

08/6/25

Subject: Change #11 to SAE/USCAR-12, Revision 6

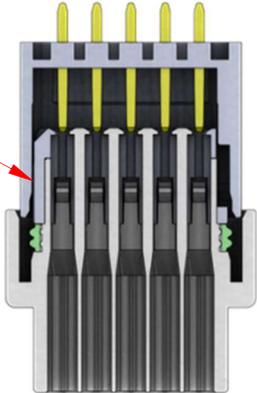
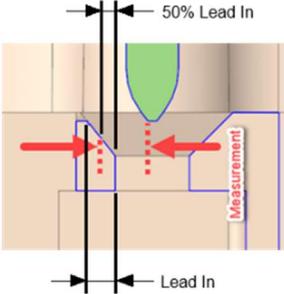
This letter describes a change to the USCAR-12 specification. Comments and questions can be sent to EWCAP@uscar.org.

Situation:

In USCAR-12, there are no clear directions on what is required for blade lead-in area on the female connector. Variations in female connector designs can allow misaligned blades on the mating device/ inline connector to incorrectly enter the receiving terminal cavity, which would lead to loss of electrical functionality of the system.

Resolution

Add the following requirements to C#3

#	Requirement	Confirmation Method	X
C3	<p>Housing alignment: Design the connector shroud to provide housing alignment of the mating connectors before terminal engagement. (This ensures terminal alignment.) (See Figure 4.)</p> <p>Additionally, the female connector assembly must be designed with beveled lead-ins on all 4 sides of the female terminal cavity on the mating interface to aid in male terminal insertion and alignment. The the male terminal blade tip will fall within the first 50% of the smallest receiving lead-in chamfer.</p> <p>Additionally, the chamfer must be at an angle that effectively leads the blade into the terminal cavity without inadvertently impacting connector mate force conformance or causing a stubbing condition.</p> <div data-bbox="261 1455 461 1629" style="border: 1px solid red; padding: 5px; display: inline-block;"> <p>Connector halves aligned prior to terminal engagement</p> </div> 	<p>A combination of CAD studies and SLA models must be reviewed to document housing alignment. Verify CAD data used for the studies is at the correct release level. Reconcile math model and documented rev levels.</p> <p>Engineering Study: CAD studies as well as traditional tolerance stack analysis at worst case condition must ensure the blade tip falls within the 50% of the leadin.</p>  <p>Alternative stack analysis may be performed to ensure pin tip always falls within the leadin. Alternative methods must be reviewed and approved by the responsible OEM Connector Engineer.</p> <p>Hand Evaluation: Connector male and female housings, terminal cavities, and crimped terminal geometry must be assembled, and biased to worst case orientation. This must be evaluated in both vertical and horizontal directions, with physical parts as well as theoretical studies. The connector halves must mate properly with all terminals properly engaged.</p>	X