

<b>DTC</b>	<b>C1246/46</b>	<b>Master Cylinder Pressure Sensor Malfunction</b>
<b>DTC</b>	<b>C1281/81</b>	<b>Master Cylinder Pressure Sensor Output Malfunction (Test Mode DTC)</b>
<b>DTC</b>	<b>C1364/61</b>	<b>Wheel Cylinder Pressure Sensor Malfunction</b>

**DESCRIPTION**

The master cylinder pressure sensor and the wheel cylinder pressure sensor are built into the brake actuator, and measure the master cylinder pressure and the wheel cylinder pressure sent to the skid control ECU.

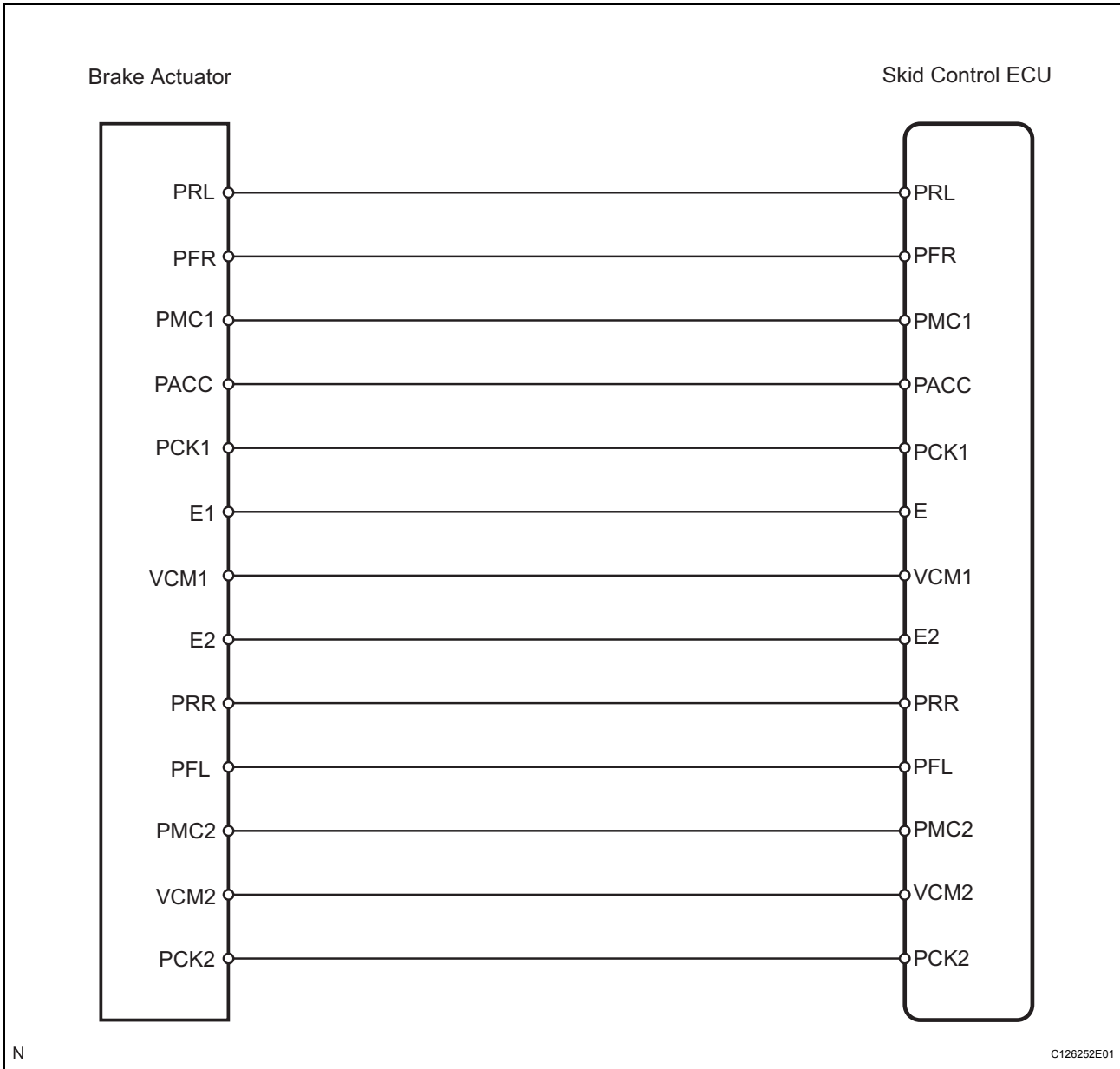
DTC C1281/81 can be detected when the master cylinder pressure sensor sends a master cylinder pressure signal or test mode ends. DTC C1281/81 is output only in test mode.

