1975-79 TUNE-UP PROCEDURES
Ford Motor Co. V8 Tune-Up

ENGINE IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

Engine can be identified by 4th character of Vehicle Identification Number (VIN). Number is the first line of rating plate or vehicle certification label.

Cowl & Windshield Models - Rating plate is located on right side of cowl top panel under hood.

F100/350, E100/350, U150 (1979 Bronco) - Rating plate is located on lock face of left front door.

P350 - Rating plate is located on boxed items and affixed by body manufacturer.

U150 (1975-78 Bronco) - Rating plate is located on inner panel of glove box door.

ENGINE IDENTIFICATION CODE

ENGINE CODE

Application	Code
302" 2-Bbl.	G
351" M & W 2-Bbl.	H
360" 2-Bbl.	Y
390" 2-Bbl.	H
390" 4-Bbl.	M
400" 2-Bbl.	S
460" 4-Bbl.	
"E" Models	A
All Others	J

TUNE-UP NOTES

NOTE: For tune-up, California models built before 1977 and Federal models built before 1978, "Light Duty" refers to vehicles 6000 lbs. GVW or less and "Heavy Duty" to vehicles 6001 lbs. or more. 1977 California and Federal models built after 1978, "Light Duty" refers to vehicles 8500 lbs. GVW or less and "Heavy Duty" to vehicles 8501 lbs. or more.

NOTE: In some applications within this article it will be necessary to refer to engine calibration number. To determine location of calibration number decal on engine, refer to Ford Motor Co. Vacuum Diagrams in EMISSION CONTROL section.

NOTE: When connecting a tachometer to SSI coil, install the alligator clip on tachometer into the "DEC" (TACH TEST) cavity.

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.

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: Idle speed adjustment procedures must be followed exactly as outlined. See HOT (SLOW) IDLE RPM in this article.

ENGINE COMPRESSION

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

COMPRESSION SPECIFICATIONS

Application	Specification
Compression Ratio	
302"	8.4:1
351" W	8.3:1
351" M & 400"	8.0:1
460"	8.0:1
Recommended Fuel	[1] (87 AKI Minimum)

[1] - Leaded or unleaded. If equipped with a catalytic converter, unleaded fuel (87 AKI Minimum) must be used.

VALVE CLEARANCE

VALVE CLEARANCE SPECIFICATIONS [1]

Application	Allowable	Desired
302"	.071-.193"	.096-.165"
351" W	.098-.198"	.123-.173"
351" M, 360", 390" & 400"	.100-.200"	.125-.175"
460"	.075-.175"	.100-.150"

[1] - Clearance specified is measured at valve stem tip with tappet collapsed.

VALVE ARRANGEMENT

302", 351", 400" & 460"

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).

360" & 390"

E-I-E-I-I-E-I-E (Both Banks, Front-to-Rear).

SPARK PLUGS

SPARK PLUG SPECIFICATIONS

Specifications	Application
Gap	.042 - .046"
Torque	
460" (1979 Only)	5-10 ft. lbs.
All Others	10-15 ft. lbs.

SPARK PLUG TYPE

Application	Autolite No.
302", 351, 400" & 460"	[1] ASF-42 or ARF-42
360" & 390"	BRF-42

[1] - 1977 Heavy Duty 351" W engine uses ASF-24.

HIGH TENSION WIRE RESISTANCE

1) Loosen wires from spark plugs by twisting spark plug boot on spark plug. Remove wires by pulling on plug boot. Remove distributor cap, leaving wires connected to cap.

NOTE: DO NOT disconnect wires from distributor cap unless replacement is necessary.

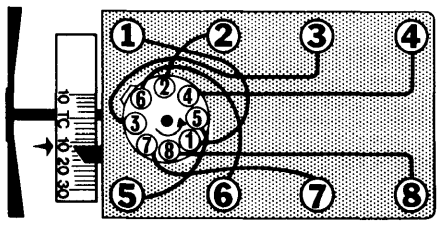
2) Check resistance of each wire by connecting one ohmmeter lead to spark plug terminal and other lead to distributor cap insert. Replace any wire with over 5000 ohms resistance per inch.

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

DISTRIBUTOR

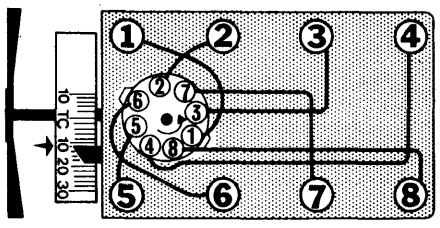
All 1975-76 models are equipped with Motorcraft Solid State Dura-Spark II Ignition systems. The 1977-79 models use Motorcraft Dura-Spark II Ignition systems. No adjustments are required.

1975-79 TUNE-UP PROCEDURES
Ford Motor Co. V8 Tune-Up (Cont.)



1-5-4-2-6-3-7-8

Fig. 1: 302", 360", 390" & 460" Firing Order & Timing Marks



1-3-7-2-6-5-4-8

Fig. 2: 351" & 400" Firing Order & Timing Marks

IGNITION TIMING

1) Determine specified timing and mark degree line on damper (some vehicles mark both pointer and damper notch). Disconnect vacuum line(s) at distributor and plug lines.

