DTCS (DIAGNOSTIC TROUBLE CODES) GENERAL DESCRIPTION

DTC Code List

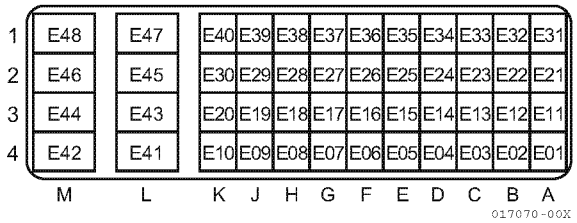
Classification	DTC	BUZZER Flashing Patterns	Error Item		Referenced page number	
			Area	Status	Overview	Failure Diagnosis
Analog Input Related Failures	P1202/4	7	Rack position sensor	Error (low voltage)	P.1-8	P.1-136
	P1203/3			Error (high voltage)	P.1-10	
	P0122/4	5	Accelerator sensor	Error (low voltage)	P.1-12	P.1-140
	P1203/3			Error (high voltage)	P.1-14	
	P0124/2			Intermittent failure	P.1-16	
	P1125/1			Error (foot pedal-close position)	P.1-18	P.1-144
	P1126/0			Error (foot pedal-open position)	P.1-20	
	P0222/4	1-8	Spare accelerator sensor	Error (low voltage)	P.1-22	P.1-148
	P0223/3			Error (high voltage)	P.1-24	
	P0224/2			Intermittent failure	P.1-26	
	P1225/1			Error (foot pedal-close position)	P.1-28	P.1-144
	P1226/0			Error (foot pedal-open position)	P.1-30	
	P1227/8			Error (pulse communication)	P.1-32	P.1-152
	P0222/4	1-9	Atmospheric pressure sensor	Error (low voltage)	P.1-34	P.1-148
	P0223/3			Error (high voltage)	P.1-36	
	P0224/2			Intermittent failure	P.1-38	
	P0668/4	4-1	ECU Temperature Sensor	Error (low voltage)	P.1-40	P.1-154
	P0669/3			Error (high voltage)	P.1-41	
	P1644/2			Intermittent failure	P.1-42	
	P0634/0	2-5	ECU Temperature Rise Alarm		P.1-43	P.1-154
	P0117/4	4	Cooling water temperature sensor	Error (Low Voltage)	P.1-45	P.1-156
	P0118/3			Error (High Voltage)	P.1-47	
	P0119/2			Intermittent failure	P.1-49	
	P0217/0	3-6	Cooling Water Temperature Rise Alarm		P.1-51	P.1-156
	P0642/4	2-4	SENSOR 5V	Error (low voltage)	P.1-53	P.1-160
	P0643/3			Error (High Voltage)	P.1-54	
	P1644/2			Intermittent failure	P.1-55	
	P0562/1	2-3	Power supply Voltage	Error (Low Voltage)	P.1-56	P.1-56
	P0563/0			Error (High Voltage)	P.1-58	P.1-58

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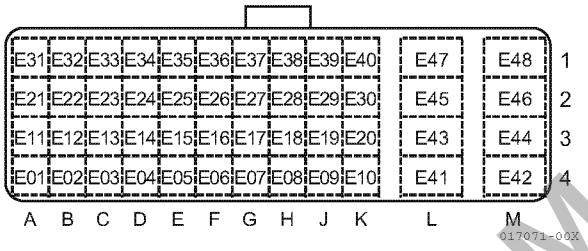
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E-ECU Pin Layout Diagram

Harness side coupler (coupling face)



ECU side coupler (coupling face)



