Dual Mass Flywheel

The dual mass flywheel (DMF) can create an improved driving experience for manual shift vehicles. Vibrations and noises that occur during vehicle operation are absorbed. Fuel consumption is reduced. This results in economical driving comfort.

Benefits resulting from employing the DMF include:

- Elimination of gear rattle
- Reduced drivetrain noise
- Reduced shifting frequency
- Less synchronizer wear
- Lower engine operating speeds save fuel and reduced emissions
- Less drivetrain torque fluctuation
- Less axial vibrations

The main function of the dual mass flywheel is to absorb engine vibrations before they are transmitted to the driveline, where they may create gear rattle or excessive wear. To achieve this, the conventional flywheel is divided into two sections. The primary section
is attached to the crankshaft. The primary and secondary sections are connected through springs to isolate engine vibrations from being transmitted to the transmission. The clutch is bolted onto the secondary section of the flywheel.

Crankshaft torsional vibration occurs because each power stroke tends to slightly twist the crankshaft. When the power stroke subsides, the crankshaft untwists. One wouldn't think a crankshaft would twist to any significance, but any piece of metal always
deflects a little when a force is applied to it. The rate that these vibrations occur is referred to as the torsional frequency. Transaxles experience torsional vibrations also. When torsional frequencies of the crankshaft match those of the transaxle an effect known as torsional resonance occurs, which may cause excessive wear on the drivetrain components.

Flywheel damper springs are located behind the snowflake shaped cover on the side of the DMF closest to the engine. These are designed to dampen vibrations caused by torsional resonance which may occur when the engine rpm dips below the optimal operating range of the engine. DMF components suffer excessive wear only if the engine
is not running correctly. Poorly functioning fuel injectors, worn piston rings, worn valves and other engine conditions affecting driveability will change the resonant frequency of the engine. A change in the resonant frequency of the engine can allow the torsional frequency match between the engine and DMF to fall within the operating range of the engine. This causes the damper springs to work continuously. The friction ring located
between the inner and outer flywheel is designed to allow the inner and outer flywheel to slip. This feature saves the transmission from damage if torque loads exceed the apacity of the transmission. The friction ring will wear out if excessive torque loads are continuously applied. A sealed double row center ball bearing carries the load between the inner and outer halves of the DMF. The cause of center bearing wear may berelated to out of balance vibration caused by not aligning the pressure plate with the DMF dowel pins. The center bearing may also wear if the clutch pilot bearing is damaged by a worn transmission input shaft. The pilot bearing is a caged needle roller bearing. If it is damaged, the transmission must be repaired or replaced. If the input shaft is not repaired correctly or replaced, the lack of input shaft support will damage the center bearing.
For the dual mass flywheel to work correctly, it is precision machined and balanced at the factory.

Therefore, the following service precautions must be followed for the DMF to work correctly.
Precautions:

1. DO NOT machine or resurface the dual mass flywheel as it may affect its balance. If the dual mass flywheel is damaged, REPLACE it.
2. ALWAYS replace the flywheel attaching bolts when changing the dual mass flywheel.
NOTE: The flywheel attaching bolt, the clutch disc, the pressure plate and the starter are unique components for installation with the dual mass flywheel.