TUNE-UP

ENGINE IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER CODE

Engine can be identified by 8th digit of Vehicle Identification Number. The VIN number is stamped on a metal plate attached to top left corner of instrument panel cover.

VIN Engine Codes

Application	Code
1.6L (98") 2-Bbl.	2
2.3L (140") 2-Bbl.	A

TUNE-UP NOTES

NOTE – *Due to running changes in production and emission standards, manufacturer recommends that specifications shown on engine compartment Emission Control Tune-Up Decal be used in all instances.*

NOTE – *If the Dura Spark 2-piece distributor cap must be removed, first remove top portion, then rotor, then bottom portion. If any spark plug wire is disconnected with this system, connection must first be greased with silicone grease before it is attached.*

NOTE – *When connecting a tachometer to Dura Spark ignition coil, install the alligator clip on tachometer into the "DEC" (TACH TESTING) cavity.*

CAUTION – *On vehicles equipped with catalytic converters, do not allow or create a condition of engine misfire in more than one cylinder for more than 30 seconds. Damage to converter may result due to loading of converter with unburned air/fuel mixture.*

ENGINE COMPRESSION

Compression Ratio	9.0:1
Recommended Fuel	Unleaded (87 AKI Minimum)

Test compression with all spark plugs removed and engine warm. Crank engine through at least five compression strokes before recording pressure. Maximum compression variation between highest and lowest cylinder must not exceed 25%.

VALVE CLEARANCE

Application	Clearance
Hydraulic Lifters	Zero Lash

VALVE ARRANGEMENT

1.6L
I-E-I-E-I-E-I-E (Front to Rear)
2.3L
E-I-E-I-E-I-E-I (Front to Rear)

SPARK PLUGS

Application	Gap (In.)	Torque (Ft. Lbs.)
1.6L	.042-.046	17-22
2.3L	.032-.036	10-15

Spark Plug Type

Application	Autolite No.
1.6L	AGSP-32
2.3L	AWSF-42

HIGH TENSION WIRE RESISTANCE

1) Using suitable tool (T74P-6666-A), loosen wires from spark plugs by twisting spark plug boot carefully to loosen its seal on spark plug. Turn ignition switch off and remove distributor cap.

2) Using an ohmmeter, check resistance of each wire by connecting one lead to spark plug terminal and other lead to distributor cap insert. If resistance exceeds 5000 ohms per inch, remove wire from cap and check resistance again. If still in excess of 5000 ohms per inch, replace wire.

NOTE – *Whenever a high tension wire is disconnected, the interior of the spark plug terminal boot must be coated with dielectric silicone grease before reconnection.*

DISTRIBUTOR

All models are equipped with Dura Spark II ignition systems and no adjustments are necessary.

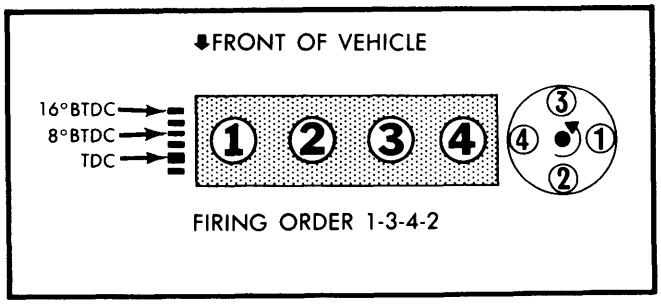

Fig. 1 1.6L Firing Order and Timing Marks

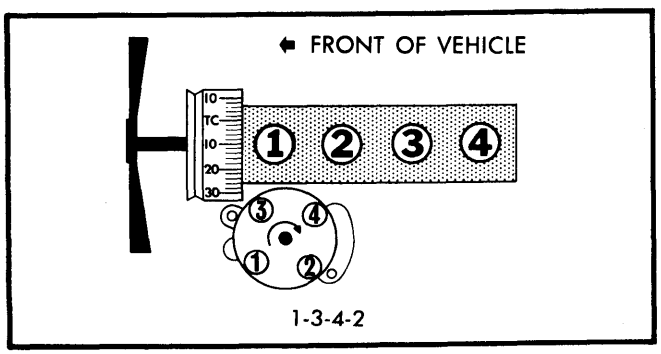

Fig. 2 2.3L Firing Order and Timing Marks

TUNE-UP (Cont.)

IGNITION TIMING

NOTE – *Timing instrument should be connected to number one spark plug wire using a suitable adapter or snap-on connector. Do not puncture spark plug wire or boot to make connection.*

1) Connect tachometer and timing light, then warm engine to normal operating temperature. Disconnect and plug vacuum hose at distributor advance unit. Place transmission selector in "D" on 2.3L engines only.

