

FCA US LLC Chronology
RAM Cab Chassis Void in Transfer Case Main Output Shaft
Submitted on August 9, 2016

- On October 3, 2015, FCA US LLC (“FCA US”) became aware of a single low mileage (43 miles) warranty event in a 4WD RAM 5500 Cab Chassis (“DP”) vehicle. When brought in for service, the customer stated the “vehicle won’t move, except in 4WD.” Upon inspection, it was determined the transfer case main shaft had fractured and was replaced.
- On October 27, 2015, the fractured main shaft, which contained voids, was returned to the Tier 1 supplier for analysis.
- From October 27, 2015, to November 13, 2015, the Tier 2 and Tier 3 suppliers, with the support of FCA US Supplier Quality Engineering (“SQE”), ran various trials to recreate the chevron shaped voids.
- Effective October 29, 2015, the Tier 1 supplier implemented 100% ultrasonic inspection of all similarly produced transfer case main shafts.
- From October 29, 2015, to November 10, 2015, the Tier 1 supplier conducted third-party ultrasonic testing of potentially affected main shafts in supplier inventory, at Saltillo Truck Assembly Plant (“STAP”), and in Mopar inventory. Two main shafts with voids from Tier 1 supplier inventory were found during these inspections.
- On November 12, 2015, the Tier 1 supplier team was able to recreate the chevron shaped voids and found them attributable to a forging cycle interruption allowing parts to cool.
- Effective November 13, 2015, the Tier 1 supplier began scrapping any in process material after an interruption in the forging operation which could allow parts to cool.
- On November 17, 2015, leveraging tool change history at the Tier 3 supplier, and First In, First Out tracking, a list of potentially affected transfer cases, identified by serial number, was generated.
- On December 7, 2015, FCA US SQE notified the FCA US Vehicle Safety and Regulatory Compliance (“VSRC”) organization of the forging void. The FCA US VSRC began monitoring the suspect population based upon both motive power and PARK being retained in 4WD as well as the reported likelihood of low occurrence.
- Between April 13, 2016, and April 20, 2016, the FCA US VSRC Product Investigations became aware of two additional warranty returns with fractured rear output main shafts.
- On April 20, 2016, the FCA US VSRC opened an investigation as a result of the findings of the two additional warranty returns.
- On May 2, 2016, May 5, 2016, May 9, 2016, and May 23, 2016, meetings with the FCA US VSRC, SQE, quality, and engineering confirmed that a chevron shaped void could result in a broken main shaft which would result in a loss of torque transfer in 2WD. This loss of torque transfer in 2WD is a loss of motive power. In addition, it was determined that a loss of PARK could be experienced in 2WD.
- Torque transfer from the input to the front output would not be affected by this condition and both motive power and park would be retained in 4WD.
- On May 9, 2016 the FCA US VSRC, SQE, quality and engineering teams concurred with the supplier analysis of the three fractured parts in warranty (at 40, 73, and 375 miles) and the parts identified during inspection. It was understood that any fracture of the shaft was expected to occur at low mileage. In addition, a low occurrence of fracture is expected based upon supplier record of eight process interruptions which could allow in process parts to cool, resulting in maximum of 16 potentially affected shafts, five of which have been accounted for.
- On May 17, 2016, FCA US engineering confirmed the possibility the one piece rear propeller shafts in 144.5” wheelbase DPs may not be retained in the event of transfer case main shaft fracture as there is a serrated flange attachment at the transfer case and no center bearing attachment.
- On May 25, 2016, FCA US SQE confirmed the inspection history and documented serial numbers. The provided serial numbers and the Component Part Traceability System were utilized to generate a list of 3,113 potentially affected VINs.
- The root cause was established by the Tier 1 supplier as billet surface hardness over specification in conjunction with damaged tooling in the forging process causing forging cycle interruptions which allowed parts to cool between stations.
- As of June 6, 2016, 687 VINs in the suspect population were unsold and therefore at low mileage and still at risk of experiencing a fractured main shaft as a result of the chevron shaped voids.

- Scope was established as the 687 unsold 2016 MY RAM 3500 Cab Chassis (“DD”), RAM 3500 Cab Chassis rated for 10,000 pounds (“DF”) and RAM 4500/5500 Cab Chassis (“DP”) vehicles built between July 24, 2015, and January 7, 2016 at STAP.
- As of July 25, 2016, FCA US identified approximately zero CAIRS or VOQ’s, three warranty claims and one STAR report potentially related to this issue.
- As of July 25, 2016, total warranty is three at 0.3 c/1000 for 2016 MY. An additional two shafts containing voids were found in supplier inventory.
- As of July 25, 2016, FCA US is unaware of any accidents or injuries potentially related to this issue.
- On June 21, 2016, FCA US determined, through the Vehicle Regulations Committee, to conduct a voluntary safety recall of the affected vehicles unsold as of that date.
- On July 21, 2016, the FCA US VSRC received an email from NHTSA recommending an expansion of the vehicle scope for S48 (16V-495) to include sold vehicles in the suspect population from April 1, 2016, to June 6, 2016. The recommended vehicles added to the scope would account for vehicles which may be sold and with low mileage or those that may be work in process at an upfitter and not yet in customer usage.
- Per NHTSA’s request, on July 26, 2016, the FCA US VSRC agreed to add 243 vehicles sold between April 1, 2016, and June 6, 2016, to the original population of 687 unsold vehicles.
- The revised scope was reestablished as 930 VINs in the suspect population which may be at risk of experiencing a fractured main shaft as a result of the chevron shaped voids.
- On August 2, 2016, FCA US determined, through the Vehicle Regulations Committee, to expand the scope of recall S48 (16V-495) to include sold vehicles in the suspect population from April 1, 2016, to June 6, 2016.