H - TESTS W/O CODES

1990 Nissan 240SX

1990 ENGINE PERFORMANCE
Trouble Shooting - No Codes

Nissan; 240SX, Axxess, Maxima, Pathfinder, Pickup, Pulsar, Sentra, Van,

INTRODUCTION

Before diagnosing symptoms or intermittent faults, perform steps in F - BASIC TESTING and G - TESTS W/CODES articles. Use this article to diagnose driveability problems existing when a hard fault code is not present or vehicle is not equipped with a self-diagnostic system.

NOTE: Some driveability problems may have been corrected by manufacturer with a revised computer calibration chip or computer control unit. Check with manufacturer for latest chip or computer application.

Symptom checks can direct the technician to malfunctioning component(s) for further diagnosis. A symptom should lead to a specific component test, system test or an adjustment.

Use intermittent test procedures to locate driveability problems that DO NOT occur when the vehicle is being tested. These test procedures should also be used if a soft (intermittent) trouble code was present, but no problem was found during self-diagnostic testing.

NOTE: For specific testing procedures, see I - SYSTEM/COMP TESTS article. For specifications, see D - ADJUSTMENTS or C - SPECIFICATIONS article.

TROUBLE SHOOTING

SYMPTOMS DIAGNOSIS

Symptom checks cannot be used properly unless the problem occurs while vehicle is being tested. To reduce diagnostic time, ensure steps in F - BASIC TESTING and G - TESTS W/CODES articles were performed before diagnosing a symptom. Symptoms available for diagnosis include the following:

* Will not start - No combustion, partial combustion (not affected by throttle combustion), partial combustion (affected by throttle position)
* Hard to start - Before warm-up, after warm-up, at all times, high humidity (damp)
* Abnormal idling - No fast Idle, low idle after warm-up, high idle after warm-up
* Unstable idling - Before warm-up, after warm-up
* Poor driveability - Stumble on acceleration, surge while cruising, lack of power, detonation
* Engine stall - During start-up, idling, accelerating, cruising, decelerating or after stopping, engine loaded
* Backfire - Intake, exhaust

WILL NOT START

NO COMBUSTION

1) Monitor vehicle's tachometer while cranking engine (at least 250 RPM).
2) Check fuel pump operation. See appropriate FUEL PUMP diagnostic chart in I - SYSTEM/COMP TESTS article. Use DIAGNOSTIC CHARTS DIRECTORY table in I - SYSTEM/COMP TESTS article to locate chart.
3) Perform appropriate INJECTOR MALFUNCTION diagnostic chart in I - SYSTEM/COMP TESTS article. Use DIAGNOSTIC CHARTS DIRECTORY table in I - SYSTEM/COMP TESTS article to locate chart.
4) Connect inductive timing light to spark plug wire and check for weakness in flash.
5) Ensure spark plug wires are within allowable resistance values.
6) Check for spark using spark tester.
7) For Code 11: Enter self-diagnostic Mode III and retrieve codes. If vehicle will not start, crank engine before entering self-diagnostic Mode III.

PARTIAL COMBUSTION (NOT AFFECTED BY THROTTLE POSITION)

1) Monitor vehicle's tachometer while cranking engine (at least 250 RPM).
2) Check fuel pump operation. See appropriate FUEL PUMP diagnostic chart in I - SYSTEM/COMP TESTS article. Use DIAGNOSTIC CHARTS DIRECTORY table in I - SYSTEM/COMP TESTS article to locate chart.
3) Perform appropriate INJECTOR MALFUNCTION diagnostic chart in I - SYSTEM/COMP TESTS article. Use DIAGNOSTIC CHARTS DIRECTORY table in I - SYSTEM/COMP TESTS article to locate chart.
4) Remove vacuum hose from fuel pressure regulator. Apply vacuum and pressure and monitor symptom change.
5) Ensure fuel pressure is within specification.
6) Ensure ignition timing is within specification.
7) Inspect throttle body ports and valves for deposits, wear or plugging. Clean or replace as necessary.
8) Check vacuum supply to vacuum hose of fuel pressure regulator. Ensure hose is not plugged. Perform FUEL PRESSURE REGULATOR SOLENOID diagnostic chart (if equipped) in I - SYSTEM/COMP TESTS article. Use DIAGNOSTIC CHARTS DIRECTORY table in I - SYSTEM/COMP TESTS article to locate chart.
9) Remove vacuum hose from fuel pressure regulator and monitor for symptom change.
10) Connect inductive timing light to spark plug wire and check for weakness in flash.
11) Ensure spark plug wires are within allowable resistance values.
12) Check for spark using spark tester.
13) For Starter Signal: Enter self-diagnostic Mode IV and perform appropriate switch tests.
14) For Coolant Temp & Crank Angle Sensor: Enter self-diagnostic Mode III and retrieve codes. If vehicle will not start, crank engine before entering self-diagnostic Mode III.
15) If Equipped: Perform AIR REGULATOR diagnostic chart in I - SYSTEM/COMP TESTS article. Use DIAGNOSTIC CHARTS DIRECTORY table in I - SYSTEM/COMP TESTS article to locate chart.

