TUNE-UP

ENGINE IDENTIFICATION

Engines can be identified by 8th digit of Vehicle Identification Number (VIN). Number is located on plate at top left corner of dashboard and at base of steering column on van models. Engine code numbers are located at front of block, at right cylinder head on 5.0 and 5.7L engines and in front of intake manifold on 7.4L engines.

VIN Engine Codes

Application	VIN Code
5.0L (305") 2-Bbl.	G
5.0L (305") 4-Bbl.	
Federal	H
Calif.	F
5.7L (350") 4-Bbl.	
Light Duty	L
Heavy Duty	M
7.4L (454") 4-Bbl.	
Heavy Duty	W

TUNE-UP NOTES

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

NOTE — *Due to changes and corrections, always refer to Engine Tune-Up Decal in engine compartment before attempting Tune-Up. In the event of a conflict between specifications given in this manual and decal specifications, decal specifications prevail.*

NOTE — *SERIES IDENTIFICATION: The vehicle series numbers used in this article have been abbreviated for common reference to both Chevrolet and GMC models. Chevrolet models use numerical designation as listed; GMC models are identified as follows: 10 = 1500; 20 = 2500; 30 = 3500.*

NOTE — *For Tune-Up purposes, "Light Duty" refers to vehicles up to 8500 lbs. "Heavy Duty" refers to vehicles exceeding 8500 lbs.*

CAUTION — *When performing tune-up on vehicles equipped with a catalytic converter, do not allow or create a condition of engine misfire in one or more cylinders for an extended period of time. Damage to converter from overheating may occur due to loading with unburned fuel.*

ENGINE COMPRESSION

Compression Ratio	
5.0L 2-Bbl.	8.5:1
5.0L 4-Bbl.	
Federal	9.2:1
Calif.	8.6:1
5.7L 4-Bbl.	8.2:1
7.4L 4-Bbl.	8.5:1
Compression Pressure	150 psi
Maximum Pressure Variation	20 psi

When making compression checks, disconnect the ignition switch connector pink wire from high energy ignition system. With air cleaner removed and throttle and choke wide open, crank engine through at least four compression strokes.

VALVE CLEARANCE

Hydraulic Lifters ..... One turn down from zero lash.

VALVE ARRANGEMENT

5.0L & 5.7L

E-I-I-E-E-I-I-E (Both banks, front to rear.)

7.4L

E-I-E-I-E-I-E-I (Left bank, front to rear.)

I-E-I-E-I-E-I-E (Right bank, front to rear.)

SPARK PLUGS

Application	Gap (In.)	Torque (Ft. Lbs.)
All Models	.045	17-27

Spark Plug Type

Application	AC No.
Light Duty Emissions	R45TS
Heavy Duty Emissions	R44T

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 specifications, or fluctuates from infinity to any value, replace cable.

Resistance (Ohms)

Wire Length	Resistance
0-24"	30,000 Max.
Over 24"	50,000 Max.

DISTRIBUTOR

5.0L Federal engines are high compression (9.2:1) models and use an Electronic Spark Control (ESC) ignition system with detonation sensor. All other models are equipped with High Energy Ignition systems and no adjustments are required.

IGNITION TIMING

NOTE — *Engines are equipped with a receptacle for magnetic probe timing lights, located 10°ATDC. Do not use this location for timing with a conventional light.*

TUNE-UP (Cont.)

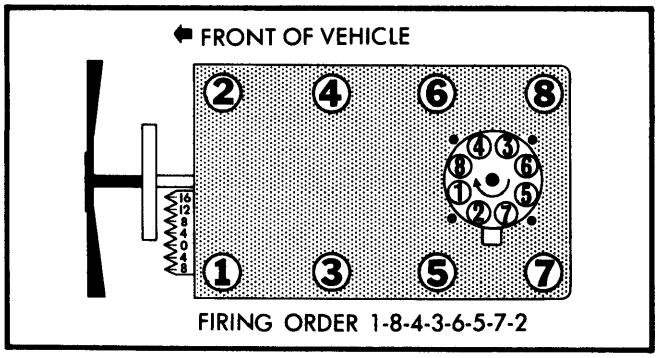

Fig. 1 Firing Order and Timing Marks (All Engines)

1) Connect an adapter between No. 1 spark plug and No. 1 spark plug wire or use an inductive type pickup. Do not puncture wires.

2) Connect timing light according to manufacturer's instructions. Check or adjust ignition timing with engine at normal operating temperature, distributor vacuum line disconnected and plugged. Place transmission in neutral, except for Light Duty models with automatic which should be in "D". Set timing to specifications.

3) To adjust timing, loosen distributor hold down bolt and rotate distributor until timing is to specifications. Tighten hold down bolt.

