

Cathode Lighting Systems Inc.  
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Gaithersburg, MD 20879  
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Email: Info@CathodeLightingSystems.com

## INSTALLATION MANUAL

### Model FCLS (Flexible Cathode Light Strip)

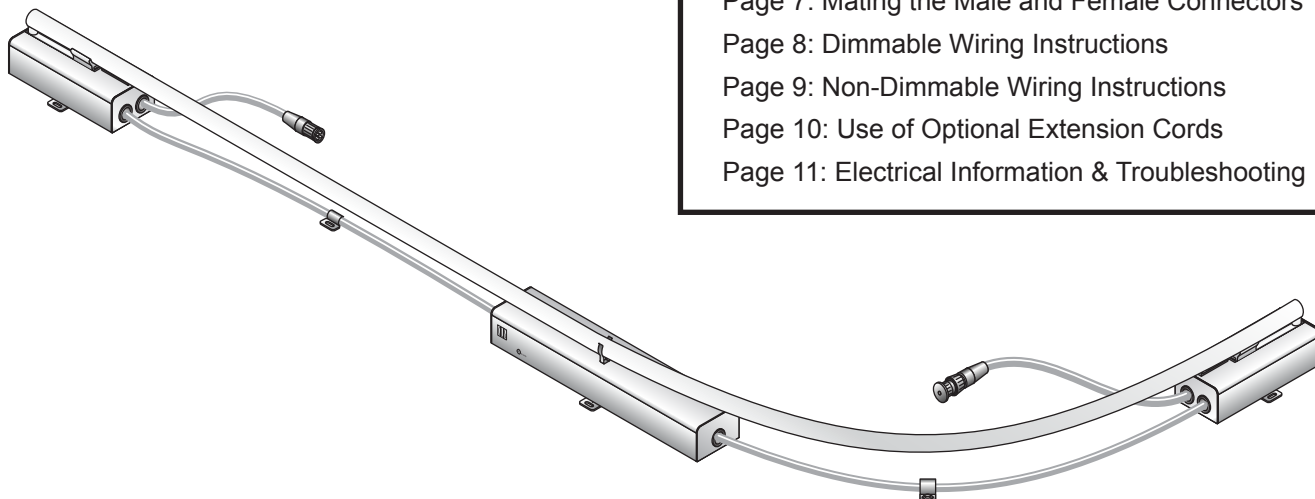
For indoor dry, location installation only.  
Operating temperature range: 55 F to 85 F



Pat. 7,293,895  
Pat. 6,454,431

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Page 1: Typical Luminaire Configuration
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Page 10: Use of Optional Extension Cords
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#### PLEASE READ THIS MANUAL THOROUGHLY PRIOR TO INSTALLING THIS LUMINAIRE

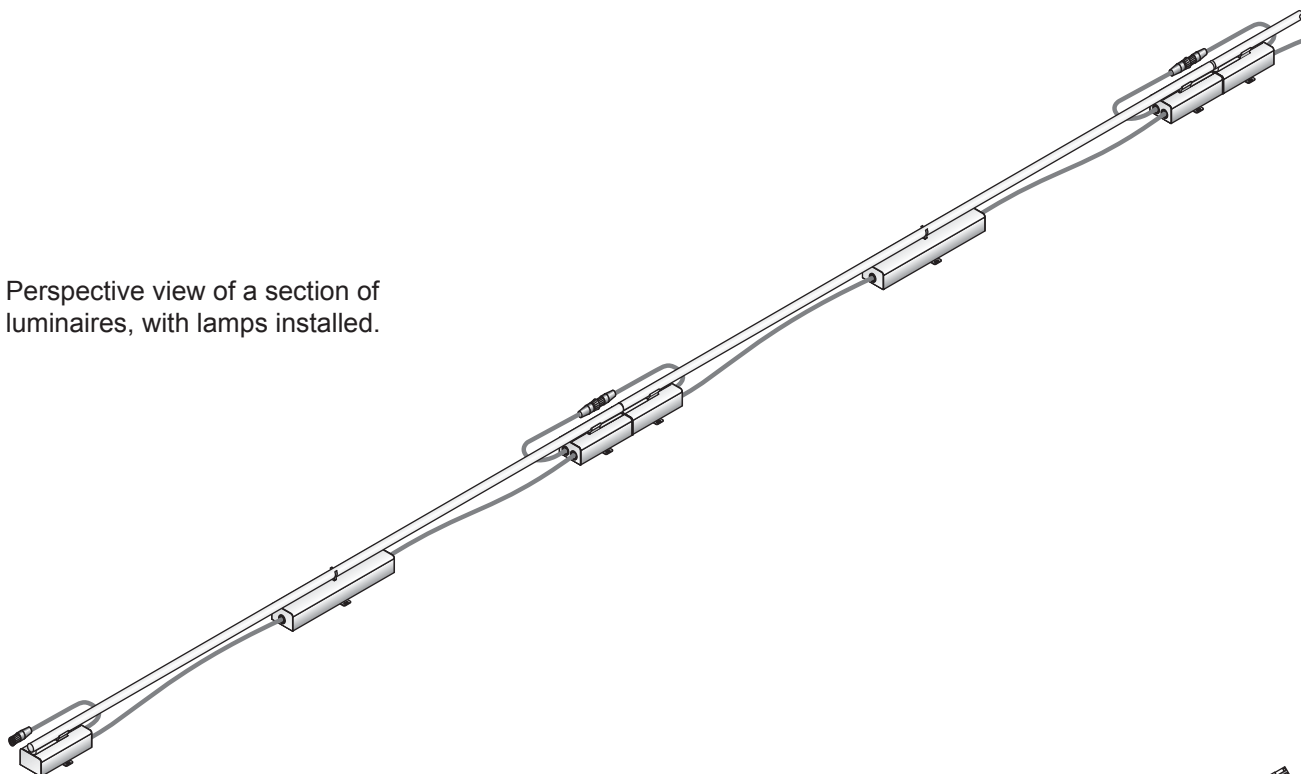
**WARNING:** These luminaires are to be installed in surface-mounted, non-concealed locations only. They may not be recessed into the building structure. No part of the luminaire may be concealed behind drywall, permanent ceiling, or any other similar structure.

This luminaire must be installed by a licensed electrical contractor, and must be installed in accordance with all applicable local, and national electric codes.