PARTIAL COMBUSTION (AFFECTED BY THROTTLE POSITION)

1) Monitor vehicle's tachometer while cranking engine (at least 250 RPM).
2) Check fuel pump operation. See appropriate FUEL PUMP

diagnostic chart in I - SYSTEM/COMP TESTS article. Use DIAGNOSTIC CHARTS DIRECTORY table in I - SYSTEM/COMP TESTS article to locate chart.

3) Perform appropriate INJECTOR MALFUNCTION diagnostic chart in I - SYSTEM/COMP TESTS article. Use DIAGNOSTIC CHARTS DIRECTORY table in I - SYSTEM/COMP TESTS article to locate chart.

4) Remove vacuum hose from fuel pressure regulator. Apply vacuum and pressure and monitor symptom change.

5) Ensure fuel pressure is within specification.

6) Ensure ignition timing is within specification.

7) Inspect throttle body ports and valves for deposits, wear or plugging. Clean or replace as necessary.

8) Check fast idle cam.

9) Check idle speed control circuit. See IDLE CONTROL SYSTEM in I - SYSTEM/COMP TESTS article.

10) Enter self-diagnostic Mode III and retrieve codes. If vehicle will not start, crank engine before entering self-diagnostic Mode III.

11) For Coolant Temp Sensor, Idle Switch & Inhibit Switch: Enter self-diagnostic Mode V and monitor real-time diagnostic setting of fault codes. Perform appropriate code chart in G - TESTS W/CODES article.

HARD TO START

BEFORE WARM-UP

1) Monitor vehicle's tachometer while cranking engine (at least 250 RPM).

2) Ensure battery is fully charged and maintains at least 9.6 volts while cranking.

3) Check fast idle cam.

4) Check idle speed control circuit. See IDLE CONTROL SYSTEM in I - SYSTEM/COMP TESTS article.

5) For Crank Signal & Idle Switch: Enter self-diagnostic Mode IV & perform appropriate switch tests.

6) For Coolant Temperature Sensor: Enter self-diagnostic Mode III & retrieve codes. If vehicle will not start, crank engine before entering self-diagnostic Mode III.

AFTER WARM-UP

1) Monitor vehicle's tachometer while cranking engine (at least 250 RPM).

2) Ensure battery is fully charged and maintains at least 9.6 volts while cranking.

3) Cool fuel lines with wet rags and try to start engine (vapor lock).

4) For Coolant Temperature Sensor & Airflow Meter: Enter self-diagnostic Mode III and retrieve codes. If vehicle will not start, crank engine before entering self-diagnostic Mode III.

5) For Crank Signal: Enter self-diagnostic Mode IV and perform appropriate switch tests.

6) Check vacuum supply to vacuum hose of fuel pressure regulator. Ensure hose is not plugged. Perform FUEL PRESSURE REGULATOR SOLENOID diagnostic chart (if equipped) in I - SYSTEM/COMP TESTS article. Use DIAGNOSTIC CHARTS DIRECTORY table in I - SYSTEM/COMP TESTS article to locate chart.

AT ALL TIMES

1) Check fuel pump operation. See appropriate FUEL PUMP

diagnostic chart in I - SYSTEM/COMP TESTS article. Use DIAGNOSTIC CHARTS DIRECTORY table in I - SYSTEM/COMP TESTS article to locate chart.

2) Monitor vehicle's tachometer while cranking engine (at least 250 RPM).

