

# Installation Instructions for Lifeline® MC: Cable Splice Using Ceramic Standoffs

Technical Information Sheet #402



Classified by UL to UL 2196 for one-hour installations

For use with Lifeline® MC Cables and Jacketed LSZH MC Cables sizes 14 AWG to 350MCM, UL Electrical Circuit Integrity System (FHIT) No. 50A

## DESCRIPTION

The Lifeline® MC Splice Kit contains components required to assemble the 1-hour fire rated splice system. The components supplied in this kit are for use only with a SELCO MANUFACTURING CORP. (SELCO MFG) UL listed NEMA 4X stainless steel enclosure with mounting plate, REMKE PowR-Teck™ stainless steel metal clad cable connectors and Thomas & Betts Blackburn® copper compression connectors. Please refer to UL Listing FHIT No. 50A for more details and read these instructions thoroughly before beginning installation.

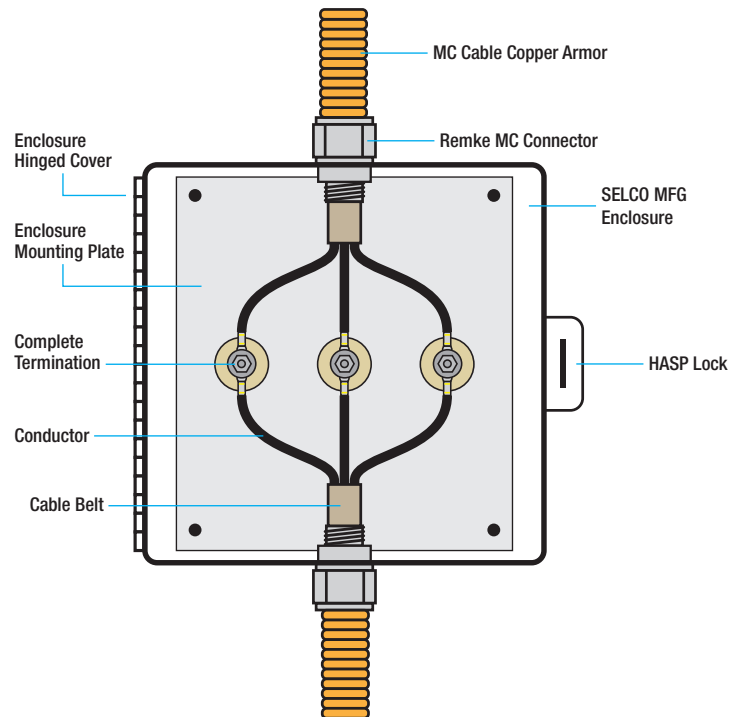
For technical support please contact Prysmian Cables and Systems USA at (800) 333 4248 x2600.

## MATERIALS NEEDED

- Lifeline® MC Splice Kit(s)
- UL Listed SELCO MFG NEMA 4X stainless steel enclosure with mounting plate
- REMKE PowR-Teck™ stainless steel metal clad cable connectors,
- Stainless steel connector locking nut

## TOOLS NEEDED

- Pipe cutter
- Wire stripping tool
- Utility knife
- Large flat head screw driver
- Hammer
- Channel lock pliers
- Cable cutter
- Stainless steel capable hole saw
- Crimping tool
- 1/4" inch drill bit
- Tape Measure
- Two 7/16" wrenches



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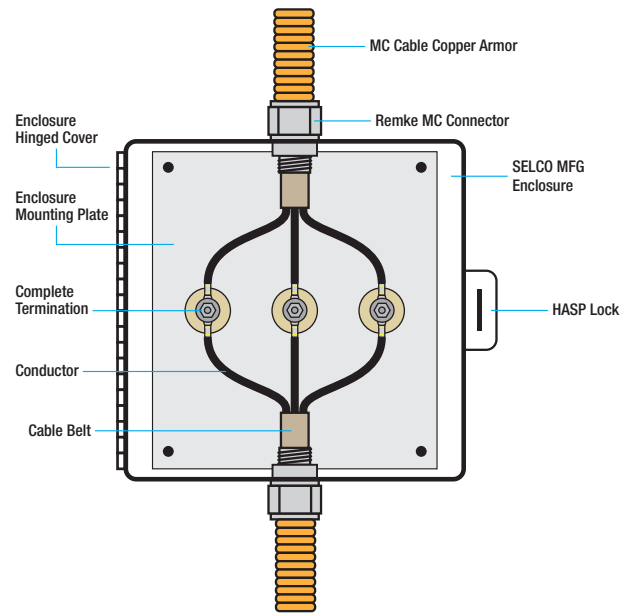
# Lifeline® MC Splice Kit\*

