

09243-00020

Idle Adjusting Screw Wrench



TOYOTA  
89450-60010  
198600-5110  
DENSO JAPAN







#### 4. CHECK AND ADJUST CO CONCENTRATION AT IDLE

**NOTICE:** Always use a CO meter when adjusting the idle mixture. It is not necessary to adjust with the idle mixture screw in most vehicles if they are in good condition. If a CO meter is not available, DO NOT ATTEMPT TO ADJUST IDLE MIXTURE.

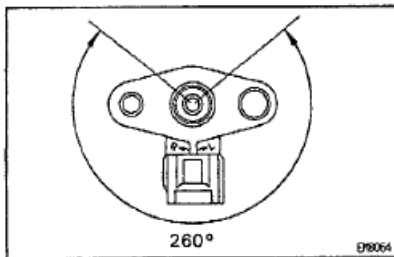
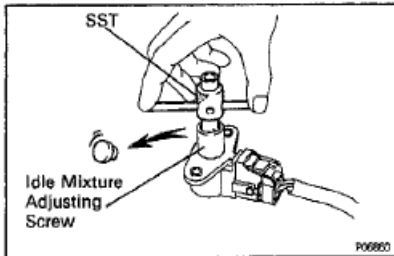
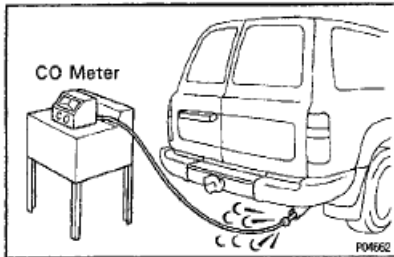
(a) Race the engine at 2,500 rpm for approx. 180 seconds.

(b) Insert a tester probe at least 40 cm (1.3 ft) into the tailpipe.

(c) Wait at least 1 minute before measuring to allow the concentration to stabilize. Complete the measuring within 3 minutes.

**Idle CO concentration:**

**1.5 ± 0.5 %**



If the CO concentration does not conform to regulations, adjust by turning the IDLE MIXTURE ADJUSTING SCREW in the variable resistor with SST. SST 09243-00020

**HINT:** The idle mixture adjusting screw can be tightened through on angle of 260°.

- If the CO concentration is within specification, this adjustment is complete.
- If the CO concentration cannot be corrected by idle mixture adjustment, see the table below for other possible causes.

#### Troubleshooting

CO	Phenomenon	Causes
High	Rough idle (Black smoke from exhaust)	1. Clogged air filter 2. Plugged PCV valve 3. Faulty EFI systems: <ul style="list-style-type: none"> <li>• Faulty pressure regulator</li> <li>• Clogged fuel return line</li> <li>• Defective water temperature sensor</li> <li>• Faulty engine ECU</li> <li>• Faulty injectors</li> <li>• Faulty throttle position sensor</li> <li>• Faulty air flow meter</li> </ul>