3) Ensure battery is fully charged and maintains at least 9.6 volts while cranking.

4) Advance and retard timing while attempting to start engine.

5) Check canister purge hoses for leaks.

6) Remove vacuum hose from fuel pressure regulator and monitor for symptom change.

7) Ensure fuel pressure is within specification.

8) Connect inductive timing light to spark plug wire and check for weakness in flash.

9) Ensure spark plug wires are within allowable resistance values.

10) Check spark plug for improper gap or fouling.

11) Check for spark using spark tester.

HUMIDITY HIGH (DAMP)

1) Connect inductive timing light to spark plug wire and check for weakness in flash.

2) Ensure spark plug wires are within allowable resistance values.

3) Dry distributor and/or ignition coil and attempt to start engine.

4) Check spark plug for improper gap or fouling.

5) Check for spark using spark tester.

ABNORMAL IDLING

NO FAST IDLE

1) Check fast idle cam.

2) If Equipped: Perform AIR REGULATOR diagnostic chart in I - SYSTEM/COMP TESTS article. Use DIAGNOSTIC CHARTS DIRECTORY table in I - SYSTEM/COMP TESTS article to locate chart.

3) Check blow-by hose for clogging.

4) Ensure ignition timing is within specification.

5) Remove vacuum hose from fuel pressure regulator. Apply vacuum and pressure and monitor symptom change.

6) For Coolant Temperature Sensor: Enter self-diagnostic Mode III & retrieve codes. If vehicle will not start, crank engine before entering self-diagnostic Mode III.

LOW IDLE AFTER WARM-UP

1) Ensure ignition timing is within specification.

2) Check blow-by hose for clogging.

3) Inspect throttle body ports and valves for deposits, wear or plugging. Clean or replace as necessary.

4) Remove vacuum hose from fuel pressure regulator. Apply vacuum and pressure and monitor symptom change.

5) Enter self-diagnostic Mode III and retrieve codes. If vehicle will not start, crank engine before entering self-diagnostic Mode III.

6) For Airflow Meter & Coolant Temperature Sensor: Enter self-diagnostic Mode V and monitor real-time diagnostic setting of fault codes. Perform appropriate code chart in G - TESTS W/CODES article.

HIGH IDLE AFTER WARM-UP

5, 19, 11, 39 or 37 (if equipped), 3, 28, 1, 20, 35 34

1) Ensure ignition timing is within specification.
2) Ensure there are no vacuum leaks into intake system.
3) Check idle speed control circuit. See IDLE CONTROL SYSTEM in I - SYSTEM/COMP TESTS article.
4) Check fast idle cam.
5) If Equipped: Perform AIR REGULATOR diagnostic chart in I - SYSTEM/COMP TESTS article. Use DIAGNOSTIC CHARTS DIRECTORY table in I - SYSTEM/COMP TESTS article to locate chart.
6) Inspect throttle body ports and valves for deposits, wear or plugging. Clean or replace as necessary.
7) Remove vacuum hose from fuel pressure regulator and monitor for symptom change.
8) Ensure fuel pressure is within specification.
9) Check fast idle system. See IDLE CONTROL SYSTEM in I - SYSTEM/COMP TESTS article.
10) For Idle Switch: Enter self-diagnostic Mode IV and perform appropriate switch tests.
11) For Coolant Temp Sensor, Crank Angle Sensor & Airflow Meter: Enter self-diagnostic Mode III and retrieve codes. If vehicle will not start, crank engine before entering self-diagnostic Mode III.

UNSTABLE IDLING

BEFORE WARM-UP

1) Ensure ignition timing is within specification.
2) Check fast idle cam.
3) If Equipped: Perform AIR REGULATOR diagnostic chart in I - SYSTEM/COMP TESTS article. Use DIAGNOSTIC CHARTS DIRECTORY table in I - SYSTEM/COMP TESTS article to locate chart.
4) Remove vacuum hose from fuel pressure regulator. Apply vacuum and pressure and monitor symptom change.
5) Check idle speed control circuit. See IDLE CONTROL SYSTEM in I - SYSTEM/COMP TESTS article.
6) Check EGR control valve operation.
7) Check EGR control valve solenoid operation.
8) Enter self-diagnostic Mode III and retrieve codes. If vehicle will not start, crank engine before entering self-diagnostic Mode III.