## CONTENTS FOR ONE TERMINAL

- 0.25"-20 X 1.5" Stainless steel stud x1
- 0.25"-20 Nut, stainless steel x2
- 0.25" Belleville spring washer, stainless steel 884lb flattening load x1
- 0.25" x 0.75" Flat washer, stainless steel x2
- 0.24" x 0.38" Silicone o-ring x1
- 1" x 1" Grade L5 ceramic, round, female threaded standoff x1
- 0.25"-20 X 0.5" Stainless steel bolt x1
- 0.25" x 0.5" Stainless steel split washer x1
- Thomas & Betts Blackburn® copper compression connectors, straight barrel, one-hole lug x2

\* When ordering the Lifeline® MC Splice kit, please specify by **adding** the prefix **CUS** to the Part Number.

**Example:** Lifeline® MC cable Part Number LMCJ05014 requires Part Number CUSLMCJ05014 when order a splice kit.

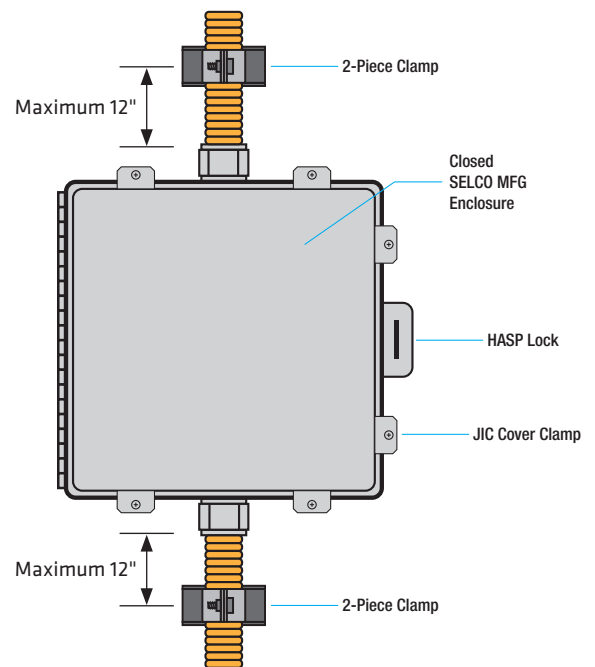


## MATERIALS NOT SUPPLIED

- REMKE PowR-Teck™ stainless steel metal clad cable connectors, catalog numbers provided in Tables 1 and 2.
- Stainless steel locking nut.
- UL Listed SELCO MFG NEMA 4X stainless steel enclosure with mounting plate. Enclosure Model numbers provided in Table 4.

