

Noise: The Worst Nightmare That We Face On A Regular Basis



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Contributing Editor

Nothing is more frustrating or disappointing to me than to answer a call on our tech hotline and find the caller has a noise problem. I sincerely want to help every customer who calls to the best of my ability, but noise is almost impossible to fix over the phone.

Sherlock Holmes, Hercule Poirot and other detectives of legend all had one thing in common. They worked through the process of elimination. We have to do the same. Weed out all the areas that are not causing the problem, and what is left will be the source of the complaint. First we must arm

ourselves with some important equipment:

1. Knowledge of powerflow – You won't fix it if you don't know how it works.
2. Repair manuals – Give you assembly data, endplay specs, fluid types, torque values, etc.
3. Proper tools – precision measuring tools, bearing pullers, bearing and seal installers, etc.

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Put an End to Transfer Case Failures For Good!



Extreme HD • AWD-To-Part-Time Conversions
Slip-Yoke Eliminator Kits • AWD Low-Range Lockups
AWD Viscous Eliminators

JEEP TRANSFER CASES

All Jeep Transfer Cases are Remanufactured with the Latest O.E. Components

*Includes New Morse Chain

WRANGLER - YJ, TJ, NV231J, NV241J

CHEROKEE - XJ, NV231J, NV242J, NV249J

LIBERTY - KJ, NV231J, NV242J

GRAND CHEROKEE - ZJ, WJ, WK, NV140J, NV147J, NV231J, NV242J, NV245J, NV247J, NV249J

CHEROKEE/WAGONEER/J10 - NP208J, NP219J, NP228J, NP229J

Rockland Standard Gear can custom fit all of these transfer cases to any TJ, YJ, ZJ, WJ, XJ & KJ model

231J Command Trac w/ Slip-Yoke Eliminator

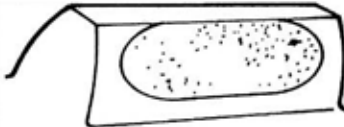
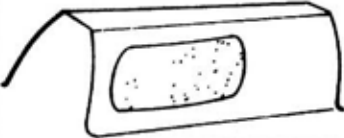
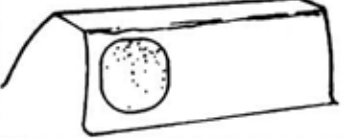
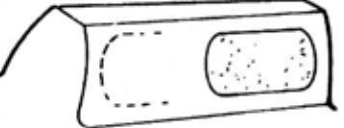
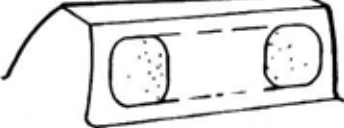






247J & 249J AWD

Non-viscous – more MPG, less wear
Perfect for warmer climates
Retains safety of AWD



Gear Tooth Contact Patterns

Description	Accept	Reject
Desired Contact Pattern		#1
End Contact Pattern		
Traveling Contact Pattern (Moves From Side To Side)		
High Contact Pattern		
Low Contact Pattern		

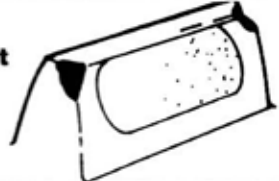
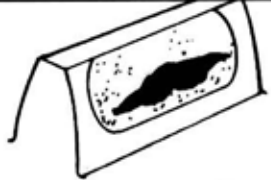
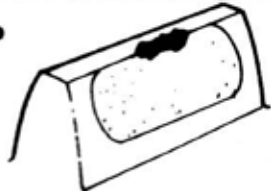
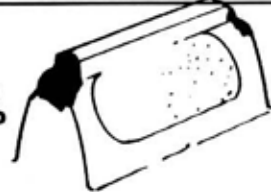
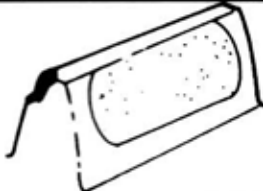
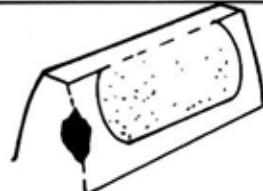
4. The facts – For example, was the unit noisy during the initial road test? What were the customer's complaints? Who road tested the vehicle for the shop? Was it drivable?

The fix starts when you first look at the vehicle. There is no such thing as a "casual" road test. The information you get from that test drive will influence everything you are about to do to the car. Radio off, clean sheet of paper and pen, customer with you if possible, pay attention as if your wallet depended on it. Even if the car is

not drivable, there is a lot to learn. Check the condition of all external elements that can have an effect

on the trans. Use common sense when you take a unit apart. If you get one that was run dry and the

gear train is black and blue, there is NO way to ensure quiet operation after repair. If you have a unit that has been run with bad bearings for a period of time, inspect the gear train with a fine-tooth comb, looking for abnormal wear patterns. Think about it – the gears have been running off centerline for some time, putting angles and endplay into the gear mesh that were never intended. Look at each gear and shaft. Are they

Repair	Reject
<p>Corner Chip At Drive Face</p> 	<p>Chip Within Contact Pattern</p> 
<p>O.D. Edge Chip At Drive Face May Extend Slightly Into Contact Pattern</p> 	<p>Chip Completely Through Tooth (Considered To be Broken)</p> 
<p>Corner Chip At Coast Face</p> 	#2
<p>Side Edge Chip At Drive Face</p> 	

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galled, worn thin, changed in profile? During the repair, new bearings will re-establish the gears on center, but previous wear and tear may generate noise.

