

SHIFT SELECTOR OPERATION & CODE MANUAL

Codes and instructions on how to use the shift selector to read oil level and diagnostic codes



pushbutton shift selector



lever shift selector



www.allisontransmission.com
P.O. Box 894 Indianapolis, IN 46206-0894 1-800-252-5ATD

ISO/QS 9000 and ISO 14001 certified
Information or specifications subject to change without notice or obligation. SA3360EN (2002/02)



DISPLAYING OIL LEVEL INFORMATION

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

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

1 TO ENTER THE OIL LEVEL DISPLAY MODE:



• Using a *pushbutton shift selector*, simultaneously press the **UP** and **DOWN** arrow buttons.

• Using a *lever shift selector*, press the **DISPLAY MODE** button.



A two minute countdown begins when the following conditions are met:

- Engine is at idle.
 - Sump oil is at operating temperature.
 - Transmission output shaft is stopped.
 - Transmission is in neutral.
 - Oil level sensor is functioning properly.
- Oil level will be displayed at the end of the two minute countdown. During the countdown, the display flashes and a count down occurs reducing by one digit every 15 seconds. (8, 7, 6, 5, 4, 3, 2, 1)

NOTE: Failure to meet any of the above conditions will stop the two minute countdown. The shift selector will display one of the following *oil level codes* to show the reason for the countdown interruption. The countdown will resume where it stopped once all conditions have been met. Shift selectors with single digit displays will display the four digit codes one digit at a time. Shift selectors with two digit displays will display the codes two digits at a time.

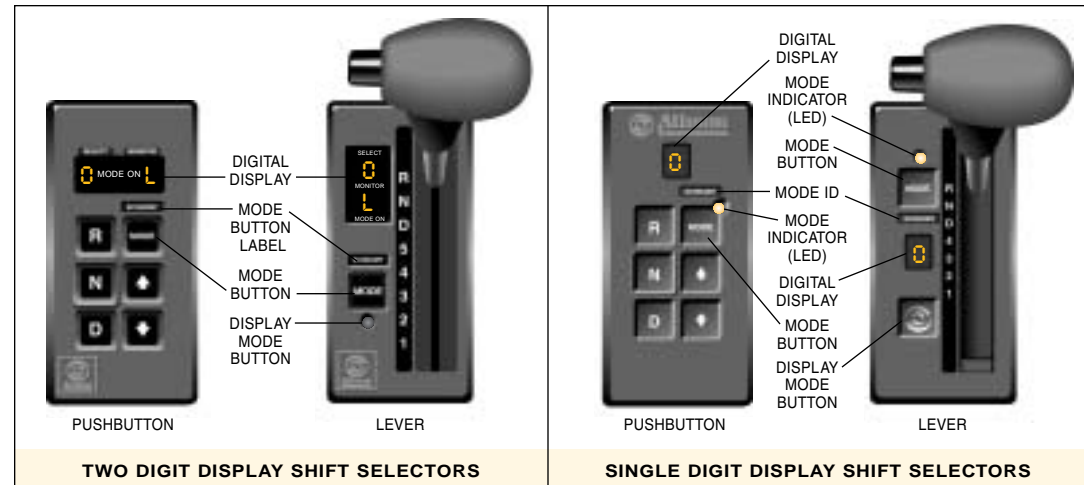
| OIL LEVEL CODE | CODE DESCRIPTION |
|----------------|---------------------------------|
| o L 0 X | Setting time too short |
| o L 5 0 | Engine RPM too low |
| o L 5 9 | Engine RPM too high |
| o L 6 5 | Neutral not selected |
| o L 7 0 | Sump fluid temperature too low |
| o L 7 9 | Sump fluid temperature too high |
| o L 8 9 | Output shaft rotation detected |
| o L 9 5 | Oil level sensor failed |

2 AFTER THE TWO MINUTE COUNTDOWN, the shift selector displays the oil level data as in the following examples:

| OIL LEVEL READINGS | MEANING OF READINGS |
|-----------------------------|-----------------------------|
| o L o K | Fluid level is correct |
| o, L, L, o, 1 or OL, LO, 01 | Fluid level is 1 quart low |
| o, L, H, I, 1 or OL, HI, 01 | Fluid level is 1 quart high |

3 TO EXIT THE OIL LEVEL DISPLAY MODE:

- Using the *pushbutton shift selector*, press the **NEUTRAL** button or simultaneously press the **UP** and **DOWN** arrows twice.
- Using the *lever shift selector*, press the **DISPLAY** button twice or momentarily move the shift selector to any range and back to neutral.