2) For vehicles with dual mode timing ignition module, disconnect the 3-pin switch assembly connector from the ignition module.

NOTE: Vehicles built in 1979 may be equipped with dual mode timing modules. They may be identified by having an ignition barometric pressure switch assembly (located near the ignition module) and include 3 connectors.

3) Connect tachometer to engine. Connect a timing light to No. 1 spark plug wire. Reset timing, if timing is more than ±2° from specification.

4) Recheck timing. Reconnect 3-pin connector to dual mode timing ignition module and check function of barometric pressure switch. Compare basic timing to requirements for elevation at which test is conducted:

ELEVATION-TIMING RELATIONSHIP

Elevation Above Sea Level	Basic Timing
Below 2400 ft.	Specification less 3-6°
2400-4300 ft.	Specification or Specification less 3-6°
Over 4300 ft.	Specification

NOTE: If timing cannot be set, check for presence of roll pin retaining reluctor to sleeve in distributor shaft. Verify Orange and Purple wires are not reversed between distributor pickup coil and ignition module. This will cause timing to be 22 1/2 degrees off.

1975 IGNITION TIMING SPECIFICATIONS (DEGREES BTDC @ RPM)

Application	Man. Trans.	Auto. Trans.
302"	[1]	[1]
351W"		12° @ 650
351M"		12° @ 650
360	6° @ 650	[1]
390		6° @ 650
400		12° @ 650
460		14° @ 650

[1] – See Emission Control Tune-Up Decal under hood.

1976 IGNITION TIMING SPECIFICATIONS (DEGREES BTDC @ RPM)

Application	Man. Trans.	Auto. Trans.
302"	[1]	[1]
351W		12° @ 650
351M		12° @ 650
360	6° @ 650	[1]
390		6° @ 650
400		12° @ 650
460		14° @ 650

[1] – See Emission Control Tune-Up Decal under hood.

1977 IGNITION TIMING SPECIFICATIONS (DEGREES BTDC @ RPM)

Application	Man. Trans.	Auto. Trans.
302"		
F100		
Federal & Calif.	6° @ 550	6° @ 550
High Alt.	8° @ 550	10° @ 550
U100 (Bronco)	[1] 8° @ 550	8° @ 550
351" W		
Light Duty		
Federal	8° @ 800	[2] 14° @ 800
Calif.	14° @ 500	14° @ 500
High Alt.	12° @ 550	12° @ 550
Heavy Duty		
Federal	6° @ 650	8° @ 550
Calif.	6° @ 650	[3] 8° @ 650
351" M		
Light Duty		
Federal	10° @ 500	[4] 10° @ 500
Calif.	18° @ 500	18° @ 500
High Alt.	10° @ 500	10° @ 500
Heavy Duty		
Federal	[5] 12° @ 650	[6] 12° @ 850
Calif.	10° @ 650	10° @ 650
400"		
Light Duty	6° @ 500	6° @ 500
Heavy Duty		
Federal	12° @ 650	12° @ 650
Calif.	12° @ 650	[7] 10° @ 650
460"	12° @ 650	12° @ 650

[1] – 4° @ 550 with Calibration No. 7-53H-R10.
[2] – 12° @ 550 with Calibration No. 7-65A-R0, 14° @ 500 with Calibration No. 7-65U-R0.
[3] – 6° @ 650 with Calibration No. 7-76J-R10.
[4] – 6° @ 500 with Calibration No. 7-60G-R11.
[5] – 6° @ 650 with Calibration No. 7-71-R10.
[6] – 14° @ 650 with Calibration No. 7-72-R10.
[7] – 12° @ 650 with Calibration No. 7-74J-R0.

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1978 IGNITION TIMING SPECIFICATIONS (DEGREES BTDC @ RPM)

Application	Man. Trans.	Auto. Trans.
302"		
Federal	6° @ 550	8° @ 550
Calif.	6° @ 550	10° @ 550
High Alt.	12° @ 550	10° @ 550
351" W		
Light Duty		
E100		
Federal	8° @ 600	14° @ 500
Calif.		10° @ 500
High Alt.		12° @ 550
E150/250	4° @ 500	8° @ 500
Heavy Duty		
Federal	6° @ 650	8° @ 550
Calif.		6° @ 650
351" M		
Light Duty		
Federal	8° @ 500	10° @ 500
Calif.	6° @ 500	8° @ 500
High Alt.		14° @ 500
Heavy Duty	6° @ 650	14° @ 650
400"		
Light Duty		
Federal	12° @ 650	12° @ 650
Calif.		10° @ 650
460"		
Federal		12° @ 650
Calif.		14° @ 650

1979 IGNITION TIMING SPECIFICATIONS (DEGREES BTDC @ RPM)

Application	Man. Trans.	Auto. Trans.
302"		
Light Duty		
Federal	[1] 6° @ 550	[2] 6° @ 550
Calif.		[3] 6° @ 550
351" M Engine		
Light Duty		
Federal	10° @ 650	6° @ 550
Calif.	[4] 10° @ 650	[5] 6° @ 500
Heavy Duty [6]	6° @ 600	12° @ 600
351" W Engine		
Light Duty		
Federal	4° @ 500	[7] 10° @ 500
Calif.		8° @ 500
Heavy Duty [6]		6° @ 650
400" Engine		
Light Duty		
Federal	10° @ 650	6° @ 550
Calif.		6° @500
Heavy Duty	3° @ 600	3° @ 600
460" Engine		
Light Duty		
All Models		14° @ 650
Heavy Duty		
All Models		8° @ 650