2) With engine idling at specified RPM, check timing. If within ±2° of specified timing, do not reset. If not, loosen distributor and adjust timing.

3) On all models, remove test equipment. Reconnect vacuum line at distributor.

Ignition Timing Specifications (Degrees BTDC@RPM)

Application	Man. Trans.	Auto. Trans.
1.6L	①10@800	10@800
2.3L	6@700	6@700

① – On Calibration No. 1-3N-R0, set to 6@800.

SLOW & FAST IDLE ADJUSTMENT

1.6L ENGINES ONLY

NOTE – *Whenever idle speed is changed, the automatic transmission throttle linkage must be adjusted.*

1) Warm engine to normal operating temperature and connect tachometer. Disconnect and plug vacuum hoses at EGR and canister purge valves.

2) Locate vacuum source for air injection control valve by-pass connection. If supply is from carburetor, disconnect and plug supply hose at control valve. Connect a hose from manifold vacuum to control valve by-pass connection.

3) Place fast idle screw on 2nd step of fast idle cam. Run engine until cooling fan comes on, then adjust fast idle RPM. Tighten lock nut after adjustment.

4) Connect vacuum lines at EGR and canister purge valve. Return engine to idle speed and adjust RPM with idle speed adjustment screw. Run engine at 2000 RPM briefly, then recheck idle speed.

5) If equipped with A/C, turn A/C on and disconnect compressor clutch wire. If no A/C, disconnect and plug vacuum hose at throttle kicker. Run a hose from manifold vacuum to kicker. On all models, run engine until cooling fan comes on, then adjust RPM using screw on top of kicker.

