1975-79 TUNE-UP PROCEDURES
Oldsmobile 4-Cylinder

1976-79 Oldsmobile

ENGINE IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

Engine can be identified by the fifth character of Vehicle Identification Number (VIN), located on plate attached to driver's side of instrument panel, and visible through windshield.

VIN CODE

Application	Codes
1976-77	
140" 2-Bbl.	B
1978-79	
151" 2-Bbl. (LX8)	V
151" 2-Bbl. (LS6)	1

ENGINE IDENTIFICATION CODE

Engine identification number is located on a pad on right side of engine block, near distributor. On 1979 VIN V engines, the number is on the left front corner of block, above water pump.

ENGINE CODE

Application	Codes
1976-77	
140" (VIN B)	
California	CAZ, CBK, CBL
Federal	CAY, CBS, CBT
High Altitude	CBS, CBT
1978	
151" (VIN V)	XL, XN, WB, WD, WH
151" (VIN 1)	ZJ, ZK
1979	
151" (VIN V)	AC, AD, AF, AH
151" (VIN 1)	WD, WH, WJ, WM

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.

NOTE: The EPA High Altitude emission standards apply to vehicles sold in certain areas outside California which have an elevation above 4000 feet.

NOTE: Before making a compression test or cranking engine with a remote starting switch, disconnect ignition switch connector (Pink wire) from HEI distributor.

CAUTION: Do not remove spark plug wires with engine running. High Energy Ignition (HEI) secondary voltage is higher than standard ignition systems and may inflict harmful electrical shock.

NOTE: Damage to the HEI electronic module and/or ignition coil may result if "TACH" terminal, in distributor cap connector or on ignition coil, is directly grounded.

ENGINE COMPRESSION

Remove air cleaner and place throttle and choke in wide open position. Check compression through at least 4 compression strokes. If using a remote starting switch, disconnect ignition switch connector (Pink wire) at distributor.

ENGINE COMPRESSION SPECIFICATIONS

Application	Specification
Compression Ratio	
140" (VIN B)	8.0:1
151" (VIN V)	8.2:1
151" (VIN 1)	8.3:1
Recommended Fuel	Unleaded (87 AKI Minimum)
Compression Pressure	140 psi
Maximum Variation Between Cylinders	20 psi

VALVE CLEARANCE

140" (VIN B)

Hydraulic Lifters - Non-adjustable.

151" (VIN V & 1)

Hydraulic Lifters - Zero lash.

VALVE ARRANGEMENT

1976-77 Models

140" (VIN B) - I-E-I-E-I-E-I-E (Front-to-Rear),

1978 Models

151" (VIN V & 1) - E-I-I-E-E-I-I-E (Front-to-Rear).

1979 Models

151" (VIN V) - I-E-I-E-E-I-E-I (Front-to-Rear),
151" (VIN 1) - E-I-I-E-E-I-I-E (Front-to-Rear).

SPARK PLUGS

SPARK PLUG TYPE

Application	AC NO.
All Models	R43TSX

SPARK PLUG INSTALLATION

Application	Gap	Torque
140"	.035"	15 ft. lbs.
151"	.060"	22 ft. lbs.

HIGH TENSION WIRE RESISTANCE

Carefully remove ends of wire from spark plug and distributor. Using an ohmmeter, check resistance while gently twisting wire. If resistance is not to specification, or fluctuates from infinity to any value, replace wire.

WIRE RESISTANCE

Wire Length	[1] Ohms (Maximum)
Under 24"	30,000
Over 24"	50,000

[1] - Reading must be 3000-17,000 ohms on 1976 models.

DISTRIBUTOR

All models are equipped with High Energy Ignition systems. No adjustments are required.

1975-79 TUNE-UP PROCEDURES
Oldsmobile 4-Cylinder (Cont.)

