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Date: October 11, 2024
Subject: CEN24LA189, Fuel Selector Position
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A fuel selector valve designed by Allen Aircraft Products, Inc was submitted for X-ray examination to determine if the selector was properly aligned. Per a part drawing provided by Allen, the switch was connected to a 90° ell at the same level as the inlet and outlet ports. The position of the switch controlled the orientation of the ell and thus the direction of fuel travel.

Attached images show that melted and re-solidified pieces of aluminum were attached to sections of the valve, including the right inlet port, the front of the valve, and the top of the valve where the switch control was located.

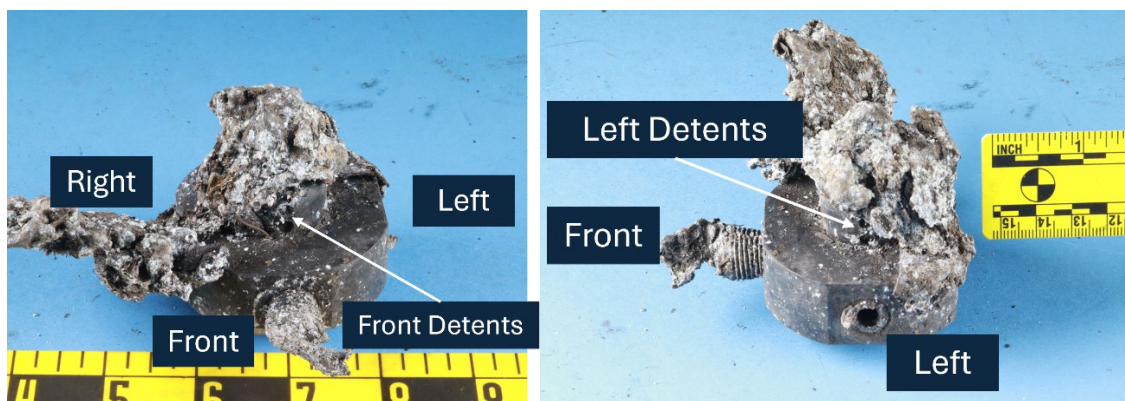


Figure 1 - Melted and Re-solidified Pieces of Aluminum Attached to Valve Sections

Radiographs of the internal features showed that the ell was not aligned with any ports. The ell was off by approximately 30° clockwise (when viewed from the top) from a position what would have connected the right and front ports. A schematic drawing is included.

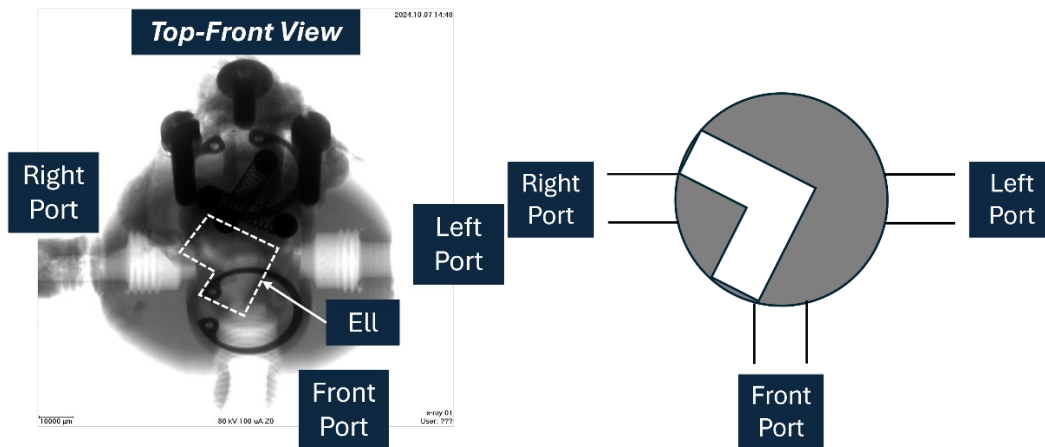


Figure 2 - Top-Front View of Fuel Selector (left) with Schematic Drawing (right)

Two of the four pairs of detents (front and left) were visible on the case from the outside. The detents were circular in shape and filled with ash. The other two pairs of detents (right and rear) were covered by the re-solidified metal mass and could not be imaged with the X-ray to determine if they were damaged. A pair of spring and ball assemblies near the top of the switch would engage with the detents as the switch was turned.

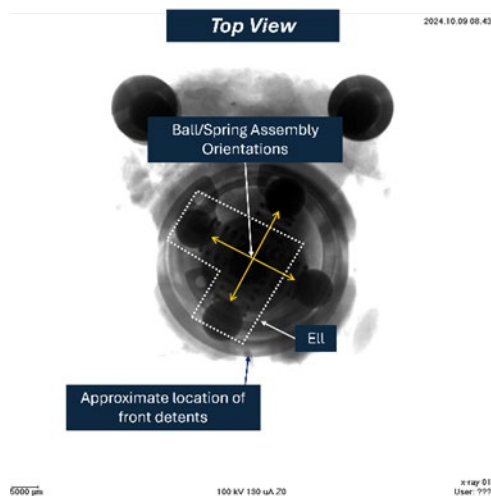


Figure 3 - Top View of Fuel Selector with Ball/Spring Assembly Orientations and Front Detents

Each assembly consisted of two balls with a spring between them. The two assemblies were offset by 90°, such that the spring of one assembly was parallel to one leg of the ell, and the spring of the other assembly was parallel to the other leg of the ell. Radiographs showed that the relative orientation of both spring and ball assemblies to the ell was consistent with the part drawing. The re-solidified metal attached to the selector prevented turning the switch to test if the assemblies and detents were still functional.