DTC	C1246/46	MALFUNCTION IN MASTER CYLINDER PRESSURE SENSOR

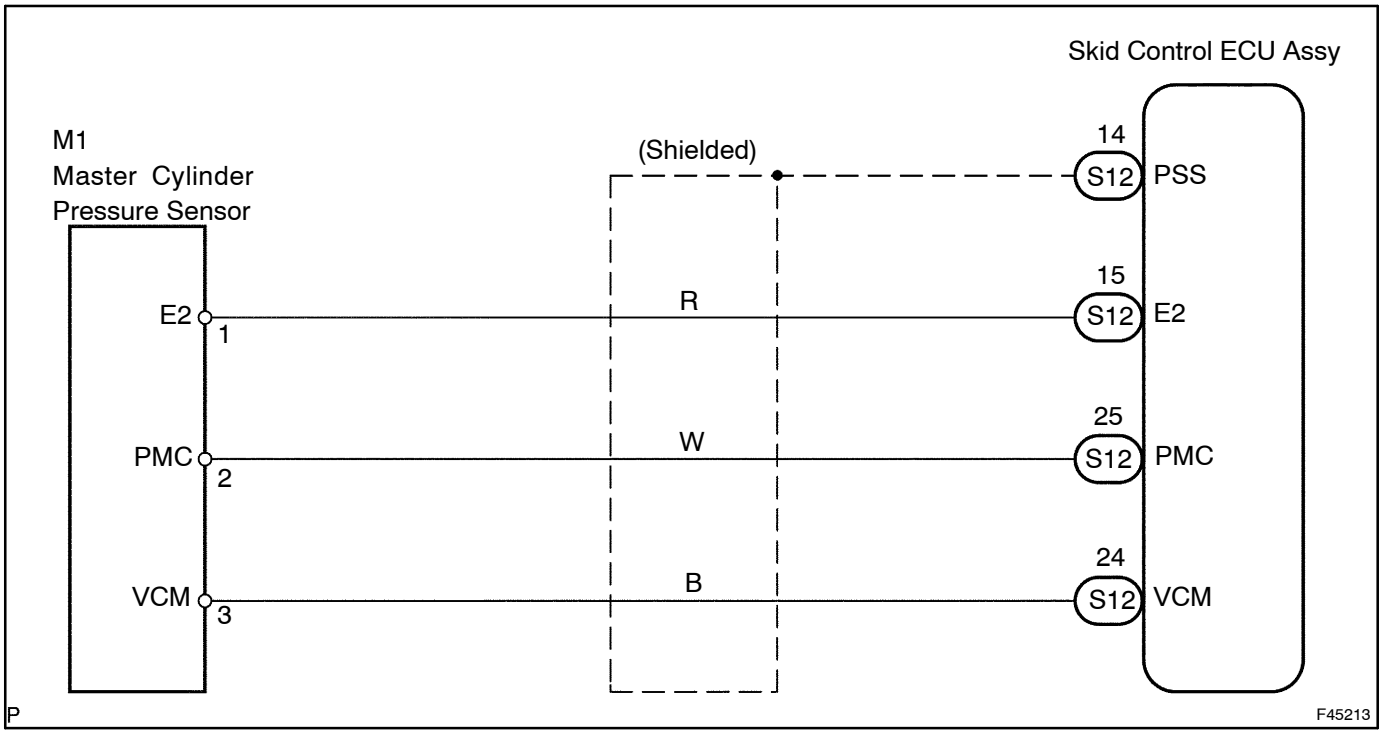
CIRCUIT DESCRIPTION

DTC No.	DTC Detection Condition	Trouble Area
C1246/46	1, 2, 3, 4 or 5 is detected: 1. Condition that IG1 terminal voltage is 19 to 32 V and VCM terminal voltage is 4.3 to 5.8 V (out of range) for 1.2 sec. or more 2. Condition that PMC terminal voltage is 0.14 to 4.75 V (out of range) for 1.2 sec. or more 3. Vehicle speed is 10 km/h (6.2 mph) or more, condition that stop lamp switch is OFF and, for 5 sec. or more, PMC terminal voltage is more than 0.86 V, or less than 0.3 V 4. Vehicle speed is 7 km/h (4 mph) or more, for 60 sec. or more, PMC terminal voltage is 0.86 V to 1 V (out of range), for 30 sec. PMC terminal voltage is 1 V or more, and voltage fluctuation is within 0.008 V. 5. When vehicle speed is 10 km/h (6.2 mph) or more, PMC terminal receives noise 7 times or more within 5 sec.	• Stop lamp switch assy • Master cylinder pressure sensor • Master cylinder pressure sensor circuit

HINT:

- If the brake pedal is depressed firmly, the brake force may be lowered.
- Fail–safe function:
  If any trouble occurs in the master cylinder pressure sensor circuit, the ECU will prohibit BRAKE ASSIST.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 if using the hand–held tester. If not, start from step 2.

1	READ VALUE OF HAND–HELD TESTER (MASTER CYLINDER PRESSURE SENSOR OUTPUT VALUE)

(a) Connect the hand–held tester (with 24 V VIM) to the DLC3.

(b) Select the DATA LIST mode on the hand–held tester.

(c) Check that brake fluid pressure value of the master cylinder pressure sensor changes when the brake pedal is depressed.

