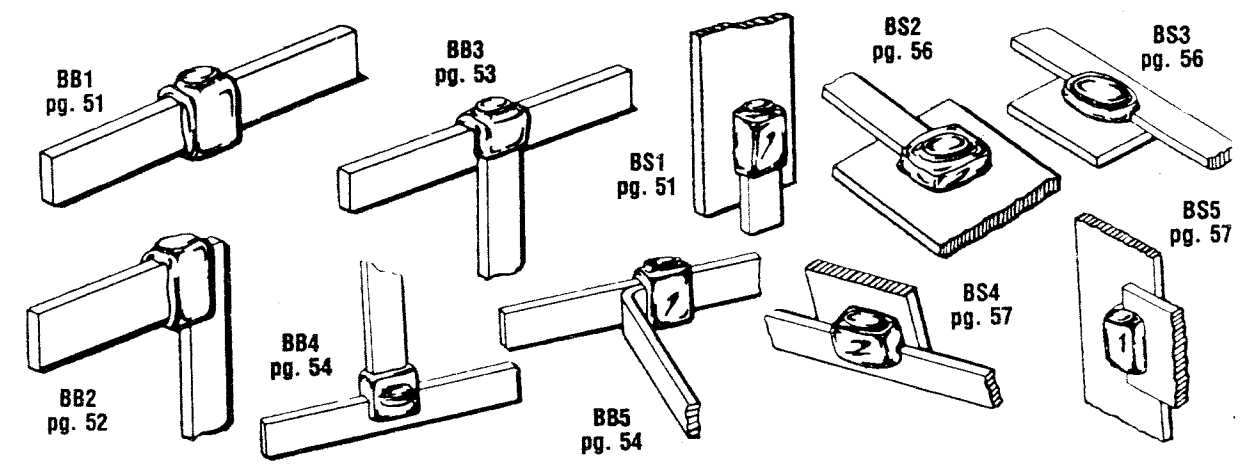

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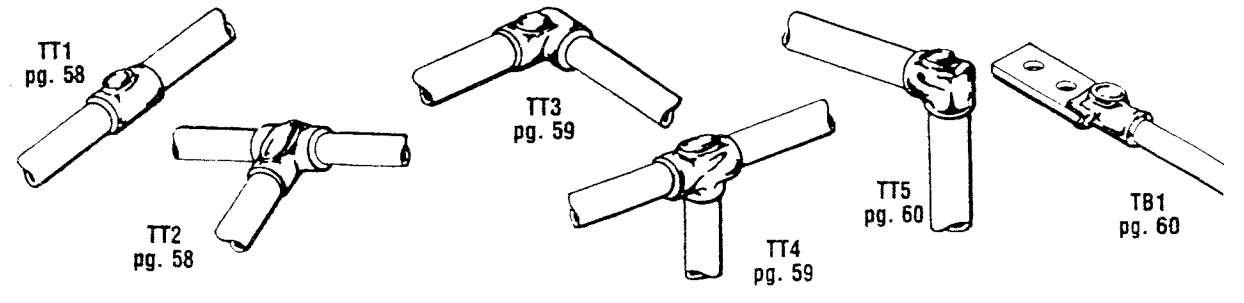

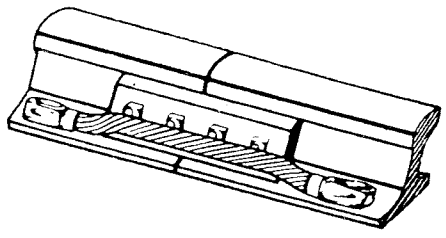

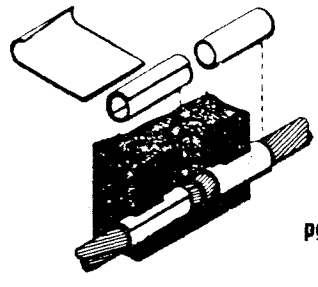

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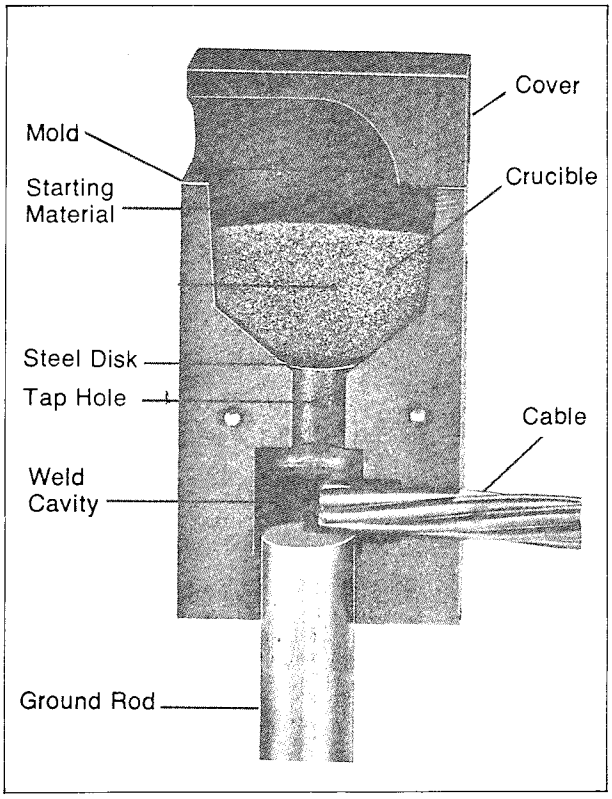


J - WELD

THE PROCESS

J - Weld electrical connection process is a simple, portable, efficient method of welding copper to copper or copper to steel without the use of an external power source.

J - Weld connections utilize the high temperature of reaction of powdered copper oxide and, aluminum. * When the J - Weld reaction takes place in a semi-perma- nent graphite mold, liquid super-heated copper flows over the conductors which are in the mold, causing them to melt, and form a fusion weld between them.

J - Weld reaction takes place in a matter of seconds; therefore the total amount of hear (calories or B. T. U. ′s) applied to the conductors or surfaces is considerably less than that employed in brazing or soldering operations. this is an important advantage when welding to insulated cable or thin wall pipe.

J - Weld process may also be used to weld materials other than copper for electrical purposes. J-Weld electrical connections have been made between copper and the foll- wing materials:

Stainless
Steel Rail
Ordinary Steel
Nichrome V
Monel

Cooperweld
Brass
Bronze
Everdur
Galvanized Steel

J - Weld Connection

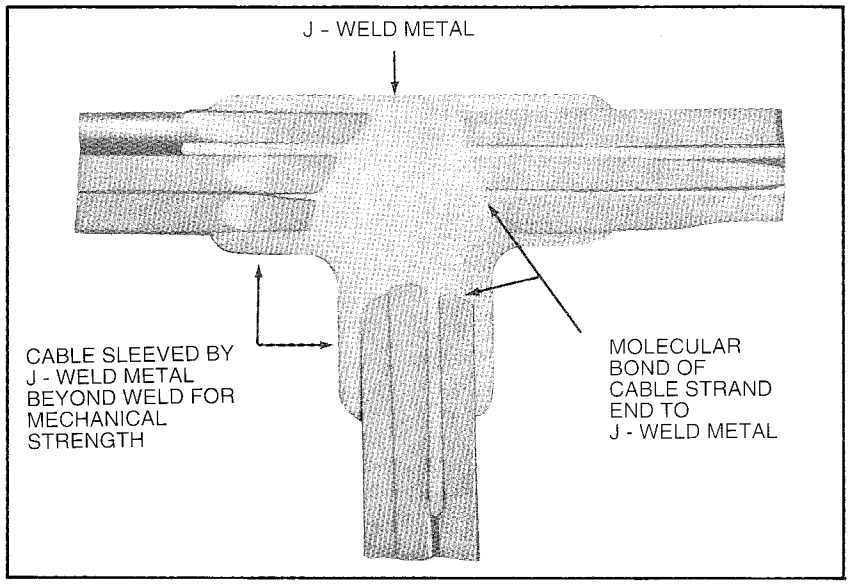
J - Weld connection is a fusion or molecular weld of virtually pure copper. The finished connection in the majority of cases has at least twice the cross sectional area of the conductors being welded and therefore:

1. Will not be affected by high current surges. Tests have shown that the electrical conductor will melt before the J-Weld connection when subjected to high short circuit current.

2. Will not loosen or corrode at the point of the weld. There are no contact surfaces or mechanical pressures involved. J-Weld connection becomes an integral part of the conductors. See Figure 2.

3. Has a current carrying capacity equal to or greater than that of the conductors welded.

4. Sleeving of the conductors extends beyond welded joint area for greater mechanical strength if conductors are subjected to flexing.



J - Weld Equipment

J - Weld is ideal for field use as it is light and portable and requires no outside power source. It requires very little time or skill to obtain vibration-proof, corrosion and maintenance-free electrical connections.

J - Weld equipment required for making all types of electrical connections is shown on the following pages.

J - Weld Clamps

For most connections involving lugs, cable, small tubular or rectangular bus, J - Weld clmps are used. These clamps make possible the use of many different sizes and types of mold with only two different J - Weld clamps, namely catalog B106 and 107. These two clamps will fi 95% of all the standard molds.

1. Use B106 clamps for all J - Weld having a price key "4" — "7" — 14". These molds are nominally 76.2 × 76.2 mm in width and depth (3" × 3").

2. Use B107 clamps for all molds having a price key "5" — "6" — "8" — "15". These molds are nominally 101.6 × 101.6 mm in width and depth (4" × 4").

3. All mold having a price key "3" and "10" needs handles.

J - Weld Powder

The quantity (weight in grams) of each envelope content is identified by an adesive white label.

Each "price key" mold has its especific cartridge. Certain molds, however, require the use of more than one cartridge for full charge, according to the connection table. In these cases each ignition powder tube must be used and spread over the welding powder already dropped inside the mold.

DO NOT TAMP POWDER DOWN ONCE IT IS PLACED IN THE MOLD.

J - Weld powder is packed in Plastic case, with the ignition powder tube inside.

The cartridges totally hermetic and non-hygroscopic, what assures the total protection of its content.

The cartridges are packed in a cardboard box according to the table below.

J - Weld Mold

The copper thermite reaction takes place within a specially designed, fine graphite mold that permits free flow of metal to all sections of the weld cavity. The weld cavity is designed to allow easy removal of the mold from finished joint to increase mold life.

The average life of a mold is 50 plus welds depending on the care and treatment it receives. The maximum wear on a mold takes place at the mold openings due to forcing a mold shut over "out of round" conductors, hitting and then chipping openings with ends of conductors, etc. To at least double the mold life "wear plates" can be factory installed around the mold openings. See Figure 1.

They can be supplied for all molds for cable sizes 1000 Mem. and smaller and ground rods 1" O.D. and smaller. To order, simply add the suffix "W" to the mold catalog number such as CC1 - 1616 - W.

Many times a customer will use very heavily oxidized reclaimed conductor for his grounding system. Due to this heavy oxidation, a thorough cleaning job cannot be done. In these cases, a "heavy duty" mold is recommended as it utilizes a larger size cartridge than the standard duty mold. The actual heat of reaction is not increased but is prolonged for a longer period of time and allows for burn-off of the heavy oxidation. The completed joint in physical size is, of course, larger than one produced by a standard mold. At times, a customer may feel that the calculated theoretical ground fault current may be rather high and prefers the heavy duty mold so that he will obtain the greater mass of metal around his finished connection. A standard duty mold *may not* be used as a heavy duty mold by merely using a larger cartridge. To order a heavy duty mold add the suffix "H" to the required mold, number.

