ATTACHMENT C

PROPOSED 15-DAY MODIFICATIONS TO THE AMENDMENTS TO CP-207: CERTIFICATION PROCEDURE FOR ENHANCED CONVENTIONAL (ECO) NOZZLES AND LOW PERMEATION CONVENTIONAL HOSES FOR USE AT GASOLINE DISPENSING FACILITIES

[Note: The originally proposed modifications to the regulatory language are shown in underline to indicate additions and ~~strikethrough~~ to indicate deletions. The proposed 15-day modifications to the proposed regulations are shown in double underline to indicate additions and ~~double strikethrough~~ to indicate deletions. Only text with proposed 15-day modifications are included in this attachment. For all amendments to CP-207 approved by the Board during the October 25, 2018, hearing, refer to Staff Report: Initial Statement of Reasons Appendix D. The symbol "***" means that intervening text not amended is not shown. [Bracketed text] is not part of the proposed amendments.]

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3. PERFORMANCE STANDARDS AND SPECIFICATIONS FOR ECO NOZZLES AND LOW PERMEATION HOSES

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Table 3-2
ECO Nozzle Spout and Insertion Interlock Dimensions
(Figures 3A and 3B illustrate the nozzle and insertion interlock dimensions.)

Symbol	Description	Dimension Range (Minimum/Maximum)
D_1	Spout Outside Diameter Minimum Length of D_1 Roundness of D_1	20.~~12~~50/21.34 mm (0.~~792~~807/0.840 in) $L_2 - A_1$ Within diameter limits
D_2 [(a)]	Nozzle Anchor Device Outside Diameter [(a)]	25.1/32.1 mm~~.~~ (0.988/1.264 in) [(a)]
C_t	Spout Tip Chamfer or Radius	2.0 mm max (0.080 in max)
C_α	Spout Tip Chamfer Angle	30° to 45°
A_r	Anchor Radius	1.5 mm max (0.059 in max)
A_α	Anchor minimum angle	45°
A_1	Overall Length of Anchor	6.5/20.2 mm (0.256/0.795 in)
A_2	Length of Anchor without Chamfer	~~0.5~~/12.5 mm max (~~0.020~~/0.500 in max)
A_H [(b)]	Anchor Latch Height [(b)]	Minimum: 0.88 mm (0.035 in) Maximum constrained by D_2 [(b)]
S_α [(c)]	Bend Angle of Nozzle Spout [(c)]	19.5° / 26.0° [(c)]
L_1	Length of Straight Part of Nozzle Spout	L_2 + 5.0 mm min (L_2 + 0.197 in min)
L_2	Distance Between Nozzle End and First Anchor Position	85.0/95.0 mm (3.346/3.740 in)
L_3 [(d)]	Distance Between Nozzle End and Aspirator Port Centerline [(d)] *(Aspirator can be in front face of tip)*	18.0 mm max (0.709 in max) [(d)]

Table 3-2 [continued]
ECO Nozzle Spout and Insertion Interlock Dimensions
(Figures 3A and 3B illustrate the nozzle and insertion interlock dimensions.)

Symbol	Description	Dimension Range (Minimum/Maximum)
L_4	Clearance from Fuel Dispensing End to Spout Connection to Nozzle Body	150 mm min (5.906 in min)
B_1	~~Nozzle Bellows~~ Insertion Interlock Face Outer Diameter	77 mm max (3.031 in max)
P (e)	Aspirator Port Diameter (e)	2.00/4.25 mm (0.079/0.167 in) (e)
~~H~~	~~Calibration Hole (f)~~	- (f)

(a) If an offset anchor is utilized, anchor outside diameter measurement will be the effective length (greatest length) across the anchor surface.

(b) Measurement of anchor latch height (A_H) taken from ~~spout to virtual sharp~~ anchor largest diameter to spout diameter.

(c) If spout bend angle (S_α) is out of the recommended range, ~~full nozzle review is mandatory in the vehicle fill pipe clearance zone described in the SAE recommended practice document J1140~~ the nozzle spout assembly and body must be able to be inserted within the vehicle fill pipe access zone defined in Section 3.5.3.