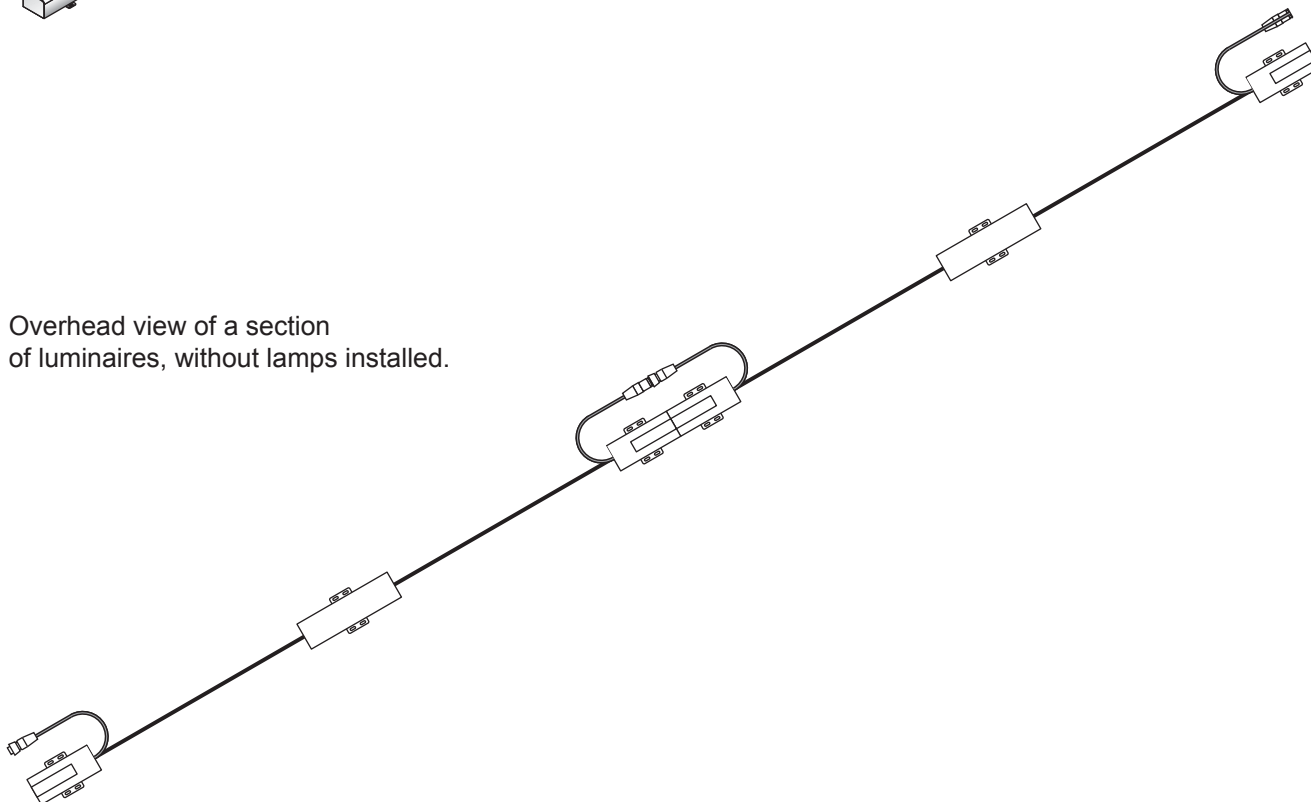
This flexible cold cathode fluorescent luminaire has been designed to allow a single flexible luminaire to be utilized with a variety of cold cathode lamp shapes and sizes. The modular connectors at the ends of each luminaire allow "plug and play" connection of the luminaire to adjacent luminaires. The luminaire does not have to be disassembled during installation or wiring. It is completely modular. Each luminaire is composed of three metal enclosures, permanently connected by two lengths of flexible cord. The middle enclosure contains the ballast. The two end-enclosures each contain a lampholder into which each lamp end of the lamp is inserted. Permanently attached to each end-enclosure is a short length of power cord with a polarized 4-pole modular connector. The end-enclosure on one side of the luminaire has a female connector, the end-enclosure at the other side has a male connector.

The luminaires are fastened to the mounting surface (with the lamps installed). They are connected to each other, via the modular plugs at each end.

Perspective view of a section of  
luminaires, with lamps installed.



Overhead view of a section  
of luminaires, without lamps installed.

