How to use the shift selector to read oil level and diagnostic codes on 3000/4000 Series Allison transmissions

If it’s not Allison, it’s not Automatic.
The Allison Advantage

Your Allison Automatic is fully electronically controlled. The Allison electronic controls package oversees the operation of the transmission, controlling transmission upshifts and downshifts, and providing important information on the operation of your drive system.

Through readouts on your shift selector, you will be able to monitor transmission oil levels and read diagnostic codes. This brochure will help you understand the readouts, and thereby help you enjoy long, trouble-free operation of your Allison Automatic.

Checking Fluid Levels

The transmission fluid cools, lubricates and transmits hydraulic power, so it is important the proper fluid level be maintained at all times. If the fluid level is too low, the converter and clutches do not receive an adequate supply of fluids. If the fluid level is too high, the fluid can aerate, causing the transmission to shift erratically or overheat.

If the transmission is equipped with an oil level sensor, oil level information can be displayed on the shift selector.

Use the following procedure to display oil level information if the transmission is equipped with the option.

To enter the oil level display mode:

1. Park the vehicle on a level surface, shift to N (Neutral) and apply the parking brake.
2. Using a pushbutton shift selector, simultaneously press the UP and DOWN arrow buttons.
   
   Using a lever shift selector, press the DISPLAY MODE button one time.

3. A two-minute countdown begins when the following conditions are met:
   - Engine is at idle.
   - The fluid temperature is above 60°C (140°F) and below 104°C (220°F).
   - Transmission output shaft is stopped.
   - Transmission is in N (Neutral).
   - The vehicle has been stationary for approximately two minutes to allow the fluid to settle.

Oil level will be displayed at the end of the two-minute countdown. During the countdown, the display flashes and a countdown occurs reducing by one digit every 15 seconds (for example 8, 7, 6, 5, 4, 3, 2, 1).
4. After the two-minute countdown, the shift selector displays the oil level data as follows:

- **CORRECT FLUID LEVEL** – “oL” is displayed ("oL" represents “Fluid (Oil) Level Check Mode”), followed by “oK.” The “oK” display indicates the fluid is within the correct fluid level zone. The sensor display and the transmission dipstick may not agree exactly because the oil level sensor compensates for fluid temperature.

![SINGLE DIGIT DISPLAY](image)

- **LOW FLUID LEVEL** – “oL” is displayed ("oL" represents “Fluid (Oil) Level Check Mode”) followed by “Lo” ("Lo" represents “Low Oil Level”) and the number of quarts the transmission fluid is low.

  Example: oL Lo 02 “2” indicates that 2 additional quarts of fluid will bring the fluid level within the middle of the “oK” zone.

![DOUBLE DIGIT DISPLAY](image)

- **HIGH FLUID LEVEL** – “oL” is displayed ("oL" represents “Fluid (Oil) Level Check Mode”) followed by “HI” (“HI” represents “High Oil Level”) and the number of quarts the transmission fluid is overfilled.

  Example: oL HI 1 “1” indicates 1 quart of fluid above the full transmission level.

![SINGLE DIGIT DISPLAY](image)

- **INVALID FOR DISPLAY** – Failure to meet any of the above conditions will stop the two-minute countdown. The shift selector will display “oL” ("oL" represents “Fluid (Oil) Level Check Mode”) followed by “-” (for single digit display) or “– –” (for double digit display) and a numerical display. The numerical display is a fault code and indicates conditions are not proper to receive the fluid level information, or that there is a system malfunction.

  The fault codes that may be encountered are shown in the Fluid Level Fault Codes tables:

<table>
<thead>
<tr>
<th>SINGLE DIGIT DISPLAY</th>
<th>FLUID LEVEL FAULT CODE</th>
<th>DOUBLE DIGIT DISPLAY FAULT CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>o, L, –, 0, X</td>
<td>Setting time too short</td>
<td>oL, – –, 0X</td>
</tr>
<tr>
<td>o, L, –, 5, 0</td>
<td>Engine speed too low</td>
<td>oL, – –, 50</td>
</tr>
<tr>
<td>o, L, –, 5, 9</td>
<td>Engine speed too high</td>
<td>oL, – –, 59</td>
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<tr>
<td>o, L, –, 6, 5</td>
<td>Neutral must be selected</td>
<td>oL, – –, 65</td>
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<tr>
<td>o, L, –, 7, 0</td>
<td>Sump fluid temperature too low</td>
<td>oL, – –, 70</td>
</tr>
<tr>
<td>o, L, –, 7, 9</td>
<td>Sump fluid temperature too high</td>
<td>oL, – –, 79</td>
</tr>
<tr>
<td>o, L, –, 8, 9</td>
<td>Output shaft rotation</td>
<td>oL, – –, 89</td>
</tr>
<tr>
<td>o, L, –, 9, 5</td>
<td>Oil level sensor failed*</td>
<td>oL, – –, 95</td>
</tr>
</tbody>
</table>

*Report sensor failure display to a distributor or dealer in your area.

**CAUTION:** A low or high fluid level can cause overheating and irregular shift patterns. Incorrect fluid level can damage the transmission.
To exit the oil level display mode:

**SINGLE DIGIT DISPLAY**
- **Pushbutton selector:** Press the NEUTRAL button or simultaneously press the UP and DOWN arrows twice.
- **Lever selector:** Press the DISPLAY button twice or momentarily move the shift selector to any range and back to neutral.