DISPLAYING DIAGNOSTIC CODES

1 TO ENTER THE DIAGNOSTIC MODE:

- 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** button once if the transmission does not have an oil level sensor and twice if the transmission is equipped with an oil level sensor.

2 IF NO CODES ARE PRESENT, the display will show a dash (-) on a single digit display shift selector or a double dash (- -) on a two digit display shift selector.

IF CODES ARE PRESENT, the code registered in the first of five code positions will display on the shift selector. The code list position is the first item displayed, followed by the two digit main code and then the two digit sub code. Each item is displayed for about one second. The display cycles continuously until the next code list position is selected by pressing the **MODE** button.

THE FOLLOWING LIST REPRESENTS A CODE DISPLAY USING CODE 25 11 AS AN EXAMPLE:

- Code list position - **d 1** (will be displayed one digit at a time on a shift selector with a single digit display).
- Main code - **2 5** (will be displayed one digit at a time on a shift selector with a single digit display).
- Sub code - **1 1** (will be displayed one digit at a time on a shift selector with a single digit display).

- Cycle will continue to repeat itself.

3 TO VIEW THE CODES in the second, third, fourth and fifth positions (d 2, d 3, d 4, d 5), momentarily press the **MODE** button as explained above in step 2. Momentarily pressing the **MODE** button when the fifth position is displayed, will restart the sequence by displaying code position one (d 1).

- 4 IF A LISTED CODE IS ACTIVE, the LED indicator next to the **MODE** button will be illuminated on shift selectors with a single digit display. On shift selectors with a two digit display, the **MODE ON** light will appear on the display.



CLEARING DIAGNOSTIC CODES

- 1 WHILE IN THE DIAGNOSTIC MODE, push and hold the **MODE** button for approximately ten seconds to clear all of the codes. Shift selectors with two digit displays will sound a tone at about eight seconds and a second tone at about ten seconds indicating that all of the codes are cleared. Shift selectors with a single digit display will flash the LED indicator three times after about 3 seconds and three times again after about 10 seconds indicating that all of the codes are cleared.
- 2 DRIVE THE VEHICLE AND CHECK FOR CODE REOCCURRENCE. If codes continue to reoccur, bring the vehicle to an authorized Allison Transmission repairing outlet to diagnose and repair the problem causing the codes.

EXITING THE DIAGNOSTIC MODE

- 1 ON PUSHBUTTON SHIFT SELECTORS, press the **NEUTRAL** button or simultaneously press the **UP** and **DOWN** arrows.
- 2 ON LEVER SHIFT SELECTORS, press the **DISPLAY MODE** button or move the shift selector to any range and back to neutral.

