## Freightliner Business Class M2 Fault Codes List - ABS System Troubleshooting

Meritor WABCO Pneumatic Antilock Braking System (ABS) – Table of DTCs

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>001</td>
<td>01</td>
<td>Incorrect sensor air gap</td>
<td>1. Adjust the sensor. Check the AC voltage across pins 7 and 8 of the black X2 ECU connector while rotating the LF wheel 30 rpm.</td>
<td>Voltage is 0.2 Vac or greater</td>
<td>Sensor adjustment solved the problem.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Voltage is less than 0.2 Vac</td>
<td>Check for excessive wheel bearing end play and hub runout. Repair as needed.</td>
</tr>
<tr>
<td>136</td>
<td>001</td>
<td>02</td>
<td>Incorrect tire size</td>
<td></td>
<td></td>
<td>Check for correct tire size and mixed tire sizes. Check for correct number of teeth on tone wheel. Correct as needed.</td>
</tr>
<tr>
<td>136</td>
<td>001</td>
<td>03</td>
<td>Sensor shorted to power</td>
<td>2. Measure the voltage across pins 7 of the X2 (black) connector and a good chassis ground. Repeat the test between pin 8 and ground.</td>
<td>Measurable voltage at either pin</td>
<td>Repair short to power in circuit(s) 377LF+ and 377LF– in chassis harness and sensor cable. If problem is in the sensor harness, replace the sensor.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>No voltage at either pin</td>
<td>Repeat the test and check for intermittent short to power in circuits 377LF+ and 377LF–. Suspect ECU is at fault if the problem persists.</td>
</tr>
</tbody>
</table>
## Left Front Wheel Sensor Troubleshooting (SID 001)

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>001</td>
<td>04</td>
<td>Short to ground</td>
<td>3. Measure the resistance between pin 7 of the X2 (black) connector and a good chassis ground. Repeat the test between pin 8 and ground.</td>
<td>Resistance between either pin and ground is less than 100,000 ohms</td>
<td>Repair the short to ground in circuit(s) 377LF+ and 377LF− in chassis harness or sensor cable. If problem is in sensor harness, replace the sensor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance between either pin and ground is greater than 100,000 ohms</td>
<td>Repeat the test for intermittent short to ground in circuits 377LF+ and 377LF−. Suspect ECU at fault if the problem persists.</td>
<td></td>
</tr>
<tr>
<td>136</td>
<td>001</td>
<td>05</td>
<td>Open circuit</td>
<td>4. Measure the resistance between pins 7u and 8 of the X2 (black) connector.</td>
<td>Resistance is 900–2000 ohms</td>
<td>Repeat the test and check for intermittent open or short in circuits 377LF+ and 377LF−. Suspect ECU at fault if the problem persists.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance is greater than 2000 ohms or less than 900 ohm.</td>
<td>Perform test 5.</td>
<td></td>
</tr>
<tr>
<td>136</td>
<td>001</td>
<td>05</td>
<td>Open circuit</td>
<td>5. Disconnect the sensor connector from the chassis harness. Measure the resistance between the pins on the sensor connector.</td>
<td>Resistance is 900–2000 ohms</td>
<td>Repair open or short in circuit(s) 377LF+ and 377LF− in chassis harness.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance is greater than 2000 ohms or less than 900 ohms</td>
<td>Replace the sensor.</td>
<td></td>
</tr>
<tr>
<td>136</td>
<td>001</td>
<td>06</td>
<td>Short circuit</td>
<td></td>
<td>Perform tests 4 and 5.</td>
<td></td>
</tr>
<tr>
<td>136</td>
<td>001</td>
<td>07</td>
<td>Damaged tone ring</td>
<td></td>
<td>Inspect tone ring for damage and missing teeth. Make sure correct tooth wheel is installed (100-tooth is normal application). Repair as needed.</td>
<td></td>
</tr>
<tr>
<td>136</td>
<td>001</td>
<td>08</td>
<td>Excessive wheel slip</td>
<td></td>
<td>Check sensor adjustment. This fault usually occurs when there is excessive tire spin for more than 16 seconds.</td>
<td></td>
</tr>
<tr>
<td>136</td>
<td>001</td>
<td>09</td>
<td>Wire mismatch</td>
<td>6. Check for mixed sensor connection. Using Meritor PC Diagnostics, spin each wheel individually. Check that output is from the correct sensor.</td>
<td></td>
<td>Correct wiring connections, as needed.</td>
</tr>
</tbody>
</table>

## Left Front Wheel Sensor Troubleshooting (SID 001)

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<tbody>
<tr>
<td>136</td>
<td>001</td>
<td>10</td>
<td>Intermittent signal</td>
<td>7. Adjust the sensor. Using the wheel sensor output screen in Meritor PC</td>
<td>Signal output OK</td>
<td>Adjustment solved the problem. Make sure brake chatter is not causing the problem.</td>
</tr>
</tbody>
</table>
Diagnostics, spin the wheel or drive the vehicle and check for intermittent or erratic signal.

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<tbody>
<tr>
<td>136</td>
<td>001</td>
<td>11</td>
<td>Erratic signal</td>
<td></td>
<td></td>
<td>Perform test 7.</td>
</tr>
<tr>
<td>136</td>
<td>001</td>
<td>12</td>
<td>Frequency too high</td>
<td>8. Check sensor wiring and connectors for intermittent contact.</td>
<td>Wiring OK</td>
<td>Suspect ECU at fault if problem persists.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>Wiring incorrect</td>
<td>Repair wheel sensor circuit, as needed.</td>
</tr>
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**Right Front Wheel Sensor Troubleshooting (SID 002)**

<table>
<thead>
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<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>002</td>
<td>01</td>
<td>Incorrect sensor air gap</td>
<td>1. Adjust the sensor. Check the AC voltage across pins 5 and 6 of the black X2 ECU connector while rotating the RF wheel 30 rpm.</td>
<td>Voltage is 0.2 Vac or greater</td>
<td>Sensor adjustment solved the problem.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Voltage is less than 0.2 Vac</td>
<td>Check for excessive wheel bearing end play and hub runout. Repair as needed.</td>
</tr>
<tr>
<td>136</td>
<td>002</td>
<td>02</td>
<td>Incorrect tire size</td>
<td></td>
<td></td>
<td>Check for correct tire size and mixed tire sizes. Check for correct number of teeth on tone wheel. Correct as needed.</td>
</tr>
<tr>
<td>136</td>
<td>002</td>
<td>03</td>
<td>Sensor shorted to power</td>
<td>2. Measure the voltage across pin 5 of the X2 (black) connector and a good chassis ground. Repeat the test between pin 8 and ground.</td>
<td>Measurable voltage at either pin</td>
<td>Repair short to power in circuit(s) 377RF+ and 377RF– in chassis harness and sensor cable. If problem is in the sensor harness, replace the sensor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No voltage at either pin</td>
<td>Repeat the test and check for intermittent short to power in circuits 377RF+ and 377RF–. Suspect ECU is at fault if the problem persists.</td>
</tr>
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<td>MID</td>
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<td>Problem</td>
<td>Test</td>
<td>Test Result</td>
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<td>---------------------------------------------------------------------</td>
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<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>136</td>
<td>002</td>
<td>04</td>
<td>Short to ground</td>
<td>3. Measure the resistance between pin 5 of the X2 (black) connector and a good chassis ground. Repeat the test between pin 6 and ground.</td>
<td>Resistance between either pin and ground is less than 100,000 ohms</td>
<td>Repair the short to ground in circuit(s) 377RF+ and 377RF– in chassis harness or sensor cable. If problem is in sensor harness, replace the sensor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance between either pin and ground is greater than 100,000 ohms</td>
<td>Repeat the test for intermittent short to ground in circuits 377RF+ and 377RF–. Suspect ECU at fault if the problem persists.</td>
</tr>
<tr>
<td>136</td>
<td>002</td>
<td>05</td>
<td>Open circuit</td>
<td>4. Measure the resistance between pins 5 and 6 of the X2 (black) connector.</td>
<td>Resistance is 900–2000 ohms</td>
<td>Repeat the test and check for intermittent open or short in circuits 377RF+ and 377RF–. Suspect ECU at fault if the problem persists.</td>
</tr>
<tr>
<td></td>
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<td>Resistance is greater than 2000 ohms OR less than 900 ohm.</td>
<td>Perform test 5.</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>5. Disconnect the sensor connector from the chassis harness. Measure the resistance between the pins on the sensor connector.</td>
<td>Resistance is 900–2000 ohms</td>
<td>Repair open or short in circuit(s) 377RF+ and 377RF– in chassis harness.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance is greater than 2000 ohms OR less than 900 ohms</td>
<td>Replace the sensor.</td>
</tr>
<tr>
<td>136</td>
<td>002</td>
<td>06</td>
<td>Short circuit</td>
<td>6. Perform tests 4 and 5.</td>
<td></td>
<td>Perform tests 4 and 5.</td>
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<tr>
<td>136</td>
<td>002</td>
<td>07</td>
<td>Damaged tone ring</td>
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<td>Inspect tone ring for damage and missing teeth. Make sure correct tooth wheel is installed (100-tooth is normal application). Repair as needed.</td>
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<td>136</td>
<td>002</td>
<td>08</td>
<td>Excessive wheel slip</td>
<td></td>
<td></td>
<td>Check sensor adjustment. This fault usually occurs when there is excessive tire spin for more than 16 seconds.</td>
</tr>
<tr>
<td>136</td>
<td>002</td>
<td>09</td>
<td>Wire mismatch</td>
<td>6. Check for mixed sensor connection. Using Meritor PC Diagnostics, spin each wheel individually. Check that output is from the correct sensor.</td>
<td></td>
<td>Correct wiring connections, as needed.</td>
</tr>
</tbody>
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### Left Rear Wheel Sensor Troubleshooting (SID 003)