No.		Pin function name	Code
E01	4-A	STEP MOTOR D-PHASE	STPM-D
E02	4-B	APPLICATION OPEN OUTPUT 2	APP-OP2
E03	4-C	RxD1	RxD
E04	4-D	TxD1	TxD
E05	4-E	APPLICATION OPEN INPUT 5	APP-IP5
E06	4-F	APPLICATION OPEN INPUT 6	APP-IP6
E07	4-G	Key switch	IGNSW
E08	4-H	ENGINE START RECOGNITION	STARTSW
E09	4-J	APPLICATION OPEN INPUT 3	APP-IP3
E10	4-K	Spare speed sensor	RENRPM
E11	3-A	STEP MOTOR C-PHASE	STPM-C
E12	3-B	FAILURE INDICATOR LAMP	FAIL-LMP
E13	3-C	APPLICATION OPEN INPUT 7	APP-IP7
E14	3-D	APPLICATION OPEN INPUT 2	APP-IP2
E15	3-E	EMERGENCY ENGINE STOP	SHUDNSW
E16	3-F	COOLING WATER TEMPERATURE (HIGH ACCURACY)	RET
E17	3-G	APPLICATION OPEN INPUT 4	APP-IP4
E18	3-H	SPEED INPUT (-)	NRPM-GND
E19	3-J	SPEED INPUT (+)	NRPM
E20	3-K	APPLICATION OPEN OUTPUT 1	APP-OP1
E21	2-A	STEP MOTOR B-PHASE	STPM-B
E22	2-B	SPEED MONITOR	NRPM-M
E23	2-C	PREHEAT LAMP	PREHT-LMP
E24	2-D	APPLICATION OPEN INPUT 1	APP-IP1

No.		Pin function name	Code
E25	2-E	COOLING WATER TEMPERATURE (CONVENTIONAL)	TW
E26	2-F	INTAKE TEMPERATURE	TAIR
E27	2-G	EGR TEMPERATURE	TEGR
E28	2-H	SENSOR GND	GND-A
E29	2-J	BOOT MODE	BOOTSW
E30	2-K	CAN TERMINAL RESISTANCE SWITCH-OVER	RECAN
E31	1-A	STEP MOTOR A-PHASE	STPM-A
E32	1-B	LOAD FACTOR MONITOR 1	LOAD-M
E33	1-C	RACK ACTUATOR RELAY	RACK-RLY
E34	1-D	Main relay	MAIN-RLY
E35	1-E	ACCELERATOR POSITION SENSOR	APS
E36	1-F	Rack position sensor	RPS
E37	1-G	RESERVED ANALOG	REAN
E38	1-H	SENSOR 5V	AVCC
E39	1-J	CANL	CANL
E40	1-K	CANH	CANH
E41	4-L	CSD Solenoid Valve Coil	CSD-CL
E42	4-M	Rack actuator	RACKSOL
E43	3-L	SENSOR 12V	AVB
E44	3-M	START ASSIST RELAY	AIRHT-RLY
E45	2-L	POWER SUPPLY GND	GND
E46	2-M	(FLY-BACK)	(FB)
E47	1-L	POWER GND	GND-P
E48	1-M	POWER SUPPLY 12V	VB