On some very large cable to cable, or bar to bar connections which require multiple cartridges, a separate crucible must be used. (See Pages 66 and 67). A single mold having both the crucible and weld cavity as an integral unit, would be excessively large, expensive and could only be used for the specific application. The separate crucible is nothing more than a "basin" which holds the weld powder previous to ignition. This crucible is placed directly on top of the mold which contains only the weld cavity. In this manner, the customer gains a cost advantage and flexibility in that the same crucible can be used on different molds.
Refer to pages 66 and 67 for accessories that are available for the J - Weld line.

How to Use J - Weld Equipment

1. Clean and dry cables and mold to avoid porous weld. Straighten cables and place in cable grooves. Close J - Weld clamp tightly until locking action is felt.

2. Place metal disc over tap hole in bottom of crucible. Pour in welding powder from cartridge. Tap bottom of cartridge to remove all powder and spread the ignition powder over the welding powder. Close the mold.

3. Hold mold securely. Ignite starting powder with flint gun. Remove gun immediately. Allow weld to cool for about 10 seconds.

Remove J - Weld connection and clean crucible.

Obs.: Before starting the connection, it is recommended to fire one cartridge in the empty mold to warm up it.

ATTENTION

When welding inside manhole, use necessarily exhaust equipment to eliminate smoke.

GROUNDING

The need for proper grounding is universally recognized to provide:

1. Safety of men or animals from electric shock.
2. Protection of equipment or apparatus from damage by electrical faults.
3. Better reliability and continuity of electric service.
4. Methods of circuit relaying to clear ground faults on the electrical system:

Because of the great importance of the ground system whenever it is required to function, it is essential to plan any grounding system completely and carefully. Naturally, the first consideration in any ground is the soil itself.

The materials comprising the earth's surface have a very high resistivity compared with the low resistance of metals. As a result, all current flowing through the ground has a considerable voltage drop in a short distance. It is apparent from this, that the conceptin of the ground potential as always being zero is not true. A considerable potential gradient is quite possible between different portions of the ground, more particularly between those portions which are immediately adjacent to a ground electrode and those portions wich are remote from the ground electrode.

There is considerable variation in the resistance of the soil itself. The resistance depends upon many factors, such as:

1. Type off soil
2. Depth
3. Temperature
4. Moisture content
5. Percent of salt concentration in the soil

AVERAGE RESISTIVITY OF THE GROUND

TYPE OF GROUND	RESISTIVITY
Wet Organic Soil	10
Moist Soil	10^2
Dry Soil	10^3
Dry Soil	10^4

Loam, clay and limestone soils usually have relatively low resistance; sandy and rocky soils have higher resistance.

In general, there are two types of ground connections:

1. Ground connections that are made to water pipes, steel building frames, or other metal structures which are installed for purposes other than grounding.

2. Connections that are made to driven rods, buried cables or plates, or other types of electrodes especially designed for grounding purposes.

See Figure 4 for typical grounding applications.

Water piping systems should be used for grounding wherever possible, in as much as their great length usually cuts down the ground resistance to a fraction of an ohm. In addition, the pipes are usually installed at depths below the frost line where the moisture is relatively permanent and where the resistance is little affected by seasonal variations. An exception must be made of water piping systems where the joints in the pipe are sealed by cement or similar compounds which insulate sections of pipe from each other, thereby reducing their effectiveness for grounding purposes.

Where water pipe grounds are not available the ground may consist of driven rods or pipes, buried plates, cable grids, or cable counterpoises. In a addition there are various types of patented grounding devices, but these are expensive and seldom used.

Driven rods or pipes have proven to be quite economical grounding devices. The pipes are usually steel whereas the rods are most often made with a steel core surrounded by a relatively thick sheath of pure cooper. The latter type of electrode is of especial advantage where installation is required in corrosive soils.

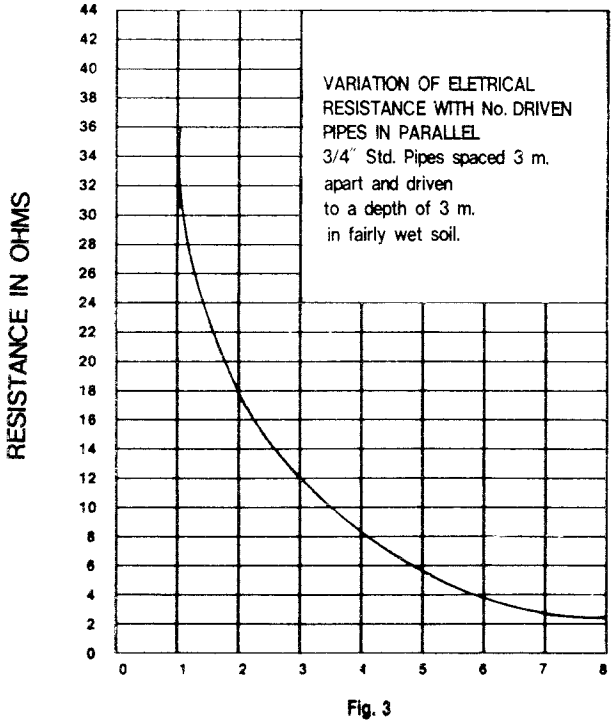


Fig. 3

NUMBER OF PIPES IN PARALLEL
Reduction in relative effectivencess of ground eletrodes as number increases

GROUND CABLE SIZE FOR SHORT CIRCUITS

SHORT CIRCUIT CURRENTS	CABLE SIZE
Até / To — 2.000 Amps	50 mm²
2.000 — 4.000 Amps	70 mm²
4.000 — 6.000 Amps	120 mm²
6.000 — 10.000 Amps	150 mm²
10.000 — 15.000 Amps	240 mm²
15.000 — 20.000 Amps	400 mm²
20.000 — 30.000 Amps	500 mm²

Compared to the soil resistance, the resistance of the ground lead, ground electrode, and contact between electrode and soil is negligible. The soil resistance itself is considered to be the resistance of the soil about the electrode up to the point where additional distance from the electrode does not vary the potential.

It has been determined that about 93 percent of the entire voltage drop occurs within a 2 meters radius of a driven ground, and 82 percent of the total voltage drop within a 30 cm radius. This means that the soil within 30 cm about the driven ground appears responsible for 82 percent of the total resistance of the ground circuit, whereas the adjoining 1,70 m is responsible for only 11 percent of the total resistance of the circuit. For this reason soil treatment is practical and important. Since about 90 percent of the total potential drop takes place within 60 cm of the pipe or rod, these should therefore be kept at least 2 m apart wherever possible. One pipe will thereby be kept out of the dense current path of another and the resistance of the ground connections will vary almost inversely as the number of rods or pipes. For reasons of economy and effectiveness it is not advisable to use more than six elements per electrode. See Fig. 3.

The resistance of a cylinder of earth adjacent to a driven rod or pipe depends upon the moisture content of the soil and of the condition and tightness of packing as well as its chemical content.

High resistant soils are frozen, dry, loose, sandy, gravelly or boulder clay. Low resistant soils contain ashes, cinders, organic matter or salt solutions.

In driving a rod or pipe for a ground it is essential that the electrode be driven below the frost level into the permanent moisture level. Frozen earth has many times the resistance of identical soil at a higher temperature. The permanent moisture level is usually at a depth of about 2,5 m, although sometimes it is necessary to go considerably deeper.

In some locations it is necessary to use soil treatment to reduce ground resistance. Such soil treatment usually consists of digging a small trench about 45 cm deep about the ground rod and filling it with 25 to 50 kg of coarse rock salt, copper sulphate or magnesium sulphate. Salt is cheap but is highly corrosive and being soluble must be replaced Magnesium sulphate is more expensive but is not as corrosive and is very satisfactory electrically.

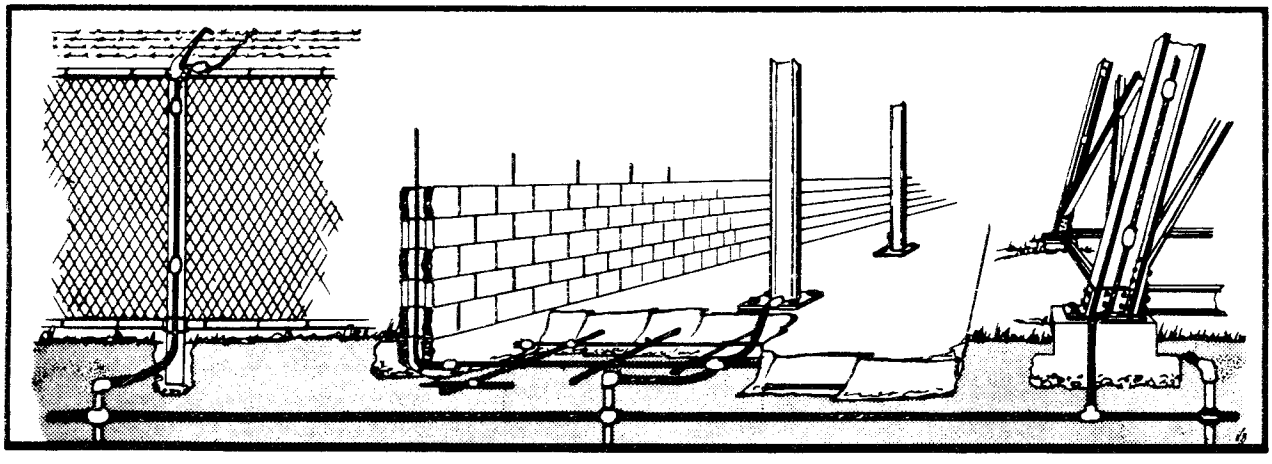
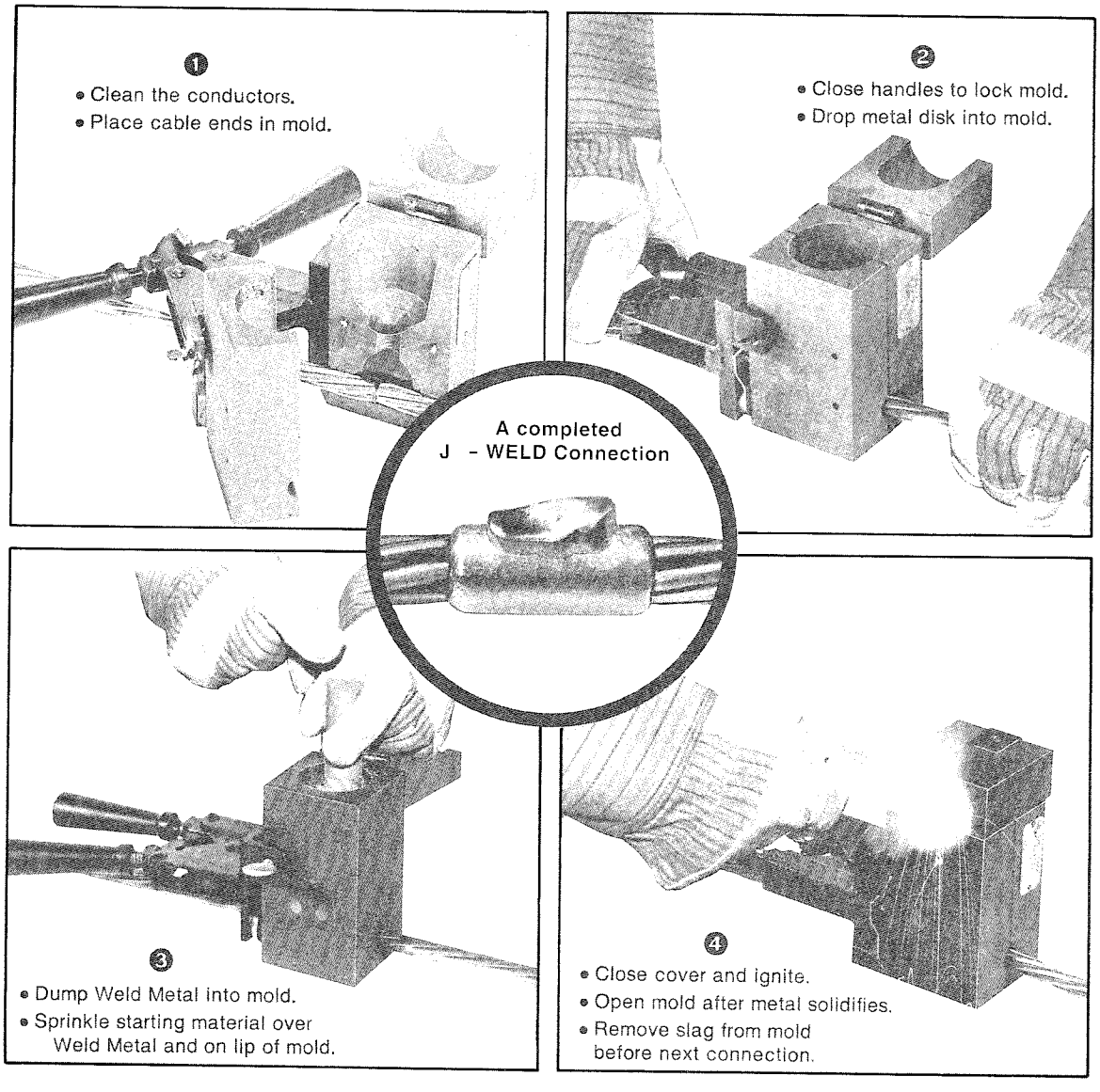


Fig. 4 - Typical grounding applications for J - Weld connections.