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<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>003</td>
<td>01</td>
<td>Incorrect sensor air gap</td>
<td>1. Adjust the sensor. Check the AC voltage across pins 1 and 2 of the</td>
<td>Voltage is 0.2 Vac or greater</td>
<td>Sensor adjustment solved the problem.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>black X2 ECU connector while rotating the LR wheel 30 rpm.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>136</td>
<td>003</td>
<td>02</td>
<td>Incorrect tire size</td>
<td></td>
<td></td>
<td>Check for correct tire size and mixed tire sizes. Check for correct</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>number of teeth on tone wheel. Correct as needed.</td>
</tr>
<tr>
<td>136</td>
<td>003</td>
<td>03</td>
<td>Sensor shorted to power</td>
<td>2. Measure the voltage across pin 1 of the X3 (green) connector and a</td>
<td>Measurable voltage at either pin</td>
<td>Repair short to power in circuit(s) 377LR+ and 377LR– in chassis</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>good chassis ground. Repeat the test between pin 2 and ground.</td>
<td></td>
<td>harness and sensor cable.</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>If problem is in the sensor harness, replace the sensor.</td>
</tr>
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</table>

### Right Front Wheel Sensor Troubleshooting (SID 002)

<table>
<thead>
<tr>
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<th>Test Result</th>
<th>Action</th>
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<tbody>
<tr>
<td>136</td>
<td>002</td>
<td>10</td>
<td>Intermittent signal</td>
<td>7. Adjust the sensor. Using the wheel sensor output screen in Meritor</td>
<td>Signal output OK</td>
<td>Adjustment solved the problem. Make sure brake chatter is not causing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PC Diagnostics, spin the wheel or drive the vehicle and check for</td>
<td></td>
<td>the problem.</td>
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<td></td>
<td></td>
<td>intermittent or erratic signal.</td>
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<td></td>
<td>Signal output</td>
<td>Check for intermittent wheel sensor circuit connections. Cause</td>
</tr>
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<td></td>
<td></td>
<td>incorrect</td>
<td>could be due to brake chatter. Repair as needed.</td>
</tr>
<tr>
<td>136</td>
<td>002</td>
<td>11</td>
<td>Erratic signal</td>
<td></td>
<td></td>
<td>Perform test 7.</td>
</tr>
<tr>
<td>136</td>
<td>002</td>
<td>12</td>
<td>Frequency too high</td>
<td>8. Check sensor wiring and connectors for intermittent contact.</td>
<td>Wiring OK</td>
<td>Suspect ECU at fault if problem persists.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Wiring incorrect</td>
<td>Repair wheel sensor circuit, as needed.</td>
</tr>
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</table>
## Left Rear Wheel Sensor Troubleshooting (SID 003)

<table>
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<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>003</td>
<td>04</td>
<td>Short to ground</td>
<td>3. Measure the resistance between pin 1 of the X3 (green) connector and a good chassis ground. Repeat the test between pin 2 and ground.</td>
<td>Resistance between either pin and ground is less than 100,000 ohms</td>
<td>Repair the short to ground in circuit(s) 377LR+ and 377LR– in chassis harness or sensor cable. If problem is in sensor harness, replace the sensor.</td>
</tr>
<tr>
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</tr>
<tr>
<td>136</td>
<td>003</td>
<td>05</td>
<td>Open circuit</td>
<td>4. Measure the resistance between pins 1 and 2 of the X3 (green) connector.</td>
<td>Resistance is 900–2000 ohms</td>
<td>Repeat the test and check for intermittent open or short in circuits 377LR+ and 377LR–. Suspect ECU at fault if the problem persists.</td>
</tr>
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<td></td>
</tr>
<tr>
<td>136</td>
<td>003</td>
<td>06</td>
<td>Short circuit</td>
<td>5. Disconnect the sensor connector from the chassis harness. Measure the resistance between the pins on the sensor connector.</td>
<td>Resistance is greater than 2000 ohms OR less than 900 ohms</td>
<td>Repair open or short in circuit(s) 377LR+ and 377LR– in chassis harness.</td>
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<td></td>
</tr>
<tr>
<td>136</td>
<td>003</td>
<td>07</td>
<td>Damaged tone ring</td>
<td>6. Check for mixed sensor connection. Using Meritor PC Diagnostics, spin each wheel individually. Check that output is from the correct sensor.</td>
<td>Resistance is greater than 2000 ohms OR less than 900 ohms</td>
<td>Replace the sensor.</td>
</tr>
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<td></td>
</tr>
<tr>
<td>136</td>
<td>003</td>
<td>08</td>
<td>Excessive wheel slip</td>
<td>7. Adjust the sensor. Using the wheel sensor output screen in Meritor PC Diagnostics, spin the wheel or drive the vehicle and check for intermittent or erratic signal.</td>
<td>Signal output OK</td>
<td>Adjustment solved the problem. Make sure brake chatter is not causing the problem.</td>
</tr>
<tr>
<td></td>
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<td></td>
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</tr>
<tr>
<td>136</td>
<td>003</td>
<td>09</td>
<td>Wire mismatch</td>
<td>8. Check sensor wiring and connectors for intermittent contact.</td>
<td>Signal output incorrect</td>
<td>Check for intermittent wheel sensor circuit connections. Cause could be due to brake chatter. Repair as needed.</td>
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## Left Rear Wheel Sensor Troubleshooting (SID 003)

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<tr>
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<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>003</td>
<td>10</td>
<td>Intermittent signal</td>
<td>7. Adjust the sensor. Using the wheel sensor output screen in Meritor PC Diagnostics, spin the wheel or drive the vehicle and check for intermittent or erratic signal.</td>
<td>Signal output OK</td>
<td>Adjusting solved the problem. Make sure brake chatter is not causing the problem.</td>
</tr>
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<td></td>
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<tr>
<td>136</td>
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<td>Erratic signal</td>
<td>8. Check sensor wiring and connectors for intermittent contact.</td>
<td>Signal output incorrect</td>
<td>Check for intermittent wheel sensor circuit connections. Cause could be due to brake chatter. Repair as needed.</td>
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<td></td>
</tr>
<tr>
<td>136</td>
<td>003</td>
<td>12</td>
<td>Frequency too high</td>
<td>9. Check sensor wiring and connectors for intermittent contact.</td>
<td>Wiring OK</td>
<td>Suspect ECU at fault if problem persists.</td>
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## Right Rear Wheel Sensor Troubleshooting (SID 004)

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<tr>
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<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>004</td>
<td>01</td>
<td>Incorrect sensor air gap</td>
<td>1. Adjust the sensor. Check the AC voltage across pins 3 and 4 of the black X2 ECU connector while rotating the RR wheel 30 rpm.</td>
<td>Voltage is 0.2 VAC or greater</td>
<td>Sensor adjustment solved the problem.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Voltage is less than 0.2 VAC</td>
<td>Check for excessive wheel bearing end play and hub runout. Repair as needed.</td>
</tr>
<tr>
<td>136</td>
<td>004</td>
<td>02</td>
<td>Incorrect tire size</td>
<td></td>
<td></td>
<td>Check for correct tire size and mixed tire sizes. Check for correct number of teeth on tone wheel. Correct as needed.</td>
</tr>
<tr>
<td>136</td>
<td>004</td>
<td>03</td>
<td>Sensor shorted to power</td>
<td>2. Measure the voltage across pin 3 of the X3 (green) connector and a good chassis ground. Repeat the test between pin 4 and ground.</td>
<td>Measurable voltage at either pin</td>
<td>Repair short to power in circuit(s) 377RR+ and 377RR– in chassis harness and sensor cable. If problem is in the sensor harness, replace the sensor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No voltage at either pin</td>
<td>Repeat the test and check for intermittent short to power in circuits 377RR+ and 377RR–. Suspect ECU is at fault if the problem persists.</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>004</td>
<td>04</td>
<td>Short to ground</td>
<td>3. Measure the resistance between pin 3 of the X3 (green) connector and a good chassis ground. Repeat the test between pin 4 and ground.</td>
<td>Resistance between either pin and ground is less than 100,000 ohms</td>
<td>Repair the short to ground in circuit(s) 377RR+ and 377RR– in chassis harness or sensor cable. If problem is in sensor harness, replace the sensor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance between either pin and ground is greater than 100,000 ohms</td>
<td>Repeat the test for intermittent short to ground in circuits 377RR+ and 377RR–. Suspect ECU at fault if the problem persists.</td>
</tr>
<tr>
<td>136</td>
<td>004</td>
<td>05</td>
<td>Open circuit</td>
<td>4. Measure the resistance between pins 3 and 4 of the X3 (green) connector.</td>
<td>Resistance is 900–2000 ohms</td>
<td>Repeat the test and check for intermittent open or short in circuits 377RR+ and 377RR–. Suspect ECU at fault if the problem persists.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance is greater than 2000 ohms OR less than 900 ohm.</td>
<td>Perform test 5.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5. Disconnect the sensor connector from the chassis harness. Measure the resistance between the pins on the sensor connector.</td>
<td>Resistance is 900–2000 ohms</td>
<td>Repair open or short in circuit(s) 377RR+ and 377RR– in chassis harness.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance is greater than 2000 ohms OR less than 900 ohms</td>
<td>Replace the sensor.</td>
</tr>
<tr>
<td>136</td>
<td>004</td>
<td>06</td>
<td>Short circuit</td>
<td></td>
<td></td>
<td>Perform tests 4 and 5.</td>
</tr>
<tr>
<td>136</td>
<td>004</td>
<td>07</td>
<td>Damaged tone ring</td>
<td></td>
<td></td>
<td>Inspect tone ring for damage and missing teeth. Make sure correct tooth wheel is installed (100-tooth is normal application). Repair as needed.</td>
</tr>
<tr>
<td>136</td>
<td>004</td>
<td>08</td>
<td>Excessive wheel slip</td>
<td></td>
<td></td>
<td>Check sensor adjustment. This fault usually occurs when there is excessive tire spin for more than 16 seconds.</td>
</tr>
<tr>
<td>136</td>
<td>004</td>
<td>09</td>
<td>Wire mismatch</td>
<td>6. Check for mixed sensor connection. Using Meritor PC Diagnostics, spin each wheel individually. Check that output is from the correct sensor.</td>
<td></td>
<td>Correct wiring connections, as needed.</td>
</tr>
</tbody>
</table>
### Left Front Modulator Valve Troubleshooting (SID 007)

