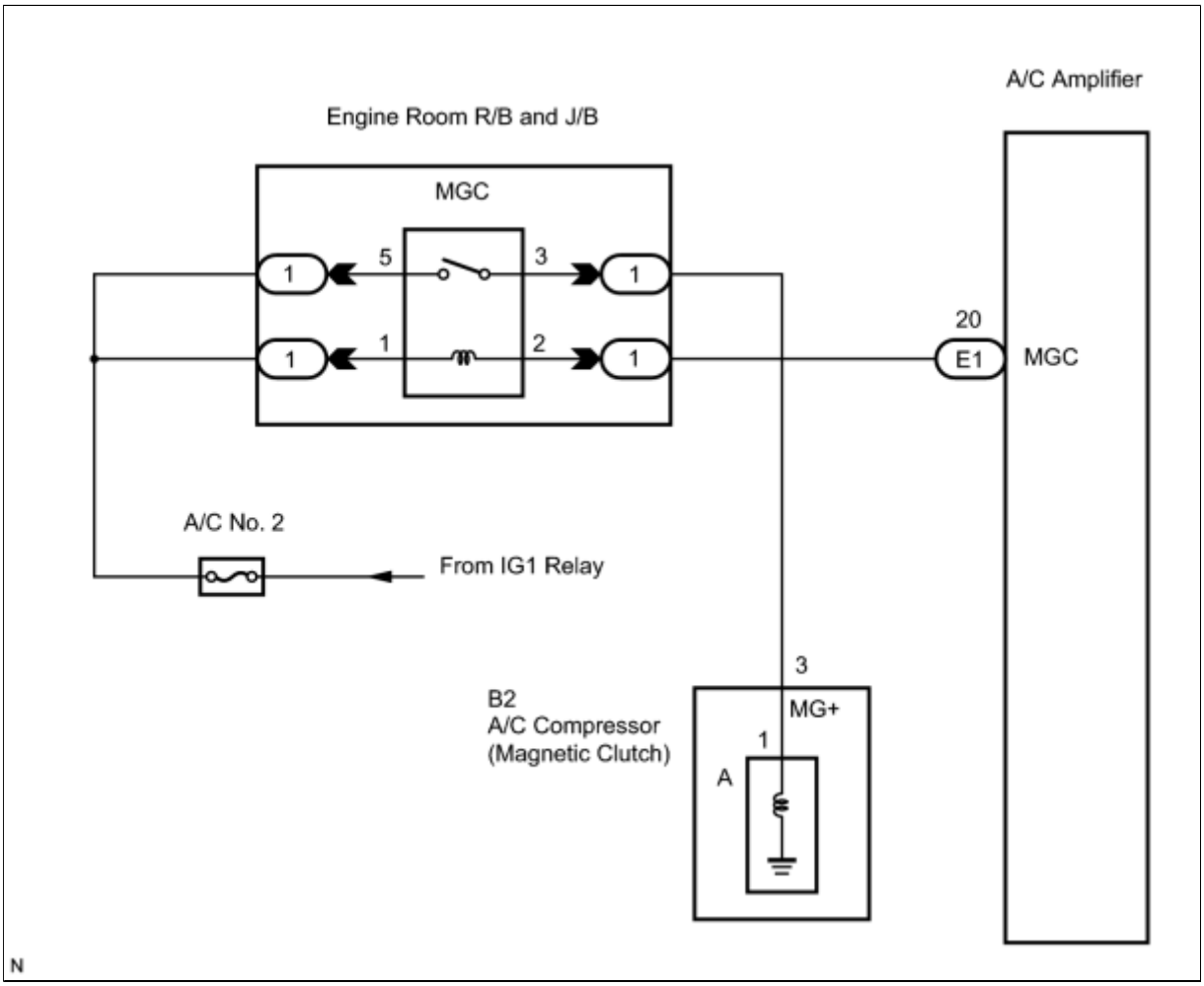
Last Modified: 7-13-2007		1.7 J
Service Category: Vehicle Interior	**Section:** Heating/Air Conditioning	
Model Year: 2008	**Model:** ES350	**Doc ID:** RM000000XCQ00RX
Title: AIR CONDITIONING: AIR CONDITIONING SYSTEM: Air Conditioning Compressor Magnetic Clutch Circuit (2008 ES350)		

Air Conditioning Compressor Magnetic Clutch Circuit

DESCRIPTION

When the A/C amplifier is turned on, a magnetic clutch ON signal is sent from the MGC terminal of the A/C amplifier. Then, the MGC relay turns on to operate the magnetic clutch.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK CAN COMMUNICATION SYSTEM**

(a) Use Techstream to check if the CAN Communication System is functioning normally.

Result:

RESULT	PROCEED TO
CAN DTC is not output	A
CAN DTC is output	B

B ▶ **GO TO CAN COMMUNICATION SYSTEM**

A ▼

2.	READ VALUE OF TECHSTREAM

(a) Connect Techstream to the DLC3.

(b) Turn the engine switch on (IG) and turn Techstream on.

(c) Turn the A/C switch on and off.