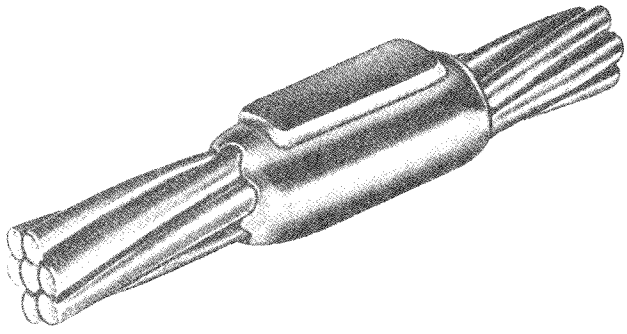
How to make a J - Weld connection



TYPE CC1

Horizontal End to End

The mold Type CC1 makes a high conductivity copper alloy end-to-end weld connection. Type CC1 mold can be used on solid, rope lay and concentric stranded copper conductors from 16 to 500 mm².



CONCENTRIC STRANDED CONDUCTORS

CABLE (a) mm²	STANDARD MOLD			HEAVY DUTY (ADD H TO MOLD No.)	
	MOLD No.	PRICE KEY	CART (b) No.	PRICE KEY	CART. No.
16	CC1- 16	4	25	4	45
25	CC1- 25	4	32	4	65
35	CC1- 35	4	32	4	65
50	CC1- 50	4	45	4	90
70	CC1- 70	4	65	4	90
95	CC1- 95	4	90	4	200
120	CC1-120	4	115	4	250
150	CC1-150	4	115	4	250
185	CC1-185	4	150	5	2-150
240	CC1-240	4	200	15	2-200
400	CC1-400	15	2-150	15	3-200
500	CC1-500	15	2-200	15	3-250

(a) For solid-to-solid connections, add suffix "S" to Mold Nº

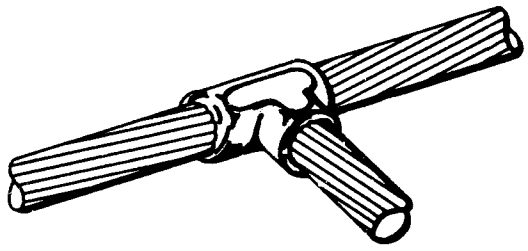
(b) Order one size larger cartridge when welding solid conductors 50 mm² and larger.

ORDER J - WELD CLAMPS SEPARATELY

TYPE CC2

Horizontal Cable Tap to Horizontal Cable Run

To connect a horizontal cable tap to a horizontal thru cable run, mold Type CC2 is reccomended for solid, concentric stranded, or rope lay copper conductors from 16 to 500 mm².



CONCENTRIC STRANDED CONDUCTORS

CABLE (a) mm²		STANDARD MOLD			HEAVY DUTY MOLD (ADD H TO MOLD No.)	
RUN	TAP	MOLD No.	PRICE KEY	CART(b) No.	PRICE KEY	CART. No.
16	16	CC2- 1616	4	32	4	65
25	25	CC2- 2525	4	32	4	65
25	16	CC2- 2516	4	32	4	65
35	35	CC2- 3535	4	45	4	90
35	25	CC2- 3525	4	45	4	65
35	16	CC2- 3516	4	45	4	65
50	50	CC2- 5050	4	90	4	115
50	35	CC2- 5035	4	45	4	65
50	25	CC2- 5025	4	45	4	90
50	16	CC2- 5016	4	45	4	65
70	70	CC2- 7070	4	90	4	115
70	50	CC2- 7050	4	90	4	115
70	35	CC2- 7035	4	45	4	90
70	25	CC2- 7025	4	45	4	65
70	16	CC2- 7016	4	45	4	65
95	95	CC2- 9595	4	150	5	2-150
95	70	CC2- 9570	4	90	4	200
95	50	CC2- 9550	4	90	4	200
95	35	CC2- 9535	4	90	4	150
95	25	CC2- 9525	4	45	4	90
120	120	CC2-120120	4	150	5	2-150
120	95	CC2- 12095	4	150	5	2-150
120	70	CC2- 12070	4	90	4	200
120	50	CC2- 12050	4	90	4	200
120	35	CC2- 12035	4	90	4	150
150	150	CC2-150150	4	200	5	2-200
150	120	CC2-150120	4	150	5	2-150
150	95	CC2- 15095	4	150	5	2-150
150	70	CC2- 15070	4	90	4	200
150	50	CC2- 15050	4	90	4	200
150	35	CC2- 15035	4	90	4	150

CONCENTRIC STRANDED CONDUCTORS

CABLE (a) mm²		STANDARD MOLD			HEAVY DUTY MOLD (ADD H TO MOLD No.)	
RUN	TAP	MOLD No.	PRICE KEY	CART. (b) No.	PRICE KEY	CART. No.
185	185	CC2-185185	4	200	5	2-200
185	150	CC2-185150	4	200	5	2-200
185	120	CC2-185120	4	200	5	2-200
185	95	CC2- 18595	4	150	5	2-150
185	70	CC2- 18570	4	90	5	200
185	50	CC2- 18550	4	90	4	200
185	35	CC2- 18535	4	90	4	150
240	240	CC2-240240	4	2-150	5	500
240	185	CC2-240185	4	200	5	2-200
240	150	CC2-240150	4	200	5	2-200
240	120	CC2-240120	4	200	5	2-200
240	95	CC2- 24095	4	150	5	2-150
240	70	CC2- 24070	4	90	4	200
240	50	CC2- 24050	4	90	4	200
240	35	CC2- 24035	4	90	4	200
400	400	CC2-400400	5	2-250	10*(c)	4-250
400	240	CC2-400240	5	2-200	5	3-250
400	185	CC2-400185	5	250	5	2-250
400	150	CC2-400150	4	200	5	2-200
400	120	CC2-400120	4	200	5	2-200
400	95	CC2- 40095	4	150	5	2-150
400	70	CC2- 40070	4	150	5	2-150
400	50	CC2- 40050	4	150	5	2-150
500	500	CC2-500500	15	2-250	10*(c)	4-250
500	400	CC2-500400	15	2-250	10*(c)	4-250
500	240	CC2-500240	15	2-200	15	3-250
500	185	CC2-500185	14	250	15	2-250
500	150	CC2-500150	14	200	15	2-200
500	120	CC2-500120	14	200	15	2-200
500	95	CC2- 50095	14	150	15	2-150
500	70	CC2- 50070	14	150	15	2-150
500	50	CC2- 50050	14	150	15	2-150

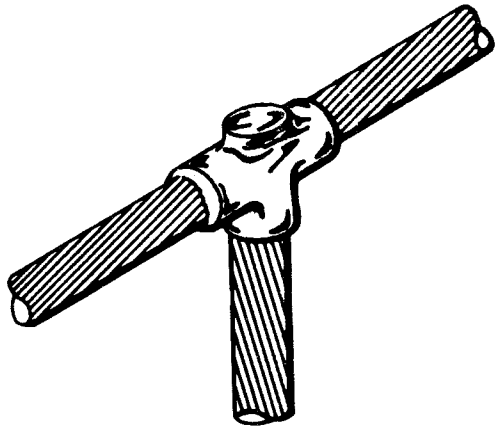
(a) For solid-to-solid connections, add suffix "S" to Mold N°
(b) Order one size larger cartridge when welding solid conductors 50 mm² and larger.
(c) Sold complete with frame, if graphite part only is required, add sufix "G" to Cat. N°
*Requires additional mold M-181

ORDER J - WELD CLAMPS SEPARATELY

TYPE CC3

Vertical Drop Cable Tap to Horizontal Thru Cable

Type CC3 mold is recommended for connecting a vertical drop cable tap to a horizontal thru cable. Current carrying capacity of connection is greater than the cables joined. For use on solid, rope lay,, and concentric stranded copper conductors from 16 to 240 mm².



CONCENTRIC STRANDED CONDUCTORS

CABLE (a) mm²		STANDARD MOLD			HEAVY DUTY MOLD (ADD H TO MOLD No.)	
RUN	TAP	MOLD No.	PRICE KEY	CART (b) No.	PRICE KEY	CART. No.
16	16	CC3- 1616	4	32	4	65
35	35	CC3- 3535	4	32	4	65
35	25	CC3- 3525	4	32	4	65
35	16	CC3- 3516	4	32	4	65
50	50	CC3- 5050	4	90	4	150
50	35	CC3- 5035	4	90	4	115
50	25	CC3- 5025	4	90	4	115
50	16	CC3- 5016	4	90	4	115
70	70	CC3- 7070	4	90	4	200
70	50	CC3- 7050	4	90	4	200
70	35	CC3- 7035	4	90	4	150
70	25	CC3- 7025	4	90	4	150
70	16	CC3- 7016	4	90	4	150
95	95	CC3- 9595	4	150	5	2-150
95	70	CC3- 9570	4	150	4	250
95	50	CC3- 9550	4	150	4	250
95	35	CC3- 9535	4	150	4	200
95	16	CC3- 9516	4	150	4	200
120	120	CC3-120120	4	150	5	2-150
120	95	CC3- 12095	4	150	5	2-150
120	70	CC3- 12070	4	150	4	250
120	50	CC3- 12050	4	150	4	250

CONCENTRIC STRANDED CONDUCTORS

CABLE (a) mm²		STANDARD MOLD			HEAVY DUTY MOLD (ADD H TO MOLD No.)	
RUN	TAP	MOLD Nº	PRICE KEY	CART. Nº	KEY	CART. Nº
120	35	CC3- 12035	4	150	4	200
120	16	CC3- 12016	4	150	4	200
150	150	CC3-150150	4	200	15	2-200
150	120	CC3-150120	4	200	15	2-150
150	95	CC3- 15095	4	200	15	2-150
150	70	CC3- 15070	4	200	4	250
150	50	CC3- 15050	4	200	4	250
150	35	CC3- 15035	4	150	4	250
185	185	CC3-185185	4	200	15	2-200
185	150	CC3-185150	4	200	15	2-200
185	120	CC3-185120	4	200	15	2-200
185	95	CC3- 18595	4	200	15	2-200
185	70	CC3- 18570	4	200	5	2-150
185	50	CC3- 18550	4	200	5	2-150
185	35	CC3- 18535	4	150	5	2-150
240	240	CC3-240240	5	2-150	15	2-250
240	185	CC3-240185	5	2-150	15	2-250
240	150	CC3-240150	4	250	15	2-200
240	120	CC3-240120	4	250	15	2-200
240	95	CC3- 24095	4	250	15	2-200
240	70	CC3- 24070	4	250	15	2-200
240	50	CC3- 24050	4	250	15	2-200
240	35	CC3- 24035	4	250	15	2-150

(a) For solid-to-solid connections, add suffix "S" to Mold Nº
(b) Order one size larger cartridge when welding solid conductors 50 mm² and larger.