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>007</td>
<td>03</td>
<td>Short to power</td>
<td>1. Measure the voltage between pins 2, 10, and 11 of the X2 (black) connector and a good chassis ground.</td>
<td>No voltage at either pin</td>
<td>Repeat test. Check circuits 378LFI, 378LFO, and 378LF– for intermittent short to power. Check above circuits for shorts to power. Check above circuits for shorts to power. Repair as necessary. If problem persists, the suspect ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Inlet or outlet circuit shorted to battery supply or another modulator valve wire.</td>
<td></td>
<td></td>
<td>Measurable voltage at either pin</td>
</tr>
<tr>
<td>136</td>
<td>007</td>
<td>05</td>
<td>Open circuit</td>
<td>2. Check the modulator valve inlet and outlet circuit resistance. Disconnect the connector from the valve and perform the modulator valve resistance test.</td>
<td>Resistance in both circuits is within 4 to 8 ohms.</td>
<td>Check harness wiring circuits 378LFI, 378LFO, or 378LF–.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Inlet or outlet circuit open.</td>
<td></td>
<td></td>
<td>Resistance in both circuits is not within 4 to 8 ohms.</td>
</tr>
<tr>
<td>136</td>
<td>007</td>
<td>06</td>
<td>Short to ground</td>
<td>3. Check the modulator valve inlet and outlet circuit resistance. Disconnect the connector from the valve and perform the modulator valve test.</td>
<td>Resistance in both circuits is within 4 to 8 ohms.</td>
<td>Check harness wiring circuits 378LFI, 378LFO, or 378LF– for short to ground. Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Inlet or outlet circuit shorted to ground.</td>
<td></td>
<td></td>
<td>Resistance in both circuits is not within 4 to 8 ohms.</td>
</tr>
</tbody>
</table>

### Right Rear Wheel Sensor Troubleshooting (SID 004)

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>004</td>
<td>10</td>
<td>Intermittent signal</td>
<td>7. Adjust the sensor. Using the wheel sensor output screen in Meritor PC Diagnostics, spin the wheel or drive the vehicle and check for intermittent or erratic signal.</td>
<td>Signal output OK</td>
<td>Adjustment solved the problem. Make sure brake chatter is not causing the problem.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Signal output incorrect</td>
<td>Check for intermittent wheel sensor circuit connections. Cause could be due to brake chatter. Repair as needed.</td>
</tr>
<tr>
<td>136</td>
<td>004</td>
<td>11</td>
<td>Erratic signal</td>
<td>8. Check sensor wiring and connectors for intermittent contact.</td>
<td>Wiring OK</td>
<td>Suspect ECU at fault if problem persists.</td>
</tr>
<tr>
<td>136</td>
<td>004</td>
<td>12</td>
<td>Frequency too high</td>
<td></td>
<td>Wiring incorrect</td>
<td></td>
</tr>
</tbody>
</table>

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### Right Front Modulator Valve Troubleshooting (SID 008)

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>008</td>
<td>03</td>
<td>Short to power inlet or outlet circuit shorted to battery supply or another modulator valve wire.</td>
<td>1. Measure the voltage between pins 3, 4, and 9 of the X2 (black) connector and a good chassis ground.</td>
<td>No voltage at either pin</td>
<td>Repeat test. Check circuits 378RFO, 378RFI, and 378RF– for intermittent short to power. Check above circuits for shorts to other modulator valve wires. Repair as necessary. If problem persists, the suspect ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Measurable voltage at either pin</td>
<td>Repair short to power in circuit 378RFO, 378RFI, or 378RF–.</td>
</tr>
<tr>
<td>136</td>
<td>008</td>
<td>05</td>
<td>Open circuit inlet or outlet circuit open.</td>
<td>2. Check the modulator valve inlet and outlet circuit resistance. Disconnect the connector from the valve and perform the modulator valve resistance test.</td>
<td>Resistance in both circuits is within 4 to 8 ohms.</td>
<td>Check harness wiring circuits 378RFO, 378RFI, or 378RF–.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance in both circuits is not within 4 to 8 ohms.</td>
<td>Replace the modulator valve.</td>
</tr>
<tr>
<td>136</td>
<td>008</td>
<td>06</td>
<td>Short to ground inlet or outlet circuit shorted to ground.</td>
<td>3. Check the modulator valve inlet and outlet circuit resistance. Disconnect the connector from the valve and perform the modulator valve test.</td>
<td>Resistance in both circuits is within 4 to 8 ohms.</td>
<td>Check harness wiring circuits 378RFO, 378RFI, or 378RF– for short to ground. Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance in both circuits is not within 4 to 8 ohms.</td>
<td>Replace modulator valve.</td>
</tr>
</tbody>
</table>

### Left Rear Modulator Valve Troubleshooting (SID 009)

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>009</td>
<td>03</td>
<td>Short to power inlet or outlet circuit shorted to battery supply or another modulator valve wire.</td>
<td>1. Measure the voltage between pins 10, 11, and 12 of the X3 (green) connector and a good chassis ground.</td>
<td>No voltage at either pin</td>
<td>Repeat test. Check circuits 378LRI, 378LRO, and 378LR– for intermittent short to power. Check above circuits for shorts to other modulator valve wires. Repair as necessary. If problem persists, the suspect ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Measurable voltage at either pin</td>
<td>Repair short to power in circuit 378LRI, 378LRO, or 378LR–.</td>
</tr>
<tr>
<td>136</td>
<td>009</td>
<td>05</td>
<td>Open circuit inlet or outlet circuit open.</td>
<td>2. Check the modulator valve inlet and outlet circuit resistance. Disconnect the connector from the valve and perform the modulator valve resistance test.</td>
<td>Resistance in both circuits is within 4 to 8 ohms.</td>
<td>Check harness wiring circuits 378LRI, 378LRO, and 378LR–.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance in both circuits is not within 4 to 8 ohms.</td>
<td>Replace the modulator valve.</td>
</tr>
</tbody>
</table>
### Left Rear Modulator Valve Troubleshooting (SID 009)

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>009</td>
<td>06</td>
<td>Short to ground Inlet or outlet circuit shorted to ground.</td>
<td>3. Check the modulator valve inlet and outlet circuit resistance. Disconnect the connector from the valve and perform the modulator valve test.</td>
<td>Resistance in both circuits is within 4 to 8 ohms.</td>
<td>Check harness wiring circuits 378LRI, 378LRO, and 378LR for short to ground. Repair as necessary.</td>
</tr>
</tbody>
</table>

### Right Rear Modulator Valve Troubleshooting (SID 010)

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>010</td>
<td>03</td>
<td>Short to power Inlet or outlet circuit shorted to battery supply or another modulator valve wire.</td>
<td>1. Measure the voltage between pins 7, 8, and 9 of the X3 (green) connector and a good chassis ground.</td>
<td>No voltage at either pin</td>
<td>Repeat test. Check circuits 378RRO, 378RR−, and 378RRI for intermittent short to power. Check above circuits for shorts to other modulator valve wires. Repair as necessary. If problem persists, the suspect ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Measurable voltage at either pin</td>
<td>Repair short to power in circuit 378RRO, 378RR−, or 378RRI.</td>
</tr>
<tr>
<td>136</td>
<td>010</td>
<td>05</td>
<td>Open circuit Inlet or outlet circuit open.</td>
<td>2. Check the modulator valve inlet and outlet circuit resistance. Disconnect the connector from the valve and perform the modulator valve test.</td>
<td>Resistance in both circuits is within 4 to 8 ohms.</td>
<td>Check harness wiring circuits 378RRO, 378RRI, and 378RR−.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance in both circuits is not within 4 to 8 ohms.</td>
<td>Replace the modulator valve.</td>
</tr>
<tr>
<td>136</td>
<td>010</td>
<td>06</td>
<td>Short to ground Inlet or outlet circuit shorted to ground.</td>
<td>3. Check the modulator valve inlet and outlet circuit resistance. Disconnect the connector from the valve and perform the modulator valve test.</td>
<td>Resistance in both circuits is within 4 to 8 ohms.</td>
<td>Check harness wiring circuits 378RRI, 378RRO, and 378RR− for short to ground. Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance in both circuits is not within 4 to 8 ohms.</td>
<td>Replace modulator valve.</td>
</tr>
</tbody>
</table>
### Ground Faults Troubleshooting (SID 014)

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>014</td>
<td>04</td>
<td>Low voltage or open circuit</td>
<td>1. Disconnect the X1 (gray) connector at the ABS ECU. With the ignition ON, measure the voltage between pins 1 and 12.</td>
<td>Voltage is 9.5 to 14 volts.</td>
<td>System voltage is acceptable. Check for intermittent low voltage. Check the batteries and charging system. Voltage may have been temporarily too low. Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Voltage is less than 9.5 volts.</td>
<td>Check vehicle batteries and charging system. Check ABS ECU power and ground circuits for open or high resistance. Repair as necessary.</td>
</tr>
<tr>
<td>136</td>
<td>014</td>
<td>05</td>
<td>Central group open or high resistance</td>
<td>2. Disconnect the X1 (gray) connector at the ABS ECU. Check the ground circuit (pin 11) for high resistance or open circuit.</td>
<td>Ground is okay</td>
<td>Verify the fault. Check the ground circuits for open or high resistance. Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ground is open or has high resistance</td>
<td>Repair ground circuit as necessary.</td>
</tr>
<tr>
<td>136</td>
<td>014</td>
<td>06</td>
<td>Internal relay does not open</td>
<td></td>
<td></td>
<td>If fault repeats, replace the ABS ECU.</td>
</tr>
</tbody>
</table>

