

STARTING SYSTEM

REFER TO 2L, 3L ENGINE REPAIR MANUAL
(Pub. No. RM123E)

NOTE: The following pages contain only the points which differ from the above listed manual

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PRE-HEATING SYSTEM	ST-2
Super Glow Type [2L-T]	ST-2
Fixed Delay Type [3L]	ST-8
STARTER RELAY (LJ)	ST-9

ST

ST-2

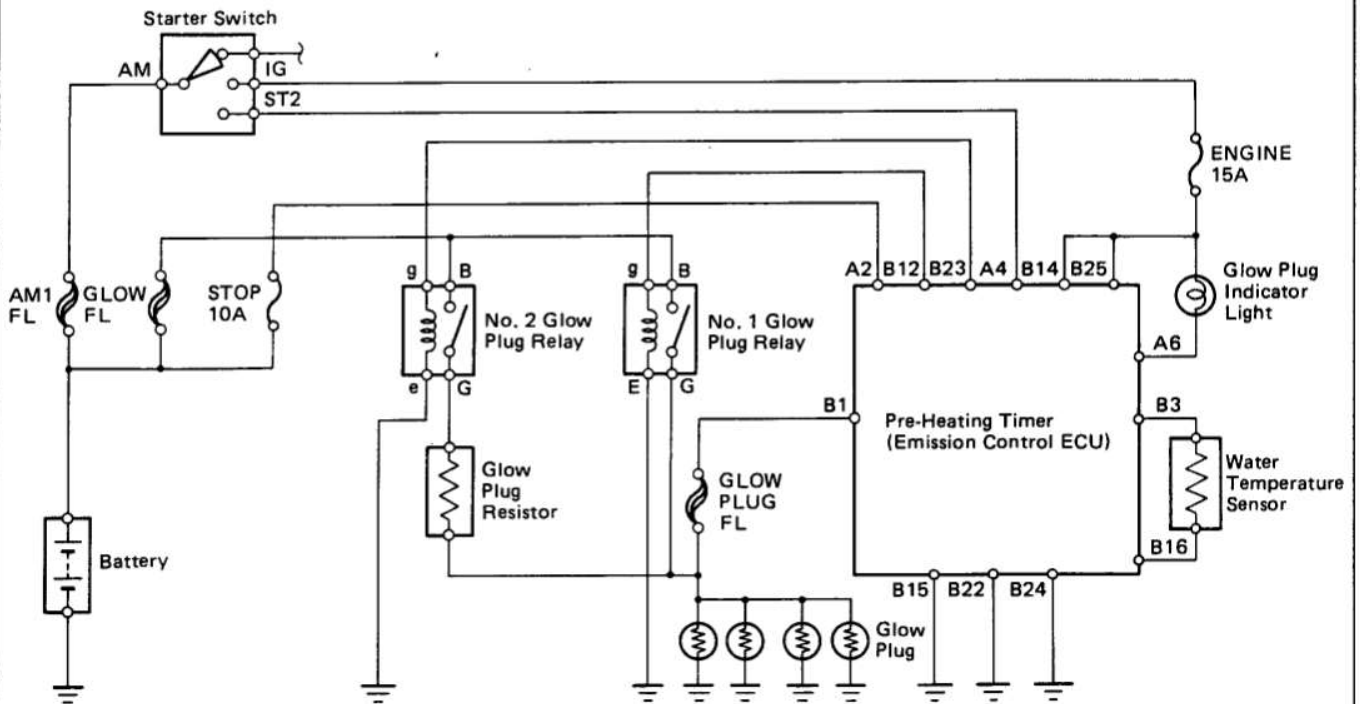
STARTING SYSTEM – Pre-Heating System (Super Glow Type [2L-T])