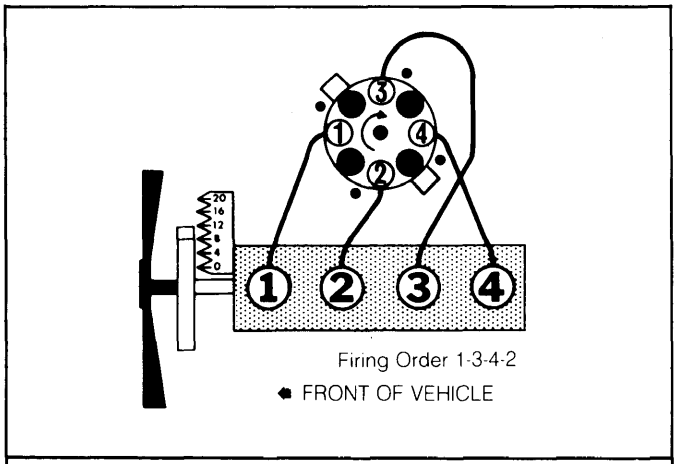

Fig. 1: 140" (VIN B) Firing Order & Timing Marks

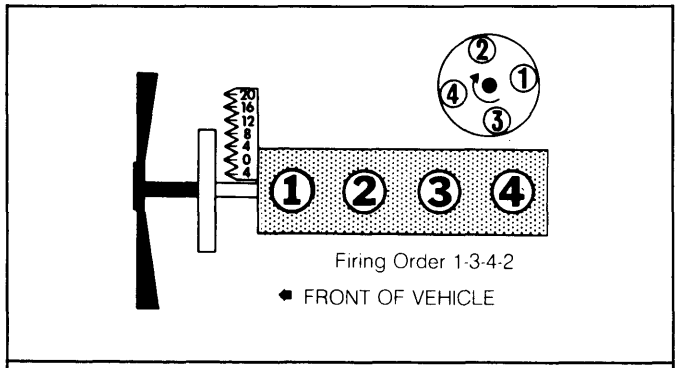

Fig. 2: 151" (VIN V) Firing Order & Timing Marks

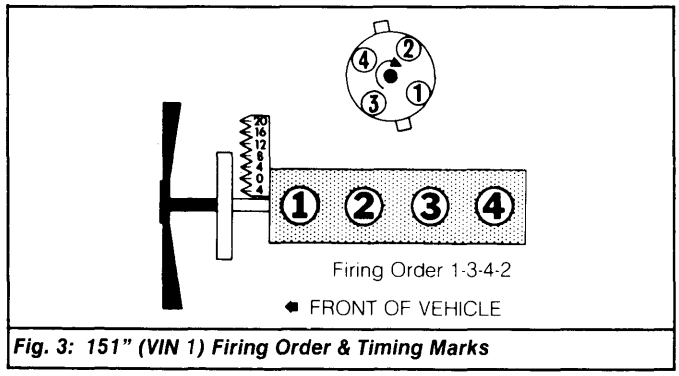

Fig. 3: 151" (VIN 1) Firing Order & Timing Marks

IGNITION TIMING

NOTE: Some engines incorporate a magnetic timing probe hole for use with special electronic timing equipment. Refer to equipment manufacturer's instructions for correct procedures.

1976-77 Models - Set ignition timing with engine at specified RPM and distributor vacuum advance hose disconnected and plugged.

1978-79 Models - Set ignition timing while making the hot (slow) idle RPM adjustment. Set ignition timing with engine running at specified RPM, then reset hot (slow) idle RPM if necessary.

HOT (SLOW) IDLE RPM

1976 Models - 1) With engine at normal operating temperature, air cleaner installed, and A/C off, disconnect and plug distributor vacuum advance hose and fuel tank hose from vapor canister. Place automatic transmission in Drive or manual transmission in Neutral.

IGNITION TIMING SPECIFICATIONS (DEGREES BTDC@RPM)

Application	Man. Trans.	Auto. Trans.
1976		
All Models	10@700	12@700
1977		
Calif.	2@700	0@650
Federal	0@700	2@650
High Alt.	0@700	2@700
1978		
151" (VIN V)	14@1000	14@1000
151" (VIN 1)		14@1000
1979		
151" (VIN V)	12@900	12@650
151" (VIN 1)	14@1000	14@1000

2) Set parking brake and block drive wheels. Start engine. Disconnect electrical lead at idle stop solenoid (if equipped). Adjust low idle speed screw at front of throttle lever to obtain lower specified RPM.