### Ground Faults Troubleshooting (SID 015)

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>015</td>
<td>03</td>
<td>ATC valve grounded to power.</td>
<td>1. Disconnect the X3 (green) connector, check for voltage between pin 6 and ground.</td>
<td>Voltage at pin 6.</td>
<td>Circuit 378T- is shorted to power. Locate fault and repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No voltage at pin 6.</td>
<td>Verify fault. Check for intermittent fault in circuit 378, repair as necessary.</td>
</tr>
<tr>
<td>136</td>
<td>015</td>
<td>04</td>
<td>Low voltage or open circuit</td>
<td>2. Disconnect the X1 (gray) connector at the ABS ECU. With the ignition ON, measure the voltage between pin 2 and a good ground.</td>
<td>Voltage is 9.5 to 14 volts.</td>
<td>System voltage is acceptable. Check for intermittent low voltage. Check the batteries and charging system. Voltage may have been temporarily too low. Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Voltage is less than 9.5 volts.</td>
<td>Repair voltage supply to ECU.</td>
</tr>
<tr>
<td>136</td>
<td>015</td>
<td>05</td>
<td>ATC Valve - High Impedance</td>
<td></td>
<td></td>
<td>Replace ABS ECU if fault persists.</td>
</tr>
<tr>
<td>136</td>
<td>015</td>
<td>06</td>
<td>ATC Valve circuit shorted to ground</td>
<td>Disconnect the X3 (green) connector, check resistance between pin 6 and a good ground.</td>
<td>Resistance is less than 10,000 ohms</td>
<td>Verify fault. Check for intermittent fault in circuit 378, repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance is greater than 10,000 ohms</td>
<td>Verify fault. Check for intermittent fault in circuit 378T, repair as necessary.</td>
</tr>
</tbody>
</table>
### ATC Valve Troubleshooting (SID 018)

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>018</td>
<td>03</td>
<td>Short to power.</td>
<td></td>
<td>Voltage</td>
<td>Circuit 378T+ is shorted to power. Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No voltage</td>
<td>Check circuit 378+ for intermittent short to power. Repair as necessary.</td>
</tr>
<tr>
<td>136</td>
<td>018</td>
<td>05</td>
<td>Open circuit</td>
<td></td>
<td>Resistance is 7 to 14 ohms.</td>
<td>Go to step 3.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance is not 7 to 14 ohms.</td>
<td>Replace ATC Valve.</td>
</tr>
<tr>
<td>136</td>
<td>018</td>
<td>07</td>
<td>Short to ground.</td>
<td></td>
<td>Resistance is 7 to 14 ohms.</td>
<td>Verify fault. Check for intermittent open circuit in 376T+ and 376 T-. Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance is not 7 to 14 ohms.</td>
<td>Repair circuit 376T+ or 376T-.</td>
</tr>
</tbody>
</table>

### Auxiliary Output Troubleshooting (not currently used) (SID 019)

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>019</td>
<td>03</td>
<td>Short to power.</td>
<td></td>
<td></td>
<td>This fault should not appear. Reconfigure the ECU. If fault continues to appear, check the wiring in the X2 (black) connector. This ABS ECU connector should be unused. Make sure there are no connections to these pins. If incorrect wiring is found, correct it and reconfigure the ECU. If this does not correct the problem, contact Meritor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Verify fault. Contact Meritor WABCO if fault persists.</td>
</tr>
<tr>
<td>136</td>
<td>019</td>
<td>05</td>
<td>Open circuit</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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### J1939 Datalink Troubleshooting (SID 231)

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>231</td>
<td>02</td>
<td>J1939 speed plausibility error. NOTE: This fault indicates a discrepancy between vehicle speed reported on J1939 and ABS sensed vehicle speed.</td>
<td>Check the speedometer calibration. Check for the tire size mismatch. The vehicle speed reported on the J1939 databus does not agree with the wheel sensor speeds.</td>
<td>Refer to SB 54-133 for troubleshooting J1939.</td>
<td>Repair J1939 datalink as necessary.</td>
</tr>
<tr>
<td>136</td>
<td>231</td>
<td>05</td>
<td>J1939 open/short</td>
<td>Check the driveline retarder ECU and wires. Check the J1939 Datalink. Freightliner SB 54-133</td>
<td>Repair J1939 datalink as necessary.</td>
<td></td>
</tr>
<tr>
<td>136</td>
<td>019</td>
<td>06</td>
<td>Short to ground</td>
<td></td>
<td></td>
<td>This fault should not appear. Reconfigure the ECU. If fault continues to appear, check the wiring in the X2 (black) connector. This ABS ECU connector should be unused. Make sure there are no connections to these pins. If incorrect wiring is found, correct it and reconfigure the ECU. If this does not correct the problem, contact Meritor.</td>
</tr>
</tbody>
</table>

### J1939 Datalink Troubleshooting (SID 231)

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>231</td>
<td>07</td>
<td>J1939 time out NOTE: Fault occurs if engine retarder sends message incorrectly.</td>
<td>Check the driveline retarder ECU and wires. Freightliner SB 54-133</td>
<td></td>
<td>Check J1939 datalink and driveline retarder ECU. Repair as necessary.</td>
</tr>
<tr>
<td>136</td>
<td>231</td>
<td>08</td>
<td>J1939 time out NOTE: Fault occurs if engine retarder sends message incorrectly.</td>
<td>Check engine ECU and wires. Check J1939 datalink. Freightliner SB 54-133</td>
<td></td>
<td>Check J1939 datalink and engine ECU. Repair as necessary.</td>
</tr>
<tr>
<td>136</td>
<td>231</td>
<td>09</td>
<td>J1939 time out NOTE: Fault occurs if engine retarder sends message incorrectly.</td>
<td>Check engine and transmission ECUs and wires. Check J1939 datalink. Freightliner SB 54-133</td>
<td></td>
<td>Check J1939 datalink, engine ECU, transmission ECU, and wiring. Repair as necessary.</td>
</tr>
</tbody>
</table>
### Voltage Troubleshooting (SID 251)

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>251</td>
<td>03</td>
<td>Overvoltage</td>
<td>Using Meritor PC Diagnostics, check the diagonal voltages with the</td>
<td>Voltage is 9.5 to 14 volts</td>
<td>Check for intermittent sources of high voltage. Check condition of</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Voltage to ECU was too high for more than 5</td>
<td>engine running at governed speed, or measure the voltage at the</td>
<td></td>
<td>charging system and batteries. Verify fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>seconds.</td>
<td>batteries with the engine running at governed speed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>136</td>
<td>231</td>
<td>10</td>
<td>J1939 time out</td>
<td>Check the engine ECU and wires. Check the J1939 datalink. Freightliner</td>
<td>Voltage is greater than 14</td>
<td>Check J1939 datalink and engine ECU. Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NOTE: Fault occurs if the exhaust retarder</td>
<td>SB 54-133</td>
<td>volts.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>sends a message incorrectly.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>136</td>
<td>231</td>
<td>12</td>
<td>J1939 internal error</td>
<td></td>
<td></td>
<td>Verify fault. Clear code from the ECU memory. If fault persists,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>replace the ABS ECU.</td>
</tr>
</tbody>
</table>

### Configuration Errors Troubleshooting (SID 253)

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>253</td>
<td>01</td>
<td>ATC configuration error</td>
<td>Check J1939 for proper wiring. Check engine ECU for communication.</td>
<td></td>
<td>Check J1939 for proper wiring. Check engine ECU for communication.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NOTE: ATC valve is detected without engine</td>
<td>Repair as necessary, then reconfigure ECU.</td>
<td></td>
<td>Repair as necessary, then reconfigure ECU.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>datalink (J1939).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>136</td>
<td>253</td>
<td>02</td>
<td>ABS configuration/wheel parameter incorrect.</td>
<td>Reconfigure ECU. If fault repeats then the wrong ECU is installed.</td>
<td></td>
<td>Reconfigure ECU. If fault repeats then the wrong ECU is installed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Replace with the correct ECU.</td>
<td></td>
<td>Replace with the correct ECU.</td>
</tr>
<tr>
<td>136</td>
<td>253</td>
<td>12</td>
<td>Check sum error.</td>
<td>Check parameter setting. Check if diagnostic device was</td>
<td></td>
<td>Check parameter setting. Check if diagnostic device was disconnected</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>disconnected during active diagnosis.</td>
<td></td>
<td>during active diagnosis.</td>
</tr>
</tbody>
</table>

### Miscellaneous Faults Troubleshooting (SID 254)

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>254</td>
<td>05</td>
<td>ABS/ATC ECU, no loads</td>
<td>No modulator valve connected. Fault may have resulted from end of</td>
<td></td>
<td>No modulator valve connected. Fault may have resulted from end of</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>line test at factory.</td>
<td></td>
<td>line test at factory.</td>
</tr>
<tr>
<td>MID</td>
<td>SID</td>
<td>FMI</td>
<td>Problem</td>
<td>Test</td>
<td>Test Result</td>
<td>Action</td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>--------------------------------------</td>
<td>------</td>
<td>-------------</td>
<td>----------------------------------------------------------------</td>
</tr>
<tr>
<td>136</td>
<td>254</td>
<td>08</td>
<td>Excessive wheel slip.</td>
<td></td>
<td></td>
<td>Check wheel speed sensor air gaps. One wheel was much faster than the other. May have been caused by testing vehicle on a dynamometer.</td>
</tr>
<tr>
<td>136</td>
<td>254</td>
<td>09</td>
<td>Modulator valve actuated too long.</td>
<td></td>
<td></td>
<td>Modulator valve was activated too long (more than 75% of 5 minutes). After a delay, function will return to normal.</td>
</tr>
<tr>
<td>136</td>
<td>254</td>
<td>12</td>
<td>Internal error</td>
<td></td>
<td></td>
<td>If fault persists, replace the ABS ECU.</td>
</tr>
<tr>
<td>136</td>
<td>254</td>
<td>13</td>
<td>Accelerometer out of range</td>
<td></td>
<td></td>
<td>If fault persists, replace the ABS ECU.</td>
</tr>
</tbody>
</table>

**Miscellaneous Faults Troubleshooting (SID 254)**

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>254</td>
<td>14</td>
<td>ECU Mounting</td>
<td></td>
<td></td>
<td>Check ECU mounting. Replace the ECU if fault persists.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Extreme banked road (measured acceleration not plausible)</td>
<td></td>
<td></td>
<td>No correction required. This fault is for reporting only.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Accelerometer linearity (measured acceleration not plausible)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Meritor WABCO Hydraulic Antilock Braking System (ABS) – Table of DTCs

