

## Transmission Control Module (TCM)

Diagnostic Trouble Codes (DTCs)  
VN, VHD, VAH**Transmission Control Module (TCM), Diagnostic  
Trouble Codes (DTCs)**

The bulletin provides Transmission Control Module (TCM) diagnostic trouble codes (DTCs) for VOLVO VN, VHD and VAH vehicles.

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**Note:** Information is subject to change without notice.

Illustrations are used for reference only and can differ slightly from the actual engine being serviced. However, key components addressed in this information are represented as accurately as possible.

# Troubleshooting

## Transmission Control Module (TCM), Diagnostic Trouble Codes (DTCs)

**Note:** For some DTCs, after the component repair is made, the code may not change to inactive status until the component is activated.

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## P1050, Transmission Range, Position

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal, or shorted to high source</li> </ul>	<ul style="list-style-type: none"> <li>Status from application-specific integrated circuit (ASIC) is short circuit to U-BATT</li> </ul>	<ul style="list-style-type: none"> <li>Slow gear changes</li> <li>Yellow lamp is illuminated</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Status from ASIC is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>Status from ASIC is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 54	<ul style="list-style-type: none"> <li>Calibration value out of range</li> </ul>	<ul style="list-style-type: none"> <li>The checksum in NVRAM is not correct or, the sensor has not been calibrated.</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Cranking is inhibited</li> <li>Engine cannot start</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P1051, Transmission Splitter, Position

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal, or shorted to high source</li> </ul>	<ul style="list-style-type: none"> <li>Status from ASIC is short circuit to U-BATT</li> </ul>	<ul style="list-style-type: none"> <li>Slow gear changes</li> <li>Yellow lamp is illuminated</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Status from ASIC is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>Status from ASIC is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 54	<ul style="list-style-type: none"> <li>Calibration value out of range</li> </ul>	<ul style="list-style-type: none"> <li>The checksum in NVRAM is not correct or, the sensor has not been calibrated.</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Cranking is inhibited</li> <li>Engine cannot start</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P1052, Clutch Cylinder, Position

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 62	<ul style="list-style-type: none"> <li>Data erratic, intermittent, or incorrect</li> </ul>	<ul style="list-style-type: none"> <li>The difference between clutch positions indicated by the sensor signal (SEPoC) and the inverted sensor signal (SEPoCINV) is too large and both signals are within normal range</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow clutch performance</li> <li>Rough shifting at start and at slow speed</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal, or shorted to high source</li> </ul>	<ul style="list-style-type: none"> <li>Sensor signal is short circuit to UBATT or sensor supply when: at least one of the sensor signals is above normal range</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow clutch performance</li> <li>Rough shifting at start and at slow speed</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Open circuit on any of the sensor signals is detected when: one of the sensor signals is within normal range and the other sensor signal is below normal range</li> <li>Open circuit on ground is detected when both the sensor signals are within the normal range and the sum of the sensor signals is above a specific value</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow clutch performance</li> <li>Rough shifting at start and at slow speed</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 29	<ul style="list-style-type: none"> <li>• Faulty device or component</li> </ul>	Both sensor signals are below normal when: <ul style="list-style-type: none"> <li>• Status of the sensor ASIC is internal fault on the sensor or</li> <li>• Short circuit to ground on any of the sensor signals or</li> <li>• Open circuit on supply or</li> <li>• Short circuit between the two sensor signals</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Slow clutch performance</li> <li>• Rough shifting at start and at slow speed</li> <li>• Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
FTB 54	<ul style="list-style-type: none"> <li>• Calibration value out of range</li> </ul>	<ul style="list-style-type: none"> <li>• The checksum in NVRAM is not correct or, the sensor has not been calibrated.</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Cranking is inhibited</li> <li>• Engine cannot start</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>



## P1053, Clutch Plates Wear, Condition

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 78	<ul style="list-style-type: none"> <li>Data valid but above normal operational range</li> </ul>	<ul style="list-style-type: none"> <li>The clutch wear is more than or equal to "SERVICE DUE POSITION"</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>If active for a long period of time the clutch may completely wear out and fail</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P1054, Transmission Tank, Air Pressure

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 22	<ul style="list-style-type: none"> <li>Data valid but above normal operational range</li> </ul>	<ul style="list-style-type: none"> <li>Sensor signal is in normal range</li> <li>Pressure is above 10.0 bar (145 PSI)</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow clutch performance</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 21	<ul style="list-style-type: none"> <li>Data valid but below operational range</li> </ul>	<ul style="list-style-type: none"> <li>Sensor signal is in normal range</li> <li>Pressure is below 5.0 bar (72.5 PSI)</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The symbol for compressed air, transmission is illuminated</li> <li>Gear changes may be absent</li> <li>Slow clutch performance</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The sensor signal is above normal range</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>The sensor signal is below normal range</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P1055, Brake Switch Status

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 94	<ul style="list-style-type: none"> <li>Special Instructions</li> </ul>	<ul style="list-style-type: none"> <li>The gear lever is moved from neutral or "FOLD" position without prior application of the service brake</li> </ul>	<ul style="list-style-type: none"> <li>White lamp is illuminated together with pop up message</li> <li>The transmission will not engage the selected gear (stays in neutral)</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## U3003, TCM Power Supply