## GENERAL

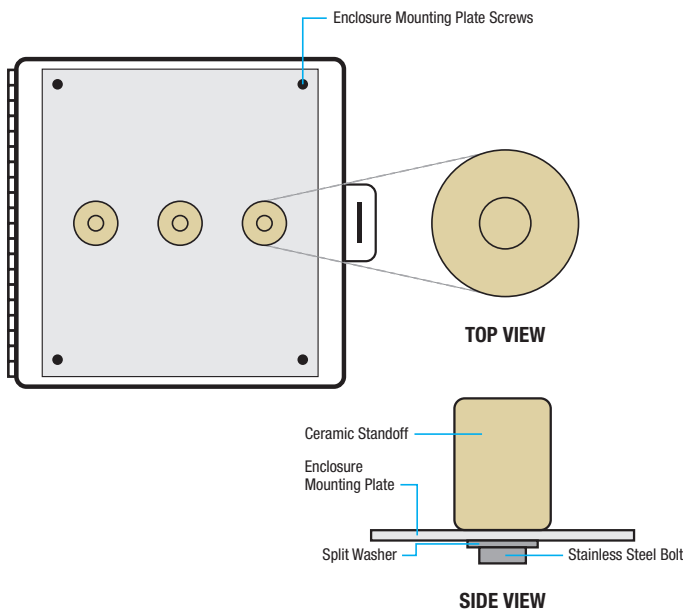
Only use SELCO MFG NEMA 4X stainless steel enclosure with Mounting Plate, REMKE PowR-Teck™ stainless steel metal clad cable connectors and Thomas & Betts Blackburn® copper compression connectors. Support the Lifeline® MC cable with a 2-piece clamp a maximum of 12 inches from the enclosure and every four feet thereafter. Do not add any other materials inside the splice enclosure that are not included in the installation instructions. Cables can be installed in a horizontal or vertical directions, these instructions only show vertical orientation as examples. Check the size of the enclosures and connectors prior to beginning installation. Recommended enclosure sizes for Lifeline® MC cables are provided in Table 1 and Table 2, also reference REMKE PowR-Teck™ Metal Clad cable connector installation, Doc No 2-100102.



## SPLICE TERMINAL INSTALLATION

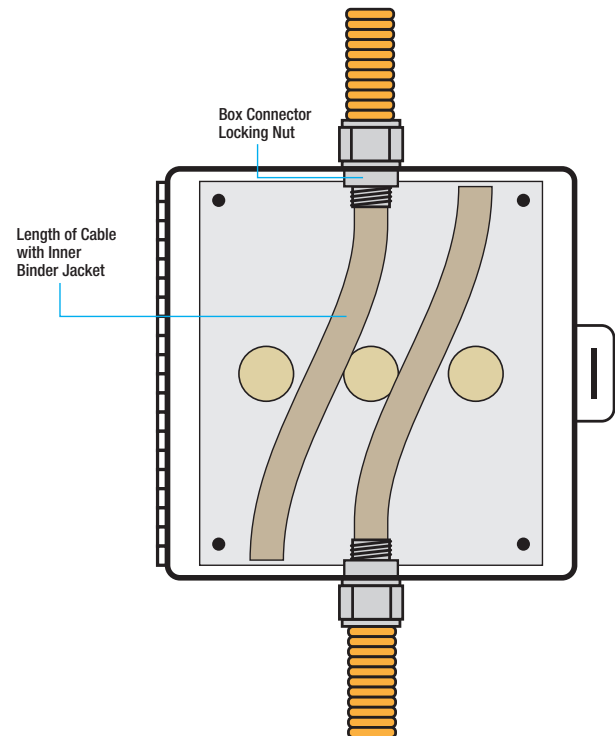
### 1. Mounting Enclosure and Ceramic Standoff

- Prepare enclosure holes for Remke connectors. Holes should be located at the center of the enclosure wall and only offset as needed to ensure clearance necessary for installation between the enclosure cover, hasp, or hinge.
- Drill 0.25 inch holes in enclosure mounting plate to mount stand-offs. Holes should be centered vertically in the enclosure for horizontal cable installations and centered horizontally in the enclosure for vertical cable installations. Holes should be spaced a minimum of 1-3/4 inch on center between terminals and 1-3/8 inch on center from terminal to enclosure wall for conductor sizes 1/0AWG and smaller, and 2 inches on center between terminals and 1-3/4 inches on center from terminal to enclosure wall for conductor sizes 2/0AWG and larger.
- Remove any sharp edges and clean away any oil or metal shavings from enclosure and mounting plate.
- Attach the ceramic standoff to the mounting plate using the bolt and split washer, hand tighten holding bolt with wrench and turning ceramic standoff.
- Insert the mounting plate back into the enclosure and secure.
- Install enclosure to fire rated support structure using 3/8 inch or larger steel bolt.



