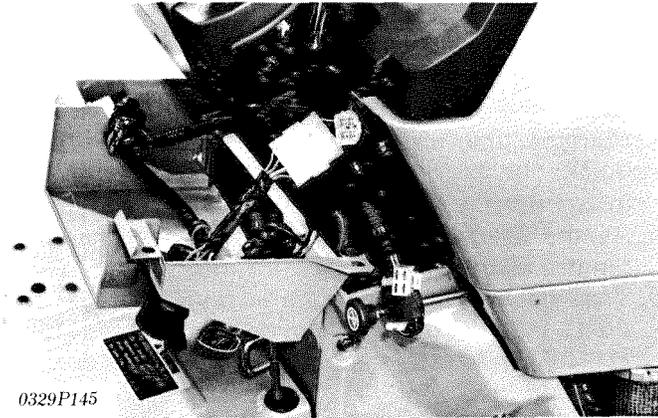


# [2] STARTING SYSTEM

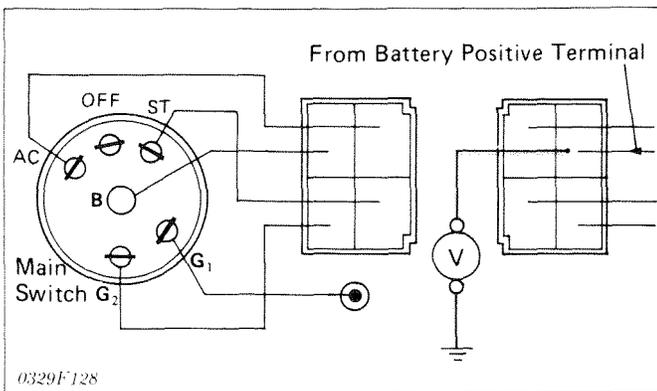
## CHECKING



0329P145

### Main Switch

- Remove the switch board, and disconnect the main switch connectors after turning the main switch off. Perform the following checkings 1) to 5).

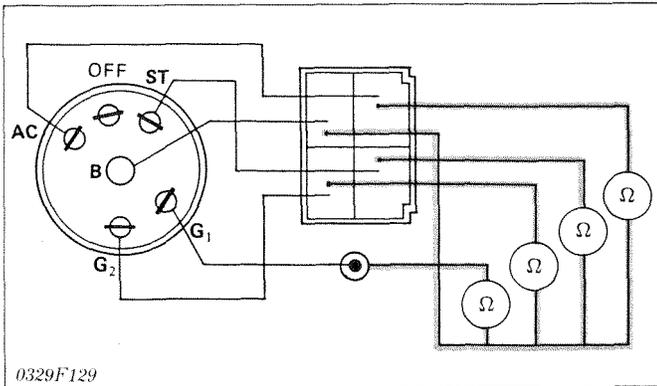


0329F128

#### 1) Connector Voltage

- Measure the voltage with a voltmeter across the connector B terminal and chassis.
- If the voltage differs from the battery voltage (11 to 14V), the wiring harness is faulty.

Voltage	Connector B terminal – Chassis	Approx. battery voltage

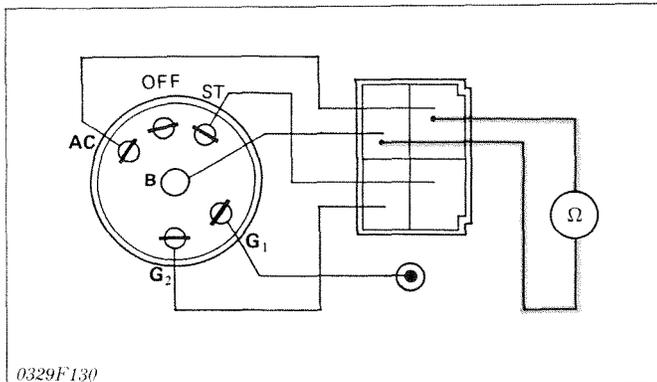


0329F129

#### 2) Main Switch key at OFF Position

- Turn the main switch off.
- Measure the resistances with an ohmmeter across the B terminal and the AC terminal, B terminal and ST terminal, B terminal and G<sub>1</sub> terminal, and B terminal and G<sub>2</sub> terminal.
- If infinity is not indicated, the contacts of the main switch are faulty.