(d) If L_3 is greater than 18.0 mm (0.709 in) the distance difference between L_2 and L_3 must be greater than 69 mm (2.72 in), and L_3 can be no greater than 25.4 mm (1.000 in).

(e) Reference only dimension. Aspirator (sensor) placement can be in spout end or along bottom of spout.

~~(f) Reference only dimension. Calibration holes may be present in nozzle bellows to avoid premature shutoff caused by excess vacuum during the refueling of ORVR equipped vehicles. Such holes shall be blocked/sealed during V/L ratio nozzle adjustments.~~

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Figure 3A
ECO Nozzle Spout Dimensions as Specified by Table 3-2

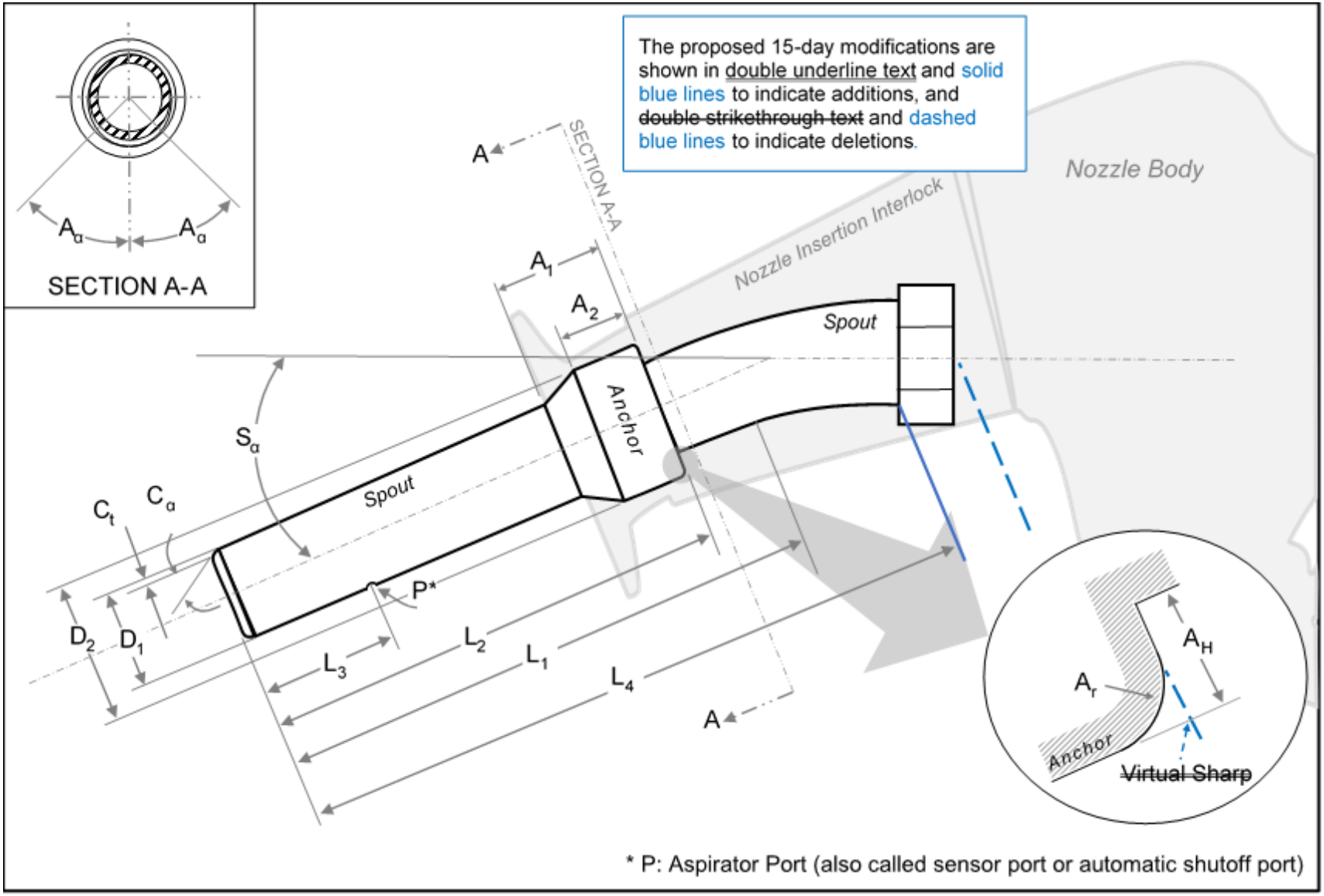
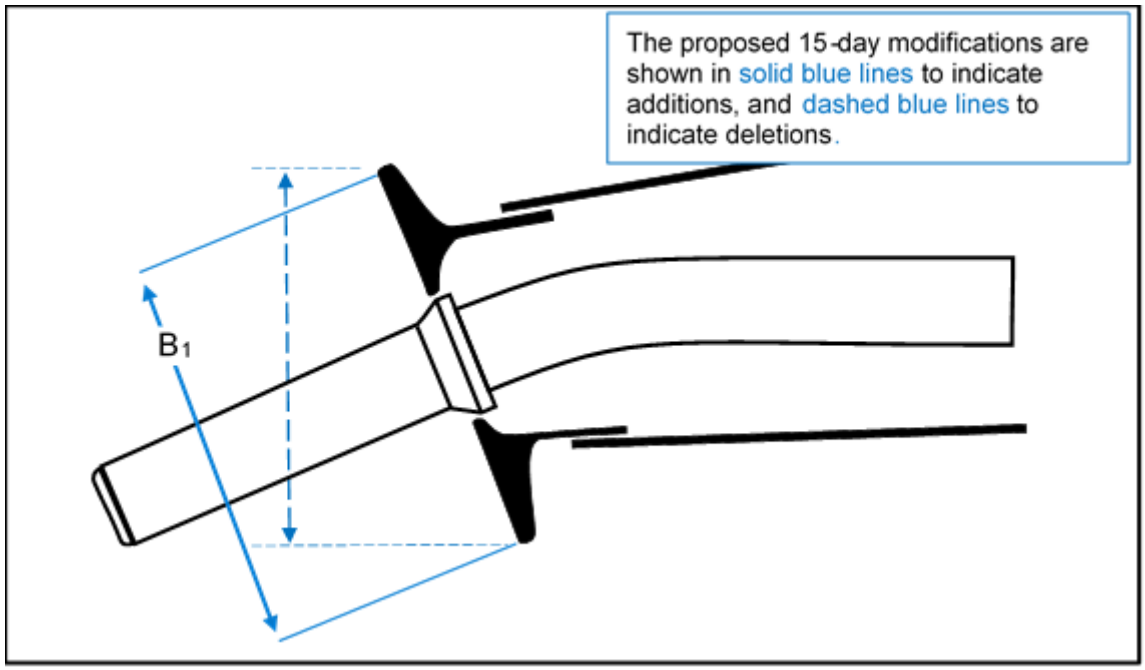


