

# Problems with the MP Transfer Case



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The MP families of transfer cases were introduced in the 2007/2008 model years as a replacement for the NVG transfer cases. Built by Magna Powertrain (MP), the transfer cases are available in several models:

- Manual Shift (RPO NQG; Models 1222/1225/1226)
- Electric Shift (RPO NQF; Models 1625/1626)
- Auto Trac (RPO NQH; Models 3023/3024)

Like other mechanical things, MP transfer cases have their share of quirks and problems. As with an automatic transmission, the key to making money repairing these units is to know what to look for and what to do once you've identified a problem.

Several updates have been implemented by Magna to address many of the problems you may experience. So let's take a few minutes to bring you up to speed.



MP SLINGER

## Transfer Case Chain Stretched

On applications that are used off road or on roads with standing water,

some customers may comment that they hear a popping noise, especially on turns, in 4WD or Auto mode.

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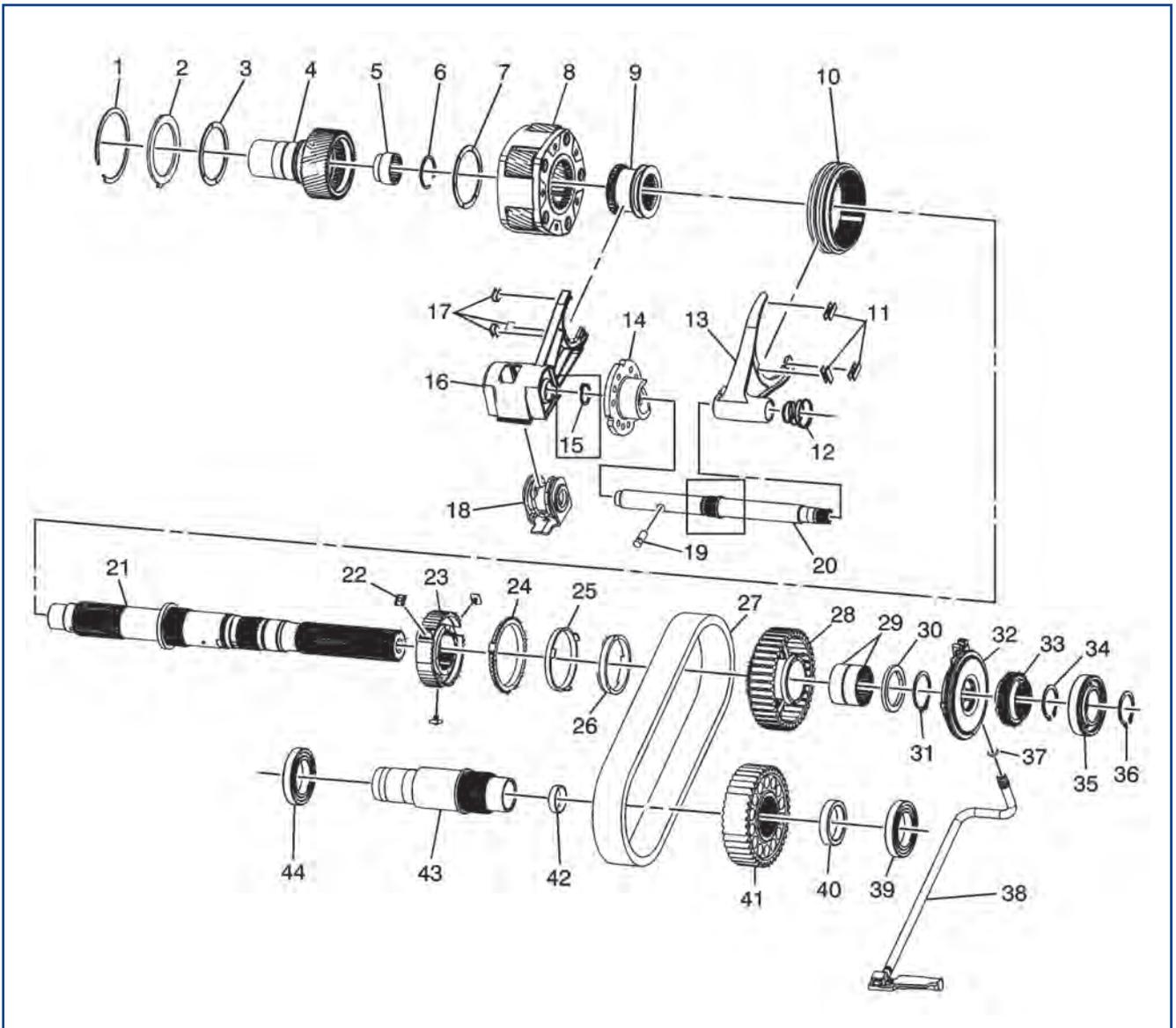
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MP T Case NQF 1st Design

