TUNE-UP

ENGINE IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER CODE

The engine can be identified by the 8th digit of the Vehicle Identification Number (VIN) which is stamped on a metal plate located at the upper left corner of the windshield.

VIN Engine Code

Application	Code
3.8L (232") V6	3

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 – *Before making a compression check or cranking engine with a remote starter switch, disconnect ignition wire at distributor.*

CAUTION – *Do not remove ignition wires while engine is running. Ignition voltage is extremely high and can cause fatal electrical shock.*

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 removed, connection must first be coated with silicone grease before it is reconnected.*

ENGINE COMPRESSION

Test compression with all spark plugs removed and engine at normal operating temperature. Crank engine through at least 5 compression strokes before recording reading. Maximum variation between cylinders should not exceed 25%.

VALVE CLEARANCE

Hydraulic Lifters ..... Zero Lash

VALVE ARRANGEMENT

I-E-I-E-I-E (Front to rear, both banks).

SPARK PLUGS

Application	Gap (In.)	Torque Ft. Lbs. (N·m)
All Models	.044	17-22 (23-30)

Spark Plug Type

Application	Motorcraft No.
All Models	AGSP-52

HIGH TENSION WIRE RESISTANCE

Loosen spark plug wires from plugs. Remove distributor cap with wires attached. Check resistance of each wire by connecting one ohmmeter lead to cap terminal and the other lead to spark plug end of wire. If resistance is over 5000 ohms per inch, remove wire from cap and retest. If still too high, replace wire.

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

DISTRIBUTOR

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

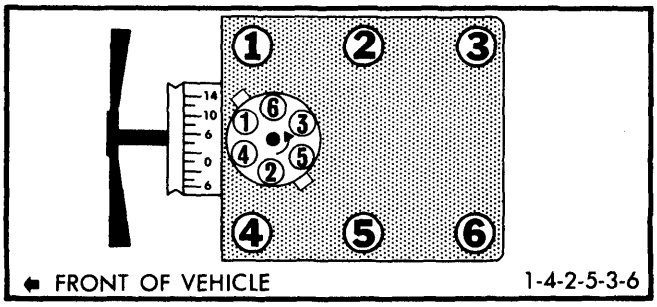

Fig. 1 Firing Order and Timing Marks

IGNITION TIMING

NOTE – *Magnetic probe timing receptacle is provided, located at 135° ATDC. Do not use this location for timing with a conventional timing light.*

1) Warm engine to normal operating temperature. Disconnect and plug distributor vacuum hoses. Stop engine.

2) If vehicle is equipped with 3-plug ignition module (Basic Part No. 12A244), disconnect 2-wire connector. Place a jumper wire across the Black and Yellow wires in module side of connector.

3) Start engine and check timing. If within ±2°, do not adjust. If not, loosen hold-down bolt and turn distributor to adjust.

4) If equipped with 3-plug module, remove jumper wire and reconnect 2-wire connector. Reconnect vacuum lines at distributor and remove test equipment.

Ignition Timing Specifications (Degrees BTDC@RPM)

Application	Man. Trans.	Auto. Trans.
All Models		
Federal	12@800	10@800
Calif.	12@800	12@800

HOT (SLOW) IDLE RPM

NOTE – *Leave all hoses connected to air cleaner when performing carburetor adjustments. Air cleaner may be placed aside for adjustments, but must be installed during speed measurements.*

1) Warm engine to normal operating temperature and turn all accessories off. On Calif. models, disconnect and plug vacuum hose at throttle kicker.

2) Check curb idle. If adjustment is needed, use curb idle screw (Calif.) or solenoid bracket adjusting nut (Federal). Place

TUNE-UP (Cont.)

transmission in neutral and reve engine, then recheck idle speed. Reconnect throttle kicker hose.

3) Adjust dashpot clearance (plunger compressed) to .090-.140". On Calif. models, apply pressure to nylon nut on accelertor pump to take up linkage clearance. Turn nut until .010" clearance exists between top of pump and pump lever. Turn pump rod counterclockwise 1 turn to set preload.

4) On Calif. models, disconnect and plug VOTM kicker hose, then apply 10 in. Hg vacuum to kicker. On Federal models, turn air conditioning and blower fan on, then disconnect compressor clutch. On Calif. models, set solenoid RPM by turning VOTM bracket screw. On Federal models, turn hex nut between solenoid and dashpot.

5) Remove test equipment. Reconnect vacuum hoses or electrical wiring.

Idle Speed Specifications

Application	Curb Idle A/C Off	Curb Idle A/C On
All Models	550	650

IDLE MIXTURE ADJUSTMENT

IDLE MIXTURE PLUG REMOVAL

2150 Carburetors – Remove carburetor and mount upsidedown on a carburetor stand. Place support underneath plug caps, then use punch and hammer to tap spring tang on plug out. Reinstall carburetor.