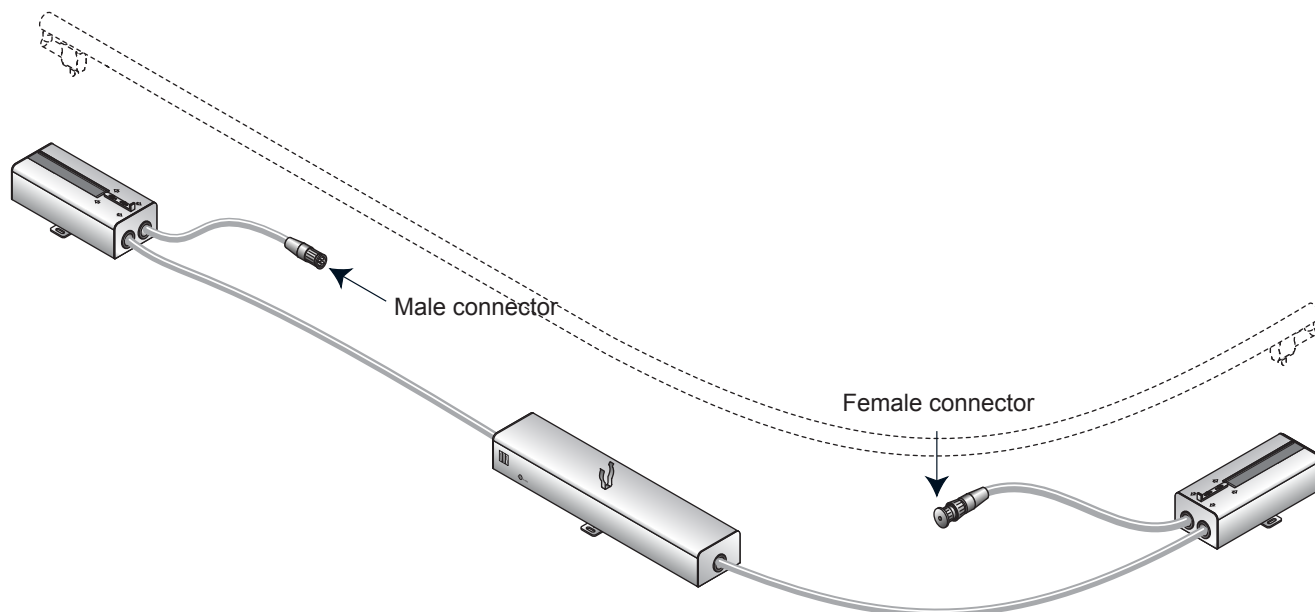


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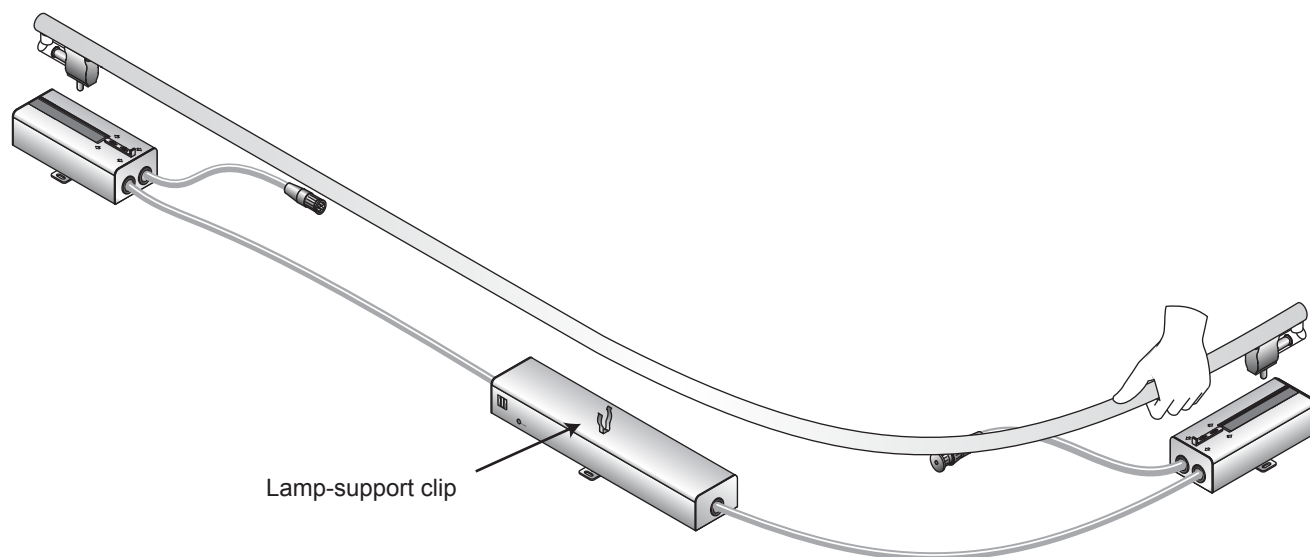
**WARNING: ALL CIRCUITS MUST BE DE-ENERGIZED DURING THE INSTALLATION OF THIS PRODUCT**

**STEP 1:** Remove the luminaire and lamp from their factory packaging, and arrange the luminaire to the mounting surface, using the lamp shape as a guideline.



Please note: The luminaire, or luminaire array must be oriented so that a male connector will be facing the location in which the power is brought to the luminaire or luminaire array.

**STEP 2:** Carefully install the lamp into the luminaire, making sure lamp contacts are fully seated into the lampholders and the middle section of the lamp is snapped into the lamp-support clip on the middle enclosure.



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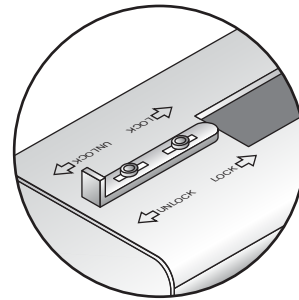
FCLS Manual 6-08  
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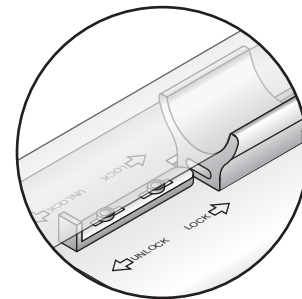
**STEP 3:** Secure the lamp at each end of the luminaire using the lamp-lock clips as shown.

Luminaire ends are equipped with a sliding lamp-lock clip. The clip mates with a slot in the lamp base. The lamp can only be removed from the luminaire if the clip is disengaged.

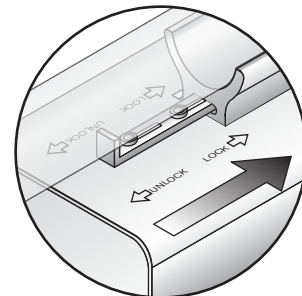
A. The lamp-lock clip slides forwards and backwards as shown by the markings on the luminaire.



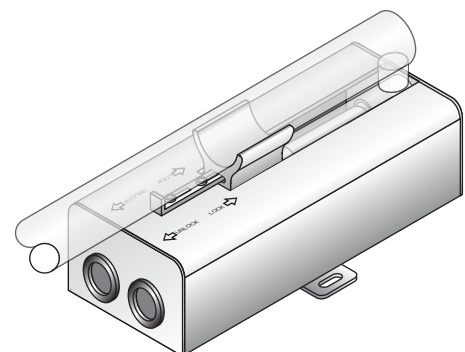
B. With the clip in its unlocked position, the lamp is inserted into the lampholder.



C. With the lamp properly installed, the clip is moved into its final locked position.



D. Final position of lamp-lock clip (typical for both lamp ends)  
Lamp cannot be removed from lampholders unless clip is slid to its unlocked position.



