1981 Jeep 4 Tune-Up

TUNE-UP

ENGINE IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER CODE

Engine can be identified by the 4th digit of the Vehicle Identification Number (VIN), which is stamped on a plate attached to top left corner of instrument panel.

VIN Engine Code

Application	Code
2.5L (151") 2-Bbl.	B

ENGINE IDENTIFICATION NUMBER CODE

Engine code is stamped into a pad on the left rear upper corner of the engine block. On engines built for sale in Georgia and Tennessee, a second code number is stamped into the left rear flange.

TUNE-UP NOTES

NOTE – *In order to comply with emission standards, specifications shown on engine compartment emission control tune-up decal must be used in all instances.*

CAUTION – *When performing tune-up on vehicles equipped with catalytic converters, do not allow or create a condition of engine misfire in more than 1 cylinder for an extended period of time. Damage to converter may occur due to loading converter with unburned air/fuel mixture.*

ENGINE COMPRESSION

Compression Ratio	8.2:1
Compression Pressure	140 psi
Maximum Variation Between Cylinders	30 psi

Check compression pressure with engine at normal operating temperature, all spark plugs removed, and throttle and choke valves wide open.

VALVE CLEARANCE

Hydraulic Lifters	Zero Lash

VALVE ARRANGEMENT

I-E-I-E-E-I-E-I

SPARK PLUGS

Application	Gap (In.)	Torque (Ft. Lbs.)
All Models	.060	7-15

Spark Plug Type

Application	AC No.
All Models	R44TSX

HIGH TENSION WIRE RESISTANCE

Do not puncture spark plug wires with any type of probe. Remove spark plug wire and check resistance using an ohmmeter.

Resistance (Ohms)

Wire Length	Minimum	Maximum
0-15"	3000	10,000
15-25"	4000	15,000
25-35"	6000	20,000
Over 35"	8000	25,000

DISTRIBUTOR

All models are equipped with a Delco High Energy Ignition system distributor and no adjustments are necessary.

IGNITION TIMING

NOTE – *Engines are equipped with a receptacle for a magnetic probe timing light, located 9.5°ATDC. Do not use this location for timing with a conventional light.*

Check or adjust ignition timing with engine at normal operating temperature, distributor vacuum hose disconnected and plugged, and engine at curb idle speed.

Ignition Timing Specifications (Degrees BTDC@RPM)

Application	Man. Trans.	①Auto. Trans.
Federal	10@900	12@700
Calif.	10@900	10@700

① – Auto. Trans. in "D".

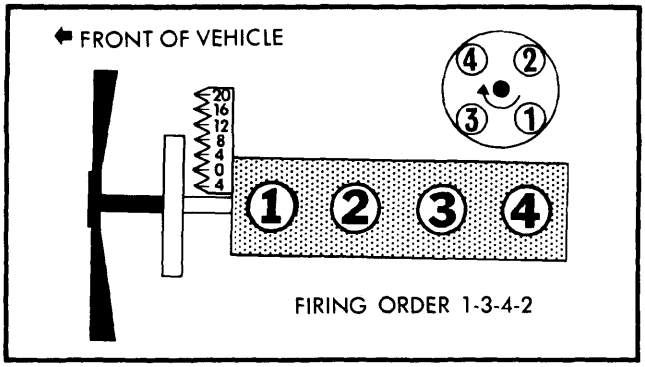

Fig. 1 Firing Order and Timing Marks

HOT (SLOW) IDLE RPM

NOTE – *Do not idle engine for over 3 minutes at a time. If idle adjustment is not completed within 3 minutes, run engine at 2000 RPM for 1 minute before continuing, repeat as necessary.*

TUNE-UP (Cont.)

1) Warm engine to normal operating temperature and connect tachometer. Place automatic transmission in "D". Turn nut on solenoid plunger to obtain solenoid RPM.

2) Disconnect solenoid wire and use curb idle screw to set curb idle. Reconnect solenoid wire and remove test equipment.

Idle Speed (RPM)

Application	Curb Idle	Solenoid Energized
Man. Trans.	500	900
Auto. Trans.①	500	700

① – Auto. Trans. in "D".

IDLE MIXTURE

NOTE – *Do not idle engine for over 3 minutes at a time. If idle mixture adjustment is not completed within 3 minutes, run engine at 2000 RPM for 1 minute before continuing, repeat as necessary.*

MIXTURE SCREW PLUG REMOVAL

NOTE – *Mixture adjustment is not a normal tune-up procedure. DO NOT remove idle mixture plugs unless vehicles fails emissions testing or throttle body has been disassembled.*

1) Remove carburetor and drain fuel. Place upside down on holding fixture. Place a punch in locator point in throttle body (beneath mixture plug).

2) Drive punch through locator until plug breaks, then drive out loose pieces by holding punch at a 45° angle. Reinstall carburetor and make adjustments using a thin wall 3/16"deep socket.

LEAN DROP PROCEDURE (FEDERAL VEHICLES ONLY)

1) Connect an accurate tachometer, start engine, and warm to normal operating temperature.

2) Place manual transmission in neutral and automatic transmission in "D". Starting from full rich position, turn mixture screw leaner (clockwise) until a noticeable RPM loss is indicated.

3) Turn mixture screw richer (counterclockwise) until highest RPM reading is obtained. Do not turn screw any further than point at which highest RPM is first obtained.