PRE-HEATING SYSTEM

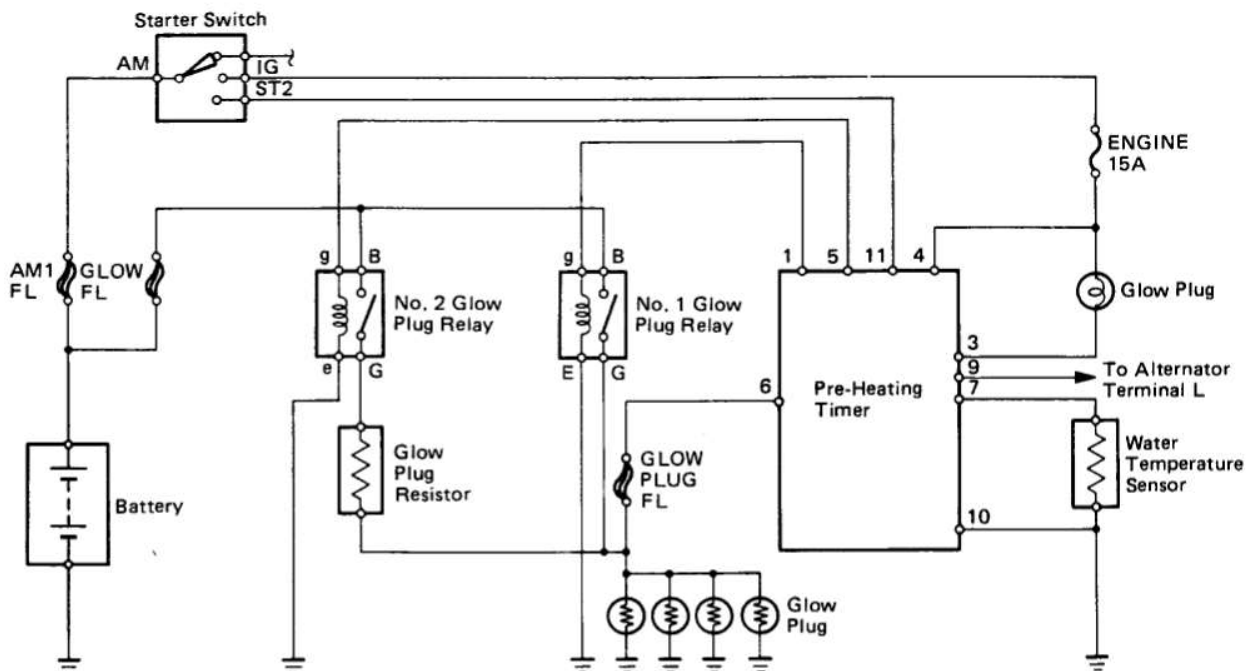
Super Glow Type [2L-T]

