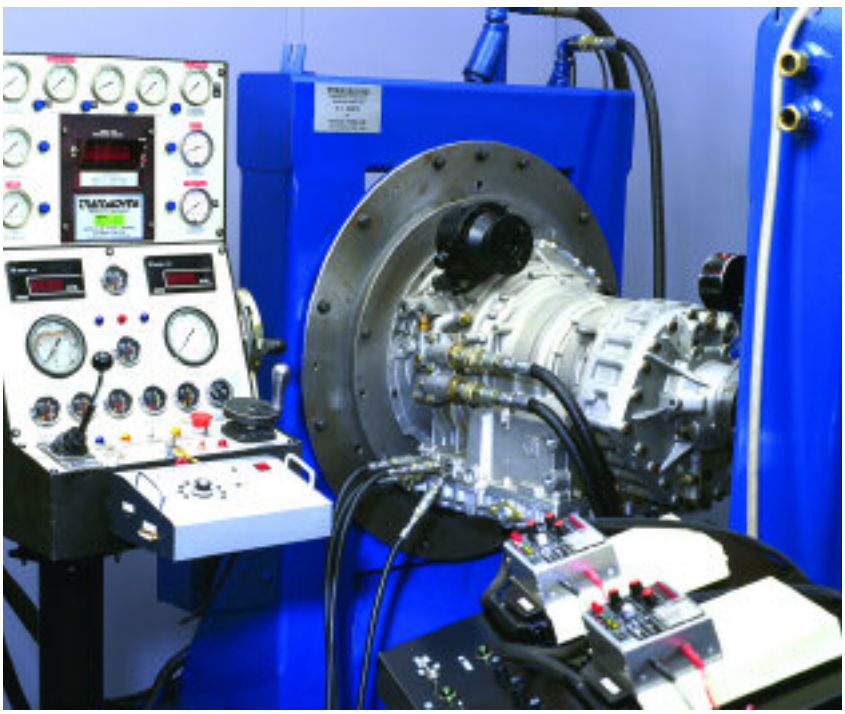
Fault diagnosis

Andy French, workshop manager for HL Smith Transmissions has some handy tips on diagnosing common gearbox faults.

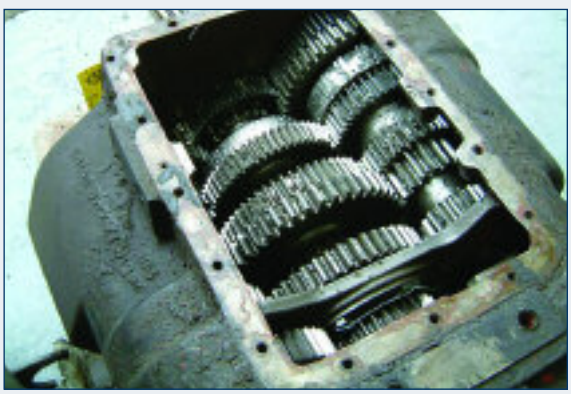


Transmissions are now extremely reliable components and with regular maintenance will give thousands of miles of trouble-free service. When they do go wrong a few simple checks can help confirm what the fault might be. If the driver does report something wrong with the gears, do investigate or you risk consequential damage to other parts of the transmission which might be far more costly to rectify.

PROBLEM:
Jumping out of gear (the gear lever moves from its engaged position).

CHECK:
Remove linkage from gearbox and select gear manually . If the gearbox remains in gear, check the following

1. Are linkages, tie bars and ball joints worn. Are they free from any obstruction?.
2. Are the gaiters intact – debris from worn gaiters can jam the linkage
3. Are the cab or engine mounts worn? Cab/engine movement can jam the linkage and stop it moving freely.
4. If the gearbox has been removed, has it been reinstalled to its original settings.?
5. If fitted, are linkage dampers or springs worn or broken? Worn or broken dampers can allow excessive movement of the gear stick causing a jump-out situation.
6. If fitted, are external detent plungers and springs worn or damaged and are they set correctly?



Shock loadings from can cause consequential damage.

Consequential damage from synchro material failure.

PROBLEM:
Difficulty selecting gears

CHECK:

1. Can you engage the gears freely using the external linkage drop arm on the gearbox? Check the linkages are fully actuating and free from any obstruction.
2. Is the clutch working properly? To check, try to engage reverse gear. There is no synchroniser on reverse, so you will know immediately if the clutch is braking drive. If it is OK, there may be internal synchroniser wear and you must get it checked by experts. Worn synchros can cause consequential damage to the gearbox).
3. If a power take-off is fitted, check it is shimmed correctly. If not, it can cause braking effect on the gears.

PROBLEM:
Knocking, whining or crunching noise

CHECK:

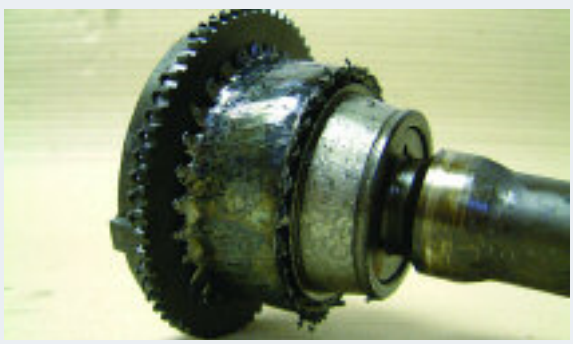
1. Identify the type of noise. A knocking noise indicates missing or damaged gear teeth. A whining noise indicates bearing wear and can also indicate lack of oil in the unit.
2. With worn synchronisers, there's a crunching noise when trying to engage a gear.
3. Take an oil sample. Any metal debris will indicate an internal problem.
4. A power take-off can cause noise if it is not shimmed correctly.

PROBLEM:
Loss of Drive (gear lever remains in engaged position but there is no drive)

CHECK:

1. Seals. Remove range-change or splitter cylinders, check o-rings and seals for wear, splits and cracking. If the problem is with the internal splitter gears, the solution is service exchange or a new box.
2. Faulty trigger valves and air systems can cause loss of drive so check for sticking shuttle valves or blocked exhaust ports.

Synchro damage from oil leak.



Low oil level damage.

PROBLEM:
Oil leak

CHECK:

1. Air system is not leaking into the gearbox pressurising the unit.
2. Breather is not blocked causing pressure in the gearbox.
3. Worn propshaft causing vibration can result in a leak from the rear seal.

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