

Operations

Warm-Up

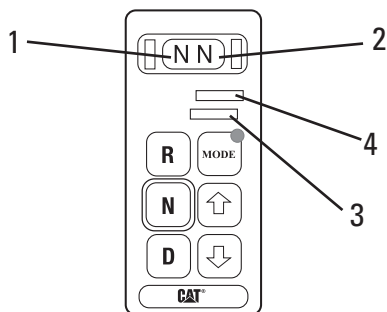
Operations with ambient temperatures from 0°C (32°F) to 35°C (95°F) require minimal transmission warm-up. Warming the engine will circulate and warm the transmission oil. When the transmission oil is allowed to warm up gradually, the anti friction components maintain optimum lubrication and cooling. High engine speeds during a cold start-up will decrease the durability of the bearing components. The electronic control system will restrict available transmission gears if operated with cold oil. If the ambient temperature is less than -23°C (-10°F), the engine needs to be warmed up for 20 minutes.

Basic Operation

With the ignition key switch in the ON position, the Shift Selector Pad will display "N N," indicating that the transmission is in Neutral.

Shift Pad

- (1) Left character
- (2) Right character
- (3) Mode One decal and LED light
- (4) Mode Two decal and lamp



Range Selection

To shift the transmission into a desired Range, the operator pushes D for Forward, R for Reverse or N for Neutral.

Shift Pad Display Illumination

The display's illumination level is normally tied to the dash illumination level control. An optional vehicle-mounted switch, if so equipped, may be used to disable the display.

Flashing Desired Gear

Several circumstances may prevent the transmission from shifting into a desired Range. When this happens, the Desired Gear value will flash but the transmission will not shift into the selected range. Circumstances preventing shift into the desired range include the following:

- Engine speed too high (over 1,000 rpm)
- Vehicle speed too high
- Programmable parameters
- Neutralized by park brake
- Auto Neutral

Additional Features

The mode functions listed in this bulletin may or may not be available based on the RV manufacturer and customer programming.

Mode Feature Access

The body manufacturer and dealers have the capability of programming Mode features. At this time, two of the available features can be accessed using the Mode button. The two features are requested using different techniques of pressing the Mode button. A quick press and release of the Mode button will provide the first mode displayed by the programmer decal in position 3 on the shift pad. Pressing and holding the Mode button for three seconds requests the second mode feature indicated by the decal on the lamp in position 4 on the shift pad.

Economy Mode

Selecting the Economy Mode will reduce the engine speed at which the transmission shifts in order to provide earlier up-shifts. This will enhance fuel economy. Additional Mode information can be obtained from the OEM manufacturer.

Daily Oil Level Check

The Caterpillar Shift Pad Selector allows the transmission oil level to be checked from the driver's seat by using an electronic oil level sensor mounted inside the transmission. The oil level can also be checked by using the transmission dipstick provided by the vehicle builder.

Requirements: Checking Transmission Oil

- Vehicle stationary
- Transmission in neutral
- Engine at idle
- Vehicle on level plane
- Transmission oil temperature above 80°C (176°F)

To initiate the electronic transmission oil level check, simultaneously press and hold the Up and Down arrows on the Shift Selector pad. The Shift Selector pad will display one of the listed messages if the requirements are not met. The Shift Pad will display two characters at a time in one of the sequences shown in the following table:

Display	Description
OL-ES-LO	Engine speed too low
OL-ES-HI	Engine speed too high
OL-TX-N	Neutral not selected
OL-OT-LO	Oil temperature too low
OL-OT-HI	Oil temperature too high
OL-VS-HI	Vehicle speed not zero
L-SE	System error

Once all the vehicle requirements are met, the range display will show 90 and will count down to 0 during a two-minute period. At the end of the two-minute countdown, one of the following messages will be displayed:

Display	Description
OL-LO-XX	Oil low XX quarts
OL-HI-XX	Oil high XX quarts
OL-OK	Oil level full

Note: Periodically the manual oil level dipstick should be compared to the electronic oil level display to ensure both methods provide comparable results.

The Oil Level Message display continues to function until the driver exits the mode by pressing a range button or the Up/Down arrows simultaneously. The transmission will not take any action at the end of the oil level check. The oil level check is for the driver's information, and it is up to the driver to take appropriate action.

Transmission Diagnostics

Caterpillar requires that vehicle OEMs install RED and AMBER driver-warning lamps. The lamps may have several locations within the operator's station depending on the vehicle design. The lamps indicate the transmission's condition.

1. AMBER Trouble Indicator

The diagnostic lamp is yellow or AMBER. This lamp communicates the status of the transmission's electronic system. If the amber lamp (trouble code) is activated, it alerts the driver that a diagnostic condition exists within the transmission.

2. RED Warning Indicator

The RED warning lamp tells the driver a condition exists which requires immediate attention. This lamp indicates an excessive oil temperature or an oil filter bypass has occurred.

3. Additional Information

Additional owner, driver, maintenance and service information is provided in the Operator and Maintenance Manuals listed in the Reference Literature

Transmission Maintenance & Service Intervals

Distance (odometer), service hours or calendar time, whichever occurs first, can be used to determine the

maintenance schedule. More frequent oil changes are necessary when high levels of contamination, overheating or SOS oil analysis indicate that the transmission oil has been contaminated. Contamination indicators may include an oil viscosity change, a strong odor or a discolored black appearance.

RV APPLICATIONS with SHALLOW OIL SUMPS Dexron® III H

Fluid Change Intervals	Main Filter	Magnetic Screen
25,000 miles(1) (40,000 km) 1000 hours 12 months	25,000 miles (40,000 km) 1000 hours 12 months	Every fluid Change
Synthetic ATF Oil Meeting Caterpillar AT-1 Specifications (1)(2)		
150,000 miles(1) (240,000 km) 4,000 hours 48 months	50,000 miles (80,000 km) 2,000 hours 24 months	Every fluid Change

(1) With acceptable SOS oil analysis every 25,000 miles
(2) **NOTE:** Factory test and fill oil is Dexron III H. Residual oil in the transmission will dilute the 1st use of synthetic oil. Caterpillar recommends a reduced oil change schedule for the 1st installation of synthetic oil.

CX31 & CX35 Transmission Oil Filters:

Cartridge 249-2329 Spin-On 126-1817

CX28 Transmission Oil Filters (6) Types

Listed in CX28 Operation & Maintenance Manual

Reference Literature:

CX28 Operation and Maintenance Manual SEBU8198
CX31 Operation and Maintenance Manual SEBU8192
CX35 Operation and maintenance Manual SEBU8203
Parts Book CX28 SEBP4914
Parts Book CX31 SEBP4927
Parts Book CX35 SEBP4945

Customer Call Center (Toll Free) 877-777-3126

Parts and Service Directory LEGT3466