3) Connect electrical lead to solenoid (if equipped), open throttle slightly allowing plunger to extend. Turn plunger contact screw to obtain specified higher RPM.

1976 IDLE SPEED (RPM) SPECIFICATIONS

Application	Specification
Calif.	
Man. Trans.	1000/700
Auto. Trans.	750/700
Federal	
Man. Trans.	700
Auto. Trans.	750/600

1977 Models - 1) Ensure engine is at normal operating temperature, choke is fully open, and A/C in "OFF" position (if equipped). Disconnect and plug distributor vacuum advance hose, and PCV hose at vapor canister. Place automatic transmission in Drive or manual transmission in Neutral.

2) On non-A/C equipped models with automatic transmission, turn carburetor idle speed adjustment screw to obtain specified curb idle RPM. Adjust ignition timing then recheck curb idle speed.

3) On non-A/C equipped models with manual transmission, fully collapse dashpot and turn carburetor idle speed adjustment screw to obtain specified curb idle RPM. Adjust ignition timing then recheck curb idle speed.

4) On all A/C equipped models, adjust idle speed and ignition timing as described in step **2)** or **3)**. Disconnect A/C wide open throttle override switch connector on accelerator linkage bracket.

5) Set A/C to the "ON" position. Open throttle allowing solenoid plunger to extend. Adjust solenoid screw to obtain specified solenoid energized RPM. Reconnect A/C override switch and turn A/C off.

1978-79 Models - 1) Ensure engine is at normal operating temperature, choke is fully open, and A/C in "OFF" position (if equipped). Disconnect and plug distributor vacuum advance hose, and PCV hose at vapor canister. Place automatic transmission in Drive or manual transmission in Neutral. If equipped with A/C, disconnect compressor clutch wire.

2) On models without A/C, disconnect idle stop solenoid and adjust carburetor idle speed screw to obtain specified curb idle RPM. Reconnect solenoid and adjust solenoid plunger contact screw to obtain specified solenoid energized RPM. Adjust ignition timing and recheck idle speeds.

3) On A/C equipped models, adjust idle speed and ignition timing as described under step **2)**. Disconnect A/C wide open throttle override switch connector on accelerator linkage bracket.

1975-79 TUNE-UP PROCEDURES
Oldsmobile 4-Cylinder (Cont.)

4) Set A/C to the "ON" position. Open throttle allowing solenoid plunger to extend. Adjust solenoid screw to obtain specified solenoid energized RPM. Reconnect A/C override switch and turn A/C off.

1977-79 IDLE SPEED (RPM) SPECIFICATIONS

Application	Curb Idle	Solenoid Energized
1977		
Man. Trans.		
Calif.	800	1250
Federal	700	1250
High Alt.	800	1250
Auto. Trans.		
Calif.	650	850
Federal	650	850
High Alt.	700	850
1978-79		
151" (VIN V)		
Man. Trans.		
With A/C	[1] 900	[2] 1250
Without A/C	500	[1] 900
Auto. Trans.		
With A/C	650	850
Without A/C	500	650
151" (VIN 1)		
With A/C	650	850
Without A/C	500	650

[1] - On 1978 models, set to 1000 RPM.
[2] - On 1978 models, set to 1200 RPM.

IDLE MIXTURE

NOTE: Idle mixture screws on all Rochester carburetors are covered by hardened steel plugs. Manufacturer recommends plug removal and idle mixture adjustment only after major carburetor overhaul, throttle body replacement or emissions failures.

MIXTURE SCREW PLUG REMOVAL

1) Remove carburetor from engine, invert carburetor and drain fuel. Place carburetor on holding fixture with manifold side up.
2) Place a punch between the 2 locator marks on throttle body beneath mixture screw plug (manifold side) and break out throttle body to gain access to plug.
3) Use punch to drive out mixture screw plug. If hardened steel plug shatters, remove loose pieces.
4) Repeat steps **2)** and **3)** to remove remaining plug (if equipped).