Figure 3B
ECO Nozzle Insertion Interlock Dimensions as Specified by Table 3-2



3.5.3 If an ECO nozzle spout's bend angle is outside of the range specified in Table 3-2 (S_α of 19.5° to 26.0°), the nozzle spout assembly and body must be able to be inserted within the vehicle fill pipe access zone defined by the following geometries.

(a) Zone construction of fill pipe access zone (Figure 3C).

(b) A fill pipe face that is flat within 0.25 mm profile tolerance and has a smooth surface against which an ECO nozzle insertion interlock can make contact.

(c) The fill pipe and all surrounding bumpers, body parts, and factory-installed accessories designed and fabricated so that the fill pipe access zone allows for insertion of an ECO nozzle in at least one orientation within ±15 degrees swing of the upright or vertical position. It is recommended that the zone be based on the vertical since this is the primary customer filling position.

(d) Allowance must be made for production tolerances as these are not included in the access zone.

(e) The access zone consists of three parts as follows:

(1) An insertion interlock interface zone with a fixed circular shaped cross section that is fixed relative to the sealing surface of the fill pipe and designed to accommodate the sealing portion of an ECO nozzle. Additional clearance for the ECO nozzle is prescribed per Figure 3D from the seal surface of the nozzle and pipe, a clearance inward of the pipe to a depth of 12 mm along a 40° cone to the seal surface of the fill pipe.