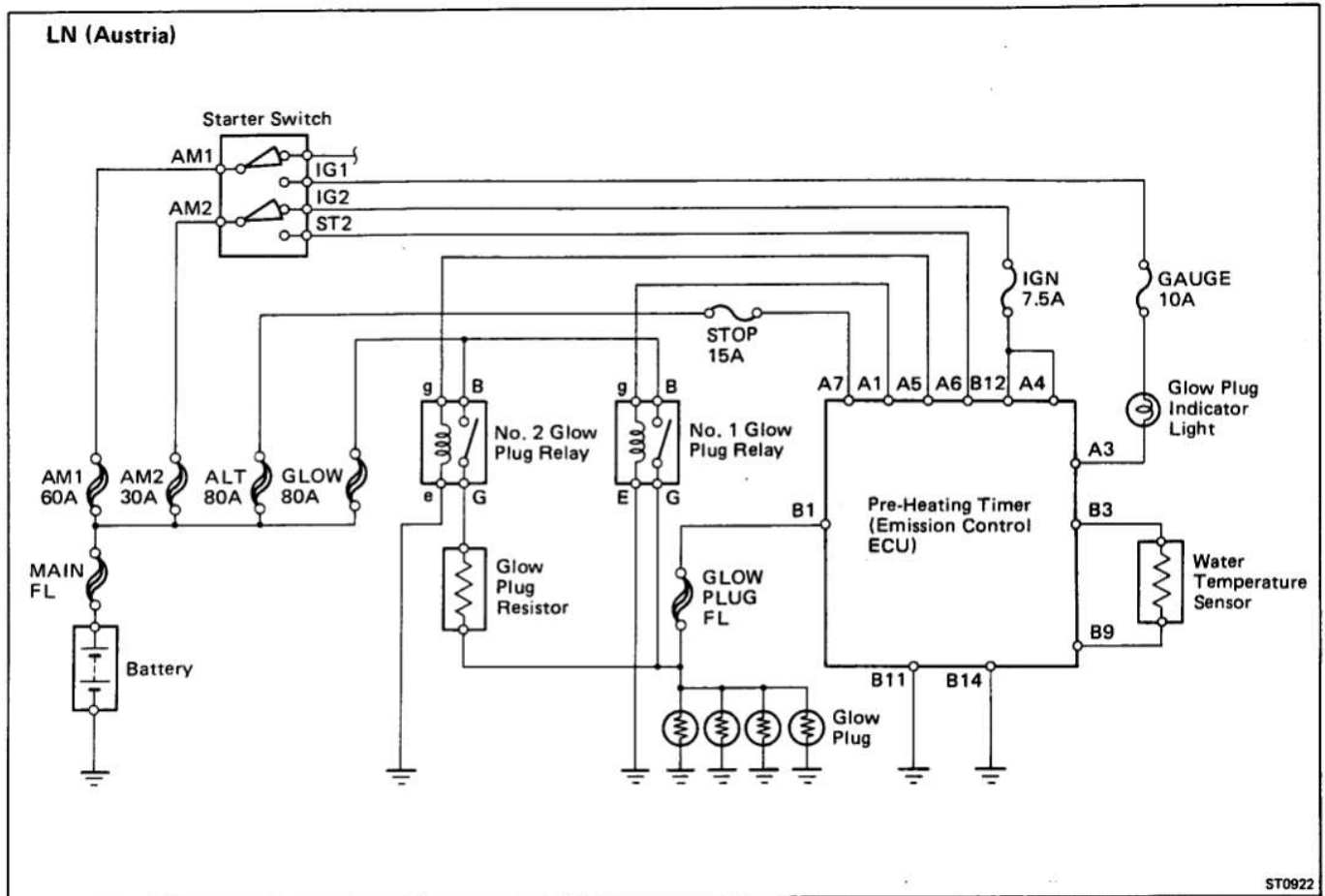
SYSTEM CIRCUIT

LJ (Austria)



LJ (Others)

ST0920
ST0921

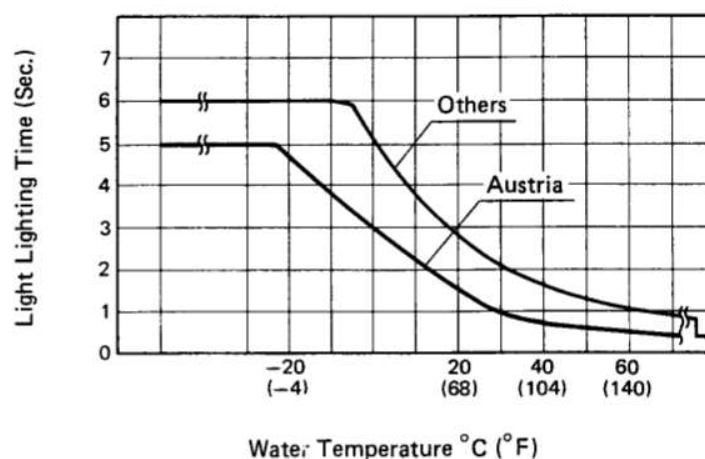
STARTING SYSTEM — Pre-Heating System (Super Glow Type [2L-T])**ST-3****SYSTEM CIRCUIT (Cont'd)****INSPECTION OF PRE-HEATING SYSTEM**

HINT: Refer to Diesel Electrical System Diagnosis for inspection procedures. (See page EM-13)

INSPECT LIGHTING TIME OF GLOW INDICATOR LIGHT

Turn the starter switch ON, measure the light lighting time.

