

Detroit™ DT12™ Transmission has 12 forward gears and two standard reverse gears that can be shifted automatically or manually. Shifting and clutch actuation are computer controlled and there is no clutch pedal needed to operate the vehicle.

Automatic shifts are selected for fuel economy or engine power. The DT12 will not automatically shift gears in reverse but requires the driver to manually shift.

To manually shift the transmission, push the lever away to request a downshift, or pull the lever toward you to request an upshift.

In all cases, shifts depend on the following factors: engine speed, accelerator pedal position, engine brake operation, vehicle load status, and road grade.

Power Up and Shift into Gear

1. With the parking brake set and Neutral (N) selected on the shifter stalk, turn the ignition switch to the ON position. Before cranking, wait for the bulb check and gauge sweep to complete.
2. Start the engine.
3. Apply the service brake.
4. Engage Drive or Reverse with the shifter stalk.
5. Release the parking brake.
6. Release the service brake and apply the accelerator.

Gear Display Window

The gear display window shows the current transmission gear and drive mode.



Refer to the DTNA Driver's Manual for Complete Information on all of the Vehicle Controls

Drive Modes

There are three drive modes:

(1) Automatic Economy, (2) Automatic Performance, (3) Manual
(Available drive modes are dependent on vehicle configuration.)

The default mode is Automatic Economy. To engage Auto Performance, simply press the end of the shifter stalk towards the steering column where the A & M are shown. The transmission will automatically return to Automatic Economy from Auto Performance, once throttle demand is reduced. To select Manual drive mode, press and hold the end of the shifter stalk. You will know whether the requested drive mode change was successful based on the display in the gear display window of the instrument cluster (Cascadia) or interactive dash display (New Cascadia).

eCoast

eCoast is a feature that can improve fuel economy (with or without cruise control). When conditions permit, the transmission shifts to Neutral and the engine goes to idle. When the conditions listed below terminate eCoast, the transmission will automatically select and shift into the proper gear. When eCoast is active, an "E" is displayed in the gear display window on the instrument cluster (Cascadia) or in the interactive dash display (New Cascadia).

The eCoast function does not initiate when any of the following occur:

- the accelerator pedal is pressed.
- the service brake pedal is pressed.
- the engine brake is in use.
- the speed limiter is active and the maximum speed is exceeded.
- PTO (if equipped) is in use.
- eCoast is disabled if the DPF is in regeneration mode.
- Steep downhill grades
- Below 50 mph

Suggested Shift

In Manual mode only, a suggested shift is displayed to indicate the most economical gear available. The suggested shift is the number of up or down arrows from the current gear with a maximum of three up or down arrows.

Creep Mode

Creep mode allows the vehicle to be maneuvered automatically at very slow speeds. To begin using it from a parked position, shift from neutral to either drive or reverse, release the service brakes, and briefly depress and release the accelerator pedal. Creep mode will be engaged and the vehicle will begin to move.

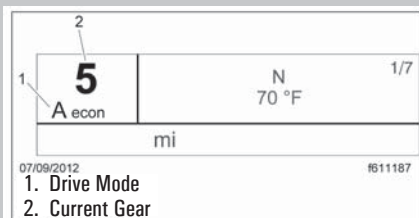
When slowing down from higher speeds in drive or reverse, remember that Creep mode will be in effect at lower speeds. Use the service brakes to completely stop the vehicle.

Cruise Descent Control

Descent Control will help control vehicle and engine speed when descending a grade.

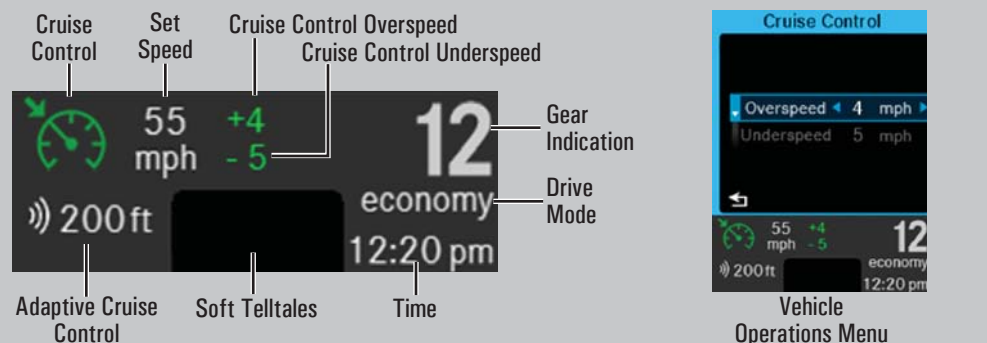
- If cruise descent control is activated with engine brake/shifter stalk in position 1:
 - Descent control is active and all levels of engine brake are available.
 - If the engine brake/shifter stalk is moved to a higher level position, descent control is cancelled entirely.
 - Once descent control is canceled, the engine brake/shifter stalk position becomes a manual engine brake request.
 - If the engine brake/shifter stalk is rolled back to the 0 position, vehicle is not returned to cruise.
- If cruise descent control is activated with engine brake/shifter stalk in position 2 or 3:
 - Descent control is active and all levels of engine brake are available.
 - If the engine brake/shifter stalk is moved to a lower level position, descent control remains in operation with all levels of automated engine brake shift available and any manual position is ignored.
 - If the engine brake/shifter stalk is rolled back to position 0, vehicle is returned to normal cruise.
- Cruise descent control does not utilize the CC band switch (Classic Cascadia) functionality and does not fuel the engine on descent.