ALLISON TRANSMISSION

SHIFT SELECTOR DIAGNOSTIC CODES

| MAIN CODE | SUB CODE | CODE DESCRIPTION |
|-----------|----------|--------------------------------------|
| 12 | 12 | OIL LEVEL - LOW |
| | 23 | OIL LEVEL - HIGH |
| 13 | 12 | ECU INPUT VOLTAGE LOW |
| | 13 | ECU INPUT VOLTAGE MEDIUM LOW |
| | 23 | ECU INPUT VOLTAGE HIGH |
| 14 | 12 | OIL LEVEL SENSOR FAILED LOW |
| | 23 | OIL LEVEL SENSOR FAILED HIGH |
| 21 | 12 | THROTTLE POSITION SENSOR FAILED LOW |
| | 23 | THROTTLE POSITION SENSOR FAILED HIGH |
| 22 | 14 | ENGINE SPEED SENSOR |
| | 15 | TURBINE SPEED SENSOR |
| | 16 | OUTPUT SPEED SENSOR |
| | 23 | PRIMARY SHIFT SELECTOR |
| 23 | 13 | PRIMARY SHIFT SELECTOR MODE FAULT |
| | 14 | SECONDARY SHIFT SELECTOR |
| | 15 | SECONDARY SHIFT SELECTOR MODE FAULT |
| | 16 | SHIFT SELECTOR DISPLAY LINE FAULT |
| | 24 | SUMP FLUID TEMPERATURE COLD |
| 24 | 23 | SUMP FLUID TEMPERATURE HOT |
| | 25 | 00 |
| 25 | 11 | OUTPUT SPEED SENSOR @ 0 IN 1ST |
| | 22 | OUTPUT SPEED SENSOR @ 0 IN 2ND |
| | 33 | OUTPUT SPEED SENSOR @ 0 IN 3RD |
| | 44 | OUTPUT SPEED SENSOR @ 0 IN 4TH |
| | 55 | OUTPUT SPEED SENSOR @ 0 IN 5TH |
| | 66 | OUTPUT SPEED SENSOR @ 0 IN 6TH |
| | 77 | OUTPUT SPEED SENSOR @ 0 IN REVERSE |
| | 26 | 00 |
| 26 | 11 | ENG. COOLANT SOURCE NOT DETECTED |
| | 32 | 00 |
| 32 | 33 | C3 PRESSURE SWITCH OPEN IN 3RD |
| | 55 | C3 PRESSURE SWITCH OPEN IN 5TH |
| | 77 | C3 PRESSURE SWITCH OPEN IN REVERSE |
| | 33 | 12 |
| 33 | 23 | SUMP TEMPERATURE SENSOR FAILED HIGH |
| | 34 | 12 |
| 34 | 13 | EPROM CALIBRATION BLOCK CHECKSUM |
| | 14 | EPROM POWER OFF BLOCK CHECKSUM |
| | 15 | EPROM DIAGNOSE QUEUE BLOCK CHECKSUM |

| MAIN CODE | SUB CODE | CODE DESCRIPTION |
|-----------|----------|--------------------------------------|
| 34 | 16 | EPROM REAL TIME BLOCK CHECKSUM |
| | 17 | EPROM MODIFIABLE CONSTANTS CHECKSUM |
| 35 | 00 | POWER INTERRUPTION |
| | 16 | REAL TIME WRITE INTERRUPTION |
| 36 | 00 | HARDWARE / SOFTWARE NOT COMPATIBLE |
| 41 | 12 | A SOLENOID OPEN OR SHORTED TO GROUND |
| | 13 | B SOLENOID OPEN OR SHORTED TO GROUND |
| | 14 | C SOLENOID OPEN OR SHORTED TO GROUND |
| | 15 | D SOLENOID OPEN OR SHORTED TO GROUND |
| | 16 | E SOLENOID OPEN OR SHORTED TO GROUND |
| | 21 | F SOLENOID OPEN OR SHORTED TO GROUND |
| | 22 | G SOLENOID OPEN OR SHORTED TO GROUND |
| | 23 | H SOLENOID OPEN OR SHORTED TO GROUND |
| | 24 | J SOLENOID OPEN OR SHORTED TO GROUND |
| | 25 | K SOLENOID OPEN OR SHORTED TO GROUND |
| | 26 | N SOLENOID OPEN OR SHORTED TO GROUND |
| 42 | 12 | A SOLENOID SHORTED TO BATTERY |
| | 13 | B SOLENOID SHORTED TO BATTERY |
| | 14 | C SOLENOID SHORTED TO BATTERY |
| | 15 | D SOLENOID SHORTED TO BATTERY |
| | 16 | E SOLENOID SHORTED TO BATTERY |
| | 21 | F SOLENOID SHORTED TO BATTERY |
| | 22 | G SOLENOID SHORTED TO BATTERY |
| | 23 | H SOLENOID SHORTED TO BATTERY |
| | 24 | J SOLENOID SHORTED TO BATTERY |
| | 25 | K SOLENOID SHORTED TO BATTERY |
| | 26 | N SOLENOID SHORTED TO BATTERY |
| 44 | 12 | A SOLENOID SHORTED TO GROUND |
| | 13 | B SOLENOID SHORTED TO GROUND |
| | 14 | C SOLENOID SHORTED TO GROUND |
| | 15 | D SOLENOID SHORTED TO GROUND |
| | 16 | E SOLENOID SHORTED TO GROUND |
| | 21 | F SOLENOID SHORTED TO GROUND |
| | 22 | G SOLENOID SHORTED TO GROUND |
| | 23 | H SOLENOID SHORTED TO GROUND |
| | 24 | J SOLENOID SHORTED TO GROUND |
| | 25 | K SOLENOID SHORTED TO GROUND |
| | 26 | N SOLENOID SHORTED TO GROUND |
| 45 | 12 | A SOLENOID CIRCUIT OPEN |