Light lighting time: Refer to chart



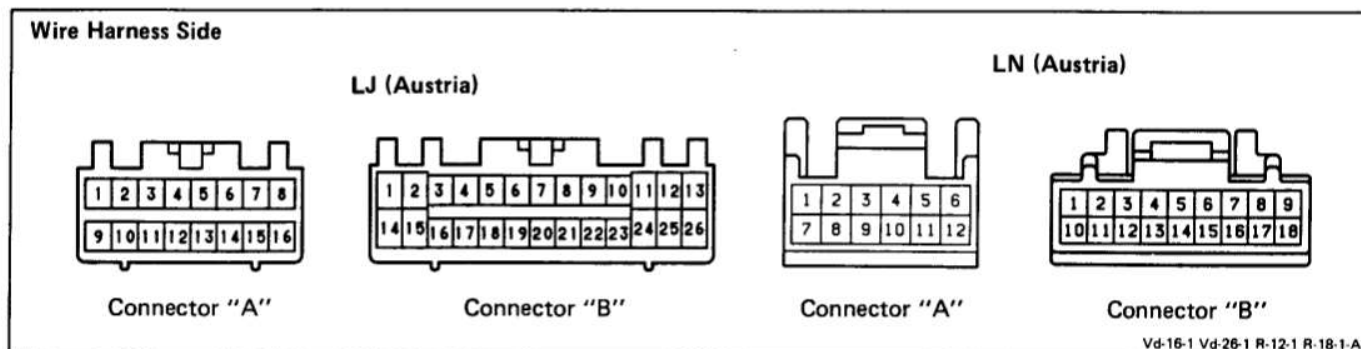
ST0910

ST-4**STARTING SYSTEM – Pre-Heating System (Super Glow Type [2L-T])****INSPECTION OF COMPONENTS****Pre-Heating Timer**

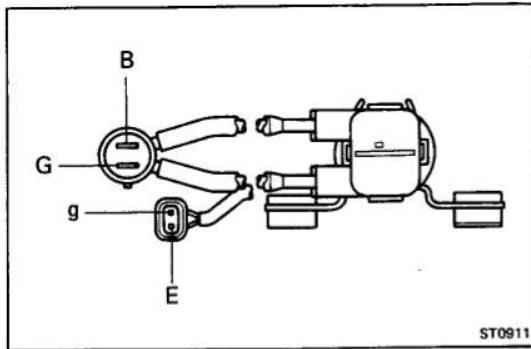
LOCATION: In the cowl on the passenger side.

INSPECT PRE-HEATING TIMER CIRCUIT

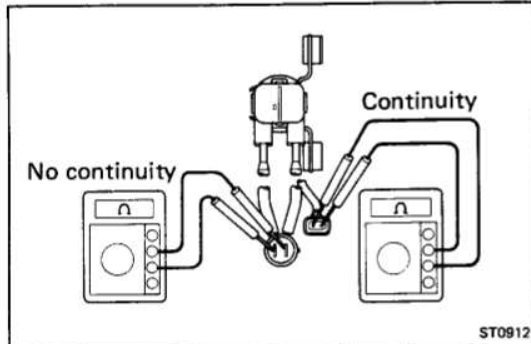
Disconnect the connector from the pre-heating timer, and check the connector on the wire harness side as shown in the following chart.



Check for	Tester connection			Condition	Specified value
	LJ	LN			
Continuity	B12	A1	– Ground	–	Continuity
Voltage	A2	A7	– Ground	–	Battery voltage
Voltage	B14	B12	– Ground	Turn starter switch OFF	No voltage
				Turn starter switch ON	Battery voltage
Voltage	A6	A3	– Ground	Turn starter switch OFF	No voltage
				Turn starter switch ON	Battery voltage
Continuity	B23	A5	– Ground	–	Continuity
Continuity	B15	B11	– Ground	–	Continuity
Continuity	B22	B14	– Ground	–	Continuity
Continuity	B24	–	– Ground	–	Continuity
Continuity	B3	B3	–B16(LJ), –B9(LN)	–	Continuity
Continuity	B16	B9	– Ground	–	Continuity
Voltage	A4	A6	– Ground	Turn starter switch OFF	No battery
			– Ground	Turn starter switch START	Battery voltage