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Data valid but above normal operational range</li> </ul>	<ul style="list-style-type: none"> <li>12 Volt System: Voltage is above 19 V</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 16	<ul style="list-style-type: none"> <li>Data valid but below operational range</li> </ul>	<ul style="list-style-type: none"> <li>12 Volt System: Voltage is below 9 V and the engine has been running for 5 seconds</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Reduced transmission performance</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P1057, Main Shaft Speed Sensor (SESM)

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 21	<ul style="list-style-type: none"> <li>Data valid but below operational range</li> </ul>	<ul style="list-style-type: none"> <li>The sensor signal is within normal range and,</li> <li>The main shaft speed differs from both the value of the countershaft speed and the vehicle speed received from the vehicle ECU</li> </ul> <p>The following conditions must be fulfilled for a time of 2.0 seconds in order to activate:</p> <ul style="list-style-type: none"> <li>A gear (not neutral) is engaged in the transmission</li> <li>The value of the input shaft speed calculated from the main shaft speed sensor (SESM) is more than 300 rpm</li> <li>The value of the input shaft speed calculated from the counter shaft speed sensor (SESC) is more than 300 rpm</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes</li> <li>Rough gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 21	(Continued)	<ul style="list-style-type: none"> <li>• The values of the input shaft speed calculated from the main shaft speed sensor (SESM) and the counter shaft speed sensor (SESC) differ more than 50 rpm</li>   <li>• The values of the input shaft speed calculated from the main shaft speed sensor (SESM) and the vehicle speed received from the Vehicle ECU differ more than 30 rpm</li>   <li>• The values of the input shaft speed calculated from the counter shaft speed sensor (SESC) and the vehicle speed received from the Vehicle ECU differ less than 30 rpm</li> </ul>		

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 29	<ul style="list-style-type: none"> <li>• Data erratic, intermittent, or incorrect</li> </ul>	<ul style="list-style-type: none"> <li>• The sensor indicates wrong direction</li> </ul> <p>The following conditions must be fulfilled for a time of 2,0 seconds in order to activate:</p> <ul style="list-style-type: none"> <li>• The input shaft speed calculated from the countershaft speed sensor (SECS) is above 300 rpm and the clutch is engaged or</li> <li>• The input shaft speed calculated from the countershaft speed sensor (SECS) is above 600 rpm and the clutch position is more engaged than the slip point and the engine speed is received from the engine ECM and above 600 rpm</li> <li>• A forward gear is engaged in the transmission and the mainshaft speed sensor (SESM) indicates reverse movement or</li> <li>• A reverse gear is engaged and the mainshaft speed sensor (SESM) indicates forward movement</li> <li>• There is no other active fault on the sensor for the main shaft speed (SEMS)</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>• Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>• Signal or supply voltage is above normal range</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Slow gear changes</li> <li>• Rough gear changes</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
FTB 16	<ul style="list-style-type: none"> <li>• Voltage below normal or shorted low</li> </ul>	<ul style="list-style-type: none"> <li>• Signal and supply voltage is below normal range</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Slow gear changes</li> <li>• Rough gear changes</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>• Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>• Signal voltage is below normal range</li> <li>• Supply voltage is in the normal range</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Slow gear changes</li> <li>• Rough gear changes</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>

## P1058 Counter Shaft Speed Sensor

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 21	<ul style="list-style-type: none"> <li>Data valid but below operational range</li> </ul>	<ul style="list-style-type: none"> <li>The sensor signal is within normal range and,</li> <li>The counter shaft speed differs from both the main shaft speed (SESM) and the vehicle speed received from the Vehicle ECU when the counter shaft is rotating</li> </ul> <p>The following conditions must be fulfilled for a time of 2.0 seconds in order to activate:</p> <ul style="list-style-type: none"> <li>A gear (not neutral) is engaged in the transmission</li> <li>The value of the input shaft speed calculated from the main shaft speed sensor (SESM) is more than 300 rpm</li> <li>The value of the input shaft speed calculated from the counter shaft speed sensor (SESC) is more than 300 rpm</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes</li> <li>Transmission brake up-shifts cannot be used</li> <li>Engagement point not functioning properly</li> <li>Starting gear can only be engaged when the vehicle is stationary or when the vehicle speed is high enough to synchronize the transmission with the engine</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 21	(Continued)	<ul style="list-style-type: none"> <li>• The values of the input shaft speed calculated from the counter shaft speed sensor (SESC) and the main shaft speed sensor (SESM) differ more than 50 rpm</li>   <li>• The values of the input shaft speed calculated from the counter shaft speed sensor (SESC) and the vehicle speed received from the Vehicle ECU differ more than 30 rpm</li>   <li>• The values of the input shaft speed calculated from the main shaft speed sensor (SESM) and the vehicle speed received from the Vehicle ECU differ less than 30 rpm</li> </ul>		

