TUNE-UP

ENGINE IDENTIFICATION

Engine identification number is stamped on right side of block below No. 1 spark plug. First letter designates model year (A). Next 3 digits indicate cubic inch displacement (225).

MODEL IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

Vehicle identification number (VIN) is stamped on right side of block below No. 6 spark plug. VIN also appears on vehicle identification plate located on driver's door body latch post and on equipment identification plate located on inner surface of hood.

VIN Engine Codes

Application	VIN Code
225"-1 (3.7L) 1-Bbl.	N
225"-2 (3.7L) 1-Bbl.	C
225"-1 (3.7L) 2-Bbl.	B

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 one cylinder for an extended period of time. Damage to converter may occur due to loading converter with unburned air/fuel mixture.*

CAUTION — *On vehicles equipped with catalytic converters do not add fuel system cleaning agents to fuel tank or carburetor as their use may be detrimental to the catalytic converter.*

NOTE — *For other items affecting Tune-Up, see FUEL SYSTEMS Section or EMISSION CONTROL Section.*

CAUTION — *Before making a compression test or cranking engine using a remote starting switch, disconnect coil wire from distributor and secure to a good ground.*

NOTE — *For Tune-Up, "Light Duty" refers to vehicles 8500 lbs. GVW or less and "Heavy Duty" to vehicles 8501 lbs. or more.*

CAUTION — *IDLE SPEED ADJUSTMENT: Procedures and specifications for idle speed adjustment must be followed exactly as outlined. See "Hot (Slow) Idle RPM" under Tune-Up.*

ENGINE COMPRESSION

Compression Ratio	8.4:1
Recommended Fuel	①Regular (87 AKI Minimum)
Compression Pressure	Min. 100 psi
Maximum Pressure Variation	25 psi

① — Unleaded (87 AKI minimum) if equipped with catalytic converter.

With engine warm, spark plugs removed and throttle wide open, compression pressure should be as specified.

VALVE TAPPET CLEARANCE

Adjust valve tappet clearance by turning self-locking rocker arm screw.

Intake (Hot)	.010"
Exhaust (Hot)	.020"

VALVE ARRANGEMENT

E-I-E-I-E-I-I-E-I-E-I-E (Front to rear).

SPARK PLUGS

Gap	.035"
Torque	10 ft. lbs.

Spark Plug Type

Application	Champion No.
225" Light Duty	RBL 16Y

HIGH TENSION WIRE RESISTANCE

Carefully remove spark plug wire from spark plug and install the proper adapter between wire and spark plug. Carefully remove wire from distributor cap. Connect an ohmmeter between spark plug adapter and opposite end of wire. If resistance is not within specifications, replace wire. To check coil wire resistance, remove distributor cap from distributor without removing wire from cap or coil. Connect an ohmmeter between center contact in cap and either primary terminal at coil. If resistance is not within specifications, remove coil wire at coil tower and check cable resistance. If resistance is now within specifications, check for a loose connection at coil tower or a faulty coil. If resistance is not within specifications, replace wire.

Resistance (Ohms)

Application	Maximum
Coil Wire	
Installed	25,000
Removed	15,000
Spark Plug Wire	
To 25" Length	30,000
Over 25" Length	50,000

DISTRIBUTOR

All models are equipped with Chrysler Corp. Electronic Ignition System and no adjustments are required.

NOTE — *Dwell is not adjustable, even though it may be read with a dwell meter.*

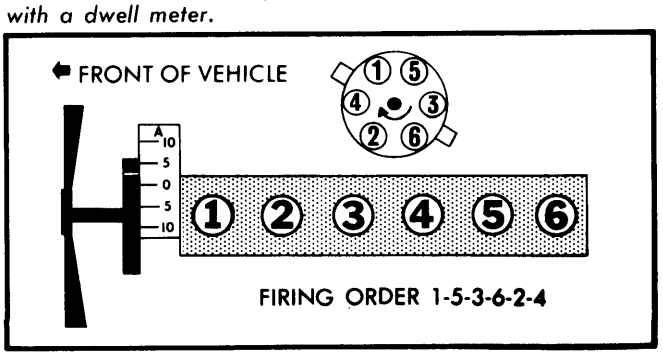

Fig. 1 225" Firing Order & Timing Mark Identification

TUNE-UP (Cont.)