[1] - 4° @ 550 for Calibration No. 9-53H-R0 Federal Man. Trans.
[2] - 8° @ 550 for Calibration No. 9-54H-R0 Federal Auto. Trans.
[3] - 8° @ 550 for Calibration No. 9-54S-R0 Calif. Auto. Trans.
[4] - 8° @ 650 for Calibration No. 9-59S-R0 Calif. Man. Trans.
[5] - 10° @ 500 for Calibration No. 9-60S-R0 Calif. Auto. Trans.
[6] - Without catalytic converter.
[7] - 12° @ 500 for Calibration No. 9-64H-R0 Federal Auto. Trans.

NOTE: To improve performance on 1975-76 Federal Bronco and Pickups with 302", 360" and 390" engines, the timing may be advanced up to 6° over base specification. Test drive vehicle and ensure detonation does not occur.

NOTE: Some 1977 pickups may exhibit spark knock. To correct this, the timing may be retarded up to 6° until the knocking goes away.

NOTE: On engines that idle smoothly but become rough at 1000-2000 RPM, check for crossed Orange and Purple primary ignition wires between distributor and module. To check, turn ignition key off and set engine at initial timing mark firing point. One spoke of distributor armature should be opposite stator pole. If pole is between spokes or offset, primary wires are probably crossed.

HOT (SLOW) IDLE RPM

NOTE: Hot (Slow) Idle RPM procedures and specifications for 1975-76 vehicles are located on the Emission Decal. Specifications are not available from the manufacturer.

1975-76 MODELS

1) Place transmission selector lever in "NEUTRAL" (Man. Trans.) or "PARK" (Auto. Trans.). Warm engine to normal operating temperature. Stop engine and remove air cleaner assembly, plugging vacuum hoses. Check throttle and choke linkage for binding.
2) Connect tachometer. Ensure solenoid is energized. Turn solenoid mounting screw to set higher idle speed specified on Emission Decal Label. Run engine at 2500 RPM for 15 seconds in "NEUTRAL" (Man. Trans.) or "PARK" (Auto. Trans.). Let engine speed stabilize.
3) Disconnect wire to idle solenoid. Compare speed to lower idle speed specifications and adjust throttle screw if necessary. Reconnect all disconnected wires and vacuum hoses.

NOTE: If specified idle speed cannot be achieved by normal adjustments on vehicles with speed control, disconnect accelerator cable at carburetor throttle lever. If idle speed can then be achieved, check speed control installation.

NOTE: For Hot (Slow) Idle Specifications on 1979 vehicles, see 1979 ENGINE IDLE SPEED (RPM) chart.

1977-79 MODELS

Preliminary Adjustments - 1) Apply parking brake and block wheels. Turn off all accessories. Disengage power take off units, if equipped.
2) Remove air cleaner assembly and plug lines. Ensure throttle and choke linkages are not binding. Connect tachometer to engine.
3) On light duty vehicles equipped with air injection with two vacuum lines on side of dump valve, disconnect and plug both lines. If dump valve has only one vacuum line on top, check to see if line is connected directly to intake manifold vacuum. If not, connect a vacuum hose from dump valve to intake manifold vacuum source. Plug other vacuum line.

NOTE: On 351" M, 400" and 460" engines, place transmission shift lever in "NEUTRAL" (Man. Trans.) or "PARK" (Auto. Trans.) and run engine until normal operating temperature is reached. Shut off engine.

4) On heavy duty vehicles with 351" M, 400" or 460" engines, disconnect system vacuum hose to decel throttle control diaphragm and plug hose. If equipped, disconnect fuel evaporative line at first point of removal other than valve itself. Plug line and cap open port. Do not disconnect at purge valve or damage will result.

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NOTE: Before making speed checks, run engine at 2500 RPM for 15 seconds in "NEUTRAL" (Man. Trans.) or "PARK" (Auto. Trans.). Allow engine speed to return to curb idle and move shift lever to "DRIVE" (Auto. Trans.) or "NEUTRAL" (Man. Trans.). Measure curb idle speed and adjust if not within ±50 RPM of specifications.

ALL LIGHT DUTY MODELS (EXC. 1979 351" & 400" ENGINES)

Curb Idle - 1) Run engine at 2500 RPM for 15 seconds in "NEUTRAL" (Man. Trans.) or "PARK" (Auto. Trans.) and then let engine speed stabilize.

2) Place shift lever in "DRIVE" (Auto. Trans.) or "NEUTRAL" (Man. Trans.). Adjust curb idle speed if not within ±50 RPM of specifications.

3) If curb idle cannot be adjusted low enough, check for presence of dashpot. Ensure there is clearance between dashpot stem and throttle lever pad and repeat curb idle adjustment until consistent speed is obtained.

4) Collapse dashpot stem and check clearance between dashpot stem and throttle lever pad. Adjust if not to specifications.

