HOW DOES FOUR-WHEEL DRIVE WORK

Using the Electronic Shift On the Fly System (If Equipped)

This four-wheel drive system utilizes a 2-speed Electronic Shift On the Fly (ESOF) transfer case which is also known as a part-time system. This system offers the driver two-wheel drive high, four-wheel drive high, and four-wheel drive low as available modes of operation. When you select either four-wheel drive high or four-wheel drive low, the system provides mechanically locked four-wheel drive power to both the front and rear wheels for use in off-road or slippery conditions such as deep snow, sand or mud. When you select four-wheel drive low, the system provides additional gearing for increased torque multiplication for conditions like deep sand, steep slopes, or pulling heavy objects. Additionally, the system is capable of recreational flat towing by putting the transfer case into a neutral position. See **Recreationally Towing Your Vehicle** (page 426).

There is further information available on driving in unique driving conditions. See **Off-Road Driving** (page 409).

Your vehicle has manual hub locks on either the driver side or the driver and passenger side of your vehicle. For proper operation, make sure that each hub is fully engaged and that both hub locks are set to the same position (both set to lock or both set to auto). To engage lock, turn the hub locks completely clockwise. To engage auto, turn the hub locks completely counterclockwise.

The ESOF four-wheel drive system:

- Provides 4x4 High engagement and disengagement while the vehicle is moving.
- Operates by a push button control located on the instrument panel that allows you select 4x2, 4x4 High or 4x4 Low operation.
- Uses auto-manual hub locks. When set to auto, the hubs engage and disengage automatically based on the 4x4 mode you select. When set to lock, the hubs remain engaged at all times.
- Increases fuel economy when used in the hub lock's recommended auto mode.

Note: *Auto-manual hub locks manually lock by rotating the hub lock control from auto to lock.*

Note: *Hub locks should be in auto mode when in 4x2 mode. If hub locks are in lock mode in 4x2 mode, there will be additional noise from the front axle.*

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FOUR-WHEEL DRIVE PRECAUTIONS

WARNING: Vehicles with a higher center of gravity (utility and four-wheel drive vehicles) handle differently than vehicles with a lower center of gravity (passenger cars). Avoid sharp turns, excessive speed and abrupt steering in these vehicles. Failure to drive cautiously increases the risk of losing control of your vehicle, vehicle rollover, personal injury and death.

WARNING: Do not become overconfident in the ability of four-wheel drive vehicles. Although a four-wheel drive vehicle may accelerate better than a two-wheel drive vehicle in low traction situations, it won't stop any faster than two-wheel drive vehicles. Always drive at a safe speed.

Truck and utility vehicles differ from passenger cars. Your vehicle could be higher to allow it to travel over rough terrain without getting stuck or damaging underbody components. The differences that make your vehicle so versatile also make it handle differently than passenger cars. Always maintain steering wheel control, especially in rough terrain. Since sudden changes in terrain can result in abrupt steering wheel motion, make sure you grip the steering wheel from the outside. Do not grip the spokes. Drive cautiously to avoid vehicle damage from concealed objects such as rocks and stumps. Drive slower in strong crosswinds which can affect the normal steering characteristics of your vehicle. Be extremely careful when driving on pavement made slippery by loose sand, water, gravel, snow or ice.

Note: *Your vehicle may come with a front air dam that can become damaged (due to reduced ground clearance) when taking your vehicle off-road. To prevent damage, remove the 15 bolts securing the air dam and remove.*

FOUR-WHEEL DRIVE LIMITATIONS

Do not use four-wheel drive high or four-wheel drive low mode on dry, hard surface roads. Doing so can produce excessive noise, increase tire wear and can damage drive components. Four-wheel drive high or four-wheel drive low modes are intended for consistently slippery or loose surfaces. Use of four low mode on these surfaces could produce some noise, such as occasional clunks, but should not damage drive components. When transitioning from consistently loose or slippery surfaces, be sure the four-wheel drive system is not mechanically blocked once on dry, hard surface roads in two-wheel drive high.

Note: *In certain scenarios, where the four-wheel drive system has difficulty engaging, a* ***To Engage 4x4 Slow to 3 MPH*** *or* ***To Engage 4x4 Slow to 5 km/h*** *message could appear in the instrument cluster.*

Operating Four-Wheel Drive with a Spare or Worn Tires

Your four-wheel drive system is not intended to provide full function with tires that have different levels of wear or with a dissimilar spare tire. Incorrect use of four-wheel drive with such tires can cause system damage.