DTC No.	INF Code	DTC Detection Condition	Trouble Area
C1246/46	191	Sensor power source 1 (VCM1) voltage is less than 4.7 V or 5.3 V or more for at least 0.05 sec.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1246/46	192	Ratio of master pressure sensor output voltage 1 (PMC1) to sensor power source (VCM1) is less than 5% or 90.5% or more for at least 0.05 sec.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1246/46	194	Sensor power source 2 (VCM2) voltage is less than 4.7 V or 5.3 V or more for at least 0.05 sec.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1246/46	195	Ratio of master pressure sensor output voltage 2 (PMC2) to sensor power source (VCM2) is less than 5% or 90.5% or more for at least 0.05 sec.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1246/46	197	Master pressure sensor output voltage 1 (PMC1) is abnormal.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> </ul>
C1246/46	198	Master pressure sensor output voltage 2 (PMC2) is abnormal.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> </ul>
C1246/46	199	Master pressure sensor output 1 (PMC1) is not approx. 0 Mpa when not braking.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> <li>• Stop input signal</li> </ul>
C1246/46	200	Master pressure sensor output 2 (PMC2) is not approx. 0 Mpa when not braking.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> <li>• Stop input signal</li> </ul>
C1246/46	201	PMC1 and PMC2 voltages are different when braking.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1246/46	202	Master pressure sensor 1 data (PMC1) is invalid.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1246/46	205	Master pressure sensor 2 data (PMC2) is invalid.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1281/81	-	Detected only during test mode.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> </ul>
C1364/61	221	Sensor power source 1 (VCM1) voltage is less than 4.7 V or 5.3 V or more for at least 0.05 sec.	<ul style="list-style-type: none"> <li>• Harness and connector</li> <li>• Skid control ECU</li> </ul>

DTC No.	INF Code	DTC Detection Condition	Trouble Area
C1364/61	222	Ratio of FR right sensor output voltage (PFR) to sensor power source (VCM1) is less than 5% or 90.5% or more for at least 0.05 sec.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1364/61	224	When one of following conditions is met: <ul style="list-style-type: none"> <li>• FR right sensor output (PFR) is not approx. 0 Mpa when not braking.</li> <li>• FR right sensor (PFR) zero point malfunction.</li> <li>• Open or short in FR right sensor (PFR) circuit.</li> </ul>	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1364/61	225	Ratio of FR right sensor output voltage (PFR) to sensor power source (VCM1) is less than 90.5% for at least 0.1 sec. when self-diagnosis signal is output.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1364/61	226	Voltage difference before and after changing the pull-up resistance in the sensor signal input circuit is 0.3 V or more (poor connection).	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1364/61	227	Sensor power source 2 (VCM2) voltage is less than 4.7 V or 5.3 V or more for at least 0.05 sec.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1364/61	228	Ratio of FR left sensor output voltage (PFL) to sensor power source (VCM2) is less than 5% or 90.5% or more for at least 0.05 sec.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1364/61	230	When one of following conditions is met: <ul style="list-style-type: none"> <li>• FR left sensor (PFL) is not approx. 0 Mpa when not braking.</li> <li>• FR left sensor (PFL) zero point malfunction</li> <li>• Open or short in FR right sensor (PFL) circuit.</li> </ul>	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1364/61	231	Ratio of FR left sensor output voltage (PFL) to sensor power source (VCM2) is less than 90.5% for at least 0.1 sec. when self-diagnosis signal is output.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1364/61	232	Voltage difference before and after changing the pull-up resistance in the sensor signal input circuit is 0.3 V or more (poor connection).	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1364/61	233	Sensor power source 2 (VCM2) voltage is less than 4.7 V or 5.3 V or more for at least 0.05 sec.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>
C1364/61	234	Ratio of RR right sensor output voltage (PRR) to sensor power source (VCM2) is less than 5% or 90.5% or more for at least 0.05 sec.	<ul style="list-style-type: none"> <li>• Brake actuator assembly</li> <li>• Skid control ECU</li> <li>• Harness and connector</li> </ul>