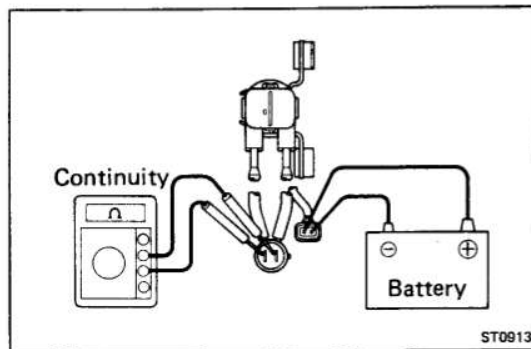
STARTING SYSTEM – Pre-Heating System (Super Glow Type [2L-T])**ST-5****No.1 Glow Plug Relay (LJ)**

LOCATION: In the engine compartment on the left side.

**1. INSPECT RELAY CONTINUITY**

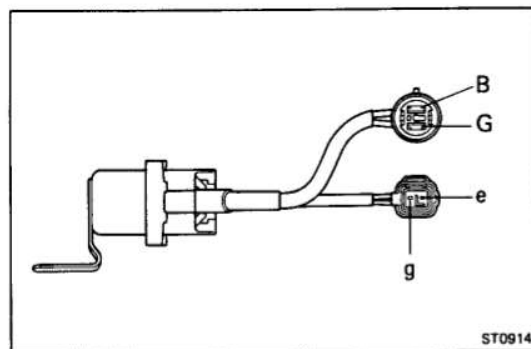
- Using an ohmmeter, check that there is continuity between terminals E and g.
- Check that there is no continuity between terminals B and G.

If continuity is not as specified, replace the relay.

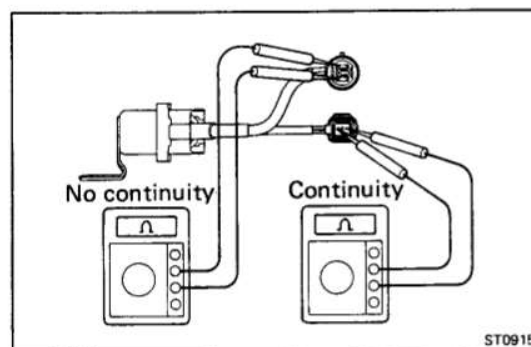
**2. INSPECT RELAY OPERATION**

- Apply battery voltage across terminals E and g.
- Using an ohmmeter, check that there is continuity between terminals B and G.

If operation is not as specified, replace the relay.

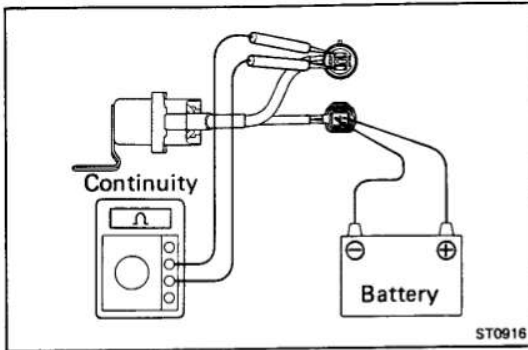
**No.2 Glow Plug Relay (LJ)**

LOCATION: In the engine compartment on the left side.

**1. INSPECT RELAY CONTINUITY**

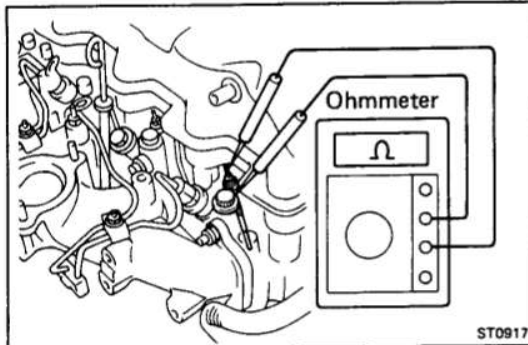
- Using an ohmmeter, check that there is continuity between terminals e and g.
- Check that there is no continuity between terminals B and G.