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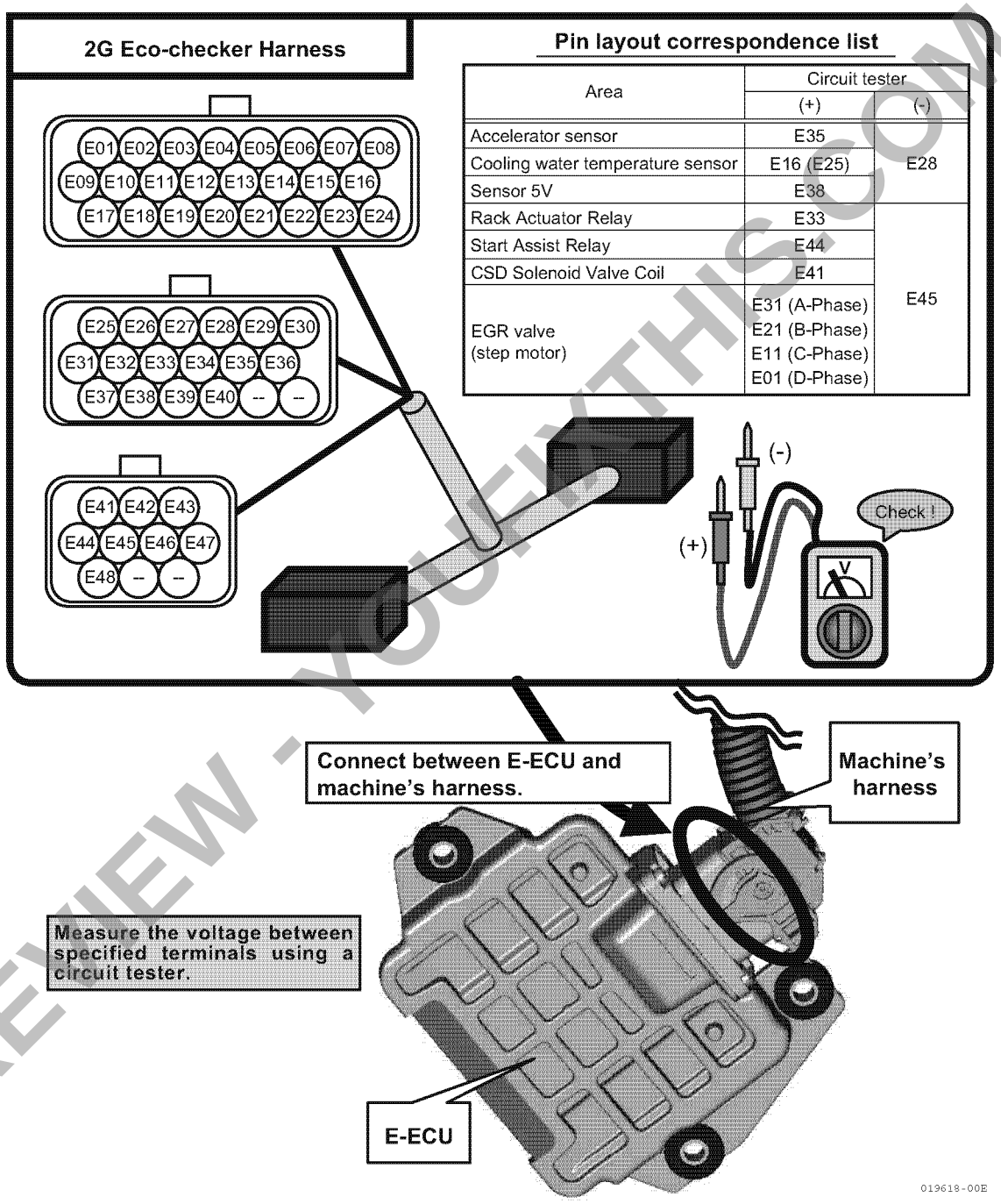
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How to use the 2G eco-checker harness

Failure diagnosis for area listed in the following correspondence list includes the work measuring voltage with the 2G eco-checker harness.Therefore before the failure diagnosis, remove the E-ECU and machine's harness, and connect the 2G eco-checker harness between the E-ECU and machine's harness.

* For details of the failure diagnosis for each area, see the followings.

* Measure the voltage using a circuit tester referring the following list.



Pin layout correspondence list

Area	Circuit tester (+)	Circuit tester (-)
Accelerator sensor	E35	E28
Cooling water temperature sensor	E16 (E25)	
Sensor 5V	E38	
Rack Actuator Relay	E33	E45
Start Assist Relay	E44	
CSD Solenoid Valve Coil	E41	
EGR valve (step motor)	E31 (A-Phase) E21 (B-Phase) E11 (C-Phase) E01 (D-Phase)	

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Analog Input Related Failures