AFTER WARM-UP

1) Check blow-by hose for clogging.
2) Ensure there are no vacuum leaks into intake system.
3) Check canister purge hoses for leaks.
4) Check vacuum supply to vacuum hose of fuel pressure regulator. Ensure hose is not plugged. Perform FUEL PRESSURE REGULATOR SOLENOID diagnostic chart (if equipped) in I - SYSTEM/COMP TESTS article. Use DIAGNOSTIC CHARTS DIRECTORY table in I - SYSTEM/COMP TESTS article to locate chart.
5) Connect inductive timing light to spark plug wire and check for weakness in flash.
6) Ensure spark plug wires are within allowable resistance values.
7) Check for spark using spark tester.
8) Ensure ignition timing is within specification.
9) Ensure engine has adequate compression.

10) Check EGR control valve operation.
11) Check EGR control valve solenoid operation.
12) For Idle Switch: Enter self-diagnostic Mode IV and perform appropriate switch tests.

POOR DRIVEABILITY

STUMBLE ON ACCELERATION

1) Connect inductive timing light to spark plug wire and check for weakness in flash.
2) Ensure spark plug wires are within allowable resistance values.
3) Check for spark using spark tester.
4) Ensure there are no vacuum leaks into intake system.
5) For Idle Switch: Enter self-diagnostic Mode IV and perform appropriate switch tests.
6) Remove vacuum hose from fuel pressure regulator and monitor for symptom change.
7) Ensure fuel pressure is within specification.
8) For Airflow Meter & O2 Sensor: Enter self-diagnostic Mode III and retrieve codes. If vehicle will not start, crank engine before entering self-diagnostic Mode III.
9) For Airflow Meter & O2 Sensor: Enter self-diagnostic Mode V and monitor real-time diagnostic setting of fault codes. Perform appropriate code chart in G - TESTS W/CODES article.
10) Disconnect exhaust gas sensor and monitor change in driveability. If it improves, replace sensor. If not, go to 11.
11) Enter self-diagnostic Mode II and monitor fuel metering system operation.

SURGE WHILE CRUISING

1) Ensure there are no vacuum leaks into intake system.
2) Ensure ignition timing is within specification.
3) Check EGR control valve operation.
4) Check EGR control valve solenoid operation.
5) Remove vacuum hose from fuel pressure regulator and monitor for symptom change.
6) Ensure fuel pressure is within specification.
7) For Idle Switch: Enter self-diagnostic Mode IV and perform appropriate switch tests.
8) For Crank Angle Sensor, Airflow Meter, Ignition Signal & Exhaust Gas Sensor: Center self-diagnostic Mode III and retrieve codes. If vehicle will not start, crank engine before entering self-diagnostic Mode III.
9) For Crank Angle Sensor, Airflow Meter, Ignition Signal & Exhaust Gas Sensor: Enter self-diagnostic Mode V and monitor real-time diagnostic setting of fault codes. Perform appropriate code chart in G - TESTS W/CODES article.
10) Disconnect exhaust gas sensor and monitor change in driveability. If it improves, replace sensor. If not, go to 11.
11) Enter self-diagnostic Mode II and monitor fuel metering system operation.

LACK OF POWER

1) Check air filter for restriction.
2) Ensure ignition timing is within specification.
3) Inspect throttle body ports and valves for deposits, wear or plugging. Clean or replace as necessary.
4) Connect inductive timing light to spark plug wire and

check for weakness in flash.
5) Ensure engine has adequate compression.
6) Ensure spark plug wires are within allowable resistance values.
7) Check for spark using spark tester.
8) Remove vacuum hose from fuel pressure regulator and monitor for symptom change.
9) Ensure fuel pressure is within specification.
10) For Airflow Meter: Enter self-diagnostic Mode III and retrieve codes. If vehicle will not start, crank engine before entering self-diagnostic Mode III.
11) For Airflow Meter: Enter self-diagnostic Mode V and monitor real-time diagnostic setting of fault codes. Perform appropriate code chart in G - TESTS W/CODES article.
12) Disconnect exhaust gas sensor and monitor change in driveability. If it improves, replace sensor. If not, go to 14.
13) If Equipped: Perform POWER VALVE or SWIRL CONTROL VALVE diagnostic chart in I - SYSTEM/COMP TESTS article. Use DIAGNOSTIC CHARTS DIRECTORY table in I - SYSTEM/COMP TESTS article to locate appropriate chart.
14) Enter self-diagnostic Mode II and monitor fuel metering system operation.