ORDER J - WELD CLAMPS SEPARATELY

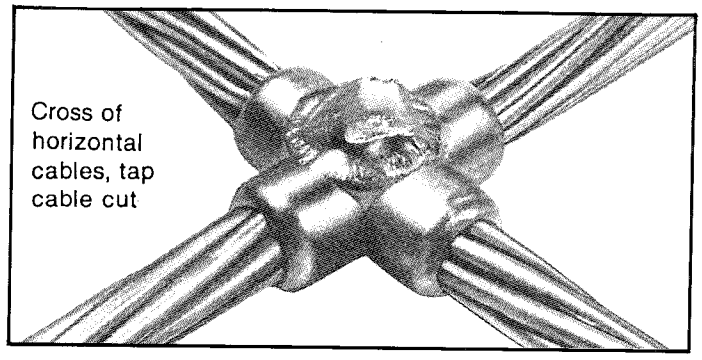
J - WELD

Cable to Cable

TYPE CC4

Horizontal to Horizontal Cable Cross

For horizontal cable cross on solid, rope lay, or concentric stranded copper conductors from 16 to 240 mm^2, type CC4 mold is recomended. The connection is a solid mass of copper that is impervious to moisture or corrosion.



CONCENTRIC STANDARD CONDUCTORS

CABLE (a) mm^2		STANDARD MOLD			HEAVY DUTY MOLD (ADD H TO MOLD No.)	
RUN	TAP	MOLD Nº	PRICE KEY	CART. (b) Nº	PRICE KEY	CART. Nº
16	16	CC4- 1616	4	45	4	65
25	16	CC4- 2516	4	45	4	65
25	25	CC4- 2525	4	45	4	65
35	35	CC4- 3535	4	65	4	90
35	25	CC4- 3525	4	65	4	90
35	16	CC4- 3516	4	65	4	90
50	50	CC4- 5050	4	90	4	200
50	35	CC4- 5035	4	90	4	150
50	25	CC4- 5025	4	90	4	150
50	16	CC4- 5016	4	90	4	150
70	70	CC4- 7070	4	115	4	200
70	50	CC4- 7050	4	115	4	200
70	35	CC4- 7035	4	115	4	150
70	25	CC4- 7025	4	115	4	150
70	16	CC4- 7016	4	115	4	150
95	95	CC4- 9595	4	150	5	2-150
95	70	CC4- 9570	4	150	4	250
95	50	CC4- 9550	4	150	4	250
95	35	CC4- 9535	4	115	4	200
95	25	CC4- 9525	4	115	4	200
120	120	CC4-120120	4	200	5	2-150
120	95	CC4- 12095	4	200	5	2-150

CONCENTRIC STRANDED CONDUCTORS

CABLE (a) mm^2		STANDARD MOLD			HEAVY DUTY MOLD (ADD H TO MOLD No.)	
RUN	TAP	MOLD Nº	PRICE KEY	CART. (b) Nº	PRICE KEY	CART. Nº
120	70	CC4- 12070	4	150	4	250
120	50	CC4- 12050	4	150	4	250
120	35	CC4- 12035	4	115	4	200
150	150	CC4-150150	4	250	5	2-200
150	120	CC4-150120	4	250	5	2-200
150	95	CC4- 15095	4	200	5	2-150
150	70	CC4- 15070	4	150	4	250
150	50	CC4- 15050	4	150	4	250
150	35	CC4- 15035	4	115	4	200
185	185	CC4-185185	4	250	15	2-250
185	150	CC4-185150	4	250	15	2-250
185	120	CC4-185120	4	250	15	2-200
185	95	CC4- 18595	4	200	15	2-200
185	70	CC4- 18570	4	200	5	2-150
185	50	CC4- 18550	4	200	5	2-150
185	35	CC4- 18535	4	150	4	250
240	240	CC4-240240	15	2-250	15	3-250
240	185	CC4-240185	15	2-200	15	3-250
240	150	CC4-240150	15	2-200	15	3-200
240	120	CC4-240120	15	2-150	15	3-200
240	95	CC4- 24095	15	2-150	15	500
240	70	CC4- 24070	14	250	15	2-200
240	50	CC4- 24050	14	250	15	2-200
240	35	CC4- 24035	14	200	15	2-150

(a) For solid-to-solid connections, add suffix "S" to Mold Nº

(b) Order one size larger cartridge when welding solid conductors 50 mm^2 and larger.

ORDER J - WELD CLAMPS SEPARATELY

TAPE CC5

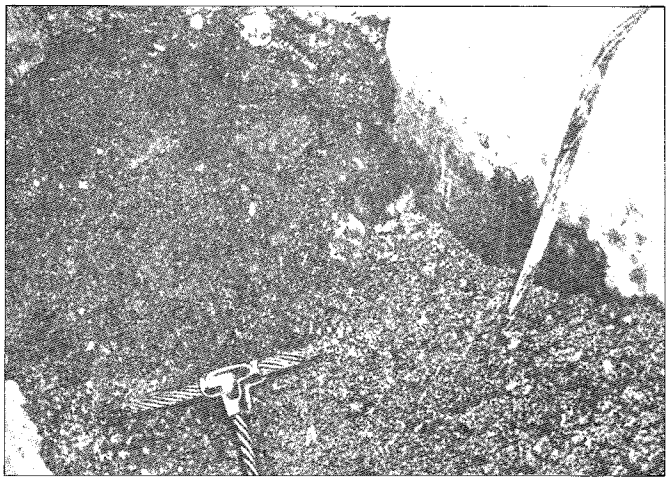
Vertical end to end Cable Joint

The mold type CC5 is recommended for vertical drop splices on solid, rope lay, or concentric stranded copper conductors up to 500 mm². The J - Weld connection is slightly larger than the diameter of the cable and has a greater currente carryng capacity.

CABLE (a) mm²	STANDARD MOLD		
	MOLD Nº	PRICE KEY	CART. (b) Nº
16	CC5- 16	7	32
25	CC5- 25	7	45
35	CC5- 35	7	45
50	CC5- 50	7	90
70	CC5- 70	7	90
95	CC5- 95	7	115
120	CC5-120	7	150
150	CC5-150	7	150
185	CC5-185	7	200
240	CC5-240	7	250
400	CC5-400	8	2-200
500	CC5-500	8	2-250

(a) For solid-to-solid connections, add suffix "S" to Mold Nº
(b) Order one size larger cartridge when welding solid conductors 50 mm² and larger.

Horizontal T connection for cable to cable - type CC2

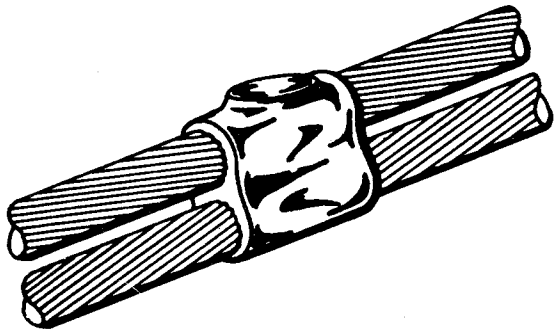


ORDER J - WELD CLAMPS SEPARATELY

TYPE CC7

Horizontal Parallel thru Cables

For connecting two horizontal thru cables, one above the other, mold Type CC7 is recommended The J - Weld joint is a solid mass of copper that is vibration proof and impervious to corrosion. Used on solid, rope lay, and concentric stranded copper conductor range 16 to 500 mm²



CONCENTRIC STANDDED CONDUCTORS

CABLE (a) mm²		STANDARD MOLD			HEAVY DUTY MOLD (ADD H TO MOLD No)	
RUN	TAP	MOLD Nº	PRICE KEY	CART.(b) Nº	PRICE KEY	CART. Nº
16	16	CC7- 1616	14	32	14	65
25	25	CC7- 2525	14	45	14	90
25	16	CC7- 2516	14	45	14	90
35	35	CC7- 3535	14	65	14	115
35	25	CC7- 3525	14	65	14	90
35	16	CC7- 3516	14	65	14	90
50	50	CC7- 5050	14	90	14	200
50	35	CC7- 5035	14	65	14	150
50	25	CC7- 5025	14	65	14	115
50	16	CC7- 5016	14	65	14	115
70	70	CC7- 7070	14	115	14	250
70	50	CC7- 7050	14	115	14	250
70	35	CC7- 7035	14	90	14	200
70	25	CC7- 7025	14	90	14	200
70	16	CC7- 7016	14	65	14	150
95	95	CC7- 9595	14	200	15	2-200
95	70	CC7- 9570	14	150	15	2-150
95	50	CC7- 9550	14	150	15	2-150
95	35	CC7- 9535	14	150	14	200
95	25	CC7- 9525	14	150	14	200
120	120	CC7-120120	14	250	15	2-250
120	95	CC7- 12095	14	200	15	2-200
120	70	CC7- 12070	14	150	15	2-150
120	50	CC7- 12050	14	150	15	2-150
120	35	CC7- 12035	14	150	14	2-250
150	95	CC7- 15095	14	200	15	2-200
150	70	CC7- 15070	14	150	15	2-150
150	50	CC7- 15050	14	150	15	2-150
150	35	CC7- 15035	14	150	14	250
185	185	CC7-185185	15	2-150	15	3-200

CONCENTRIC STRANDED CONDUCTORS

CABLE (a)		STANDARD MOLD			HEAVY DUTY MOLD (ADD H TO MOLD No.)	
RUN	TAP	MOLD Nº	PRICE KEY	CART.(b) Nº	PRICE KEY	CART. Nº
185	150	CC7-185150	15	2-150	15	3-200
185	120	CC7-185120	14	250	15	2-250
185	95	CC7-18595	14	200	15	2-200
185	70	CC7- 18570	14	150	15	2-150
185	50	CC7- 18550	14	150	14	2-150
185	35	CC7- 18535	14	150	14	250
240	240	CC7-240240	15	2-200	10*(c)	3-250
240	185	CC7-240185	15	2-150	10*(c)	3-250
240	150	CC7-240150	15	2-150	10*(c)	3-200
240	120	CC7-240120	14	250	15	2-250
240	95	CC7- 24095	14	200	15	2-250
240	70	CC7- 24070	14	150	15	2-150
240	50	CC7- 24050	14	150	15	2-150
240	35	CC7- 24035	14	150	14	250
400	400	CC7-400400	15	3-250	10*(c)	4-250
400	240	CC7-400240	15	2-250	10*(c)	4-250
400	185	CC7-400185	15	2-200	15	3-250
400	150	CC7-400150	15	2-150	15	3-250
400	120	CC7-400120	15	2-150	15	3-200
400	95	CC7- 40095	14	250	15	2-250
400	70	CC7- 40070	14	250	15	2-200
400	50	CC7- 40050	14	250	15	2-200
500	500	CC7-500500	15	4-250	10**(c)	6-250
500	400	CC7-500400	15	3-250	10**(c)	6-250
500	240	CC7-500240	15	2-250	10**(c)	5-250
500	185	CC7-500185	15	2-150	10*(c)	4-250
500	150	CC7-500150	15	2-150	15	4-250
500	120	CC7-500120	14	250	15	3-250
500	95	CC7- 50095	14	250	15	3-250
500	70	CC7- 50070	14	250	15	2-250
500	50	CC7- 50050	14	250	14	2-250

(a) For solid-to-solid connections, add suffix "S" to Mold Nº
(b) Order one size larger cartridge when welding solid conductors 50mm²and larger.
(c) Sold complete with frame, if graphite part only is required, add sufix "G" to Catalog Number.