IGNITION TIMING

NOTE – *Use proper adapters when making timing light connections. Do not puncture cables, boots or nipple with test probe.*

NOTE – *Magnetic probe timing device may be used if instrument is available and engine is so equipped. Timing probe offset is 10°ATDC on all 6 cylinder engines.*

1) Connect timing light to number 1 cylinder. Connect tachometer to engine. Start engine, set parking brake and place transmission in Neutral. Bring engine to normal operating temperature.

2) Disconnect and plug vacuum hoses to EGR valve and at distributor. Disconnect PCV valve and vapor canister purge hose at carburetor, leaving connections open. Idle set RPM should be within ±100 RPM of specifications. To adjust, use idle speed screw.

NOTE – *Idle set RPM adjustment is for timing purposes only. If adjusted, it will be necessary to perform propane enrichment procedure to obtain idle set RPM.*

3) Reconnect PCV valve and purge hose and check timing. If not within ±2°, loosen distributor hold-down screw and adjust timing until within specifications. Tighten hold-down screw when timing is correct. Recheck idle set RPM and timing.

CAUTION – *DO NOT use distributor vacuum advance unit as a handle when turning distributor housing.*

4) If timing was adjusted or idle speed screw was turned, perform propane enrichment procedure. Unplug and reconnect all vacuum hoses and remove all test equipment.

Ignition Timing Specifications (Degrees BTDC)

Application	Man. Trans.	Auto. Trans.
225"		
All Models	12	12

HOT (SLOW) IDLE RPM

Federal – 1) Set parking brake, place transmission in Neutral and connect tachometer to engine. Start engine and bring to normal operating temperature. Return engine to idle. Turn off all lights and accessories. Disconnect and plug EGR vacuum hose at valve.

2) On vehicles equipped with Spark Control Computer, disconnect and plug vacuum hose at transducer. Ground carburetor switch using jumper wire. On all other vehicles, disconnect and plug vacuum hose at distributor. Remove PCV valve from grommet and disconnect vapor canister purge hose at carburetor, leaving both connections open.

NOTE – *Propane enriched idle MUST be set before setting curb idle on A/C equipped vehicles.*

3) On vehicles equipped with A/C, remove curb idle screw from idle stop solenoid. Turn A/C on and open throttle slightly to energize solenoid. Place transmission in Drive. Insert Allen wrench into solenoid and adjust idle to "Solenoid Energized" RPM.

4) Turn A/C off, place transmission in Park, reinstall curb idle screw into solenoid and adjust curb idle to specifications. On all other vehicles, adjust idle speed screw (located on top of solenoid) to specified "Curb Idle" RPM.

5) DO NOT adjust mixture screw(s). If necessary to adjust mixture, follow "Propane Enrichment" procedure. Reconnect and/or install all hoses and remove all test equipment.

Calif. – 1) Set parking brake, place transmission in Neutral and connect tachometer to engine. Ground carburetor switch using jumper wire. Disconnect and ground coolant temperature switch lead with jumper wire. Disconnect and plug EGR vacuum hose at valve.

2) Remove PCV valve from grommet, leaving connection open. Disconnect and plug vapor canister purge hose and carburetor nipple at carburetor. Turn off all lights and accessories. Start engine and bring to normal operating temperature.

NOTE – *If already at normal operating temperature, wait 1-2 minutes before proceeding with adjustment.*

3) Connect jumper wire from positive battery post to solenoid lead wire in 3-way connector at carburetor. DO NOT disconnect connector, just insert jumper wire into connector. Make sure not to insert jumper wire into carburetor switch connector.