(continued on next page)



ALLISON TRANSMISSION

SHIFT SELECTOR DIAGNOSTIC CODES

| MAIN CODE | SUB CODE | CODE DESCRIPTION |
|-----------------------------------|----------|---|
| <i>(continued from last page)</i> | | |
| 45 | 13 | B SOLENOID CIRCUIT OPEN |
| | 14 | C SOLENOID CIRCUIT OPEN |
| | 15 | D SOLENOID CIRCUIT OPEN |
| | 16 | E SOLENOID CIRCUIT OPEN |
| | 21 | F SOLENOID CIRCUIT OPEN |
| | 22 | G SOLENOID CIRCUIT OPEN |
| | 23 | H SOLENOID CIRCUIT OPEN |
| | 24 | J SOLENOID CIRCUIT OPEN |
| | 25 | K SOLENOID CIRCUIT OPEN |
| | 26 | N SOLENOID CIRCUIT OPEN |
| 46 | 21 | F SOLENOID CIRCUIT OVER CURRENT |
| | 26 | N & H SOLENOID CIRCUITS OVER CURRENT |
| | 27 | A-HI SOLENOID CIRCUIT OVER CURRENT |
| 51 | 01 | OFF GOING RATIO TEST LOW TO 1 |
| | 10 | OFF GOING RATIO TEST 1 TO LOW |
| | 12 | OFF GOING RATIO TEST 1 TO 2 |
| | 21 | OFF GOING RATIO TEST 2 TO 1 |
| | 23 | OFF GOING RATIO TEST 2 TO 3 |
| | 24 | OFF GOING RATIO TEST 2 TO 4 |
| | 35 | OFF GOING RATIO TEST 3 TO 5 |
| | 42 | OFF GOING RATIO TEST 4 TO 2 |
| | 43 | OFF GOING RATIO TEST 4 TO 3 |
| | 45 | OFF GOING RATIO TEST 4 TO 5 |
| | 46 | OFF GOING RATIO TEST 4 TO 6 |
| | 53 | OFF GOING RATIO TEST 5 TO 3 |
| | 64 | OFF GOING RATIO TEST 6 TO 4 |
| | 65 | OFF GOING RATIO TEST 6 TO 5 |
| | XY | OFF GOING RATIO TEST X TO Y |
| | 52 | 01 |
| 08 | | OFF GOING C3PS TEST LOW TO N1 |
| 32 | | OFF GOING C3PS TEST 3 TO 2 |
| 34 | | OFF GOING C3PS TEST 3 TO 4 |
| 54 | | OFF GOING C3PS TEST 5 TO 4 |
| 56 | | OFF GOING C3PS TEST 5 TO 6 |
| 71 | | OFF GOING C3PS TEST REVERSE TO 1 |
| 72 | | OFF GOING C3PS TEST REVERSE TO 2 |
| 78 | | OFF GOING C3PS TEST REVERSE TO N2 |
| 79 | | OFF GOING C3PS TEST REVERSE TO NNC TO 2 |
| 99 | | OFF GOING C3PS TEST N3 TO N2 |