TACHOMETER (LEAN DROP) PROCEDURE

1976 Models - 1) With engine at normal operating temperature, air cleaner removed, and A/C off, ensure that the hot (slow) idle and ignition timing are properly set. Set parking brake and block drive wheels.
2) Disconnect and plug distributor vacuum advance hose and fuel tank hose from vapor canister. Place automatic transmission in Drive or manual transmission in Neutral.
3) On California automatic transmission equipped models, de-energize idle stop solenoid. Set idle speed to higher specified RPM by means of curb idle speed screw on automatic transmission equipped models or by means of low idle speed screw on manual transmission equipped models.
4) Remove idle mixture screw limiter cap and turn mixture screw counterclockwise until maximum idle speed is obtained. Reset idle speed to higher specified RPM. Now turn idle mixture screw clockwise until lower specified RPM is obtained. See 1976-77 IDLE MIXTURE RPM SPECIFICATIONS table.

1977 Models - 1) With engine at normal operating temperature and A/C off (if equipped), set parking brake and block drive wheels. Remove air cleaner for access to carburetor, keeping vacuum hoses connected.
2) Disconnect and plug other hoses as directed by Emission Control Tune-Up Decal. Connect tachometer to engine. Disconnect and plug distributor vacuum advance hose. Check ignition timing and adjust if necessary. Reconnect vacuum advance hose.
3) Carefully remove limiter cap from idle mixture screw. Lightly seat idle mixture screw, then back out just enough so that engine will run at idle. Place automatic transmission in Drive or manual transmission in Neutral.
4) Back out idle mixture screw 1/8 turn at a time until maximum idle speed is obtained, then turn idle speed adjustment screw until higher specified RPM is obtained. See 1976-77 IDLE MIXTURE RPM SPECIFICATIONS table.
5) Now turn idle mixture screw in until lower specified RPM is obtained. Turn idle speed adjustment screw to obtain specified curb idle RPM. Reconnect all disconnected hoses and install air cleaner.

1976-77 IDLE MIXTURE RPM SPECIFICATIONS

Application	Higher RPM	Lower RPM
1976		
Man. Trans.		
Calif.	820	700
Federal	830	700
Auto. Trans.	830	750
1977		
Man. Trans.		
Calif.	880	800
Federal	780	700
High Alt.	880	800
Auto. Trans.		
Calif.	680	650
Federal	680	650
High Alt.	730	700

PROPANE ENRICHMENT PROCEDURE

1978 California Models (VIN 1) - 1) With engine at normal operating temperature and A/C off (if equipped), set parking brake and block drive wheels. Disconnect and plug hoses as directed by Emission Control Tune-Up Decal under hood. Connect tachometer to engine.
2) Using "T" fitting, connect a vacuum gauge into hose from center port of vacuum modulator to carburetor at carburetor. With automatic transmission in Drive (Neutral for manual transmission), disconnect vacuum advance hose to distributor and set ignition timing. Reconnect vacuum advance hose and read vacuum gauge.
3) Reading should be between 2-4 in. Hg. If gauge reads within this range, go to step **5)** If gauge does not read within this range, turn engine off. Remove carburetor and remove idle mixture plugs. Install carburetor and reconnect vacuum gauge into hose from center port of vacuum modulator to carburetor at carburetor.
4) Read vacuum gauge. If gauge reads below 2 in. Hg, turn idle mixture screw out 1/8 turn at a time until gauge reads between 2-4 in. Hg. If vacuum gauge reads above 4 in. Hg, turn idle mixture screw in 1/8 turn at a time until gauge reads between 2-4 in. Hg.
5) Place transmission in Neutral and run engine at 2000 RPM for 30 seconds. Place automatic transmission in Drive or manual transmission in Neutral and recheck idle speed.
6) Idle speed should be to specifications shown on Emission Control Tune-Up Decal and vacuum gauge should read between 2-4 in. Hg. If not, reset idle speed and repeat idle mixture procedure.
7) If idle speed and mixture are correct, turn off engine. Remove carburetor and install mixture needle screw plug. Install carburetor and replace idle mixture screw cap. Disconnect tachometer and vacuum gauge from engine. Reconnect all disconnected hoses.