4) Open throttle slightly to energize solenoid. Remove curb idle screw from idle stop solenoid. Insert Allen wrench into solenoid and adjust idle to "Solenoid Energized" RPM. Reinstall curb idle screw until it just seats, then back out ½ turn.

5) Remove jumper wire from 3-way connector. Adjust curb idle speed screw (located on top of solenoid) to specified "Curb Idle" RPM. DO NOT adjust mixture screw(s). If necessary to adjust mixture, follow "Propane Enrichment" procedure. Reconnect and/or install all hoses and remove all test equipment.

Curb Idle Speed (RPM)①

Application	Man. Trans.	Auto. Trans.
225"		
Federal	725/900	725/900
Calif.	②840/900	②840/900

① – 1st RPM is with solenoid disconnected. 2nd RPM is with solenoid connected.
② – Curb idle is 750 RPM with hoses connected and air cleaner installed.

TUNE-UP (Cont.)

IDLE MIXTURE

PROPANE ENRICHMENT PROCEDURE

Federal – **1)** Set parking brake, place transmission in Neutral and connect tachometer and timing light to engine. Start engine and bring to normal operating temperature. Return engine to idle. Turn off all lights and accessories. Disconnect and plug EGR vacuum hose at valve.

2) On vehicles equipped with Spark Control Computer, disconnect and plug vacuum hose at transducer. On all other vehicles, disconnect and plug vacuum hose at distributor. Ground carburetor switch using jumper wire. Remove PCV valve from grommet, disconnect vapor canister purge hose at carburetor, leaving both connections open.

3) Adjust engine timing if necessary, remove timing light. Disconnect heated air door vacuum hose at 4-way connector at air cleaner and install propane supply hose to connector. Propane bottle MUST be in upright position and both valves fully closed. With engine idling and air cleaner in place, open main propane valve.

4) Slowly open propane metering valve until maximum engine speed is obtained. With propane flowing, adjust idle speed screw to "Enriched" RPM setting. Check propane flow and adjust metering valve to insure maximum idle speed. Turn off main propane valve and allow engine speed to stabilize.

NOTE – *Too much propane will cause engine speed to drop.*

5) Adjust mixture screw to obtain smoothest curb idle speed. Pause between adjustments to allow engine speed to stabilize. Turn on main propane valve. If maximum engine speed varies more than 25 RPM from setting, repeat steps **3) - 5)**. If idle speed is correct, remove propane, reconnect and/or install all vacuum hoses and remove all test equipment.

NOTE – *After reconnection of all hoses, variation in engine RPM may occur; DO NOT readjust.*

Calif. – **1)** Set parking brake, place transmission in Neutral and connect tachometer and timing light to engine. Start engine and bring to normal operating temperature. Return engine to idle. Turn off all lights and accessories and turn engine off.

2) Ground idle stop switch with jumper wire. Disconnect heated air door vacuum hose at 4-way connector and install propane supply hose to connector. Propane bottle MUST be in upright position and both valves fully closed. Disconnect and plug EGR vacuum hose at valve.

3) Disconnect and ground coolant temperature switch lead with jumper wire. Disconnect tan wire on charge temperature switch. Remove PCV valve from grommet, leaving connection open. Disconnect and plug vapor canister purge hose at canister. Start engine.

4) Wait 2 minutes and check and adjust timing if necessary. Remove timing light. Open main propane valve. With engine idling and air cleaner in place, slowly open propane metering valve until maximum engine speed is obtained. Adjust idle speed screw to "Enriched" RPM setting.

5) Check propane flow and adjust metering valve to insure maximum idle speed. Turn off main propane valve and allow engine speed to stabilize. Adjust mixture screw to obtain smoothest curb idle speed. Pause between adjustments to allow engine speed to stabilize.

NOTE – *Too much propane will cause engine speed to drop.*

6) Turn on main propane valve and recheck "Enriched" RPM setting. If maximum engine speed varies more than 25 RPM from setting, repeat steps **2) - 6)**. If idle speed is correct, remove propane, reconnect and/or install all vacuum hoses and remove all test equipment.