Resistance	B – AC	Infinity
	B – ST	Infinity
	B – G <sub>1</sub>	Infinity
	B – G <sub>2</sub>	Infinity

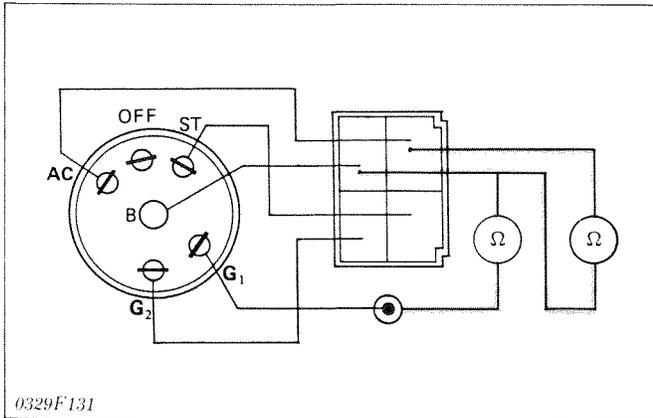


0329F130

#### 3) Main Switch key at ON Position

- Turn the main switch on.
- Measure the resistance with an ohmmeter across the B terminal and the AC terminal.
- If 0 ohm is not indicated, the B – AC contacts of the main switch are faulty.

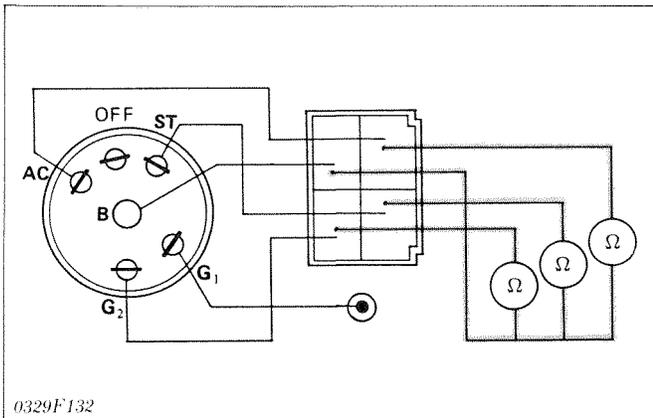
Resistance	B – AC	0 ohm



#### 4) Main Switch Key at **PREHEAT** Position

1. Turn and hold the main switch key at the **PREHEAT** position.
2. Measure the resistances with an ohmmeter across the **B** terminal and the **G<sub>1</sub>** terminal, and measure the resistance across the **B** terminal and the **AC** terminal.
3. If 0 ohm is not indicated, these contacts of the main switch are faulty.

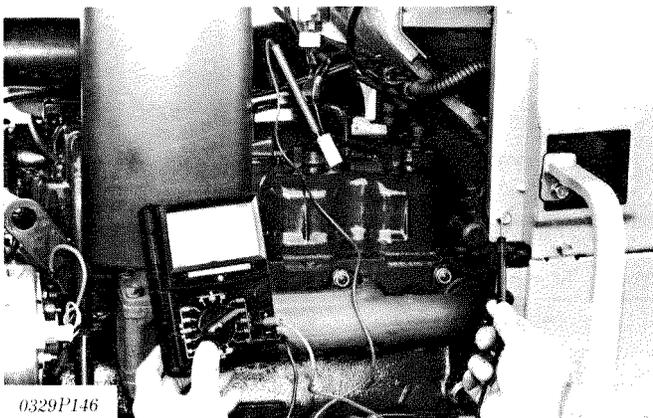
Resistance	B – G <sub>1</sub>	0 ohm
	B – AC	



#### 5) Main Switch Key at **START** Position

1. Turn and hold the main switch key at the **START** position.
2. Measure the resistances with an ohmmeter across the **B** terminal and the **G<sub>2</sub>** terminal, across the **B** terminal and the **ST** terminal, and across the **B** terminal and the **AC** terminal.
3. If 0 ohm is not indicated, these contacts of the main switch are faulty.