Ignition Timing Specifications (Degrees BTDC@RPM)

Application	Man. Trans.	Auto. Trans.
Light Duty		
5.0L 2-Bbl.	8@700	8@600
5.0L 4-Bbl.		
Federal	① 4@700	② 8@650
Calif.	.....	8@650
5.7L 4-Bbl.		
Federal	8@700	8@600
Calif.	.....	③ 6@650
Heavy Duty		
5.7L 4-Bbl.		
Federal	4@700	4@700
Calif.	6@700	6@700
7.4L 4-Bbl.	4@700	4@700

① — Set Van to 6° BTDC.
② — Set Decal AAN to 6° BTDC; Decal AAS to 2° BTDC.
③ — Set Van to 8° BTDC.

HOT (SLOW) IDLE RPM

NOTE — *See engine compartment Emission Control Tune-Up Decal to prepare engine for idle speed adjustment.*

1) Set ignition timing to specifications. Disconnect lead from idle solenoid (if equipped). Adjust idle speed to specifications using idle speed screw. Transmission should be in "D" for Light Duty automatic, and in neutral on all others.

2) Disconnect lead from air conditioning compressor. Reconnect lead at idle solenoid, then turn air conditioning "ON". Open throttle slightly to allow solenoid to fully extend. Adjust solenoid idle speed by turning solenoid screw.

3) If equipped with throttle return control, connect a hand vacuum pump to control diaphragm. With engine idling, apply at least 20 in. Hg vacuum. Open throttle slightly to allow plunger to fully extend. Screw plunger in or out as necessary to obtain 1600 RPM on Federal models and 1500 RPM on Calif. models.

Idle Speed (RPM)

Application	Curb Idle	Solenoid Energized
Light Duty		
5.0L 2-Bbl.		
Man. Trans.	600	700
Auto. Trans.	500	600
5.0L 4-Bbl.		
Federal		
Man. Trans.	700	.....
Auto. Trans.	500	600
Calif.	550	650
5.7L 4-Bbl.		
Federal		
Man. Trans.	700	.....
Auto. Trans.	500	.....
Calif.	550	650
Heavy Duty		
5.7L 4-Bbl.	700	.....
7.4L 4-Bbl.	700	.....

IDLE MIXTURE

PROPANE ENRICHMENT PROCEDURE (LIGHT DUTY MODELS ONLY)

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 on Emission Control/Tune-Up decal.

2) Connect tachometer to engine. Disconnect vacuum advance and set timing to specification. Reconnect vacuum advance. Disconnect crankcase ventilation tube from air cleaner. Insert hose with rubber stopper (tool J-26911 or equivalent) from propane valve into PCV tube opening in air cleaner.

3) Propane bottle must be in vertical position. slowly open control valve until maximum engine speed is reached with transmission in "D" (automatic) or neutral (manual).

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 or solenoid so speed rises above normal idle by specified amount. Readjust propane flow to be certain of maximum engine speed and adjust idle speed if necessary.

5) Turn off propane. Run engine at 2000 RPM in neutral for 30 seconds, return to idle, and place in "D". Check idle speed. If correct, no adjustment of mixture is necessary. If not correct, proceed with adjustment procedure.

TUNE-UP (Cont.)

6) If idle speed is too low, carefully remove cap(s) from mixture screw(s) and back out screws (richen) 1/8 turn at a time until correct speed is reached. If speed is too high, turn screw(s) in (leaner) 1/8 turn at a time until correct speed is reached.

7) Turn propane on again to check maximum engine idle speed. If speed does not meet specifications, readjust idle speed screw or solenoid screw to obtain specified enriched RPM with propane flowing. Turn off propane, place transmission in neutral and run engine at 3000 RPM for 30 seconds. Recheck idle speed and repeat procedure if necessary.

Propane Enriched RPM (Light Duty Only)

Application	Man. Trans.	Auto. Trans.
5.0L 2-Bbl.	150	50
5.0L 4-Bbl.		
Federal	①100	40
Calif.	----	20
5.7L 4-Bbl.	100	20-50

①-150 RPM on 4-sp overdrive.

BEST IDLE PROCEDURE (HEAVY DUTY MODELS ONLY)

1) Set parking brake and block drive wheels. Remove air cleaner after engine reaches normal operating temperature. Place transmission in neutral and connect tachometer.

2) As a starting point, turn idle mixture screws in lightly to seat and then back out 2 turns. Do not turn screw tightly against seat or damage may result.

3) With engine running, choke open, and transmission in neutral, adjust idle speed to specifications. Then adjust mixture screw to obtain maximum RPM.

4) Readjust idle speed screw to specifications and readjust mixture screw to obtain highest RPM. Shut down engine, remove gauges and install air cleaner.

