

## GENERAL INFORMATION

### NV247 TRANSFER CASE OPERATION

The NV247 [NV247 Transfer Case](#) is an on-demand 4-wheel drive transfer case with two operating ranges and a neutral position. Operating ranges are 4-high and 4-low. The 4-low range is used for extra pulling power in off-road situations.

Under normal driving conditions, the system operates conventionally, and the majority of available torque is applied to the rear wheels. However, when front-to-rear wheel speed variations exist, the progressive differential transfers torque to the axle with the better traction, thus minimizing wheel spin and maximizing control.

The key to this design is a progressive coupling [Progressive Coupling](#), which is supplied with pressurized oil by a gerotor style pump. The pump rotor and case are driven by the front and rear driveshafts respectively, and deliver pressurized oil flow to the coupling in proportion to their speed difference. The progressive coupling contains a multi-disc clutch pack that is alternately splined to the front and rear driveshafts, and controls torque variation between the front and rear driveshafts as dictated by the pump.

A set of orifices and valves control the speed-differential starting point and rate of torque transfer rise in the clutch. This allows the system to disregard the normal speed differences between axles that result from variations in front-to-rear loading and typical cornering.

Transfer case operating ranges are selected with a floor mounted shift lever. The shift lever is connected to the transfer case range lever by an adjustable cable. Range positions are marked on the shifter bezel plate.

**NV247 DIAGNOSIS**

<b>CONDITION</b>	<b>POSSIBLE CAUSE</b>	<b>CORRECTION</b>
TRANSFER CASE DIFFICULT TO SHIFT OR WILL NOT SHIFT INTO DESIRED RANGE	1. Vehicle speed too great to permit shifting	1. Reduce speed to 3-4 km/h (2-3 mph) before attempting to shift
	2. Transfer case external shift cable binding	2. Lubricate, repair or replace cable, or tighten loose components as necessary
	3. Insufficient or incorrect lubricant	3. Drain and refill to edge of fill hole with Mopar ATF PLUS (Type 7176) or DEXRON II Automatic Transmission Fluid
	4. Internal components binding, worn, or damaged	4. Disassemble unit and replace worn or damaged components as necessary
TRANSFER CASE NOISY IN ALL MODES	1. Insufficient or incorrect lubricant	1. Drain and refill to edge of fill hole with Mopar ATF PLUS (Type 7176) or DEXRON II Automatic Transmission Fluid. <b>If unit is still noisy after drain and refill, disassembly and inspection may be required to locate source of noise</b>
NOISY IN - OR JUMPS OUT OF 4WD LOW RANGE	1. Transfer case not completely engaged in 4WD LOW (possibly from shift to 4L while rolling)	1. Stop vehicle, shift transfer case to neutral, then shift back to 4WD LOW
	2. Shift linkage loose, binding, or is misadjusted	2. Tighten, lubricate, or repair linkage as necessary. Adjust linkage if necessary
	3. Range fork cracked, inserts worn, or fork is binding on shift rail	3. Disassemble unit and repair as necessary
	4. Annulus gear or lockplate worn or damaged	4. Disassemble unit and repair as necessary
LUBRICANT LEAKING FROM OUTPUT SHAFT SEALS OR FROM VENT	1. Transfer case over filled	1. Drain to correct level
	2. Vent closed or restricted	2. Clear or replace vent if necessary
	3. Output shaft seals damaged or installed correctly	3. Replace seals. Be sure seal lip faces interior of case when installed. Also be sure yoke seal surfaces are not scored or nicked. Remove scores and nicks with fine sandpaper or replace yoke(s) if necessary.

## **NV247 COMPONENTS**

### **GENERAL**

Clean the transfer case components with parts cleaning solvent. Flush the oil passages in the cases and drivetrain components with solvent. This will help remove dirt and particles from these passages.

Dry the transfer case components with compressed air or allow them to air dry on clean shop towels.

Apply compressed air through all oil passages in the cases and gear components to clear them of any residue.

### **MAINSHAFT**

Examine the mainshaft components carefully for evidence of wear or damage.

Replace the thrust washers if worn or damaged.

Replace the mainshaft and sprocket gears if the teeth or gear bores are worn or damaged.

Replace the mainshaft bearings if worn, flat spotted, brinelled, or damaged in any way.

Replace the mainshaft if it is bent, exhibits wear or damage to the bearing surfaces, splines or gear teeth.

### **INPUT AND LOW RANGE GEARS**

Inspect the low range gear pinions and pinion pins. Replace the low range gear if any of the pins or pinions are worn or damaged.

Inspect the thrust washers, retainer, and snap-ring. Replace the snap-ring if bent, or distorted. Replace the thrust washers and retainer if worn, cracked or damaged in any way.

Examine the input gear carefully. Be sure the gear teeth and bearing surfaces are in good condition. Replace the gear if wear or damage is evident.

Check the input gear pilot bearing. Rotate the bearing and check for roughness or noise. Also check bearing position in the bore. The bearing should be recessed approximately 2.5 mm (0.100 in.) below the top edge of the bore. The bearing should not be seated at the bottom of the bore. Replace the bearing if worn, or roughness is evident. Replace both the gear and bearing if the bearing is a loose fit in the bore.

### **GEAR CASE AND RETAINERS**

Examine both case halves and retainers carefully. Replace any retainer or case half if wear, cracks, or other damage is evident.

Check condition of the low range annulus gear and the shift rail bushing in the front case [Low Range Annulus Gear Location](#). The low range annulus gear is not a serviceable part. Replace the gear and

case as an assembly if the gear is loose, worn, or damaged. The shift rail bushing is a serviceable part and can be replaced if necessary.

Check the bushing in the rear retainer. Replace the bushing if worn or scored.

Examine the sealing surfaces of both case halves and retainers. Small burrs, or scratches on these surfaces can be reduced with crocus cloth or a fine tooth file.

Examine condition of the shift rail bushing in the front case. If the bushing is worn or damaged, it can be removed with a blind hole type puller. A replacement bushing can be installed with a suitable size driver. Recess the bushing slightly below the edge of the bore but do not seat it all the into the case.

## **GEARTRAIN**

Inspect the mainshaft splines, gear teeth and bearing surfaces carefully for evidence of wear, or damage. Replace the shaft if necessary. do not attempt to salvage it if damaged.

The shift rail and range fork are an assembly. Replace both parts if either is damaged. However, the nylon pads in the fork can be replaced if worn, or cracked.

Inspect the transfer case snap rings closely. Do not attempt to salvage a distorted snap ring by straightening or reshaping it. Replace any snap ring that is distorted, or worn.

Inspect the low range gear, input gear and the gear thrust washers retainer, and snap ring. The low range gear is serviced as an assembly only. Replace the gear if the case or pinions are damaged.

During inspection, also make sure the seal surface of the input gear is in good condition. Minor nicks on this surface can be reduced with crocus cloth. However, replace the gear if the seal surface is severely scored or worn.

## **OIL PUMP AND PROGRESSIVE COUPLING**

The oil pump and progressive coupling are not serviceable components. Replace the coupling as an assembly if it is leaking or damaged. Replace the oil pump as an assembly if the gear teeth are worn, or if the pump has become damaged.

## **BEARINGS AND SEALS**

The transfer case seals should be replaced during overhaul. Use new seals in the input gear bearing retainer, front case and rear retainer. Also replace the yoke seal washer and the detent plug O-ring.

Check condition of each transfer case bearing. Replace any bearing exhibiting signs of roughness, wear, or damage.