TSP "OFF" Speed - 1) When checking Throttle Solenoid Positioner "OFF" (TSP "OFF") speed, collapse solenoid (anti-dieseling solenoid or solenoid-dashpot) plunger by forcing throttle lever against plunger.

2) Check the TSP "OFF" speed and adjust if not within ±50 RPM of specifications.

DECEL THROTTLE CONTROL SYSTEM (RPM)

Application	Man. Trans.	Auto. Trans.
302"	1450 ±50	1500 ±
351" W	1700 ±50	1750 ±50
351" M	1650 ±50	1550 ±50
400"		1600 ±50
460"		1800 ±50

1979 LIGHT DUTY MODELS (351" M & 400" ENGINES)

Curb Idle, Auto. Trans. With A/C - 1) Check A/C "OFF" speed by verifying that throttle stop adjusting screw is not engaging throttle lever pad. Ensure dashpot is completely collapsed. Adjust curb idle by turning long screw on solenoid dashpot bracket until specified A/C "OFF" speed is repeatable.

2) Check A/C "ON" (with solenoid-dashpot energized). Shut engine off and turn ignition switch to "Engine Run" position, but do not start engine. Move climate control lever to A/C "ON" position. Manually move throttle lever away from energized solenoid-dashpot. Solenoid dashpot should extend. If not, check climate control lever position and solenoid-dashpot connection.

NOTE: There is no curb idle A/C "ON" speed specification.

Curb Idle, All Others - 1) Adjust curb idle to specifications by turning throttle stop screw. If curb idle cannot be adjusted low enough, check specified clearance between dashpot stem and throttle lever and adjust as necessary.

2) Repeat curb idle check until RPM can be repeated. Check dashpot clearance between dashpot stem and throttle lever and adjust to specifications.

1977 LIGHT DUTY IDLE SPEED (RPM)

Application	Curb Idle	TSP-Off
302" Bronco		
Federal M/T	850	
Federal A/T	650	550
Calif.	650	550
High Alt.	550	
302" F100		
Federal M/T	850	
Federal A/T	650	550
Calif.	800	550
High Alt. M/T	800	
High Alt. A/T	550	
351" W		
Federal M/T	800	
Federal A/T		
7-65A-RO	550	
7-65A-RO, H-RO	650	
7-65U-RO	700	500
Calif.	700	500
High Alt.	550	
351" M		
Federal M/T	650	550
Federal A/T		
7-60G-RO	550	
7-60G-R11	600	
Calif.	650	
High Alt.	650	
400"		
7-62G-RO	650	
7-62G-R11	600	

1978 LIGHT DUTY IDLE SPEED (RPM)

Application	Curb Idle	TSP-Off
302"		
Federal M/T	700	
Federal A/T	600	550
Calif. M/T	750	550
Calif. A/T	650	550
High Alt. M/T	800	
High Alt. A/T	550	
351" W		
Federal M/T	900	600
Federal A/T	600	500
Calif. M/T	900	600
Calif. A/T	700	500
High Alt.	550	
351" M		
Federal M/T	750	
Federal A/T	600	
Calif. M/T	800	
Calif. A/T	650	
High Alt.	650	
400"	600	

1977-79 HEAVY DUTY MODELS (351" M & 400" ENGINES)

Curb Idle, With Integral Decel Throttle Control Speed TSP - 1) Ensure throttle solenoid is energized. Connect a vacuum hose from intake manifold vacuum to diaphragm. Run engine at 2500 RPM for 15 seconds in "PARK" (Auto. Trans.) or "NEUTRAL" (Man. Trans.). Let engine speed stabilize.

2) Adjust solenoid positioner, if engine speed is not ±50 RPM of specifications. Adjust solenoid positioner by turning long screw on mounting bracket.

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3) Disconnect slave manifold vacuum hose from diaphragm and plug hose, allowing engine to return to curb idle speed.
4) For carburetors with Throttle Solenoid Positioner (TSP) or solenoid-dashpot, run engine at 2500 RPM for 15 seconds in "NEUTRAL" (Man. Trans.) or "PARK" (Auto. Trans.) and let speed stabilize. Compare speed to specifications.
5) If speed is not within ±50 RPM, adjust to meet specifications. For vehicles with separate TSP, adjust solenoid positioner by turning long screw on mounting bracket. For vehicles with integral decel throttle control diaphgram and TSP or vehicles equipped with solenoid-dashpot, turn hex head on rear of solenoid until specification is reached. For vehicles with no solenoid device, turn throttle adjusting screw to achieve specified speed.

NOTE: Each time curb idle speed is adjusted, check dashpot clearance. Collapse dashpot stem and check clearance between end of collapsed stem and throttle lever pad. Adjust if not within specifications.

6) Repeat curb idle speed check until consistent speed is obtained. For vehicles equipped with integral decel throttle control diaphgram and TSP, repeat applicable instructions in step **5)** until consistent speed is repeated.
7) Check dashpot clearance once more by collapsing dashpot stem and measuring clearance between end of stem and throttle lever pad.

TSP "OFF" Idle Speed - 1) With engine idling and transmission shift lever in "NEUTRAL" (Man. Trans.) or "PARK" (Auto. Trans.), collapse the solenoid plunger by forcing throttle lever pad against plunger.
2) Measure TSP "OFF" idle speed and compare to specifications. If not within specifications, adjust throttle adjusting screw until specified speed is obtained.