**DOUBLE DIGIT DISPLAY**
- **Pushbutton selector:** Press any range button.
- **Lever selector:** Press the DISPLAY MODE (diagnostic) button once.

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**Diagnostics**

The electronic control system of your Allison Automatic is programmed to inform the operator of a problem with the transmission system and automatically alert the operator. When the Electronic Control Unit (ECU) detects a problem condition, the ECU:

- Restricts shifting
- Illuminates the CHECK TRANS* light on the instrument panel
- Registers a diagnostic code

Continued illumination of the CHECK TRANS light during vehicle operation (other than start-up) indicates that the ECU has signaled a diagnostic code.

*For some problems, diagnostic codes may be registered without the ECU activating the CHECK TRANS light. Your Allison Transmission authorized service outlet should be consulted whenever there is a transmission-related concern. They have the equipment to check for diagnostic codes and to correct problems which arise.

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**Displaying Active Diagnostic Codes**

To enter the diagnostic mode:

1. Bring the vehicle to a complete stop. Apply the parking brake.
2. Using a *pushbutton shift selector*, simultaneously press the UP and DOWN arrows once if the transmission does not have an oil level sensor and twice if the transmission is equipped with an oil level sensor.
   - Using a *lever shift selector*, press the DISPLAY MODE/DIAGNOSTIC button once if the transmission does not have an oil level sensor and twice if the transmission is equipped with an oil level sensor.
**Diagnostic Trouble Code (DTC)** – The diagnostic trouble code number referring to the general condition or area of fault detected by the ECU.

**SINGLE DIGIT DISPLAY CODES**

When the diagnostic mode is entered, the first code (position d1) is displayed as follows:

Example Code: 13 12

Code Position: d1 – indicates that this is the first diagnostic code listed in the ECU memory.

Main Codes: 13 - (two digits displayed one at a time) are listed first and provide the general condition or area of a fault detected by the ECU.

Sub Code: 12 - (two digits displayed one at a time) is listed second and provides specific areas or conditions within the main code that caused the fault. This subcode indicates the problem is caused by low voltage.

**DOUBLE DIGIT DISPLAY CODES**

When the diagnostic mode is entered, the first code (position d1) is displayed as follows:

Example Code: P 07 22

Displayed as: d1, P, 07, 22

The Code Position (d1) is the first item displayed, followed by the Diagnostic Trouble Code (DTC)**, P, 07, 22. Each item is displayed for about one second. The display cycles continuously until the next code list position is accessed by pressing the MODE button.

**NOTE:** This information is designed to give you an overview of the Oil Level Sensor and Diagnostics operation of your Allison Automatic, and is not intended to replace your Operator’s Manual. Please refer to your Allison Automatic Operator’s Manual for complete information on Diagnostic Codes and Oil Level Sensor operation.


Or contact SGI, Inc.

Attn: Allison Literature Fulfillment Desk
8350 Allison Avenue
Indianapolis, IN 46268

Toll free: 888-666-5799
International: 317-471-4995

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**To read the digital display codes:**

Diagnostic codes will appear one digit at a time on a single digit display lever or pushbutton selector. They will appear two characters at a time on a double digit display pushbutton or lever selector.

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**To clear diagnostic codes:**

1. **SINGLE DIGIT DISPLAYS**

   Press and hold the MODE button for approximately three seconds until the MODE INDICATOR (LED) flashes. Release the MODE button and active indicators will not be illuminated. To clear inactive codes, press and hold the MODE button for 10 seconds. Some codes are self-clearing and others require ignition cycles to clear.

2. Be sure to record all codes displayed before they are cleared. This is essential for troubleshooting. Begin operating as normal.

3. Drive the vehicle and check for code recurrence. If codes continue to recur, bring the vehicle to an authorized Allison Transmission service outlet to diagnose and repair the problem causing the codes.

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**DOUBLE DIGIT DISPLAYS**

Press and hold the MODE button for 10 seconds to clear both active and inactive codes.

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### Diagnostic Transmission Codes

<table>
<thead>
<tr>
<th>MAIN CODE</th>
<th>SUB CODE</th>
<th>CODE DESCRIPTION</th>
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<tr>
<td>13</td>
<td>12</td>
<td>ECU INPUT VOLTAGE LOW</td>
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<td>13</td>
<td></td>
<td>ECU INPUT VOLTAGE MEDIUM LOW</td>
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<td>ECU INPUT VOLTAGE HIGH</td>
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<td>12</td>
<td>OIL LEVEL SENSOR, FAILED LOW</td>
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<td>12</td>
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<td>THROTTLE POSITION SENSOR, FAILED HIGH</td>
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<tr>
<td>22</td>
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<td>CALIBRATION BLOCK CHECKSUM</td>
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<td>POWER OFF BLOCK CHECKSUM</td>
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<td>DIAGNOSE QUEUE BLOCK CHECKSUM</td>
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### Diagnostic Transmission Codes

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### Diagnostic Transmission Codes

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<th>MAIN CODE</th>
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<th>CODE</th>
<th>DESCRIPTION</th>
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If it’s not Allison, it’s not Automatic.”
## Diagnostic Transmission Codes

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## Diagnostic Transmission Codes

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### Diagnostic Transmission Codes

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