4) As final adjustment, turn mixture screw clockwise to obtain specified drop in engine RPM. If final RPM differs more than ±30 RPM from specified curb idle speed, reset curb idle to specification and repeat mixture adjustment.

Specified RPM Drop

Application	RPM Drop
All Federal Models	100

DWELL METER PROCEDURE (CALIFORNIA VEHICLES ONLY)

1) Remove mixture screw plug. While carburetor is removed from vehicle, turn mixture screw in until lightly seated, then back out 2½ turns (Man. Trans.) or 3 turns (Auto. Trans.). If plug in air horn which covers idle air bleed is already removed, turn screw in until seated and back out 1½ turns. If plug is in place, DO NOT remove.

2) Remove vent stack screen to reach lean mixture screw. Turn lean mixture screw in until seated and back out 3 turns. Install carburetor on engine.

3) Disconnect bowl vent line at carburetor. Disconnect EGR and canister purge line at carburetor and plug carburetor port. Connect dwell meter (set on 6 cyl. scale) to mixture solenoid test lead near carburetor. Connect tachometer to connector on distributor side of noise filter.

4) Place transmission in neutral and start engine. Operate at fast idle for at least 3 minutes to allow oxygen sensor to warm up, and system to shift to Closed Loop operation.

5) Operate engine at 3000 RPM and adjust lean mixture screw (below vent stack screen) carefully to obtain 35° dwell reading. Back screw out to raise dwell; turn screw in to lower dwell reading. Allow engine to operate between adjustments to stabilize readings. Return engine to idle and adjust to 700 RPM.

6) Adjust idle mixture screw to obtain average dwell of 25°. Back screw out slowly to raise dwell reading; turn screw in to lower reading. Allow engine to stabilize between adjustments.

7) Disconnect mixture control solenoid wire and check that idle speed drops at least 50 RPM. If not, check idle air bleed circuit. Connect solenoid and recheck 3000 RPM dwell reading. If not correct, repeat adjustment procedure.

8) Replace all hoses and set idle speed to specification. Remove test equipment. Be sure vent stack screen is replaced.

COLD (FAST) IDLE RPM

Set fast idle with engine at normal operating temperature and EGR disconnected. Position fast idle screw on high step of fast idle cam and turn to obtain fast idle RPM.

Fast Idle (RPM)

Application	RPM
Man. Trans.	2400
Auto. Trans.	2600

AUTOMATIC CHOKE

Choke coil cover is riveted in place and no adjustment is necessary.

FUEL PUMP

Perform fuel pump test with air cleaner removed and fuel inlet line or filter disconnected at carburetor. Disconnect fuel return line at fuel filter and plug nipple or filter. Make all tests at idle speed.

TUNE-UP (Cont.)

Fuel Pump Specifications

Pressure	6.5-8.0 psi
Volume	1 pint in 30 seconds
Vacuum	10" minimum

EMISSION CONTROL

See appropriate article in EMISSION CONTROL Section.

GENERAL SERVICING

IGNITION

DISTRIBUTOR

Delco High Energy Ignition System.

Other Data & Specifications – *See Tune-Up and Delco Distributors in ELECTRICAL Section.*

IGNITION COIL

Resistance	
Primary (at 75°F)	0.4-1.0 ohms
Secondary (at 75°F)	6000-30,000 ohms
Coil Output	
All Models	25-35 KV Minimum
Current Draw	
Engine Stopped	.25 amps
Engine Idling	1.0 amps

CARBURETION

CARBURETOR

Application	Model
All Models	
Federal	Rochester 2SE
California	Rochester E2SE

Other Data & Specifications – *See Tune-Up and Rochester Carburetors in FUEL SYSTEMS Section.*

ELECTRICAL

BATTERY

Application	Cold Cranking Amps@0°F	Reserve Capacity Minutes
Standard	380	75
Optional	450	90

STARTER

Delco-Remy solenoid actuated with overrunning clutch.

Starter Specifications

Application	Volts	Amps	Test RPM
All Models	9	45-70	7000-11,900

Other Data & Specifications – *See Delco-Remy Starters in ELECTRICAL Section.*

ALTERNATOR

Application	Rated Amp. Output
Standard	42
Optional	63

Other Data & Specifications – *See Delco Alternators and Regulators in ELECTRICAL Section.*

ALTERNATOR REGULATOR

Delco-Remy non-adjustable, integral with alternator.

Operating Voltage (at 50-100°F)	13.9-14.9

Other Data & Specifications – *See Delco Alternators and Regulators in ELECTRICAL Section.*

BELT ADJUSTMENT

Tension (lbs.) Using Strand Tension Gauge

Application	New Belt	Used Belt
All Belts	125-155	90-115

REPLACEMENT INTERVALS

Component	Interval (Miles)
Oil Filter	15,000
Fuel Filter	15,000
Air Filter	30,000
PCV Filter & Valve	30,000
Oxygen Sensor (Calif.)	30,000
Charcoal Canister Filter (Fed.)	30,000
Spark Plugs	30,000

CAPACITIES

Application	Quantity
Crankcase (Includes Filter)	3.0 qts.
Cooling System	7.8 qts.
Man. Trans. (SAE 80W-90)	3.0 pts.
Transfer Case (SAE 10W-30)	4.0 pts.
Front Axle (SAE 85W-90)	2.5 pts.
Rear Axle (SAE 85W-90)	4.75 pts.
Fuel Tank	14.8 gals.