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 16	<ul style="list-style-type: none"> <li>• Voltage below normal or shorted low</li> </ul>	<ul style="list-style-type: none"> <li>• The sensor signal is below normal range</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Slow gear changes</li> <li>• Transmission brake up-shifts cannot be used</li> <li>• Engagement point not functioning properly</li> <li>• Starting gear can only be engaged when the vehicle is stationary or when the vehicle speed is high enough to synchronize the transmission with the engine</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>• Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>• The sensor signal is above normal range</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Slow gear changes</li> <li>• Transmission brake up-shifts cannot be used</li> <li>• Engagement point not functioning properly</li> <li>• Starting gear can only be engaged when the vehicle is stationary or when the vehicle speed is high enough to synchronize the transmission with the engine</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>



## P1059, Gearbox Oil Temperature Sensor

**Note:** P1059 has three levels of severity, low, medium and high. All times are reset when the key is switched off.

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 22 (Low)	<ul style="list-style-type: none"> <li>Data valid but above normal operational range</li> </ul>	<ul style="list-style-type: none"> <li>The sensor signal is in normal range</li> <li>Temperature is above 100°C (212°F) during 5 hours</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Symbol for high transmission oil temperature is lit</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 92 (Medium)	<ul style="list-style-type: none"> <li>Data valid but above normal operational range</li> </ul>	<ul style="list-style-type: none"> <li>The sensor signal is in normal range</li> <li>Temperature is above 120°C (248°F) during 10 minutes</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Symbol for high transmission oil temperature is lit</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 98 (High)	<ul style="list-style-type: none"> <li>Data valid but above normal operational range</li> </ul>	<ul style="list-style-type: none"> <li>The sensor signal is in normal range</li> <li>Temperature is above 140 °C (284°F) during 30 s</li> </ul>	<ul style="list-style-type: none"> <li>Red stop lamp is illuminated</li> <li>Symbol for high transmission oil temperature is lit</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 16	<ul style="list-style-type: none"> <li>Voltage below normal or shorted low</li> </ul>	<ul style="list-style-type: none"> <li>The sensor signal is below normal range</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>The sensor signal is above normal range</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P105E, Transmission Shifter # 1 Position Sensor

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>Status from ASIC is short circuit to U-BATT</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Status from ASIC is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>Status from ASIC is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 54	<ul style="list-style-type: none"> <li>Calibration value out of range</li> </ul>	<ul style="list-style-type: none"> <li>The checksum in NVRAM is not correct or</li> <li>The sensor has not been calibrated</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Cranking is inhibited</li> <li>Engine cannot start</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P105F, Transmission Shifter # 2 Position Sensor

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>Status from ASIC is short circuit to U-BATT</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Status from ASIC is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>Status from ASIC is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 54	<ul style="list-style-type: none"> <li>Calibration value out of range</li> </ul>	<ul style="list-style-type: none"> <li>The checksum in NVRAM is not correct or</li> <li>The sensor has not been calibrated</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Cranking is inhibited</li> <li>Engine cannot start</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P1060, Clutch Load on Plate

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 63	<ul style="list-style-type: none"> <li>Data valid but above normal operational range</li> </ul>	<ul style="list-style-type: none"> <li>The calculated stored energy is above 200 kJ</li> <li>The energy calculation is time based for VTNA and physical for others</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The clutch is overheated</li> <li>The clutch is slowly engaged</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 74	<ul style="list-style-type: none"> <li>Clutch protection active (unidentifiable error)</li> </ul>	<ul style="list-style-type: none"> <li>Clutch slip more than 8.0 seconds with vehicle movement less than 0.8 m (32 in) (e.g. hill holding event)</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>There has been unnecessary clutch slip</li> <li>The clutch is slowly engaged</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 92	<ul style="list-style-type: none"> <li>Special instructions</li> </ul>	<ul style="list-style-type: none"> <li>Attempt to start in high range in manual position</li> </ul>	<ul style="list-style-type: none"> <li>White lamp is illuminated</li> <li>Not possible to start</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P1061, Clutch Cylinder Slip Point Position

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 54	<ul style="list-style-type: none"> <li>Calibration value out of range</li> </ul>	<ul style="list-style-type: none"> <li>The checksum in NVRAM is not correct</li> <li>The slip point has not been calibrated</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>It is not possible to drive the vehicle</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P1062, Clutch Position Sensor Supply + 5V

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 16	<ul style="list-style-type: none"> <li>Data valid but above normal operational range</li> </ul>	<ul style="list-style-type: none"> <li>Voltage is above normal range</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow clutch performance</li> <li>Uneven shifting at start and at slow speed</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Data valid but below operational range</li> </ul>	<ul style="list-style-type: none"> <li>Voltage is below normal range</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow clutch performance</li> <li>Uneven shifting at start and at slow speed</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## U3000, PCB Temperature Sensor

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 4B	<ul style="list-style-type: none"> <li>Data valid but above normal operational range</li> </ul>	<ul style="list-style-type: none"> <li>Temperature is above 125°C (257°F)</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## U3000, Digital Input Flash NVRAM Programming Enable (DIEE)