DTC No.	INF Code	DTC Detection Condition	Trouble Area
C1364/61	236	When one of following conditions is met: <ul style="list-style-type: none"> <li>RR right sensor output voltage (PRR) is not approx. 0 Mpa when not braking.</li> <li>RR right sensor (PRR) zero point malfunction.</li> <li>Open or short in RR sensor (PRR) circuit.</li> </ul>	<ul style="list-style-type: none"> <li>Brake actuator assembly</li> <li>Skid control ECU</li> <li>Harness and connector</li> </ul>
C1364/61	237	Ratio of RR right sensor output voltage (PRR) to sensor power source (VCM2) is less than 90.5% for at least 0.1 sec. when self-diagnosis signal is output.	<ul style="list-style-type: none"> <li>Brake actuator assembly</li> <li>Skid control ECU</li> <li>Harness and connector</li> </ul>
C1364/61	238	Voltage difference before and after changing the pull-up resistance in the sensor signal input circuit is 0.3 V or more (poor connection).	<ul style="list-style-type: none"> <li>Brake actuator assembly</li> <li>Skid control ECU</li> <li>Harness and connector</li> </ul>
C1364/61	239	Sensor power source (VCM1) voltage is less than 4.7 V or 5.3 V or more for at least 0.05 sec.	<ul style="list-style-type: none"> <li>Brake actuator assembly</li> <li>Skid control ECU</li> <li>Harness and connector</li> </ul>
C1364/61	240	Ratio of RR left sensor output voltage (PRL) to sensor power source (VCM1) is less than 5% or 90.5% or more for at least 0.05 sec.	<ul style="list-style-type: none"> <li>Brake actuator assembly</li> <li>Skid control ECU</li> <li>Harness and connector</li> </ul>
C1364/61	242	When one of following conditions is met: <ul style="list-style-type: none"> <li>RR left sensor output (PRL) is not approx. 0 Mpa when not braking.</li> <li>RR left sensor (PRL) zero point malfunction.</li> <li>Open or short in RR left sensor (PRL) circuit.</li> </ul>	<ul style="list-style-type: none"> <li>Brake actuator assembly</li> <li>Skid control ECU</li> <li>Harness and connector</li> </ul>
C1364/61	243	Ratio of RR left sensor output voltage (PRL) to sensor power source (VCM1) is less than 90.5% for at least 0.1 sec. when self-diagnosis signal is output.	<ul style="list-style-type: none"> <li>Brake actuator assembly</li> <li>Skid control ECU</li> <li>Harness and connector</li> </ul>
C1364/61	244	Voltage difference before and after changing the pull-up resistance in the sensor signal input circuit is 0.3 V or more (poor connection).	<ul style="list-style-type: none"> <li>Brake actuator assembly</li> <li>Skid control ECU</li> <li>Harness and connector</li> </ul>