### 2. Securing Cable

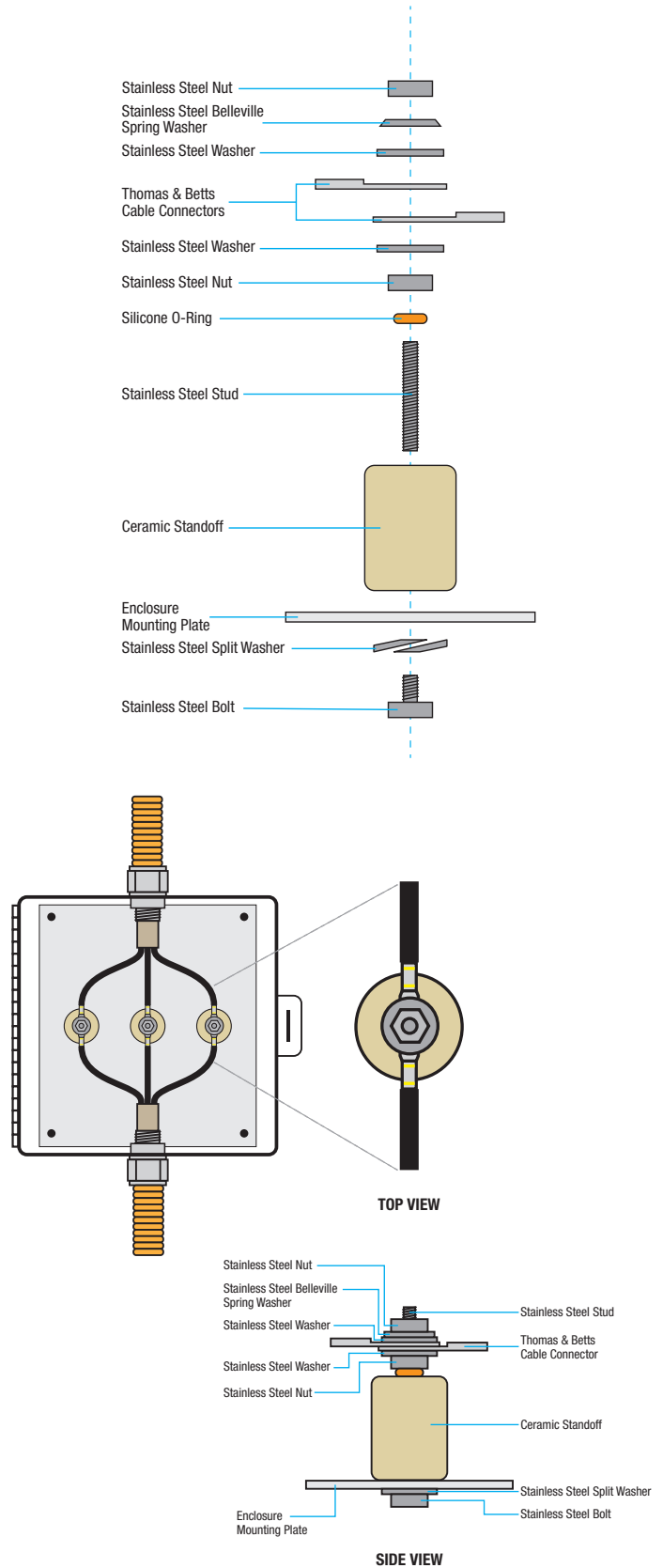
- Install REMKE PowR-Teck™ Metal Clad cable connector and secure using stainless steel locking nut according to REMKE manufacturers installation Doc No. 2-100102.
- Remove copper armor from cable using pipe cutter being careful not to cut into the inner binder jacket. It is recommended to have cable the length of the enclosure available for terminating.
- Cut off excess outer filler where it exits the armor.
- Insert the Lifeline® MC cable and the connector into the enclosure. Take care not to damage the cable when pushing into enclosure.
- Tighten REMKE connector gland nuts according to REMKE manufacturers installation Doc No. 2-100102. It may be necessary to hold the connector body to prevent movement while tightening.
- Taking care not to cut the conductor insulation, remove the inner binder jacket to approximately 1 inch from the MC connector. Do not damage, nick or cut the black insulation. Any damage to the insulation will require a replacement cable.