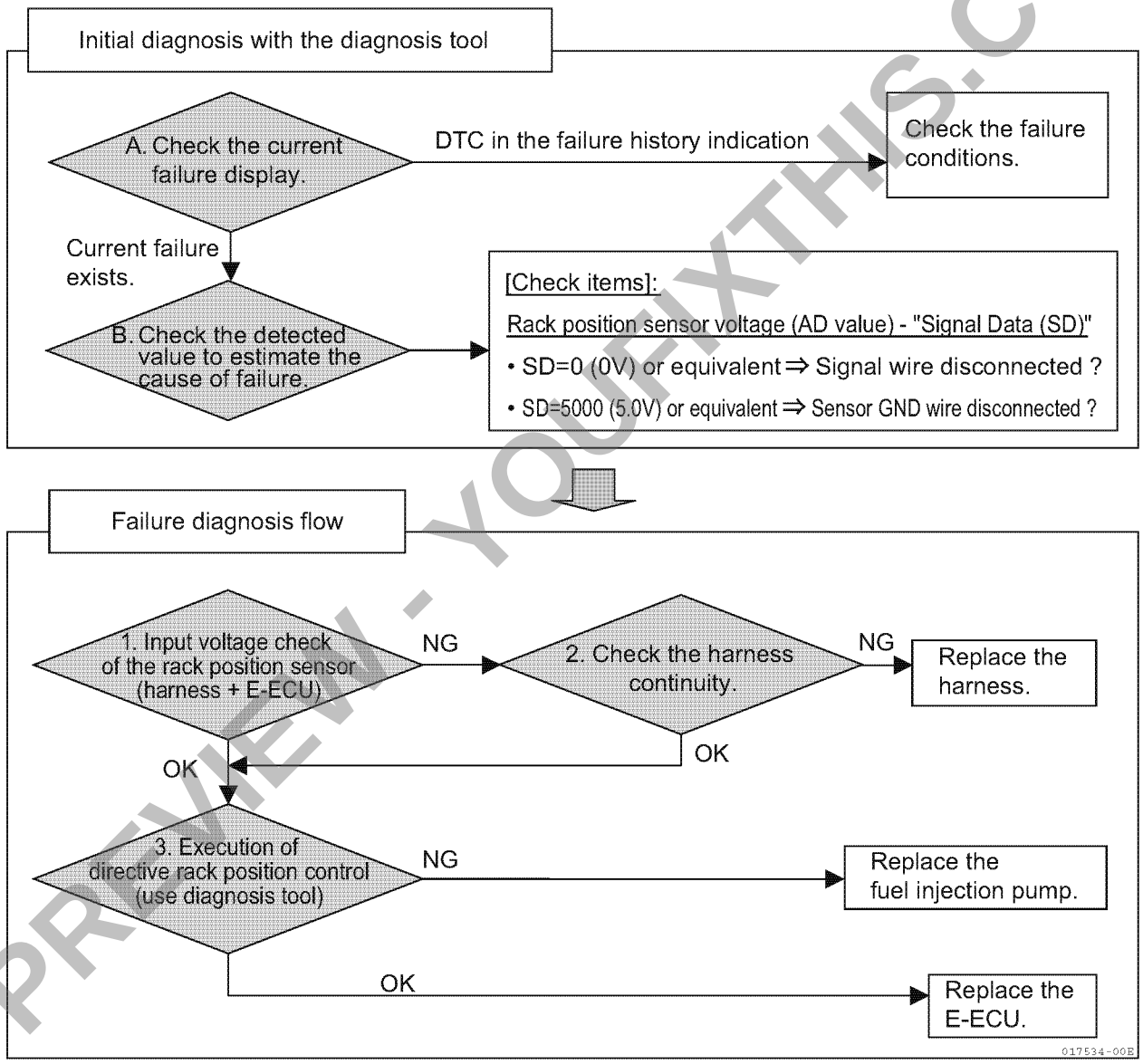
Rack position sensor

Related DTC

DTC	P1202/4	Rack Position Sensor Error (Low Voltage)
	P1203/3	Rack Position Sensor Error (High Voltage)

