1994 ENGINE PERFORMANCE
Nissan On-Vehicle Adjustments
Pickup

ENGINE MECHANICAL

Before performing any on-vehicle adjustments to fuel or ignition systems, ensure engine mechanical condition is okay.

VALVE CLEARANCE

NOTE: All engines, except GA16DE and KA24DE, are equipped with hydraulic lifters. No adjustments are required.

VALVE CLEARANCE ADJUSTMENT TABLE

<table>
<thead>
<tr>
<th>Application</th>
<th>Hot - In. (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.6L (GA16DE Engine)</td>
<td></td>
</tr>
<tr>
<td>Intake</td>
<td>.008-.019 (.21-.49)</td>
</tr>
<tr>
<td>Exhaust</td>
<td>.012-.023 (.30-.58)</td>
</tr>
<tr>
<td>2.4L (KA24DE Engine)</td>
<td></td>
</tr>
<tr>
<td>Intake</td>
<td>.012-.015 (.30-.38)</td>
</tr>
<tr>
<td>Exhaust</td>
<td>.013-.016 (.33-.41)</td>
</tr>
</tbody>
</table>

IGNITION TIMING

4-CYLINDER IGNITION TIMING

1) Start engine and warm to normal operating temperature. Turn ignition off. Disconnect throttle position sensor harness connector.

2) Start engine. Increase engine speed to 2000 RPM, 2 or 3 times, then allow engine to return to idle. Engine should be operating smoothly at correct idle RPM. Check ignition timing. See 4-CYLINDER IGNITION TIMING table. See Fig. 1.

3) If ignition timing is incorrect, loosen hold-down bolt and turn distributor to adjust ignition timing. Turn ignition off and connect throttle position sensor harness connector. Recheck ignition timing.

4-CYLINDER IGNITION TIMING TABLE- (Degrees BTDC @ RPM)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pickup</td>
<td>8-12 @ 750-850</td>
<td>8-12 @ 750-850</td>
</tr>
</tbody>
</table>

(1) - Automatic transmission/transaxle in Neutral.
V6 IGNITION TIMING

1) Start engine and warm to normal operating temperature. Increase engine speed to 2000 RPM, 2 or 3 times, then allow engine to return to idle.

2) With engine correct idle RPM, check ignition timing. See V6 IGNITION TIMING table. See Fig. 2. If ignition timing is incorrect, loosen hold-down bolt and turn distributor to adjust ignition timing.
V6 IGNITION TIMING TABLE (Degrees BTDC @ RPM)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pickup</td>
<td>13-17 @ 700-800</td>
<td>13-17 @ 700-800</td>
</tr>
</tbody>
</table>

(1) - Automatic transmission/transaxle in Neutral.

IDLE SPEED & MIXTURE

NOTE: Mixture adjustment is NOT a normal tune-up procedure. DO NOT adjust unless mixture control unit is replaced or vehicle fails emissions tests. For ECM connector terminal identification, see Fig. 5.

4-CYLINDER IDLE SPEED

1) Start engine and warm to normal operating temperature. Turn ignition off. Disconnect Throttle Position (TP) sensor harness connector. Start engine.

2) Increase engine speed to 2000 RPM, 2 or 3 times, then allow engine to return to idle. Ensure ignition timing is set correctly. Check idle speed. See 4-CYLINDER IDLE SPEED & CO% LEVEL table.

3) If idle speed is incorrect, adjust idle speed by turning idle speed adjusting screw. See Fig. 3. With idle speed correctly set, turn ignition off. Reconnect TP sensor and recheck idle speed.

4-CYLINDER IDLE SPEED & CO% LEVEL TABLE

<table>
<thead>
<tr>
<th>Application</th>
<th>(1) Idle RPM</th>
<th>(2) Idle RPM</th>
<th>(3) CO Level (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pickup</td>
<td>(4) 650-750</td>
<td>(4) 600-700</td>
<td>(5) 5</td>
</tr>
</tbody>
</table>

(1) - With throttle position sensor connected.
(2) - With throttle position sensor disconnected.
(3) - Measured in self-diagnostic mode.
(4) - Automatic transmission/transaxle in Neutral.
(5) - Maximum CO% level.

