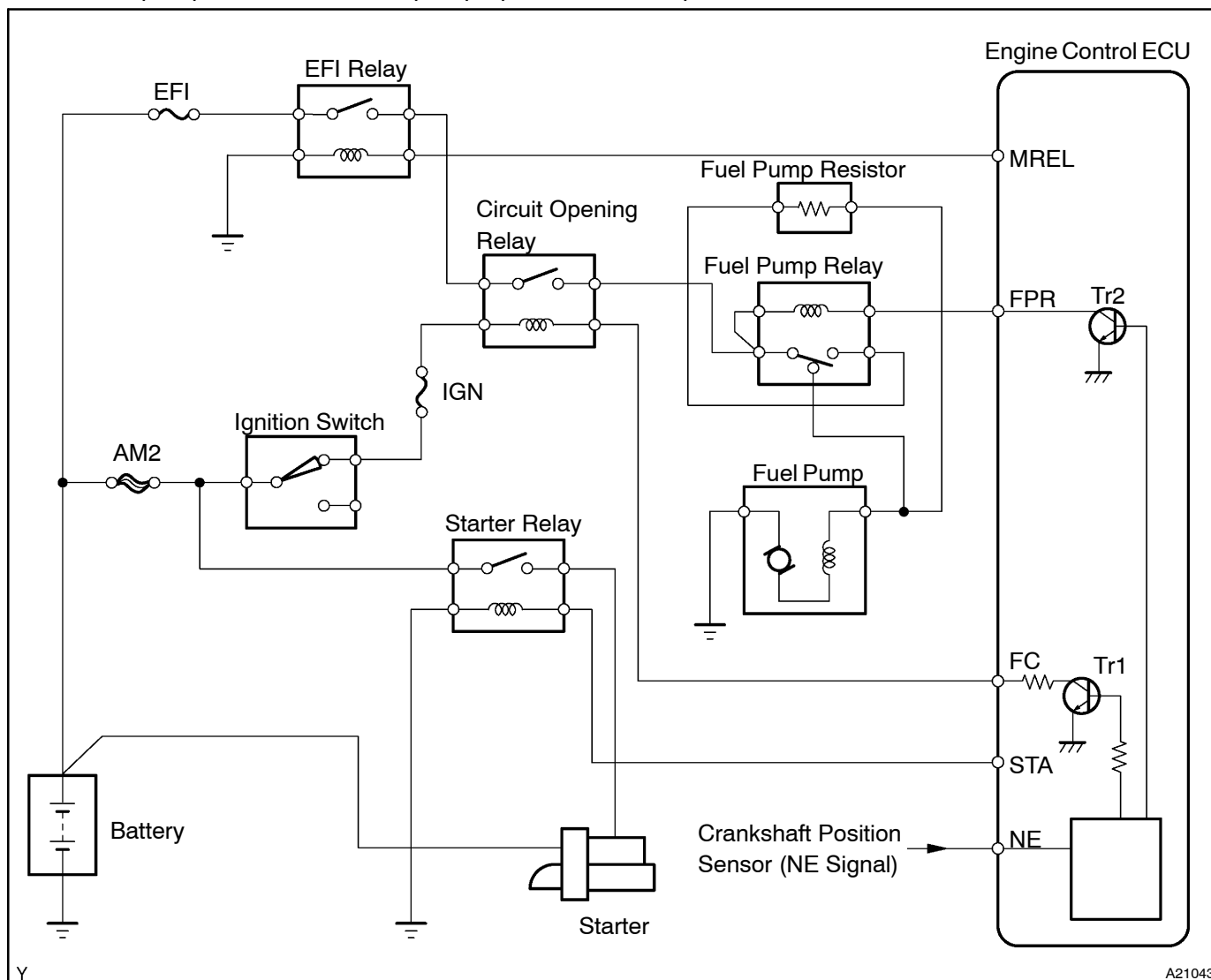


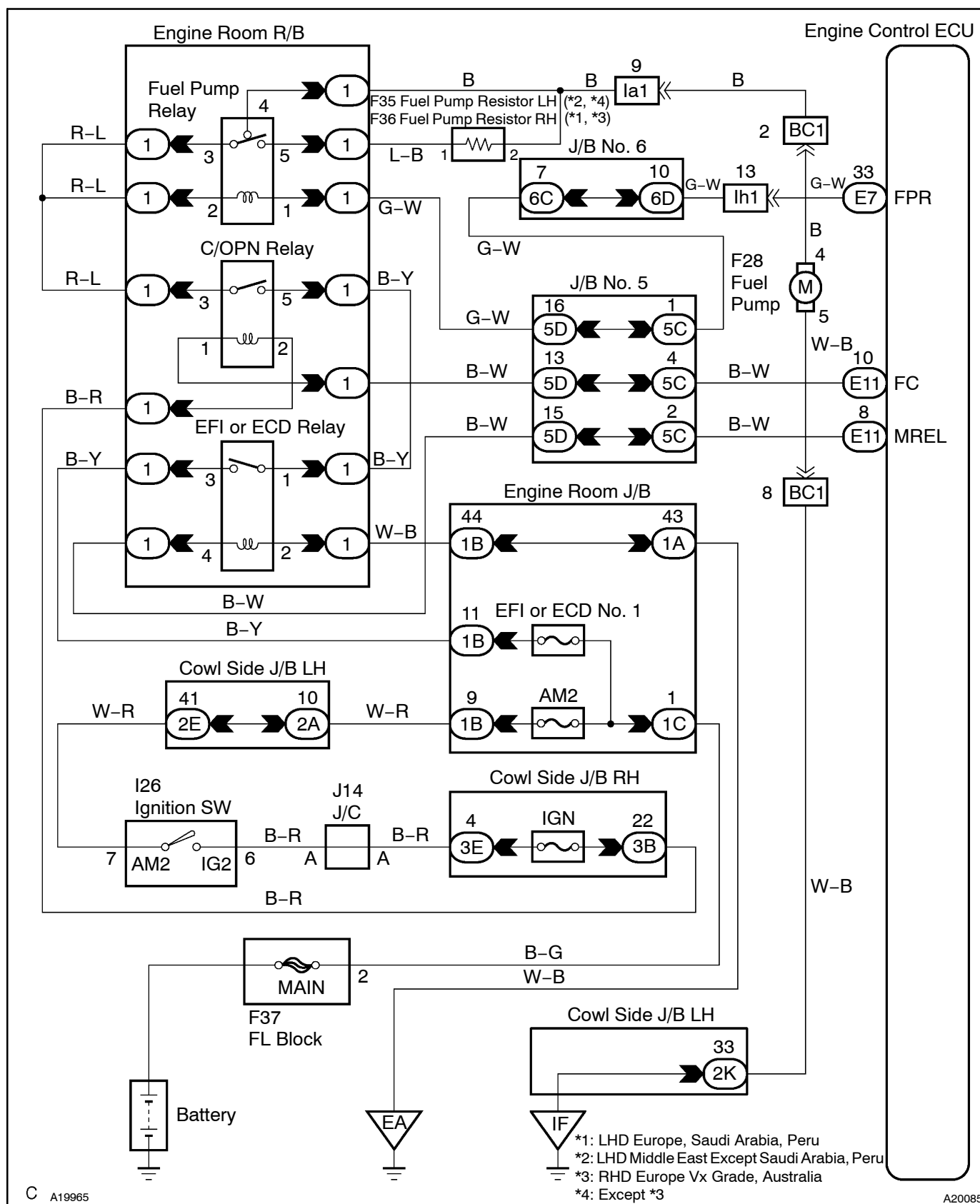
## CIRCUIT DESCRIPTION

After the engine starts during idling or light loads, since the Tr2 goes ON, power is supplied to the fuel pump via the fuel pump resistor. The fuel pump operates at low speed.



DTC No.	DTC Detecting Condition	Trouble Area
P0230/78	Open or short in fuel pump relay circuit	<ul style="list-style-type: none"><li>• Open or short in fuel pump relay circuit</li><li>• Fuel pump relay</li><li>• Circuit opening relay</li><li>• Fuel pump</li><li>• Engine control ECU</li></ul>

## WIRING DIAGRAM



## HINT:

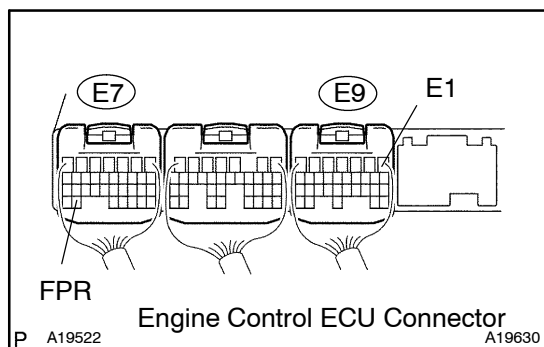
This diagnostic chart is based on premise that engine is started. If the engine is not started, proceed to problem symptoms table on DI-34.