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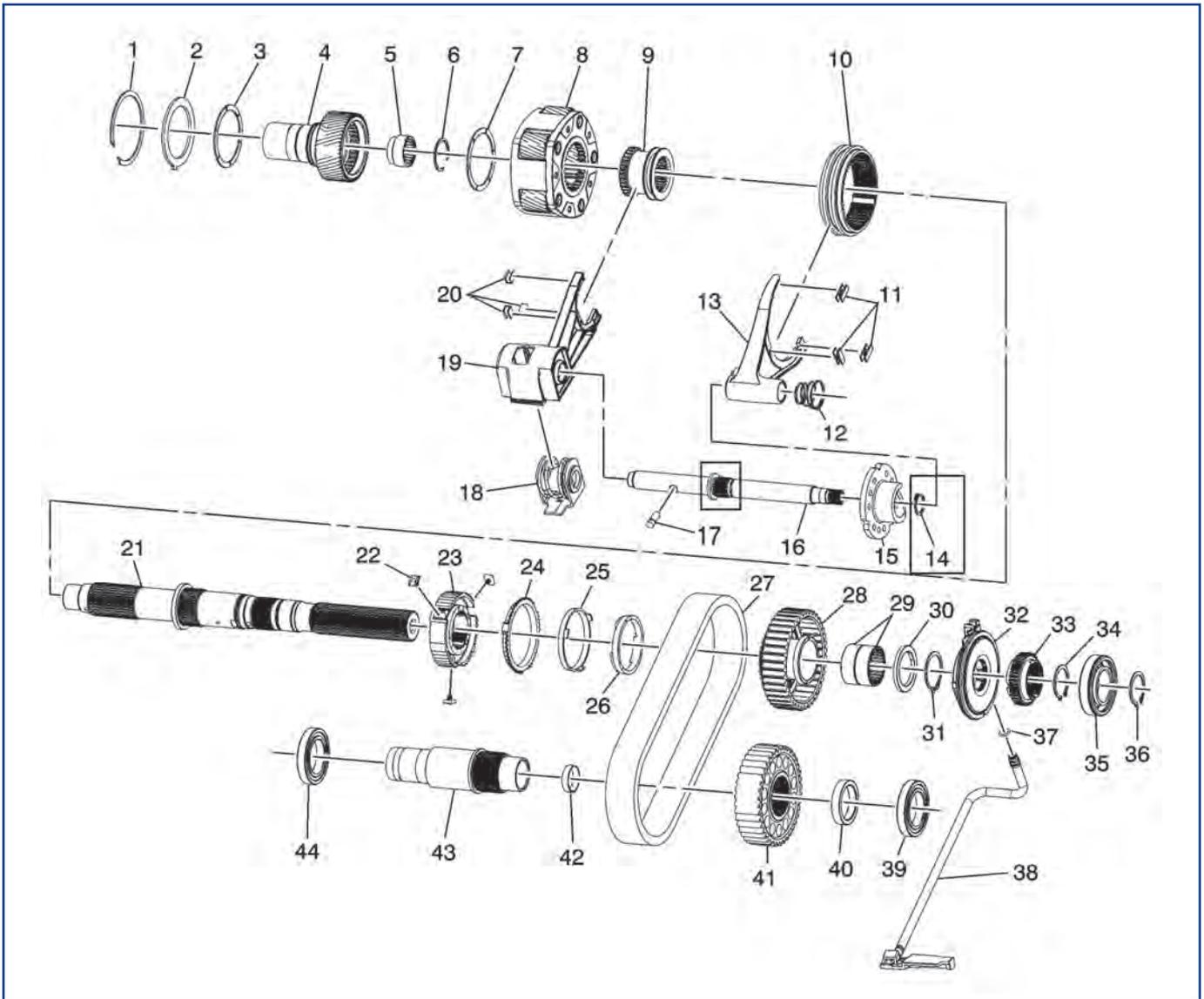
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MP T Case NQF 2nd Design