## Variable Resistor Circuit

### CIRCUIT DESCRIPTION

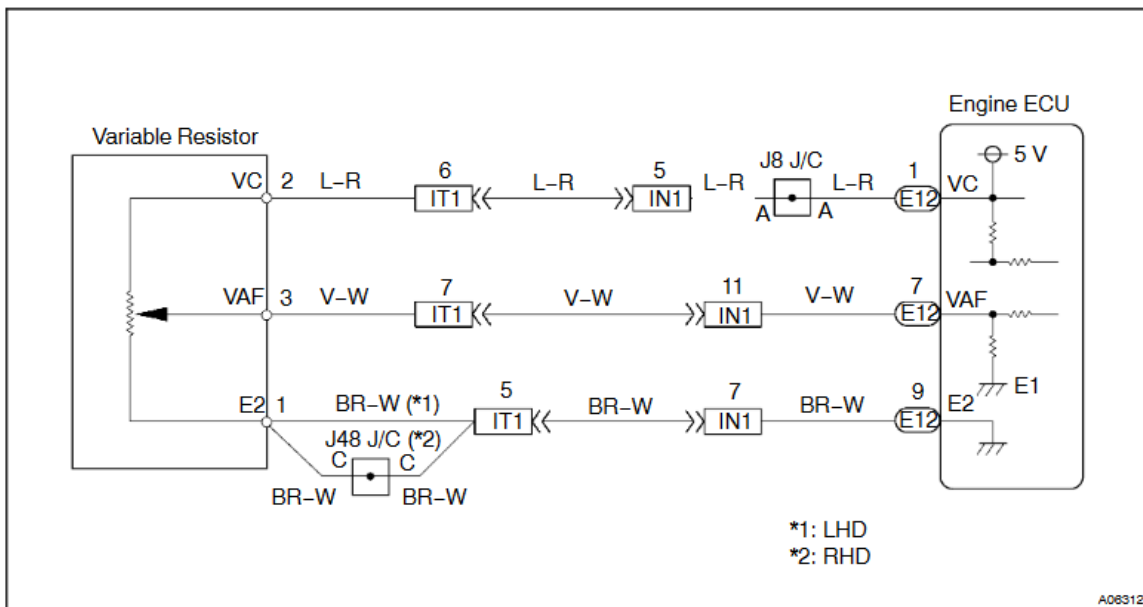
This resistor is used to change the air-fuel ratio of the air-fuel mixture.

The idle mixture is adjusted using this resistor.

Turning the idle mixture adjusting screw clockwise moves the contacts inside the resistor, raising terminal VAF voltage. Conversely, turning the screw counterclockwise lowers the terminal VAF voltage.

When the terminal VAF voltage rises, the engine ECU increases the injection volume slightly, making the air-fuel mixture a little richer.

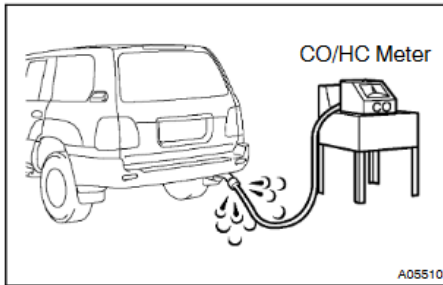
### WIRING DIAGRAM



**INSPECTION PROCEDURE****NOTICE:**

Always use a CO meter when adjusting the idle mixture. If a CO meter is not available, DO NOT ATTEMPT TO ADJUST IDLE MIXTURE.

<b>1</b>	<b>Check CO concentration.</b>
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**PREPARATION:**

- (a) Warm up engine to normal operating temperature.
- (b) All accessories switched OFF.
- (c) All vacuum lines properly connected.
- (d) Transmission in "N" position.
- (e) Connect the tachometer.
- (f) Ignition timing check correctly.
- (g) Idle speed check correctly.
- (h) Check that the CO meter is properly calibrated.
- (i) Race the engine at 2,500 rpm about 2 minutes.

**CHECK:**

Insert a tester probe at least 40 cm (1.3 ft) into the tailpipe. Measure the concentration with 1 - 3 minutes after racing the engine to allow the the concentration to stabilize.

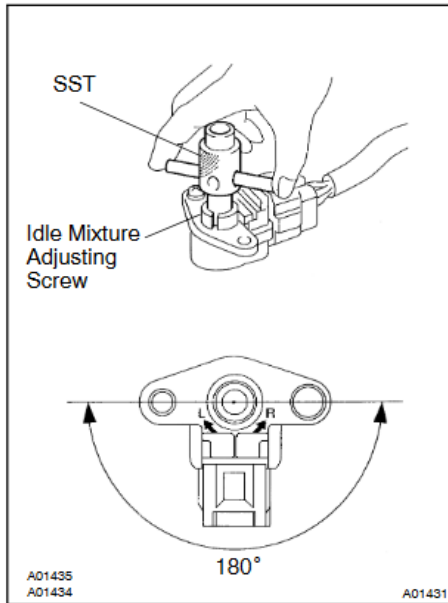
**OK:**

**Idle CO concentration: 1.0 - 2.0 %**

<b>OK</b>	<b>CO concentration is normal. Proceed to next circuit inspection shown problem symptom tables (See page DI-21).</b>
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<b>NG</b>
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## 2 Adjust CO concentration.

