

TUNE-UP

ENGINE IDENTIFICATION

Engine identification number is located at the upper front corner of the right bank. Engine displacement is indicated by first four digits of number.

Application	Digits
304" (5.0L) 2-Bbl.	V-304
345" (5.6L) 4-Bbl.	V-345

MODEL IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

Vehicle Identification Number (VIN) appears on left frame rail front and on a plate attached to right door hinge pillar.

TUNE-UP NOTES

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.

NOTE — Due to production changes, 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, use the decal specifications.

ENGINE COMPRESSION

Compression Ratio	
304"	8.19:1
345"	8.28:1
Compression Pressure	①
Recommended Fuel	Unleaded (87 AKI Minimum)

① — Lowest cylinder pressure must be at least 75% of highest cylinder pressure.

VALVE TAPPET CLEARANCE

Application	Clearance
Hydraulic Lifters	Zero Lash

SPARK PLUGS

Gap035"
Torque	28-30 Ft. Lbs.

Spark Plug Type

Application	Champion No.
All Models	RJ-10Y

HIGH TENSION WIRE RESISTANCE

Carefully remove distributor cap and spark plug wire at plug. Connect an ohmmeter to inside of spark plug terminal boot and to terminal inside distributor cap. If resistance is not to specification, or if it fluctuates from infinity to any value, replace cable.

Resistance (Ohms)

Application	Maximum
Ohms Per Foot	8,000

DISTRIBUTOR

All models are equipped with Prestolite electronic ignition system and no adjustments are required.

Air Gap008"
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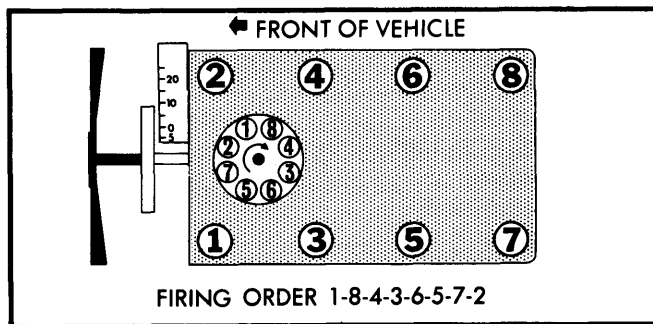


Fig. 1 Firing Order and Timing Marks (304" and 345" Engines)

IGNITION TIMING

1) Connect timing light. Disconnect and plug vacuum advance hose. Start engine and run until it reaches normal operating temperature. Observe engine idle speed and compare to specifications.

2) Adjust idle speed if necessary. Check ignition timing. To adjust, loosen distributor clamp and turn distributor until timing is correct. Tighten clamp and recheck timing. Stop engine and reconnect vacuum hoses and remove timing light.

Ignition Timing Specifications (Degrees BTDC @ RPM)

Application	Timing
304" V8	10@650
345" V8	7.5@700

HOT (SLOW) IDLE RPM

1) Apply parking brake. With air cleaner in place, shift lever in neutral (all models), air conditioning "OFF" and engine at normal operating temperature, connect tachometer.

2) With engine running, adjust curb idle screw to obtain specified RPM.

TUNE-UP (Cont.)

Slow Idle Speed (RPM)

Application	RPM
304" V8	650
345" V8	700

IDLE MIXTURE

PREPARATION

- 1) Set parking brake. With air cleaner installed, transmission shift lever in "NEUTRAL" and A/C off, disconnect and plug vacuum purge hose at charcoal canister. If canister is equipped with vacuum controlled bowl vent switch, be sure vacuum supply is still connected to switch.
- 2) Do not idle engine continuously for more than 3 minutes at a time. After each 3 minutes of idling, run engine at 2000 RPM for 1 minute and resume procedure. In winter months, make idle mixture check as soon as possible after engine will run without choke.

WITH EXHAUST ANALYZER

- 1) Connect tachometer to engine. Disconnect air injection hoses at check valves and insert probes from CO meter (SE-2842) into check valves. Be sure to insert fully so probe opens valve.
- 2) Start engine and warm to normal operating temperature. Adjust curb idle speed to specifications.
- 3) Observe CO% and adjust to specifications. Readjust idle speed and mixture screws to provide specified CO%. If specifications cannot be achieved, remove limiter caps by filing (do not pry off). Gently seat idle mixture screws. Adjust idle speed and mixture screws equal number of turns to provide specified CO%. Then install new limiter caps with tab at mid-position. Disconnect test equipment and reconnect air injection check valve hoses.

Idle Mixture Specifications (Exhaust Analyzer Method)

Application	CO%
304" V8	0.4-1.0
345" V8	0.5-1.5

WITHOUT EXHAUST ANALYZER

- 1) Connect tachometer. Note position of idle mixture screws. File off (do not pry off) limiter caps. Set idle screws to position noted prior to cap removal.
- 2) Run engine at normal operating temperature. Adjust to curb idle speed. Gently seat idle mixture screws. Carefully adjust screws counterclockwise (equally) to provide maximum idle speed. Do not turn screws past point where highest RPM is first obtained (lean best idle).
- 3) Adjust curb idle speed screw so idle is above normal setting by the RPM specified in Idle Mixture Table. Turn mixture screws

(equally) clockwise to obtain speed drop back to curb idle speed. Install new plastic limiter caps with tabs in mid-position.