DETONATION

1) Check for proper cooling system operation.
2) Ensure ignition timing is within specification.
3) Remove vacuum hose from fuel pressure regulator and monitor for symptom change.
4) Ensure fuel pressure is within specification.
5) For Crank Angle Sensor & Airflow Meter: Enter self-diagnostic Mode III and retrieve codes. If vehicle will not start, crank engine before entering self-diagnostic Mode III.
6) For Crank Angle Sensor & Airflow Meter: Enter self-diagnostic Mode V and monitor real-time diagnostic setting of fault codes. Perform appropriate code chart in G - TESTS W/CODES article.

ENGINE STALL

DURING START-UP

1) Ensure ignition timing is within specification.
2) Inspect throttle body ports and valves for deposits, wear or plugging. Clean or replace as necessary.
3) Connect inductive timing light to spark plug wire and check for weakness in flash.
4) Ensure spark plug wires are within allowable resistance values.
5) Check for spark using spark tester.
6) Ensure engine has adequate compression.
7) Remove canister purge line from intake and test drive vehicle.
8) Remove vacuum hose from fuel pressure regulator. Apply vacuum and pressure and monitor symptom change.
9) Disconnect exhaust gas sensor and monitor change in driveability. If it improves, replace sensor. If not, go to 10.
10) Enter self-diagnostic Mode II and monitor fuel metering system operation.

IDLING

1) Remove vacuum hose from fuel pressure regulator and

monitor for symptom change.
2) Ensure fuel pressure is within specification.
3) Ensure idle speed is within specification.
4) Connect inductive timing light to spark plug wire and check for weakness in flash.
5) Check spark plug for improper gap or fouling.
6) Check idle speed control circuit. See IDLE CONTROL SYSTEM in I - SYSTEM/COMP TESTS article.
7) Check fast idle system. See IDLE CONTROL SYSTEM in I - SYSTEM/COMP TESTS article.
8) For Idle Switch: Enter self-diagnostic Mode IV and perform appropriate switch tests.

ACCELERATING

1) Connect inductive timing light to spark plug wire and check for weakness in flash.
2) Ensure spark plug wires are within allowable resistance values.
3) Check for spark using spark tester.
4) Ensure engine has adequate compression.
5) Enter self-diagnostic Mode II and monitor fuel metering system operation.
6) Disconnect exhaust gas sensor and monitor change in driveability. If it improves, replace sensor. If not, go to 5.
7) For Crank Angle Sensor & Airflow Meter: Enter self-diagnostic Mode III and retrieve codes. If vehicle will not start, crank engine before entering self-diagnostic Mode III.
8) For Crank Angle Sensor & Airflow Meter: Enter self-diagnostic Mode V and monitor real-time diagnostic setting of fault codes. Perform appropriate code chart in G - TESTS W/CODES article.

CRUISING

1) At 1000-2000 RPM: Connect inductive timing light to spark plug wire and check for weakness in flash.
2) Ensure spark plug wires are within allowable resistance values.
3) Check for spark using spark tester.
4) Enter self-diagnostic Mode II and monitor fuel metering system operation.
5) Disconnect exhaust gas sensor and monitor change in driveability. If it improves, replace sensor. If not, go to 4.
6) For Airflow Meter & Crank Angle Sensor: Enter self-diagnostic Mode III and retrieve codes. If vehicle will not start, crank engine before entering self-diagnostic Mode III.
7) For Airflow Meter & Crank Angle Sensor: Enter self-diagnostic Mode V and monitor real-time diagnostic setting of fault codes. Perform appropriate code chart in G - TESTS W/CODES article.

DECELERATING OR AFTER STOPPING

1) While Decelerating: Connect inductive timing light to spark plug wire and check for weakness in flash.
2) For Ignition & Crank Angle Sensor: Enter self-diagnostic Mode V and monitor real-time diagnostic setting of fault codes. Perform appropriate code chart in G - TESTS W/CODES article.
3) Ensure idle speed is within specification.
4) Check idle speed control circuit. See IDLE CONTROL SYSTEM in I - SYSTEM/COMP TESTS article.
5) Enter self-diagnostic Mode II and monitor fuel metering system operation.
6) Disconnect exhaust gas sensor and monitor change in

driveability. If it improves, replace sensor. If not, go to 5.