Skid control ECU assy:

Item	Measurement Item/ Range (Display)	Normal Condition	Diagnostic Note
MAS CYL PRESS 1	Master cylinder pressure sensor 1 reading / Min.: 0 V, Max.: 5 V	When brake pedal is released: 0.3 to 0.7 V	Reading increases when brake pedal is depressed

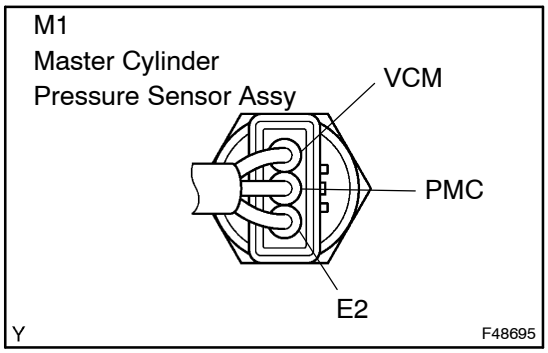
OK: Brake fluid pressure value (voltage) changes when brake pedal is depressed.

OK → **Go to step 2**

NG

REPLACE SKID CONTROL ECU ASSY (See page 01–27)

2	CHECK MASTER CYLINDER PRESSURE SENSOR ASSY



(a) Measure the voltage between terminals VCM and E2 of the M1 connector.

Standard:

Tester Connection	Specified Condition
M1–3 (VCM) – M1–1 (E2)	4.75 to 5.25 V

(b) Install the LSPV gauge to the front caliper bleeder plug portion and bleed the LSPV gauge.

(c) Start the engine and depress the brake pedal, and,with the M1 connector still connected, then check the relation between the fluid pressure and voltage between the PMC and E2 terminals of the sensor.

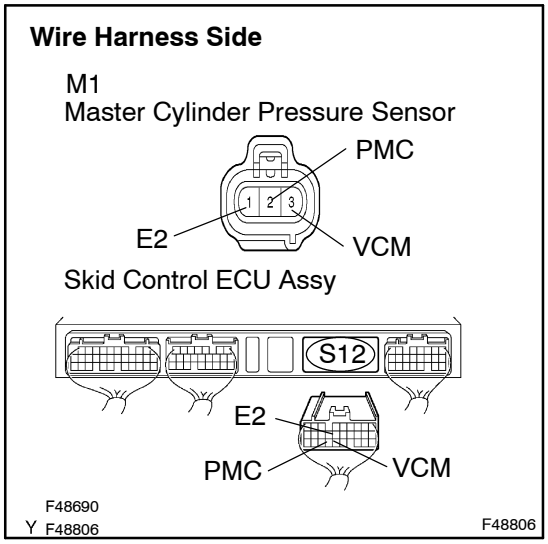
Standard:

Tester Connection	Front Brake Caliper Fluid Pressure	Voltage
M1–2 (PMC) – M1–1 (E2)	0 MPa (0 kgf/cm^2, 0 psi)	0.5 V
M1–2 (PMC) – M1–1 (E2)	9.8 MPa (100 kgf/cm^2, 1,422 psi)	2.5 V
M1–2 (PMC) – M1–1 (E2)	19.6 MPa (200 kgf/cm^2, 2,844 psi)	4.5 V

NG → **REPLACE MASTER CYLINDER PRESSURE SENSOR ASSY**

OK

3	CHECK WIRE HARNESS (MASTER CYLINDER PRESSURE SENSOR – SKID CONTROL ECU ASSY)



(a) Disconnect the M1 sensor connector.
(b) Disconnect the S12 ECU connector.
(c) Measure the resistance according to the table below.

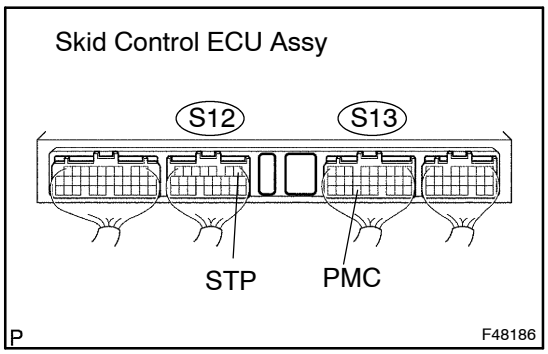
Standard:

Tester Connection	Specified Condition
S12–15 (E2) – M1–1 (E2)	Below 1 Ω
S12–24 (VCM) – M1–3 (VCM)	Below 1 Ω
S12–25 (PMC) – M1–2 (PMC)	Below 1 Ω
S12–15 (E2) – Body ground	10 kΩ or higher
S12–24 (VCM) – Body ground	10 kΩ or higher
S12–25 (PMC) – Body ground	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

4 CHECK SKID CONTROL ECU ASSY (STP, PMC VOLTAGE)



(a) Remove the ECU but do not disconnect the connectors.

(b) Measure the voltage between terminal STP of the S13 ECU connector and the body ground when the brake pedal is depressed.

Standard:

Tester Connection	Specified Condition
S13–11 (STP) – Body ground	20 to 32 V

(c) Measure the voltage between terminal STP of the S13 ECU connector and the body ground when the brake pedal is released.

Standard:

Tester Connection	Specified Condition
S13–1 (STP) – Body ground	Below 2 V

(d) Check whether or not the STP input's voltage changes when the stop lamp switch is turned on and off.

(e) Measure the voltage between terminal PMC of the S12 ECU connector and the body ground when the stop lamp switch is turned on and off before STP ON.

Standard:

Tester Connection	Specified Condition
S12–25 (PMC) – Body ground	0.3 V < PMC Voltage before STP ON < 0.86 V

NG → **CHECK STOP LAMP SWITCH CIRCUIT**

OK

REPLACE SKID CONTROL ECU ASSY (See page 01–27)