DECEL THROTTLE CONTROL SYSTEM (RPM)

Application	Man. Trans.	Auto. Trans.
351" W	1700 ±50	1750 ±50
351" M	1650 ±50	1550 ±50
400"	.....	1600 ±50
460"	.....	1800 ±50

1977-79 MODELS (460" ENGINE)

Curb Idle, With Separate Decel Throttle Control Speeds - 1) To check the curb idle, run the engine at 2500 RPM for 15 seconds in "NEUTRAL" (Man. Trans.) or "PARK" (Auto. Trans.). Let speed stabilize, and compare to curb idle specifications. If not within specifications, adjust by turning throttle adjusting screw.
2) On engines with decel throttle control diaphragm, ensure curb idle is adjusted to specifications. Connect a vacuum hose from intake manifold to diaphgram. Run engine again at 2500 RPM for 15 seconds
3) If engine speed is not 1800-1900, adjust diaphragm positioner by loosening lock nut and rotating positioner until specified speed is obtained. Tighten lock nut.
4) Disconnect slave manifold vacuum hose from diaphgram. Plug hose, allowing engine to return to curb idle. Repeat steps **2)** and **3)**.

1977 HEAVY DUTY IDLE SPEED (RPM)

Application	Curb Idle	TSP-Off
351" W		
Federal M/T	650	.....
Federal A/T	550	500
Calif. M/T	650	.....
Calif. A/T		
7-76U-R0	550	.....
7-76U-R10	650	525
351" M		
Federal M/T	650	500
Federal A/T		
7-72-R0	650	600
7-72-R10	650	500
Calif. M/T	650	.....
Calif. A/T	650	500
400"	650	500
460"	650	550

1978 HEAVY DUTY IDLE SPEED (RPM)

Application	Curb Idle	TSP-Off
351" W		
Federal M/T	650	.....
Federal A/T	550	.....
Calif.	650	525
351" M	650	500
400" M/T	650	.....
400" A/T	650	500
460"		
Federal	650	.....
Calif.	600	800

ENGINE SERVICE AFTER HOT (SLOW) IDLE RPM CHECKS

NOTE: If specified idle speed cannot be achieved by normal adjustments on vehicles with speed control, disconnect accelerator cable at carburetor throttle lever. On "F" Series and Bronco vehicles with 351" M or 400" engine and speed control, also disconnect speed control adjuster from carburetor throttle lever. If specified engine idle speed can be achieved with components disconnected, check speed control installation.

All Models - 1) Reconnect all vacuum lines or hoses to their original positions. Reinstall air cleaner assembly. Run engine at 2500 RPM for 15 seconds and recheck curb idle speed.
2) Final curb idle speed check must be made with air cleaner installed. Adjust as necessary and recheck dashpot clearance.

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1979 ENGINE IDLE SPEED (RPM)

Engine & Application	Fast Idle	Step Of Cam	Curb Idle		TSP "OFF"		Decel Throttle Control
			A/C①	Non-A/C	A/C	Non-A/C	
302"							
Federal							
Man. Trans.	2000	High	700	700	.....	.....	.....
Auto. Trans.	2000	High	600	600	550	550	.....
Calif.	2400②	High	650③	650③	550	550	.....
351" M							
Light Duty							
Federal							
Man. Trans.	2000	High	650	650	.....	.....	.....
Auto. Trans.	2000	High	550	550	.....	.....	.....
Calif.							
Man. Trans.	2000	High	650	650	.....	.....	.....
Auto. Trans.	2000④	High	550	550	.....	.....	.....
Heavy Duty							
All Models							
Man. Trans.	1750	High	600	600	.....	.....	1750±50
Auto. Trans.	2000	High	600	600	500	500	1750±50
351" W							
Light Duty							
Federal							
Man. Trans.	1500	2nd High	800	800	500	500	.....
Auto. Trans.	2200	High	600	600	500	500	.....
Calif.							
Auto. Trans.	2200	High	600	600	500	500	.....
Heavy Duty							
All Models							
Auto. Trans.	1700	2nd High	650⑤	650	525⑤	525	1900±50
400"							
Light Duty							
Federal							
Man. Trans.	2000	High	650	650	.....	.....	.....
Auto. Trans.	1900	High	550	550	.....	.....	.....
Calif.							
Auto. Trans.	1900	High	550	550	.....	.....	.....
Heavy Duty							
All Models							
Man. Trans.	1750	High	600	600	.....	.....	1750±50
Auto. Trans.	2000	High	600	600	500	500	1750±50
460"							
Light Duty							
Federal							
Auto. Trans.	1600	2nd High	650⑥	650	800⑦	800	.....
Heavy Duty							
All Models							
Auto. Trans.	1600	2nd High	650	.....	.....	.....	1850±50

① – Only for A/C-TSP equipped vehicles. A/C clutch de-energized.
② – 2000 RPM for Calibration No. 9-54T-R0 Calif. Auto. Trans.
③ – 600 RPM for Calibration No. 9-54T-R0 Calif. Auto. Trans.
④ – 2100 RPM for Calibration No. 9-60S-R0 Calif. Auto. Trans.
⑤ – A/C Off.
⑥ – A/C clutch energized.
⑦ – TSP energized.