1975-79 TUNE-UP PROCEDURES
Oldsmobile 4-Cylinder (Cont.)

1979 California Models (VIN 1) - 1) With engine at normal operating temperature and A/C off (if equipped), set parking brake and block drive wheels. Disconnect and plug hoses as directed by Emission Control Tune-Up Decal under hood.
2) Connect tachometer to engine. Disconnect vacuum advance hose to distributor and set ignition timing. Reconnect vacuum advance hose.
3) Disconnect and plug control vacuum hose at carburetor. Remove idle mixture screw plug. Remove soft lead plug covering idle needle diaphragm adjusting screw.
4) Lightly seat idle mixture screw and back out 2 turns. Turn in idle needle diaphragm adjustment screw until it is lightly seated. DO NOT force needle into seat.
5) Disconnect purge hose at charcoal canister. Install a vacuum "T" in end of hose. Insert propane hose in large end of "T". Leave small end open to act as a calibrated air bleed.
6) With A/C off, start engine. Place automatic transmission in "D" and manual transmission in Neutral.
7) Slowly open propane valve until maximum engine RPM is reached. Adjust idle speed screw until engine speed is 760 RPM with propane flowing. Ensure propane bottle remains in a vertical position.
8) Check propane adjustment again to make sure maximum RPM has been reached. If a higher engine speed is obtained, readjust to 760 RPM.
9) Turn propane off. Adjust idle mixture screw to obtain an engine speed of 600 RPM. Turn screw out to increase RPM and in to decrease RPM.
10) Place transmission in Neutral. Accelerate engine to 2000 RPM for 30 seconds. Place automatic transmission in Drive and manual transmission in Neutral. Repeat steps **7)** through **9)** to ensure maximum engine speed with propane flowing has been obtained.
11) Cap air bleed at "T". Remove propane connector from hose. Connect a vacuum gauge to "T". Adjust idle speed to obtain 650 RPM.
12) Adjust idle needle diaphragm adjustment screw until vacuum gauge reads 2.5 in. Hg at 650 RPM. It is normal for vacuum to fluctuate. Midpoint of fluctuation should be 2.5 in. Hg.
13) Remove "T" and reconnect hose to charcoal canister. Reconnect other disconnected hoses. Install a new idle mixture screw plug and idle needle diaphragm screw plug.

1978-79 Federal Models (VIN V) - 1) With engine at normal operating temperature, choke fully open and A/C off (if equipped), set parking brake and block drive wheels. Disconnect and plug hoses as directed by Emission Control Tune-Up Decal under hood.
2) Connect tachometer to engine. Disconnect vacuum advance and set timing to specification specified in Emission Control Tune-Up Decal. Reconnect vacuum advance. Disconnect PCV hose at valve cover. Insert propane hose into PCV hose using rubber stopper (J-26911).
3) Propane cartridge must be in a vertical position. Slowly open propane control valve until maximum engine speed is reached with transmission in Drive (Neutral for manual transmission).

NOTE: Too much propane will cause engine speed to drop.

4) Observe propane flow meter to ensure propane cartridge is full. With propane flowing, adjust idle speed screw to enriched RPM. See 1978-79 PROPANE ENRICHED RPM SPECIFICATIONS table. Readjust propane flow to be certain of maximum engine speed and adjust idle speed if necessary.
5) Turn off propane. Place transmission in Neutral and run engine at 2000 RPM for 30 seconds. Put transmission in Drive (Neutral for manual transmission). Check idle speed. If idle speed is as shown on Emission Control Tune-Up Decal, idle mixture is correct, proceed to step **8)**.
6) If idle speed is too low, carefully remove cap(s) from mixture screw(s) and back screw(s) out 1/8 turn at a time until specified speed is reached. If speed is too high, turn mixture screw(s) in 1/8 turn at a time until specified speed is reached.

