



More Mitsubishi

The KM200 Series Transaxles

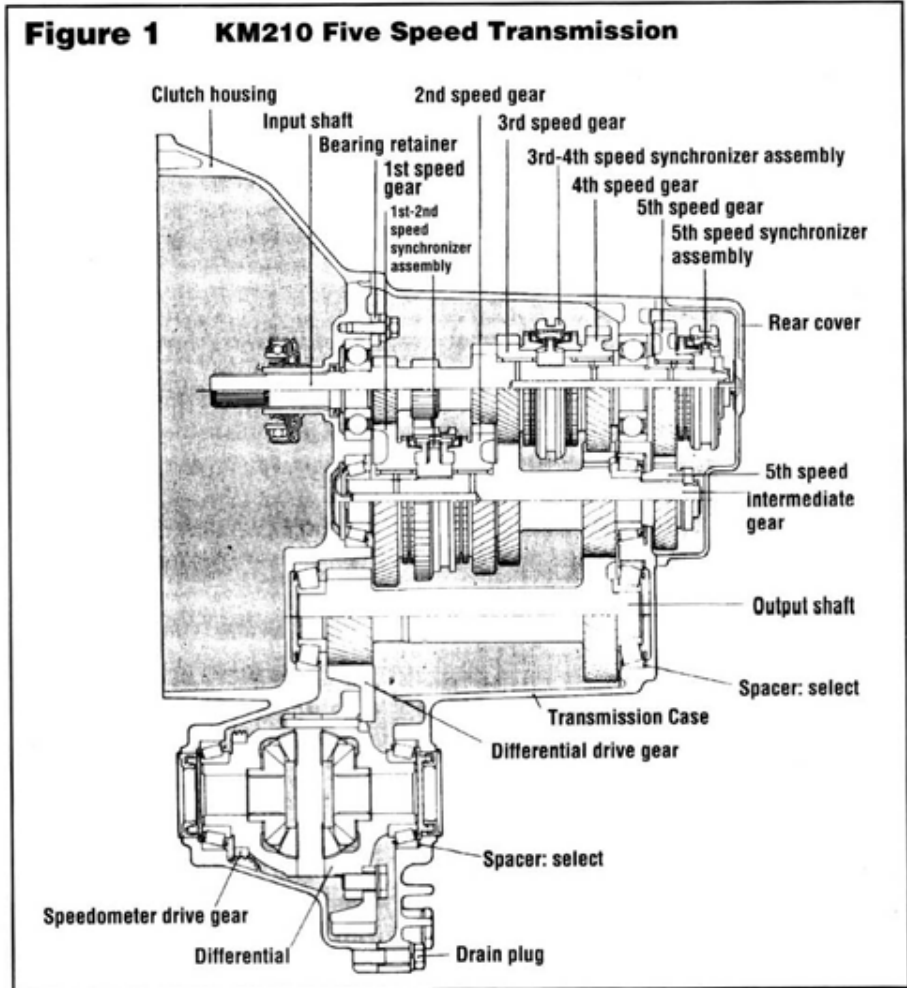
By Mike Weinberg
Contributing Editor

Mitsubishi manufactures a broad line of vehicles which show up in our shops under different model badges. The Chrysler imports (Eagle, Dodge Colt, Stealth, etc.), Hyundai and Mitsubishi vehicles all share the same designs. Ford and Chrysler use Mitsubishi transmissions in their rear-wheel-drive light trucks. Every transmission rebuilder should be familiar with the KM160 and 180 series five-speed manual transmissions, equipped with a vacuum operated two-speed input shaft, providing 5th ratio in what is essentially a four-speed transaxle. With the introduction of more powerful motors, Mitsubishi designed the next level of manual transaxles, the KM200 series.

The KM200 is a four-speed unit; the KM201, 206 and 210 are five-speed models. These compact, light-weight

continues next page

Figure 1 KM210 Five Speed Transmission



Put an End to Transfer Case Failures For Good!

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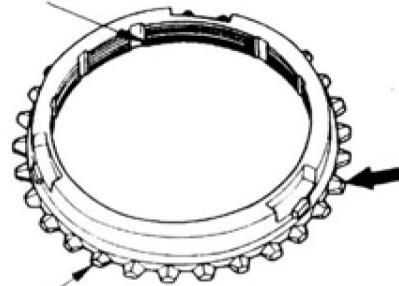
Up To Standards

transaxles basically are all of the same design, with variations of ratios and torque capacity for use behind a variety of normally aspirated and turbo power plants. This discussion is on the five-speed units.