(2) A nozzle swing zone with a rectangular cross-section tapered at the bottom that accommodates the handle portion of a nozzle. This zone is the portion shown on Figure 3C, within the lines defined by points C, D, E, F, and G.

(3) A transition zone consisting of a smooth blend from the rectangular nozzle swing zone to the circular insertion interlock zone. The top of this transition zone is the line G-H in Figure 3C and the bottom of this zone is Line A-C.

(f) Zone construction of fill pipe latching templates (Figure 3E). The templates shown in Figure 3E are for usage with nozzle insertion clearance review. There are nozzle resting and nozzle insertion position templates.

(1) The nozzle resting position template simulates a vehicle fill pipe with a minimum height locking lip, minimum depth locking lip, and a centered pipe expansion. A cross-section and face view are shown with appropriate dimensions to simulate the worst case lower handle position when the nozzle anchor is placed into the latched position and nozzle spout end is installed into the centered expansion inner diameter.

(2) The nozzle insertion position template simulates a vehicle fill pipe with a maximum height locking lip, maximum latching lip depth and a maximum pipe inner diameter. A cross-section and face view are shown with appropriate dimensions to simulate the worst case upper nozzle swing position when the nozzle anchor is resting on the latching lip and nozzle spout end contacts fill pipe interior diameter.

(g) Zone placement (Figures 3F and 3G).

(1) For usage in vehicle clearance, align the centerline of the insertion interlock interface zone with the centerline of the fill pipe-sealing surface. See Figure 3F for example.

(2) For usage with nozzle insertion clearance, the following steps apply:

(i) Align the centerline of the insertion interlock interface zone with the centerline of the nozzle resting position template.

(ii) Superimpose the nozzle design into the model, positioning the nozzle spout into a resting position as shown in Figure 3G. No sections of nozzle can encroach the boundaries of the zone. Design should be reviewed with insertion interlock compressed to seal surface of template.

(iii) Align the centerline of the insertion interlock interface zone with the centerline of the nozzle insertion position template.

(iv) Superimpose the nozzle design into the model, positioning the nozzle spout into an insertion position as shown in Figure 3G. No sections of nozzle can encroach the boundaries of the zone. Design should be reviewed with ECO nozzle insertion interlock compressed to seal surface of template.

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Figure 3C
Fill Pipe Access Zone for Comparison to Nozzles with Spout Angles Outside of the Range Specified in Table 3-2 (S_α of 19.5° to 26.0°)