### 3. Termination

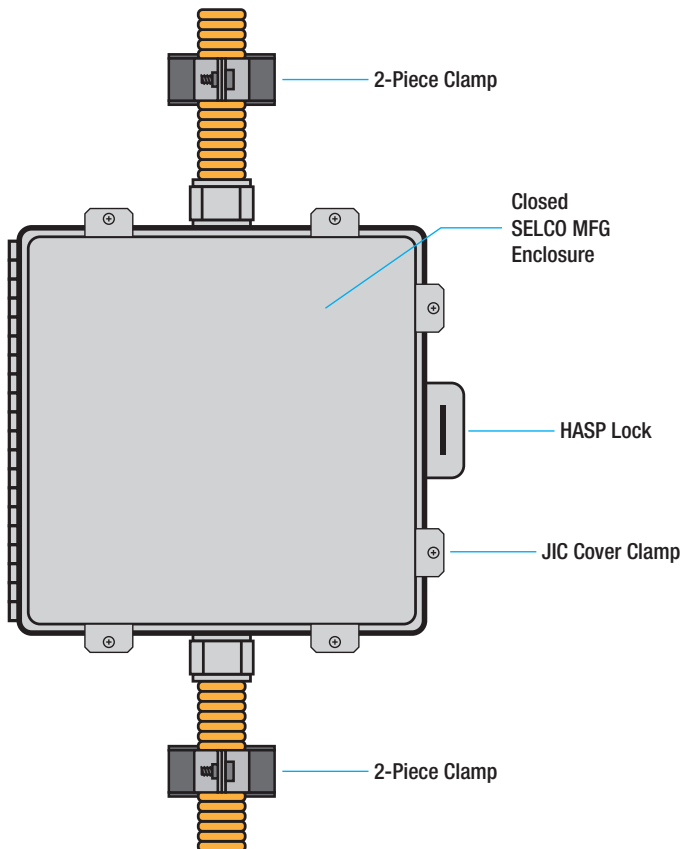
Building the splice terminal will use the following steps:

- a) Screw the stud into the ceramic standoff, finger tight the full depth of the ceramic standoff hole.
- b) Turn stud counter clock-wise to loosen one 1/2 turn.
- c) Install on the silicone O-ring.
- d) Screw a nut on the stud until slightly compressing the O-ring.
- e) Install a stainless steel washer.
- f) Position conductors to the terminals using an arrangement that minimizes crossed conductors. Do not exceed the minimum bend radius of 8x conductor OD, conductors should not touch the enclosure.
- g) Install the T&B cable connectors. Using the terminal center as the end point, cut the conductors to length. Conductors should not be installed under tension and there should be a minimum 1/2 inch extra length of conductor to ensure conductor is not under tension. Strip the insulation off the end of the conductors and verify lug fits easily over termination stud before crimping. If lug does not fit easily over termination lug the conductor should be adjusted by bending or trimming before crimping lug. When good fit over stud is achieved, crimp on the T&B connector lug on conductor. Take care when installing the T&B cable connector lugs that the copper conductor is fully inserted in the connector barrel before crimping. After crimping inspect connector to ensure conductor did not move in the connector barrel while crimping. Please follow T&B connection by compression installation guidelines.
- h) Install a stainless steel washer.
- i) Install a Belleville spring washer with wide side of cone facing stainless steel washer installed in step VIII.
- j) Screw on top stainless steel not and tighten while holding nut close to ceramic standoff with a wrench. Nut should be tightened until Belleville spring washer is flattened.
- k) Repeat the above step to connect all terminals.