## INSPECTION PROCEDURE

### HINT:

Read freeze frame data using the hand-held tester. Freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, if the engine was warmed up or not, if the air-fuel ratio was lean or rich, as well as other data from the time when a malfunction occurred.

### 1 Check voltage between terminal FPR and E1 of engine control ECU.



#### CHECK:

Measure the voltage between terminals of E7 and E9 engine control ECU connectors.

#### OK:

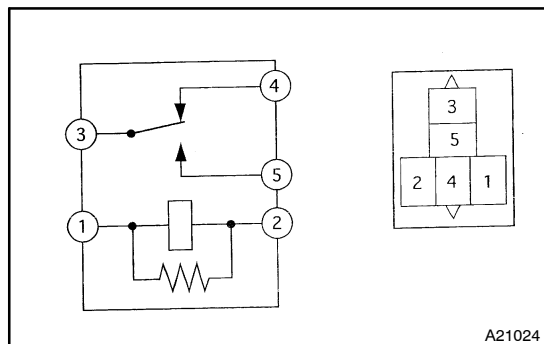
Tester Connection	Condition	Specified Condition
FPR (E7-33) - E1 (E9-1)	STA signal ON	9 to 14 V
FPR (E7-33) - E1 (E9-1)	STA signal OFF	0 to 3 V

OK

**Replace engine control ECU (See Pub. No. RM630E, page FI-74).**

NG

### 2 Check fuel pump relay.



#### PREPARATION:

Remove the fuel pump relay from the engine room R/B.

#### CHECK:

Inspect the fuel pump relay.

#### OK:

Tester Connection	Specified Condition
3 - 4	Below 1 $\Omega$
3 - 5	10 k $\Omega$ or higher
3 - 5	Below 1 $\Omega$ (Apply battery voltage terminal 1 and 2)

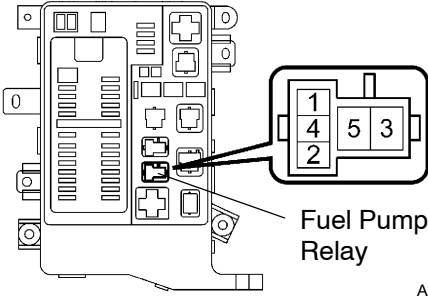
NG

**Replace fuel pump relay.**

OK

**3 Check for open and short in harness and connector between fuel pump relay and engine control ECU.**

**Engine Room J/B:**



**PREPARATION:**

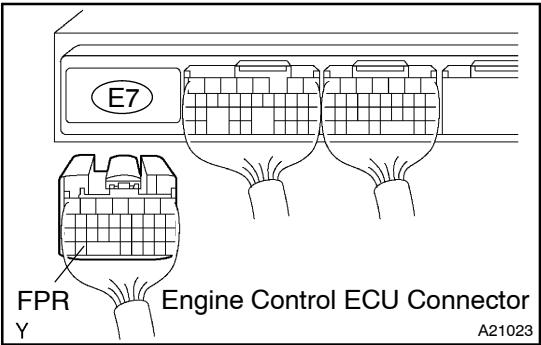
- (a) Remove the fuel pump relay from the engine room J/B.
- (b) Disconnect the E7 engine control ECU connector.

**CHECK:**

Measure the resistance between wire harness side connectors.

**OK:**

Tester Connection	Specified Condition
Engine Room J/B (Fuel pump relay terminal 1) - FPR (E7-33)	Below 1 $\Omega$
Engine Room J/B (Fuel pump relay terminal 1) or FPR (E7-33) - Body ground	10 k $\Omega$ or higher



**NG**

**Repair or replace harness or connector.**

**OK**

**Replace engine control ECU (See Pub. No. RM630, page FI-74).**