

Operation

Roadranger

Eaton® UltraShift™ Transmissions

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Driver Instructions TRDR-2500B December 2005



Driving the UltraShift

Start-up

1. Turn the ignition key to “ON” and allow the UltraShift to power-up.
- Engine cranking is delayed until the transmission power-up is complete and the gear display shows a solid “N”.
2. Start the engine.
3. Apply service brake.

NOTE: If the service brake is not applied while selecting a starting gear, the initial start gear will not be found and the driver will have to **re-select Neutral** and press the brake while re-selecting the desired mode.

4. Release the vehicle parking brakes.
5. Select the desired mode and starting gear, on the shift console.
6. Release service brake and apply accelerator.
- The transmission is not intended to provide hill-hold capability. The service brakes should be used to stop and hold the vehicle on an incline. To prevent the vehicle from rolling when starting on an incline, place both feet on the brake pedal before sliding the right foot to the throttle pedal. Gradually back off the brake while applying as little throttle as necessary to move along the incline.

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Power Down

1. Select Neutral on the shift control.
 - If gear display does not show solid "N", neutral has not yet been obtained.
2. Set the vehicle parking brakes.
3. Turn off the ignition key and allow the engine to shut down.

"D" DRIVE Mode

Depending on the transmission model and Shift Control configuration, there may be alternate forward starting gears available. While the vehicle is stopped in Drive, the up/down buttons are used to change the starting gear. This selection is used until it is changed again, or the UltraShift is powered down.

In Drive mode, all upshifts and downshifts are performed automatically based on vehicle and transmission conditions.

The driver can advance a shift (by about 75 rpm) by pressing the proper up/down button (up for upshifts, down for downshifts) when the transmission is within 75 rpm of the load based shift point. The Gear Display shows the status of the shift:

- The current gear is displayed solid.
- At the start of the shift, the current gear is displayed solid until the transmission is pulled to the neutral position.
- While the transmission is in neutral and synchronizing for the target gear, the target gear is flashed.
- When the shift is complete, the new current gear is displayed solid.

MANUAL Mode

- Can be selected while moving or from a stop.
- Must use the up and down buttons to shift. (See Note 1)
- Shifter will "beep" if shift cannot be completed due to engine RPM and road speed.

LOW Mode

- Can be selected while moving or from a stop.
- Selecting LOW from a stop engages and maintains 1st gear.
- Selecting LOW while moving will allow for downshifts only and downshifts will be performed at higher RPM to maximize engine braking. (See Note 1)

"R" REVERSE Mode

Selecting REVERSE from NEUTRAL will engage LOW REVERSE. An "R" will appear on the gear display for 10 spd. models and an "R1" will appear on the gear display on 13 or 18 spd. models.

Transmission models with multiple reverses must use the up and down arrows to select other reverse gears. Remember to select the proper reverse gear for your load and grade conditions.

All reverse gears can only be engaged at less than 2 mph.

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Note 1: The UltraShift system may perform automatic shifts in extreme situations (overspeeding the engine or excessively slipping the clutch).

Driving Tips

Proper Starting Gear

Choose a starting gear appropriate for the load and grade conditions while at a stop in Drive and MANUAL modes by using the up/down buttons. Refer to Drive Mode for detailed information.

Skip Shifting

Performed in MANUAL by pressing the shift button more than once.

Optimal Engine Braking

The LOW mode can be selected while moving. This initiates downshifts as soon as possible.

Skid Conditions

If a skid condition occurs, the UltraShift senses the vehicle speed dropping rapidly. In this case, the UltraShift delays downshifting.

Cruise Control

The UltraShift is totally compatible with cruise control. If a shift is required while cruise control is active, cruise is temporarily interrupted while the shift is performed and then automatically resumed after the shift.

Load Based Shifting

In Drive, the UltraShift will adapt to the changing conditions of the vehicle. Right after power-up or after changing loads, UltraShift needs to learn the new conditions. While learning, it may hold a gear instead of upshifting. Simply push the Up button to start the upshift. It may take three or four shifts for the UltraShift to learn the new conditions. After that it will handle upshifts and downshift automatically.

Depending on conditions, UltraShift can activate the engine brake in order to bring the engine down faster for an upshift. This can happen even if the engine brake dash switch is OFF.

Coast Mode

When coasting to a stop in lower gears, UltraShift may not finish downshifting until the driver gets back on the throttle. This is normal for the UltraShift.

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Clutch Protection

Note: As a driver of a truck equipped with a Fuller UltraShift DM2 Transmission (No Clutch Pedal) please take note of the following message:

Even though your truck does not have a clutch pedal, it still has a mechanical clutch. As you slowly increase and decrease engine RPM from a stop, the clutch is engaging and disengaging, just like slipping the clutch with an AutoShift Transmission or a Manual Transmission.

If the vehicle is operated for long periods between engine idle and 1000 RPM during take off, the driver is slipping the clutch which, in turn, gets the clutch HOT. If the clutch starts to get too hot, a warning tone will sound and a “C” and then an “A” will flash on the gear display (**Clutch Abuse**) This is an indication that the driver is abusing the clutch and it is getting too hot to operate - potentially resulting in a failure.



If a “C” and then an “A” shows on the gear display during vehicle operation, **stop the vehicle for at least two minutes and let the clutch cool down.** Continuing operation with the “C” and “A” flashing on the gear display will cause the clutch to become even hotter and the transmission may attempt to downshift into a lower start gear and/or limit the engine to idle speed until the clutch cools (approximately 3 minutes). Repeated incidents of clutch abuse may cause the clutch to fail and render the truck immobile, resulting in extended down time.

Note: Below are some examples of situations that may initiate clutch abuse along with some helpful hints on how to avoid them.

Example	How to Avoid
Starting on hills or holding on hills using the throttle rather than the brake	Use the service brakes to hold on hill. To start moving, apply the throttle and release the brakes as you feel the truck start to pull.
Moving trailer tandems	Be sure to always start off in 1st gear when moving forward and Low Reverse when moving backwards (R or R1 on gear display).
Hooking up to a trailer	Always be sure the trailer is high enough to back under. Use Low Reverse (R or R1 on gear display). Use light brake pedal pressure to reduce the “jerking” of the vehicle.

Again, if you see flashing “C” and “A”, STOP and let the clutch cool down.