

Wheels: Jim of Dayton has a question about his 1989 S-10 pickup truck equipped with the V-6 and manual 5-speed transmission. The transmission has been getting more and more difficult to shift into reverse and first. The transmission seems to shift okay with the engine off. Do you have any ideas what could be causing this problem?

Halderman: The most likely cause of this problem is a fault in the clutch. The clutch may not be fully releasing resulting in the hard-to-shift complaint. If the clutch does not fully release, engine torque is being applied to the gears inside the transmission. With torque being transmitted through the transmission gears, they cannot be moved easily. This means that the clutch must be depressed (disengaged) so that the driver can easily shift gears. If the clutch does not fully release, the transmission will be difficult to shift.

Wheels: You mentioned that the clutch could be the problem. What part or parts of the clutch could have failed to cause this problem?

Halderman: The S-10 truck is equipped with a hydraulic-activated clutch linkage. This means that the clutch pedal applies a force to a clutch hydraulic master cylinder, similar to the master cylinder used on the brake system except with just one piston and one brake fluid reservoir. This master cylinder should be checked for proper fluid level. The fluid is brake fluid, the same that is used in the brake master cylinder. Low fluid level could be the cause of the problem. The brake fluid is compressed and the resulting pressure is applied to a slave cylinder attached to the clutch fork. The clutch fork then applies force on the pressure plate part of the clutch and releases the pressure exerted on the clutch disc. The clutch disc is splined to the input shaft of the transmission. When the pressure is removed from this disc, the engine torque is removed from the transmission and a shift can be made. There are two possible clutch related faults that can cause the problem of difficult shifting including:

- A fault with the hydraulic clutch assembly. This assembly, including the master cylinder line and slave cylinder, is often available as an assembly.
- The pilot bearing that supports the front of the input shaft of the transmission and is installed in the rear of the engine crankshaft could be defective and not allow the input shaft to be released from engine torque.

Wheels: What procedure could be followed to determine the root cause of the problem?

Halderman: The first step in most diagnosis is a thorough visual inspection. The service technician should check for proper brake fluid level and condition in the clutch master cylinder as well as checking for proper movement of the slave cylinder when the clutch is depressed. A test drive should also be conducted to check for proper operation of the clutch. If the hydraulic system is functioning correctly or has been replaced, then and only then, should the transmission be removed to check and replace the clutch.