Resistance	B – G <sub>2</sub>	0 ohm
	B – ST	
	B – AC	

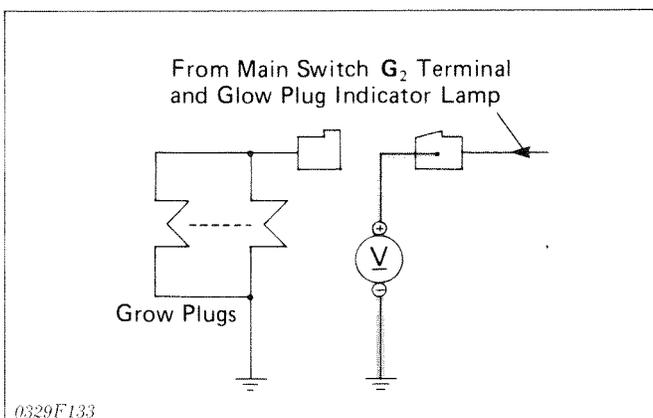


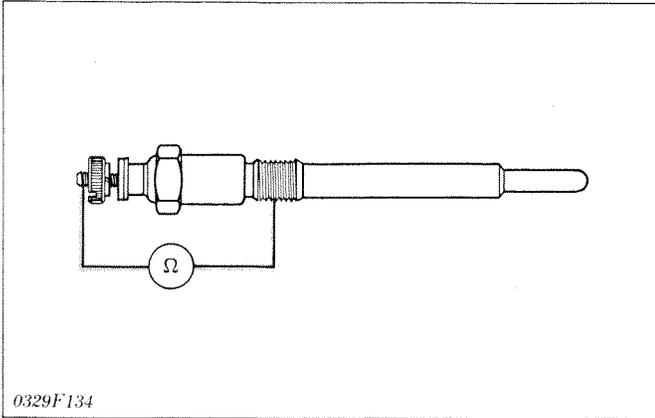
### Pre-heating

#### 1) Lead Terminal Voltage

1. Disconnect the wiring lead from the glow plug terminal after turning the main switch off.
2. Turn the main switch key to the **PREHEAT** position, and measure the voltage across the lead terminal and the chassis.
3. Turn the main switch key to the **START** position, and measure the voltage with a voltmeter across the lead terminal and the chassis.
4. If the voltage at either position differs from the battery voltage, the wiring harness or main switch is faulty.

Voltage (Lead terminal) – chassis	Main switch key at <b>PREHEAT</b>	Approx. battery voltage
	Main switch key at <b>START</b>	

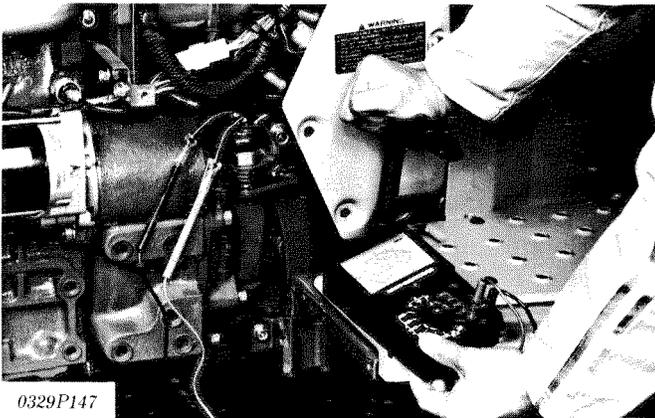




### 2) Glow Plug

1. Disconnect the leads from the glow plugs.
2. Measure the resistance with an ohmmeter across the glow plug terminal and the chassis.
3. If 0 ohm is indicated, the screw at the tip of the glow plug and the housing are short-circuited.
4. If the reference value is not indicated, the glow plug is faulty.

Glow plug resistance	Reference value	Approx. 0.5 ohms
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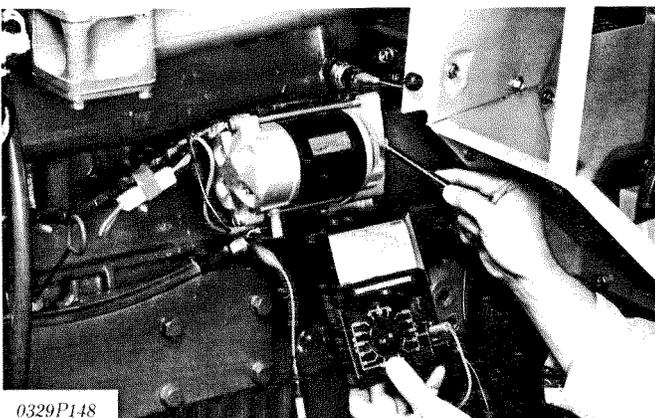
### Safety Starter Switch

#### ■ NOTE

- Be sure to measure the safety starter switch resistance after adjusting the clearance between the safety starter switch and clutch pedal. (See page S.2-6, 14)

1. Disconnect the safety starter switch leads.
2. Connect the leads of an ohmmeter to the safety starter switch lead terminals.
3. Measure the resistance while pressing the clutch pedal.
4. If 0 ohm is not indicated, the safety starter switch is faulty or improperly mounted.
5. Measure the resistance while the clutch pedal is released.
6. If infinity is not indicated, the safety starter switch is faulty.

