October 03, 2018

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California Air Resources Board
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Submitted electronically to Jason.gordon@arb.ca.gov

Re: Comments to CARB Proposed 2018 Improvements to Vapor Recovery Nozzle and Vehicle Fill Pipe Specifications

Dear Mr. Gordon:

It has been great to get this cross-functional working group working towards the resolutions of the specification and regulations. As the Chairman of the Refueling Taskforce and the Fuel Systems Subcommittee, I personally have found that the relationships on a personal and business level with CARB, (Jason, Lou, Tahir, Michelle, Sam, Gurj, and John) to be excellent and have seen this protean project of improving the interfaces well worthwhile. Thanks to all who have been involved to bring this series of regulations and specifications to the level of understanding the groups, have now.

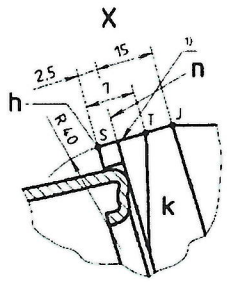
This comment letter will cover the areas that still have some need for clarification and several proposals for consideration:

Section II 2. "Vapor recovery nozzle"

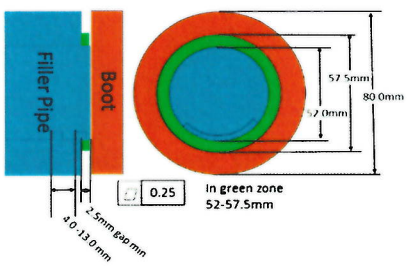
- "leaded" no longer is required in the test

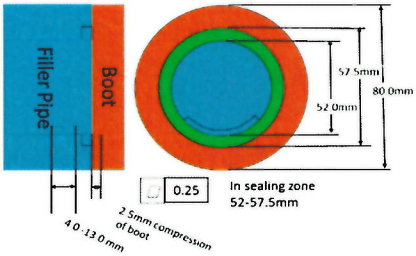
III A. a. Fill Pipe Sealing Surface

During the transitional period, the ISO 13331 current version will be still utilized. There needs to be a clarification on the 2.5mm reference in the ISO 13331 Figure 5 cross-section X. Today there are several interpretations of this and a consensus needs remedied. The Committee would prefer to have the clearance defined similar to the method 1 version of J1140 being drafted at this time. The Proposed SAE J1140 Filler Pipe Face Clearance figure is added below to show the zone for method 1(current SAE J1140/ ISO 13331) and method 2/3 updated clearances referencing 12mm of encroached clearance.

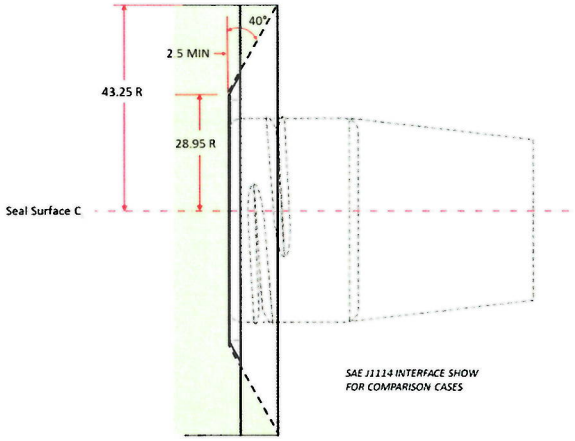


ISO 13331 Figure 5 cross-section X





Current CARB Interpretation Current Automotive Interpretation



Proposed SAE J1140 Filler Pipe Face Clearance. (2.5mm today called out as method 1 with methods 2/3 entailing further clearance equivalent to the new addendums)

Recommended changes for item A. Fill pipe sealing surface, adding to ISO 13331-1995(E))), as adopted June 1, 1995 Section 3.1:

~~a.~~ "Fill pipe sealing surface" means portion of the fill pipe face which would contact the vapor recovery nozzle boot face. ~~For purposes of this specification, this is the portion of the fill pipe face which would contact the 40 degree tapered zone in Figure A.~~

The fill pipe sealing surface as described in ISO 13331 and SAE J1140 are defined by the planar face of the pipe, the sealing even on a conical/spherical boot occurs as a point load on this surface. The inclusion of the "Clearance zones" alongside are to allow the sealing surfaces of the boot and pipe to contact.

b. Diameter of the sealing surface of the fill pipe shall have a maximum diameter of 57.59 mm~~, and the convex portion shall have a maximum radius of 6 mm~~.

By adding the addition statement this is unclear and precludes almost all designs of Capless today as well as coming into production before the 2024 timeframe. The convex callout in the past had to do with capped faces more for sealing of the fuel cap vs the nozzle.

c. Fill Pipe surfaces outside of the 57.59 mm diameter of the sealing surface are allowable so long as it does not infringe into the 40 degree tapered access zone, which extends to a maximum depth of 12 mm back from the sealing surface of the fill pipe as described in Figure ~~A access zone below.~~

III.D

This section is not necessary if the seal surface diameter is 57.9 mm max in previous sections and matches proposed drafts from the SAE Refueling Taskforce

Figure A:

- Figure A needs clarity on the definition of the zone.
    - With the current figure if tapered zone starts at, for example 52.0mm seal surface, the 40° clearance zone would end before reaching the 86mm outer range, and is not defined. See Figure A update below