Work flow

***For details of the work, see after-mentioned "<Diagnosis Description>."For the operation of the diagnosis tool, see "Diagnosis tool Operation Manual" separately.**



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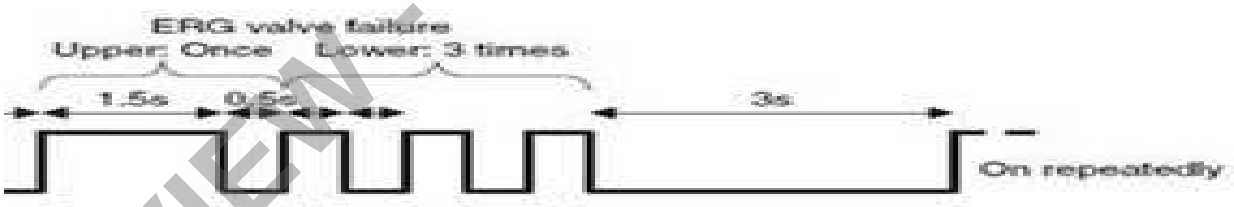
Engine warning lamp for Yanmar error codes.

While an error is occurring the error warning lamp on the cluster is flashing with a fixed frequency.
This flashing lamp is to get the attention of the driver, not to give the error code as explained in
the manual.

The error code signal which is referring to the code table in the manual is given by a sound of the
buzzer.
So to know the right error code you have to listen to the buzzer only.

Remark : Listening to the buzzer and looking at the flashing lamp together gives a very confusing
feeling and it is very hard to write down the correct error code.

EGR Code 1-3



Buzzer : ON_____OFF ON/OFF ON/OFF ON/OFF (1 long, 3 short) ☞ correct error.

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(4) P1225/1: Spare Accelerator Sensor Error (foot pedal-close position)

DTC	P1225/1	Spare Accelerator Sensor Error (foot pedal-close position)

DTC Detecting Conditions

1 - Precondition; 2 - Detecting condition(s); 3 - Flashing pattern of failure indicator	Check points
1. Key switch ON. 2. With sensor voltage at or below 0.65[V], foot pedal Normally Open switch detected being ON or foot pedal Normally Closed Switch detected being OFF. 3. One flash followed by eight flashes	Harness Foot pedal

Movement at Error occurrence

	Error detection of main accelerator sensor	
	Unavailable	Available
Error Mode	[Run As Is]: The engine continues to run using the main accelerator sensor.	[Run Under Restrictions]: The engine runs at a constant rotational speed.
Run restricted?	No.	Yes: The target speed is set to the "on-error target speed (standard value: 1500[min^{-1}])" or “pre-error target speed”.
Recovery Conditions	No.	No.
Remarks		

Estimation of Failure cause/Error condition

- The connector may not be properly connected.
- Wiring defect of the harness
  - The wiring for the foot pedal Normally Closed switch may be disconnected.
  - The wiring for the foot pedal Normally Open switch may be short-circuited with GND.
- The foot pedal may be faulty.
  - The inner wiring may be disconnected or short-circuited with GND.
- The E-ECU internal circuitry may be faulty.

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(3) P1644/2: Intermittent Failure with SENSOR 5V

DTC	P1644/2	Intermittent Failure with SENSOR 5V

DTC Detecting Conditions

1 - Precondition; 2 - Detecting condition(s); 3 - Flashing pattern of failure indicator	Check points
1. Engine running. 2. Unconfirmed error detected 10 times. 3: Does not flash.	Harness E-ECU

Movement at Error occurrence

Error Mode	[Operation Continuation]: After detecting the error, the system lets the engine continue to run without any restrictions.
Run restricted?	No.
Recovery Conditions	No.
Remarks	

Estimation of Failure cause/Error condition

- Wiring defect of the harness
  - The SENSOR 5V wire may be short-circuited with power supply or GND.
  - Sensor GND wire may be disconnected.
- The E-ECU internal circuitry may be faulty.