The transaxle is comprised of an aluminum clutch housing,

Figure 2 Synchronizer ring

Damage and wear



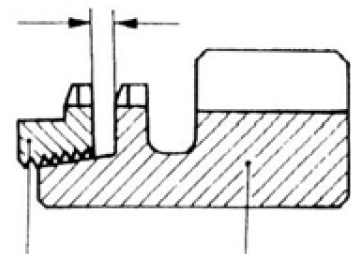
Damage and breakage

Inspection:

1. Inspect the synchronizer ring-gear teeth for damage and breakage, check the internal surface for damage, wear and broken threads (Figure 2).

transmission case and rear cover. The 5th-speed gear, synchronizer assembly and 5th-driven gear are all found under the rear cover. Mitsubishi is unique in its power-flow design, utilizing four shafts to transfer power from the clutch

Figure 3 Synchronizer ring clearance



Synchronizer ring Gear

2. Check the synchronizer ring to speed-gear clearance by forcing the synchronizer ring toward the clutch gear, and check clearance (Figure 3). Replace the synchronizer ring if the clearance is out of specification, limit 0.5mm.

to the drive axles. Third-, 4th- and 5th-speed gears are located on the input shaft; 1st and 2nd on the intermediate shaft. An output shaft (transfer shaft) transfers power from the intermediate shaft to the final-drive gear (See Figure 1). Reverse is achieved through the use of a reverse idler gear, which engages straight-cut

continues page 22

Put an End to Transfer Case Failures For Good!

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231J Command Trac
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Rockland Standard Gear can custom fit all of these transfer cases to any TJ, YJ, ZJ, WJ, XJ & KJ model!

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*Includes New Morse Chain

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 BRONCO - 93-04, 94-04, 95-04, 96-04, 97-04, 98-04, 99-04
 BRONCO 2 - 93-04, 94-04, 95-04
 RANGER - 93-04
 PICKUP - 93-04, 94-04, 95-04, 96-04, 97-04, 98-04, 99-04
 ESCORT - 93-04, 94-04

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*Includes New Morse Chain
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*Chatter-Free will not repair transfer cases that are already damaged!

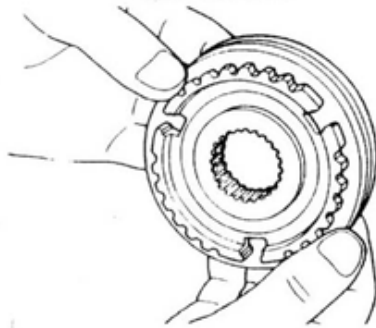
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Figure 4 Synchronizer hub and sleeve



3. Check the synchronizer sleeve and hub by combining the sleeve and hub, and check that they slide smoothly (Figure 4).
 4. Check that the sleeve is free from damage at its inside, front and ends.
 5. Check for wear of hub-end surfaces (in contact with each speed gear).
- Note:** When replacing synchronizer hub and sleeve, replace as a set.

reverse teeth on the 1-2 slider. The four shafts are supported by eight bearings. Most variations of this unit use tapered roller bearings. All varieties use selective shims to set endplay and bearing preload.

All shafts are "rifle drilled" for lubrication. Plastic oil funnels and guides are situated under the bearing races to provide lube flow through the shafts to lubricate the speed gears and their supporting needle bearings. Any cracks or flaws, or the failure to replace any or all of the lube guides removed for cleaning, will generate a comeback of epic proportions. You know, the one you will remember 30 years after you retire.

The designers at Mitsubishi have been kind enough to identify the synchro hubs directional. Cast into the hub of each synchro is a round dot, which should face the clutch housing (front of the trans) when installed on its shaft. Early models use brass synchro rings, that should be marked on disassembly as 1st and 2nd, are different. Later models went to

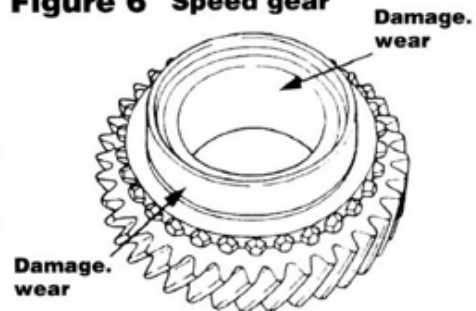
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Figure 5 Synchronizer key



6. Check the synchronizer key for wear of the center protrusion (Figure 5), and the spring for deterioration, deformation and breakage.

Figure 6 Speed gear



7. Check the bevel gear and clutch gear teeth of the speed gears for damage and wear; check the synchronizer cone for rough surface, damage and wear; and check the gear bore and front ends for damage and wear (Figure 6).