Fig. 3: Adjusting Idle Speed (Pickup 4-Cylinder)
Courtesy of Nissan Motor Co., U.S.A.
1) Start engine and warm to normal operating temperature. Run engine at 2000 RPM for 2 minutes. Perform self-diagnostics. See G - TESTS W/CODES - 2.4L article in the ENGINE PERFORMANCE section.

2) Locate ECM. See ECM LOCATIONS table. With idle speed and ignition timing correctly set, increase engine speed to 2000 RPM for 2 minutes. If Green LED on ECM does not go on and off more than 5 times during a 10 second period, go to step 4).

3) If Green LED goes on and off more than 5 times during a 10 second period, enter and set self-diagnostics system to Mode II. Red and Green LEDs on ECM should blink simultaneously. If both LEDs blink, idle mixture is correct. If both LEDs do not blink simultaneously, go to step 6).

4) Turn off engine. Disconnect negative battery cable. Disconnect oxygen sensor and ECM wiring harness connector. Using a jumper wire, ground oxygen sensor wiring harness connector. Check continuity between terminal No. 19 of ECM wiring harness connector and ground.

5) If continuity exists, remove jumper wire. Reconnect ECM and go to next step. If no continuity exists, repair wiring harness. After repairs, reconnect negative battery cable. Recheck idle speed and ignition timing.


7) Start engine and warm to normal operating temperature. Increase engine speed to 2000 RPM, 2 or 3 times and return to idle. Check CO% level at idle speed. See 4-CYLINDER IDLE SPEED & CO% LEVEL table under 4-CYLINDER IDLE SPEED. Remove 2500-ohm resistor from engine coolant temperature sensor wiring harness and reconnect sensor.

8) If CO% level is incorrect, go to next step. If CO% level is correct, replace oxygen sensor. Start engine and increase engine speed to 2000 RPM. Ensure Green LED on ECM goes on and off more than 5 times during a 10 second period with engine running at 2000 RPM. If Green LED does not perform as indicated, go to next step.

9) Ensure all components and wiring harness connectors are connected. Perform self-diagnostics. See G - TESTS W/CODES - 2.4L article in the ENGINE PERFORMANCE section. If no fault codes are present, check fuel pressure, airflow meter, injectors and engine coolant temperature sensor for faults. If all systems are operating correctly but idle CO% level is still incorrect, replace ECM.

ECM LOCATIONS TABLE

<table>
<thead>
<tr>
<th>Application</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pickup</td>
<td>Under Passenger Seat</td>
</tr>
</tbody>
</table>

V6 IDLE SPEED

V6 IDLE SPEED & CO% LEVEL TABLE

<table>
<thead>
<tr>
<th>Application</th>
<th>(1) Idle RPM</th>
<th>(2) Idle RPM</th>
<th>(3) CO Level (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto. Trans.</td>
<td>(4) 700-800</td>
<td>(4) 700</td>
<td>0.2-8.0</td>
</tr>
<tr>
<td>Man. Trans.</td>
<td>700-800</td>
<td>700</td>
<td>0.2-8.0</td>
</tr>
</tbody>
</table>

(1) - With Auxiliary Air Control (AAC) valve connected.
(2) - With Auxiliary Air Control (AAC) valve disconnected.
(3) - Measured in Self-Diagnostic Mode II.
(4) - Automatic transmission/transaxle in Neutral.
1) Start engine and warm to normal operating temperature. Increase engine speed to 2000 RPM, 2 or 3 times and return to idle.
2) With ignition timing correctly set, check idle speed (automatic transmission in Neutral). See V6 IDLE SPEED & CO% LEVEL table. If idle speed is incorrect, turn ignition off. Disconnect IACV-AAC valve wiring harness connector.
3) Adjust idle speed by turning idle speed adjusting screw. See Figs. 4. Reconnect (AAC) valve harness connector. Start engine and increase engine speed to 2000 RPM, 2 or 3 times and return to idle. Recheck idle speed to ensure correct setting.