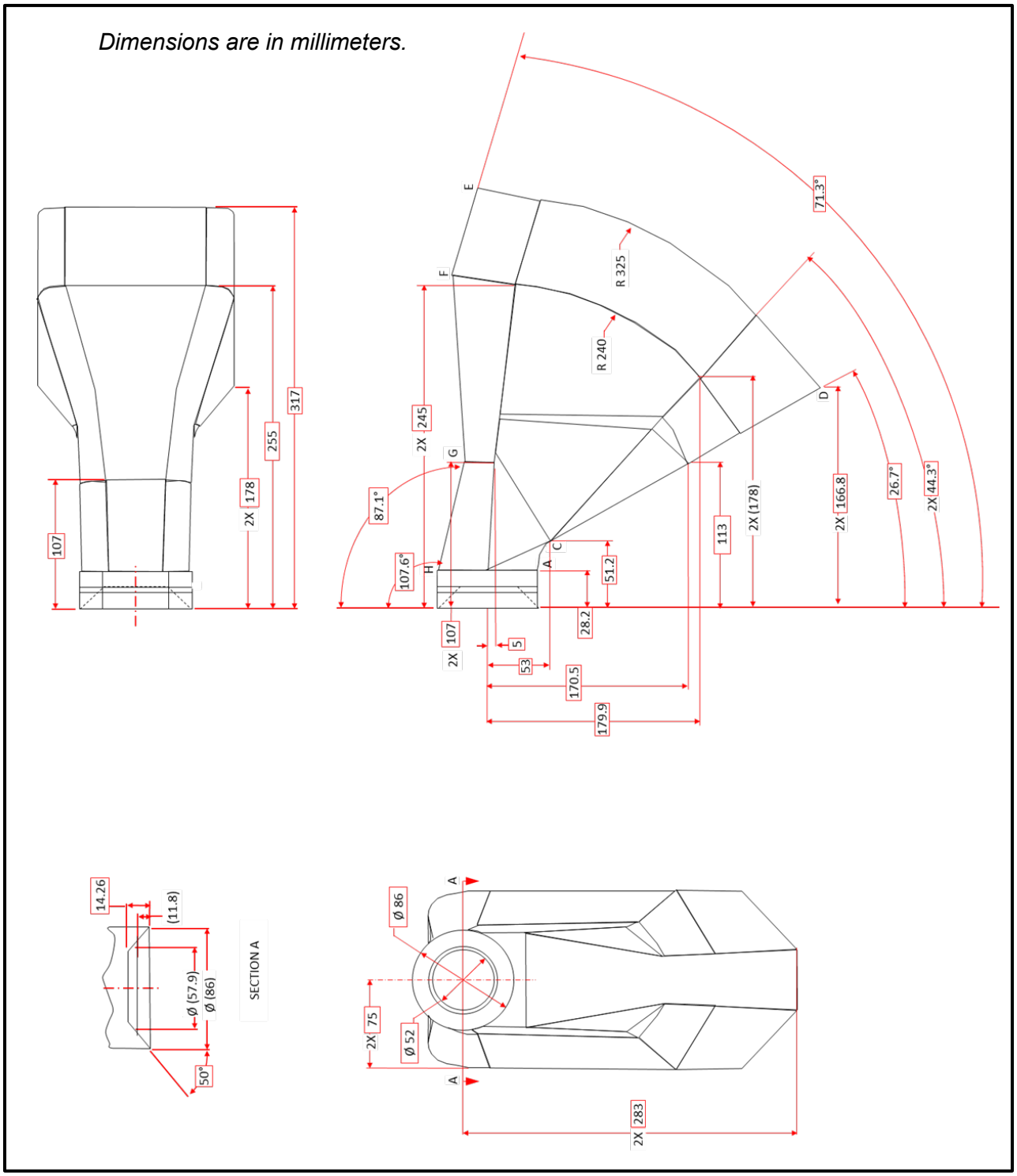
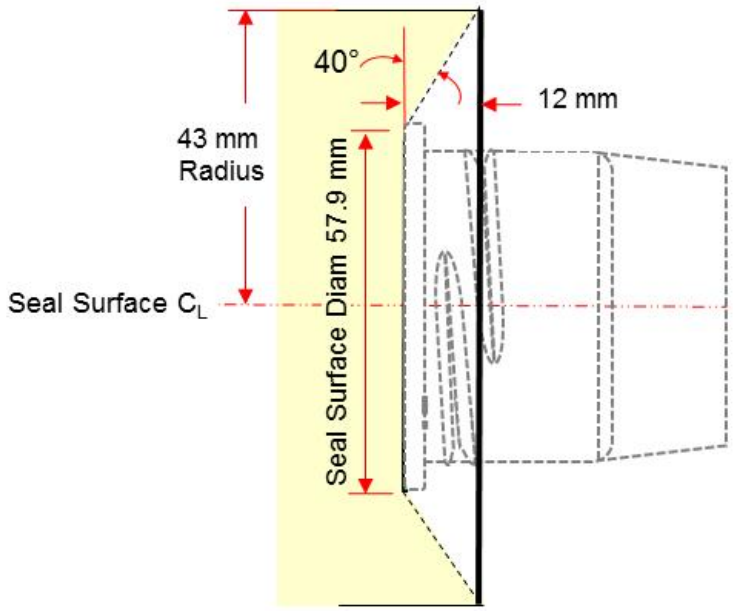