#### 4. Closing the Enclosure

- Clean away any leftover materials from inside the enclosure.
- Inspect the insulation for any damage or accidental cuts made during installation.
- Close up the enclosure, securing the cover with the JIC style cover clamps.
- Secure the cable within 12 inches of the enclosure using steel 2-piece conduit clamps.





**Table 1<sup>1</sup> Non-Jacketed Lifeline MC Cable\***

\* When ordering the Lifeline<sup>®</sup> MC Splice kit, please specify by adding the prefix CUS to the Part Number (Kit P/N: CUSLMC05014)

Part Number	Conductor Size (AWG/MCM)	Number of Conductors	Nom. Core Diameter (in)	Nom. Armor Diameter (in)	Remke Connector (Cat. No.)	Remke Connector Hub Size (in)	Recommended Enclosure Size (W x H x D)
LMC03014	14	3	0.55	0.85	RTKSS-050-4	1/2	8 x 8 x 4
LMC05014	14	5	0.66	0.97	RTKSS-075-5	3/4	10 x 10 x 6
LMC02012	12	2	0.56	0.85	RTKSS-050-4	1/2	8 x 8 x 4
LMC03012	12	3	0.59	0.91	RTKSS-075-5	3/4	8 x 8 x 4
LMC04012	12	4	0.64	0.97	RTKSS-075-5	3/4	8 x 8 x 4
LMC05012	12	5	0.70	0.97	RTKSS-075-5	3/4	10 x 10 x 6
LMC02010	10	2	0.61	0.91	RTKSS-075-5	3/4	8 x 8 x 4
LMC03010	10	3	0.64	0.97	RTKSS-075-5	3/4	8 x 8 x 4
LMC04010	10	4	0.70	0.97	RTKSS-075-5	3/4	8 x 8 x 4
LMC05010	10	5	0.77	1.08	RTKSS-075-6	3/4	10 x 10 x 6
LMC07010	10	7	0.86	1.26	RTKSS-100-7	1	10 x 14 x 6 or 14 x 10 x 6 <sup>2</sup>
LMC02008	8	2	0.70	0.97	RTKSS-075-5	3/4	8 x 8 x 4
LMC03008	8	3	0.75	1.08	RTKSS-075-6	3/4	8 x 8 x 4
LMC04008	8	4	0.82	1.18	RTKSS-100-7	1	8 x 8 x 4
LMC05008	8	5	0.90	1.26	RTKSS-100-7	1	10 x 10 x 6
LMC02006	6	2	0.78	1.08	RTKSS-075-6	3/4	8 x 8 x 4
LMC03006	6	3	0.83	1.18	RTKSS-100-7	1	8 x 8 x 4
LMC04006	6	4	0.91	1.26	RTKSS-100-7	1	8 x 8 x 4
LMC05006	6	5	1.00	1.35	RTKSS-125-8	1-1/4	10 x 10 x 6
LMC03004	4	3	0.95	1.35	RTKSS-125-8	1-1/4	10 x 10 x 6
LMC04004	4	4	1.04	1.35	RTKSS-125-8	1-1/4	10 x 10 x 6
LMC05004	4	5	1.15	1.58	RTKSS-125-10	1-1/4	10 x 10 x 6
LMC03003	3	3	1.00	1.35	RTKSS-125-8	1-1/4	10 x 10 x 6
LMC04003	3	4	1.11	1.40	RTKSS-125-9	1-1/4	10 x 10 x 6
LMC03002	2	3	1.07	1.40	RTKSS-125-9	1-1/4	10 x 10 x 6
LMC04002	2	4	1.18	1.58	RTKSS-125-10	1-1/4	10 x 10 x 6
LMC03001	1	3	1.24	1.73	RTKSS-150-11	1-1/2	12 x 12 x 6
LMC04001	1	4	1.37	1.73	RTKSS-150-11	1-1/2	12 x 12 x 6
LMC031/0	1/0	3	1.33	1.73	RTKSS-150-11	1-1/2	12 x 12 x 6
LMC041/0	1/0	4	1.47	1.85	RTKSS-150-12	1-1/2	12 x 12 x 6
LMC032/0	2/0	3	1.41	1.85	RTKSS-150-12	1-1/2	12 x 12 x 6
LMC042/0	2/0	4	1.56	1.97	RTKSS-150-13	1-1/2	12 x 12 x 6
LMC033/0	3/0	3	1.52	1.97	RTKSS-150-13	1-1/2	12 x 12 x 6
LMC043/0	3/0	4	1.69	2.15	RTKSS-200-15	2	18 x 18 x 6
LMC034/0	4/0	3	1.64	2.15	RTKSS-200-15	2	18 x 18 x 6
LMC044/0	4/0	4	1.82	2.28	RTKSS-200-16	2	18 x 18 x 6
LMC03250	250	3	1.81	2.28	RTKSS-200-16	2	18 x 18 x 6
LMC04250	250	4	2.00	2.52	RTKSS-200-18	2	18 x 18 x 6

