

# KEY TO REAL WORLD PROBLEM SOLVING

### CHAPTER 5

#### PROBLEM SOLVING 1:

Case 1: Adjust the clutch pedal free travel, and repeat the road test. If the clutch still slips, it should be replaced.

Case 2: The release/bearing is probably bad, and it should be replaced. Since some labor is required and the car has fairly high mileage, it would probably be a good idea to replace the rest of the clutch at the same time.

#### PROBLEM SOLVING 2:

Case 1: Replace the pressure plate assembly, clutch disc, release bearing, and pilot bearing. Recondition or replace the flywheel.

Case 2: The clutch disc is not aligned to the pilot bearing properly. Check to make sure the clutch disc splines are centered to the pilot bearing.

#### PROBLEM SOLVING 3:

The gear clash and mushy pedal indicate that the hydraulic system has air in it. Bleed the air out of the system, and recheck clutch operation.

### CHAPTER 8

#### PROBLEM SOLVING 1:

Case 1: Check and adjust clutch pedal free travel if necessary. If the problem still exists, check for a dragging clutch by performing a spin down.

Case 2: The low fluid level has probably caused excessive bearing wear.

#### PROBLEM SOLVING 2:

Case 1: Parts for this transmission should include: cluster gear, second-speed gear, small parts and gasket/seal kit, and any other worn parts.

Case 2: There is a problem in the 3–4 synchronizer assembly, shift fork, or shift rail. These parts should be carefully checked.

#### PROBLEM SOLVING 3:

Case 1: Ideally, you should replace all the worn parts in a transaxle. But in this case with the old car and budget restraints, replace the first- and fourth-gear blocker rings. Also, advise the customer that the transmission was repaired, not rebuilt.

Case 2: The slower speed of the output shaft indicates that one of the lower gear blocker rings is wedged between the speed gear and the synchronizer assembly. Check to make sure that every blocker ring is free and has side clearance.

### CHAPTER 10

#### PROBLEM SOLVING 1:

Case 1: The rear U-joint is binding and not moving freely; it should be replaced.

Case 2: The clunk indicates excessive lash in the drivetrain. Check each CV joint for excess clearance. If no problem is found, check for excess clearance in the transaxle.

#### PROBLEM SOLVING 2:

Case 1: This is a judgement call. The dimpled cage windows indicate a CV joint that should be replaced, and this will increase the cost of the parts. With very tight budget, I would replace the boot only and warn the customer about the damaged part.

Case 2: The outboard CV joint is worn, and either the joint or the driveshaft should be replaced.

#### PROBLEM SOLVING 3:

Case 1: If the joint locked up, a needle bearing probably got out of position. Disassemble the tight bearings and check the needle bearings.

Case 2: The vibration is probably the result of the driveshaft not being installed in the original position. Disconnect the rear U-joint from the pinion shaft flange, rotate it one-half turn, and reassemble it. Road test to verify that the vibration is gone.

### CHAPTER 12

#### PROBLEM SOLVING 1:

Case 1: This much internal lash is often caused by excessive differential wear. Remove the axle cover and check the clearance in the differential gears.

Case 2: Determine if the vibration also occurs during coast and float conditions; then check to determine if the vibration still occurs with the rear wheels removed. Worn axle bearing or a bent axle can cause this problem if the vibration is still present.

**PROBLEM SOLVING 2:**

Case 1: Obtain a special tool to press the differential pinion shaft out of the case or a special drill bit and ease out to remove the broken bolt.

Case 2: The seal is probably part of the axle bearing.

**PROBLEM SOLVING 3:**

Case 1: The lash variation is out of specifications, so it is not acceptable. The ring gear might not be fitted properly to the differential case or there might be too much runout at the ring gear flange. Remove the ring gear from the case and check for excess runout of the case or dirt or burrs between the gear and case.

Case 2: Remove and replace the pinion depth shim using a thinner shim to move the drive pinion gear deeper into the ring gear.

Case 3: The drive pinion gear in this drive axle is mounted directly into the carrier. Moving the pinion gear deeper into the ring gear requires that the drive pinion gear must be removed and a thicker shim installed behind the rear pinion shaft bearing.

**CHAPTER 14**

**PROBLEM SOLVING 1:**

Case 1: A bound-up transfer case shifter is often caused by driving on pavement in 4WD and making turns or with unequal tire diameters. Discuss the 4WD drivetrain with the customer and determine if it was the vehicle or driving conditions that caused the problem.

Case 2: No drive to the front wheels can be caused by a fault in the transfer case, front driveshaft, front drive axle, front hubs, or front drive axle shift controls. Operate the vehicle with all four tires in the air and determine where the power is available.

**PROBLEM SOLVING 2:**

Case 1: This could be caused by improper shift linkage adjustment. Check and adjust the linkage. If the problem is still there, you will probably need to disassemble the transfer case for repair.

Case 2: This problem could be caused by a fault in the front axle, hubs, or transfer case. Check the shift linkage adjustment. Then operate the vehicle with the tires off the ground to try to duplicate the problem and determine where the fault is.