## Fault Codes

<table>
<thead>
<tr>
<th>J1587 Fault Code (MID-SID)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>136-001</td>
<td>Left Front Wheel Sensor *</td>
</tr>
<tr>
<td>136-002</td>
<td>Right Front Wheel Sensor</td>
</tr>
<tr>
<td>136-003</td>
<td>Left Rear Wheel Sensor</td>
</tr>
<tr>
<td>136-004</td>
<td>Right Rear Wheel Sensor</td>
</tr>
<tr>
<td>136-013</td>
<td>Retarder</td>
</tr>
<tr>
<td>136-014</td>
<td>Power</td>
</tr>
<tr>
<td>136-023</td>
<td>ABS Warning Light</td>
</tr>
<tr>
<td>136-030</td>
<td>Recirculation Pump Relay</td>
</tr>
<tr>
<td>136-042</td>
<td>Left Front Inlet Solenoid Valve</td>
</tr>
<tr>
<td>136-043</td>
<td>Right Front Inlet Solenoid Valve</td>
</tr>
<tr>
<td>136-044</td>
<td>Left Rear Inlet Solenoid Valve</td>
</tr>
<tr>
<td>136-045</td>
<td>Right Rear Inlet Solenoid Valve</td>
</tr>
<tr>
<td>136-048</td>
<td>Left Front Outlet Solenoid Valve</td>
</tr>
<tr>
<td>136-049</td>
<td>Right Front Outlet Solenoid Valve</td>
</tr>
<tr>
<td>136-050</td>
<td>Left Rear Outlet Solenoid Valve</td>
</tr>
<tr>
<td>136-051</td>
<td>Right Rear Outlet Solenoid Valve</td>
</tr>
<tr>
<td>136-054</td>
<td>Recirculation Pump</td>
</tr>
<tr>
<td>136-055</td>
<td>ECU</td>
</tr>
<tr>
<td>136-251</td>
<td>Low Voltage</td>
</tr>
<tr>
<td>136-253</td>
<td>Internal Tire Parameter</td>
</tr>
<tr>
<td>136-254</td>
<td>ECU Internal Fault</td>
</tr>
</tbody>
</table>

* Blink codes 5-1, 5-3 and 5-4 indicate a fault with the right front, right rear and left rear wheel sensors respectively.
## Troubleshooting Tables

### J1587 Fault 136-001 Left Front Wheel Sensor

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>001</td>
<td>01</td>
<td>Incorrect sensor air gap</td>
<td>1. Adjust the sensor. Check the AC voltage across Pins 5 and 8 of the green X3 ECU connector (Circuits 377LF+ and 377 LF–) while rotating the left front wheel 30 rpm.</td>
<td>Voltage greater than 0.2 VAC</td>
<td>Sensor adjustment solved the problem. Clear the stored faults and drive the vehicle 4 mph (6 km/h).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Voltage less than 0.2 VAC</td>
<td>Check for excessive wheel bearing end play. Repair as necessary.</td>
</tr>
</tbody>
</table>

### J1587 Fault 136-001 Left Front Wheel Sensor

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>001</td>
<td>02</td>
<td>Intermittent open circuit or incorrect sensor resistance</td>
<td>2. Measure the resistance across Pins 5 and 8 of the green X3 ECU connector (Circuits 377LF– and 377 LF+).</td>
<td>Resistance reading between 500 and 2000 ohms</td>
<td>Check for intermittent, loose or poor connections in Circuits 377LF+ and 377LF– and repair as necessary. If the problem persists, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading below 500 or above 2000 ohms</td>
<td>Go to Test 3.</td>
</tr>
<tr>
<td>136</td>
<td>001</td>
<td>02</td>
<td>Incorrect or mixed tire size</td>
<td>3. Disconnect the sensor at the sensor connector. Measure the resistance at the sensor connector (on the sensor side).</td>
<td>Resistance reading between 500 and 2000 ohms</td>
<td>Check the wiring between the ECU and the wheel sensor (Circuits 377LF+ and 377LF–). Repair as necessary. Go to Test 4.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading below 500 or above 2000 ohms</td>
<td>Replace the wheel sensor.</td>
</tr>
</tbody>
</table>

### J1587 Fault 136-001 Left Front Wheel Sensor

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>001</td>
<td>02</td>
<td>Incorrect or mixed tire size</td>
<td>4. Check for tire size deviation in excess of 16 percent. Mixed tire sizes can cause this fault.</td>
<td>Correct tire size and size variation does not exceed 16 percent</td>
<td>Perform Test 2 and Test 3 if not already done. If the problem is not found, verify the fault and check the ECU.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Incorrect tire size or size variation exceeds 16 percent</td>
<td>Install the correct size tires.</td>
</tr>
</tbody>
</table>
### J1587 Fault 136-001 Left Front Wheel Sensor

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>001</td>
<td>05</td>
<td>Open circuit</td>
<td>5. Measure the resistance across Pins 5 and 8 of the green X3 ECU connector (Circuits 377LF– and 377LF+).</td>
<td>Resistance reading between 500 and 2000 ohms</td>
<td>Check for intermittent, loose or poor connections in Circuits 377LF+ and 377LF– and repair as necessary. If the problem persists, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading below 500 or above 2000 ohms</td>
<td></td>
<td>Go to Test 6.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6. Disconnect the sensor at the sensor connector. Measure the resistance at the sensor connector (on the sensor side).</td>
<td>Resistance reading between 500 and 2000 ohms</td>
<td>Check the wiring between the ECU and the wheel sensor (Circuits 377LF+ and 377LF–). Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading below 500 or above 2000 ohms</td>
<td></td>
<td>Replace the wheel sensor.</td>
</tr>
</tbody>
</table>

### J1587 Fault 136-002 Right Front Wheel Sensor

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>002</td>
<td>01</td>
<td>Incorrect sensor air gap</td>
<td>1. Adjust the sensor. Check the AC voltage across Pins 4 and 9 of the green X3 ECU connector (Circuits 377RF+ and 377RF–) while rotating the right front wheel 30 rpm.</td>
<td>Voltage greater than 0.2 VAC</td>
<td>Sensor adjustment solved the problem. Clear the stored faults and drive the vehicle 4 mph (6 km/h).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Voltage less than 0.2 VAC</td>
<td>Check for excessive wheel bearing end play. Repair as necessary.</td>
</tr>
</tbody>
</table>
### J1587 Fault 136-002 Right Front Wheel Sensor

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>002</td>
<td>02</td>
<td>Intermittent open circuit or incorrect sensor resistance</td>
<td>2. Measure the resistance across Pins 4 and 9 of the green X3 ECU connector (Circuits 377RF– and 377RF+).</td>
<td>Resistance reading between 500 and 2000 ohms</td>
<td>Check for intermittent, loose or poor connections in Circuits 377RF– and 377RF+ and repair as necessary. If the problem persists, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading below 500 or above 2000 ohms</td>
<td>Go to Test 3.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3. Disconnect the sensor at the sensor connector. Measure the resistance at the sensor connector (on the sensor side).</td>
<td>Resistance reading between 500 and 2000 ohms</td>
<td>Check the wiring between the ECU and the wheel sensor (Circuits 377RF+ and 377RF–). Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading below 500 or above 2000 ohms</td>
<td>Replace the wheel sensor.</td>
<td></td>
</tr>
<tr>
<td>136</td>
<td>002</td>
<td>05</td>
<td>Open circuit</td>
<td>4. Measure the resistance across Pins 4 and 9 of the green X3 ECU connector (Circuits 377RF– and 377RF+).</td>
<td>Resistance reading between 500 and 2000 ohms</td>
<td>Check for intermittent, loose or poor connections in Circuits 377RF– and 377RF+ and repair as necessary. If the problem persists, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading below 500 or above 2000 ohms</td>
<td>Go to Test 5.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5. Disconnect the sensor at the sensor connector. Measure the resistance at the sensor connector (on the sensor side).</td>
<td>Resistance reading between 500 and 2000 ohms</td>
<td>Check the wiring between the ECU and the wheel sensor (Circuits 377RF+ and 377RF–). Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading below 500 or above 2000 ohms</td>
<td>Replace the wheel sensor.</td>
<td></td>
</tr>
<tr>
<td>MID</td>
<td>SID</td>
<td>FMI</td>
<td>Problem</td>
<td>Test</td>
<td>Test Result</td>
<td>Action</td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>--------------------------------------------</td>
<td>------</td>
<td>------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>136</td>
<td>003</td>
<td>01</td>
<td>Incorrect sensor air gap</td>
<td>1.</td>
<td>Voltage greater than 0.2 VAC</td>
<td>Sensor adjustment solved the problem. Clear the stored faults and drive the vehicle 4 mph (6 km/h).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Check the AC voltage across Pins 3 and 10 of the green X3 ECU connector (Circuits 377LR+ and 377LR–) while rotating the left rear wheel 30 rpm.</td>
<td>2.</td>
<td>Voltage less than 0.2 VAC</td>
<td>Check for excessive wheel bearing end play. Repair as necessary.</td>
</tr>
<tr>
<td>136</td>
<td>003</td>
<td>02</td>
<td>Intermittent open circuit or incorrect sensor resistance</td>
<td>2.</td>
<td>Resistance reading between 500 and 2000 ohms</td>
<td>Check for intermittent, loose or poor connections in Circuits 377LR+ and 377LR– and repair as necessary. If the problem persists, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Measure the resistance across Pins 3 and 10 of the green X3 ECU connector (Circuits 377LR– and 377LR+).</td>
<td>3.</td>
<td>Resistance reading below 500 or above 2000 ohms</td>
<td>Go to Test 3.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Disconnect the sensor at the sensor connector. Measure the resistance at the sensor connector (on the sensor side).</td>
<td>3.</td>
<td>Resistance reading between 500 and 2000 ohms</td>
<td>Check the wiring between the ECU and the wheel sensor (Circuits 377LR+ and 377LR–). Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Measure the resistance at the sensor connector (on the sensor side).</td>
<td>3.</td>
<td>Resistance reading below 500 or above 2000 ohms</td>
<td>Replace the wheel sensor.</td>
</tr>
<tr>
<td>136</td>
<td>003</td>
<td>05</td>
<td>Open circuit</td>
<td>4.</td>
<td>Resistance reading between 500 and 2000 ohms</td>
<td>Check for intermittent, loose or poor connections in Circuits 377LR+ and 377LR– and repair as necessary. If the problem persists, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Measure the resistance across Pins 3 and 10 of the green X3 ECU connector (Circuits 377LR– and 377LR+).</td>
<td>5.</td>
<td>Resistance reading below 500 or above 2000 ohms</td>
<td>Go to Test 5.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Disconnect the sensor at the sensor connector. Measure the resistance at the sensor connector (on the sensor side).</td>
<td>5.</td>
<td>Resistance reading between 500 and 2000 ohms</td>
<td>Check the wiring between the ECU and the wheel sensor (Circuits 377LR+ and 377LR–). Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Measure the resistance at the sensor connector (on the sensor side).</td>
<td>5.</td>
<td>Resistance reading below 500 or above 2000 ohms</td>
<td>Replace the wheel sensor.</td>
</tr>
</tbody>
</table>
### J1587 Fault 136-004 Right Rear Wheel Sensor