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If there is a difference in the level of wear among tires on the vehicle or if you install a dissimilar spare tire on the vehicle, do not use 4WD High or 4WD Low (if equipped) other than to get your vehicle unstuck. After getting your vehicle unstuck, shift to 2H by performing the following steps:

1. Come to a stop on a flat, horizontal surface
2. Shift the transmission to park (P) for automatic transmissions and neutral (N) for manual transmissions.
3. Switch to two-wheel drive mode.
4. Shift the transmission to reverse (R).
5. Shift the transmission to drive (D) for automatic transmissions and to first gear for manual transmissions. This ensures the transfer case system is not trapped in place.

Note: *When the system detects a spare or worn tires and a four-wheel drive engagement request above a designated speed, a warning message appears in the instrument cluster. See* ***Four-Wheel Drive – Information Messages*** *(page 239).*

Note: *In certain scenarios, where the four-wheel drive system has difficulty engaging, a* ***To Engage 4x4 Slow to 3 MPH*** *or* ***To Engage 4x4 Slow to 5 km/h*** *message could appear in the instrument cluster.*

Mechanical Shift Blocking

On four-wheel drive vehicles with a mechanically locked four-wheel drive high mode, the transfer case distributes torque to the front wheels by mechanically interlocking the front and rear driveshafts together. Various external factors affect shifting performance of this type of system including, but not limited to:

- Vehicle acceleration.
- Dissimilar tire sizes.
- Steering input.

If the system detects a mechanical shift blockage at speed after you select two-wheel drive high, the message "4x4 Unable to Disengage See Manual", could display momentarily. If this message displays, one or more of the following actions can relieve the mechanical shift block:

- Momentary acceleration.
- Momentary braking.
- Bringing the vehicle to a stop.
- Shifting the transmission to neutral and back to drive.
- Shifting the transmission to reverse and back to drive.
- Driving the vehicle around a tight turn at a slow speed.

Note: *In certain scenarios, where the four-wheel drive system has difficulty engaging, a warning message appears in the instrument cluster. See* ***Four-Wheel Drive – Information Messages*** *(page 239).*

SWITCHING FOUR-WHEEL DRIVE ON AND OFF

A vehicle that comes with four-wheel drive, when selected, has the ability to use all four wheels to power itself. This increases traction, which may enable you to safely drive over terrain and road conditions that a conventional two-wheel drive vehicle cannot.

On some four-wheel drive models, the initial shift from two-wheel drive to four-wheel drive while the vehicle is moving can cause a momentary clunk and ratcheting sound. These sounds are normal as the front drivetrain comes up to speed and are not cause for concern.

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SELECTING A FOUR-WHEEL DRIVE MODE

The drive mode control is on the instrument panel.

Press the four-wheel drive mode button that best fits the current driving conditions. You can select two-wheel drive high (2H) or four-wheel drive high (4H) at a stop or while driving. When the shift is complete, the mode you select appears in the instrument cluster display. While shifting, the lights on the drive mode control can flash and you could see messages in the instrument cluster display indicating that a shift is in progress or to release the accelerator pedal to improve shift performance.

Note: *Momentarily releasing the accelerator pedal while a shift in progress message displays improves engagement or disengagement performance.*

Note: *Do not perform this operation when cruise control or trail control is selected and active. The system may not shift as expected.*

Note: *When the light is solid, the system has achieved the desired four-wheel drive mode. When a selected four-wheel drive mode light is blinking, the system is attempting to shift to that specific four-wheel drive mode.*

Note: *When you achieve recreational towing, all lights are off and Neutral Tow Enabled Leave Transmission in Neutral appears in the instrument cluster display.*

Note: *Do not perform this operation if the rear wheels are slipping, when making a tight turn or when applying the accelerator pedal. The system may not shift as expected.*

Note: *In certain scenarios, where the four-wheel drive system has difficulty engaging, a* ***To Engage 4x4 Slow to 3 MPH*** *or* ***To Engage 4x4 Slow to 5 km/h*** *message could appear in the instrument cluster.*

Note: *You could hear some noise as the system shifts or engages, this is normal.*

If the system detects a fault, a warning message appears in the instrument cluster display. See **Four-Wheel Drive – Information Messages** (page 239).

Shifting to or from Four-Wheel Drive Low (4L)

To select or exit four-wheel drive low (4L):

1. Bring your vehicle to a speed of 3 mph (5 km/h) or less.
2. Place the transmission in neutral (N)
3. Press the desired four-wheel drive button on the drive mode control.

A message appears in the instrument cluster display indicating a four-wheel drive shift is in progress. If any of the above shift conditions are not present, the shift will not occur and information guiding you through the proper shifting procedures appears in the instrument cluster display.