(d) Select the item below in the Data List, and read the display on Techstream.

Data List / Engine:

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
A/C Signal (A/C Signal)	A/C signal / ON or OFF	ON: A/C ON OFF: A/C OFF	-

OK:

The display is as specified in the normal condition column.

NG ▶ **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE**

OK ▼

3.	PERFORM ACTIVE TEST BY TECHSTREAM

(a) Connect Techstream to the DLC3.

(b) Turn the engine switch on (IG) and turn Techstream on.

(c) Select the item below in the Active Test and check that the magnetic clutch relay operates.

Active Test / Air Conditioner:

TESTER DISPLAY	TEST PART	CONTROL RANGE
A/C Mag Clutch (Magnetic Clutch Relay)	Magnetic clutch relay / OFF, ON	-

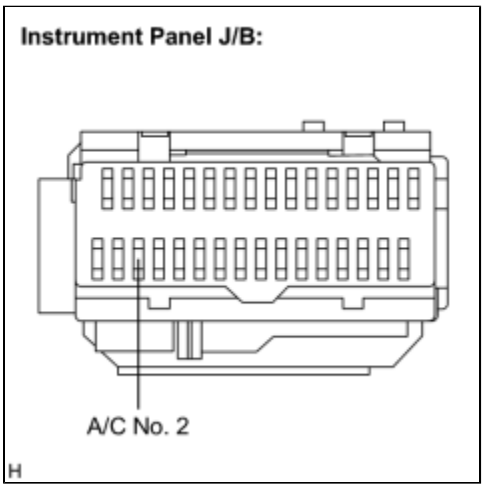
OK:

The magnetic clutch relay operates normally.

OK ▶ **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE**

NG ▼

4.	INSPECT FUSE (A/C NO. 2)



(a) Remove the A/C No. 2 fuse from the instrument panel J/B.

(b) Measure the resistance of the fuse.

Standard resistance:

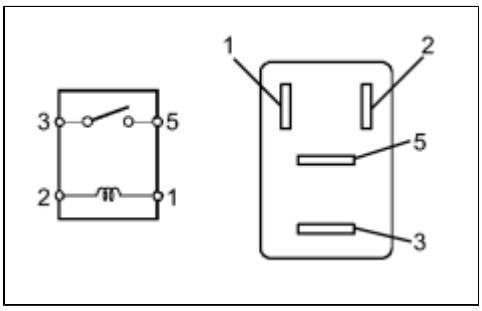
TESTER ITEM	CONDITION	SPECIFIED CONDITION
A/C No. 2 fuse	Always	Below 1 Ω

(c) Reconnect the A/C No. 2 fuse to the instrument panel J/B.

NG ▶ **REPLACE FUSE (A/C NO. 2)**

OK ▼

5.	INSPECT RELAY (MGC)



(a) Remove the MGC relay from the engine room R/B and J/B.

(b) Measure the resistance according to the value(s) in the table below.

Standard resistance:

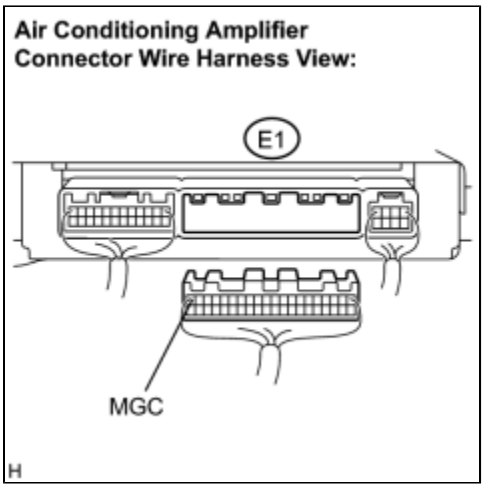
TESTER CONNECTION	SPECIFIED CONDITION
3 - 5	10 kΩ or higher
3 - 5	Below 1 Ω (when battery voltage is applied to terminals 1 and 2)

(c) Install the MGC relay to the engine room R/B and J/B.

NG ▶ **REPLACE RELAY (MGC)**

OK ▼

6.	CHECK HARNESS AND CONNECTOR (A/C AMPLIFIER - BATTERY)



(a) Disconnect the connector from the A/C amplifier.

(b) Measure the voltage according to the value(s) in the table below.

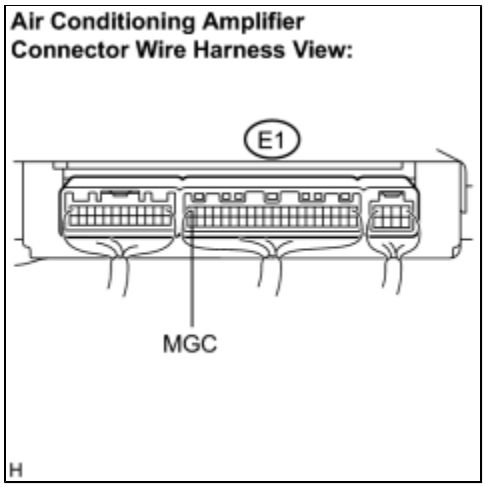
Standard voltage:

TESTER CONNECTION (SYMBOLS)	CONDITION	SPECIFIED CONDITION
E1-20 (MGC) - Body ground	Engine switch off	Below 1 V
E1-20 (MGC) - Body ground	Engine switch on (IG)	10 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

7.	INSPECT AIR CONDITIONING AMPLIFIER



(a) Reconnect the connector to the A/C amplifier.