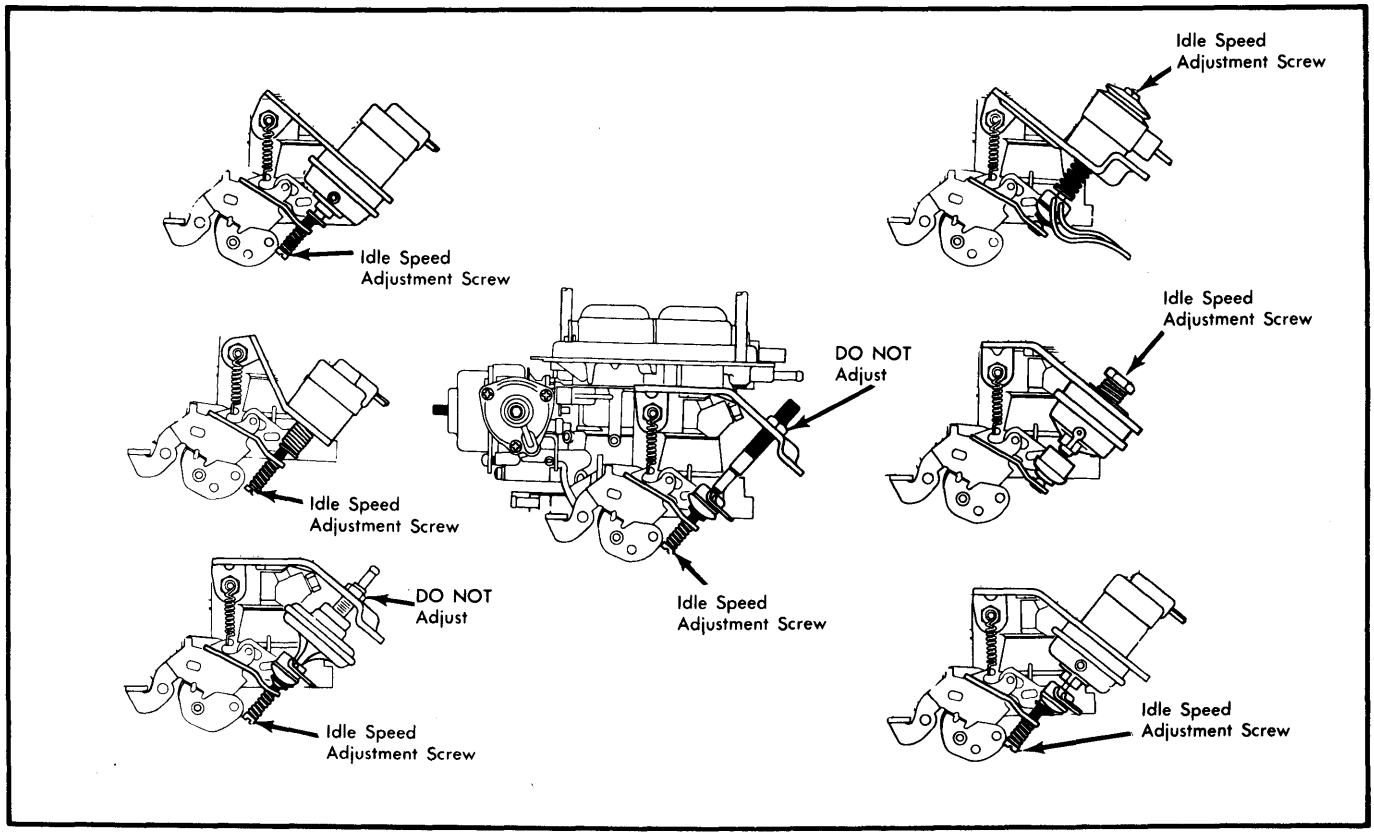

Fig. 3 2.3L Idle Adjustment Locations

TUNE-UP (Cont.)

6) Remove added vacuum hoses and reconnect original hoses to throttle kicker and air injection control valve. Reconnect A/C compressor clutch wire.

2.3L ENGINES ONLY

1) Warm engine to operating temperature and connect tachometer. Disconnect and plug vacuum hoses at EGR and canister purge valve. Disconnect ported vacuum switch (PVS) on models equipped with feedback carburetor.

2) Place fast idle screw on 2nd step of fast idle cam. Adjust fast idle RPM. Open throttle slightly to allow cam to rotate and return engine to curb idle.

3) With A/C control off, place transmission selector in "D". Adjust curb idle using appropriate adjustment screw. *See Fig. 3.*

4) Run engine at 2000 RPM briefly, then recheck idle speed. Reconnect vacuum hoses at EGR and purge valve. Reconnect PVS wire and remove test equipment.

NOTE – *No A/C-ON adjustment is necessary.*

Idle Speed Specifications (RPM)

Application	Curb Idle	Throttle Kicker
1.6L		
Man. Trans.①	900	1700
Auto. Trans.②	750	1300
2.3L		
Man. Trans.	850	.....
Auto. Trans.	750	.....

① – Set Calibration No. 1-3D-R0 to 700/1150.
② – Set Calibration Nos. 1-4C-R0 & 1-4C-R10 to 750/1850.

Fast Idle Speed Specifications

Application	RPM
1.6L	
Man. Trans.①	2400
Auto.Trans.	2400
2.3L	
Man. Trans.	2000
Auto Trans.	2300

① – Set Calibration No. 1-3D-R10 to 2200.

IDLE MIXTURE ADJUSTMENT

IDLE MIXTURE PLUG REMOVAL

1.6L Engines – Drill a 3/32" hole through mixture screw cap. Remove both metal and plastic caps with a screw extractor. Count the number of turns required to seat needle, then remove needle and check for wear or damage. Reinstall needle at original position.

2.3L Engines – Invert carburetor and center punch a mark 1/4" in from edge underneath mixture screw cap. Drill a 3/16" hole through casting, then use a pin punch to drive out cap. Count the number of turns required to seat needle, then remove needle and check for wear or damage. Reinstall needle at original position.

PROPANE ENRICHMENT PROCEDURE
1.6L & 2.3L ENGINES

1) Connect tachometer and timing light. Ensure hot idle compensator is closed (if equipped). Disconnect and plug canister purge return hose at engine or air cleaner. Disconnect fresh air duct from air cleaner and insert hose from propane tank 3/4 way into air cleaner duct.

2) Disconnect and plug the 2 hoses at dump valve portion of dump valve/diverter valve. On vehicles with feedback carburetor, disconnect wires from PVS. Leave all hoses connected to air cleaner, but position air cleaner aside to make adjustments. Air cleaner must be installed when measuring RPM.

3) Check idle speed and timing. Reset if necessary. Remove PCV valve from grommet and allow to draw air. On 1.6L engines, no PCV valve is used. Locate crankcase vent hose connector and disconnect hose to intake manifold. Allow to draw fresh air.

4) Run engine briefly at 2500 RPM before each mixture check. With engine idling, gradually open propane valve and watch for RPM gain. When RPM begins to drop off, note maximum RPM gained. If gain is within "RPM Gain" specifications, do not reset.

5) If not within specifications, remove carburetor and mixture needle plug. Reinstall carburetor. Warm engine to operating temperature, run briefly at 2500 RPM, then continue procedure.

6) If measured speed gain was higher than specified, turn mixture screw counterclockwise (rich) slightly, then repeat propane procedure until gain matches "Reset RPM" speed.

7) If measured speed gain was lower than specified, turn mixture screw clockwise (lean) slightly, then repeat propane procedure until gain matches "Reset RPM" speed.