* Requires additional mold M-181
** Requires additional mold M-182

ORDER J - WELD CLAMPS SEPARATELY

J - WELD

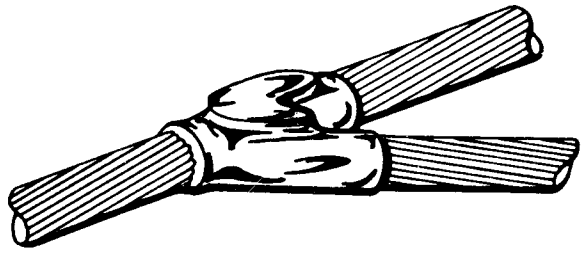
Cable to Cable

TYPE CC8-CC9

Horizontal Cable to Cable

30° Angle Tap

For horizontal cable to cable - 30° horizontal tap to a horizontal thru run, the mold CC8 is recommended for left hand, and the mold type CC9 for right hand connections. Each accommodates a range from 16 to 500 mm^2, solid, rope lay, and concentric stranded copper conductors.



CONCENTRIC STRANDED CONDUCTORS

CABLE (a) mm^2		STANDARD MOLD			HEAVY DUTY MOLD (ADD H TO MOLD No.)	
RUN	TAP	MOLD Nº	PRICE KEY	CART.(b) Nº	PRICE KEY	CART. Nº
16	16	CC8- 1616	4	45	4	65
25	25	CC8- 2525	4	45	4	65
25	16	CC8- 2516	4	45	4	65
35	35	CC8- 3535	4	65	4	90
35	25	CC8- 3525	4	65	4	90
35	16	CC8- 3516	4	65	4	90
50	50	CC8- 5050	4	90	4	115
50	35	CC8- 5035	4	90	4	90
50	25	CC8- 5025	4	90	4	90
50	16	CC8- 5016	4	90	4	90
70	70	CC8- 7070	4	115	4	150
70	50	CC8- 7050	4	115	4	150
70	35	CC8- 7035	4	115	4	115
70	25	CC8- 7025	4	115	4	115
70	16	CC8- 7016	4	115	4	115
95	95	CC8- 9595	4	150	5	2-150
95	70	CC8- 9570	4	150	4	250
95	50	CC8- 9550	4	150	4	200
95	35	CC8- 9535	4	115	4	150
95	25	CC8- 9525	4	115	4	150
120	120	CC8-120120	4	150	5	2-150
120	95	CC8- 12095	4	150	5	2-150
120	70	CC8- 12070	4	150	4	250
120	50	CC8- 12050	4	150	4	200
120	35	CC8- 12035	4	115	4	150
150	150	CC8-150150	4	200	15	2-200
150	120	CC8-150120	4	200	15	2-200
150	95	CC8- 15095	4	200	5	2-150
150	50	CC8- 15050	4	200	4	250
150	35	CC8- 15035	4	150	4	200

CONCENTRIC STRANDED CONDUCTORS

CABLE (a) mm^2		STANDARD MOLD			HEAVY DUTY MOLD (ADD H TO MOLD No.)	
RUN	TAP	MOLD Nº	PRICE KEY	CART.(b) Nº	PRICE KEY	CART. Nº
185	185	CC8-185185	4	200	15	2-200
185	150	CC8-185150	4	200	15	2-200
185	120	CC8-185120	4	200	15	2-200
185	95	CC8- 18595	4	200	15	2-150
185	70	CC8- 18570	4	200	5	2-150
185	50	CC8- 18550	4	200	5	2-150
185	35	CC8- 18535	4	150	4	250
240	240	CC8-240240	15	2-150	15	2-250
240	185	CC8-240185	15	2-150	15	2-250
240	150	CC8-240150	14	250	15	2-200
240	120	CC8-240120	14	250	15	2-200
240	95	CC8- 24095	14	250	15	2-200
240	70	CC8- 24070	14	250	15	2-200
240	50	CC8- 24050	14	250	15	2-150
240	35	CC8- 24035	14	200	15	2-150
400	400	CC8-400400	15	3-200	10* (c)	4-250
400	240	CC8-400240	15	2-250	10* (c)	4-250
400	185	CC8-400185	15	2-250	5	3-250
400	150	CC8-400150	15	2-200	15	3-200
400	120	CC8-400120	15	2-150	15	3-200
400	95	CC8-40095	14	250	15	2-250
400	70	CC8-40070	14	250	15	2-200
400	50	CC8- 40050	14	250	15	2-200
500	500	CC8-500500	15	3-250	10* (c)	4-250
500	400	CC8-500400	15	3-200	10* (c)	4-250
500	240	CC8-500240	15	2-250	10* (c)	4-250
500	185	CC8-500185	15	2-250	5	3-250
500	150	CC8-500150	15	2-200	15	3-200
500	120	CC8-500120	15	2-200	15	2-250
500	95	CC8- 50095	14	250	15	2-250
500	70	CC8- 50070	14	250	15	2-250
500	50	CC8- 50050	14	250	15	2-200

(a) For solid-to-solid connections, add suffix "S" to Mold Nº

(b) Order one size larger cartridge when welding solid conductors 50 mm^2 and larger.

(c) Sold complete with frame. If graphite part only is required, add suffix "G" to Cat. Nº

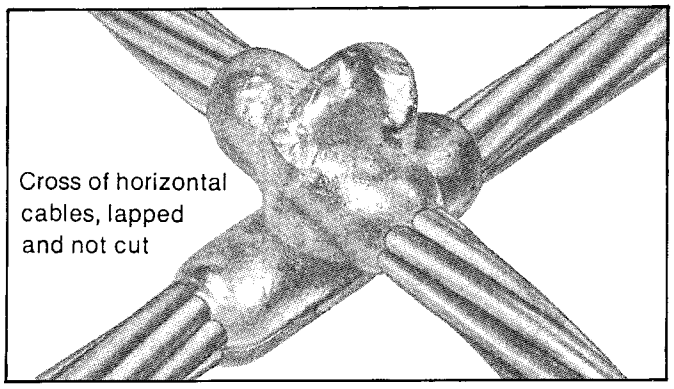
* Requires additional mold M-181.

ORDER J - WELD CLAMPS SEPARATELY

TYPE CCX

Horizontal Cable to Cable 90° Angle Tap

The CCX mold is recommended for jointing horizontal cables at 90°, from 16 to 240 mm².


Cross of horizontal cables, lapped and not cut

CONCENTRIC STANDED CONDUCTORS

CABLE (a)		STANDARD MOLD		
RUN	TAP	MOLD N°	PRICE KEY	CART.(b) N°
16	16	CCX- 1616	4	65
25	25	CCX- 2525	4	65
25	16	CCX- 2516	4	65
35	35	CCX- 3535	4	90
35	25	CCX- 3525	4	90
35	16	CCX- 3516	4	65
50	50	CCX- 5050	4	150
50	35	CCX- 5035	4	115
50	25	CCX- 5025	4	115
50	16	CCX- 5016	4	115
70	70	CCX- 7070	4	200
70	50	CCX- 7050	4	200
70	35	CCX- 7035	4	150
70	25	CCX- 7025	4	150
70	16	CCX- 7016	4	150
95	95	CCX- 9595	15	250
95	70	CCX- 9570	4	200
95	50	CCX- 9550	4	200
95	35	CCX- 9535	4	150
95	25	CCX- 9525	4	150
120	120	CCX-120120	15	2-150
120	95	CCX- 12095	15	2-150

CONCENTRIC STRANDED CONDUCTORS

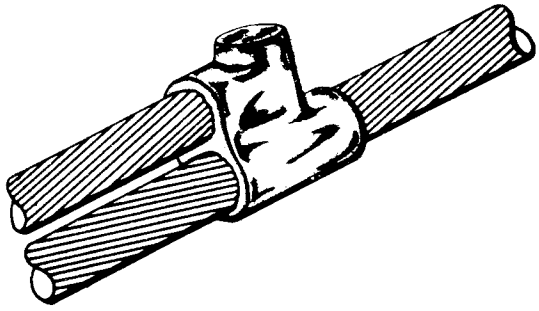
CABLE (a)		STANDARD MOLD		
RUN	TAP	MOLD N°	PRICE KEY	CART.(b) N°
120	70	CCX- 12070	14	250
120	50	CCX- 12050	14	250
120	35	CCX- 12035	14	150
150	150	CCX-150150	15	2-200
150	120	CCX-150120	15	2-200
150	95	CCX- 15095	15	2-150
150	70	CCX- 15070	14	2-150
150	50	CCX- 15050	14	250
150	35	CCX- 15035	14	150
185	185	CCX-185185	15	2-250
185	150	CCX-185150	15	2-250
185	120	CCX-185120	15	2-250
185	95	CCX- 18595	15	2-200
185	70	CCX- 18570	15	2-150
185	50	CCX- 18550	15	250
185	35	CCX- 18535	14	200
240	240	CCX-240240	15	3-250
240	185	CCX-240185	15	3-200
240	150	CCX-240150	15	3-200
240	120	CCX-240120	15	2-250
240	95	CCX- 24095	15	2-250
240	70	CCX- 24070	15	2-200
240	50	CCX- 24050	15	2-150
240	35	CCX- 24035	15	2-250

(a) For solid-to-solid connections, add suffix "S" to Mold N°
(b) Order one size larger cartridge when welding solid conductors 50 mm² and larger.

ORDER J - WELD CLAMPS SEPARATELY

J - WELD

Cable to Cable



TYPE CC6

Horizontal Parallel Tap

For cable to cable horizontal parallel taps, tap cable above the run, mold Type CC6 is recommended. It accommodates solid, rope lay, or concentric stranded copper conductor range from 16 to 95 mm².

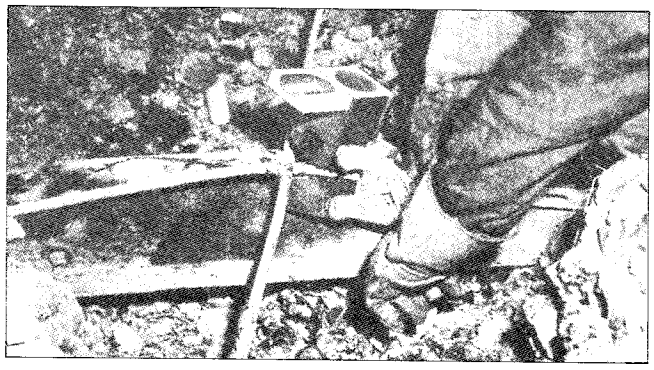
CONCENTRIC STRANDED CONDUCTORS

CABLE (a)		STANDARD MOLD		
RUN	TAP	MOLD Nº	PRICE KEY	CART. (b) Nº
16	16	CC6-1616	4	32
35	35	CC6-3535	4	65
35	25	CC6-3525	4	65
35	16	CC6-3516	4	45
50	50	CC6-5050	4	90
50	35	CC6-5035	4	65
50	25	CC6-5025	4	65
50	16	CC6-5016	4	65
70	70	CC6-7070	4	115
70	50	CC6-7050	4	115
70	35	CC6-7035	4	90
70	25	CC6-7025	4	90
70	16	CC6-7016	4	65
95	95	CC6-9595	14	150
95	70	CC6-9570	14	115
95	50	CC6-9550	14	115
95	35	CC6-9535	14	115
95	25	CC6-9525	14	90
95	16	CC6-9516	14	90

(a) For solid-to-solid connections, add suffix "S" to Mold Nº

(b) Order one size larger cartridge when welding solid conductors 50 mm²and larger.

Removal of the mold exposes a CC4 cross connection.