WIRING DIAGRAM



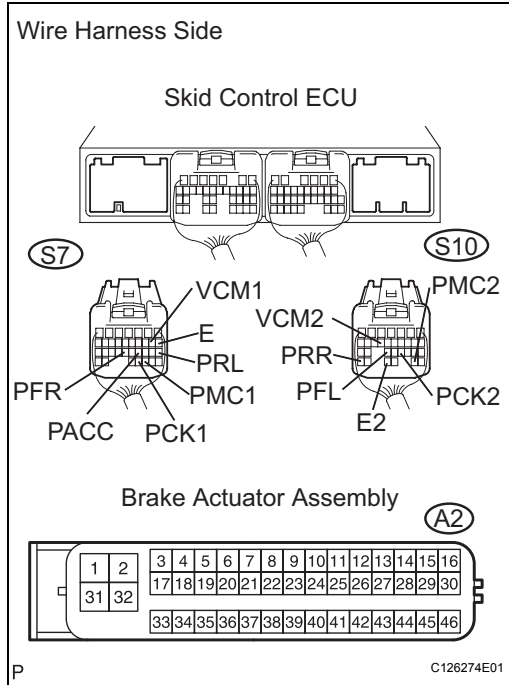
INSPECTION PROCEDURE

NOTICE:



When replacing the skid control ECU, perform initialization of linear solenoid valve and calibration (see page BC-19).

**1 CHECK WIRE HARNESS (SKID CONTROL ECU - BRAKE ACTUATOR)**



- (a) Disconnect the S7 and S10 ECU connectors.
- (b) Disconnect the A2 actuator connector.
- (c) Measure the resistance of the wire harness side connectors.

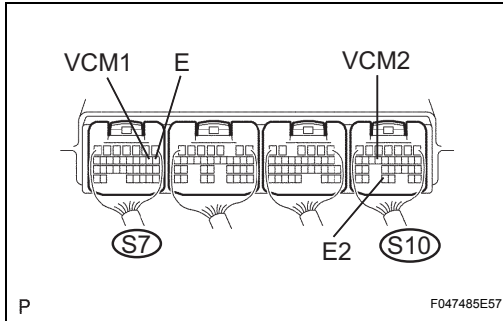
**Standard resistance**

Tester Connection	Specified Condition
S7-8 (E) - A2-45 (E1)	Below 1 Ω
S7-9 (VCM1) - A2-35 (VCM1)	Below 1 Ω
S7-18 (PRL) - A2-36 (PRL)	Below 1 Ω
S7-21 (PACC) - A2-46 (PACC)	Below 1 Ω
S7-23 (PFR) - A2-34 (PFR)	Below 1 Ω
S7-30 (PMC1) - A2-38 (PMC1)	Below 1 Ω
S7-31 (PCK1) - A2-37 (PCK1)	Below 1 Ω
S10-14 (VCM2) - A2-40 (VCM2)	Below 1 Ω
S10-21 (PCK2) - A2-42 (PCK2)	Below 1 Ω
S10-23 (PFL) - A2-39 (PFL)	Below 1 Ω
S10-27 (PMC2) - A2-43 (PMC2)	Below 1 Ω
S10-29 (E2) - A2-44 (E2)	Below 1 Ω
S10-31 (PRR) - A2-41 (PRR)	Below 1 Ω
S7-8 (E) - Body ground	10 kΩ or higher
S7-9 (VCM1) - Body ground	10 kΩ or higher
S7-18 (PRL) - Body ground	10 kΩ or higher
S7-21 (PACC) - Body ground	10 kΩ or higher
S7-23 (PFR) - Body ground	10 kΩ or higher
S7-30 (PCM1) - Body ground	10 kΩ or higher
S7-31 (PCK1) - Body ground	10 kΩ or higher
S10-14 (VCM2) - Body ground	10 kΩ or higher
S10-21 (PCK2) - Body ground	10 kΩ or higher
S10-27 (PMC2) - Body ground	10 kΩ or higher
S10-29 (E2) - Body ground	10 kΩ or higher
S10-31 (PRR) - Body ground	10 kΩ or higher

**NG** REPAIR OR REPLACE HARNESS AND CONNECTOR

**OK**

**2 CHECK SKID CONTROL ECU**



- (a) Measure the voltage of the connectors.  
HINT:  
Measure the voltage from behind the connector with the connector connected to the skid control ECU.  
**Standard voltage**