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>004</td>
<td>01</td>
<td>Incorrect sensor air gap</td>
<td>1. Adjust the sensor. Check the AC voltage across Pins 8 and 7 of the green X3 ECU connector (Circuits 377RR+ and 377RR–) while rotating the right rear wheel 30 rpm.</td>
<td>Voltage greater than 0.2 VAC</td>
<td>Sensor adjustment solved the problem. Clear the stored faults and drive the vehicle 4 mph (6 km/h).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Voltage less than 0.2 VAC</td>
<td>Check for excessive wheel bearing end play. Repair as necessary.</td>
</tr>
<tr>
<td>136</td>
<td>004</td>
<td>02</td>
<td>Intermittent open circuit or incorrect sensor resistance</td>
<td>2. Measure the resistance across Pins 6 and 7 of the green X3 ECU connector (Circuits 377RR– and 377RR+).</td>
<td>Resistance reading between 500 and 2000 ohms</td>
<td>Check for intermittent, loose or poor connections in Circuits 377RR+ and 377RR– and repair as necessary. If the problem persists, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading below 500 or above 2000 ohms</td>
<td>Go to Test 3.</td>
</tr>
<tr>
<td>136</td>
<td>004</td>
<td>05</td>
<td>Open circuit</td>
<td>3. Disconnect the sensor at the sensor connector. Measure the resistance at the sensor connector (on the sensor side).</td>
<td>Resistance reading between 500 and 2000 ohms</td>
<td>Check the wiring between the ECU and the wheel sensor (Circuits 377RR+ and 377RR–). Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading below 500 or above 2000 ohms</td>
<td>Replace the wheel sensor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4. Measure the resistance across Pins 6 and 7 of the green X3 ECU connector (Circuits 377RR– and 377RR+).</td>
<td>Resistance reading between 500 and 2000 ohms</td>
<td>Check for intermittent, loose or poor connections in Circuits 377RR+ and 377RR– and repair as necessary. If the problem persists, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading below 500 or above 2000 ohms</td>
<td>Go to Test 5.</td>
</tr>
<tr>
<td>136</td>
<td>004</td>
<td>05</td>
<td>Open circuit</td>
<td>5. Disconnect the sensor at the sensor connector. Measure the resistance at</td>
<td>Resistance reading between 500 and 2000 ohms</td>
<td>Check the wiring between the ECU and the wheel sensor (Circuits 377RR+ and 377RR–). Repair as necessary.</td>
</tr>
</tbody>
</table>

Download from: [https://truckmanualshub.com/](https://truckmanualshub.com/)
the sensor connector (on the sensor side).

Resistance reading below 500 or above 2000 ohms Replace the wheel sensor.

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>013</td>
<td>03</td>
<td>Short to power</td>
<td>1. Disconnect the black X2 connector at the ECU. Disconnect the retarder relay. With the ignition ON, measure the voltage between Pin 7 of the black X2 ECU connector and a good chassis ground.</td>
<td>Voltage zero</td>
<td>Check for an intermittent short to power in Circuit 376R. If okay, ECU may be at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Voltage not zero</td>
<td>Check for a short to power in Circuit 376R. Repair as necessary.</td>
</tr>
<tr>
<td>136</td>
<td>013</td>
<td>05</td>
<td>Open circuit</td>
<td>2. Disconnect the black X2 connector at the ECU. Disconnect the retarder relay. Measure the resistance between Pin 7 of the black X2 ECU connector and relay connector cavity that corresponds to pin 85 of the relay.</td>
<td>Resistance less than 1 ohm</td>
<td>Check relay coil resistance (should be 60-85 Ohms). If okay, check circuit 81C (power to relay coil) for open. Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance more than 1 ohm</td>
<td>Repair open in circuit 376R.</td>
</tr>
<tr>
<td>136</td>
<td>013</td>
<td>06</td>
<td>Short to ground</td>
<td>3. Disconnect the black X2 connector at the ECU. Disconnect the retarder relay. Measure the resistance between pin 7 of the X2 connector and a good chassis ground.</td>
<td>Resistance is less than 10 Ohms</td>
<td>Check circuit 376R for short to ground. Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance is much greater than 10 Ohms</td>
<td>Check for intermittent short to ground in circuit 376R. If okay, ECU may be at fault.</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>014</td>
<td>03</td>
<td>Voltage supplied to ECU with ignition OFF</td>
<td>1. Check for voltage backfeeding to ECU with the ignition off, especially to pins 7/X2 and 10/X2.</td>
<td>Voltage zero</td>
<td>Repair as necessary.</td>
</tr>
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<tr>
<td></td>
<td></td>
<td></td>
<td>No voltage supplied to</td>
<td>2. With the ignition ON, measure the voltage between Pin 3 of the black X2 ECU connector and a</td>
<td>Voltage between 9.5 and 14 volts at both pins.</td>
<td>Check Circuit 376A for an intermittent open circuit. If the problem persists, suspect the ECU is at fault.</td>
</tr>
</tbody>
</table>
J1587 Fault 136-023 ABS Warning Light

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>023</td>
<td>05</td>
<td>Open circuit or low current</td>
<td>1.</td>
<td>ABS light illuminates</td>
<td>Check circuit 376L for open circuit between splice S22 and X2/8 at the ABS connector. Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.</td>
<td>ABS light does not illuminate</td>
<td>Check the bulb and wire (circuit 376L between splice S22 and ICU pin B11. If okay, replace the ICU.</td>
</tr>
</tbody>
</table>

J1587 Fault 136-030 Recirculation Pump Relay

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>030</td>
<td>03</td>
<td>Relay shorted to power</td>
<td>1.</td>
<td>Voltage zero</td>
<td>If the problem persists, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.</td>
<td>Voltage not zero</td>
<td>Circuit 376H is shorted to power. Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td>030</td>
<td>05</td>
<td>Relay open circuit</td>
<td>2.</td>
<td>Resistance between 50 and 200 ohms</td>
<td>If the problem persists, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td>030</td>
<td>05</td>
<td></td>
<td>3.</td>
<td>Resistance below 50 or above 200 ohms</td>
<td>Check the relay coil, relay coil ground circuit, and Circuit 376H for an open circuit. Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td>030</td>
<td>06</td>
<td>Relay short to ground</td>
<td>3.</td>
<td>Resistance between 50 and 200 ohms</td>
<td>If the problem persists, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.</td>
<td>Resistance below 50 or above 200 ohms</td>
<td>Check Circuit 376H for a short to ground. Repair as necessary.</td>
</tr>
</tbody>
</table>

J1587 Fault 136-030 Recirculation Pump Relay

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>030</td>
<td>07</td>
<td>Pump relay sticks, pump</td>
<td>4.</td>
<td>Pump OFF</td>
<td>The ABS pump relay (located in the chassis harness, near the ABS valve) may be intermittently sticking. Try a new relay and verify that the problem is solved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>continues to run when ECU</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>deactivated the relay</td>
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<td></td>
<td>NOTE: The problem may</td>
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<td></td>
<td></td>
<td></td>
<td>likely be caused by a</td>
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<td></td>
<td></td>
<td></td>
<td>short circuit in the</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>system.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
be intermittent and a new relay may be required to correct the fault.

to see if the recirculation pump is running.

| Pump ON | The ABS pump relay (located in the chassis harness, near the ABS valve) is sticking. Replace the relay. |
### J1587 Fault 136-042 Left Front Inlet Solenoid Valve

