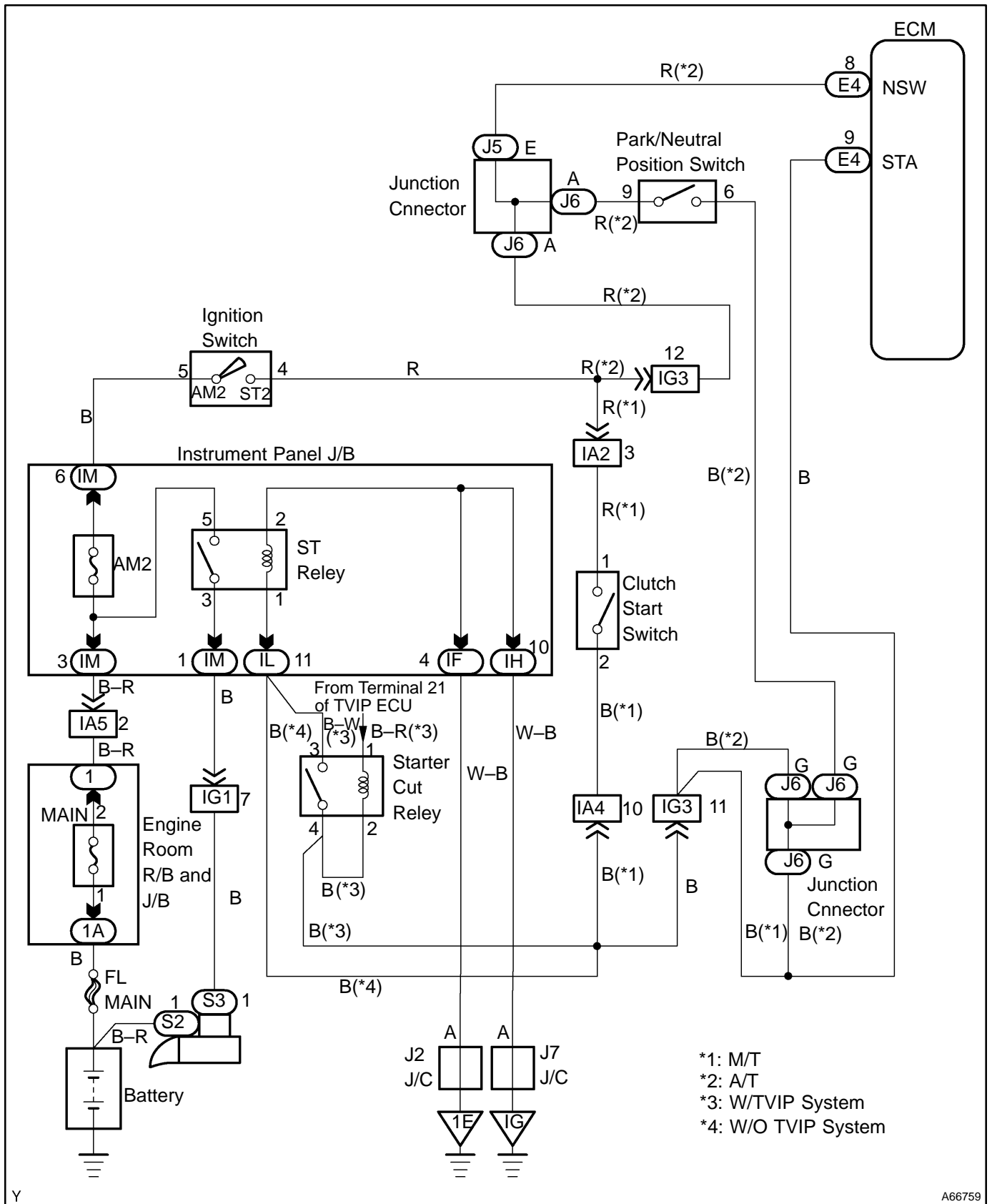


STARTER SIGNAL CIRCUIT

CIRCUIT DESCRIPTION

When the engine is cranked, the intake air flow is slow, so fuel vaporization is poor. A rich mixture is therefore necessary in order to achieve good startability. While the engine is being cranked, the battery voltage is applied to terminal STA of the ECM. The starter signal is mainly used to increase the fuel injection volume for the starting injection control and after-start injection control.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

This diagnostic chart is based on the premise that the engine is cranked normally. If the engine is not cranked, proceed to the problem symptoms table on page .

Hand-held tester:

1 READ VALUE OF HAND-HELD TESTER(STARTER SIGNAL)

- (a) Connect the hand-held tester to the DLC3.
- (b) Turn the ignition switch ON and push the hand-held tester main switch ON.
- (c) Select the item "STARTER SIG" in the DATALIST and read its value displayed on or hand-held tester.
- (d) Read the STA signal on the hand-held tester while the starter is operating.

