

Additional questions on mDrive and I-Shift:

1. What is safety risk for I-Shift case, and for mDrive case?

Base on Volvo submitted recall 13V-268, "The risk to motor **vehicle safety** is that the **stopping distance may increase if the clutch does not disengage when applying the brake pedal**, which may result in a vehicle crash."

For mDrive, if the **clutch does not disengage** when applying the brake pedal, would the same **risk to vehicle safety apply?** **No, the two switches give redundancy to the one aspect of the brake application input to the transmission. The vehicle clutch cannot override the service brakes if applied. The transmission is also looking at other inputs, vehicle forward motion, output speed, and countershaft speed.** If not, why? **If the clutch stays engaged and the brakes are applied the engine will shut down. (CC)**

2. What is the problem for I-Shift, and for mDrive?

Based on PE13-002 for I-Shift, there were total of 294 failure reports alleged I-Shift clutch not disengaging from engine as intended. **This defect (problem) involved removal of a secondary switch which was serving as a redundancy from a safety perspective. Example, if one switch failed there was an additional switch that signaled to disengage the cruise control and clutch. Therefore, the safety defect was associated with the lack of signaling (redundancy). (CC)**

For mDrive, we have total of 241 failure reports alleged same or similar failures. Can Mack/Volvo confirm those mDrive failures are not related to mDrive clutch not disengaging as intended? **The complaints and the repairs have been reviewed multiple times, while in some cases the clutch (not disengaging) due to some component failures; there are also claims for mis-plumbed trucks, Automatic Traction Control systems issues, pneumatic system leaks, entire transmission failures, range housing, clutch, flywheel issues, release bearing issues. (CC)**

3. What is the cause for I-Shift, and for mDrive alleged failure?

Base on Volvo submitted recall 13V-268, "The safety-related defect is the lack of a redundant signal in the event that the air pressure switch is not able to signal the clutch when the brake is applied"

For mDrive, if the clutch does not disengage when applying the brake pedal, what is the possible cause? **You can have internal issues with the transmission such as, input shaft, shifter forks, air leaks, gear damage, oil leaks, component system failures, pneumatic issues, flywheel, clutch damage issues etc.**

4. Why we still see claims on same or similar failures from I-Shift 2013-2016 model year field reports?

We have identified at least 15 field reports from same model years as mDrive 2013-2016 Model years alleging vehicle pulling through the brake, or transmission not disengaging. Volvo recalled 2007-2014 models with micro switch to add redundant clutch disengagement signal, and to ensure the clutch gets the disengaging signal, why clutch would not disengage? ***The signaling, brake switches are the electrical signals to the cruise control (disable), brake lights, and transmission (but not the sole source). The transmission itself, in conjunction with the engine will disengage the clutch. The clutch, flywheel and release bearing are all wear items which are used on all mechanical transmissions which could give symptoms of a clutch not disengaging entirely.***