**The new seal is similar to a Stemco or Scott seal that you may have seen on some HD truck wheel bearings. Because of the internal seal design it is critical that you install the seal to the correct depth in the front case half.**

Upon inspection you may find that the transfer case has taken on water. Water contamination will cause the chain to rust, leading to accelerated

wear of the chain links and other transfer case components.

If water has gotten into the transfer case, chances are the front output seal probably allowed the water in. The early seal design was unable to shed the large volume of water that struck the front propeller shaft area from the front tires and road surface.

To address this, GM and Magna developed a new design front seal and added a shield to the front output shaft. The new seal will retrofit all MP transfer case applications and will be available early 2011.

The new seal is similar to a Stemco or Scott seal that you may have seen on some HD truck wheel bearings. Because of the internal seal design it is critical that you install the seal to the correct depth in the front case half. It

should be flush with the case half.

If you install the seal too deep, it'll fail prematurely due to the pressure placed on the internal lips of the seal. If you don't install it deep enough the seal could fail to keep water out.

A shield has been added to act as a deflector for the seal. To mount the shield, a small amount of material was machined from the front output shaft in the shield area. If you want to add a shield to your application you either need to replace the front output shaft with the updated design or have your shaft machined.

### Input Shaft Seal Leaks

Some technicians may experience a comeback due to a transfer case input shaft seal leaking after repairs were performed on the transfer case. The seal

is available in two versions: a single-lip and double-lip design.

If you use the wrong seal, the seal may fail. This may lead to an external leak or to an increase in transfer case fluid level, depending on the situation.

The 6L80/6L90 transmission applications use a *dry* transfer case 4X4 adapter and require a single-lip seal, GM P/N 19133156. All other transmissions utilize a *wet* transfer case adapter and require a double-lip seal, GM P/N 19133155.

### Transfer Case Hard Shifting; Possible Noise

The complaint will usually involve a problem shifting the transfer case. This may also include a noise from the transfer case. Upon inspection you may find the shift lever bearing has failed.

The bearing likely failed because it overheated. This was due to the centerline of the lever balls being located off center from the lever. This resulted in uneven pressure on the bearing. This condition was common on the light duty versions of the MP transfer case.

The heavy duty versions didn't usually have this problem.

To repair this, GM/Magna are now using the HD shift levers in all applications. The HD levers use smaller balls (3mm smaller) and thicker collars to apply pressure more evenly to the bearing while improving the heat transfer from the lever bearing. The updated parts are:

- Lever 19168254
- Lever 19168255
- 10mm balls 19168257

### New Transfer Case Motor

The shift motors on electronic shifted MP transfer cases now come from a different supplier for all NQF/NQH models.

The previous design motors were built by Bosch. The new motors are from Daewoo and are designed to interchange with the previous design motors. The appearance of the motors may vary slightly but the new motor will retrofit older units without any modifications.

As with the Bosch motor, you'll

**Upon inspection, you may notice that the range fork and its pads are worn. This was due to the amount of contact area available with the older design range fork and its pads.**

need to perform the motor relearn procedure any time you've replaced the motor.

### Grinding, Pops Out of Gear

Upon inspection, you may notice that the range fork and its pads are worn. This was due to the amount of contact area available with the older design range fork and its pads.