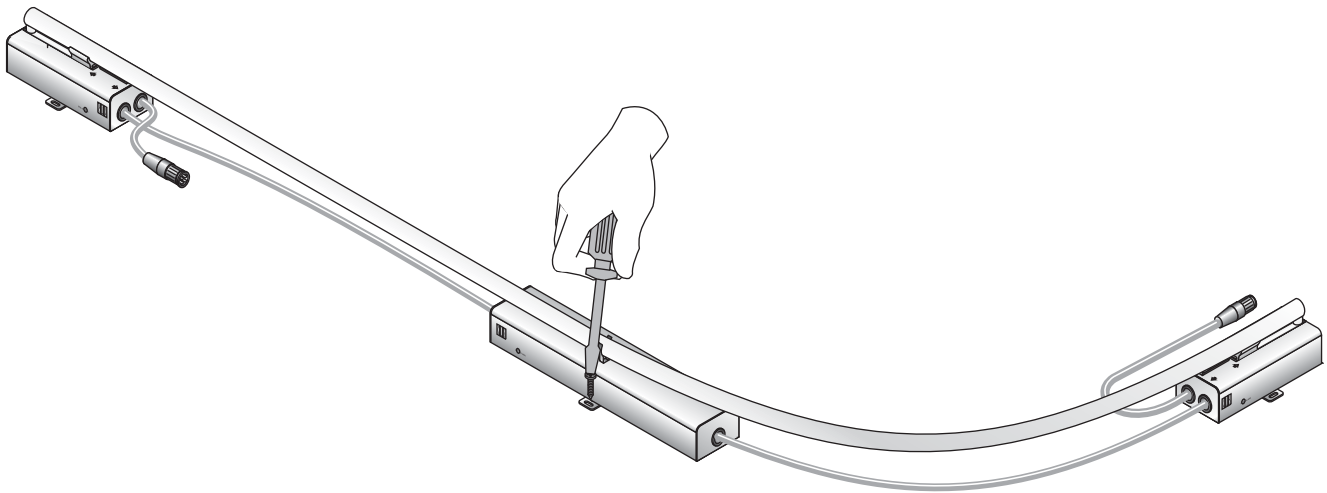
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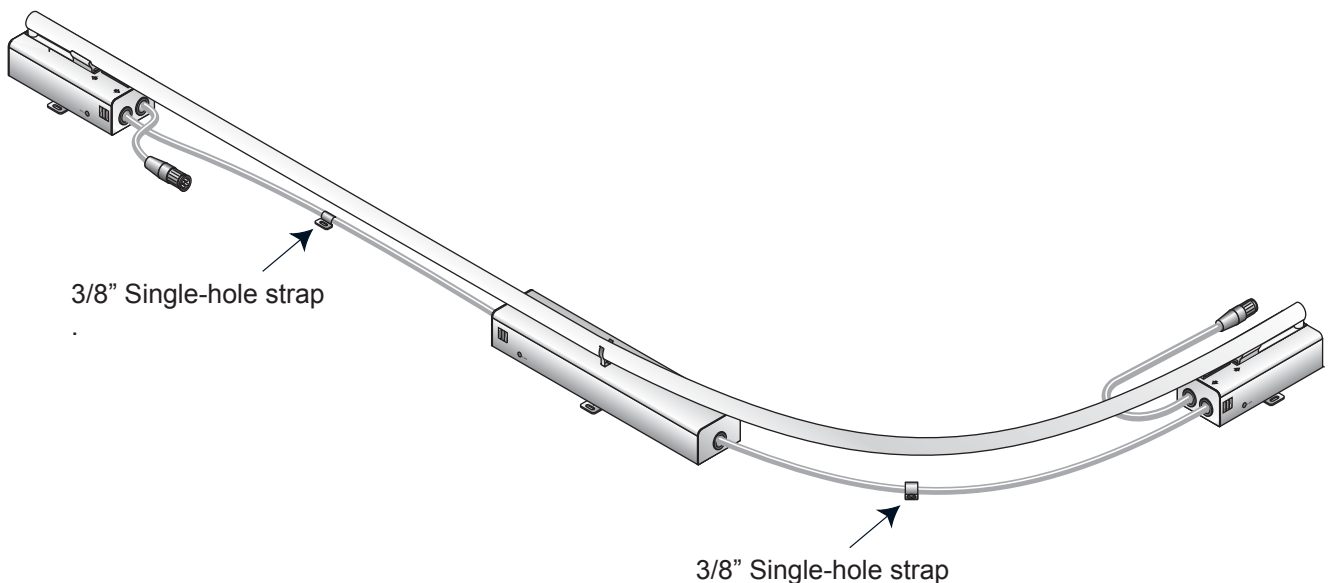
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**STEP 4:** Using the correct fasteners, fasten each of the three metal boxes to the mounting surface. Please note that each metal box has a mounting tab on each side.



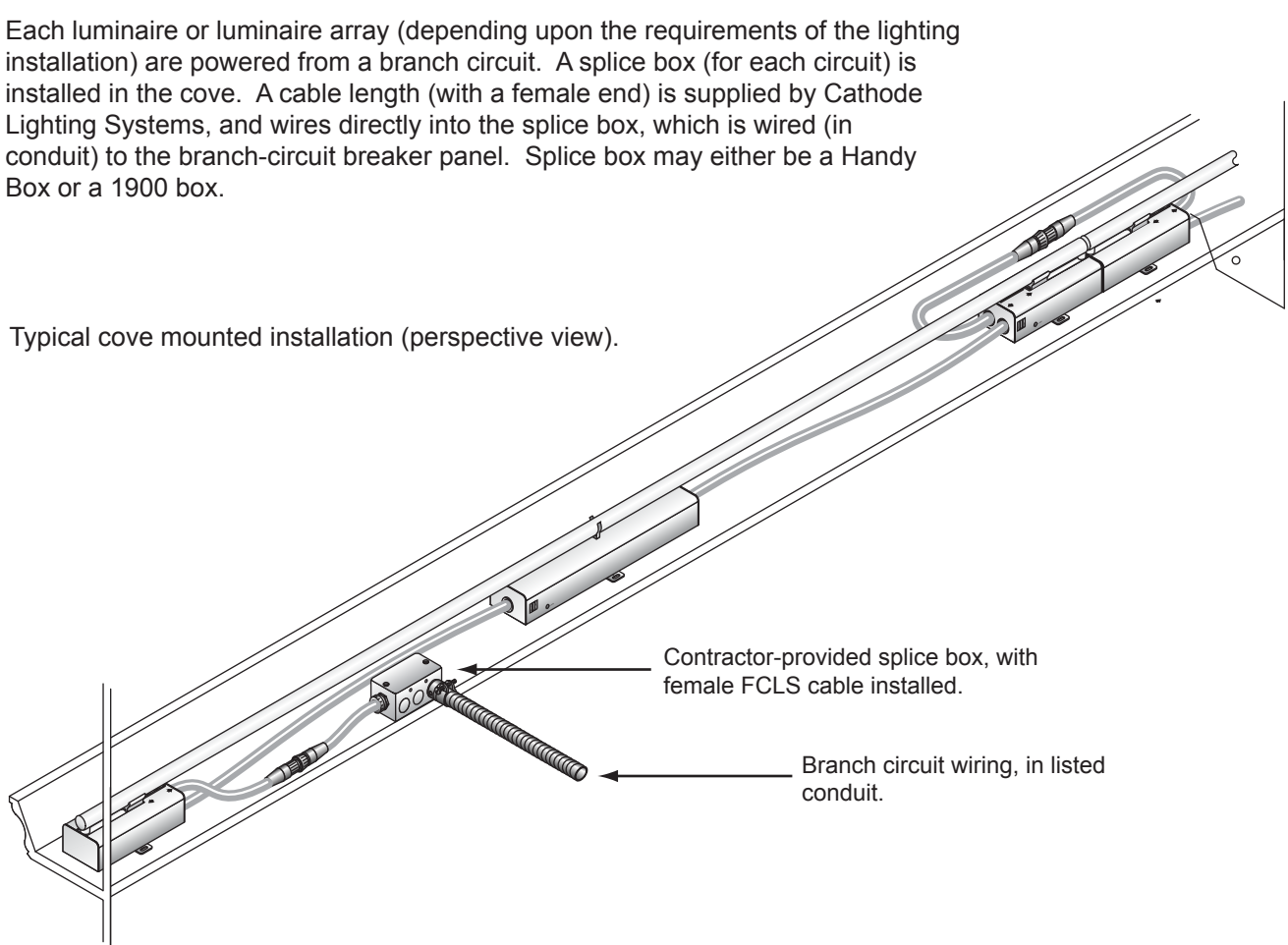
**STEP 5:** Using 3/8" single-hole cable straps (two straps are included with each luminaire) and the correct fasteners, secure the two flexible cords that interconnect the center ballast enclosure to the end lampholder enclosures. The cable straps should be installed in the middle of each cord segment.



