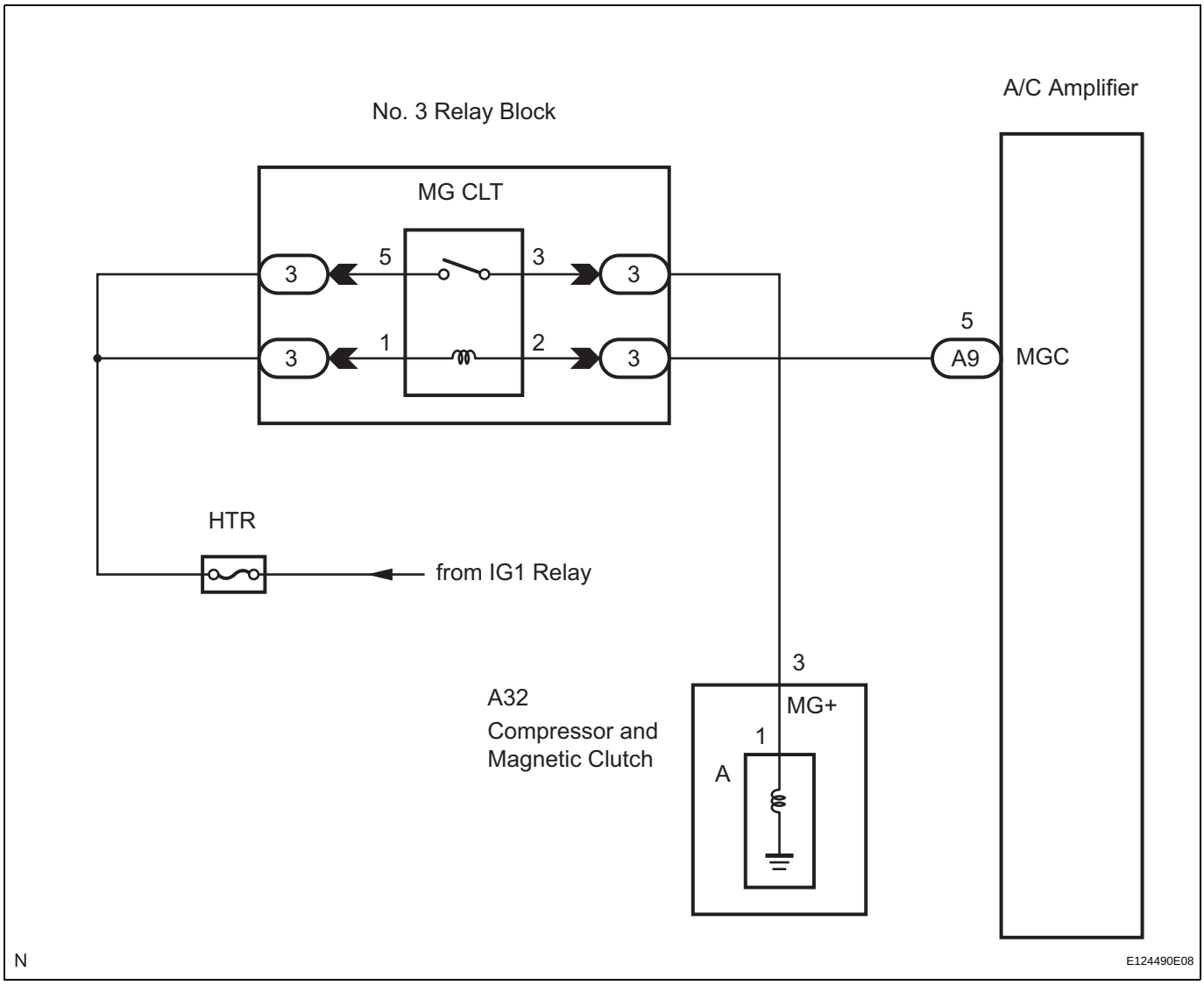
Air Conditioning Compressor Magnetic Clutch Circuit

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 MG CLT relay turns on to operate the magnetic clutch.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK CAN COMMUNICATION SYSTEM

(a) Use the intelligent tester 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	CHECK MULTIPLEX COMMUNICATION SYSTEM

(a) Use the intelligent tester to check if the multiplex communication system is functioning normally.
Result

Result	Proceed to
MPX DTC is not output	A
MPX DTC is output	B

B → **GO TO MULTIPLEX COMMUNICATION SYSTEM**

A

3	PERFORM ACTIVE TEST BY INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch to the ON position and turn the intelligent tester main switch on.
(c) Select the item below in the ACTIVE TEST and then check that the relay operates.

ACTIVE TEST / AIR CONDITIONER:

Tester Display	Test Part	Control Range	Diagnostic Note
A/C MAG CLUTCH	Magnetic clutch relay	OFF, ON	-

OK:
Magnetic clutch relay operates.

NG → **Go to step 4**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

4	INSPECT FUSE (HTR)

(a) Remove the HTR fuse from the driver side junction block.
(b) Measure the resistance according to the value(s) in the table below.
Standard resistance

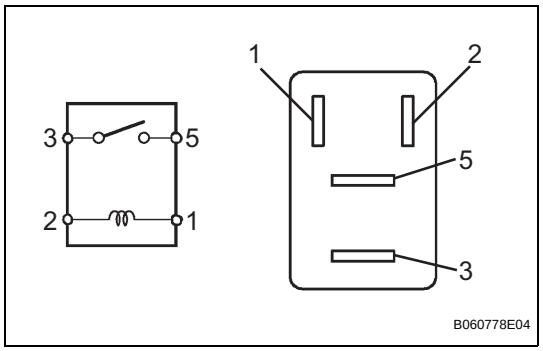
Tester Item	Condition	Specified Condition
HTR fuse	Always	Below 1 Ω

(c) Reconnect the HTR fuse to the driver side junction block.

