

**22S11 - CERTAIN 2016-2017 F-150, EXPEDITION AND NAVIGATOR VEHICLES MASTER
CYLINDER LEAK
Amendment #2
Chronology**

In May 2016, Ford issued FSA 16S24 (16V345) for F-150s produced between August 1, 2013 and August 31, 2014 equipped with the 3.5L Ecoboost engine to address brake master cylinder fluid leakage into the booster caused by the rolling of the rearmost cup seal in the master cylinder. When the decision was made, root cause was unknown and a rate-based decision was made based on information available at that time.

After continued field data monitoring and discussions with NHTSA, Ford issued 20S31 (20V332) in June 2020, to extend the population for F-150's equipped with the 3.5L Ecoboost engine produced through August 1, 2016. This is when Hitachi implemented a corrective action, adding a silicone lubricant to the master cylinder seal. At the time of 20S31 (20V332), Ford understood the data to support the end date for that recall.

Ford continued to monitor field reports and communicate with NHTSA for vehicles outside the scope of 20S31. The monitoring included Ford Expedition and Lincoln Navigator vehicles built during the 20S31 period, which share a similar brake master cylinder design, as well as F-150 3.5L Ecoboost vehicles built after August 1, 2016. At the time of 20S31, field reports were significantly lower for both of those other populations than for the population subject to 20S31.

An updated analysis of field data in November 2021 found the report rate for Expedition / Navigator vehicles was approaching 10R/1000 for certain months of vehicle production. A total of 498 potentially related reports had been received between January, 2016 and November, 2021. In addition, field data for Expedition / Navigator and F-150 3.5L Ecoboost vehicles produced within several months post-20S31 showed increasing failure rates, though still below the rate for vehicles addressed by 20S31. A total of 231 potentially related reports had been received between June, 2020 and November, 2021. Ford reviewed this subject with NHTSA on December 8, 2021 and February 7, 2022. Investigation into supplier records and discussion with the supplier identified additional steps taken by the supplier to further improve brake master cylinder seal installation from August 2016 – December 2016. These include an automated process to remove imperfect threads from the master cylinder outlet port, as well as actions to improve installation of the rearmost cup seal in the master cylinder. Master cylinders with these improvements were incorporated into vehicle production by January 31, 2017.

On March 4, 2022, Ford's Field Review Committee reviewed the concern and approved a safety recall action.

Ford is aware of 4 low speed/low impact accident allegations with no injuries.