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The voltage level for the DIEE pin is high</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Cranking is inhibited</li> <li>Engine cannot start</li> <li>All communication with the control module is disabled except for programming of MSW</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## U3000, Program Memory

**Note:** The boot program only sets this DTC during power-up. The boot program does not save any DTC.

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 44	<ul style="list-style-type: none"> <li>Data erratic, intermittent, or incorrect</li> </ul>	<ul style="list-style-type: none"> <li>Faulty data in program memory</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Cranking is inhibited</li> <li>Engine cannot start</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 81	<ul style="list-style-type: none"> <li>Incorrect</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

FTB 55	• Test software	• N/A	• N/A	• N/A
FTB 41	• General checksum failure	• N/A	• N/A	• N/A

### U3000, Calibration Memory EEPROM

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 46	• Calibration value out of range	<ul style="list-style-type: none"> <li>• Flash checksum dataset error</li> <li>• Program code missing</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Cranking is inhibited</li> <li>• Engine cannot start</li> </ul>	• N/A

### U0300, J1939 Communication

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 55	• Test software	• N/A	• N/A	• N/A
FTB 81	• Data Incorrect	• N/A	• N/A	• N/A

### P1063, Transmission Inclination Sensor

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 29	• Data erratic, intermittent, or incorrect	<ul style="list-style-type: none"> <li>• The sensor signal is above or below normal range</li> <li>• The vehicle has been standing still for a specific time</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• The start gear may be wrong</li> <li>• Gear selection performance might be reduced</li> <li>• Downhill and uphill gear change performance may be reduced</li> </ul>	• N/A

## P1064, Clutch Fast Engagement Valve

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to U-BATT and</li> <li>There is no active DTC for short circuit to U-BATT on VAF-</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Erratic clutch performance</li> <li>Slow clutch performance</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Erratic clutch performance</li> <li>Slow clutch performance</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Erratic clutch performance</li> <li>Slow clutch performance</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P1065, Clutch Slow Engagement Valve

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to U-BATT and</li> <li>There is no active DTC for short circuit to U-BATT on VAS-</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Erratic clutch performance</li> <li>Uneven shifting at start and at slow speed</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Erratic clutch performance</li> <li>Uneven shifting at start and at slow speed</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Erratic clutch performance</li> <li>Uneven shifting at start and at slow speed</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P1066, Clutch Fast Disengagement Valve

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to U-BATT and</li> <li>There is no active DTC for short circuit to U-BATT on VAF-</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Erratic clutch performance</li> <li>Slow clutch performance</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Erratic clutch performance</li> <li>Slow clutch performance</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Erratic clutch performance</li> <li>Slow clutch performance</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>



## P1067, Clutch Fast Disengagement Valve

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to U-BATT and</li> <li>There is no active DTC for short circuit to U-BATT on VAS-</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Erratic clutch performance</li> <li>Uneven shifting at start and at slow speed</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Erratic clutch performance</li> <li>Slow clutch performance</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Erratic clutch performance</li> <li>Slow clutch performance</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P1068, Fast Clutch Valves, Low Side Circuit

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The low-side drive is short circuit to U-BATT</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Erratic clutch performance</li> <li>Slow clutch performance</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>The low-side drive is short circuit to ground and</li> <li>There is no active DTC for short circuit to ground on VAFE or VAFD</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Erratic clutch performance</li> <li>Slow clutch performance</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P1069, Slow Clutch Valves, Low Side Circuit

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The low-side drive is short circuit to U-BATT</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Erratic clutch performance</li> <li>Uneven shifting at start and at slow speed</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>The low-side drive is short circuit to ground and</li> <li>There is no active DTC for short circuit to ground on VASE or VASD</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Erratic clutch performance</li> <li>Uneven shifting at start and at slow speed</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P106A, Gear 1 Valve, Inner Actuator for Shift Cylinder 1

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to U-BATT</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve is activated</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P106B, Gear Reverse Valve, Outer Actuator for Shift Cylinder 1

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to U-BATT</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve is activated</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P106C, Gear 2 Valve, Inner Actuator for Shift Cylinder 2

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to U-BATT</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve is activated</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P106D, Gear 3 Valve, Outer Actuator for Shift Cylinder 2

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to U-BATT</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P106E, PTO 1 Engagement Valve

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to U-BATT</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve is activated</li> <li>The PTO cannot be deactivated</li> <li>Rough gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>The PTO does not work</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>The PTO does not work</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P106F, PTO 2 Engagement Valve

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to U-BATT</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve is activated</li> <li>The PTO cannot be deactivated</li> <li>Rough gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>The PTO does not work</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>The PTO does not work</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P1070, Transmission Brake Valve

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to U-BATT</li> </ul>	<ul style="list-style-type: none"> <li>Red stop lamp is illuminated</li> <li>The valve and the brake are activated</li> <li>The transmission will be damaged if the vehicle drives</li> <li>The drive shaft has to be removed to move the vehicle</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P1071, Split Engagement System