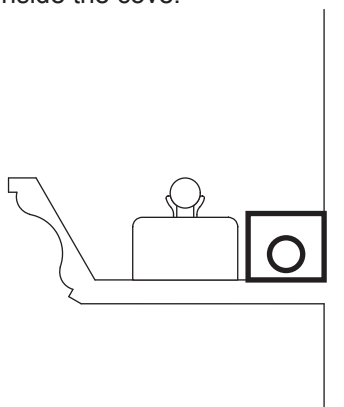
## SCHEMATICS OF TYPICAL MOUNTING CONFIGURATION & SPLICE BOX LOCATION

Each luminaire or luminaire array (depending upon the requirements of the lighting installation) are powered from a branch circuit. A splice box (for each circuit) is installed in the cove. A cable length (with a female end) is supplied by Cathode Lighting Systems, and wires directly into the splice box, which is wired (in conduit) to the branch-circuit breaker panel. Splice box may either be a Handy Box or a 1900 box.

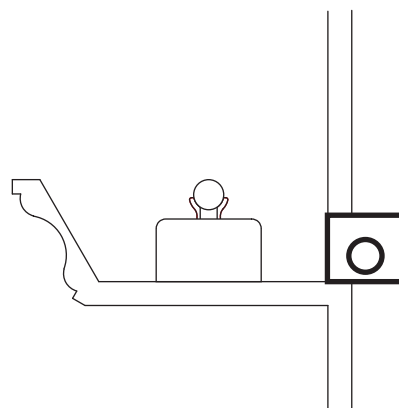
Typical cove mounted installation (perspective view).



Detail of FCLS fixture installed within an uplight cove, showing the splice box surface-mounted inside the cove.

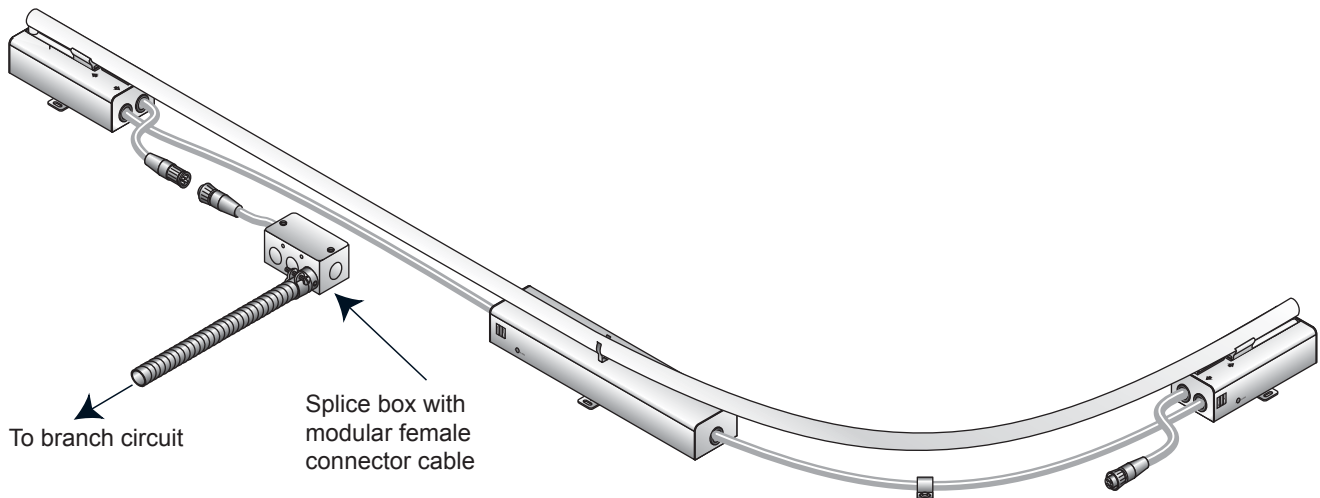


Detail of FCLS fixture installed within an uplight cove, showing the splice box flush-mounted inside the cove.