Result:

Ignition Switch Position	ON	START
STA Signal	OFF	ON

OK PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE

NG

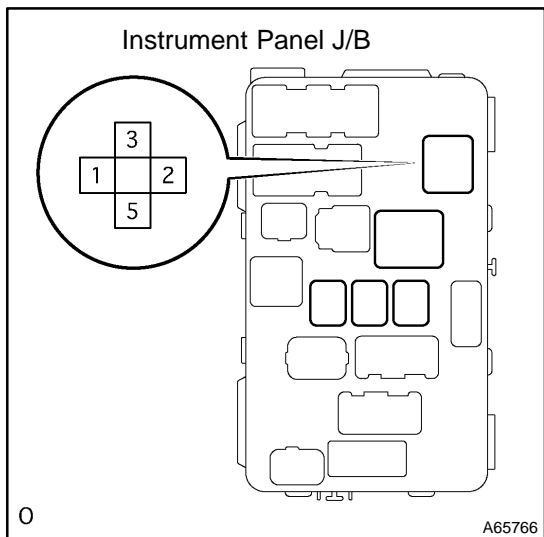
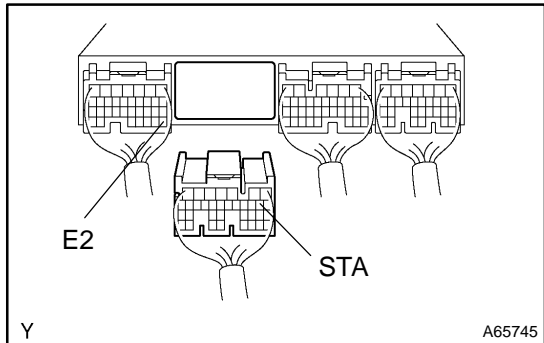
2 CHECK WIRE HARNESS OR CONNECTOR(ECM-STARTER RELAY)

- (a) Disconnect the ECM E4 connector.
- (b) Remove the starter relay.
- (c) Check continuity between the terminals STA of the ECM connector and 1 of the starter relay connector side.

Resistance: 1 Ω or less

- (d) Check for short between the terminals STA of the ECM connector and E2 of the ECM connector.

Resistance: 1 MΩ or more



NG

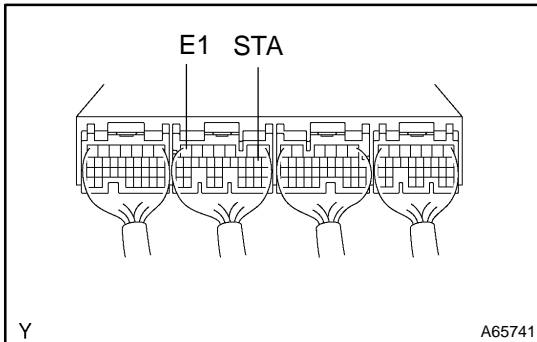
REPAIR OR REPLACE WIRE HARNESS OR CONNECTOR

OK

CHECK AND REPLACE ECM

OBD II scan tool (excluding hand-held tester):

1 INSPECT ECM(CHECK VOLTAGE)



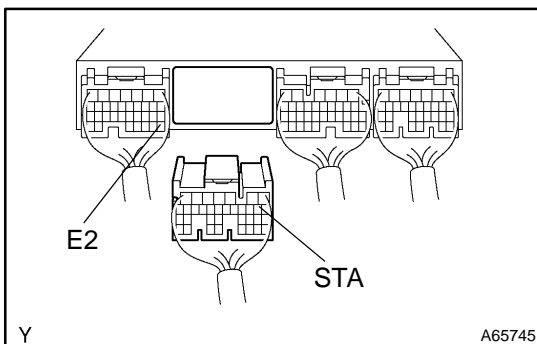
- (a) Turn the ignition switch ON.
- (b) Measure the voltage between terminal STA of the ECM connector and E1 of the ECM connector, during the engine cranking.
Voltage: 6 V or more

OK

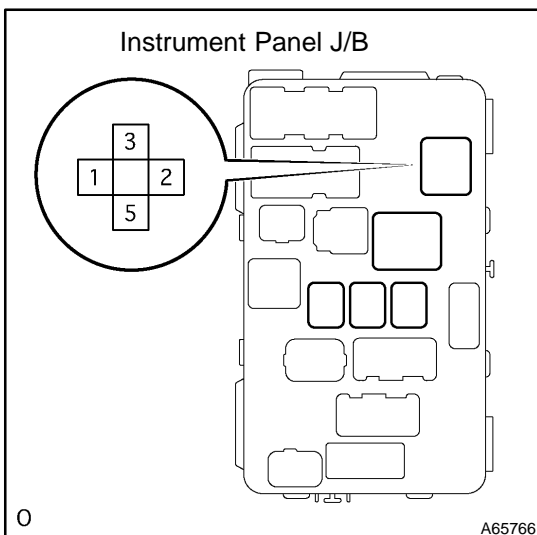
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE

NG

2 CHECK WIRE HARNESS OR CONNECTOR(ECM-STARTER RELAY)



- (a) Disconnect the ECM E4 connector.
- (b) Remove the starter relay.
- (c) Check continuity between the terminals STA of the ECM connector and 1 of the starter relay connector side.
Resistance: 1 Ω or less
- (d) Check for short between the terminals STA of the ECM connector and E2 of the ECM connector.
Resistance: 1 M Ω or more



NG

REPAIR OR REPLACE WIRE HARNESS OR CONNECTOR

OK

CHECK AND REPLACE ECM