| MAIN CODE | SUB CODE | CODE DESCRIPTION |
|-----------|--|-------------------------------------|
| 52 | XY | OFF GOING C3PS TEST X TO Y |
| 53 | 08 | OFF GOING SPEED TEST LOW TO N1 |
| | 18 | OFF GOING SPEED TEST 1 TO N1 |
| | 28 | OFF GOING SPEED TEST 2 TO N1 |
| | 29 | OFF GOING SPEED TEST 2 TO N2 |
| | 38 | OFF GOING SPEED TEST 3 TO N1 |
| | 39 | OFF GOING SPEED TEST 3 TO N3 |
| | 48 | OFF GOING SPEED TEST 4 TO N1 |
| | 49 | OFF GOING SPEED TEST 4 TO N3 |
| | 58 | OFF GOING SPEED TEST 5 TO N1 |
| | 59 | OFF GOING SPEED TEST 5 TO N3 |
| | 68 | OFF GOING SPEED TEST 6 TO N1 |
| | 69 | OFF GOING SPEED TEST 6 TO N4 |
| | 78 | OFF GOING SPEED TEST REVERSE TO N1 |
| 99 | OFF GOING SPEED TEST N2 TO N3 / N3 TO N2 | |
| 54 | XY | OFF GOING SPEED TEST X TO Y |
| | 01 | ON COMING RATIO TEST LOW TO 1 |
| | 07 | ON COMING RATIO TEST LOW TO REVERSE |
| | 10 | ON COMING RATIO TEST 1 TO LOW |
| | 12 | ON COMING RATIO TEST 1 TO 2 |
| | 17 | ON COMING RATIO TEST 1 TO REVERSE |
| | 21 | ON COMING RATIO TEST 2 TO 1 |
| | 23 | ON COMING RATIO TEST 2 TO 3 |
| | 24 | ON COMING RATIO TEST 2 TO 4 |
| | 27 | ON COMING RATIO TEST 2 TO REVERSE |
| | 32 | ON COMING RATIO TEST 3 TO 2 |
| | 34 | ON COMING RATIO TEST 3 TO 4 |
| | 35 | ON COMING RATIO TEST 3 TO 5 |
| | 42 | ON COMING RATIO TEST 4 TO 2 |
| | 43 | ON COMING RATIO TEST 4 TO 3 |
| | 45 | ON COMING RATIO TEST 4 TO 5 |
| | 46 | ON COMING RATIO TEST 4 TO 6 |
| 53 | ON COMING RATIO TEST 5 TO 3 | |
| 54 | ON COMING RATIO TEST 5 TO 4 | |
| 56 | ON COMING RATIO TEST 5 TO 6 | |
| 64 | ON COMING RATIO TEST 6 TO 4 | |
| 65 | ON COMING RATIO TEST 6 TO 5 | |
| 70 | ON COMING RATIO TEST REV. TO LOW | |
| 71 | ON COMING RATIO TEST REVERSE TO 1 | |

(continued on next page)



