

Clutch Drag / Hard Transmission Shifting

Background

It sometimes occurs that a truck will have higher than normal transmission gear shift effort. While this may indicate an internal transmission problem, it could also be the result of abnormally high clutch drag. High clutch drag can also be detected by the vehicle wanting to “pull” or drive when the engine is running, the clutch pedal is pushed down near the floor (but without contacting the clutch brake - if so equipped) and the transmission is in 1st, low or reverse.

Valeo Clutch Design

Valeo single plate clutches are designed to be of very low inertia and drag so any noticeable clutch drag indicates an abnormal condition.

Conditions Causing Clutch Drag

I. Low Release Bearing Travel: For complete clutch disengagement, the release bearing must move 1/2” when the clutch pedal is pushed. Less bearing movement can cause clutch drag. If release bearing travel is too low, check the following:

- Clutch pedal “up” position too low
- Clutch pedal blocked from full “down” travel
- Clutch linkage misadjusted, bent or worn
- Incorrect clutch adjustment (pull type clutches)
- Linkage movement restricted by air, fuel or electrical lines
- Air in hydraulic linkage (if so equipped)
- Leaking hydraulic linkage (if so equipped)
- Release bearing sticking on guide tube (push type clutches)

II. Faulty Clutch Adjustment (pull type clutches): When free play adjustments are done at the external clutch linkage rather than at the clutch release bearing, the bearing can relocate too far forward leaving the gap behind the bearing too long. This will place high “side loading” on the release bearing pushing it into the transmission input shaft and creating drag (see adjustment specifications).



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III. Failed Pilot Bearing: A failed clutch pilot bearing will directly pass engine torque into the transmission input shaft causing drag.

IV. Sticking Clutch Disc Splines: Grease, rust, dirt or damage on the spline teeth can prevent the clutch disc from sliding away from the flywheel during clutch disengagement. The resulting contact between the clutch disc and the flywheel will cause drag.

V. Bent or Warped Clutch Disc: A clutch disc bent or warped more than the pressure plate disengagement "lift" can contact both the pressure plate and flywheel with high pressure after the clutch is disengaged causing drag.

VI. Faulty Pressure Plate and Cover Assembly: A bent, damaged or poor performing cover assembly can fail to "lift" the pressure plate the correct amount even though the release bearing travel is correct. This will result in pressure on the clutch disc at disengagement causing drag.

VII. Faulty Clutch Installation: The following is a list of the most common installation problems which can cause clutch drag:

- Misaligned or damaged pilot bearing
- Excessive flywheel eccentricity or runout
- Transmission to Engine misalignment
- Misaligned or off-center clutch assembly
- Reversed clutch disc
- Use of incorrect / excessive thick clutch disc
- Linkage side loading of release bearing (pull type clutches)
- Foreign matter or loose parts inside clutch assembly
- Use of incorrect / excessive long transmission input shaft
- Clutch assembly drivetrain allen head screws removed in error