If continuity is not as specified, replace the relay.

ST-6**STARTING SYSTEM — Pre-Heating System (Super Glow Type [2L-T])****2. INSPECT RELAY OPERATION**

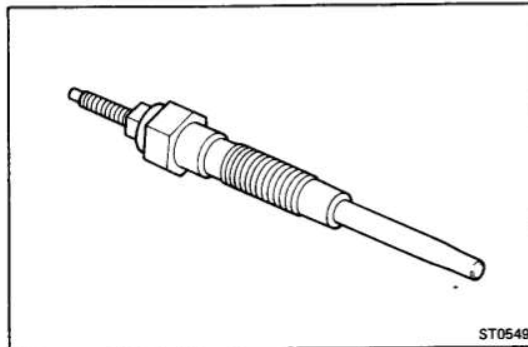
- (a) Apply battery voltage across terminals e and g.
- (b) Using an ohmmeter, check that there is continuity between terminals B and G.

If operation is not as specified, replace the relay.

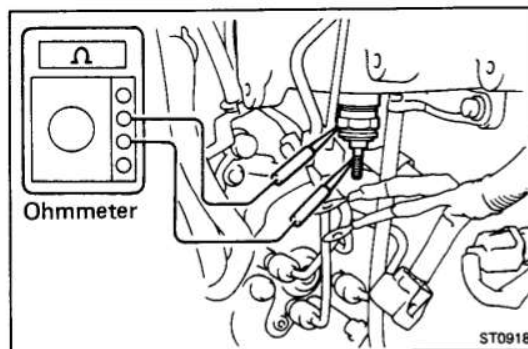
**Glow Plug****INSPECT GLOW PLUG**

Using an ohmmeter, check that there is continuity between the glow plug terminal and ground.

If there is no continuity, replace the glow plug.

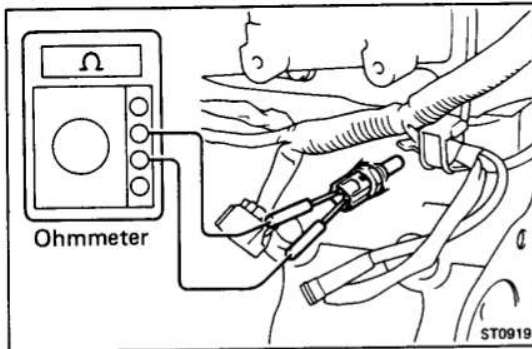
**HINT:**

- Be careful not to damage the glow plug pipes as it could cause an open circuit or shorten life of the plugs.
- Avoid getting oil and gasoline on the glow plug when cleaning.
- During inspection, be sure to wipe any oil off the glow plug terminal and bakelite washer with a dry cloth.
- Be careful to apply more than 11 volts to the glow plug as it could cause an open circuit.

**Glow Plug Resistor****INSPECT GLOW PLUG RESISTOR**

Using an ohmmeter, check that there is continuity between the resistor terminals.

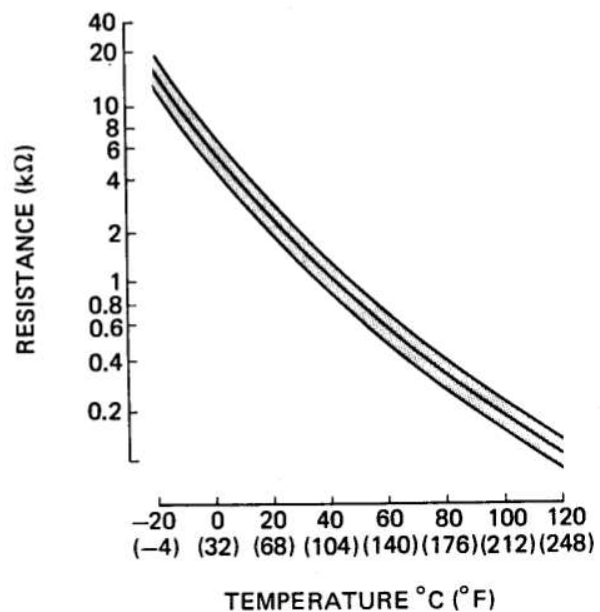
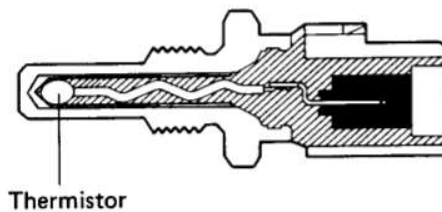
If there is no continuity, replace the resistor.