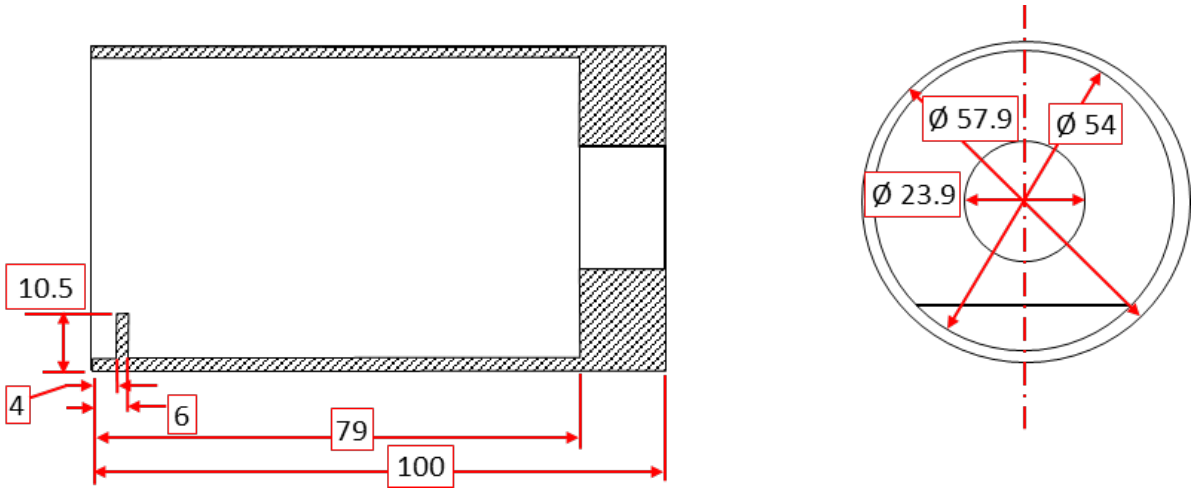
Figure 3D
Fill Pipe Access Zone for Comparison to Nozzles with Spout Angles Outside of the Range Specified in Table 3-2 (S_α of 19.5° to 26.0°)

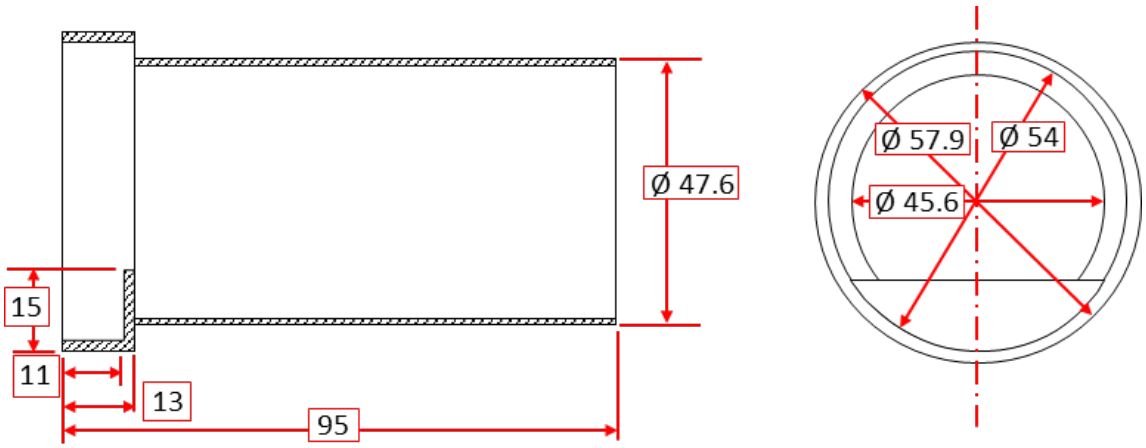


Dimensions are in millimeters.

Figure 3E
Fill Pipe Latching Templates for Comparison to Nozzles with Spout Angles Outside of the Range Specified in Table 3-2 (S_α of 19.5° to 26.0°)

A. Nozzle Resting Position Template





Dimensions are in millimeters.

Figure 3F
Zone Placement for Vehicle Usage for Comparison to Nozzles with Spout Angles Outside of the Range Specified in Table 3-2 (S_α of 19.5° to 26.0°)