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IDLE MIXTURE

NOTE: If adjustments to the air/fuel mixture are made that require removing the idle limiter caps, BLUE Service Limiter Caps must be installed. Idle mixture should be adjusted only during carburetor repair or when necessary as a result of government inspection laws.

NOTE: Some 1977 Bronco and pickup models may have rough idling or exhaust fume leaks from the EGR valve. On Bronco models with 302", ensure EGR valve D7TZ-9D448-G is used. On F100 models, ensure EGR valves (D7TZ-9E448-J for 302" or D7TE-9D448-K for 351M") are used. On pickups with 460" pickups, ensure carburetor spacer, gasket, EGR gasket, spacer gasket and studs (D7VZ-9C477-A, 387544-S, D6VZ-9E464-B, D6VZ-9447-BZ) are used.

NOTE: Some 1977 "F" models with 351M" and 400" engine may develop a rough idle. This condition may be caused by a loose vacuum fitting at rear of intake manifold. To correct this, remove fitting and apply Loctite to threads.

EXHAUST GAS ANALYZER PROCEDURE

1975-79 Without Catalytic Converter - 1) Apply parking brake and block wheels. Connect tachometer. Disconnect and plug fuel evaporative purge valve return hose at engine.
2) Warm engine to normal operating temperature. Disconnect evaporative emission purge hose at air cleaner and plug nipple.
3) For vehicles equipped with thermactor, disconnect and plug hoses of dump valves equipped with two fittings. If valves have one fitting, remove and plug hose at valve. Connect slave hose to dump valve and intake manifold vacuum source.
4) On all vehicles, insert analyzer probe in tailpipe. If CO reading is not to specification, adjust mixture screws. Reset idle speed and recheck CO. After adjustment, reconnect all disconnected hoses.

PROPANE ENRICHMENT PROCEDURE

NOTE: For specifications for Propane Enrichment Procedure, see Emission Control Tune-Up Decal. Specifications for 1975-78 are not available. If no decal for 1979 vehicles can be located, use specifications at end of instructions.

1975-79 With Catalytic Converter - 1) Leave all vacuum signal hoses attached to air cleaner assembly when relocating air cleaner for carburetor adjustments. Air cleaner MUST be installed for engine speed checks.
2) Apply parking brake and block wheels. Connect tachometer to engine.
3) Disconnect and plug fuel evaporative purge valve return hose at engine. Disconnect evaporative emission purge hose at air cleaner. Plug nipple.
4) Disconnect flexible fresh air tube from air cleaner duct or adapter. Insert hose from propane enrichment tool (Rotunda T75L-9600-A) into duct or fresh air tube.
5) For vehicles equipped with thermactor, disconnect and plug hoses of dump valves equipped with two fittings. If valves have one fitting, remove and plug hose at valve. Connect slave hose to dump valve and intake manifold vacuum source.
6) Ensure idle mixture limiter(s) is set to maximum rich position (counterclockwise against stop). Check curb idle speed or A/C "OFF" RPM and set to specifications.

NOTE: If idle mixture limiter caps have been previously removed from 2-Bbl. or 4-Bbl. carburetors, shut off engine, turn mixture screws clockwise until seated and then back (counterclockwise) 2 turns. Start engine and proceed to step 7).

7) With shift lever in "NEUTRAL" (Man. Trans.) or "PARK" (Auto. Trans.), run engine at 2500 RPM for 15 seconds before each mixture check.
8) With engine idling at normal operating temperature, place transmission shift lever in "NEUTRAL" (Man. Trans.) or "DRIVE" (Auto. Trans.). Gradually open propane tool valve and watch for engine speed gain on tachometer. When speed reaches maximum and begins to drop off, note amount of speed gain.

NOTE: If engine speed will not drop off, check bottle gas supply. If necessary, repeat test with new bottle.

9) Compare measured speed gain to specifications. If idle mixture adjustment is necessary, adjust to "Reset RPM." If speed increase is within "RPM Gain" specification, proceed to step **16)**.
10) If measured speed gain is zero RPM and minimum speed gain specification is zero RPM, proceed to step **13)**.
11) If measured speed gain is GREATER than specification, turn mixture screw(s)/limiter(s) counterclockwise in equal amounts and repeat steps **6)** through **9)** until measured speed rise meets "Reset RPM" specifications. After final adjustment, proceed to step **16)**.
12) If measured speed gain is LESS than specification, turn mixture screw(s)/limiter(s) clockwise in equal amounts and repeat steps **6)** through **9)** until speed rise meets "Reset RPM" specifications. After final adjustment, proceed to step **16)**.
13) If there is ZERO increase in RPM and the minimum speed gain specification is zero RPM, perform the following speed drop test. While watching tachometer, adjust mixture screw(s)/limiter(s) clockwise by number of turns specified. Note drop in engine speed.
14) If measured speed is EQUAL TO or drops off MORE THAN speed drop specifications, return mixture limiter(s) to maximum rich position or mixture screw(s) to position prior to adjustment. Then proceed to step **16)**.
15) If measured speed drop is LESS THAN the specified minimum, leave mixture limiter(s) in adjusted position and repeat steps **6)** through **14)**.
16) Check curb idle speed and remove all test equipment. Reconnect all components and reinstall air cleaner, if previously removed.