COLD (FAST) IDLE RPM

1) Place transmission in neutral. Move cam follower onto highest step of fast idle cam. Disconnect and plug vacuum hose to EGR valve.

2) Start engine without touching throttle. Turn fast idle speed screw to adjust speed to specifications.

Fast Idle Speed (RPM)

Application	Man. Trans.	Auto. Trans.
Light Duty		
5.0L 2-Bbl.	1300	1600
5.0L 4-Bbl. & 5.7L 4-Bbl.		
Federal	1300	1600
Calif.	----	1800
Heavy Duty		
All Engines	1900	1900

AUTOMATIC CHOKE

The choke cover on all engines is riveted in place and no adjustments are possible or necessary.

FUEL PUMP PRESSURE

Pressure (At Idle)	
With Vapor Return Line	
7.4L	7.5-9.0 psi
All Others	5.5-7.0 psi
Without Vapor Return Line	7.5-9.0 psi
Volume	1.0 pt. in 30 seconds or less

EMISSION CONTROL

See appropriate article in EMISSION CONTROL Section.

GENERAL SERVICING

IGNITION

DISTRIBUTOR

5.0L 4-Bbl. Federal engines use Electronic Spark Timing (EST) system with detonation sensor and 5-pin module. All other models use a standard HEI system with 4-pin module.

NOTE – *High energy ignition system module must be replaced as a unit. A liberal coat of silicone grease MUST be applied to both the module and the surface on which it will be mounted.*

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

IGNITION COIL

Coil Resistance (Ohms@68°F)

Application	Primary	Secondary
All Models	0.4-1.0	6000-30,000

Coil Output

At all engine speeds	30 KV Min.

FUEL SYSTEMS

CARBURETORS

Application	Model
Light Duty	
5.0L 2-Bbl.	Rochester M2ME
5.0L & 5.7L 4-Bbl.	Rochester M4ME
Heavy Duty	
All	Rochester M4MC

GENERAL SERVICING (Cont.)

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

ELECTRICAL

BATTERY

Application	Cold Crank Amps@0° F	Reserve Capacity Minutes
5.0L & 5.7L		
Standard	350	80
Optional	430	100
7.4L	465	125

STARTER

Delco ..... Overrunning Clutch

Starter Specifications

Application	Volts	Amps	Test RPM
5.0L	9	50-80	5500-10,500
5.7L & 7.4L	9	65-96	7500-10,500

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

ALTERNATOR

Delco ..... Integral Regulator

General Motors offers either a 37 amp, 42 amp, 61 amp or an 80 amp alternator as standard or optional equipment.

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

ALTERNATOR REGULATOR

Delco – Non Adjustable, Integral with Alternator.
Operating Voltage (@85°F) 13.8-14.8

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

REPLACEMENT INTERVALS

Component	Interval (Miles)
Oil Filter	15,000
Fuel Filter	15,000
PCV Filter & Valve	15,000
Air Filter	30,000
Spark Plugs	30,000

BELT ADJUSTMENT

Tension (Lbs.) Using Strand Tension Gauge

Application	New Belt	Used Belt
Air Conditioning	135-145	90-100
All Others	120-130	70-80

CAPACITIES (EXCEPT COOLING)

Application	Quantity
Crankcase	
5.0L & 5.7L	①4.0 qts.
7.4L	①6.0 qts.
Automatic Transmission (Dexron)	
THM 350	
Overhaul	10.0 qts.
Refill	6.0 pts.
THM 400	
Overhaul	11.0 qts.
Refill	7.0 pts.
Manual Transmission (SAE 80W-90)	
3-Speed	3.0 pts.
4-Speed	4.0 qts.
Transfer Case (SAE 10W-30)	5.0 pts.
Front Axle (SAE 80W-90)	5.0 pts.
Rear Axle (SAE 80W-90)	②
Power Take-Off (SAE 80W-90)	5.0 qts.
Fuel Tank	
Pickup Models	
Short Wheelbase (Each Tank)	16.0 gals.
Long Wheelbase (Each Tank)	20.0 gals.
Van Models	
Standard	22.0 gals.
Optional	33.0 gals.
Suburban Models	
Standard	25.0 gals.
Optional	31.0 or 40.0 gals.
Blazer Models	
Standard	25.0 gals.
Optional	31.0 gals.
"P" Models	
Standard	31.0 gals.
Optional	40.0 gals.

① – Add 1 quart for filter change.
② – Fill to bottom of filler hole.

CAPACITIES (COOLING)

Application	Quantity
5.0L	
Pickup	17.5 qts.
Van	19.0 qts.
5.7L	
Pickup	17.5 qts.
Van	17.0 qts.
"P" Models	20.0 qts.
7.4L	24.0 qts.