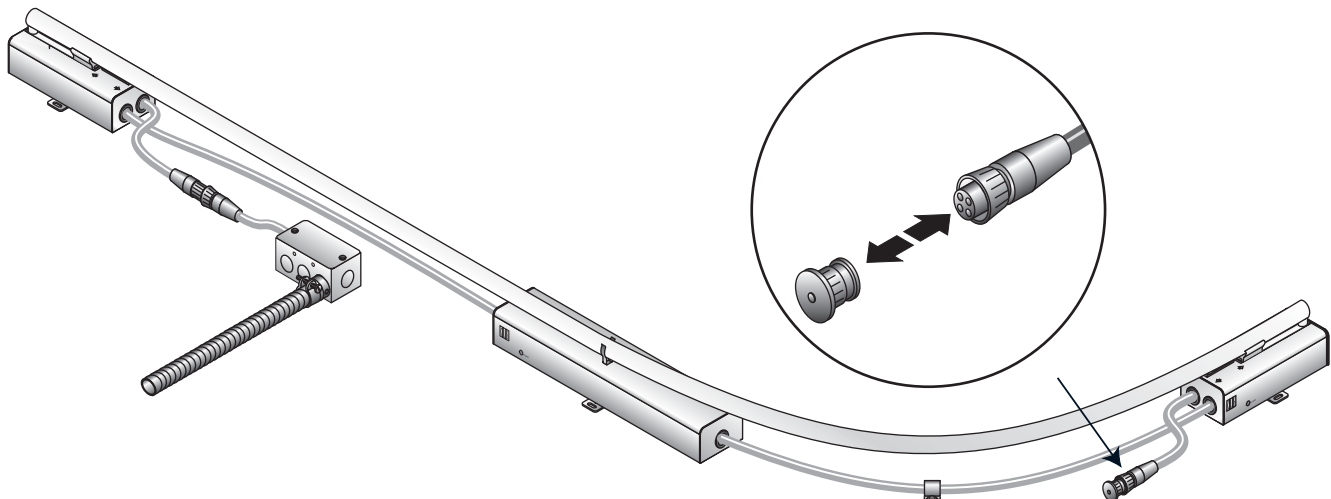


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**STEP 6:** Connect the male modular plug at the end of the luminaire or luminaire array, to the splice box, using the modular female connector cable as shown:



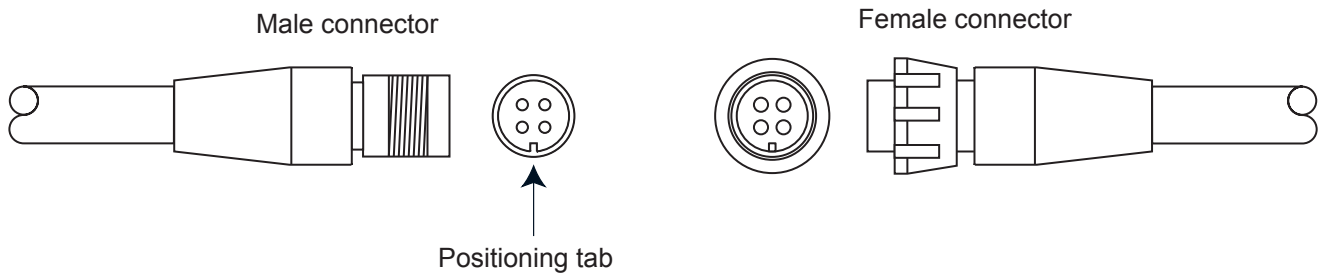
**STEP 7:** Install the blanking cap on the unused female connector at the end of the luminaire (or luminaire array), and energize the circuit.



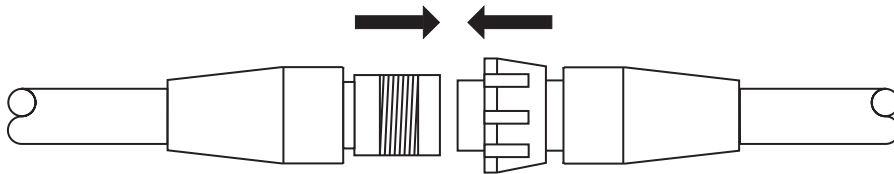
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The modular male and female connectors integral to this luminaire allow a "daisy-chain" electrical connection from one luminaire to the next, and allow for an easy connection of a luminaire, or a luminaire array to the splice box (which is wired to the branch circuit). The male connector has four (4) pins, and the female connector has four (4) pin receptacles and a rotating locking ring to assure secure attachment to the male connector.

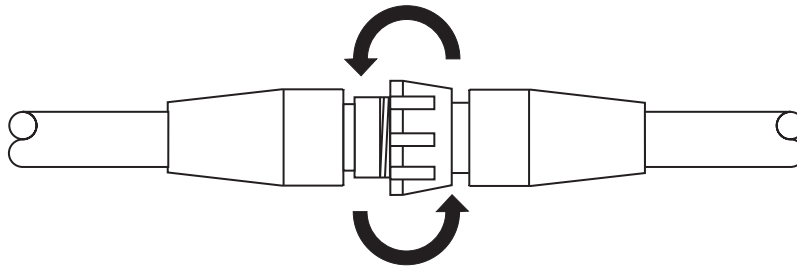
The connectors are polarized (via a positioning tab), and cannot be mated incorrectly.



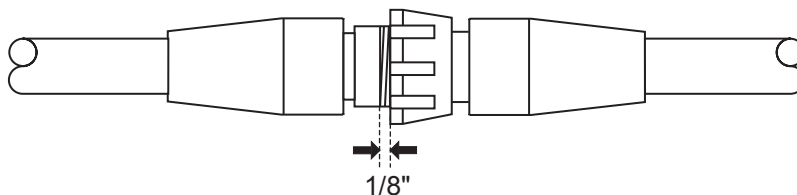
**STEP 1:** Align the connectors and push together.