NOTE – *After reconnection of all hoses, variation in engine RPM may occur; DO NOT readjust.*

Propane Enrichment (RPM)

Application	Man. Trans.	Auto. Trans.
225"		
Federal	880	835
Calif.	885	885

EXHAUST GAS ANALYZER PROCEDURE (ALTERNATE FOR CALIFORNIA ONLY)

1) Allow vehicle to sit without engine running for a minimum of one hour. Start engine and run in "NEUTRAL" on step 2 of fast idle cam until fully warm. Disconnect and plug distributor vacuum hose. Disconnect purge hose at carburetor and remove PCV valve from cylinder head cover. Leave purge hose and carburetor connection open.

2) Disconnect and plug engine side of air pump supply hose. Insert probe of engine exhaust analyzer ahead of mini-catalyst. Install tachometer, and adjust idle speed and air/fuel mixture screws to yield specified carbon monoxide percentage. Adjust simultaneously for lowest hydrocarbon level or smoothest idle speed at specified RPM.

3) Reconnect air supply tube and reset idle set RPM to specifications.

NOTE – *Before each curb idle RPM and/or CO measurement, run engine at approximately 2000 RPM for 10 seconds. Let engine speed stabilize and take reading.*

4) Connect purge hose and PCV valve and reconnect distributor hose.

California Idle Speed (RPM) and CO%

Application	Idle Speed	CO%
225"	800	0.3%

COLD (FAST) IDLE RPM

1) Set parking brake, place transmission in Neutral and connect tachometer to engine. Start engine and bring to normal

operating temperature. Remove air cleaner top. Turn off all lights and accessories. Disconnect and plug EGR vacuum hose at valve.

2) On vehicles equipped with Spark Control Computer, disconnect and plug vacuum hose at transducer. On all other vehicles, disconnect and plug vacuum hose at distributor. On Calif. vehicles only, ground carburetor switch and coolant temperature switch using separate jumper wires for each one.

3) Start engine, allow engine speed to stabilize. Place fast idle speed screw on specified step of fast idle cam and adjust fast idle speed to specifications. Reconnect all vacuum hoses, remove all test equipment and reinstall air cleaner top.

Fast Idle Speed (RPM) ①

Application	Man. Trans.	Auto. Trans.
225"		
Federal	1400	1600
Calif.	2000	2000

① – Set fast idle speed screw on 2nd highest step of cam.

DASHPOT ADJUSTMENT

After idle speed adjustments have been made, install tachometer and start engine. Position throttle lever so that it contacts dashpot stem without depressing it. Allow engine speed to stabilize for about 30 seconds. Adjust dashpot, if not to specifications, by loosening lock nut and screwing dashpot in or out until desired setting is obtained. Tighten lock nut on dashpot against bracket. Check for consistent curb idle speed.

Dashpot Adjustment Speed (RPM)

Application	RPM
225"	2300

AUTOMATIC CHOKE

Vehicles over 6000 lbs. GVW are equipped with a nonadjustable thermostatically controlled automatic choke using engine heat only in positioning valve. All other vehicles have an electric assist choke requiring no adjustment.

FUEL PUMP

Pressure	3½-5 psi
Volume (at idle)	1 quart in 1 minute

MANIFOLD HEAT CONTROL VALVE

Every 30,000 miles (light duty) or 18,000 miles (heavy duty), apply a suitable solvent to both ends of valve shaft where it rotates in bushing. Work valve back and forth several times.

CAUTION – *Apply solvent only when manifold is cold.*

EMISSION CONTROL SYSTEMS

See appropriate article in Emission Control Section.

GENERAL SERVICING

IGNITION

DISTRIBUTOR

All models are equipped with Chrysler Corp. Electronic Ignition System. Units are entirely self-contained and require no outside adjustments.