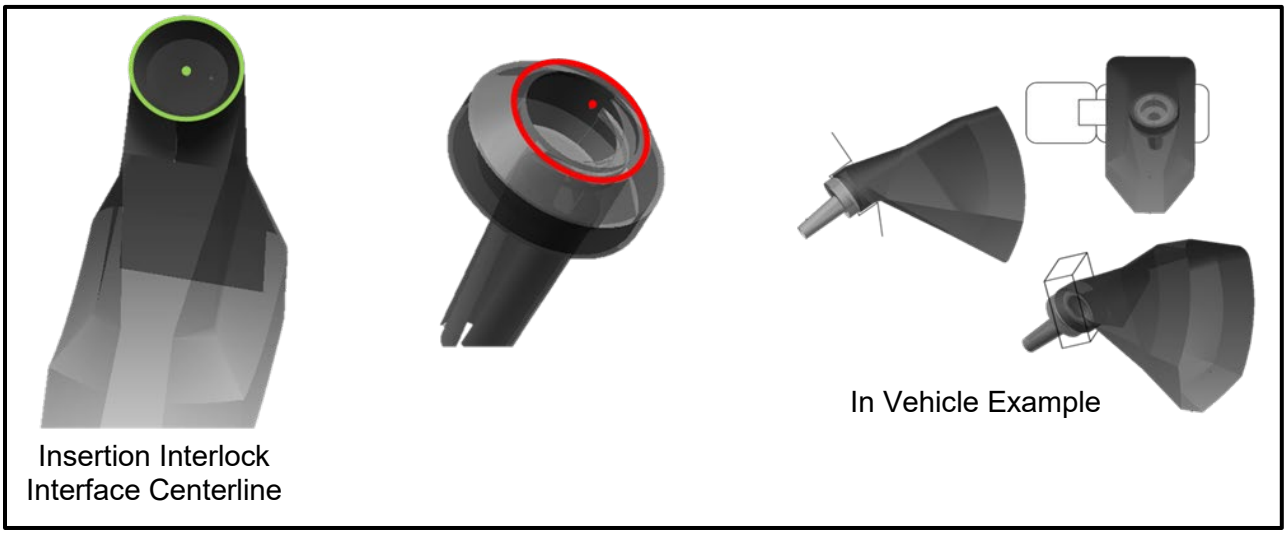
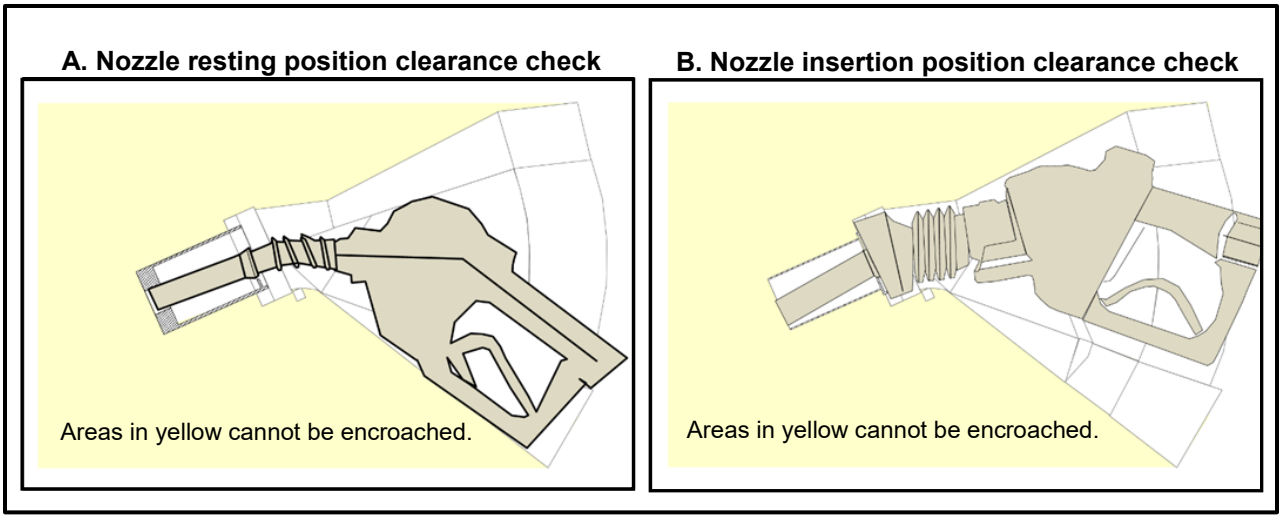


Figure 3G
Nozzle Vehicle Clearance for Comparison to Nozzles with Spout Angles Outside of the Range Specified in Table 3-2 (S_α of 19.5° to 26.0°)



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