Instrument Cluster Display - Cascadia



1. Drive Mode
2. Current Gear

Interactive Dash Static Display Area - New Cascadia - Interactive Dash Display Cards

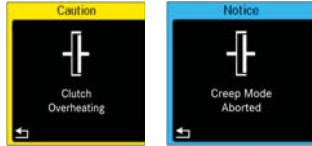


Clutch Abuse Protection

A vehicle equipped with a Detroit transmission does not have a clutch pedal, but still has a clutch that is operated automatically and can be damaged by abusive driver actions. To protect the clutch, the vehicle has a series of clutch abuse alerts that warn the driver and restricts functionality when needed for events including...

- Extended periods in Creep Mode
- Slipping the clutch (using accelerator pedal to hold vehicle on a hill, for example)
- Mitigating high clutch temperatures

Dash Display Pop-ups for New Cascadia

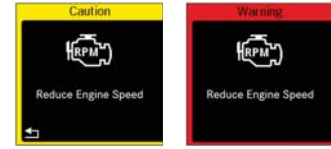


IMPORTANT: The transmission system will disable Creep Mode if it determines the clutch temperature is too high. A display message notifies the driver when creep mode is about to be aborted.

Engine Overspeed Alerts

To help protect the engine, the system has display messages to notify the driver when the engine has exceeded certain thresholds and needs to be slowed down before significant engine damage occurs. There are two warnings, one at 2300 rpm and another at 2500 rpm.

Dash Display Pop-ups for New Cascadia



Low Transmission Air Warning

Pneumatic controls are used to shift the transmission. If there is a loss of air pressure, a warning is displayed and the quality of gear shifts may degrade.

Hill Start Aid Feature

The DT12 comes standard with a Hill Start Aid feature. Hill Start Aid engages and holds the service brakes of the tractor and trailer on grades greater than 3% to allow the driver time to transition from the service brake to the accelerator pedal. This feature prevents the vehicle from rolling backwards and permits the driver time to safely pull away from an intersection. Hill Start Aid will release brakes after 3 seconds. Hill Start Aid also works in reverse when backing up an incline greater than 3%.

Note: When a vehicle with a DT12 transmission is starting from a stop, the transmission automatically selects the proper launch gear based on mass calculation and grade. It is not uncommon for the transmission to start in a gear other than first.

TIPS FOR AVOIDING CLUTCH ABUSE

Example	Tip
Holding the vehicle stationary on an uphill slope	Use the service brakes, not the accelerator pedal.
Starting off on an uphill slope	To start moving, accelerate and release the brakes as the vehicle begins to move.
Hooking up to a trailer	Ensure the trailer is raised high enough to back under, and use first gear reverse.
First start after attaching a trailer	Start in first gear.
Do not overuse Creep Mode, and deactivate it when warned. If warned, stop the vehicle or apply throttle until clutch is completely closed.	

Engine Brake Control

- Is set using the shifter stalk.
- To activate automatically the shifter stalk must be perpendicular to the steering column or in the upmost position.
- The driver can operate the engine brakes manually by moving the shifter stalk in a clockwise direction. There are 3 detents for low, medium and high engine braking (see diagram.)
- When the shifter stalk is in the auto position and the cruise control is set, the engine braking is dictated by the parameters settings for the optional Cruise Control Band Switch.
- The engine brake does not provide precise control of the vehicle, and is not a substitute for service brakes.



“Auto”
 ↓ Detent 1 Low
 ↓ Detent 2 Med
 ↓ Detent 3 Max

Cascadia: Cruise Control Band Switch

The DT12 has an optional 3-position Cruise Control Band Switch on the B-panel which allows the driver to control the hysteresis of the vehicle speed above the cruise control set point prior to engaging the engine brakes.

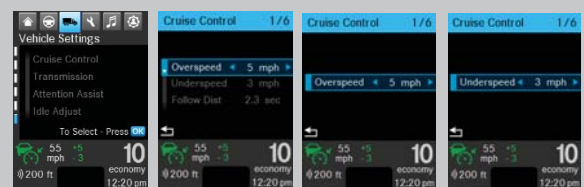
- To function properly, the shifter stalk needs to be in the Auto or fully upward position.
- Default settings are 3mph, 5mph and no engine brake retardation above the cruise control set point. If different settings are desired, they can be changed with the appropriate Detroit DiagnosticLink® tools.
 - The 3mph position is recommended for steep grades
 - The 5mph position is recommended for rolling terrain
 - No engine retardation setting is recommended for flat terrain
- If no CCB Band switch, default setting is 5mph above cruise control set point.

Auto-Neutral

If the parking brake is set with the transmission in gear for 5 seconds, an “N” will flash on the instrument cluster (Cascadia) or interactive dash display (New Cascadia) to warn of imminent Auto-Neutral. After 10 seconds, the transmission shifts to Neutral and activates the buzzer for 1 second. After Auto-Neutral is engaged, the driver must select “N” on the shifter stalk and reselect “D” to engage gear. The purpose of this feature is to prevent the driver from leaving the transmission in gear when parked.

New Cascadia: Cruise Control - Interactive Dash Display Cards

1. Select the Vehicle Operations Icon from the main menu.
2. Toggle down and select Cruise Control.
3. Select Overspeed for upper speed setting.
4. Go back and select Underspeed for lower speed setting.



Vehicle Settings Menu

Cruise Control Menu

Refer to the DTNA Driver's Manual for Complete Information on all of the Vehicle Controls