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

IGNITION COIL

Resistance

Primary (at 70-80° F)	
Prestolite	1.60-1.79 ohms
Essex	1.34-1.55 ohms
Secondary (at 70-80°F)	
Prestolite	9400-11,700 ohms
Essex	9000-12,200 ohms
Ballast Resistor (at 70-80°F)	1.1-1.3 ohms

FUEL SYSTEMS

CARBURETORS

Application	Carburetor
All Models	Holley 1945 1-Bbl.

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

ELECTRICAL

BATTERY

12 Volt – Negative Ground.

Application	Ampere Hours	Cranking Rating Amperes @0°F
Standard	48	305
Optional	59	375
Optional		
Main. Free	70	430
Long Life Main. Free	85	500

STARTER

All models use a Chrysler Corp. Reduction Gear type starter.

Cranking Amp. Draw	165-180 Amps.
Locked Resistance @4 Volts	475-550 Amps.
Free Running Test @ 11 Volts & 3700 RPM Minimum	90 Amps.

Other Data & Specifications – *See Chrysler Corp. Starters in ELECTRICAL Section.*

ALTERNATORS

All models use Chrysler Corp. alternator.

GENERAL SERVICING (Cont.)

Tag Color	Rated Amp. Output
Violet	41
Yellow	60
Yellow ("D", "W", "AD", "PD", "AW" & "PW")	117

Other Data & Specifications – *See Chrysler Corp. Alternators in ELECTRICAL Section.*

ALTERNATOR REGULATOR

All models use Chrysler Corp. Electronic Voltage Regulator. Unit is nonadjustable.

Operating Voltage (@80°F) ..... 13.9-14.6 Volts

Other Data & Specifications – *See Chrysler Corp. Electronic Regulator in ELECTRICAL Section.*

ENGINE

INTAKE MANIFOLD TIGHTENING

Starting in center and working outward, tighten intake-to-exhaust manifold 3/8" studs to 30 ft. lbs., 5/16" bolts to 20 ft. lbs., and exhaust manifold nuts to 10 ft. lbs.

FILTERS & CLEANERS

Filter or Cleaner	Service Interval (Miles) Schedule A	Schedule B
Air Cleaner	30,000	30,000
Oil Filter	①15,000	①15,000
Fuel Filter		30,000
PCV Valve		③30,000
Canister Filter		30,000
Crankcase Inlet Air Cleaner		④30,000

① – Replace first time at 7,500 miles.
② – Check at 30,000 miles.
③ – Check at 15,000 and 45,000 miles.
④ – Clean rather than replace.

COOLING CAPACITIES

Application	Quantity (Qts.)
225" Engine	①12

① – Add 2 quarts with A/C or increased cooling.

BELT ADJUSTMENTS

Tension (Lbs.) Using Strand Tension Gauge

Application	New Belt	①Used Belt
All	120	70

① – Any belt operated for 15 minutes.

CAPACITIES (EXCEPT COOLING)

Application	Quantity
Crankcase	①5 qts.
Automatic Transmission (Dexron II)	②7.7 pts.
Manual Transmission	
4-Speed Overdrive (A-833) (Dexron II)	7.5 pts.
4-Speed N.P. 435 (SAE 80W-90)	7.0 pts.
Transfer Case	
N.P. 205 (SAE 80W-90)	4.5 pts.
N.P. 208 (SAE 10W-30)	4.0 pts.
Rear Axle (SAE 80W-90)	
8 3/8" Ring Gear	4.5 pts.
9 1/4" Ring Gear	4.5 pts.
9 3/4" Ring Gear	6.0 pts.
10 1/2" Ring Gear	6.5 pts.
Front Axle (SAE 80W-90)	
Model 44	3.5 pts.
Model 60	6.5 pts.
Fuel Tank	
"AD", "PD", "AW" & "PW" Models	
Standard	24.0 gals.
Extra	35.0 gals.
"D" & "W" Models	
Ahead of Rear Axle	18.0 gals.
Behind Rear Axle	21.0 gals.
"B", "PB" & "CB" Models	
Standard	22.0 gals.
Optional	36.0 gals.

① – Add 1 quart with filter change.
② – Without torque converter drain.