NOTE: Idle mixture RPM gain and reset RPM specifications for 1975-78 vehicles are found on the Emission Decal Label.

NOTE: Idle mixture adjustment by propane enrichment not required for heavy duty vehicles.

1979 IDLE MIXTURE SPECIFICATIONS

Application	RPM Gain/Reset RPM	Zero Gain Turns/RPM Drop
302"		
Man. Trans.	0-25/10-15	1/4/50
Auto. Trans.	70-140/90-120	N/R
351" W		
Man. Trans.	160-220/170-210	N/R
Auto. Trans.	65-125/75-115	N/R
351" M		
Man. Trans.	20-100/40-80	N/R
Auto. Trans. [2]	5-60/20-40	N/R
400"		
Man. Trans.	20-100/40-80	N/R
Auto. Trans.	5-60/20-40	N/R
460"		
Auto. Trans.	0-25/20-40	

[1] - Specifications for Calibrations No. 9-54J-R1 and 9-54J-R10 Federal Man. Trans. are 40-130/60-100.
[2] - Specifications for Calibration No. 9-60S-R0 Calif. Auto. Trans. is 40-160/70-130.

1975-79 TUNE-UP PROCEDURES
Ford Motor Co. V8 Tune-Up (Cont.)

COLD (FAST) IDLE RPM

NOTE: Specifications are not available for 1975-76 vehicles, see Emission Control Decal. For Cold (Fast) Idle Specifications on 1979 vehicles, see 1979 ENGINE IDLE SPEED (RPM) chart.

ALL MODELS

1) Apply parking brake and block wheels. Turn off all accessories. Remove air cleaner assembly and plug vacuum lines. Ensure throttle and choke linkage is not binding.
2) Connect tachometer to engine. Disconnect and plug vacuum line to decel throttle control diaphgram, if equipped. Disengage all power take-off units, if equipped.
3) On all light duty and 351" W heavy duty vehicles, disconnect and plug EGR vacuum line at EGR/PVS valve, if equipped. If not equipped, do not detach EGR vacuum line. On heavy duty vehicles with decel throttle control, disconnect EGR vacuum hose at EGR valve and plug hose.
4) On light duty vehicles equipped with air injection, with two vacuum lines on side of dump valve, disconnect and plug both lines. If dump valve has only one vacuum line on top, check to see if line is connected directly to intake manifold. If not, connect a vacuum hose from dump valve directly to intake manifold source.
5) Disconnect fuel evaporative purge valve vacuum line at first connection other than purge valve itself. Disconnecting at purge valve may damage valve. If equipped with a spark delay valve, remove valve and route vacuum line directly to distributor.
6) With engine running at normal operating temperature, transmission shift lever in "NEUTRAL" (Man. Trans.) or "PARK" (Auto. Trans.), and choke plate fully opened, place fast idle lever on specified step of fast idle cam.
7) Check fast idle speed and adjust (if not within ±100 RPM of specifications) by turning fast idle adjusting screw. Repeat steps **6)** and **7)** until consistent fast idle speed is obtained.
8) Upon completion of tests, reconnect all vacuum lines to original locations, install air cleaner and spark delay valve, if removed.

1977 FAST IDLE SPEED (RPM)

Application	RPM	Cam Step
Light Duty		
302"	2000	High Cam
351" W		
Federal		
Man. Trans.	1500	High Cam
Auto. Trans.	[1] 1500	High Cam
Calif.	1500	High Cam
High Alt.	2200	High Cam
351" M		
Federal & Calif.	1900	High Cam
High Alt.	2100	High Cam
400" M	1900	Kick Down
Heavy Duty		
351" W		
Federal		
Man. Trans.	1250	High Cam
Auto. Trans.	[1] 1500	High Cam
Calif.		
Man. Trans.	1250	Kick Down
Auto. Trans.	1500	Kick Down
400"	1500	Kick Down
460"	1250	Kick Down

[1] - 2200 RPM on Calib. No. 7-65H-R0.

1978 FAST IDLE SPEED (RPM)

Application	RPM	Cam Step
Light Duty		
302"		
Federal	2000	High Cam
Calif.		
Man. Trans.	2000	High Cam
Auto. Trans.	2100	High Cam
High Alt.	2000	High Cam
351" W		
Federal		
Man. Trans.	1750	Kick Down
Auto. Trans.	2000	High Cam
Calif.	1500	Kick Down
High Alt.	2100	High Cam
351" M		
Federal	2100	High Cam
Calif.		
Man. Trans.	2100	High Cam
Auto. Trans.	1900	High Cam
High Alt.	2200	High Cam
400"	2100	High Cam
Heavy Duty		
351" W		
Federal		
Man. Trans.	1250	Kick Down
Auto. Trans.	1500	Kick Down
Calif.	1700	Kick Down
351" M		
Federal		
Man. Trans.	1250	Kick Down
Auto. Trans.	1500	Kick Down
400"		
Federal		
Man. Trans.	1250	Kick Down
Auto. Trans.	1500	Kick Down
460"		
Federal		
Man. Trans.	1200	Kick Down
Auto. Trans.	1500	Kick Down

DASHPOT ADJUSTMENT

With idle mixture and speed properly adjusted, remove air cleaner and loosen dashpot lock nut. With choke open, hold throttle plate closed (idle position) and check clearance between throttle lever pad and dashpot plunger tip. Plunger MUST be completely collapsed to check clearance. Turn dashpot in or out to obtain clearance specified. Tighten lock nut.