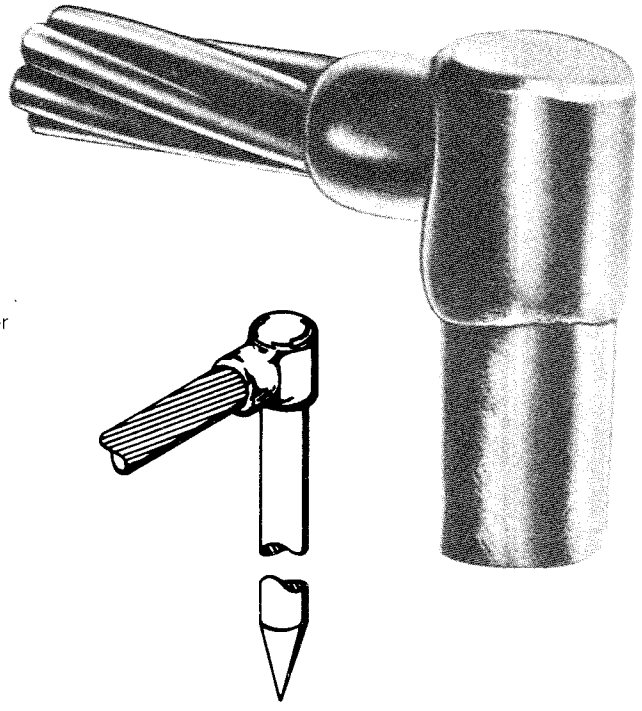


Removal of the mold exposes a CC4 cross connection

ORDER J - WELD CLAMPS SEPARATELY

J - WELD

Cable to Ground Rod



TYPE CR1

Horizontal Cable Terminal to Ground Rod

For terminating horizontal solid, rope lay or concentric stranded copper cable to top of vertical ground rods, mold type CR1 is recommended The J - Weld joint is solid mass of copper that is vibration proof and impervious to corrosion. For copper cable, range from 35 to 500 mm^2 and copper ground rod, range ½" thru 1"

CONCENTRIC STRANDED CONDUCTORS

GROUND ROD POL. INCH	CABLE (a) mm^2	STANDARD MOLD			HEAVY DUTY MOLD (ADD H TO MOLD No.)	
		MOLD Nº	PRICE KEY	CART.(b) Nº	PRICE KEY	CART. Nº
1/2"	35	CR1- 1235	4	65	4	90
	50	CR1- 1250	4	90	4	115
	70	CR1- 1270	4	90	4	115
	95	CR1- 1295	4	90	4	150
	120	CR1-12120	4	90	4	150
	150	CR1-12150	4	90	4	200
5/8"	35	CR1- 1635	4	65	4	90
	50	CR1- 1650	4	90	4	115
	70	CR1- 1670	4	90	4	115
	95	CR1- 1695	4	90	4	150
	120	CR1-16120	4	90	4	200
	150	CR1-16150	4	115	4	200
	185	CR1-16185	4	115	4	200
	240	CR1-16240	4	150	4	250
3/4"	50	CR1- 1950	4	90	4	150
	70	CR1- 1970	4	90	4	150
	95	CR1- 1995	4	90	4	200
	120	CR1-19120	4	90	4	200
	150	CR1-19150	4	115	4	250
	185	CR1-19185	4	115	4	250
	240	CR1-19240	4	150	5	2-150
	400	CR1-19400	4	250	15	2-200
1"	50	CR1- 2550	4	150	4	200
	70	CR1- 2570	4	150	4	200
	95	CR1- 2595	4	150	4	250
	120	CR1-25120	4	150	4	250
	150	CR1-25150	4	200	5	2-150
	185	CR1-25185	4	200	5	2-150
	240	CR1-25240	4	200	15	2-200
	400	CR1-25400	4	250	15	2-250
	500	CR1-25500	5	2-150	15	2-250

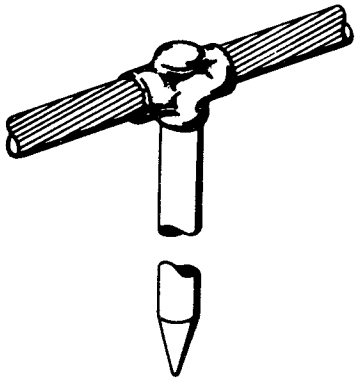
(a) For solid-to-solid connections, add suffix "S" to Mold Nº
(b) Order one size larger cartridge when welding solid conductors 50 mm^2 and larger.

ORDER J - WELD CLAMPS SEPARATELY

TYPE CR2

Horizontal Cable to Ground Rod

The mold Type CR2 is recommended for making horizotal thru cable connections to the top of vertical ground rods. J - Weld connections are permanent and trouble-free. Used for concentric stranded copper cable, range from 35 to 500mm² and copper ground rod, range ½" thru 1"



CONCENTRIC STRANDED CONDUCTORS

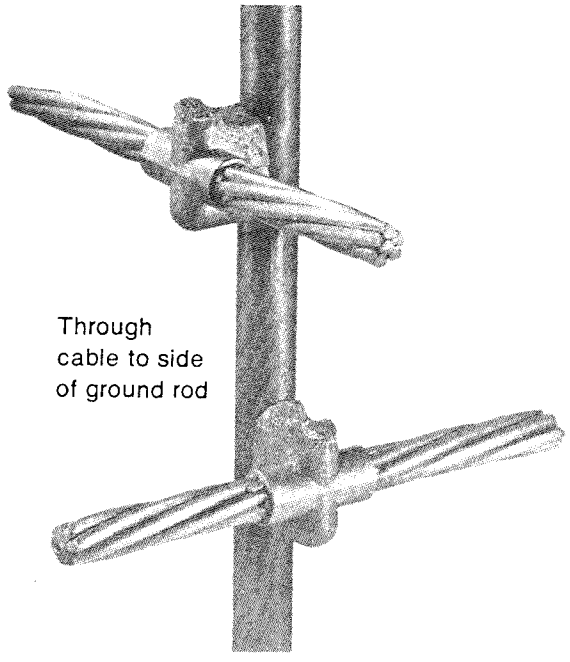
GROUND ROD POL. INCH	CABLE (a) mm²	STANDARD MOLD			HEAVY DUTY MOLD (ADD H TO MOLD No.)	
		MOLD Nº	PRICE KEY	CART.(b) Nº	PRICE KEY	CART. Nº
1/2"	35	CR2- 1235	4	90	4	150
	50	CR2- 1250	4	90	4	200
	70	CR2- 1270	4	90	4	200
	95	CR2- 1295	4	115	4	250
	120	CR2-12120	4	150	4	2-150
	150	CR2-12150	4	200	4	2-150
5/8"	35	CR2- 1635	4	90	4	150
	50	CR2- 1650	4	90	4	200
	70	CR2- 1670	4	115	4	200
	95	CR2- 1695	4	115	4	250
	120	CR2-16120	4	150	5	2-150
	150	CR2-16150	4	200	5	2-200
	185	CR2-16185	4	200	5	2-200
	240	CR2-16240	4	250	5	2-250
3/4"	35	CR2- 1935	4	90	4	150
	50	CR2- 1950	4	115	4	200
	70	CR2- 1970	4	115	4	250
	95	CR2-1995	4	115	5	2-150
	120	CR2-19120	4	150	5	2-200
	150	CR2-19150	4	200	5	2-200
	185	CR2-19185	4	200	5	2-250
	240	CR2-19240	4	250	15	3-250
	400	CR2-19400	5	2-200	15	4-250
	500	CR2-19500	5	2-250	15	4-250
1"	50	CR2- 2550	4	150	4	250
	70	CR2- 2570	4	150	4	250
	95	CR2- 2595	4	150	5	2-150
	120	CR2-25120	4	200	5	2-200
	150	CR2-25150	4	200	5	2-250
	185	CR2-25185	4	200	5	2-250
	240	CR2-25240	4	250	15	3-250
	400	CR2-25400	5	2-200	15	4-250
	500	CR2-25500	5	2-250	15	4-250

(a) For solid-to-solid connections, add suffix "S" to Mold Nº
(b) Order one size larger cartridge when welding solid conductors 50 mm² and larger.

ORDER J - WELD CLAMPS SEPARATELY

J - WELD

Cable to Ground Rod



Through cable to side of ground rod

TYPE CR3

Horizontal thru cable to Ground Rod

To connect a horizontal thru cable to the side of a vertical ground rod mold type CR3 is recommended. J - Weld joint is a fused solid copper weld of 100% greater cross-sectional area than the cable. It accommodates concentric stranded copper cable range from 16 to 500 mm^2 and copper ground rod, range 1/2" thru 1"

CONCENTRIC STRANDED CONDUCTORS

GROUND ROD POL. INCH	CABLE (a) mm^2	STANDARD MOLD MOLD N°	PRICE KEY	CART. (b) N°
1/2"	16	CR3- 1216	7	90
	35	CR3- 1235	7	90
	50	CR3- 1250	7	115
	70	CR3- 1270	7	115
	95	CR3- 1295	7	150
	120	CR3-12120	7	150
	150	CR3-12150	7	200
5/8"	16	CR3- 1616	7	90
	35	CR3- 1635	7	90
	50	CR3- 1650	7	115
	70	CR3- 1670	7	115
	95	CR3- 1695	7	150
	120	CR3-16120	7	150
	150	CR3-16150	7	200
	185	CR3-16185	7	250
	240	CR3-16240	7	2-200
3/4"	16	CR3- 1916	7	90
	35	CR3- 1935	7	90
	50	CR3- 1950	7	115

CONCENTRIC STRANDED CONDUCTORS

GROUND ROD POL. INCH	CABLE (a) mm^2	STANDARD MOLD MOLD N°	PRICE KEY	CART.(b) N°
3/4"	70	CR3- 1970	7	115
	95	CR3- 1995	7	150
	120	CR3-19120	7	200
	150	CR3-19150	7	250
	185	CR3-19185	8	2-150
	240	CR3-19240	8	2-250
	400	CR3-19400	8	3-250
1"	16	CR3- 2516	7	90
	35	CR3- 2535	7	90
	50	CR3- 2550	7	115
	70	CR3- 2570	7	115
	95	CR3- 2595	7	150
	120	CR3-25120	7	200
	150	CR3-25150	7	250
	185	CR3-25185	8	2-150
	240	CR3-25240	8	2-250
	400	CR3-25400	8	3-250
	500	CR3-25500	8	3-250

(a) For solid-to-solid connections, add suffix "S" to Mold N°

(b) Order one size larger cartridge when welding solid conductors 50 mm^2 and larger.