Resistance (Across switch terminals)	When switch push is pushed	0 ohm
	When switch push is released	Infinity

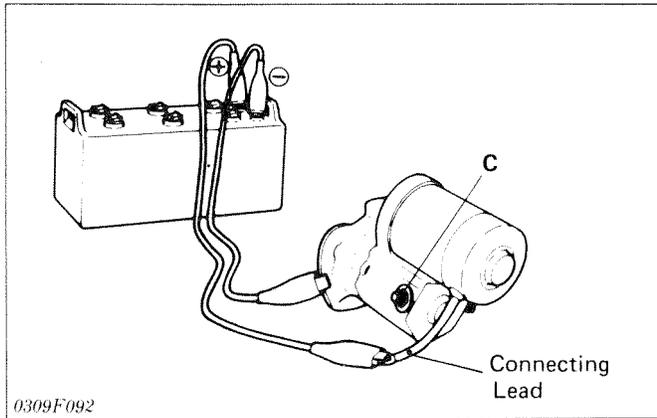


### Starter Motor

#### 1) B Terminal Voltage

1. Measure the voltage with a voltmeter across the B terminal and chassis.
2. If the voltage differs from the battery voltage, the battery's positive cable or the battery negative cable is faulty.

Voltage	B terminal – chassis	Approx. battery voltage
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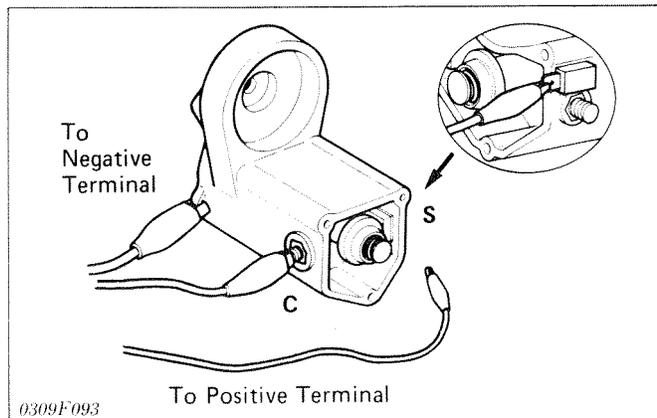
## 2) Motor Test

1. Disconnect the ground cable clamp from the battery negative terminal post.
2. Disconnect the battery positive cable and the leads from the starter.
3. Remove the starter motor from the engine.
4. Disconnect the connecting lead from the starter C terminal.

### ⚠ CAUTION

- Secure the starter in a vise to prevent it from jumping up and down while testing the motor.

5. Connect a jumper lead from the connecting lead to the battery positive terminal post.
6. Connect a jumper lead momentarily between the starter motor housing and the battery negative terminal post.
7. If the motor does not run, check the motor.



## 3) Pull-in Coil Test of Magnet Switch

1. Remove the motor from the starter housing.
2. Remove the end cover from the starter housing.
3. Prepare a 6V battery for the test.
4. Connect jumper leads from the battery negative terminal post to the housing and to the starter C terminal.
5. The plunger should be attracted and the pinion gear should pop out when a jumper lead is connected from the battery positive terminal to the S terminal.

### ⚠ CAUTION

- Never disconnect the jumper leads from the battery to the starter until the end cover has been replaced on the starter housing. Otherwise, the plunger may pop out like a bullet.

## 4) Holding Coil Test of Magnet Switch

1. Perform the pull-in coil test to the magnet switch.
2. Keep the jumper leads from the battery to the starter and install the end cover.
3. Disconnect the jumper lead to the starter C terminal. Then the pinion gear should remain popped out.

### ⚠ CAUTION

- Never disconnect the jumper leads from the battery to the starter until the end cover has been replaced on the starter housing. Otherwise, the plunger may pop out like a bullet.