

PROCEDURES/ELECTRICAL

FNHA-3-E-010.00

SPICES

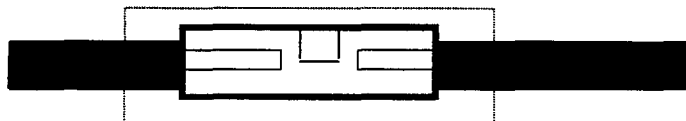
1. SCOPE

1.1 This standard details the requirements for splices in wiring assemblies. It contains descriptions and criteria set for the different types of splices.

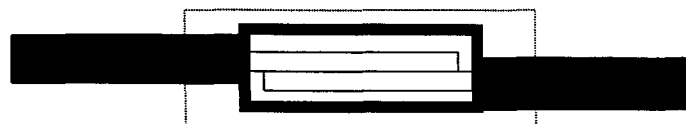
1.2 Splices are used to make a permanent electrical and mechanical connection of two or more wires. Splices should be located in areas that minimize cable flexing and are convenient for manufacturing purpose. Splices are done four different ways: closed barrel, ultra-sonic, splice-clipped, and splice pack. Listed are the configurations, types, general criteria, and specific criteria of a splice. Splice configuration should be specified on the drawing.

2. CONFIGURATIONS

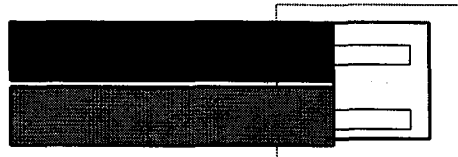
2.1 Butt splice - Wires are inserted from each end. They do not overlap. One side may be left open and uncrimped for use in the field.



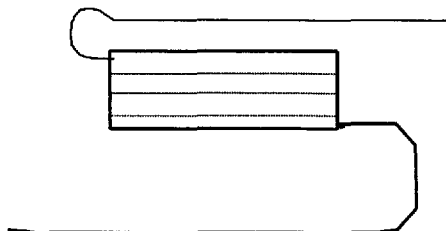
2.2 Parallel splice - Two or more wires overlap inside splice. They are then crimped together. A spliced assembly is unacceptable if the wires do not overlap at least 90% of the full length of the splice.



2.3 Closed End splice - All wires meet at one end point. This is similar to a cap joining the wires together.

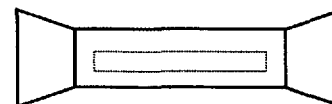


2.4 S splice - A parallel configuration must be used to make the S splice. The splice must be folded into an "S" shape so that the wires double back. Next, tubing must be heat shrunk over the "S" shape. When finished the wires should go into the splice from opposite directions. This is done for strain relief of the wires. The picture below will illustrate the configuration. This is highly recommended in areas of flexing or high vibration.



3. TYPE OF SPLICE

3.1 Pre-insulated closed barrel tube - A metal tube covered by a plastic insulator which overhangs the ends of the tube (splice). The insulator may be PVC, nylon, or a heat shrink material.



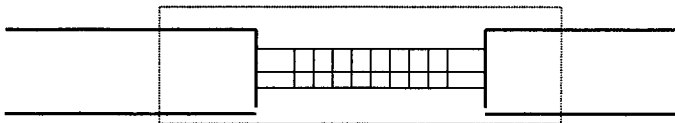
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					 NEW HOLLAND		ENGINEERING SPECIFICATION	
							FRAME	OF
							1	3
							PART NUMBER	
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3.2 Splice Clip - The wires from both sides are inserted into a metal clip. The metal U-shaped clip is crimped by a die, and it is pressed around the wire group. The splice is then soldered. Then the splice is pushed down by forcing the ends of the wires closer together. Finally the wires are pulled straight while the solder is still hot. The splice can be put into a butt, end or parallel configuration.

3.3 Ultrasonic splices - Wires are welded together using an ultrasonic welder to form one long wire.

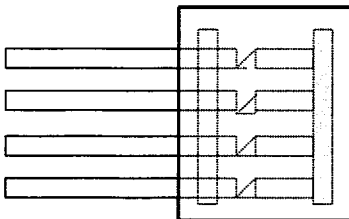


3.3.1 Ultrasonic peel test - A good splice weld is a balance between "not weld enough, and welded too much", so we will perform the following tests to verify a "good weld":

3.3.2 Perform a "PEEL" test on the splice, you may use your judgement to estimate the percentages listed below:

At least 20% of the strands of the wire(s) that separate from the main body of the splice must peel away with the wire(s). At least 20% of the strands of the wire(s) that separate from the main body of the splice must remain bonded to the splice.

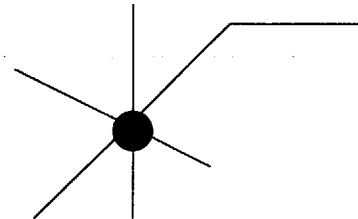
3.4 Splice Pack - Two or more wires are put together through a terminal point. Each wire is terminated and passes through a seal into a connector to a bus bar. It may consist of a wire seal, wire terminal, secondary lock, pack clip, bus bar, and cap.



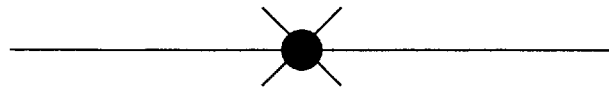
4. SYMBOLS

A splice will be indicated on a wire schematic diagram, draft, schematic, and drawing as a black dot joining two or more lines. The dot may be labeled SPL and given an alpha character.

Example: SPL - A
SPL - Indicates splice
A - Indicates splice destination



4.1 For a wire harness drawing, or draft a splice will be symbolized by a line passing through a black dot with an x over it. This will represent spliced wires in a designated area.



4.2 For a harness schematic and diagram the splice will be represent by a dot with a line through it.



5. GENERAL SPLICE CRITERIA

5.1 All splices must be insulated, ie covered with a shrink sleeve.

5.2 A splice cannot be within 50 mm (2 inches) of flexing or abrasive area.

5.3 A splice cannot be within 50 mm (2 inches) of a branch of a harness.

5.4 A splice cannot be within 25 mm (1 inch) in line with another splice on the same circuit.

5.5 Splices must be staggered 100 mm (4 inches) apart when on separate circuits in the same bundle.

	NAME				PART NUMBER	
	STD WIRE SPLICES				86537991	
ENGINEERING SPECIFICATION				REV. B	FRAME 2	OF 3