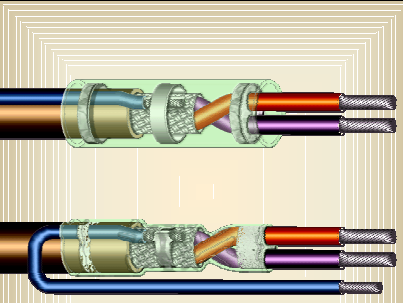


### CABLE AND HARNESS SOLDER SLEEVES



#### SOLDER SLEEVES

Solder sleeves are primarily used to attach a ground wire (lead) to the shielding braid of a shielded cable by means of a shrinkable tubing assembly having an integral solder preform.

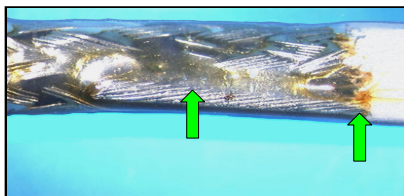
Solder sleeves are also used to splice two or more conductors together in a parallel configuration.

See Section 4.01 "Cable and Harness, General Requirements", and Section 6.01 "Through-Hole Soldering, General Requirements", for common accept / reject criteria.



#### PREFERRED

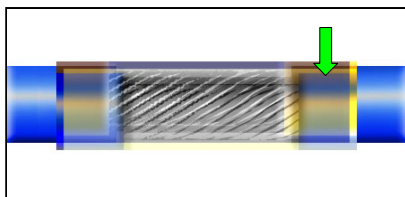
Solder sleeve has been properly installed and tightly shrunk. Strain relief is acceptable. Overlaps are of sufficient length to meet minimum electrical spacing. Solder fillet is visible, fully flowed, and smooth.



#### ACCEPTABLE CLOSE-UP VIEW

The termination exhibits proper solder flow and complete wetting. There is evidence of a complete fillet between the ground wire and the shield. Individual strands are discernable. Minor flux entrapment is acceptable.

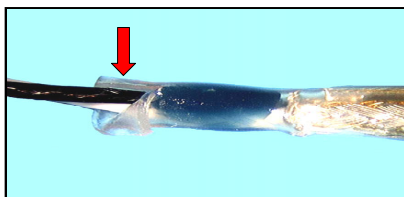
NASA-STD-8739.4 [ 19.6.1.b ], [ 19.6.1.g ]



#### ACCEPTABLE DISCOLORATION

The solder sleeve may exhibit slight discoloration resulting from the heating process. The sleeve shall not exhibit any damage.

NASA-STD-8739.4 [ 19.6.1.g.3 ]



#### UNACCEPTABLE DAMAGED SLEEVE

Solder sleeves shall be free of cracks, cuts, crushing, gouges, punctures, and charred, melted or burned areas. Slight scuffing or discoloration is acceptable.

NASA-STD-8739.4 [ 19.6.1.g.3 ], [ 19.6.2.g.6 ]

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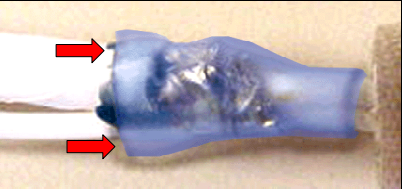
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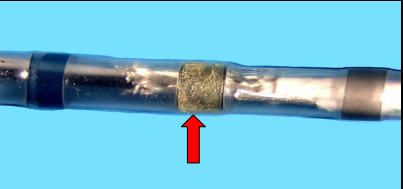
### CABLE AND HARNESS SOLDER SLEEVES (cont.)



#### UNACCEPTABLE INCOMPLETE SHRINKAGE

The solder sleeve shall be completely shrunk to provide a tight fit and proper stress relief.

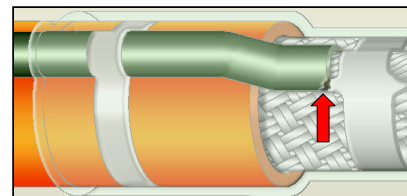
NASA-STD-8739.4 [ 9.10 ], [ 11.4 ], [ 19.6.1.b.6 ]



#### UNACCEPTABLE INCOMPLETE SOLDER FLOW

The solder preform has not melted and properly flowed. Typically this is caused by insufficient heat, insufficient dwell time during the shrinkage process, or use of an infra-red (IR) heat source.

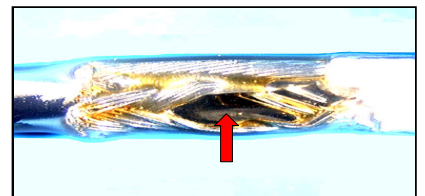
NASA-STD-8739.4 [ 19.6.2.g ]



#### UNACCEPTABLE INSUFFICIENT INSULATION CLEARANCE

The insulation shall not be imbedded in the solder joint. The contour of the conductor shall not be obscured at the termination end of the insulation.