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 94	<ul style="list-style-type: none"> <li>Unintentional disengagement of indirect split</li> </ul>	<ul style="list-style-type: none"> <li>Low split jumps out</li> <li>The split cylinder valves are inactive</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Loss of torque</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 96	<ul style="list-style-type: none"> <li>Unintentional disengagement of direct split</li> </ul>	<ul style="list-style-type: none"> <li>High split jumps out</li> <li>The split cylinder valves are inactive</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Loss of torque</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 79	<ul style="list-style-type: none"> <li>Unintentional disengagement of neutral split</li> </ul>	<ul style="list-style-type: none"> <li>The split cylinder position leaves the neutral position</li> <li>The split cylinder valves are inactive</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 92	<ul style="list-style-type: none"> <li>Blocked engagement of neutral split</li> </ul>	<ul style="list-style-type: none"> <li>The neutral split gear cannot engage</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Eco roll not available</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 77	<ul style="list-style-type: none"> <li>Blocked engagement of indirect split</li> </ul>	<ul style="list-style-type: none"> <li>The indirect split gear can not engage</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Loss of torque</li> <li>Incorrect gear selection</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 97	<ul style="list-style-type: none"> <li>Blocked engagement of direct split</li> </ul>	<ul style="list-style-type: none"> <li>The direct split gear can not engage</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Loss of torque</li> <li>Incorrect gear selection</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P1072, Range Engagement System

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 94	<ul style="list-style-type: none"> <li>Unintentional disengagement of low range</li> </ul>	<ul style="list-style-type: none"> <li>The range cylinder leaves the low range position</li> <li>The range cylinder valves are inactive</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Loss of torque</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 92	<ul style="list-style-type: none"> <li>Unintentional disengagement of high range</li> </ul>	<ul style="list-style-type: none"> <li>The range cylinder leaves the high range position</li> <li>The range cylinder valves are inactive</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Loss of torque</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 77	<ul style="list-style-type: none"> <li>Blocked engagement of low range</li> </ul>	<ul style="list-style-type: none"> <li>The low range gear can not engage</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Loss of torque</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 97	<ul style="list-style-type: none"> <li>Blocked engagement of high range</li> </ul>	<ul style="list-style-type: none"> <li>The high range gear can not engage</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Loss of torque</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>



## P1073, Gears 1/R Engagement System

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 96	<ul style="list-style-type: none"> <li>• Unintentional disengagement of first gear</li> </ul>	<ul style="list-style-type: none"> <li>• The 1/R cylinder leaves the 1st position</li> <li>• The 1st cylinder valves are inactive</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Loss of torque</li> </ul>	<ul style="list-style-type: none"> <li>• Control housing detent assembly</li> <li>• Brass lugs</li> <li>• Transmission control module (TCM)</li> <li>• Cylinder stroke</li> <li>• Clutch teeth, engaging sleeve</li> <li>• Piston rod</li> <li>• Main shaft hub</li> <li>• Gear wheel</li> </ul>
FTB 92	<ul style="list-style-type: none"> <li>• Unintentional disengagement of reverse gear</li> </ul>	<ul style="list-style-type: none"> <li>• The 1/R gear leaves the reverse position</li> <li>• The 1/R cylinder valves are inactive</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Loss of torque</li> </ul>	<ul style="list-style-type: none"> <li>• Control housing detent assembly</li> <li>• Brass lugs</li> <li>• Transmission control module (TCM)</li> <li>• Cylinder stroke</li> <li>• Clutch teeth, engaging sleeve</li> <li>• Piston rod</li> <li>• Main shaft hub</li> <li>• Gear wheel</li> </ul>

FTB 94	<ul style="list-style-type: none"> <li>• Unintentional disengagement of neutral</li> </ul>	<ul style="list-style-type: none"> <li>• The 1/R cylinder leaves the neutral position</li> <li>• The 1/R cylinder valves are inactive</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Loss of torque</li> <li>• Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>• Control housing detent assembly</li> <li>• Brass lugs</li> <li>• Transmission control module (TCM)</li> <li>• Cylinder stroke</li> <li>• Piston rod</li> </ul>
FTB 71	<ul style="list-style-type: none"> <li>• Blocked engagement of neutral</li> </ul>	<ul style="list-style-type: none"> <li>• The 1/R cylinder cannot reach neutral position when requested</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>• Control housing detent assembly</li> <li>• Brass lugs</li> <li>• Transmission control module (TCM)</li> <li>• Seals, solenoid valve</li> <li>• Piston rod</li> <li>• Engaging sleeve</li> </ul>