ALLISON TRANSMISSION

SHIFT SELECTOR DIAGNOSTIC CODES

| MAIN CODE | SUB CODE | CODE DESCRIPTION |
|-----------------------------------|----------|---|
| <i>(continued from last page)</i> | | |
| 54 | 72 | ON COMING RATIO TEST REVERSE TO 2 |
| | 80 | ON COMING RATIO TEST N1 TO LOW |
| | 81 | ON COMING RATIO TEST N1 TO 1 |
| | 82 | ON COMING RATIO TEST N1 TO 2 |
| | 83 | ON COMING RATIO TEST N1 TO 3 |
| | 85 | ON COMING RATIO TEST N1 TO 5 |
| | 86 | ON COMING RATIO TEST N1 TO 6 |
| | 92 | ON COMING RATIO TEST N2 TO 2 |
| | 93 | ON COMING RATIO TEST N3 TO 3 |
| | 95 | ON COMING RATIO TEST N3 TO 5 |
| | 96 | ON COMING RATIO TEST N4 TO 6 |
| | 97 | ON COMING RATIO TEST 2 TO REVERSE |
| | XY | ON COMING RATIO TEST X TO Y |
| 55 | 07 | ON COMING C3PS TEST LOW TO REVERSE |
| | 17 | ON COMING C3PS TEST 1 TO REVERSE |
| | 27 | ON COMING C3PS TEST 2 TO REVERSE |
| | 80 | ON COMING C3PS TEST N1 TO LOW |
| | 87 | ON COMING C3PS TEST N1 TO REVERSE |
| | 97 | ON COMING C3PS TEST NVL TO REVERSE |
| | XY | ON COMING C3PS TEST X TO Y |
| 56 | 00 | LOW RANGE VERIFICATION TEST |
| | 11 | 1ST RANGE VERIFICATION TEST |
| | 22 | 2ND RANGE VERIFICATION TEST |
| | 33 | 3RD RANGE VERIFICATION TEST |
| | 44 | 4TH RANGE VERIFICATION TEST |
| | 55 | 5TH RANGE VERIFICATION TEST |
| | 66 | 6TH RANGE VERIFICATION TEST |
| | 77 | REVERSE RANGE VERIFICATION TEST |
| 57 | 11 | 1ST RANGE VERIFICATION C3PS TEST |
| | 22 | 2ND RANGE VERIFICATION C3PS TEST |
| | 44 | 4TH RANGE VERIFICATION C3PS TEST |
| | 66 | 6TH RANGE VERIFICATION C3PS TEST |
| | 88 | N1 RANGE VERIFICATION C3PS TEST |
| | 99 | N2 TO N4 RANGE VERIFICATION C3PS TEST |
| 61 | 00 | RETARDER OIL TEMPERATURE HOT |
| 62 | 12 | RETARDER TEMP. SENSOR FAILED LOW |
| | 23 | RETARDER TEMP. SENSOR FAILED HIGH |
| | 32 | ENGINE COOLANT TEMP. SENSOR FAILED LOW |
| | 33 | ENGINE COOLANT TEMP. SENSOR FAILED HIGH |

| MAIN CODE | SUB CODE | CODE DESCRIPTION |
|-----------|----------|--|
| 63 | 00 | INPUT FUNCTION FAULT |
| | 26 | KICKDOWN INPUT FAILED ON |
| | 40 | SERVICE BRAKE STATUS INPUT FAILED ON |
| 64 | 12 | RETARDER MODULATION SENSOR FAILED LOW |
| | 23 | RETARDER MODULATION SENSOR FAILED HIGH |
| 65 | 00 | ENGINE RATING TOO HIGH |
| 66 | 00 | SERIAL COMMUNICATION INTERFACE FAULT |
| | 11 | S. C. I. ENGINE COOLANT SOURCE FAULT |
| 69 | 12 | A SOLENOID DRIVER OPEN IN ECU |
| | 13 | B SOLENOID DRIVER OPEN IN ECU |
| | 14 | C SOLENOID DRIVER OPEN IN ECU |
| | 15 | D SOLENOID DRIVER OPEN IN ECU |
| | 16 | E SOLENOID DRIVER OPEN IN ECU |
| | 21 | F SOLENOID DRIVER OPEN IN ECU |
| | 22 | G SOLENOID DRIVER OPEN IN ECU |
| | 23 | H SOLENOID DRIVER OPEN IN ECU |
| | 24 | J SOLENOID DRIVER OPEN IN ECU |
| | 25 | K SOLENOID DRIVER OPEN IN ECU |
| | 26 | N SOLENOID DRIVER OPEN IN ECU |
| | 27 | A-HIGH SWITCH INOPERATIVE IN ECU |
| | 28 | F-HIGH SWITCH INOPERATIVE IN ECU |
| | 29 | N & H-HIGH SWITCH INOPERATIVE IN ECU |
| | 32 | SPI COMMUNICATIONS LINK FAULT IN ECU |
| | 33 | CENTRAL OPERATING PROCESSOR TIMEOUT |
| | 34 | EPROM WRITE TIMEOUT IN ECU |
| | 35 | EPROM CHECKSUM TEST IN ECU |
| | 36 | RAM SELF TEST IN ECU |
| | 39 | COMMUNICATIONS CHIP ADDRESSING ERROR |
| | 41 | I/O ASIC ADDRESSING TEST IN ECU |
| | 42 | SPI OUTPUT FAILURE |
| | 43 | SPI INPUT FAILURE |

