

## System Operation

The 10R80 MHT transmission is a 10-speed, step ratio rear wheel drive transmission that is controlled by a **PCM**. The 10R80 MHT has ten forward speeds, one reverse speed, four planetary gearsets, one mechanical One-Way Clutch or OWC, six friction clutches, an upper valve body, a lower valve body with eight solenoids, and **PCM** controlled electronics. The 10R80 MHT utilizes six shift (A-F) solenoids that are linear force solenoids. Unlike previous shift solenoids they are mechanical in nature in that no transmission fluid passes through them. **CIDAS** s use a armature/pin assembly that moves a control valve in the main control valve body to control and apply hydraulic fluid pressure. Each clutch (A-F) is controlled by a corresponding shift solenoid (A-F). These solenoids are directly proportional in that zero current equals zero pressure and maximum current equals maximum pressure. If the power circuit to the transmission solenoids fails open, then all solenoids are failed electrically, none of the clutch packs are able to engage and there is no fail safe operation.

### Upshift Gear Sequence

At times the 10-speed transmission may **skip** gears when the vehicle starts from a complete stop. This is **normal** and desired **behavior**.

At part pedal when acceleration is brisk, single step upshifts would result in very frequent shift events (very short time in gear). Double step upshifts results when a longer time is spent in gear.

However, at light pedal or road load, single step upshifts **will** occur. The small 10-speed gear steps allow the engine speed to drop to lower values than it would in the 6-speed transmission; providing for the best fuel economy. In contrast, when the 10-speed transmission is at heavy or max pedal, the small steps keep the engine closer to the horsepower peak for best performance.

### Down shift Gear Sequence

At times the 10-speed transmission may **skip** gears when the vehicle downshifts to a complete stop. This is **normal** and desired **behavior**.

The same **skip** shift strategy used for the upshift may be applied during downshift.

## Component Description

<https://www.fordtechservice.dealerconnection.com/publication/proc?linkType=Procedure&i...> 9/6/2022