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>042</td>
<td>03</td>
<td>Shorted to power (inlet valve)</td>
<td>1. Measure the resistance across Pins 3 and 2 of the gray X1 ECU connector (Circuits 378LFI and GRDE).</td>
<td>Resistance reading 6.5±0.5 ohms</td>
<td>Check for intermittent wiring connections. If the wiring is OK, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>05</td>
<td>Open circuit (inlet valve)</td>
<td></td>
<td>Resistance reading not 6.5±0.5 ohms</td>
<td>Go to Test 2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>06</td>
<td>Shorted to ground (inlet valve)</td>
<td>2. Check the ground circuit by measuring the resistance between Pin 2 of the gray X1 ECU connector and a good chassis ground.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 3.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NOTE: Check for an open circuit in the wiring between the ECU and the modulator valve. Check the ground circuit to the modulator valve.</td>
<td></td>
<td>Resistance reading not close to zero</td>
<td>Check and repair the ground circuit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3. With the modulator valve connector removed, measure the resistance between Pin 8 on the modulator connector and a good chassis ground.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 4.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4. Measure the resistance in Circuit 378LFI between modulator connector Pin 12 and connector Pin 3 on the gray X1 ECU connector.</td>
<td>Resistance reading not close to zero</td>
<td>Check the modulator ground circuit, repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5. With the modulator valve connector removed, measure the resistance across Pins 12 and 8 on the modulator connector.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 5.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not close to zero</td>
<td>Repair Circuit 378LFI.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading 6.5±0.5 ohms</td>
<td>Repeat Tests 1 through 5. The problem may be intermittent. If the wiring is OK, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not 6.5±0.5 ohms</td>
<td>Replace the modulator valve.</td>
</tr>
<tr>
<td>MID</td>
<td>SID</td>
<td>FMI</td>
<td>Problem</td>
<td>Test</td>
<td>Test Result</td>
<td>Action</td>
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</tr>
<tr>
<td>136</td>
<td>043</td>
<td>03</td>
<td>Shorted to power (inlet valve)</td>
<td>1. Measure the resistance across Pins 4 and 2 of the gray X1 ECU connector (Circuits 378RFI and GRDE).</td>
<td>Resistance reading 6.5±0.5 ohms</td>
<td>Check for intermittent wiring connections. If the wiring is OK, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>05</td>
<td>Open circuit (inlet valve) Shorted to ground (inlet valve)</td>
<td>Resistance reading not 6.5±0.5 ohms</td>
<td>Go to Test 2.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>06</td>
<td>NOTE: Check for an open circuit in the wiring between the ECU and the modulator valve. Check the ground circuit to the modulator valve.</td>
<td>2. Check the ground circuit by measuring the resistance between Pin 2 of the gray X1 ECU connector and a good chassis ground.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 3.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not close to zero</td>
<td>Check and repair the ground circuit.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3. With the modulator valve connector removed, measure the resistance between Pin 8 on the modulator connector and a good chassis ground.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 4.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not close to zero</td>
<td>Check the modulator ground circuit, repair as necessary.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4. Measure the resistance in Circuit 378RFI between modulator connector Pin 4 and connector Pin 4 on the gray X1 ECU connector.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 5.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not close to zero</td>
<td>Repair Circuit 378RFI.</td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td>5. With the modulator valve connector removed, measure the resistance across Pins 4 and 8 on the modulator connector.</td>
<td>Resistance reading 6.5±0.5 ohms</td>
<td>Repeat Tests 1 through 5. The problem may be intermittent. If the wiring is OK, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not 6.5±0.5 ohms</td>
<td>Replace the modulator valve.</td>
<td></td>
</tr>
<tr>
<td>MID</td>
<td>SID</td>
<td>FMI</td>
<td>Problem</td>
<td>Test</td>
<td>Test Result</td>
<td>Action</td>
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<td>03 044</td>
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</tr>
<tr>
<td>136</td>
<td>03</td>
<td>05</td>
<td>06</td>
<td>Shorted to power (inlet valve)</td>
<td>Resistance reading 6.5±0.5 ohms</td>
<td>Check for intermittent wiring connections. If the wiring is OK, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Shorted to ground (inlet valve)</td>
<td>Resistance reading not 6.5±0.5 ohms</td>
<td>Go to Test 2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Open circuit (inlet valve)</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 3.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Check for an open circuit in the wiring between the ECU and the modulator valve. Check the ground circuit to the modulator valve.</td>
<td>Resistance reading not close to zero</td>
<td>Check and repair the ground circuit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. With the modulator valve connector removed, measure the resistance between Pin 8 on the modulator connector and a good chassis ground.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 4.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not close to zero</td>
<td>Check the modulator ground circuit, repair as necessary.</td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>4. Measure the resistance in Circuit 378LRI between modulator connector Pin 2 and connector Pin 5 on the gray X1 ECU connector.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 5.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not close to zero</td>
<td>Repair Circuit 378LRI.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5. With the modulator valve connector removed, measure the resistance across Pins 2 and 8 on the modulator connector.</td>
<td>Resistance reading 6.5±0.5 ohms</td>
<td>Repeat Tests 1 through 5. The problem may be intermittent. If the wiring is OK, suspect the ECU is at fault.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not 6.5±0.5 ohms</td>
<td>Replace the modulator valve.</td>
<td></td>
</tr>
<tr>
<td>MID</td>
<td>SID</td>
<td>FMI</td>
<td>Problem</td>
<td>Test</td>
<td>Test Result</td>
<td>Action</td>
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</tr>
<tr>
<td>136</td>
<td>045</td>
<td>03</td>
<td>Shorted to power (inlet valve)</td>
<td>1. Measure the resistance across Pins 6 and 2 of the gray X1 ECU connector (Circuits 378RRI and GRDE).</td>
<td>Resistance reading 6.5±0.5 ohms</td>
<td>Check for intermittent wiring connections. If the wiring is OK, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>05</td>
<td>Open circuit (inlet valve)</td>
<td></td>
<td>Resistance reading not 6.5±0.5 ohms</td>
<td>Go to Test 2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>06</td>
<td>Shorted to ground (inlet valve)</td>
<td>2. Check the ground circuit by measuring the resistance between Pin 2 of the gray X1 ECU connector and a good chassis ground.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 3.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NOTE: Check for an open circuit in the wiring between the ECU and the modulator valve. Check the ground circuit to the modulator valve.</td>
<td></td>
<td>Resistance reading not close to zero</td>
<td>Check and repair the ground circuit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3. With the modulator valve connector removed, measure the resistance between Pin 8 on the modulator connector and a good chassis ground.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 4.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>4. Measure the resistance in Circuit 378RRI between modulator connector Pin 11 and connector Pin 6 on the gray X1 ECU connector.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 5.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>5. With the modulator valve connector removed, measure the resistance across Pins 11 and 8 on the modulator connector.</td>
<td>Resistance reading not close to zero</td>
<td>Repair Circuit 378RRI.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading 6.5±0.5 ohms</td>
<td>Repeat Tests 1 through 5. The problem may be intermittent. If the wiring is OK, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Resistance reading not 6.5±0.5 ohms</td>
<td>Replace the modulator valve.</td>
</tr>
<tr>
<td>MID</td>
<td>SID</td>
<td>FMI</td>
<td>Problem</td>
<td>Test</td>
<td>Test Result</td>
<td>Action</td>
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</tr>
<tr>
<td>136</td>
<td>048</td>
<td>03</td>
<td>Shorted to power (outlet valve)</td>
<td>1. Measure the resistance across Pins 10 and 2 of the gray X1 ECU connector (Circuits 378LFO and GRDE).</td>
<td>Resistance reading 3.5±0.5 ohms</td>
<td>Check for intermittent wiring connections. If the wiring is OK, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>05</td>
<td>Open circuit (outlet valve)</td>
<td></td>
<td>Resistance reading not 3.5±0.5 ohms</td>
<td>Go to Test 2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>06</td>
<td>Shorted to ground (outlet valve)</td>
<td>2. Check the ground circuit by measuring the resistance between Pin 2 of the gray X1 ECU connector and a good chassis ground.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 3.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NOTE: Check for an open circuit in the wiring between the ECU and the modulator valve. Check the ground circuit to the modulator valve.</td>
<td></td>
<td>Resistance reading not close to zero</td>
<td>Check and repair the ground circuit.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>3. With the modulator valve connector removed, measure the resistance between Pin 8 on the modulator connector and a good chassis ground.</td>
<td>3. With the modulator valve connector removed, measure the resistance between Pin 8 on the modulator connector and a good chassis ground.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 4.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not close to zero</td>
<td></td>
<td>Check the modulator ground circuit, repair as necessary.</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td>4. Measure the resistance in Circuit 378LFO between modulator connector Pin 13 and connector Pin 10 on the gray X1 ECU connector.</td>
<td>4. Measure the resistance in Circuit 378LFO between modulator connector Pin 13 and connector Pin 10 on the gray X1 ECU connector.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 5.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not close to zero</td>
<td></td>
<td>Repair Circuit 378LFO.</td>
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</tr>
<tr>
<td></td>
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<td></td>
<td>5. With the modulator valve connector removed, measure the resistance across Pins 13 and 8 on the modulator connector.</td>
<td>Resistance reading 3.5±0.5 ohms</td>
<td>Repeat Tests 1 through 5. The problem may be intermittent. If the wiring is OK, suspect the ECU is at fault.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not 3.5±0.5 ohms</td>
<td></td>
<td>Replace the modulator valve.</td>
<td></td>
</tr>
<tr>
<td>MID</td>
<td>SID</td>
<td>FMI</td>
<td>Problem</td>
<td>Test</td>
<td>Test Result</td>
<td>Action</td>
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</tr>
<tr>
<td>136</td>
<td>049</td>
<td>03</td>
<td>Shorted to power (outlet valve)</td>
<td>1. Measure the resistance across Pins 9 and 2 of the gray X1 ECU connector (Circuits 378RFO and GRDE).</td>
<td>Resistance reading 3.5±0.5 ohms</td>
<td>Check for intermittent wiring connections. If the wiring is OK, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>05</td>
<td>Open circuit (outlet valve)</td>
<td></td>
<td>Resistance reading not 3.5±0.5 ohms</td>
<td>Go to Test 2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>06</td>
<td>Shorted to ground (outlet valve)</td>
<td></td>
<td>Resistance reading close to zero</td>
<td>Go to Test 3.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NOTE: Check for an open circuit in the wiring between the ECU and the modulator valve. Check the ground circuit to the modulator valve.</td>
<td></td>
<td>Resistance reading not close to zero</td>
<td>Check and repair the ground circuit.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>2. Check the ground circuit by measuring the resistance between Pin 2 of the gray X1 ECU connector and a good chassis ground.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 4.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Resistance reading not close to zero</td>
<td>Check the modulator ground circuit, repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3. With the modulator valve connector removed, measure the resistance between Pin 8 on the modulator connector and a good chassis ground.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 5.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>Resistance reading not close to zero</td>
<td>Repair Circuit 378RFO.</td>
</tr>
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<td></td>
<td>4. Measure the resistance in Circuit 378RFO between modulator connector Pin 5 and connector Pin 9 on the gray X1 ECU connector.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 5.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Resistance reading not close to zero</td>
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<td></td>
<td>5. With the modulator valve connector removed, measure the resistance across Pins 5 and 8 on the modulator connector.</td>
<td>Resistance reading 3.5±0.5 ohms</td>
<td>Repeat Tests 1 through 5. The problem may be intermittent. If the wiring is OK, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Resistance reading not 3.5±0.5 ohms</td>
<td>Replace the modulator valve.</td>
</tr>
<tr>
<td>MID</td>
<td>SID</td>
<td>FMI</td>
<td>Problem</td>
<td>Test</td>
<td>Test Result</td>
<td>Action</td>
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</tr>
<tr>
<td>136</td>
<td>050</td>
<td>03</td>
<td>Shorted to power (outlet valve)</td>
<td>1. Measure the resistance across Pins 8 and 2 of the gray X1 ECU connector (Circuits 378LRO and GRDE).</td>
<td>Resistance reading 3.5±0.5 ohms</td>
<td>Check for intermittent wiring connections. If the wiring is OK, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>05</td>
<td>Open circuit (outlet valve)</td>
<td>Resistance reading not 3.5±0.5 ohms</td>
<td>Go to Test 2.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>06</td>
<td>Shorted to ground (outlet valve)</td>
<td>2. Check the ground circuit by measuring the resistance between Pin 2 of the gray X1 ECU connector and a good chassis ground.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 3.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NOTE: Check for an open circuit in the wiring between the ECU and the modulator valve. Check the ground circuit to the modulator valve.</td>
<td>Resistance reading not close to zero</td>
<td>Check and repair the ground circuit.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. With the modulator valve connector removed, measure the resistance between Pin 8 on the modulator connector and a good chassis ground.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 4.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not close to zero</td>
<td>Check the modulator ground circuit, repair as necessary.</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td>4. Measure the resistance in Circuit 378LRO between modulator connector Pin 1 and connector Pin 8 on the gray X1 ECU connector.</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 5.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not close to zero</td>
<td>Repair Circuit 378LRO.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5. With the modulator valve connector removed, measure the resistance across Pins 1 and 8 on the modulator connector.</td>
<td>Resistance reading 3.5±0.5 ohms</td>
<td>Repeat Tests 1 through 5. The problem may be intermittent. If the wiring is OK, suspect the ECU is at fault.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not 3.5±0.5 ohms</td>
<td>Replace the modulator valve.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## J1587 Fault 136-051 Right Rear Outlet Solenoid Valve