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Jeep Transfer Cases



- 231J Command Trac
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- 249 J AWD

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

Ford Transfer Cases



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Dodge Transfer Cases



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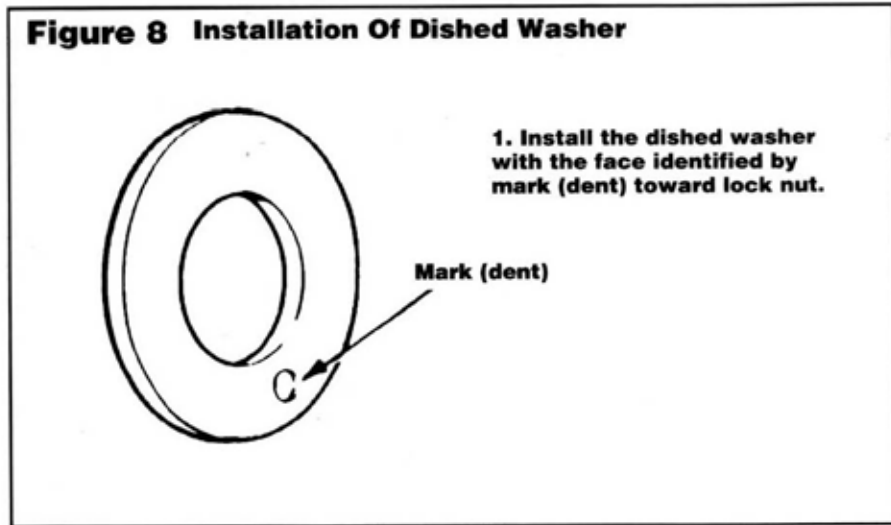
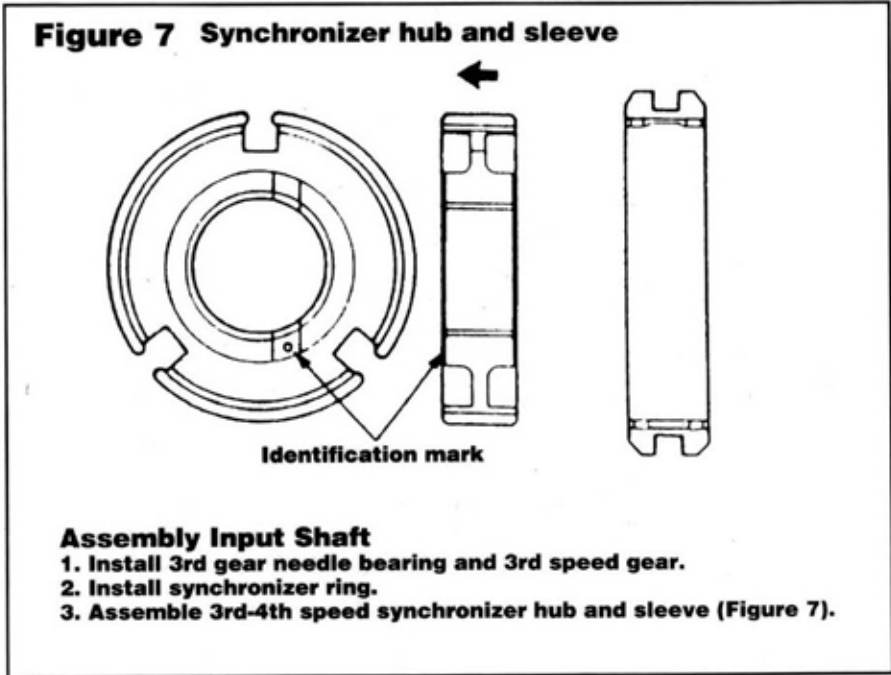


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compound lined rings and still later models reverted to brass rings once more (confusing, isn't it?).

The usual attention to gear backlash, clearances, endplay and preload apply to these units, as well as any other gear box we work on. I'll say it again – you can't beat a factory manual for getting the right specs and good diagrams (See Figures 2 through

7). I'm tired of repeating that statement, but it seems to fall on deaf ears, because out of the hundreds of tech calls I handle every month, nobody ever seems to own a good manual on the unit they are working on. Make an investment in yourself and watch how much simpler life becomes.

One of the most common problems associated with this unit is over-tightening the shaft lock

nuts, or lock nuts that back off. The torque spec for the lock nuts is 115 ³/₁₆ lbs. This figure is about a third of what a good 1/2 inch air-gun can generate. Time to break out the torque wrench, please. Over-tightening simply stresses the nut and shaft threads and risks binding the shaft components. Under each lock nut is a dished washer (See Figure 8). These are marked with a dot that should face the lock nut when installed. Failure to do so can permit the nut to back off and make the inside of a trans look like a certain Federal building in Oklahoma City. Not a pretty sight.

Later models of the KM200 series five-speeds have a new-design rear cover and 5th-speed synchro. On top of the synchro will be a sixth synchro ring and a waved flat spring. In the cover will be a steel synchro cone retained to the cover with three flush-mounted screws. This extra ring and cone and used to brake the input shaft when engaging reverse gear to limit gear clash on the straight-cut reverse gears. All of these units are specified for 75w gear lube, although we have used 20-50w synthetic motor oil to overcome cold shift problems.

The 200 series units are well designed, reasonably simple gear boxes. There is a large group of vehicles on the road which can turn into profit for our shops, and happy, satisfied customers in our communities. Arm yourself with the most powerful weapon known to man – KNOWLEDGE. Your net worth will increase, your job satisfaction will grow and you will like the guy you see in the mirror every morning. **TD**