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 97	<ul style="list-style-type: none"> <li>• Blocked engagement of first gear</li> </ul>	<ul style="list-style-type: none"> <li>• The 1st gear can not engage and,</li> <li>• There is no active DTC on the SE-Po1R and,</li> <li>• There is no active DTC for low air pressure and,</li> <li>• There is no active DTC on any of the 1st and reverse gear cylinder valves</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Loss of torque</li> <li>• Incorrect gear selection</li> <li>• The 1st gears will not be selected by the system for a short while after five successful gear-shifts a new attempt to use 1st gear may be made</li> </ul>	<ul style="list-style-type: none"> <li>• Control housing detent assembly</li> <li>• Brass lugs</li> <li>• Transmission control module (TCM)</li> <li>• Seals, solenoid valve</li> <li>• Gear and engagement Clutch teeth</li> <li>• Piston rod</li> <li>• Gear wheel</li> </ul>
FTB 77	<ul style="list-style-type: none"> <li>• Blocked engagement of reverse gear</li> </ul>	<ul style="list-style-type: none"> <li>• The reverse gear cannot engage</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• The R gear can not engage, but the system will try to engage it as long as the gear lever is in the reverse position</li> </ul>	<ul style="list-style-type: none"> <li>• Control housing detent assembly</li> <li>• Brass lugs</li> <li>• Transmission control module (TCM)</li> <li>• Seals, solenoid valve</li> <li>• Gear and engagement clutch teeth</li> <li>• Piston rod</li> <li>• Gear wheel</li> </ul>

## P1074, Gears 2/3 Engagement System

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 96	<ul style="list-style-type: none"> <li>• Unintentional disengagement of second gear</li> </ul>	<ul style="list-style-type: none"> <li>• The 2/3 cylinder position indicates that the 2/3 gear leaves the 2nd position</li> <li>• The cylinder valves are inactive</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Loss of torque</li> </ul>	<ul style="list-style-type: none"> <li>• Control housing detent assembly</li> <li>• Brass lugs</li> <li>• Transmission control module (TCM)</li> <li>• Cylinder stroke</li> <li>• Clutch teeth engaging sleeve</li> <li>• Piston rod</li> <li>• Main shaft hub</li> <li>• Gear wheel</li> </ul>
FTB 92	<ul style="list-style-type: none"> <li>• Unintentional disengagement of third gear</li> </ul>	<ul style="list-style-type: none"> <li>• The 2/3 cylinder leaves the 3rd position</li> <li>• The 3rd cylinder valves are inactive</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Loss of torque</li> </ul>	<ul style="list-style-type: none"> <li>• Control housing detent assembly</li> <li>• Brass lugs</li> <li>• Transmission control module (TCM)</li> <li>• Cylinder stroke</li> <li>• Clutch teeth engaging sleeve</li> <li>• Piston rod</li> <li>• Main shaft hub</li> <li>• Gear wheel</li> </ul>

FTB 94	<ul style="list-style-type: none"> <li>• Unintentional gear engagement</li> </ul>	<ul style="list-style-type: none"> <li>• The split cylinder position leaves the neutral position</li> <li>• The split cylinder valves are inactive</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> </ul>	<ul style="list-style-type: none"> <li>• Control housing detent assembly</li> <li>• Brass lugs</li> <li>• Transmission control module (TCM)</li> <li>• Cylinder stroke</li> <li>• Piston rod</li> </ul>
FTB 71	<ul style="list-style-type: none"> <li>• Blocked engagement of neutral</li> </ul>	<ul style="list-style-type: none"> <li>• The 2/3 gear cylinder cannot reach neutral position when requested</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>• Control housing detent assembly</li> <li>• Brass lugs</li> <li>• Transmission control module (TCM)</li> <li>• Seals, solenoid valve</li> <li>• Piston rod</li> <li>• Engaging sleeve</li> </ul>

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 97	<ul style="list-style-type: none"> <li>• Blocked engagement of second gear</li> </ul>	<ul style="list-style-type: none"> <li>• The 2nd gear can not engage</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Loss of torque</li> <li>• Incorrect gear selection</li> <li>• The 2nd gear will not be selected by the system for a short while after five successful gearshifts a new attempt to use 2nd gear may be made</li> </ul>	<ul style="list-style-type: none"> <li>• Control housing detent assembly</li> <li>• Brass lugs</li> <li>• Transmission Control Module (TCM)</li> <li>• Seals, solenoid valve</li> <li>• Gear and engagement Clutch teeth</li> <li>• Piston rod</li> <li>• Gear wheel</li> </ul>
FTB 77	<ul style="list-style-type: none"> <li>• Blocked engagement of third gear</li> </ul>	<ul style="list-style-type: none"> <li>• The 3rd gear can not engage</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow lamp is illuminated</li> <li>• Loss of torque</li> <li>• Incorrect gear selection</li> <li>• The 3rd gear will not be selected by the system for a short while after five successful gearshifts a new attempt to use 3rd gear may be made</li> </ul>	<ul style="list-style-type: none"> <li>• Control housing detent assembly</li> <li>• Brass lugs</li> <li>• Transmission control module (TCM)</li> <li>• Seals, solenoid valve</li> <li>• Gear and engagement Clutch teeth</li> <li>• Piston rod</li> <li>• Gear wheel</li> </ul>