ORDER J - WELD CLAMPS SEPARATELY

TYPE RR1

Ground Rod to Ground Rod

Vertical ground rod to vertical ground rod connections can be made with mold type RR1. The J - Weld connection is a low resistance joint that never corrodes or loosens. Ground rod range 1/2" thru 1"

CONCENTRIC STRANDED CONDUCTORS

GROUND ROD POL. INCH	STANDARD MOLD			HEAVY DUTY MOLD (ADD H TO MOLD No.)	
	MOLD Nº	PRICE KEY	CART.(b) Nº	PRICE KEY	CART. Nº
1/2"	RR1-12	7	150	7	250
5/8"	RR1-16	7	200	7	2-150
3/4"	RR1-19	7	2-150	8	2-200
1"	RR1-25	8	2-250	8	3-250

ORDER J - WELD CLAMPS SEPARATELY

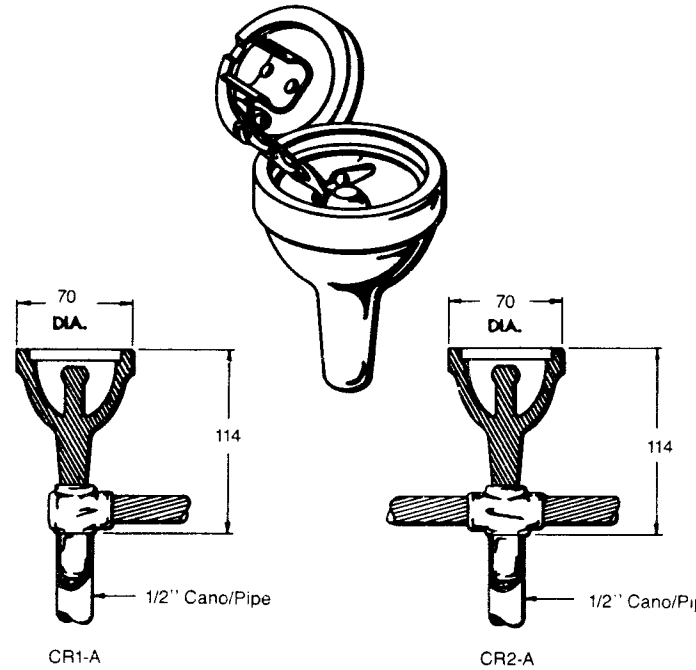
J - WELD

Grounding Plate and Receptacles

TYPE TG275

Airport Ground Receptacle

J- Weld Type TG275 is a cast copper alloy ground receptacle designed for static grounding of aircraft. The receptacle, when installed, is flush with the airport apron surface and provides a permanent, corrosion-proof static grounding connection point.
Mold Type CR1-A or CR2-A is recommended for joining the receptacle to the buried ground-system. The stud element is equivalent to a 3/4" ground rod. A protective cap, attached to a chain, snaps over the ball joint, when receptacle is not in use.



TYPE CR1-A AND CR-2A CONNECTIONS

CONCENTRIC STRANDED CONDUCTORS

CABLES	CR1-A			CR2-A		
mm²	MOLD Nº	PRICE KEY	CART. Nº	MOLD Nº	PRICE KEY	CART. Nº
35	CR1A-35	4	115	CR2A-35	4	115
50	CR1A-50	4	150	CR2A-50	4	150
70	CR1A-70	4	150	CR2A-70	4	150
95	CR1A-95	4	150	CR2A-95	4	200

GROUND RECEPTACLE INSTALLATION INSTRUCTIONS

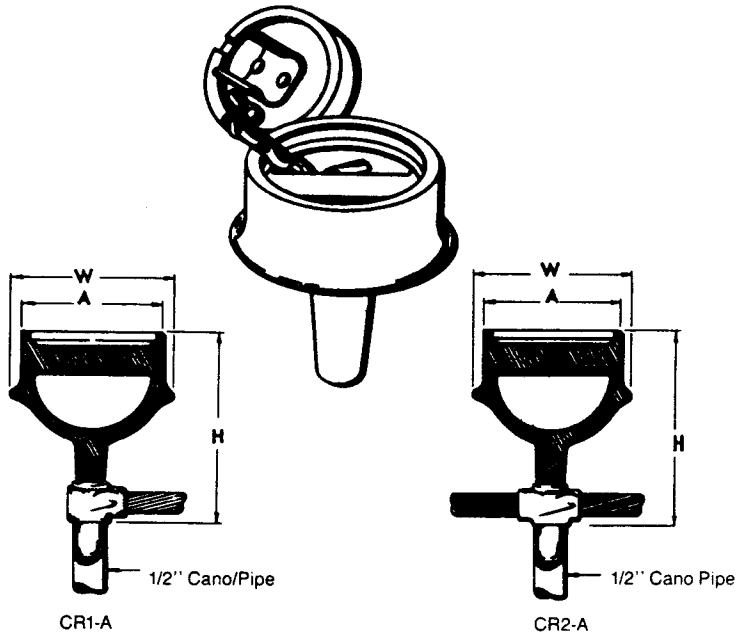
Ground Receptacle must be inverted prior to connecting it to the ground system cable. The mold is designed so that the connection results in a 1/2" riser that will fit into a 1/2" pipe. The 1/2" pipe is driven to a depth (see dimension charts above) so that it will support the ground receptacle with its top flush with the finished apron surface.

ORDER J - WELD CLAMPS SEPARATELY

TYPE TTAG

Airport Ground Receptacle

Type TTAG is an airport ground receptacle made of cast copper alloy with a tie down crossbar that provides for static grounding as well as aircraft tie down. The receptacle is flush with airport apron surface. The stud element is equivalent to a 3/4" ground rod. A mold: Type CR1-A or CR2-A is recommended to install the receptacle.



TYPE CR1-A CR2-A CONNECTIONS

CONCENTRIC STRANDED CONDUCTORS

CABLES mm²	CR1-A			CR2-A		
	MOLD Nº	PRICE KEY	CART. Nº	MOLD Nº	PRICE KEY	CART. Nº
35	CR1A-35	4	115	CR2A-35	4	115
50	CR1A-50	4	150	CR2A-50	4	150
70	CR1A-70	4	150	CR2A-70	4	150
95	CR1A-95	4	150	CR2A-95	4	200

CAT. Nº	A mm	H mm	W mm
TTAG388	98,4	158,7	120,6
TTAG475	120,6	184,1	165,1

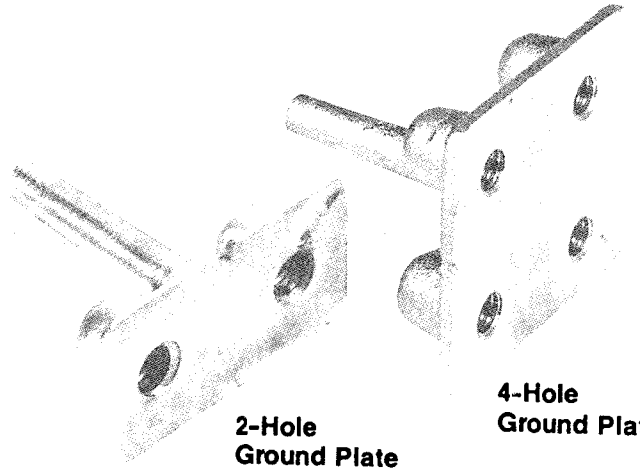
GROUND RECEPTACLE INSTALLATION INSTRUCTIONS

Ground Receptacle must be inverted prior to connecting it to the ground system cable. The mold is designed so that the connection results in a 1/2" riser that will fit into a 1/2" pipe. The 1/2" pipe is driven to a depth (see dimension charts above) so that it will support the ground receptacle with its top flush with the finished apron surface.

GROUND RECEPTACLE INSTALLATION INSTRUCTIONS

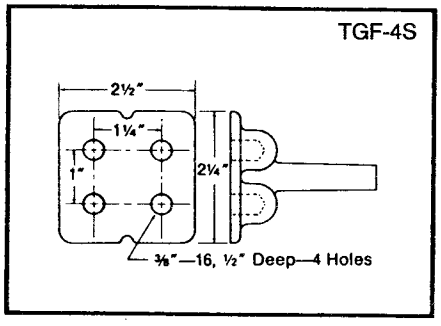
Jiwoong ground plates used in concrete structures offer convenient ground system connection polints. These ground points are used for equipment, machinery and structure grounding after completion of the concrete work.

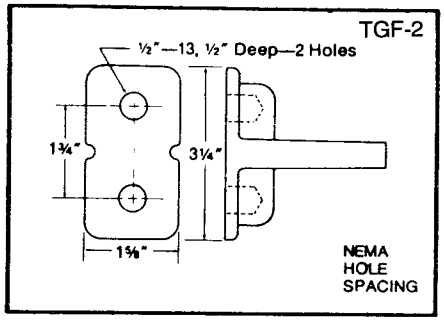
The castings are made from a copper alloy ··· Jiwoong ground plate connections result in current carrying capacity equal to that of the conductor or stud and cannot loosen or corrode.

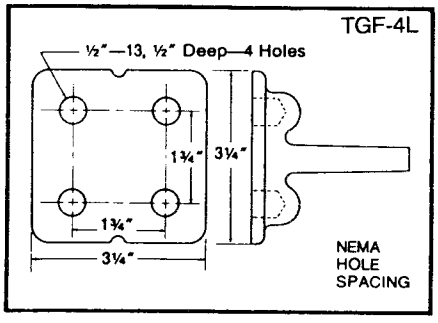


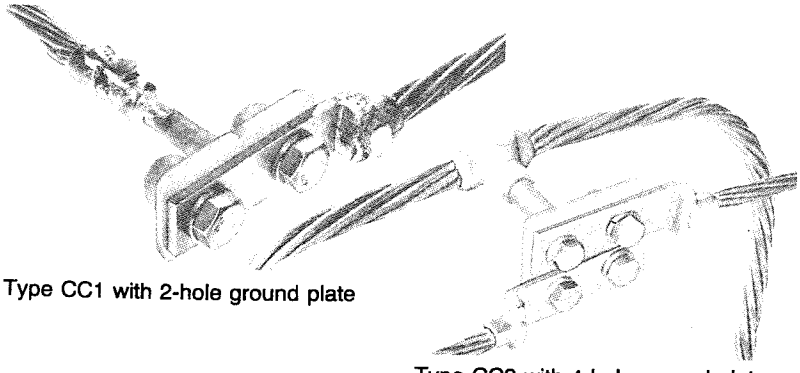
2-Hole Ground Plate

4-Hole Ground Plate





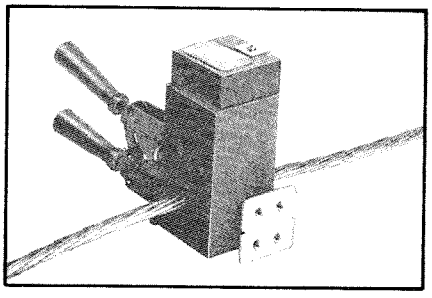




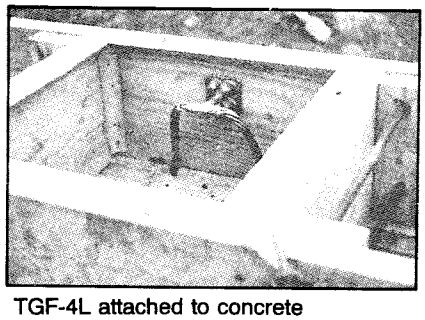
Type CC1 with 2-hole ground plate

Type CC2 with 4-hole ground plate

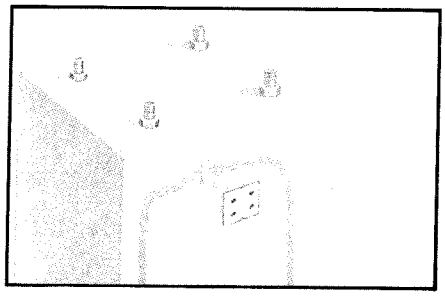
Typical 4-hole ground plate installation



TGF-4L Ground Plate welded to cable, Type CC2



TGF-4L attached to concrete form before final pouring



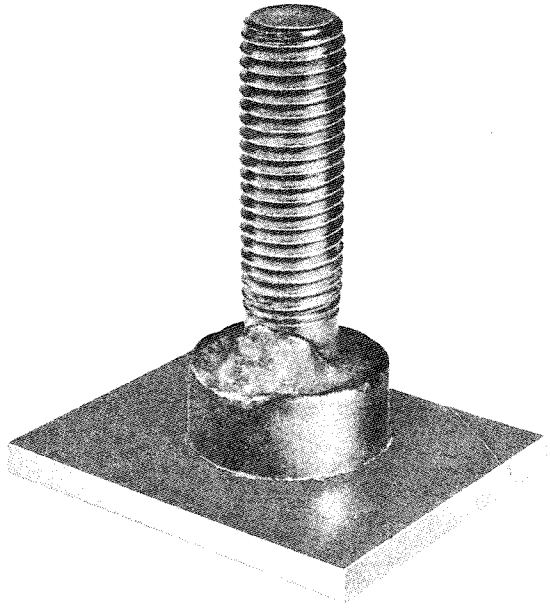
TGF-4L in finished(illustrated) pier

Thread Stud to Steel Surface

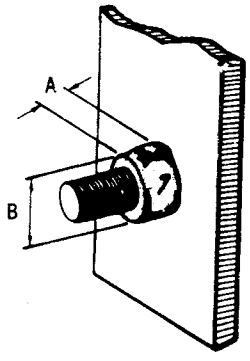
TYPE RS1 AND RS2

Horizontal and Vertical Stud

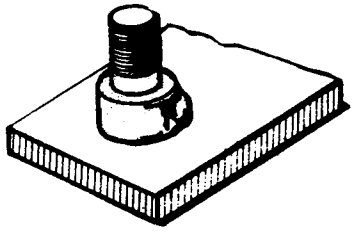
To fasten a horizontal bronze threaded or smooth stud to a vertical steel surface, from which a disconnectable ground lead can be taken, mold type RS1 is recommended. The mold type RS2 is recommended for fixing a vertical stud to a horizontal steel surface. Threaded stud range: 1/4" thru 1".



