How To Select Flex Rated UL486F Ferrules (ZMLF) to Convert Flex AWG and Flex IEC mm2 wires to AWG Class B, C & Solid For Use in IHI / LugsDirect.com Class B and C Wire Connectors

1. Knowing the **application current rating** and temperature rating and **preferred flexibility (stranding class)** of the copper wire needed for the application, establish the gauge of the wire from NEC or IEC current and temperature rating tables for the rated maximum current tables See NEC Table. Example: say #6 AWG stranding Class K or 16mm^2 IEC class 5. The maximum rated current follows the wire gauge chosen.
2. Look for a **UL486F ferrule that specifically covers the gauge and stranding class for that size of wire** in the description or specifications of the ferrule part number. It is required to keep the package labeling proving the ferrule has UL486F ratings for the gauge and stranding class and **the specified tool needed to crimp the ferrule**.

Common Ratings of UL486F ferrules that have Flex class ratings:

AWG Classes: Rigid B, C. Flex Classes G, H, I DLO, K, M.

IEC Classes: Rigid (r) Class 2 Flex classes (f) Class 5, 6

Companies that manufacture UL486F Ferrules with B/C and FLEX and metric wire ratings: (individual products can cover any of these classes but not necessarily all. Check manufacturer product details on each specific ferrule as these details vary) The UL inspector will want to see the packaging.

Panduit (Panduit ferrule drawings): Class B, C, G, H, I, DLO, K, and M (does not offer metric classes)

Cembre GmBH (Cembre Installation Sheet): Metric Class 2, 5, AWG Class G, and K

Phoenix Contact GmBH (Phoenix Contact Ferrule Information Page): Metric Class 5, 6, and AWG Class B, C, G, H, I, K, and M

For additional information on Wire Classes see Table of Wire Strand Count by Stranding Class

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3. **The active length of the ferrule** must meet the minimum for the wire connector's wire hole depth chosen, and is generally the same as the wire strip length for bare wire. (Fig 1.)

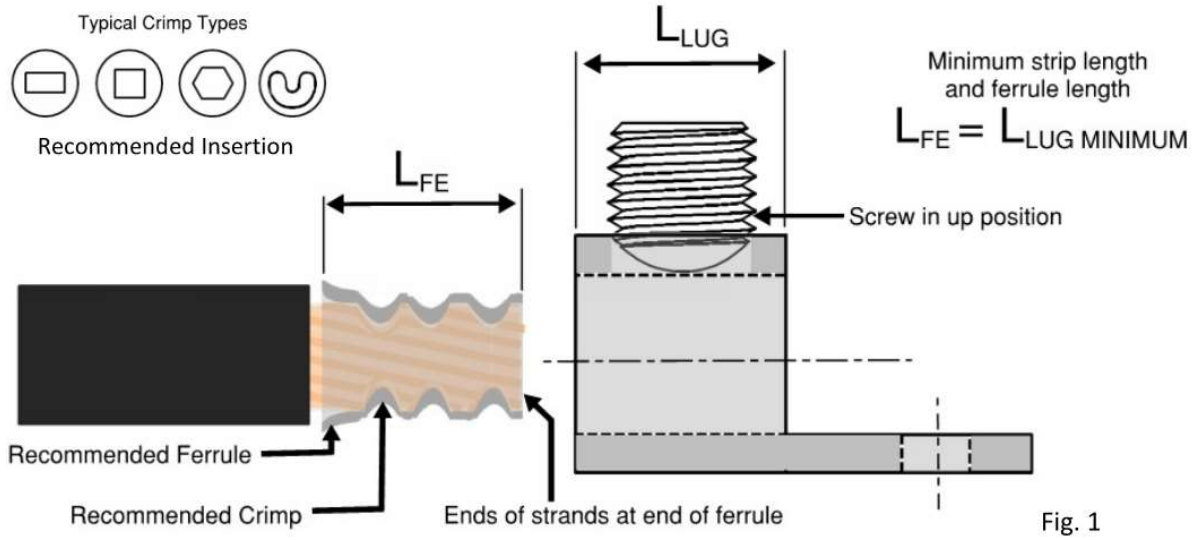
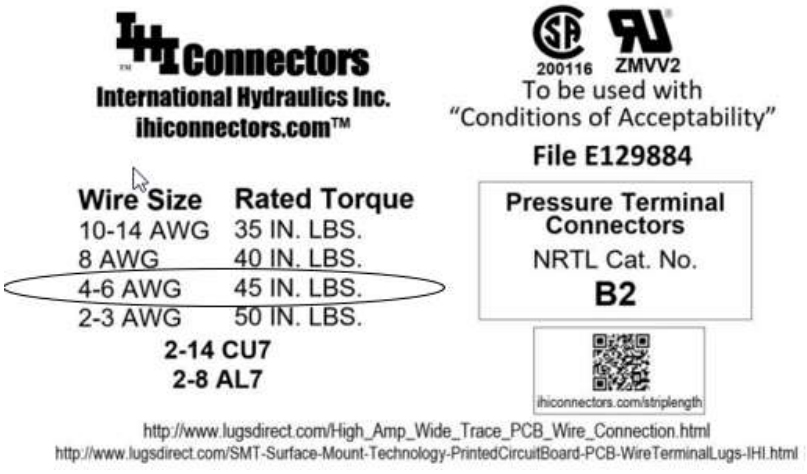


Fig. 1

For more detailed strip length guidelines for IHI Connectors lugs see IHI Connectors Wire Insertion Depth Practices

4. **If using a twin ferrule refer to the chart** to determine the total AWG number of the combined pair of twinned wires. **Use this AWG number then pick a twin ferrule in the same way as above.** See Twin Ferrule Conversion Chart here.
5. Look for a connector that has a large enough wire hole to hold the crimped ferrule and wire combined. The size of the connector and its wire hole will normally need to be upsized larger. For reference see the Typical Post Crimp Dimensions in UL486F Ferrules
6. If using the connector example below for say #6 AWG stranding Class K or 16mm^2 IEC class 5 the equivalent AWG and class of the ferruled wire is either 6 AWG B/C or 5.2 AWG (16mm^2 IEC)



7. Both 6.0 AWG and 5.2 AWG fall into the 45 in-lb (5.1 N-m) torque rating of AWG range 4-6. UL486F and UL486AB allow the B/C torque to be used as though the Flex strands were converted to rigid strands or for 10-4 AWG flex stranded as though converted to solid wire. See Ferrule Conversion Chart here.

Consequently, the ferruled flex wire is "converted" to class B/C wire class and is covered by the label of the UL486AB connector Catalog number B2 or part number B2A / B2A-PCB(-xx-series) in this example.

8. Test the wire and crimped ferrule combination in the chosen connector wire hole at the connector label torque of 45 in-lbs (5.1 N-m) and verify fit and function is satisfactory for the end use. Confirm the application is conforming with your UL / CSA field inspection
9. This method applied to all IHI® Connectors® screw type lugs.

For more information on the use of ferrules in UL Applications see:

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

FAQ for using ferrules in UL486AB Lugs, UL508A Panels, and NEC Applications