8) Reconnect PCV hose and other disconnected vacuum lines or wiring. Readjust idle speed if necessary, then remove test equipment.

Idle Mixture Adjustment Specifications

Application	RPM Gain	Reset RPM
1.6L		
Man. Trans.	20-200	100
Auto. Trans.	10-40	20
2.3L		
Man. Trans.	60-80	70
Auto. Trans.①	90-130	110

① – Calibration No. 1-6A-R0 Gain is 20-40, Reset 30.

DASHPOT ADJUSTMENT

1.6L ENGINES

Dashpot must be adjusted after curb idle speed is adjusted. With engine off, collapse dashpot and measure clearance between plunger and throttle lever pad. Adjust clearance by rotating dashpot.

TUNE-UP (Cont.)

Dashpot Clearance Specifications

Application	Clearance (In.)
1.6L	
Man. Trans.①	.13-.15
Auto. Trans.	.15-.17

① — Set Calibration No. 1-3D-R10 to .15-.17".

AUTOMATIC CHOKE

All models are equipped with tamper-proof choke covers that are riveted on. No adjustment is possible.

FUEL PUMP

Make all tests with engine at normal operating temperature and at idle speed with transmission in neutral. When making pressure test pinch off pump-to-tank fuel return line.

Pressure	
1.6L	4.0-6.0 psi
2.5L	5.0-7.0 psi
Volume	1 pint in 30 sec.

EXHAUST EMISSION SYSTEMS

See EXHAUST EMISSION SYSTEMS section.

GENERAL SERVICING

IGNITION

DISTRIBUTOR

All models are equipped with Motorcraft Dura Spark II ignition system.

IGNITION COIL

Coil Resistance (Ohms@75°F)

Application	Primary	Secondary
All Models	1.13-1.23	7700-9300

CARBURETION

CARBURETORS

Application	Model
1.6L	Motorcraft 740
2.3L	Holley-Weber 5200 or 6500

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

ELECTRICAL

BATTERY

Application	Standard Amps	Optional Amps
1.6L	45, 48	....
2.3L	36, 45	54

STARTER

Motorcraft positive engagement type.

Application	Cranking RPM	Cranking Amps
All Models	180-260	150-250

ALTERNATOR

Motorcraft external regulator alternator.

Application	Std. Amp.	Opt. Amp.
All Models	40	60, 65

ALTERNATOR REGULATOR

Motorcraft Solid State Electronic Regulator, calibrated and preset by manufacturer. No adjustment is required or possible on this unit.

BELT ADJUSTMENTS

Tension (Lbs.) With Strand Tension Gauge

Application	New Belt	①Used Belt
Standard "V" Belt	50-80	40-60
Ribbed "V" Belts②		
5K	110-140	110-130
6K (w/o Tensioner)	140-170	140-160
6K (w/Tensioner)	85-140	85-140

① — Any belt operated for 10 minutes or longer.
② — 5K or 6K indicates number of grooves per inch.

COOLING CAPACITIES

Application	Capacity
Escort, Lynx	6.3 qts.
Cougar, Fairmont, Granada, Zephyr	
Std.	8.6 qts.
A/C	9.2 qts.
Capri, Mustang	
Std.	8.6 qts.
A/C	9.0 qts.

TUNE-UP (Cont.)

OIL & FUEL CAPACITIES

Application	Capacity
Crankcase	
1.6L (Including filter)	4.0 qts.
2.3L	①4.0 qts.
Fuel Tank	
Escort, Lynx	
Man. Trans.	9.0 gals.
Auto. Trans.	10.0 gals.
Opt. Tank	11.3 gals.
Capri, Mustang	12.5 gals.
Cougar, Fairmont, Granada, Zephyr	14.0 gals.

① — Add 1 qt. with filter change.

TRANSMISSION & DIFFERENTIAL CAPACITIES

Application	Capacity
Man. Transaxle (ATF Type "F")	5.0 pts.
Man. Trans. (Man. Trans. Lube)	
4 Spd.	
80ET	2.8 pts.
SR4	3.5 pts.
SROD	4.5 pts.
5 Spd.	3.7 pts.
Auto. Transaxle (ATF Type "F")	9.8 qts.
Auto. Trans. (Dexron II)	
C-3	8.0 qts.
C-4	6.8 qts.
Rear Axle (Hypoid Gear Lube)	
6.75" Axle	2.5 pts.
7.5" Axle	3.5 pts.

REPLACEMENT INTERVALS

Component	Interval (Miles)
Oil Filter	10,000
Air Filter	30,000
PCV Filter	
1.6L	30,000
2.3L	50,000
Spark Plugs	30,000