STARTING SYSTEM – Pre-Heating System (Super Glow Type [2L-T])**ST-7****Water Temperature Sensor****INSPECT TEMPERATURE SENSOR**

Using an ohmmeter, measure the resistance between the sensor terminals.

Resistance: Refer to chart

If the resistance is not as specified, replace the sensor.

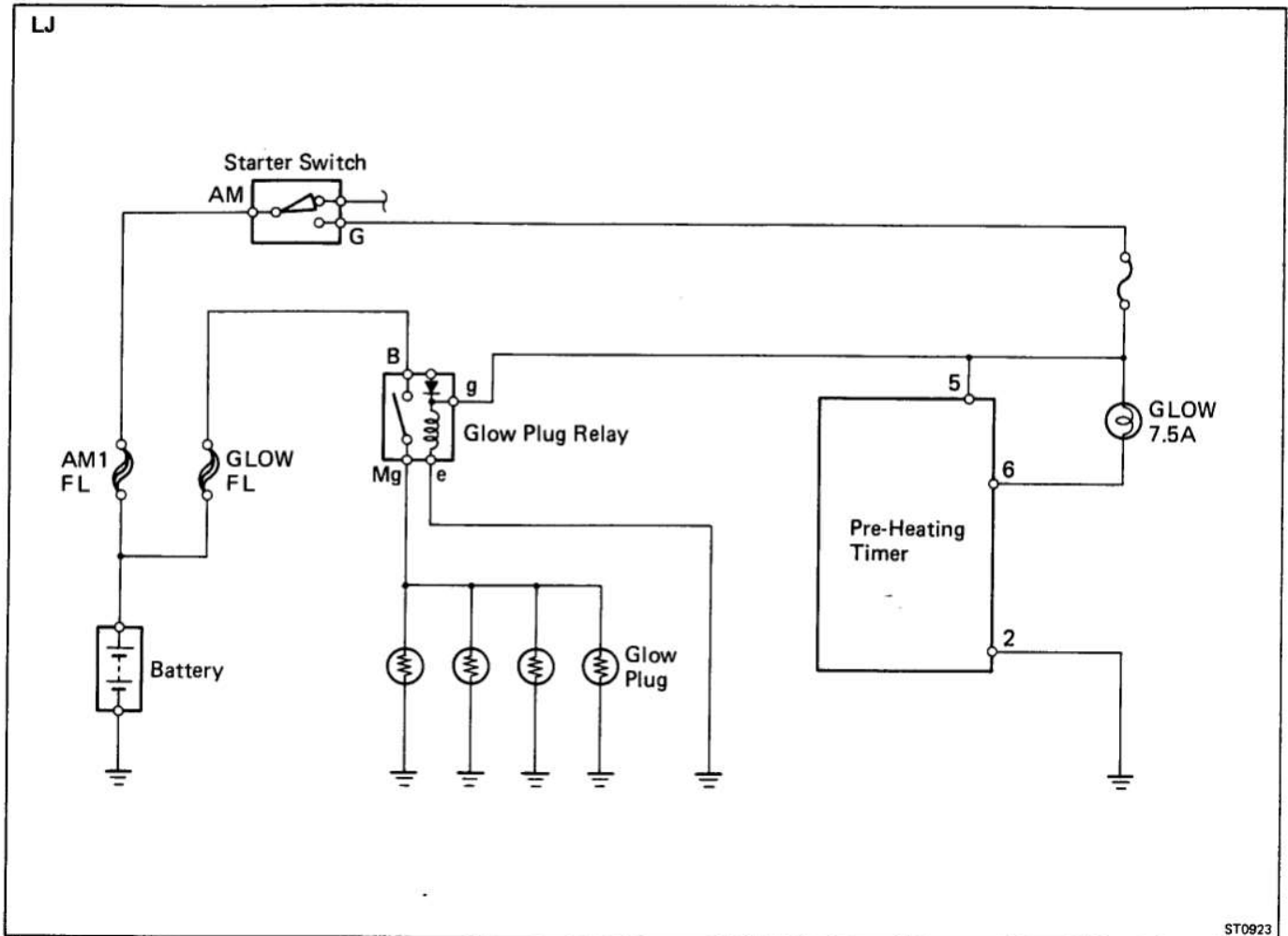
WATER TEMP. SENSOR

F13828 F10709

ST-8**STARTING SYSTEM – Pre-Heating System (Fixed Delay Type [3L])**

Fixed Delay Type [3L]

SYSTEM CIRCUIT

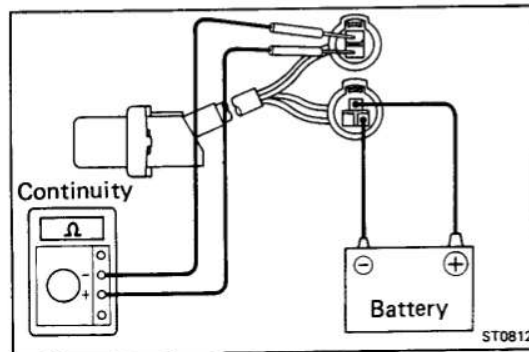
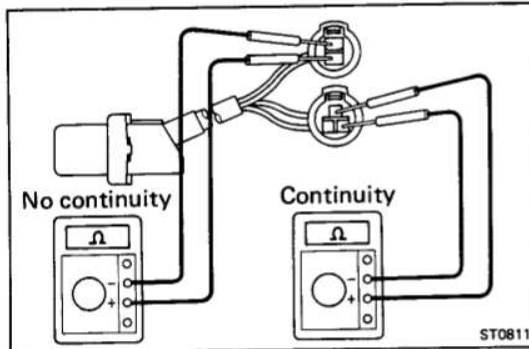
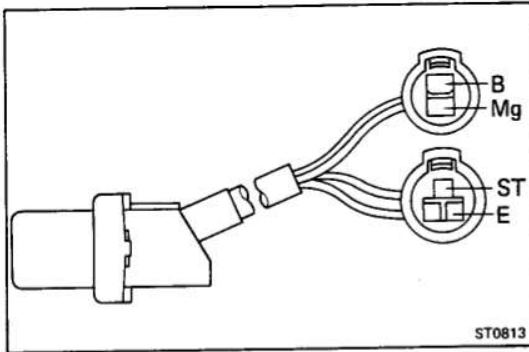
**INSPECTION OF PRE-HEATING SYSTEM****INSPECT LIGHTING TIME OF GLOW INDICATOR LIGHT**

Turn the starter switch GLOW, measure the light lighting time.

Light lighting time: Approx. 6 seconds

STARTING SYSTEM — Starter Relay (LJ)**ST-9****STARTER RELAY (LJ)**

LOCATION: In the engine compartment on the left side.

**INSPECTION OF STARTER RELAY****1. INSPECT RELAY CONTINUITY**

- (a) Using an ohmmeter, check that there is continuity between terminals E and ST.
- (b) Check that there is no continuity between terminals B and Mg.

If continuity is not as specified, replace the relay.

2. INSPECT RELAY OPERATION

- (a) Apply battery voltage across terminals E and ST.
- (b) Using an ohmmeter, check that there is continuity between terminals B and Mg.

If operation is not as specified, replace the relay.

