

IPC/WHMA-A-620B Amendment 1

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**Requirements
and Acceptance
for Cable and
Wire Harness
Assemblies**

A standard developed by IPC

Association Connecting Electronics Industries



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- Minimize time to market
- Contain simple (simplified) language
- Just include spec information
- Focus on end product performance
- Include a feedback system on use and problems for future improvement

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- Inhibit innovation
- Increase time-to-market
- Keep people out
- Increase cycle time
- Tell you how to make something
- Contain anything that cannot be defended with data

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2.7 United States Department of Defense (DoD)

~~MIL-HDBK-454 General Guides for Electronic Equipment~~

3.2 Strand Damage and End Cuts

Conductors shall not ~~[D1D2D3]~~ ~~[N1D2D3]~~ be cut or modified in any manner to reduce circular mil area (CMA) to fit a termination.

4.3.1 Solder Connection – General Requirements

4.7 Birdcaged Wire (Soldered)

Figure 4-16

Acceptable - Class 1,2,3

- Wire strands have separation but:
 - Do not exceed one strand **diameter**.
 - Do not extend beyond wire insulation outside diameter.

Figure 4-17

Acceptable - Class 1

Process Indicator – Class 2

Defect - Class 3

- Wire strands have separation exceeding 1 strand diameter but do not extend beyond wire insulation outside diameter.

Acceptable - Class 1

Defect - Class 2,3

- Wire strands:
 - ~~Have separation exceeding 1 strand diameter.~~
 - Extend beyond wire insulation outside diameter.

4.8.1.1 Terminals – Turrets and
Straight Pins – Lead/Wire Placement

Table 4-2 Turret and Straight Pin Terminal Lead/Wire Placement²

4.8.2.1 Terminals – Bifurcated –
Lead/Wire Placement – Side Route

Table 4-3 is applicable to leads and wires attached to side-route bifurcated terminals.

Table 4-3 Bifurcated Terminal Lead/Wire Placement - Side Route¹

Criteria	Class 1	Class 2	Class 3
<90° wrap	Defect		
≥90° wrap	Acceptable		
>360° and wire overlaps itself	Acceptable	Defect	

Note 1: 4.8.2.1 provides exceptions to wrap requirements depending on wire size; 4.8.2.3 provides exceptions to wrap requirements when staking is used.

Figure 4-30

Defect - Class 1,2,3

- Wire does not pass through slot.
- Wire end violates minimum electrical clearance.
- Wire/lead <0.75 mm [0.0295 in] in diameter is wrapped around a post less than 90°. See 4.8.2.3 for exception.

4.8.4.1 Terminals – Pierced/Perforated/Punched – Lead/Wire Placement

4.8.5.1 Terminals – Hook – Lead/Wire Placement

Figure 4-55

Target - Class 1,2,3

- Wire wrap contacts terminal for a minimum of 180°.
- ~~Minimum of 1 wire diameter space from end of hook to the closest wire.~~
- Wires attached within the 180° arc of the hook.
- Wires do not overlap.
- Insulation clearance 1 wire diameter.

5 Crimp Terminations (Contacts and Lugs)

Conductor strands **shall not** ~~[D1D2D3]~~ [N1D2D3] be cut or modified in any manner to reduce circular mil area (CMA) to fit a termination. Contacts **shall not** ~~[D1D2D3]~~ [N1D2D3] be altered to accept oversized wire or an excessive number of conductors. Conductors **shall not** [D1D2D3] be tinned prior to termination, unless otherwise specified. Solid wire **shall not** [D1D2D3] be crimped except as allowed in 13.2.1.

5.1.1.1 Stamped and Formed – Open Barrel – Insulation Support – Inspection Window

Figure 5-3

Acceptable - Class 1,2,3

~~Process Indicator - Class 2,3~~

- Insulation is flush with but does not enter the wire crimp area (1).
- Insulation is flush with the end of the insulation crimp tabs and does not enter the inspection window area (2).

5.1.2 Stamped and Formed – Open Barrel – Insulation Clearance if No Support Crimp

Acceptable - Class 1,2,3

- Insulation is flush to the end of the contact barrel.
- Insulation is flush with but does not enter the wire crimp area.

Acceptable - Class 2,3

- Conductor is visible between the insulation and contact barrel but no greater than 1 wire diameter.

Acceptable - Class 1

Process Indicator - Class 2,3

- ~~Insulation is flush to the end of the contact barrel.~~
- Insulation is greater than 1 but less than 2 wire diameters from the end of the contact barrel.
- ~~Insulation is flush with but does not enter the wire crimp area.~~

Defect - Class 1,2,3

- Insulation is greater than 2 wire diameters from the end of the contact barrel.