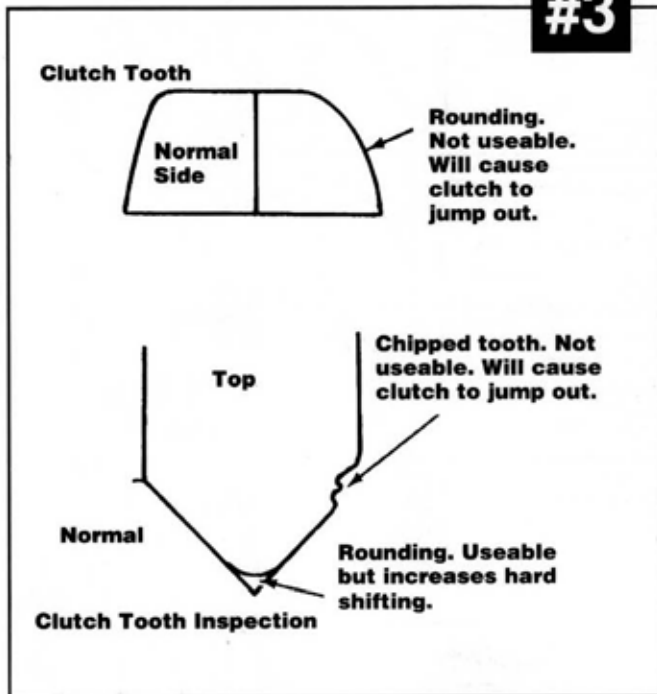
Types of powertrain make a difference. Diesel engines; odd firing engines; power plants with

stant point of reference. I don't care how good the bearings look, replace them with new quality parts. Proper bearing and race installation is a must. Use the proper tools to install bearings. I see many bearings that were installed with a hammer and chisel. Check

gear backlash. Every transmission gear will have backlash against the opposing gear it mates with. The only way to know what amount of backlash is correct is through some service manuals and your own "feel" from experience. A good rule of thumb is to look for any one gear that has more backlash or is much "tighter" than the others; that is the guy that

the noise is in the unit. Noise will walk through driveshafts, rears, transfer cases, hubs, misrouted shifter or speedo cables, clutch components, etc. Working on the wrong end of the horse is a real waste of time. Once it is confirmed that the trans is the guilty party, we have to isolate which components are involved.

Understanding powerflow is now critical in eliminating those parts of the trans that are not involved. If you took my advice and changed all the bearings and set the endplay and preload correctly, these items should not be the problem. Get used to cataloging noise by type. Gear noises are different from bearings; shift-fork rattle is not the same as a synchronizing squawk. As you test drive more cars learn to match the noise they made to the root cause of the problem. These are tough problems to diagnose, but you never learn anything from the units that go in the car and work perfectly. The more detail oriented you are during your test drives, teardown and rebuilding, the less time you will spend on comebacks. **TD**

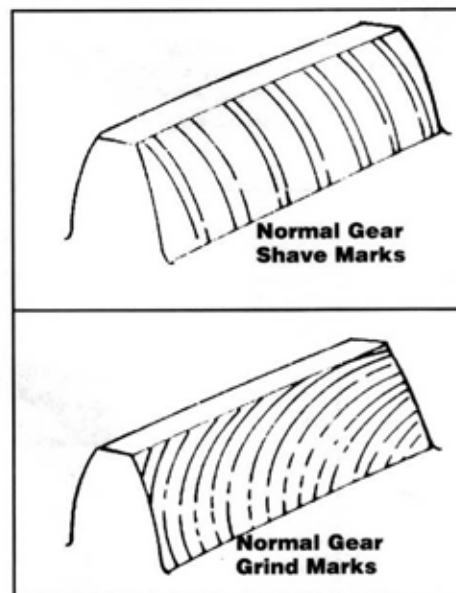


bore, stroke or cam modifications, or out-of-tune or missing motors can create gear rattle or neutral rollover noise. Many older-design transmissions are noisier than their modern counterparts. People who grow up with present day technology often complain when they get behind the wheel of an older car or truck. Most transfer cases use straight-cut gears for planetary low reduction and are inherently noisy. Don't promise to quiet something that will never be quiet.

Proper rebuilding technique goes a long way in preventing noise complaints. Knowing endplay before teardown and after rebuild will be the start of consistently good repair. Prelube every moving part during assembly. Replacing all main and thrust bearings in a unit gives you a con-

may be the problem.

When confronted with a unit that makes noise, begin the process of elimination, making sure



THE BOTTOM LINE:

Tell us your opinion of this article:

Circle the corresponding number on the free information card.

99 Useful information.

101 Not useful information.

102 We need more information.

Accept Gears With Normal Tool Marks, But Reject If Roughness Or Ridges Are Present On Tooth Face

#4