## P1075, Clutch System

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 94	<ul style="list-style-type: none"> <li>Unintentional disengagement of the clutch</li> </ul>	<ul style="list-style-type: none"> <li>The clutch disengages when not commanded and,</li> <li>There is no active DTC on the SE-PoC and,</li> <li>There is no active DTC for low air pressure and,</li> <li>There is no active fault code on any of the clutch cylinder valves and,</li> <li>The PCB temperature is above a specific limit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes</li> <li>Slow clutch performance</li> </ul>	<ul style="list-style-type: none"> <li>Clutch valve assembly</li> </ul>
FTB 92	<ul style="list-style-type: none"> <li>Unintentional engagement of the clutch</li> </ul>	<ul style="list-style-type: none"> <li>The clutch engages when not commanded and,</li> <li>There is no active DTC on the SE-PoC and</li> <li>There is no active DTC for low air pressure and</li> <li>There is no active DTC on any of the clutch cylinder valves and,</li> <li>The PCB temperature is above a specific limit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes</li> <li>Erratic clutch performance</li> </ul>	<ul style="list-style-type: none"> <li>Clutch cylinder</li> <li>Clutch valve assembly</li> <li>Clutch cylinder air hose</li> <li>Clutch cylinder air connection</li> </ul>

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 77	<ul style="list-style-type: none"> <li>Mechanical system not responding or out of adjustment</li> </ul>	<ul style="list-style-type: none"> <li>The clutch does not disengage/engage properly when commanded and,</li> <li>There is no active DTC on the SE-PoC and,</li> <li>The mechanical system of the clutch does not work correctly</li> <li>There is no active DTC for low air pressure and,</li> <li>There is no active DTC on any of the clutch cylinder valves and,</li> <li>The PCB temperature is above 10° C (50°F)</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes</li> <li>Erratic clutch performance</li> </ul>	<ul style="list-style-type: none"> <li>Clutch</li> <li>Clutch cylinder</li> <li>Clutch cylinder air hose</li> <li>Clutch valve assembly</li> <li>Clutch valve assembly air supply</li> </ul>
FTB 38	<ul style="list-style-type: none"> <li>Clutch system</li> </ul>	<ul style="list-style-type: none"> <li>Low system air pressure</li> <li>Set point for clutch position can not be reached using normal actuator control. Limit for using actuator valves exceeded. Clutch position is outside tolerance at disengaged position</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Harsh start</li> <li>Harsh shifting</li> <li>Slow shifting</li> <li>Slow clutch engagement at start</li> </ul>	<ul style="list-style-type: none"> <li>Air leakage from the following component (s): clutch cylinder, clutch valve assembly, clutch cylinder air hose, clutch cylinder air connection</li> </ul>
FTB 74	<ul style="list-style-type: none"> <li>Clutch drag</li> </ul>	<ul style="list-style-type: none"> <li>The clutch transfers too much torque in the disengaged position</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The vehicle tends to creep on flat ground at idle</li> <li>The clutch wear is high</li> </ul>	<ul style="list-style-type: none"> <li>Clutch</li> <li>Warped flywheel</li> <li>Transmission input shaft</li> </ul>
FTB 71	<ul style="list-style-type: none"> <li>Unintentional clutch slip</li> </ul>	<ul style="list-style-type: none"> <li>The clutch cannot transfer a specific torque without slipping</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The engine torque is reduced so that the clutch does not continue to slip</li> </ul>	<ul style="list-style-type: none"> <li>Clutch</li> </ul>



Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 75	<ul style="list-style-type: none"> <li>Clutch system</li> </ul>	<ul style="list-style-type: none"> <li>Not possible to disengage the clutch</li> </ul>	<ul style="list-style-type: none"> <li>Red stop lamp is illuminated</li> <li>Not possible to disengage the clutch</li> <li>Engine shut down</li> <li>Not possible to shift gears</li> <li>Not possible to engage neutral gear position</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

### P1076, Transmission Brake

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 94	<ul style="list-style-type: none"> <li>Mechanical system not responding or out of adjustment</li> </ul>	<ul style="list-style-type: none"> <li>The transmission brake does not brake when the valve is activated</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes at standstill</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

### U0100, Lost Communication with Engine Control Module (ECM)

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 00	<ul style="list-style-type: none"> <li>Abnormal update rate</li> </ul>	<ul style="list-style-type: none"> <li>Message missing on SAE J1939 data link from the engine control module (ECM)</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>If there is no CAN 2 data link, automatic gear selection enters backup mode with gear changes only at certain vehicle speeds</li> <li>If there is no CAN 2 data link and if the engine does not receive messages from the TCM, the gear changes will be slow</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## U0140, Lost Communication with Vehicle ECU

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 00	<ul style="list-style-type: none"> <li>Abnormal update rate</li> </ul>	<ul style="list-style-type: none"> <li>Message missing on SAE J1939 data link engine control module (ECM)</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Automatic gear selection enters backup mode with gear changes only at certain vehicle speeds</li> <li>Rough shifting at start and at slow speed</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## U2005, Lost Communication with IC

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 08	<ul style="list-style-type: none"> <li>Abnormal update rate</li> </ul>	<ul style="list-style-type: none"> <li>This FTB shall be set if the message from the brake ECU (MID 136) is not received</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## U0129, Lost Communication with Brake Control Module (EBS/BECU)

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 86	<ul style="list-style-type: none"> <li>Abnormal update rate</li> </ul>	<ul style="list-style-type: none"> <li>This FTB shall be set if the message from the brake ECU (MID 136) is not received</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## U1142, Missing Data on J1939 from Brake Control Module (EBS/BECU)