Diagnosis Description

1) Initial diagnosis with the diagnosis tool	• Check the fault indication. • Check the voltage of the Sensor 5V . *For details of the method and the procedure of diagnosis, see P.1-160

2) Check of connectors/wiring	• Before beginning your work, be sure to turn off the key switch. • Check that the Sensor 5V line and sensor GND line are not disconnected or the insulation of the wiring is not peeled.

3) Failure Diagnostic Work	• Check the harness for correct continuity. • Check the output voltage of the E-ECU (voltage of the sensor 5V line). *For details of the method and the procedure of diagnosis, see P.1-160

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(3) P1244/2: Intermittent Failure with CSD solenoid valve

DTC	P1244/2	Intermittent Failure with CSD solenoid valve

DTC Detecting Conditions

1 - Precondition; 2 - Detecting condition(s); 3 - Flashing pattern of failure indicator	Check points
1. Engine running. 2. Unconfirmed error detected 10 times. 3: Does not flash.	Connector Harness CSD solenoid valve E-ECU

Movement at Error occurrence

Error Mode	[Run As Is]: After detecting the error, the system lets the engine continue to run without any restrictions.
Run restricted?	No.
Recovery Conditions	No.
Remarks	

Estimation of Failure cause/Error condition

- The connector may not be properly connected.
- Wiring defect of the harness
  - The CSD solenoid valve wiring may be disconnected or short-circuited with POWER SUPPLY.
- The E-ECU internal circuitry may be faulty.

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Diagnosis Description

1) Initial diagnosis with the diagnosis tool	• Check the fault indication. • Check that the input signal of the water temperature switch is correctly recognized. *For details of the method and the procedure of diagnosis, see P.1-187

↓

2) Engine Inspection	• Turn the key switch off to stop the engine. • Check the engine cooling system. • After a little, turn the key switch on to check if the DTC is detected. *For description and procedure of engine inspection, see the Service manual (“Engine”).

↓

3) Failure Diagnostic Work	• Check the water temperature switch system. *For details of the method and the procedure of diagnosis, see P.1-187

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Work Description

1. Continuity check (contact input switch only):
   - Remove the harness from each contact input switch.
   - Referring to the following table, check the continuity between contact input terminal and body frame using a circuit tester.

Item	Terminal name (Terminal No.)	Continuity [Between terminal and body frame]	Status
Oil pressure switch	APP-IP2 (E14)	Available	OK: normal
		Unavailable	NG: Internal circuitry fault
Charge Switch	APP-IP3 (E09)	Unavailable	OK: normal
		Available	NG: Internal circuitry fault
Water Temperature Switch	APP-IP4 (E17)	Unavailable	OK: normal
		Available	NG: Internal circuitry fault
Air cleaner switch	APP-IP5 (E05)	Unavailable	OK: normal
		Available	NG: Internal circuitry fault
Oil-Water Separator Switch	APP-IP6 (E06)	Unavailable	OK: normal
		Available	NG: Internal circuitry fault

NG	Replace the contact input switch.
OK	Check the continuity with the contact input switch and the harness being connected. → Go to [2. Continuity check (contact input switch + harness):]

2. Continuity check (contact input switch + harness):
   - Connect the contact input switch and the harness, and remove E-ECU from the harness.
   - Check the continuity between harness ECU connector terminal and body frame using a circuit tester. Then, for the terminal name to be checked, refer to above-mentioned [1. Continuity check (contact input switch only):].

NG	Check the harness for correct continuity. → Go to [3. Check of harness continuity:]
OK	Check if the movement of the contact input switch is correctly recognized with the diagnosis tool “Diagnosis Test”. → Go to [4. Movement check of the contact input switch:]

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