Tester Connection	Condition	Specified Condition
S7-9 (VCM1) - Body ground	Power switch ON (READY)	4.75 to 5.25 V
S10-14 (VCM2) - Body ground	Power switch ON (READY)	4.75 to 5.25 V

- (b) Measure the resistance of the connectors.  
**Standard resistance**

Tester Connection	Specified Condition
S7-8 (E) - Body ground	Below 1 Ω
S10-29 (E2) - Body ground	Below 1 Ω

**NG** → **REPLACE SKID CONTROL ECU**

**OK**

**3 READ VALUE OF INTELLIGENT TESTER (MASTER CYLINDER PRESSURE SENSOR)**

- (a) Check the DATA LIST for proper functioning of the master cylinder pressure sensor.

**Skid control ECU**

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
MAS CYL PRS 1	Master cylinder pressure sensor 1 reading / Min.: 0 V, Max.: 5 V	When brake pedal is released: 0.3 to 0.9 V	Reading increases when brake pedal is depressed
MAS CYL PRS 2	Master cylinder pressure sensor 2 reading / Min.: 0 V, Max.: 5 V	When brake pedal is released: 0.3 to 0.9 V	Reading increases when brake pedal is depressed

**OK:**  
When the pedal is depressed, displayed voltage on the intelligent tester increase.

**NG** → **REPLACE BRAKE ACTUATOR ASSEMBLY**

**OK**

**BC**

**4 READ VALUE OF INTELLIGENT TESTER (WHEEL CYLINDER PRESSURE SENSOR)**

- (a) Connect the pedal effort gauge.
- (b) Install the LSPV gauge (SST) and bleed air (see page [BC-205](#)).

**SST 09709-29018**

(c) Select the DATA LIST mode on the intelligent tester.

**Skid control ECU**

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
FR PRESS SENS	Front right pressure sensor / Min.: 0 V, Max.: 5 V	When brake pedal is released: 0.3 to 0.9 V	-
FL PRESS SENS	Front left pressure sensor / Min.: 0 V, Max.: 5 V	When brake pedal is released: 0.3 to 0.9 V	-
RR PRESS SENS	Rear right pressure sensor / Min.: 0 V, Max.: 5 V	When brake pedal is released: 0.3 to 0.9 V	-
RL PRESS SENS	Rear left pressure sensor / Min.: 0 V, Max.: 5 V	When brake pedal is released: 0.3 to 0.9 V	-

(d) Check the output value the wheel cylinder pressure sensor at each fluid pressure during the ECB control.

**Standard voltage:**

**Front wheel cylinder pressure sensor**

Fluid Pressure	FR PRESS SENS (DATA-LIST)	FL PRESS SENS (DATA-LIST)
1 MPa (10.2 kgf/cm <sup>2</sup> , 145.0 psi)	0.65 to 0.75 V	0.65 to 0.75 V
3 MPa (30.6 kgf/cm <sup>2</sup> , 435.2 psi)	1.05 to 1.2 V	1.05 to 1.2 V
7 MPa (71.4 kgf/cm <sup>2</sup> , 1015.5 psi)	1.8 to 2.05 V	1.8 to 2.05 V
10 MPa (102.0 kgf/cm <sup>2</sup> , 1450.7 psi)	2.4 to 2.7 V	2.4 to 2.7 V

**Rear wheel cylinder pressure sensor**

Fluid Pressure	RR PRESS SENS (DATA-LIST)	RL PRESS SENS (DATA-LIST)
1 MPa (10.2 kgf/cm <sup>2</sup> , 145.0 psi)	0.65 to 0.75 V	0.65 to 0.75 V
3 MPa (30.6 kgf/cm <sup>2</sup> , 435.2 psi)	1.05 to 1.2 V	1.05 to 1.2 V

**NG** → **REPLACE BRAKE ACTUATOR ASSEMBLY**

**OK**

**REPLACE SKID CONTROL ECU**