(b) Measure the voltage according to the value(s) in the table below.

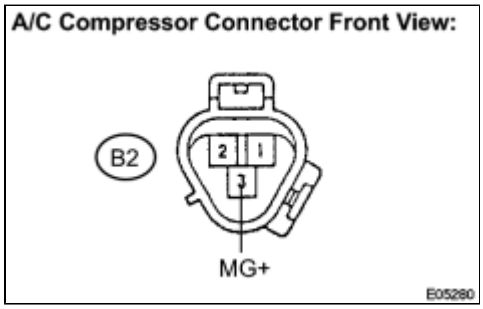
Standard voltage:

TESTER CONNECTION (SYMBOLS)	CONDITION	SPECIFIED CONDITION
E1-20 (MGC) - Body ground	Engine switch on (IG) A/C switch: OFF	10 to 14 V
E1-20 (MGC) - Body ground	Engine switch on (IG) A/C switch: ON	Below 1 V

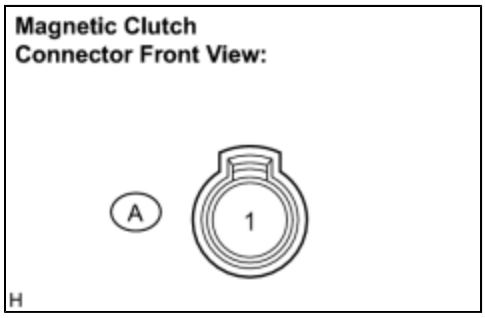
NG ▶ **REPLACE AIR CONDITIONING AMPLIFIER**

OK ▼

8.	INSPECT A/C COMPRESSOR



(a) Disconnect the connector from the A/C compressor.



(b) Disconnect the connector from the magnetic clutch.

(c) Measure the resistance according to the value(s) in the table below.

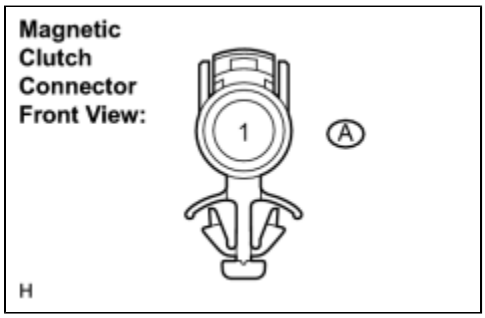
Standard resistance:

TESTER CONNECTION (SYMBOLS)	CONDITION	SPECIFIED CONDITION
B2-3 (MG+) - A-1	Always	Below 1 Ω
B2-3 (MG+) - Body ground	Always	10 kΩ or higher

NG ▶ **REPLACE A/C COMPRESSOR**

OK ▼

9.	INSPECT MAGNETIC CLUTCH



(a) Measure the resistance according to the value(s) in the table below.

Standard resistance:

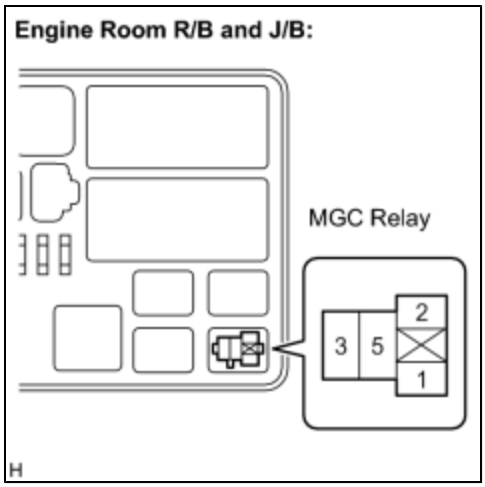
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A-1 - Body ground	Always	3.4 to 3.8 Ω

(b) When connector terminal A-1 is connected to the positive (+) battery terminal, check that the following occurs: 1) the magnetic clutch's operating sound can be heard, and 2) the magnetic clutch's hub and rotor lock.

NG ▶ **REPLACE MAGNETIC CLUTCH**

OK ▼

10.	CHECK HARNESS AND CONNECTOR (ENGINE ROOM R/B AND J/B - BATTERY)



(a) Remove the MGC relay from the engine room R/B and J/B.

(b) Turn the engine switch on (IG).

(c) Measure the voltage according to the value(s) in the table below.

Standard voltage:

TESTER CONNECTION	SPECIFIED CONDITION
Relay block MGC relay terminal 5 - Body ground	10 to 14 V
Relay block MGC relay terminal 1 - Body ground	10 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (ENGINE ROOM R/B AND J/B - A/C COMPRESSOR)**