NOTE: Dashpot adjustment specifications are not available, see Emission Control Decal.

AUTOMATIC CHOKE ADJUSTMENT

Loosen choke cover screws and turn choke cover in desired direction as indicated on cover to specified setting.

NOTE: Choke adjustment settings are not available for 1975-76 vehicles, see Emission Control Decal.

1975-79 TUNE-UP PROCEDURES
Ford Motor Co. V8 Tune-Up (Cont.)

1977 AUTOMATIC CHOKE SPECIFICATIONS

Application	Setting
Light Duty	
302"	[1] 3NR
351" W Engine	
Federal	
Man. Trans.	3NR
Auto. Trans.	1NR
Calif. & High Alt.	Index
351" M Engine	
Federal & Calif.	Index
High Alt.	2NR
400" Engine	Index
Heavy Duty	
351" W Engine	
Man. Trans.	1NR
Auto. Trans.	2NR
351" M Engine	
Man. Trans.	2NR
Auto. Trans.	3NR
400" Engine	
Man. Trans.	2NR
Auto. Trans.	3NR
460" Engine	Index

1978 AUTOMATIC CHOKE SPECIFICATIONS

Application	Setting
Light Duty	
302"	3NR
351" W Engine	
Man. Trans.	3NR
Auto. Trans.	[2] Index
351" M Engine	
Federal & High Alt.	Index
Calif.	1NR
400" Engine	Index
Heavy Duty	
351" M Engine	[3] 3NR
351" W Engine	
Man. Trans.	1NR
Auto. Trans.	2NR
400" Engine	3NR
460" Engine	Index

[1] – Set 1NR on F100 High Altitude models with Man. Trans.
[2] – Set to 3NR on Calibrations No. 7-65G-R0 and 7-65H-R0 Federal models.
[3] – Set to 2NR on Calibration No. 7-71-R10 Federal models woth Man. Trans..

1979 AUTOMATIC CHOKE SPECIFICATIONS

Application	Setting
302" Engine	
Federal	[1] 3NR
Calif.	[2] 1NR
351" M Engine	
Light Duty	
Federal	Index
Calif.	[3] Index
Heavy Duty	
All Models	3NR
351" W Engine	
Light Duty	Index
Heavy Duty	3NR
400" Engine	
Light Duty	Index
Heavy Duty	2NR
460" Engine	2NR

[1] – Calibration No. 9-54J-R1 Federal Auto. Trans. is 2NR.
[2] – Calibration No. 9-54T-R0 Calif. Auto. Trans. is 3NR.
[3] – Calibration No. 9-60S-R0 Calif. Auto. Trans. is 3NR.

MANIFOLD HEAT CONTROL VALVE

Check valve for freedom of movement and lubricate with solvent.

FUEL PUMP

Check mechanical fuel pump at curb idle RPM with engine at normal operating temperature and transmission in "NEUTRAL".

FUEL PUMP SPECIFICATIONS

Application	Specification
Pressure	
1975 [1]	[2] 5-7 psi
1976-77	[3] 5-7 psi
1978-79	[4] 6-8 psi
Volume	
1975-79	One pint in 20 seconds.

[1] – Pinch closed pump-to-tank return line, if equipped.
[2] – Should be 4-6 psi, on Federal F100/U150 with 302".
[3] – On "E" models with 460", pressure should be 6-8 psi.
[4] – On "F" models with 460", pressure should be 5-7 psi.

IGNITION SYSTEM

DISTRIBUTORS

All 1975-76 models are equipped with Motorcraft Solid State Ignition systems. The 1977-79 models use Motorcraft Dura-Spark II Ignition systems.

Other Data & Specifications – See Motorcraft Solid State Ignition system or Motorcraft Dura-Spark II Ignition system article in DISTRIBUTORS & IGNITION SYSTEMS section.

IGNITION COIL

COIL SPECIFICATIONS

Application	Specifications
1975-78	
Resistance	
Primary	1.0-2.0 Ohms
Secondary	7000-13000 Ohms
Resistor Wire	1.3-1.4 Ohms
Reserve Voltage (Minimum)	36,000 Volts
1979	
Resistance	
Primary	1.13-1.23 Ohms
Secondary	7700-9300 Ohms
Resistor Wire	1.05-1.15 Ohms
Reserve Voltage (Minimum)	28,000 Volts

FUEL SYSTEM

CARBURETORS

Application	Model
302", 351" W, 351" M, & 400"	
1975-79	Motorcraft 2150 2-Bbl.
360" 2-Bbl.	
1975-76	Motorcraft 2100 or 2150
390" (F100) 2-Bbl.	
1975-76	Motorcraft 2150
390" 4-Bbl.	
1975-76	Motorcraft 4160-C
460" 4-Bbl.	
1975-77	Motorcraft 4350
1978-79	Holley 4180-C

Other Data & Specifications – See Holley or Motorcraft Carburetors in FUEL SYSTEMS section.