NG → **REPLACE FUSE (HTR)**

OK

5 INSPECT RELAY (MG CLT)



(a) Remove the MG CLT relay from the No. 3 relay block.
(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)

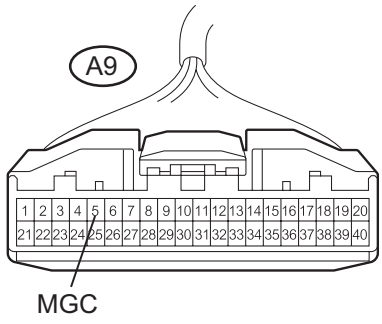
(c) Install the MG CLT relay to the No. 3 relay block.

NG → **REPLACE RELAY (MG CLT)**

OK

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

Front view of wire harness connector:
(to A/C Amplifier)



H

E143742E44

(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	Condition	Specified Condition
A9-5 (MGC) - Body ground	Ignition switch: OFF	Below 1 V
A9-5 (MGC) - Body ground	Ignition switch: ON	11 to 14 V

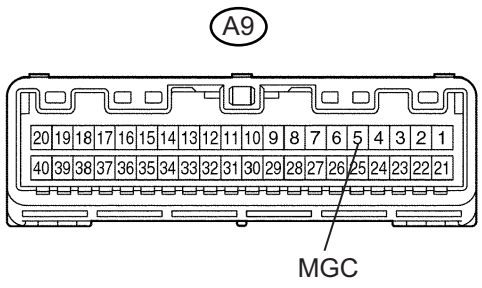
NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

AC

7 INSPECT A/C AMPLIFIER

Component with harness connected:
(A/C Amplifier)



E147476E02

(a) Reconnect the connector to the A/C amplifier.
(b) Measure the voltage according to the value(s) in the table below.

Standard voltage

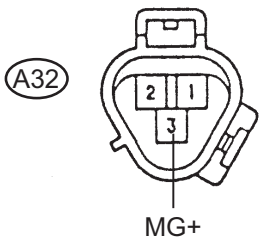
Tester Connection	Condition	Specified Condition
A9-5 (MGC) - Body ground	Ignition switch: ON A/C switch: OFF	11 to 14 V
A9-5 (MGC) - Body ground	Ignition switch: ON A/C switch: ON	Below 1 V

NG → **REPLACE A/C AMPLIFIER**

OK

8 INSPECT COMPRESSOR AND MAGNETIC CLUTCH

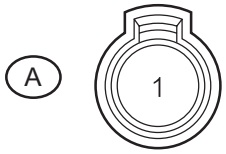
Component without harness connected:
(Compressor and Magnetic Clutch)



E145186E02

(a) Disconnect the connector from the compressor and magnetic clutch.

Front view of wire harness connector:
(to Magnetic Clutch)



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E124482E04

(b) Disconnect the connector from the magnetic clutch.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

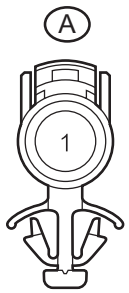
Tester Connection	Condition	Specified Condition
A32-3 (MG+) - A-1	Always	Below 1 Ω
A32-3 (MG+) - Body ground	Always	10 kΩ or higher

NG → **REPLACE COMPRESSOR AND MAGNETIC CLUTCH**

OK

9 INSPECT MAGNETIC CLUTCH

Component without harness connected:
(Magnetic Clutch)



E147609E01

(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

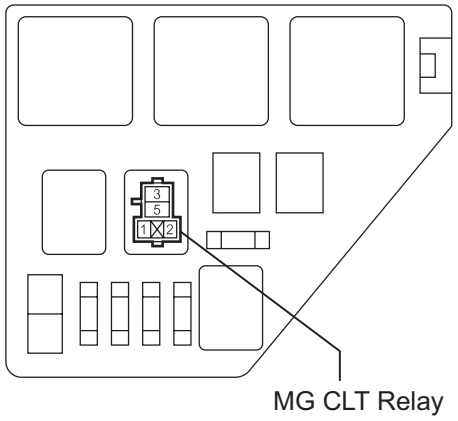
(b) When connector terminal A1 is connected to the positive (+) battery terminal, check that the following occurs: 1) the magnetic clutch's operating sound can be heard, and 2) the magnetic clutch's hub and rotor lock.

NG → **REPLACE MAGNETIC CLUTCH**

OK

10 CHECK HARNESS AND CONNECTOR (NO. 3 RELAY BLOCK - BATTERY)

Component without relay installed:
(No. 3 Relay Block)



H

E147378E01

(a) Remove the MG CLT relay from the No. 3 relay block.
(b) Turn the ignition switch to the ON position.
(c) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester Connection	Specified Condition
Relay block MG CLT relay terminal 5 - Body ground	11 to 14 V
Relay block MG CLT relay terminal 1 - Body ground	11 to 14 V

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR (NO. 3 RELAY BLOCK - COMPRESSOR AND MAGNETIC CLUTCH)**

OK

REPAIR OR REPLACE HARNESS OR CONNECTOR

AC