<sup>1</sup> To ensure proper sizing of connectors and enclosures please check <https://www.prysmiangroup.com> for the latest version of this document.

<sup>2</sup> For horizontal installations use 10x14x6 enclosure and for vertical installations use 14x10x6 enclosure.

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## Table 2<sup>1</sup> Jacketed Lifeline MC Cable\*

\* When ordering the Lifeline® MC Splice kit, please specify by adding the prefix CUS to the Part Number (Kit P/N: CUSLMCJ05014)

Part Number	Conductor Size (AWG/MCM)	Number of Conductors	Nom. Core Diameter (in)	Nom. Armor Diameter (in)	Nom. Overall Cable Diameter (in)	Remke Connector (Cat. No.)	Remke Connector Hub Size (in)	Recommended Enclosure Size (W x H x D)
LMCJ03014	14	3	0.55	0.85	0.95	RTKSS-050-4	1/2	8 x 8 x 4
LMCJ05014	14	5	0.66	0.97	1.07	RTKSS-075-5	3/4	10 x 10 x 6
LMCJ02012	12	2	0.56	0.85	0.95	RTKSS-050-4	1/2	8 x 8 x 4
LMCJ03012	12	3	0.59	0.91	1.01	RTKSS-075-5	3/4	8 x 8 x 4
LMCJ04012	12	4	0.64	0.97	1.07	RTKSS-075-5	3/4	8 x 8 x 4
LMCJ05012	12	5	0.70	0.97	1.07	RTKSS-075-5	3/4	10 x 10 x 6
LMCJ02010	10	2	0.61	0.91	1.01	RTKSS-075-5	3/4	8 x 8 x 4
LMCJ03010	10	3	0.64	0.97	1.07	RTKSS-075-5	3/4	8 x 8 x 4
LMCJ04010	10	4	0.70	0.97	1.07	RTKSS-075-5	3/4	8 x 8 x 4
LMCJ05010	10	5	0.77	1.08	1.18	RTKSS-075-6	3/4	10 x 10 x 6
LMCJ07010	10	7	0.86	1.26	1.37	RTKSS-125-8	1	10 x 14 x 6 or 14 x 10 x 6 <sup>2</sup>
LMCJ02008	8	2	0.70	0.97	1.07	RTKSS-075-5	3/4	8 x 8 x 4
LMCJ03008	8	3	0.75	1.08	1.18	RTKSS-075-6	3/4	8 x 8 x 4
LMCJ04008	8	4	0.82	1.18	1.28	RTKSS-100-7	1	8 x 8 x 4
LMCJ05008	8	5	0.90	1.26	1.36	RTKSS-125-8	1-1/4	10 x 10 x 6
LMCJ02006	6	2	0.78	1.08	1.18	RTKSS-075-6	3/4	8 x 8 x 4
LMCJ03006	6	3	0.83	1.18	1.28	RTKSS-100-7	1	8 x 8 x 4
LMCJ04006	6	4	0.91	1.26	1.36	RTKSS-125-8	1-1/4	8 x 8 x 4
LMCJ05006	6	5	1.00	1.35	1.45	RTKSS-125-8	1-1/4	10 x 10 x 6
LMCJ03004	4	3	0.95	1.35	1.45	RTKSS-125-8	1-1/4	10 x 10 x 6
LMCJ04004	4	4	1.04	1.35	1.45	RTKSS-125-8	1-1/4	10 x 10 x 6
LMCJ05004	4	5	1.15	1.58	1.70	RTKSS-125-10	1-1/4	10 x 10 x 6
LMCJ03003	3	3	1.00	1.35	1.45	RTKSS-125-8	1-1/4	10 x 10 x 6
LMCJ04003	3	4	1.11	1.40	1.50	RTKSS-125-9	1-1/4	10 x 10 x 6
LMCJ03002	2	3	1.07	1.40	1.50	RTKSS-125-9	1-1/4	10 x 10 x 6
LMCJ04002	2	4	1.18	1.58	1.70	RTKSS-125-10	1-1/4	10 x 10 x 6
LMCJ03001	1	3	1.24	1.73	1.85	RTKSS-150-12	1-1/2	12 x 12 x 6
LMCJ04001	1	4	1.37	1.73	1.85	RTKSS-150-12	1-1/2	12 x 12 x 6
LMCJ031/0	1/0	3	1.33	1.73	1.85	RTKSS-150-12	1-1/2	12 x 12 x 6
LMCJ041/0	1/0	4	1.47	1.85	1.97	RTKSS-150-13	1-1/2	12 x 12 x 6
LMCJ032/0	2/0	3	1.41	1.85	1.97	RTKSS-150-13	1-1/2	12 x 12 x 6
LMCJ042/0	2/0	4	1.56	1.97	2.09	RTKSS-150-13	1-1/2	12 x 12 x 6
LMCJ033/0	3/0	3	1.52	1.97	2.09	RTKSS-150-13	1-1/2	12 x 12 x 6
LMCJ043/0	3/0	4	1.69	2.15	2.27	RTKSS-200-15	2	18 x 18 x 6
LMCJ034/0	4/0	3	1.64	2.15	2.27	RTKSS-200-15	2	18 x 18 x 6
LMCJ044/0	4/0	4	1.82	2.28	2.43	RTKSS-200-16	2	18 x 18 x 6
LMCJ03250	250	3	1.81	2.28	2.43	RTKSS-200-16	2	18 x 18 x 6
LMCJ04250	250	4	2.00	2.52	2.67	RTKSS-200-18	2	18 x 18 x 6