Idle Mixture Specifications (Speed Drop Method)

Application	Speed Drop (RPM)
304" V8	85
345" V8	100

COLD (FAST) IDLE RPM

- 1) Run engine at normal operating temperature. Shut off engine. Remove air cleaner and disconnect and plug hose at EGR valve. Connect tachometer and check timing. Set curb idle speed.
 - 2) With engine stopped, open throttle and move choke plate to fully closed position. Holding choke closed, close throttle. Fast idle screw should be on high step of fast idle cam on 304" 2-Bbl. and on 2nd step (and against high step) on 345" 4-Bbl. engines.
 - 3) Without touching accelerator, start engine. Allow engine speed to stabilize and observe tachometer for fast idle RPM. If necessary, adjust fast idle speed screw to achieve specification.
- 2) and 3).

Fast Idle Speed (RPM)

Application	RPM
304" 2-Bbl.	2200 on High Step
345" 4-Bbl.	1600 on 2nd Step

DASHPOT ADJUSTMENT

To adjust dashpot, first set curb idle speed to specification. Depress dashpot plunger completely into dashpot and measure clearance between plunger and throttle lever pad, using a gauge from SE-2425 Gauge Set. If not within clearance, loosen jam nut and rotate dashpot to achieve clearance of .070", then tighten jam nut.

MANIFOLD HEAT CONTROL VALVE

Check valve periodically for spring tension and freedom of movement. Lubricate every 15,000 miles, but only when engine is cold.

FUEL PUMP

Make all tests at specified RPM. For pressure test, pinch off fuel return line, if equipped. Connect pressure gauge to fuel line at carburetor, then hold gauge at level of pump outlet. For volume test, use short hose from pump outlet into receptacle.

Pressure (At 500 RPM)	4.5-5.75 psi
Volume (At 500 RPM)	1 qt. in 1 min.

EMISSION CONTROL

See appropriate article in EMISSION CONTROL Section.

GENERAL SERVICING

IGNITION

DISTRIBUTOR

Engines use Prestolite electronic ignition (breakerless) distributor with external ignition coil and integral electronic control unit.

Other Data & Specifications — See *Tune-Up and Prestolite Distributors* in *ELECTRICAL* Section.

IGNITION COIL

Resistance

Primary (at 70° F) 1.2-1.4 ohms
Secondary (at 70°F) 9,400-11,100 ohms

Coil Output at 2500 RPM 20 KV Minimum

FUEL SYSTEMS

CARBURETORS

Application	Type
304" 2-Bbl.	Holley 2245C
345" 4-Bbl.	Carter Thermo-Quad

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

ELECTRICAL

BATTERY

12 Volt — Negative Ground.

Application	Cold Cranking Amps
Standard	300
Optional	390, 500

STARTER

Delco Enclosed Shift Lever
Free Speed Voltage 9 at 5500-10,500 RPM
Free Speed Amperage 50-80 at 5500-10,500 RPM

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

ALTERNATOR

Delco Integral Regulator

Application	Rated Amp. Output
Standard	37
Optional	63

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

ALTERNATOR REGULATOR

Delco — Nonadjustable, integral with alternator.

Operating Voltage 13.8-14.4 volts

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

ENGINE

INTAKE MANIFOLD TIGHTENING

Tighten bolts to 25-30 ft. lbs.

CAPACITIES

Application	Quantity
Cooling (Includes Heater)	
304" V8	21.0 qts.
345" V8	22.0 qts.
Crankcase (Includes Filter)	6.0 qts.
Man. Trans. (SAE 20W-30)	
3-Spd.	3.0 pts.
4-Spd.	7.0 pts.
Auto. Trans. (Dexron)	19.0 pts.
Transfer Case (SAE 90W mineral oil)	3.5 pts.
Front Axle (SAE 85W-140)	4.0 pts.
Rear Axle (SAE 85W-140)	3.0 pts.
Fuel Tank	19.0 gals.

FILTERS & CLEANERS

Filter or Cleaner	Service Interval (Miles)
Oil Filter	① Replace 5000
Air Filter	Clean 6000
	Replace 15,000
PCV Valve	Clean 15,000
	Replace 30,000
Vapor Storage Canister Filter	Replace 15,000
Fuel Filter	Replace 15,000

① — Or every oil change.

BELT ADJUSTMENT

Adjust belt tension to obtain specified amount of deflection when belt is depressed in the middle of a 1 foot span.

Belt Width	Deflection
3/8" Belt	1/2"
1/2" & 3/4" Belts	7/16"
7/8" Belt	1/2"
1" Belt	9/16"