Part 573 Safety Recall Report 22V-408

Manufacturer Name : Roush CleanTech, LLC
Submission Date : JUN 09, 2022
NHTSA Recall No. : 22V-408
Manufacturer Recall No. : VA-J2044

Manufacturer Information :

Manufacturer Name : Roush CleanTech, LLC
Address : 12170 Globe Street
Livonia MI 48150
Company phone : 800-597-6874

Population :

Number of potentially involved : 3,245
Estimated percentage with defect : 56 %

Vehicle Alterer Information :

Vehicle 1 : 2016-2022 Ford (altered by Roush) E350/450, F450/550, F53/59, F650/750

Descriptive Information : Roush altered a total of 3,245 LPG-fueled vehicles between August 21, 2015, and November 16, 2021. 1,815 were originally sold for operation in Salt Belt states. Roush is working to verify how many additional vehicles are currently registered in Salt Belt states.

The population of altered vehicles covered by this report does not include vehicles altered prior to August 21, 2015 because that date is when Roush first began to install fuel return lines with zinc-plated fittings. And it does not include vehicles altered after November 16, 2021 because that date is when Roush began to use fuel return lines with additional protection.

Roush's conclusion that this report does not apply to vehicles that were not sold in or currently registered in Salt Belt states is based primarily on the following: (1) all of the 19 warranty claims that reported corrosion of a fuel return line fitting came from vehicles in the Salt Belt states; (2) Roush's inspection of 166 vehicles from various regions of the United States (the results of which are described in the "Describe the Cause" section of this report) demonstrated that there has been extremely little, if any, corrosion of fittings on vehicles outside of the Salt Belt states.

Production Dates : AUG 21, 2015 - NOV 16, 2021

Description of Defect :

Description of the Defect :	Some zinc-plated carbon steel fuel return line fittings on Gen 4 and Gen 5 Roush Cleantech LPG fuel conversion kits installed on vehicles operating in the Salt Belt states have exhibited galvanic-reaction-caused corrosion where the stainless-steel crimp collar on the fuel return line contacts the zinc-plated carbon steel fitting if the zinc-plating has been compromised by road debris pecking. If this occurs, there is a risk that the fuel line fitting could corrode to the point where LPG fuel will leak.
FMVSS 1 :	NR
FMVSS 2 :	NR
Description of the Safety Risk :	If the fuel return line leaks, it could increase the risk of a fire.
Description of the Cause :	Roush believes that a galvanic reaction can occur in Salt Belt state road conditions (i.e., a combination of road debris pecking on the zinc-plated carbon steel fitting, road salt, and moisture from snow/ice/water). This galvanic reaction can create the potential for compromised zinc plating to corrode the carbon steel LPG fuel return line fittings where the stainless-steel crimp collar contacts the fitting. Roush has concluded that this problem is limited to vehicles operating in the Salt Belt states. Roush inspected (and rated for degree of corrosion on a scale of 1 (like new) to 6 (leaking)) the fittings on 166 representative vehicles (altered Ford E/F Series vehicles and Blue Bird school buses) in multiple regions of the country. Of the 70 vehicles inspected and rated in the non-Salt Belt states, 55 were rated #1 (still looking new with the zinc plating intact), and the remaining 15 were rated #2 (little to no rust showing on the fittings). Conversely, of the 96 vehicles inspected in the Salt Belt states, only 8 received a #1 rating, 45 were rated #2, and 43 rated either #3 (red rust greater than/ equal to 50% of the inspected part) or higher.
Identification of Any Warning that can Occur :	It may be possible to observe a significant amount of red rust on the fuel return line connector fitting prior to any fuel leak.

Involved Components :

Component Name :	¼” fuel return line
Component Description :	Fuel return line assembly that includes a zinc-plated carbon steel fitting and stainless-steel crimp collar.
Component Part Number :	See MFR Comments

Supplier Identification :

Component Manufacturer

Name : Detroit Flex Defense
Address : 2921 Industrial Row
Troy Michigan 48084
Country : United States

Chronology :

In Oct 2020, Roush was informed that two Blue Bird school buses in PA had experienced apparent corrosion-caused fuel return line fitting failures about 3 weeks apart. Roush started to investigate service history, engineering and supplier quality. Several additional similar warranty claims were reported in 2021. By Spring 2022, Roush had received a total of 19 corrosion warranty claims, with no fires. None of those 19 claims involved a vehicle altered by Roush. These claims arose solely in Salt Belt states and involved vehicles with various mileage and manufacturing dates.

Roush began its Salt Belt and non-Salt Belt geographic field and laboratory investigation in 2021. In total, Roush inspected (and rated for degree of corrosion) the fittings on more than 166 representative vehicles as described in the "Describe the Cause" section above. The inspections identified the vehicle make, model, part number, part location, orientation, mileage, alteration date, geographic location, and route characteristics. Some non-leaking fittings observed with exterior corrosion were dissected to ascertain the extent of any internal compromised metal.

Roush also conducted two types of laboratory salt spray testing. The ASTM B117 salt spray testing varied the orientation of the fittings in the salt test chamber (parallel to ground, perpendicular, 45 degrees, reversed male tube directions). Roush's modified salt spray testing included a road debris pecking simulation. Roush then tested fittings equipped with additional spiral wrap protection, with braided loom protection, and with a combination of the two protections.

Based on the results of its investigation, in late May 2022, Roush decided to conduct a regional recall as described above.

Description of Remedy :

Description of Remedy Program :	Roush will notify the owners of the recalled vehicles and work with their applicable servicing dealers to replace the fuel return lines in those vehicles at Roush's sole cost. Replacement fuel return lines will include a new 5" spiral wrap covered with a 9" braided loom zip tied at each end of the spiral wrap (the "Wrap & Loom protection"). All parts and material will be supplied by Roush. Applicable servicers will be reimbursed by Roush for all associated labor costs. Roush will offer to reimburse all owners of recalled vehicles who previously paid to remedy the condition identified in this report.
How Remedy Component Differs from Recalled Component :	The remedy fuel return lines will all have the Wrap & Loom protection in place. The addition of the combined Wrap & Loom protects the carbon steel zinc-plating on the fitting from road debris pecking damage. Intact zinc-plating reduces the adverse potential galvanic reactions exacerbated by salt and moisture.
Identify How/When Recall Condition was Corrected in Production :	Roush implemented the Wrap & Loom protection in its production of altered Ford E/F Series commercial fleet LPG fueled vehicles on November 16, 2021.

Recall Schedule :

Description of Recall Schedule :	To Be Determined
Planned Dealer Notification Date :	NR - NR
Planned Owner Notification Date :	NR - NR

Purchaser Information :

The following manufacturers purchased this defective/noncompliant equipment for possible use or installation in new motor vehicles or new items of motor vehicle equipment:

Name :	
Address :	
Country :	
Company Phone :	

* NR - Not Reported