<sup>1</sup> To ensure proper sizing of connectors and enclosures please check <https://www.prysmiangroup.com> for the latest version of this document.

<sup>2</sup> For horizontal installations use 10x14x6 enclosure and for vertical installations use 14x10x6 enclosure.

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### Table 3

## Thomas & Betts Blackburn® Copper Compression Connectors

(Note: connectors are included in the splice kit)

Conductor Size (AWG/MCM)	Thomas & Betts Catalog Number
14	54101
12	54101
10	54101
8	54130
6	54105
4	54106
3	54107
2	54107
1	54108
1/0	54152-TB
2/0	54157
3/0	54162-TB
4/0	54167
250	54172-TB

### Table 4

## SELCO MFG NEMA 4X Enclosures

Enclosure (WxHxD)	SELCO MFG Model Number
8 x 8 x 4 - inch	NE4X-08-08-04-BP
10 x 10 x 6 - inch	NE4X-10-10-06-BP
10 x 14 x 6 - inch	NE4X-10-14-06-BP
14 x 10 x 6 - inch	NE4X-14-10-06-BP
12 x 12 x 6 - inch	NE4X-12-12-06-BP
18 x 18 x 6 - inch	NE4X-18-18-06-BP

**Additional instructions for cable constructions not addressed above are included in the following addendums:**

- **TIS 402 Addendum 1:** Additional Instructions for splicing Lifeline® MC cables with 350MCM conductors using ceramic standoffs
- **TIS 402 Addendum 2:** Additional Instructions for splicing Lifeline® MC cables with four 2AWG conductors and four 10AWG grounding conductors using ceramic standoffs and copper grounding bar.