NOTE: It may be necessary to remove air cleaner to reach idle mixture screw(s). Reinstall air cleaner to check speed.

7) Turn propane on again to check maximum engine idle speed. If speed is different from specification, readjust idle speed screw to enriched RPM with propane flowing. Turn off propane and accelerate engine to 2000 RPM for 30 seconds and recheck idle speed. Idle speed should be to specification, if not repeat procedure starting with step 6).
8) If idle is unusually rough, turn mixture screws in until lightly seated. Back screws out equally to average previous position and repeat propane idle test starting with step **2)**. If idle is correct, turn engine off and remove propane tool. Connect positive crankcase ventilation and reconnect all other hoses.

1978-79 PROPANE ENRICHED RPM SPECIFICATIONS

Application	Curb Idle	Enriched RPM
151" (VIN V)		
Man. Trans.		
With A/C	1000	[1] 1040
Without A/C	500	[1] 1040
Auto. Trans.		
With A/C	650	680-700
Without A/C	500	680-700

[1] - On 1978 models, set to 1140-1160 RPM.

COLD (FAST) IDLE RPM

Place automatic transmission in Park or manual transmission in Neutral. Make sure engine is at normal operating temperature, idle speed is correctly set, air cleaner installed, choke open, EGR valve and distributor vacuum lines disconnected and plugged. With A/C off, place fast idle screw on high step of fast idle cam. Adjust fast idle screw to obtain specified RPM.

COLD (FAST) IDLE RPM SPECIFICATIONS

Application	Man. Trans.	Auto. Trans.
140" (VIN B) [1]	2500	2500
151" (VIN V)	2200	2400
151" (VIN 1)	2200	2400

[1] - Set cold fast idle to 2200 RPM on 1976 models.

AUTOMATIC CHOKE

Loosen choke cover retaining screws. Rotate choke cover until mark on cover aligns with specified setting on choke housing. Tighten choke cover retaining screws.

AUTOMATIC CHOKE SETTING

Application	Setting
1976-77	
140" (VIN B)	3NR
1978	
151" (VIN V)	
Man. Trans.	1NR
Auto. Trans.	2NR
151" (VIN 1)	Index
1979	
151" (VIN V)	
Man. Trans.	1NR
Auto. Trans.	2NR
151" (VIN 1)	
Man. Trans.	2NR
Auto. Trans.	1NR

1975-79 TUNE-UP PROCEDURES
Oldsmobile 4-Cylinder (Cont.)

FUEL PUMP

Make all tests at idle speed. For pressure test, pinch off fuel return line (if equipped).

FUEL PUMP SPECIFICATIONS

Application	Specification
Pressure	[1] 4.0-5.5 psi
Volume	One pint in 30 seconds.

[1] - Fuel pump pressure is 3.0-4.5 psi on 1976-77 models.

IGNITION

DISTRIBUTOR

All models use a Delco-Remy High Energy Ignition system. Module must be replaced as a unit. A liberal coat of silicone grease MUST be applied to the surface on which module will be mounted.

Other Data & Specifications - Also see Delco Ignition Systems in DISTRIBUTOR & IGNITION SYSTEMS section.

IGNITION COIL

IGNITION COIL SPECIFICATIONS

Application	Specification
Primary Resistance (at 75°F)	[1] 0-1.0 Ohms
Secondary Resistance (at 75°F)	6000-30,000 Ohms
Coil Output (Minimum)	[1] 25,000-35,000 Volts

[1] - Resistance is 0.4-0.5 ohm on 1976-77 models.
[2] - Replace if below 25,000 volts.

CARBURETION

CARBURETORS

Application	Model
1976-77	
140" (VIN B)	Holley 5210-C 2-Bbl.
1978	
151" (VIN V)	Holley 5210-C 2-Bbl.
151" (VIN 1)	Holley 6510-C 2-Bbl.
1979	
151" (VIN V)	Rochester 2SE 2-Bbl.
151" (VIN 1)	Holley 6510-C 2-Bbl.

Other Data & Specifications - Also see Rochester Carburetors in FUEL SYSTEMS section.