**PREPARATION:**

Same condition as step 1 of this chart.

**CHECK:**

Using SST, adjust the mixture by turning the idle mixture adjusting screw in the variable resistor.

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**RESULT:**

OK	CO concentration: 1.0 - 2.0 %
NG type I	Change in CO concentration
NG type II	No change in CO concentration

**HINT:**

Always check idle speed after turning the idle mixture adjusting screw. If it is incorrect, readjust idle speed.

Adjustable range of the idle mixture adjust to turn this screw is 180 degrees. Do not turn this screw more than it.

Type I

See page EM-1 and go on troubleshooting.

Type II

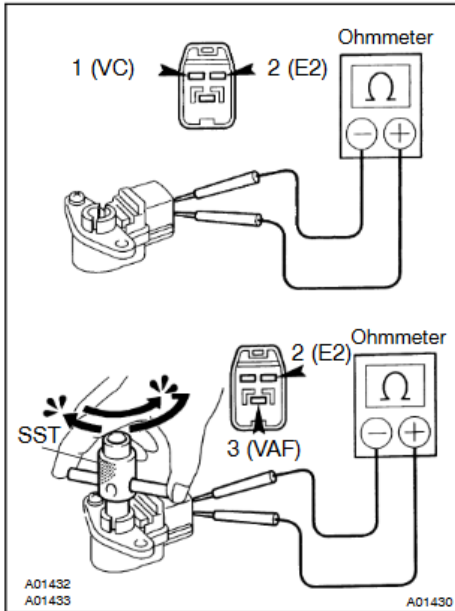
Go to step 3.

OK

Adjustment is complete.



### 3 Check resistance of variable resistor.



#### Check Resistance Between 1 and 2:

##### PREPARATION:

Disconnect the variable resistor connector.

##### CHECK:

Measure resistance between terminals 1 and 2 of the variable resistor.

##### OK:

**Resistance: 4 - 6 k $\Omega$**

#### Check Resistance Between 2 and 3:

##### CHECK:

Measure resistance between terminals 2 and 3 when turning the idle mixture adjusting screw fully clockwise and counter-clockwise using SST.

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##### OK:

**Resistance:**

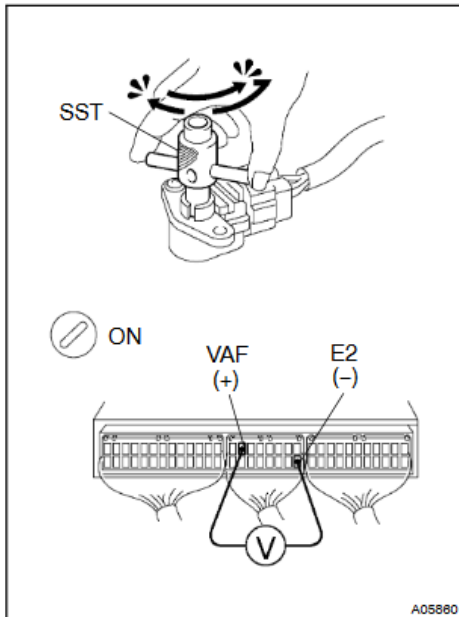
**Change from about 5 k $\Omega$  to 0 k $\Omega$  accordingly**

NG

**Replace variable resistor.**

OK

#### 4 Check voltage between terminals VAF and E2 of engine ECU connector.



#### **PREPARATION:**

- Reconnect the variable resistor connector.
- Remove the console box.
- Turn the ignition switch ON.

#### **CHECK:**

Measure voltage between terminals VAF and E2 of engine ECU connector while slowly turning the idle mixture adjusting screw first fully counterclockwise, and then fully clockwise, using SST.

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#### **OK:**

**Voltage changes smoothly from 0 V to about 5 V; i.e., does not suddenly jump up to 5 V or down to 0 V.**

OK

**Check and replace engine ECU.**