Fig. 4: Locating Idle Speed Adjusting Screw (Pickup V6)
Courtesy of Nissan Motor Co., U.S.A.

V6 IDLE MIXTURE

NOTE: No idle mixture adjustment procedure is available. If the following tests determine idle mixture is incorrect, a faulty component is responsible and must be replaced.

1) Start engine and warm to normal operating temperature. With idle speed and timing correctly set, enter Mode II of vehicle’s self-diagnostic system. See G - TESTS W/ CODES - 3.0L article in the ENGINE PERFORMANCE section.
2) Start engine. Increase engine speed to 2000 RPM for 2 minutes. Ensure MIL goes on and off more than 5 times during a 10 second period. If MIL operates as indicated, idle mixture is correct. If MIL does not operate as indicated, go to next step.
3) Turn ignition off. Disconnect negative battery cable. Disconnect oxygen sensor and ECM wiring harness connector. Using a
jumper wire, ground center terminal of oxygen sensor wiring harness connector.

4) Check continuity between terminal No. 19 of ECM wiring harness connector and ground. If no continuity exists, repair or replace wiring harness. Reconnect negative battery cable. Repeat idle speed and ignition timing adjustment procedures and check idle mixture.

5) If continuity exists, remove oxygen sensor jumper wire and reconnect ECM. Disconnect engine coolant temperature sensor connector. Connect a 2500-ohm resistor to engine coolant temperature sensor wiring harness.

6) Reconnect negative battery cable. Start engine. Increase engine speed to 2000 RPM, 2 or 3 times, then allow engine to return to idle. Check idle mixture (CO% level). See V6 IDLE SPEED & CO% LEVEL table under V6 IDLE SPEED.

7) If idle mixture (CO% level) is incorrect, go to next step. If idle mixture (CO% level) is correct, replace oxygen sensor. Ensure Green LED on ECM goes on and off more than 5 times during a 10 second period with engine running at 2000 RPM. If LED does not turn on and off as specified, go to next step.

8) Reconnect oxygen sensor. Perform self-diagnostics. See G - TESTS W/CODES - 3.0L article in the ENGINE PERFORMANCE section. If no fault codes are present, check fuel pressure, airflow meter, injectors and engine coolant temperature sensor for faults. If all systems are operating correctly but idle CO% level is still incorrect, replace ECM.

Fig. 5: ECM Conn. Terminal ID - As Viewed From Wiring Harness Side
Courtesy of Nissan Motor Co., U.S.A.

THROTTLE POSITION SENSOR & THROTTLE SWITCH ADJUSTMENT

THROTTLE POSITION (TP) SENSOR (4-CYLINDER ENGINE)

NOTE: Faults in TP sensor circuit may set Code 43. To test system, see CODE 43 diagnostic procedure in G - TESTS W/CODES - 2.4L article in the ENGINE PERFORMANCE section.

Turn ignition off. Ensure TP sensor wiring harness connector is securely connected. Adjust TP sensor by loosening mounting bolts and rotating sensor body until output voltage is within specification. See 4-CYLINDER TP SENSOR VOLTAGE table. See Fig. 6.

4-CYLINDER TP SENSOR VOLTAGE TABLE (1)

<table>
<thead>
<tr>
<th>Application</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pickup</td>
<td>.40-.60</td>
</tr>
</tbody>
</table>

(1) - Voltage is measured at wiring harness side with TP sensor connected and ignition switch in the ON position.
THROTTLE POSITION (TP) SENSOR (V6 ENGINES)

NOTE: TP sensor is not adjustable, however, faults in TPS circuit may set Code 43. To test system, see CODE 43 diagnostic procedure in G - TESTS W/CODES - 3.0L article in the ENGINE PERFORMANCE section.

THROTTLE POSITION SWITCH (V6 ENGINES)

Disconnect idle switch. Connect ohmmeter between center and outer terminals. Check idle switch off/on speed, while closing throttle valve. Idle switch should turn on at 100-400 RPM. If idle switch does not perform as indicated, loosen idle switch hold-down screws and rotate switch body to set off/on speed to specification.