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>051</td>
<td>03</td>
<td>Shorted to power (outlet valve)</td>
<td>1. Measure the resistance across Pins 7 and 2 of the gray X1 ECU connector (Circuits 378RRO and GRDE).</td>
<td>Resistance reading 3.5±0.5 ohms</td>
<td>Check for intermittent wiring connections. If the wiring is OK, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>05</td>
<td>Open circuit (outlet valve)</td>
<td>Resistance reading not 3.5±0.5 ohms</td>
<td>Go to Test 2.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>06</td>
<td>Shorted to ground (outlet valve)</td>
<td>Resistance reading close to zero</td>
<td>Go to Test 3.</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td></td>
<td></td>
<td>NOTE: Check for an open circuit in the wiring between the ECU and the modulator valve. Check the ground circuit to the modulator valve.</td>
<td>Resistance reading not close to zero</td>
<td>Check and repair the ground circuit.</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td></td>
<td></td>
<td></td>
<td>2. Check the ground circuit by measuring the resistance between Pin 2 of the gray X1 ECU connector and a good chassis ground.</td>
<td></td>
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</tr>
<tr>
<td>06</td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading close to zero</td>
<td>Go to Test 3.</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not close to zero</td>
<td>Check the modulator ground circuit, repair as necessary.</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td></td>
<td></td>
<td></td>
<td>3. With the modulator valve connector removed, measure the resistance between Pin 8 on the modulator connector and a good chassis ground.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>06</td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading close to zero</td>
<td>Go to Test 4.</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not close to zero</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05</td>
<td></td>
<td></td>
<td></td>
<td>4. Measure the resistance in Circuit 378RRO between modulator connector Pin 10 and connector Pin 7 on the gray X1 ECU connector.</td>
<td></td>
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</tr>
<tr>
<td>06</td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading close to zero</td>
<td>Go to Test 5.</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not close to zero</td>
<td>Repair Circuit 378RRO.</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td></td>
<td></td>
<td></td>
<td>5. With the modulator valve connector removed, measure the resistance across Pins 10 and 8 on the modulator connector.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>06</td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading 3.5±0.5 ohms</td>
<td>Repeat Tests 1 through 5. The problem may be intermittent. If the wiring is OK, suspect the ECU is at fault.</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td></td>
<td></td>
<td></td>
<td>Resistance reading not 3.5±0.5 ohms</td>
<td>Replace the modulator valve.</td>
<td></td>
</tr>
</tbody>
</table>
### J1587 Fault 136-054 Recirculation Pump

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>054</td>
<td>03</td>
<td>Recirculation pump on without being activated by ECU</td>
<td>1. Remove the black X2 connector from the ECU. With the ignition ON, measure the voltage between Pin 10 and a good chassis ground.</td>
<td>Voltage zero</td>
<td>Check the ECU and verify the fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NOTE: In this case the ECU is sensing voltage on the pump monitor circuit (Pin 10 of the black X2 connector) when the pump relay was not activated by the ECU (Pin 6 of the black X2 connector).</td>
<td></td>
<td>Voltage not zero</td>
<td>Go to Test 2.</td>
</tr>
<tr>
<td>136</td>
<td>054</td>
<td>04</td>
<td>Recirculation pump does not switch on when activated by the ECU</td>
<td>2. Remove the ABS pump relay (R17) and repeat Test 1.</td>
<td>Voltage zero</td>
<td>Check the ABS pump relay R17; it may be sticking or shorted.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NOTE: In this case the ECU does not sense voltage on the pump monitor circuit (Pin 10 of the black X2 ECU connector) when the pump relay was activated by the ECU (Pin 6 of the black X2 ECU connector).</td>
<td></td>
<td>Voltage not zero</td>
<td>Check for a short to power in Circuit 376B causing the pump to run when it should not be. Repair as necessary.</td>
</tr>
<tr>
<td>136</td>
<td>054</td>
<td>07</td>
<td>Recirculation pump sticks or is locked</td>
<td>3. Remove the black X2 connector from the ECU. With the ignition ON, link Pins 6 and 3 while measuring the voltage between Pin 10 and a good chassis ground. The pump should run (do not hold for more than 1 minute).</td>
<td>Voltage between 9.5 and 14 volts</td>
<td>Check for intermittent connections in Circuit 376B and check the ABS pump relay for intermittent operation. Repair as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NOTE: In this case, the ECU senses high current on the pump monitor circuit (Pin 10 of the black X2 ECU connector) indicating the pump motor is locked.</td>
<td></td>
<td>Voltage below 9.5 or above 14 volts</td>
<td>Check Circuit 376A and check Relay R17. Repair as necessary.</td>
</tr>
<tr>
<td>136</td>
<td>054</td>
<td></td>
<td>Recirculation pump sticks or is locked</td>
<td>4. Remove the black X2 connector from the ECU. With the ignition ON, momentarily link Pins 6 and 3. The pump should run (do not hold for more than 1 minute).</td>
<td>Pump runs</td>
<td>Repeat the test to verify. If the fault persists, suspect a problem with the ECU.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NOTE: In this case, the ECU senses high current on the pump monitor circuit (Pin 10 of the black X2 ECU connector) indicating the pump motor is locked.</td>
<td></td>
<td>Pump does not run</td>
<td>Replace the recirculation pump.</td>
</tr>
</tbody>
</table>

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### J1587 Fault 136-055 ECU

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>055</td>
<td>02</td>
<td>Reference to ground interrupted</td>
<td>1. With the ignition OFF, measure the voltage between Pin 2 of the gray X1 ECU connector (Circuit GND) and a good chassis ground.</td>
<td>Voltage zero volts</td>
<td>Go to Test 2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Voltage not zero volts</td>
<td>Check the ground circuit for a short to positive voltage.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Resistance near zero ohms</td>
<td>Check the ECU ground circuit (GND) for an intermittent or loose connection. Check ground Splice S10. If the problem persists, suspect the ECU is at fault.</td>
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<td></td>
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<td></td>
<td>Resistance above zero ohms</td>
<td>Check the ECU ground circuit (GND). Repair as necessary.</td>
</tr>
</tbody>
</table>

### J1587 Fault 136-251 Low Voltage

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>251</td>
<td>03</td>
<td>Voltage too high</td>
<td>1. Disconnect the black X2 ECU connector. Start the engine and run it at governed speed while measuring the voltage between Pins 3 and 9.</td>
<td>Voltage between 9.5 and 14 volts</td>
<td>Check the electrical system. If the problem persists, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NOTE: Voltage to the ABS ECU must be between 9.5 and 14 volts to function properly.</td>
<td></td>
<td>Voltage below 9.5 or above 14 volts</td>
<td>Check the batteries and charging system for malfunction. Repair as necessary.</td>
</tr>
<tr>
<td>136</td>
<td>251</td>
<td>04</td>
<td>Low voltage to ABS solenoid valves</td>
<td>2. Disconnect the black X2 ECU connector. Start the engine and run it at idle while measuring the voltage between Pins 3 and 9 of the black X2 ECU connector.</td>
<td>Voltage between 9.5 and 14 volts</td>
<td>Verify that the batteries were not drained or the charging system was not overloaded when the fault occurred. If the problem persists, suspect the ECU is at fault.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NOTE: Voltage to the ABS ECU must be between 9.5 and 14 volts to function properly.</td>
<td></td>
<td>Voltage below 9.5 or above 14 volts</td>
<td>Check the batteries and charging system for malfunction. Repair as necessary.</td>
</tr>
</tbody>
</table>

### J1587 Fault 136-253 Internal Tire Parameter

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>253</td>
<td>02</td>
<td>Incorrect internal tire parameter</td>
<td>—</td>
<td>—</td>
<td>Contact Meritor WABCO (1-800-535-5560).</td>
</tr>
</tbody>
</table>

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### J1587 Fault 136-254 ECU Internal Fault

<table>
<thead>
<tr>
<th>MID</th>
<th>SID</th>
<th>FMI</th>
<th>Problem</th>
<th>Test</th>
<th>Test Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>254</td>
<td>12</td>
<td>Internal ECU Fault</td>
<td>—</td>
<td>—</td>
<td>Replace the ECU.</td>
</tr>
</tbody>
</table>

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