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 86	<ul style="list-style-type: none"> <li>Abnormal frequency, pulse width, or period</li> </ul>	<ul style="list-style-type: none"> <li>This FTB shall be set if the wheel speeds from the brake ECU (MID 136) are not correct.</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear changes</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## U0103, Lost Communication with Gear Selector Control Module

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 00	<ul style="list-style-type: none"> <li>Abnormal update rate</li> </ul>	<ul style="list-style-type: none"> <li>This FTB shall be set if the message from the gear selector control module (MID 223) is not received</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow response on manual gear changes and slow response when buttons on the gearlever are pressed.</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## U0132, Lost Communication with Suspension Control Module (ECS)

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 00	<ul style="list-style-type: none"> <li>Abnormal update rate</li> </ul>	<ul style="list-style-type: none"> <li>This FTB shall be set if the message from the LCM (MID 216) is not received</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The start gear might be wrong</li> <li>Automatic gear selection performance might be reduced a certain time after start</li> <li>Automatic gear selection performance might be reduced a certain time after a trailer has been connected/disconnected</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## U0182, Lost Communication with Lighting Control Module (LCM)

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 00	<ul style="list-style-type: none"> <li>Abnormal update rate</li> </ul>	<ul style="list-style-type: none"> <li>This FTB shall be set if the message from the LCM (MID 216) is not received</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The start gear might be wrong</li> <li>Automatic gear selection performance might be reduced a certain time after start</li> <li>Automatic gear selection performance might be reduced a certain time after a trailer has been connected/disconnected</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## U0104, Missing Data from J1939 for Adaptive Cruise Control (ACC) ECM

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 00	<ul style="list-style-type: none"> <li>Abnormal update rate</li> </ul>	<ul style="list-style-type: none"> <li>This FTB shall be set if the message from the ECU (MID 219) is not received and,</li> <li>ACC is installed</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The retarder ACC function does not work</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## U1144, Missing Data from J1939 for Bodybuilder Module (BBM)

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 00	<ul style="list-style-type: none"> <li>Abnormal update rate</li> </ul>	<ul style="list-style-type: none"> <li>This FTB shall be set if the message from the ECU (MID 219) is not received and,</li> <li>ACC is installed</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The retarder ACC function does not work</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## U0073, Lost Communication with ECM on Powertrain CAN

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
<b>Note:</b> This DTC is valid for vehicles where a CAN 2 data link exists between the TCM and the engine				
FTB 88	<ul style="list-style-type: none"> <li>Data erratic, intermittent, or incorrect</li> </ul>	<ul style="list-style-type: none"> <li>CAN 2 data link communication does not work</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear shifts</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 87	<ul style="list-style-type: none"> <li>Abnormal update rate</li> </ul>	<ul style="list-style-type: none"> <li>Message missing on SAE J1939 data link from the following control module: Engine Control Module (ECM)</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>Slow gear shifts</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P105A, High Range Valve (VAHR)

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to U-BATT</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve is activated</li> <li>Low range gears are missing</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>High range gears are missing</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>Range gears are missing</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P105B, Low Range Valve (VALR)

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to U-BATT</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve is activated</li> <li>High range gears are missing</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>Low range gears are missing</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>Range gears are missing</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P105C, Direct Split Valve (VADS)

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to U-BATT</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve is activated</li> <li>Indirect and neutral split gears are missing</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>Splitter gears are missing</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>Splitter gears are missing</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>



## P105D, Indirect Split Valve (VAIDS)

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 17	<ul style="list-style-type: none"> <li>Voltage above normal or shorted high</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to U-BATT</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve is activated</li> <li>Direct and neutral split gears are missing</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 18	<ul style="list-style-type: none"> <li>Current below normal or open circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is open circuit</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>Splitter gears are missing</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
FTB 19	<ul style="list-style-type: none"> <li>Current above normal or grounded circuit</li> </ul>	<ul style="list-style-type: none"> <li>The high-side drive is short circuit to ground</li> </ul>	<ul style="list-style-type: none"> <li>Yellow lamp is illuminated</li> <li>The valve cannot be activated</li> <li>Splitter gears are missing</li> <li>Incorrect gear selection</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## P107B Missing Data on J1939 from VMCU (VECU)

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 86	<ul style="list-style-type: none"> <li>Abnormal frequency, pulse width or period</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## U0010, J1939 Communication

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 88	<ul style="list-style-type: none"><li>Data erratic, intermittent, or incorrect</li></ul>	<ul style="list-style-type: none"><li>CAN 2 data link communication does not work</li></ul>	<ul style="list-style-type: none"><li>Yellow lamp is illuminated</li><li>Slow gear shifts</li></ul>	<ul style="list-style-type: none"><li>N/A</li></ul>

## U0001, J1939 Communication

Type of fault:	FTB Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FTB 88	<ul style="list-style-type: none"><li>Data erratic, intermittent, or incorrect</li></ul>	<ul style="list-style-type: none"><li>N/A</li></ul>	<ul style="list-style-type: none"><li>N/A</li></ul>	<ul style="list-style-type: none"><li>N/A</li></ul>