TRANSFER CASE

Transfer Cases are very sensitive to any external changes due to their integration with the rest of the powertrain control system in today’s vehicles. IN GENERAL, THE NUMBER ONE REASON FOR A TRANSFER CASE FAILURE OR CONCERN IS THE TIRES.

Tire size (NOT THE SIZE MARKED ON THE SIDEWALL) and proper inflation are key components. All the tires installed on the vehicle must be within 1/4 inch overall circumference. That measurement must be taken by actually measuring the circumference of the tire or doing a tire roll out test. Mismatched tires will damage the viscous coupling in a Transfer Case and will also damage Differentials.

Proper tire pressure must be maintained. One under-inflated tire can cause the Transfer case not to shift out of four-wheel drive to two-wheel drive. The unit will shift fine when on a lift and the wheels are unloaded. The reason is the computer monitors the wheel/shaft speeds and any difference is identified as slip and activates the clutch packs.

No transfer case can be operated on the highway in four-wheel drive high or low without having problems. Those modes are for use on snow, grass, mud, sand or loose gravel – not on hard pavement – even in the rain.

All transfer cases with 2 speeds have idling planets and will have some noise when unloaded. Do not assume the Transfer Case is bad because it sounds noisy on the lift. Test drive the vehicle.

Some Transfer Cases may exhibit a high pitched whine when first installed. This may be related to a speed sensor not installed properly and hitting the sensor tone wheel. Make sure all speed sensors are installed correctly and reading correctly.

Assure the correct fluid, and additive if required, is used for each individual type of Transfer case. This will avoid concerns with excessive slippage or chatter of the clutch packs and couplers.

Keep dirt and water from intruding into the wiring or the encoder motor. Corrosion or faults in the harness may cause the computer to read the incorrect resistance and make unwanted shifts to a different range.
Leaks from the axle housing can be caused by several factors.

- Worn axle shaft seal surface
- Over full fluid level
- Damaged seal lip
- Worn Pinion Shaft seal surface
- Improperly tightened differential cover
- Missing gasket between the transmission and the transfer case
- Wrong or missing vent

Front and Rear Differential

Noises, vibrations and other abnormal driving characteristics can help to diagnose a differential or driveline problem. Here are a few of the symptoms and their possible cause:

- Whirring noise while decelerating at all speeds is most likely caused by bad pinion bearings or incorrect pinion bearing preload, and almost never by bad ring and pinion gears.
- A howl or whine during acceleration over various speed ranges is usually caused by worn ring and pinion gears or improper gear set up (if just after install).
- Howl, Whir or Growl on acceleration may be due to lack of lubrication or overloading.
- Rumbling or whirring at speeds over 20 mph can be caused by worn carrier bearings. The noise may change while turning.
- Wheel hop or chatter on turns can be caused by the wrong lubricant, worn positrackion clutches or lack of lubrication.
- Regular clunking every few feet may indicate broken ring or pinion gears.
- Banging or clunking only on corners can be caused by broken spider gears, lack of sufficient positrackion lubrication, or worn positracton clutches.
- Rumble while turning may indicate bad wheel bearings.
- A steady vibration that increases with the vehicle’s speed can be caused by worn u-joints or an out of balance driveshaft.
- Clunking only when starting to move or getting on and off the gas might be loose yokes, bad u-joints, worn transfer case or damaged transmission components.
- Binding, noise and premature failure of the differential components may be caused by misalignment of the unit, axles or drive shafts.
- Vibration and a rattle noise while turning can be caused by a damaged or worn axle shaft or CV joint.