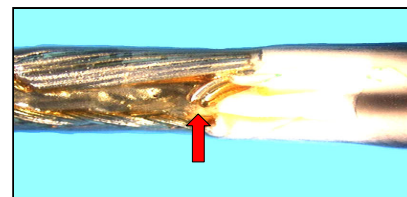
NASA-STD-8739.4 [ 10.1.7.a.1 ]



#### UNACCEPTABLE SEPARATED SHIELD STRANDS

Birdcaging or separation of the shield stranding may introduce unwanted electrical noise into the system, and may interfere with the proper installation of the solder sleeve.

NASA-STD-8739.4 [ 19.6.1.e.16 ]



#### UNACCEPTABLE SEVERED / PROTRUDING STRANDS

Conductors exhibiting severed strands shall not be used. Severed wire strands may protrude through the solder sleeve, creating a shorting and reliability risk.

NASA-STD-8739.3 [ 7.2.3 ]  
NASA-STD-8739.4 [ 19.6.2.a.2 ], [ 19.6.2.g.7 ]



#### UNACCEPTABLE TERMINATION NOT VISIBLE

The solder sleeve is opaque, prohibiting visual inspection of the termination. The solder sleeve shall be transparent or translucent to allow inspection.

NASA-STD-8739.4 [ 19.6.2.g.1 ]

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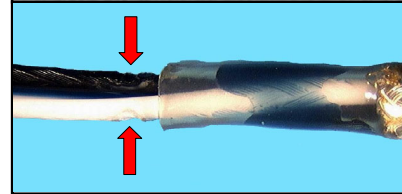
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CABLE AND HARNESS  
SOLDER SLEEVES (cont.)

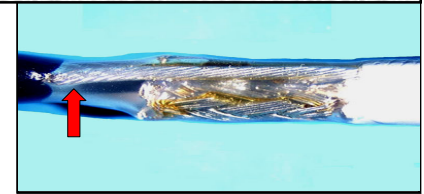
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CABLE AND HARNESS  
SOLDER SLEEVES (cont.)



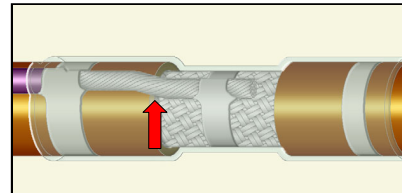
**UNACCEPTABLE  
DAMAGED WIRE INSULATION**

Cut, crushed, gouged, damaged, nicked, burned, or melted insulation may result in reduced electrical isolation and/or short circuits. Slight scuffing or discoloration is acceptable.  
[NASA-STD-8739.4 \[ 19.6.2.e.9 \]](#)



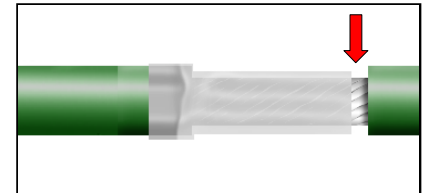
**UNACCEPTABLE  
EXCESSIVE CONDUCTOR LENGTH**

The ground conductor should extend a maximum of flush with the end of the stripped shield section.  
[Best Workmanship Practice](#)



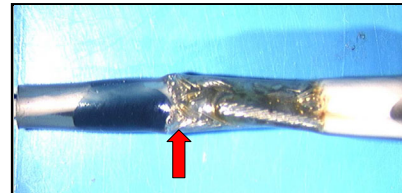
**UNACCEPTABLE  
EXCESSIVE INSULATION CLEARANCE**

The maximum insulation clearance shall be such that the end of the conductor insulation is even with the end of the cable jacket.  
[Best Workmanship Practice](#)



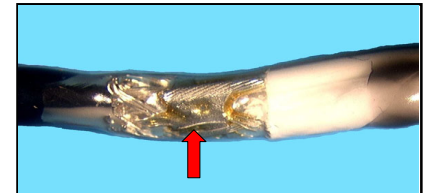
**UNACCEPTABLE  
EXPOSED CONDUCTIVE SURFACES**

Solder sleeves shall cover all exposed metal in the splice area. Improper positioning, movement during shrinkage, or improper sizing of the sleeve, typically results in exposed conductive surfaces.  
[NASA-STD-8739.4 \[ 19.6.2.g.5 \]](#)



**UNACCEPTABLE  
IMPROPER LOCATION**

Solder sleeves should be installed, such that the solder preform is approximately centered on the stripped section of the conductors, ensuring proper sealing and strain relief.  
[Best Workmanship Practice](#)



**UNACCEPTABLE  
INCOMPLETE FILLET**

The termination shall exhibit a complete, fully wetted fillet along both sides of the interface between the two conductors.  
[NASA-STD-8739.4 \[ 19.6.2.g.2 \], \[ 19.6.2.g.3 \]](#)

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