NOTE – *No mixture screws are used on 7200 VV carburetors.*

PROPANE ENRICHMENT PROCEDURE

NOTE – *No idle mixture adjustment is possible on vehicles equipped with 7200 VV carburetors. If engine performance is unsatisfactory, see Ford MCU article in COMPUTERIZED ENGINE CONTROLS Section.*

1) Connect tachometer and timing light. Ensure hot idle compensator (if equipped) is closed during testing. Disconnect canister purge hose at engine or air cleaner and plug port. Disconnect fresh air duct from air cleaner and insert hose from propane tank ¾ way into air cleaner duct.

NOTE – *Leave all vacuum lines attached to air cleaner. Air cleaner may be placed aside for adjustment, but must be installed for speed checks.*

2) Revise air injection dump valve hoses as follows: If valve has 2 vacuum fittings, disconnect and plug the hoses. If only 1 vacuum fitting, disconnect and plug hose, then run a jumper hose from manifold vacuum to fitting on valve.

3) Check and adjust curb idle and timing. Remove PCV valve from grommet and allow to draw fresh air. Run engine at 2500 RPM for 15 seconds.

4) With engine idling, open propane valve slowly and watch for RPM gain. When RPM begins to drop off, note maximum speed gain. If gain is within "RPM Gain" specifications, DO NOT adjust mixture.

5) If not within specifications, remove mixture screw plugs. Reinstall carburetor and run engine briefly at 2500 RPM. Proceed with adjustments.

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

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

8) Reconnect PCV and other disconnected hoses. Readjust idle speed if necessary, then remove test equipment.

Idle Mixture Adjustment Specifications

Application	RPM Gain	Reset RPM
All Models	50-150	100

COLD (FAST) IDLE RPM

1) Warm engine to normal operating temperature, then disconnect and plug EGR and canister purge hoses. On Granada and Cougar Calif. models, disconnect and plug vacuum hose to triple vacuum switch.

2) Place fast idle screw on 2nd step of cam, then adjust fast idle speed. Reconnect all hoses and remove test equipment.

Fast Idle Speed

Application	RPM
All Models	
Federal	2200
Calif.	1200

AUTOMATIC CHOKE

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

FUEL PUMP

Check fuel pressure and volume with pump installed on engine, operating temperature normal and engine running at curb idle. Pinch off pump-to-tank return line during test.

Application	Specification
Pressure	6.0-8.0 psi
Volume	1 pint in 20 seconds

EXHAUST EMISSION SYSTEMS

See EXHAUST EMISSION SYSTEMS section.

GENERAL SERVICING

IGNITION

DISTRIBUTOR

All models are equipped with Motorcraft Dura-Spark II Ignition system. The V6 model uses a V8 distributor base, unique adaptor section and a 6-cylinder rotor, armature and cap.

IGNITION COIL

Coil Resistance (Ohms@75° F)

Application	Primary	Secondary
All Models	1.13-1.23	7700-9300
Ballast Resistor		1.05-1.15 ohms

CARBURETION

CARBURETORS

Application	Model
Federal	Motorcraft 2150 2-Bbl.
Calif.	Motorcraft 7200 VV 2-Bbl.

ELECTRICAL

BATTERY

Application	Standard Amps	Optional Amps
All Models	45	54

STARTER

Motorcraft positive engagement type.

Application	Volts	Amps	Test RPM
All Models			
4" Armature	12	80	6700 Min.
4½" Armature	12	85	7380-9356

ALTERNATOR

Motorcraft external regulator with side or rear terminals.

Application	Standard Amps	Optional Amps
All Models	40, 60, 65	70, 100

ALTERNATOR REGULATOR

Motorcraft Solid State Electronic Alternator Regulator is preset by manufacturer and no adjustment is possible.

REPLACEMENT INTERVALS

Component	Interval (Miles)
Oil Filter	7,500
Air Filter	30,000
PCV Filter	30,000
Fuel Filter	50,000
Spark Plugs	30,000

COOLING CAPACITIES

Application	Quantity
Continental	11.1 qts.
All Other Models	
Standard	8.4 qts.
With A/C	8.5 qts.

TRANSMISSION & DIFFERENTIAL CAPACITIES

Application	Quantity
Automatic Transmission	
AOT (Dexron II)	12.0 qts.
C-5 (ATF Type "H")	11.0 qts.
Rear Axle (Hypoid Gear Lube)	
Continental	3.75 pts.
All Other Models	3.25 pts.

OIL & FUEL CAPACITIES

Application	Quantity
Crankcase (Includes Filter)	4.0 qts.
Fuel Tank	
Continental	
Standard	20.0 gals.
Optional	22.6 gals.
Cougar & Granada	
Standard	16.0 gals.
Optional	20.0 gals.
Thunderbird & XR-7	21.0 gals.

BELT ADJUSTMENT

Application	New Belt	Used Belt
V-Belts		
¼" Belt	50-80	40-60
Exc. Air Pump	120-160	90-120
Air Pump	90-130	90-120
Ribbed Belts①		
5K	130-170	120-150
6K	160-200	130-160

① — 5K or 6K indicates number of ribs per inch.