ENGINE LOADED

1) Ensure idle speed is within specification.
2) Ensure ignition timing is within specification.
3) Check idle speed control circuit. See IDLE CONTROL SYSTEM in I - SYSTEM/COMP TESTS article.
4) Check fast idle system. See IDLE CONTROL SYSTEM in I - SYSTEM/COMP TESTS article.
5) For Idle Switch: Enter self-diagnostic Mode IV and perform appropriate switch tests.

BACKFIRE

INTAKE

1) Ensure there are no vacuum leaks into intake system.
2) Ensure ignition timing is within specification.
3) Remove vacuum hose from fuel pressure regulator and monitor for symptom change. (Clean injector if improves).
4) Enter self-diagnostic Mode II and monitor fuel metering system operation.
5) Disconnect exhaust gas sensor and monitor change in driveability. If it improves, replace sensor. If not, go to 4.
6) For Airflow Meter: Enter self-diagnostic Mode III and retrieve codes. If vehicle will not start, crank engine before entering self-diagnostic Mode III.
7) For Airflow Meter: Enter self-diagnostic Mode V and monitor real-time diagnostic setting of fault codes. Perform appropriate code chart in G - TESTS W/CODES article.

EXHAUST

1) Check air filter for restriction.
2) Remove vacuum hose from fuel pressure regulator. Apply vacuum and pressure and monitor symptom change.
3) Enter self-diagnostic Mode II and monitor fuel metering system operation.
4) For Idle Switch: Enter self-diagnostic Mode IV and perform appropriate switch tests.
5) For Ignition Signal: Enter self-diagnostic Mode V and monitor real-time diagnostic setting of fault codes. Perform appropriate code chart in G - TESTS W/CODES article.
6) Check air injection valve. See AIR INJECTION under EMISSION SYSTEMS & SUB-SYSTEMS in I - SYSTEM/COMP TESTS article.
7) Check air injection valve solenoid.

INTERMITTENT PROBLEM DIAGNOSIS

Intermittent fault testing requires duplicating circuit or component failure to identify the problem. These procedures may lead to the computer setting a fault code (on some systems) which may help in diagnosis.

If problem vehicle does not produce fault codes, monitor voltage or resistance values using a DVOM while attempting to reproduce conditions causing intermittent fault. A status change on DVOM indicates a fault has been located.

Use a DVOM to pinpoint faults. When monitoring voltage, ensure ignition is in ON position, or engine is running. Ensure ignition is in OFF position or negative battery cable is disconnected

when monitoring circuit resistance. Status changes on DVOM during test procedures indicate area of fault.

TEST PROCEDURES

Five different diagnostic modes are available through the ECCS. Diagnostic Mode I and Mode II monitor air/fuel mixture ratio using LED inspection lights. Mode III is the self-diagnostic system and is used to obtain trouble codes for component or circuit failures. Mode IV monitors for malfunction(s) in the system's on-off control switches. Mode V is the real-time diagnostic system; it monitors the system and its components during actual driving, usually to simulate intermittent condition.

NOTE: For additional information on self-diagnostic system, see the G - TESTS W/CODES article.

MODE V

Mode detects problems when system is active. The moment a malfunction is detected, the Red LED and Green LED on the side of ECU will display the malfunction code.

1) While operating the vehicle in self-diagnostic Mode V, observe the inspection lights. Operate vehicle under conditions which malfunction or intermittent seems to occur.
2) If malfunction code is indicated, repair related circuit for intermittent problem. If no intermittent fault is indicated, go to INTERMITTENT SIMULATION.

INTERMITTENT SIMULATION

To reproduce the conditions creating an intermittent fault, use the following methods.

* Lightly vibrate component.
* Heat component.
* Wiggle or bend wiring harness.
* Spray component with water.
* Remove/apply vacuum source.

Monitor circuit/component voltage or resistance while simulating intermittent. If engine is running, monitor for self-diagnostic codes. Use test results to identify a faulty component or circuit.