PINO STUD POL. INCH	A (THICK.) POL. INCH	B (DIAM.) POL. INCH	STANDARD MOLD				
			TYPE RS1	TYPE RS2	PRICE KEY		CART. Nº
1/4"	3/8"	1/4"	RS1-1880	RS2-1886	4	7	25
5/16"	3/8"	3/4"	RS1-1881	RS2-1887	4	7	25
3/8"	9/16"	7/8"	RS1-1882	RS2-1888	4	7	45
1/2"	5/8"	1 1/2"	RS1-1883	RS2-1889	4	7	65
3/4"	5/8"	1 1/2"	RS1-1884	RS2-1890	4	7	150
1"	1 5/16"	1 5/8"	RS1-1885	RS2-1891	4	7	250



RS1



RS2

ORDER J - WELD CLAMPS SEPARATELY

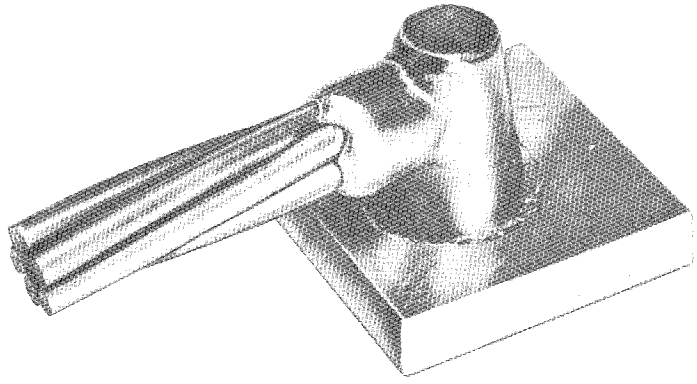
J - WELD

Cable to Steel Surface

TYP CS1

Horizontal Cable to Horizontal Steel Surface

The mold Type CS1 is recommended for terminating a horizontal copper cable to a horizontal steel surface, such as, tower leg, pipe line, etc. The mold joint fuses into a solid copper mass of 100% greater cross-sectional area than the cable. Solid, rope lay, or concentric stranded copper conductor range from 16 to 500 mm ^{2}. Resurface galvanized steel with galvanizing bar: Catalog number A-311.



CABLE (a) mm²	STANDARD MOLD			HEAVY DUTY MOLD (ADD H TO MOLD No.)	
	MOLD Nº	PRICE KEY	CART.(b) Nº	PRICE KEY	CART. Nº
16	CS1- 16	3	45	4	115
35	CS1- 35	3	45	4	115
50	CS1- 50	4	90	4	200
70	CS1- 70	4	90	4	200
95	CS1- 95	4	115	4	250
120	CS1-120	4	115	14	250
150	CS1-150	4	150	14	250
185	CS1-185	4	200	15	2-150
240	CS1-240	4	200	15	2-150
400	CS1-400	5	2-150	15	2-250
500	CS1-500	5	2-200	15	3-250

(a) For solid-to-solid connections, add suffix "S" to Mold Nº
(b) Order one size larger cartridge when welding solid conductors 50 mm^2 and larger.
* Add "X" to mold nº for cables on the surface.

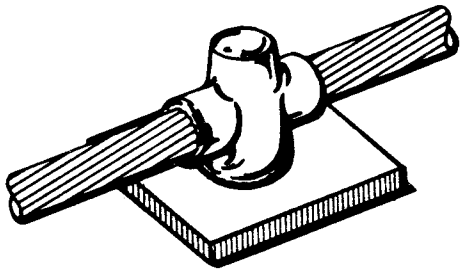
FOR WELDING TO PIPE AND CURVED SURFACES, REFER TO INSTRUCTIONS ON PAGE 36 ENTITLED, "WELDING TO STEEL PIPE".

ORDER J - WELD CLAMPS SEPARATELY

TYPE CS2

Horizontal Thru Cable to Horizontal Steel Surface

For joining a horizontal thru copper cable off surface to a horizontal steel surface, mold Type CS2 is recommended. The J - Weld joint fuses to a steel surface, such as a tower leg, an "I" beam, pipe line, etc., and makes a permanent, moisture proof joint. Solid, rope lay or concentric stranded copper conductor range from 16 to 500 mm^2. Resurface galvanized steel with galvanizing bar: Catalog number A-331.



CABLE (a) mm^2	STANDARD MOLD			HEAVY DUTY MOLD (ADD H TO MOLD No.)	
	MOLD N°	PRICE KEY	CART.(b) N°	PRICE KEY	CART. N°
16	CS2-16	3	45	4	150
35	CS2-35	3	45	4	150
50	CS2-50	4	90	4	250
70	CS2-70	4	115	4	250
95	CS2-95	4	150	5	2-150
120	CS2-120	4	150	5	2-150
150	CS2-150	4	200	5	2-200
185	CS2-185	4	250	5	2-200
240	CS2-240	5	2-150	5	3-200
400	CS2-400	-	-	15	3-250
500	CS2-500	-	-	15	4-250

(a) For solid-to-solid connections, add suffix "S" to Mold N°
(b) Order one size larger cartridge when welding solid conductors 50 mm^2 and larger.

FOR WELDING TO PIPE AND CURVED SURFACES, REFER TO INSTRUCTIONS ON PAGE 36 ENTITLED, "WELDING TO STEEL PIPE".

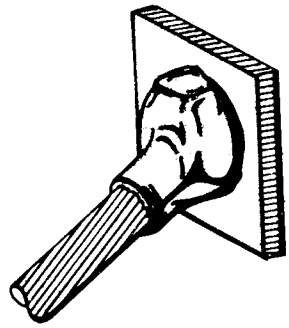
ORDER J - WELD CLAMPS SEPARATELY

J - WELD

Cable to Steel Surface

TYPE CS3

Angular Cable Drop to Vertical Steel Surface



The mold Type CS 3 is recommended for terminating copper cables at an angle of approximately 30°. to a vertical flat steel surface or pipe. J - Weld joint fuses to steel surface making a permanent, trouble-free, vibration proof connection. Range: from 16 to 500 mm² solid, rope lay, or concentric stranded copper conductor. Resurface galvanized steel with Galvanizing Bar: Catalog number A-331.

CABLE (a) mm²	STANDARD MOLD			HEAVY DUTY MOLD (ADD H TO MOLD No.)	
	MOLD Nº	PRICE KEY	CART.(b) Nº	PRICE KEY	CART. Nº
16	CS3- 16	4	45	4	115
25	CS3- 25	4	45	4	115
35	CS3- 35	4	45	4	115
50	CS3- 50	4	90	4	150
70	CS3- 70	4	90	4	150
95	CS3- 95	4	115	4	200
120	CS3-120	4	115	4	200
150	CS3-150	14	150	4	250
185	CS3-185	14	200	4	250
240	CS3-240	14	200	5	2-150
400	CS3-400	15	2-150	5	2-250
500	CS3-500	15	2-200	5	3-250

(a) For solid-to-solid connections, add suffix "S" to Mold Nº
(b) Order one size larger cartridge when welding solid conductors 50 mm² and larger.

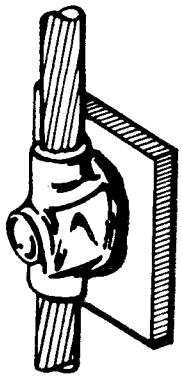
FOR WELDING TO PIPE AND CURVED SURFACES, REFER TO INSTRUCTIONS ON PAGE 36 ENTITLED, "WELDING TO STEEL PIPE".

ORDER J - WELD CLAMPS SEPARATELY

TYPE CS4

Vertical Thru Cable to Vertical Steel Surface

To joint a vertical thru copper cable to a vertical steel surface or pipe, mold Type CS 4 is recommended J - Weld joint fuses to steel surface making a permanent, vibration proof connection. Accommodates solid, rope lay, or concentric stranded copper conductor, range from 16 to 240 mm². Resurface galvanized steel with galvanized Bar: Catalog number A-331.



CABLE (a) mm²	STANDARD MOLD			HEAVY DUTY MOLD (ADD H TO MOLD No.)	
	MOLD N°	PRICE KEY	CART.(b) N°	PRICE KEY	CART. N°
16	CS4- 16	7	90	7	200
25	CS4- 25	7	90	7	200
35	CS4- 35	7	115	6	250
50	CS4- 50	7	200	6	2-200
70	CS4- 70	7	200	6	2-200
95	CS4- 95	7	250	6	2-250
120	CS4-120	7	250	6	2-250
150	CS4-150	7	250	6	2-250
185	CS4-185	7	-	6	3-200
240	CS4-240	7	-	6	3-250

(a) For solid-to-solid connections, add suffix "S" to Mold N°
(b) Order one size larger cartridge when welding solid conductors 50 mm² and larger.

FOR WELDING TO PIPE AND CURVED SURFACES, REFER TO INSTRUCTIONS ON PAGE 36 ENTITLED, "WELDING TO STEEL PIPE".

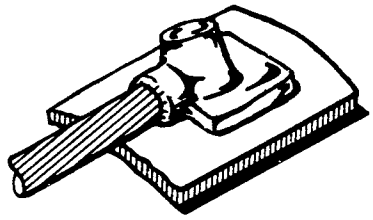
J - WELD

Cable to Cast Iron Surface

TYPE CS5

Horizontal Cable Tap to Horizontal Cast Iron Surface

The mold Type CS 5 is recommended for making copper cable taps to cast iron surfaces. Solid, rope lay, or concentric stranded copper conductor, range from 16 to 120 mm². CS 5 mold conectors requite special packing, refer to note below for instrutions.



CABLE (a) mm²	STANDARD MOLD		
	MOLD Nº	PRICE KEY	CART. (b) Nº
16 SOL.	CS5- 16-S	3(c)	25
16	CS5- 16	3(c)	25
35 SOL.	CS5- 35-S	3(c)	45
35	CS5- 35	3(c)	45
50	CS5- 50	4	90
70	CS5- 70	4	90
95	CS5- 95	4	115
120	CS5-120	4	115

(a) For solid-to-solid connections, add suffix "S" to Mold Nº

(b) Order one size larger cartridge when welding solid conductors 50 mm² and larger.

(c) Sold complete with handle and frame. If graphite part only is required, add suffix "G" to catalog number.

INSTRUCTIONS FOR WELDING TO CAST IRON PIPE

Add nominal pipe size to catalog number. For exemple: 50 mm² to flat cast iron, catalog number is CS 4-50. For 4" pipe, catalog number is CS 4-50-4. For 35 mm² cable and smaller, use a flat surface mold, for 30" pipes and larger. For 50 mm² cable and larger, use a flat surface mold, for pipes 54" and large. For pipe wall thickness under 12 mm, DO NOT use cartridge larger than Nº 65 CI alloy cartridge

ORDER J - WELD CLAMPS SEPARATELY