**STEP 2:** Turn the female locking ring clockwise until snug.



**STEP 3:** When properly mated, approximately 1/8" of thread should be visible on the male connector.

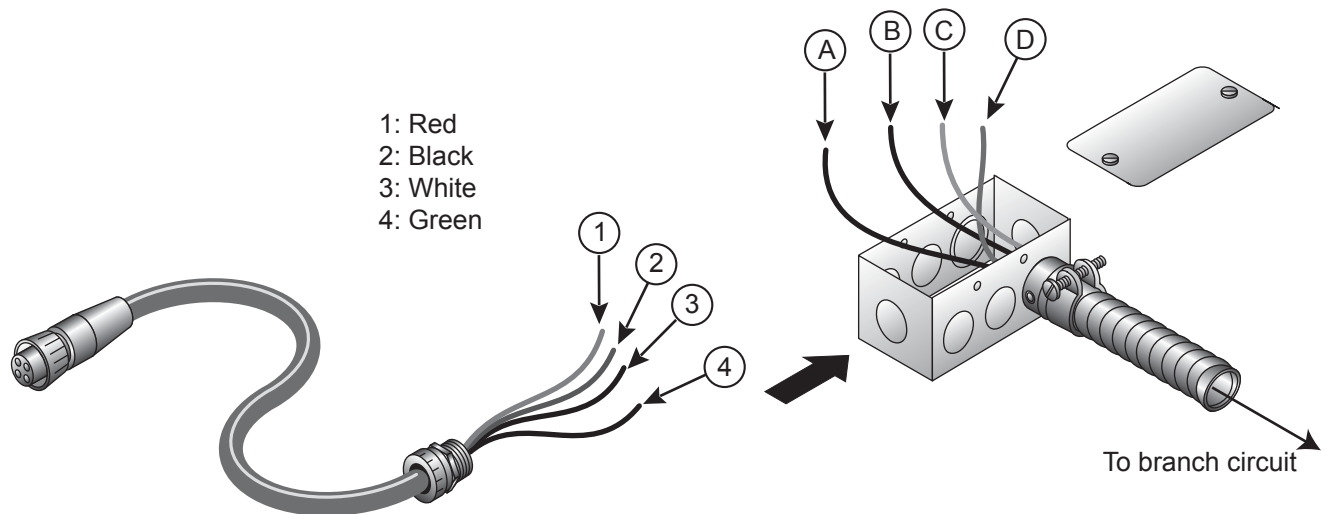


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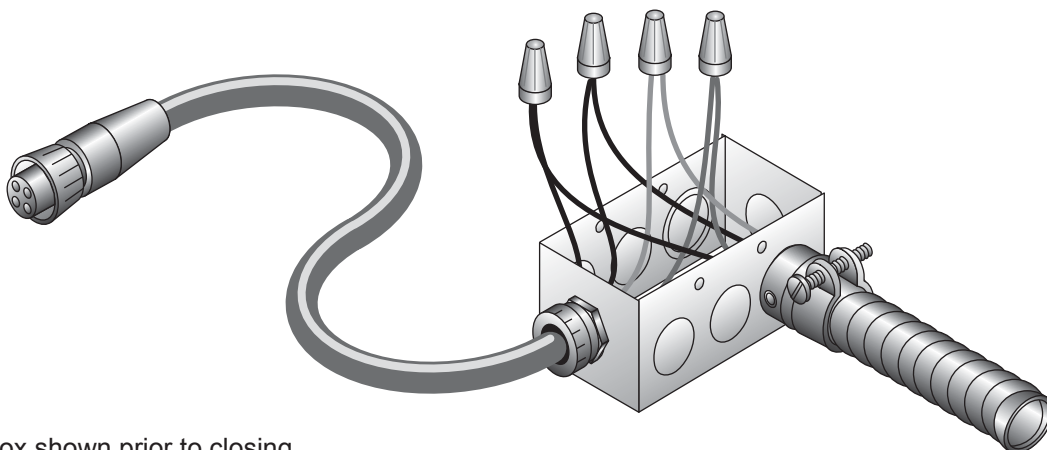


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- 1 (Red) —→ to A (dimmed hot from dimmer)
- 2 (Black) —→ to B (switched hot from dimmer)
- 3 (White) —→ to C (neutral)
- 4 (Green) —→ to D (ground)

- A: Dimmed hot from dimmer
- B: Switched hot from dimmer
- C: Neutral
- D: Ground



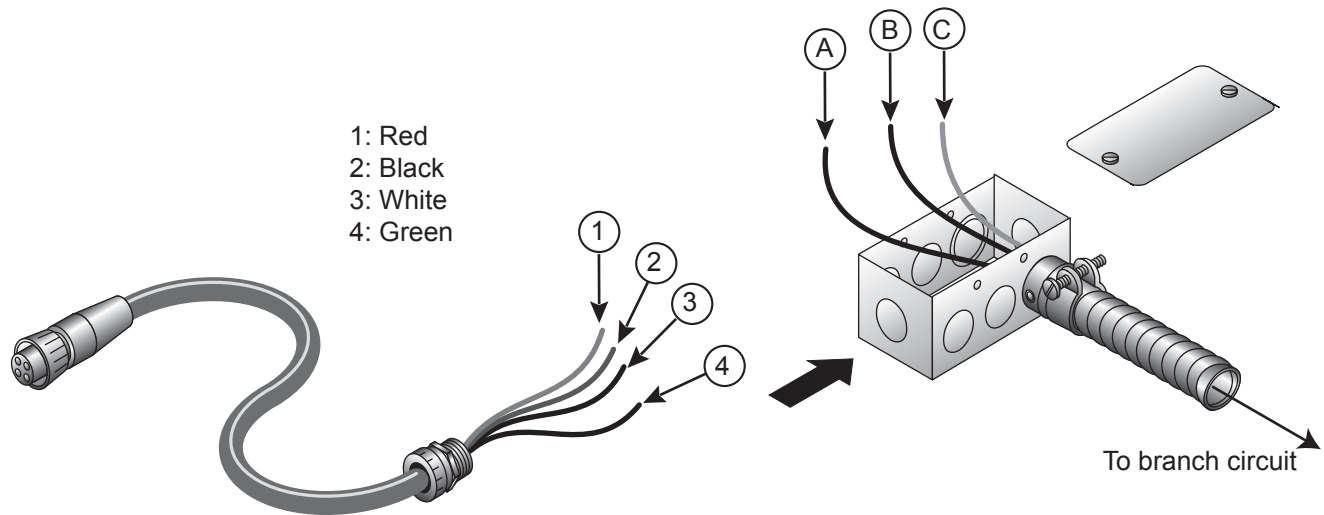
Splice box shown prior to closing,  
with connections made, using the properly-  
sized UL-listed wire connectors.



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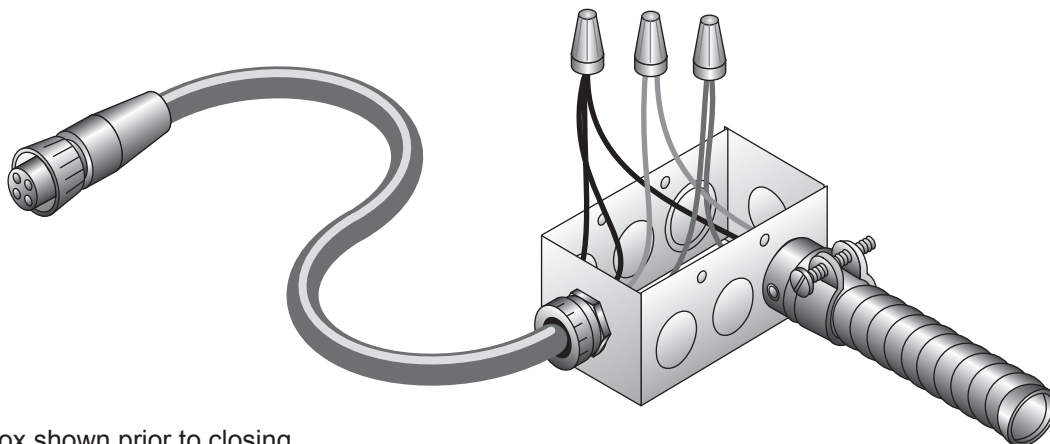
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- 1 (Red) → to A (Hot)
- 2 (Black) → to B (Neutral)
- 3 (White) → to B (Neutral)
- 4 (Green) → to C (Ground)

