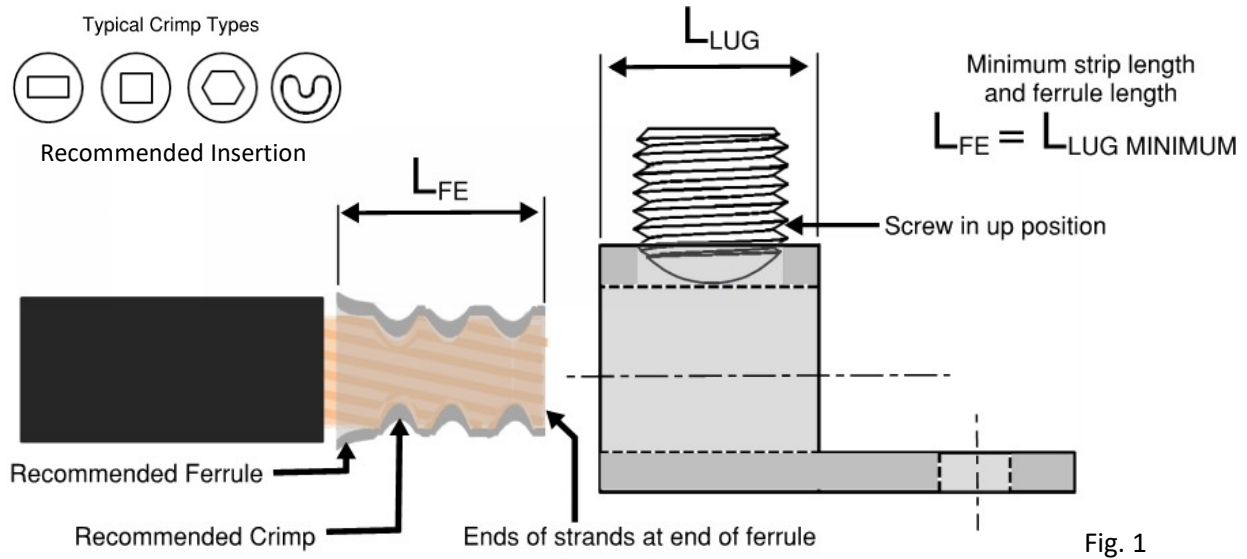
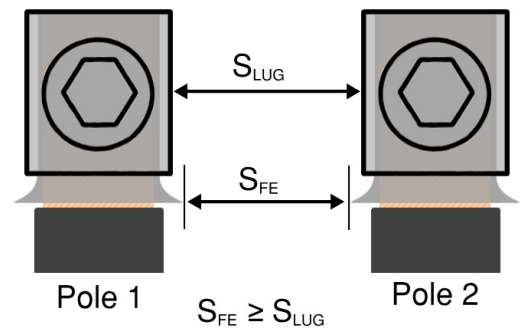


# Copper Ferrules Used on Stranded FLEX or Code Wire UL Inspected Installations UL508A Panel Builders



## UL508A Mandates of Use

1. Lug must already be rated for the copper wire size and stranding class.
2. The ferrule size must be recommended by the makers for the wire gauge and stranding class being used.
3. Ferrule must be crimped before inserting into lug using the ferrule maker's recommendation for that ferrule and wire gauge and stranding class.
4. The length of the ferrule to be adequate to maintain the strip length for the full depth of the wire hole.
5. Bare part of ferrule must not cause a reduction of intended electrical spacings  $S_{LUG}$ . (Fig. 2)
6. After crimping and insertion into wire hole, lug screw to be tightened to the rated torque for the wire gauge and stranding class.
7. See pages 2 and 3 for UL decision on "Use of Ferrules"



## USE OF FERRULES:

The original 2013 published "Use of Ferrules" bulletin from UL found [here](#) (historical use only) has been replaced by a formal "UL Decision" on 11-3-2016.

UL has made the following decision on 11-3-2016 for UL508A panel builders with regard to factory wiring use of ferrules:

This information is provided verbatim as an educational convenience to UL508A compliant customers seeking to learn about the *use of ferrules on fine stranded wire used in combination IHI brand fine stranded mechanical wire connector lugs, in factory wired situations*. Check with your UL field inspector for current practices and updates.

**Date issued 11-3-2016. Date uploaded to UL site 11-4-2016**

## UNDERWRITERS LABORATORIES INC. CERTIFICATION REQUIREMENT DECISION

*This Certification Requirement Decision is prepared by UL LLC. It is normative for the applicable UL Product Certification Program(s); however, it is currently not part of the UL Standard(s) referenced below.*

**Product Category (CCN): NITW**

**Standard Number: UL 508A**

**Standard Title: Standard for Industrial Control Pan(els)**

**Edition Date: December 20, 2013**

**Edition Number: 2**

**Section / Paragraph Reference: Sections 29.3.4, 29.3.5.1 (New), SB3.1 and SB4.2**

***Subject: Wiring Ferrules for use in Industrial Control Panels***

## DECISION:

***29.3.4 A connection to a terminal of a component shall be made by:***

***a) Wire inserted directly into a pressure wire terminal of the component;***

b) Quick-connect terminal of the component, where the mating part is provided with a dimple, depression, or spring-type connection such that a mechanical snap-action connection is made that does not rely solely upon friction between the two parts;

c) Crimped-on pressure terminal connector or closed-loop eyelet;

d) Solder terminal specified in 29.3.2;

e) Wire-binding screw specified in 29.3.3; or

f) Open-type eyelet specified in 29.3.5.

***g) Wiring ferrule specified in 29.3.5.1.***

***29.3.5.1 A wiring ferrule shall be:***

***a) Used with stranded copper wire(s) only***

***b) Terminated in a connector rated for copper wire and rated for the number and size of wire(s) crimped to the ferrule.***

***c) Crimped with an appropriate tool as recommended by the ferrule manufacturer before terminating in a terminal of a component.***

***d) Sized in diameter appropriate for the number of wires and wire size(s) as recommended by the ferrule manufacturer.***

***e) Crimped to the wires such that the length of the uninsulated portion of the wires does not result in the reduction of electrical spacings when the ferrule is installed.***

## SB3.1 Internal wiring connections

*SB3.1.1 All terminals of power circuit wiring connectors, wiring ferrules and components shall be torqued to the manufacturer's specified value or crimped-on according to the manufacturer's instructions*

## SB4.2 Short circuit current ratings of individual power circuit components

SB4.2.1 All power circuit components, including disconnect switches, branch circuit protective devices, branch circuit fuseholders, load controllers, motor overload relays, terminal blocks, and bus bars, shall have a short circuit current rating expressed in amperes or kiloamperes and voltage.

Exception No. 1: Power transformers, reactors, current transformers, dry-type capacitors, resistors, varistors, and voltmeters are not required to have a short circuit current rating.

Exception No. 2: The <sup>2</sup>S<sup>2</sup> contactor of a wye-delta motor controller is not required to have a short circuit current rating.

*Exception No. 3: Wiring ferrules are not required to have a short circuit current rating, provided that their requirements of 29.3.5.1 are met.*

### RATIONALE FOR DECISION:

*Wiring ferrules are commonly used to facilitate connection of internal wiring in industrial control panels. The use of ferrules is currently not addressed by UL 508A. Ferrules are limited to factory installation since specialized tools and control of their use must be applied to the installation. Any manufacturer's ferrules are suitable for use in factory wiring only, power or control circuits. As ferrules are an extension of a conductor, no short circuit current rating is required or assigned.*

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