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If there is a transfer case tooth blockage a message appears in the instrument cluster display. To alleviate this condition, place the transmission in a forward gear, move your vehicle forward approximately 5 ft (1.5 m), and shift the transmission back to neutral (N) to allow the transfer case to complete the range shift.

Note: *You could hear some noise as the system shifts or engages, this is normal.*

If the system detects a fault, a warning message appears in the instrument cluster display. See **Four-Wheel Drive – Information Messages** (page 239).

FOUR-WHEEL DRIVE MODES

TWO-WHEEL DRIVE HIGH

Two-wheel drive high is for general on-road driving. Power is sent to the rear wheels only.

Note: *Two-wheel drive high can turn on or off automatically based on Drive Mode selection. See **Drive Mode Control** (page 309).*

FOUR-WHEEL DRIVE HIGH

Four-wheel drive high provides mechanically locked four-wheel drive power to both the front and rear wheels for use in off-road or winter conditions such as deep snow, sand or mud. This mode is not for use on dry pavement.

Note: *Four-wheel drive high can turn on or off automatically based on Drive Mode selection. See **Selecting a Drive Mode** (page 309).*

FOUR-WHEEL DRIVE LOW

Four-wheel drive low provides mechanically locked four-wheel drive power to both the front and rear wheels for use on low traction surfaces, but does so with additional gearing for increased torque multiplication. This mode is only for off-road conditions such as deep sand, steep slopes, or pulling heavy objects.

Note: *Four-wheel drive low can turn on or off automatically based on drive mode selection. See **Selecting a Drive Mode** (page 309).*

FOUR-WHEEL DRIVE INDICATORS

Two-wheel Drive High

Momentarily illuminates when you select two-wheel drive high.

Four-wheel Drive High

Continuously illuminates when you select four-wheel drive high.

Four-wheel Drive Low

Continuously illuminates when you select four-wheel drive low.

TRANSFER CASE FLUID CAPACITY AND SPECIFICATION

See **Transfer Case Fluid Capacity and Specification** (page 539).

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FOUR-WHEEL DRIVE – TROUBLESHOOTING

FOUR-WHEEL DRIVE – WARNING LAMPS

Illuminates when a four-wheel drive or power train fault is present.

Note: *When a system fault is present, the system can typically remain in whichever mode was selected prior to the fault condition occurring. It does not default to two-wheel drive in all circumstances. When this warning is displayed, have your vehicle serviced by an authorized dealer.*

FOUR-WHEEL DRIVE – INFORMATION MESSAGES

Message	Action
Check 4x4	A four-wheel drive system fault is present. Have the system checked as soon as possible.
4x4 Shift in Progress	The four-wheel drive system is making a shift.
For 4x4 LOW Shift to N	Displays when you attempt to switch to four-wheel drive low mode and you do not shift the transmission to neutral (N).
For 4x4 LOW Slow to 3 MPH	Displays when you attempt to switch to four-wheel drive low mode and your vehicle's speed is greater than 3 mph (5 km/h).
For 4x4 LOW Slow to 5 km/h	
To Exit 4x4 LOW Shift to N	Displays when you attempt to switch from four-wheel drive low mode and you do not shift the transmission to neutral (N).
To Exit 4x4 LOW Slow to 3 MPH	Displays when you attempt to switch from four-wheel drive low mode and your vehicle's speed is greater than 3 mph (5 km/h).
To Exit 4x4 LOW Slow to 5 km/h	
Shift Delayed Drive Forward	Displays when there is a transfer case gear tooth blockage while shifting to or from four-wheel drive low mode or to the neutral state. Place the transmission in a forward gear, move your vehicle forward approximately 5 ft (1.5 m), and shift the transmission back to neutral (N) to allow the transfer case to complete the range shift.

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Message	Action
Shift to Neutral	Displays when the system requires an additional transmission shift to neutral (N) to complete a transfer case shift.
To Engage 4x4 Slow to 3 MPH	Displays when the system is unable to engage four-wheel drive high and requires the driver to slow down before attempting to engage.
To Engage 4x4 Slow to 5 km/h	
To Engage 4x4 Release Accelerator Pedal	Displays when the four-wheel drive system requests that you release the accelerator pedal to complete a four-wheel drive shift. See **Selecting a Four-Wheel Drive Mode** (page 237).
4x4 Unable to Disengage See Manual	Displays when the four-wheel drive system detects a mechanical shift block when shifting out of four-wheel drive high. See **Four-Wheel Drive Limitations** (page 235).

FOUR-WHEEL DRIVE VIDEOS

4-Wheel-Drive Systems Video Link

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