A: Hot  
B: Neutral  
C: Ground



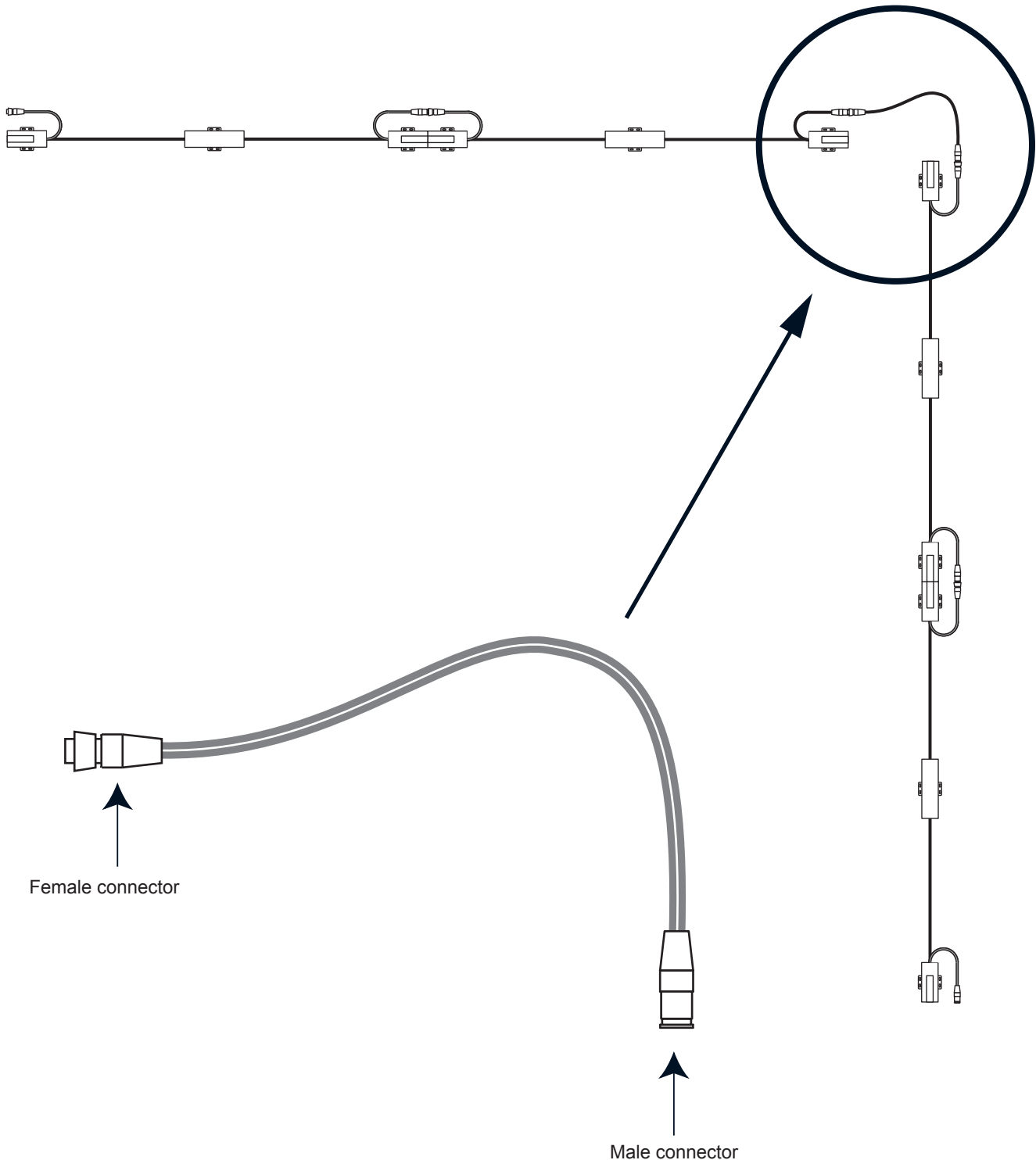
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Certain applications require that a luminaire or luminaire-array installation may not be continuous, or additional space is required from one luminaire to the next. Extension cords (each having one female and one male end) may be provided to make this connection within the cove. Cords are available in 24" lengths only.



**NOTES:**

**Dimming:** 3-Wire (triac-based) fluorescent dimmers are required, utilizing a dimmed hot, switched hot, neutral, and ground.

**Connector ratings:** 20-amp circuit loaded at 80% (16 amps) maximum

**Branch circuit requirements:** Conduit or MC cable containing three (3) conductors, plus a ground wire. A dedicated circuit is required.

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**SYSTEM CHECKLIST (PRIOR TO ENERGIZING)**

The circuit may be energized after the following items have been completed:

- A. Luminaires are properly fastened and lamps are properly installed and seated within the lampholders.
- B. All modular connections between luminaires have been mated properly.
- C. The female blanking cap has been installed in the unused female plug at the opposite end of the luminaire, or at the end of the last luminaire in the array.
- D. Extension cords between non-continuous luminaires have been installed, connected and properly secured.
- E. Cable straps have been properly installed.

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**TROUBLESHOOTING****Lamp will not light.**

*The ballast in this luminaire is equipped with integral open-circuit and ground-fault protection. If the luminaire is energized without a lamp in place, the ballast will turn itself off automatically. To reset the ballast, the primary power must be turned off, and then on again. If the luminaire still does not light, the lamp could be inoperable. Contact the factory for further assistance.*

**Lamp exhibits a rolling or spiraling effect**

*Turn the luminaire off for five seconds, and then turn off for two seconds. Repeat this procedure 5-10 times. The rolling or spiraling should stop. If the lamp continues to roll or spiral, remove the lamp from the luminaire, wipe it with a clean rag, and reinsert the lamp. If the lamp continues to appear unstable, contact the factory for further assistance.*



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