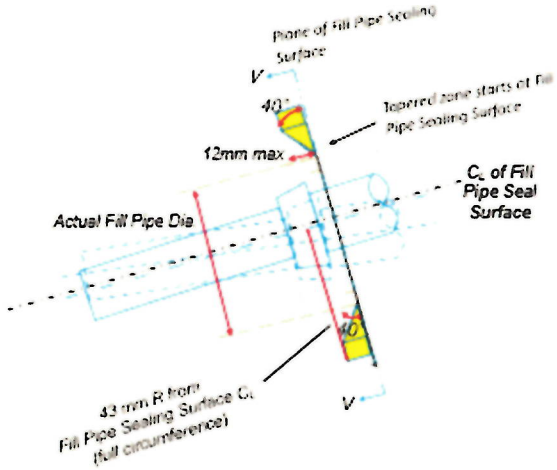
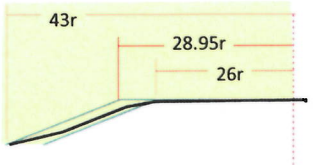
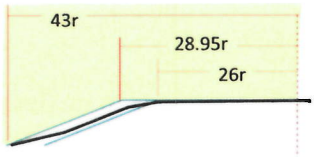


Figure A updated to show concern

- Figure A with floating Pipe diameter can lead to additional concerns for interpretation of zone
    - Example: when a smaller than 57.9mm seal surface is used as shown in the illustrations below,



From interpretation of Figure A
Not Accepted

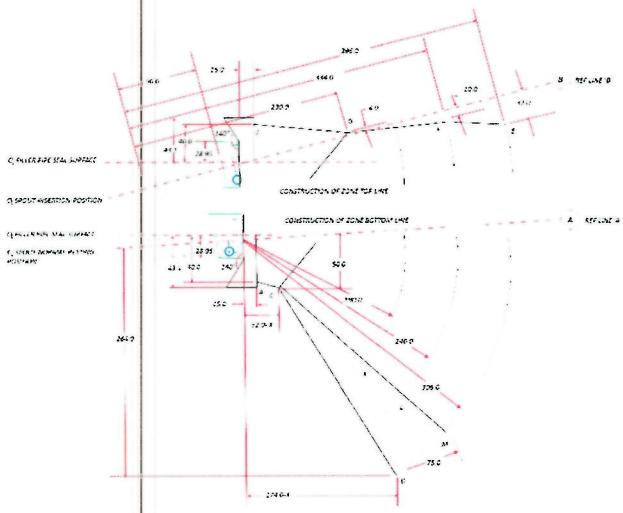


From interpretation of Proposed SAEJ1140
Accepted

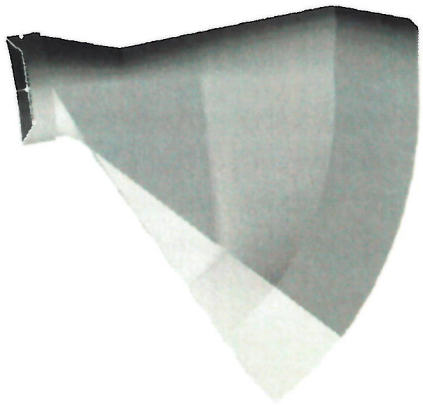
SAE proposes replacing figure A with figure, "Proposed SAE J1140 Filler Pipe Face Clearance"

- This establishes a fixed zone for the nozzle bellows referenced in CARB TP-206.
- By fixing the zone this allows for the clearance and relevance to Spherical, conical, and planar nozzle boots.
- Sealing surface for all versions of nozzles needs to stay as single plane like the process has been since 1972. All style of nozzles still seal off on the front plane/ frontal point seal.
    - The additional clearance surfaces of the boot extensions are not necessarily sealing surfaces.

SAE would propose further push to utilize either method 2 being drafted in J1140 (the modified existing zone with the static boot face updated to have the spherical/conical clearances added) or method 3(the hard static zone being developed for nozzle review) as the updated 2024+ zone.



Method 2



Method 3

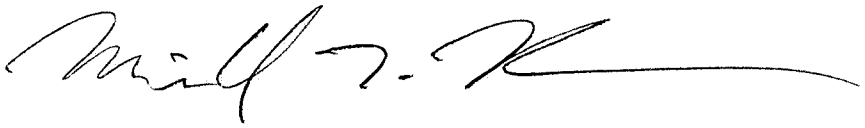
Section VI

- The safety factor needs further data to develop a limit.
- Vehicles with a 2.5mm equivalent orifice meet the 0.5 V/L requirement today with vehicles from several manufactures utilizing this since 2016 calendar year and testing performed at the pumps and benches by said vehicle OEMs.
- Variability of the nozzles to discriminate should not drive significant safety factors into vehicle OEM equipment.
- SAE recommends further analysis to determine agreeable acceptance criteria.
- A further review with both automotive and stationary sides into nozzle discrimination capability is requested as well to properly develop limits.

Section VII

- Nozzle to be used needs to be described for the initial version of the specification
- SAE recommends a standardized fixture be developed and a full detailed repeatable test be followed through with in the J1140.

Jason, once again thank you for the work you have performed on this specification as well as all the time and efforts working with the SAE refueling taskforce on the series of specifications we have been developed. It has been a pleasure developing the relationships and working with you.



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