To address this issue a new design

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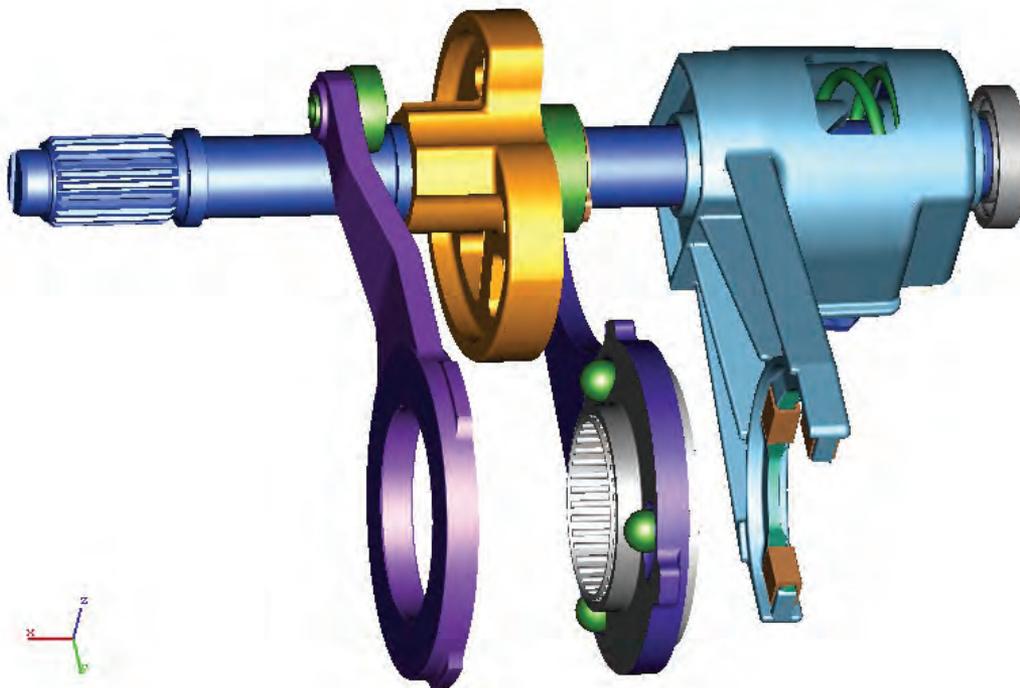
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NQH Shift System

**NQF (electric shift model) applications may experience shift problems on early design units (2007-2009). If the condition is present, the transfer case may fail to complete the shift or it may fail to shift again once the shift has been completed.**

range fork has been released. The new *horseshoe* design fork and pads are designed to increase the amount of surface area available, thus spreading the load over more of the fork.

In addition, the diameter of the flange where it contacts the shift sleeve has been increased from 73mm to 76mm, to spread the load over more area, reducing fork and sleeve wear. The updated fork and sleeve will retrofit previous model years.

### Rear Seal Leak

The rear output shaft seal on the NQH, NQF and NQG transfer cases may leak fluid. An updated seal is available that provides improved wear and temperature performance. The new seal is available as part number 24226707.

### Won't Shift

NQF (electric shift model) applications may experience shift problems on early design units (2007-2009). If the condition is present, the transfer case may fail to complete the shift or it may fail to shift again once the shift has been completed. In addition, you may find a DTC C0387 or C0569 in TCCM memory.

NQF Models — The snap ring (#15 in parts book) on the shift shaft may have popped out of its snap ring groove. This is due to the end thrust on the snap ring during the shift.

To repair the condition, an updated shift shaft has been developed. The updated shaft has a flange built into it to prevent the end thrust from reaching the snap ring. To repair the condition, you'll need to install the updated shaft and hardware. As noted in the picture,

the position of the components will change with the 2<sup>nd</sup> design shaft and hardware.

The updated parts are:

- Shaft 19210805
- Cam 19210806

NQG/NQF Models — The synchronizer ring may have separated from the body of the drive sprocket. This will prevent the synchronizer from operating, which may lead to gear clash during the shift. If the ring is loose, replace the drive sprocket, synchronizer, blocking ring, and blocking ring inner and outer rings.

Well as you can tell, diagnosing and repairing problems with the MP transfer cases is really not as big a deal as you might think. A little patience, a little background on these units, and you'll be making money like a broker on Wall Street... well, maybe not quite that much money!

Until next time, remember: "Life is like riding a bicycle; you don't fall off until you stop pedaling."



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