## 1966-74 FORD MOTOR CO. EXHAUST EMISSION TUNE-UP

### DESCRIPTION

*Refer to EMISSION CONTROL APPLICATION Section for individual systems applied to particular model/engine/-transmission combinations.*

Several systems are used to control emission of pollutants. Each system is designed to control particular vehicle emissions. In addition, specially calibrated carburetors, distributors, modified combustion chambers and valve timing are used with these systems.

### SERVICE PROCEDURES

In addition to servicing the individual emission system or component, it is important that all ignition system and carburetor adjustments be correct.

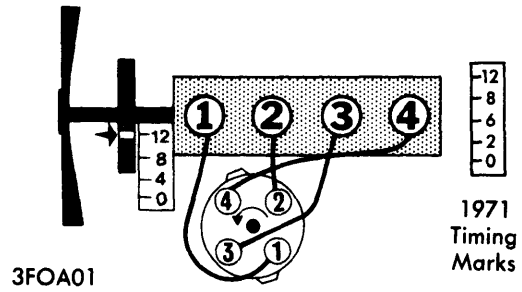
*NOTE — Due to late changes and corrections, always refer to Engine Tune-Up Decal in engine compartment before attempting Tune-Up. In event of conflict between these specifications and decal specifications, decal specifications should prevail.*

*NOTE — To by-pass Starter Interlock, turn ignition "ON" and locate by-pass relay underhood. Press and release button on relay. Engine can now be cranked or started. If ignition is turned to "OFF" or "LOCK" position, reactivation of relay button will be required before engine can again be cranked or started.*

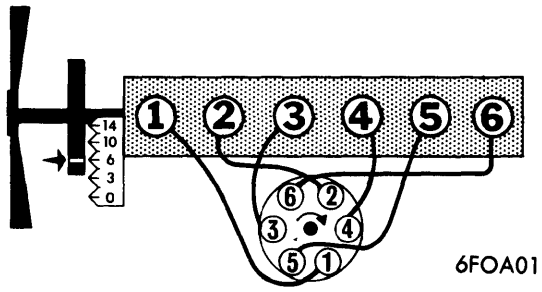
### IGNITION SYSTEM

#### IGNITION TIMING

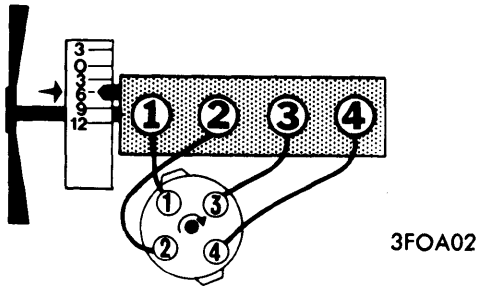
*Refer to appropriate Tune-Up Chart in TUNE-UP SPECIFICATION Section for ignition system and timing setting specifications.*



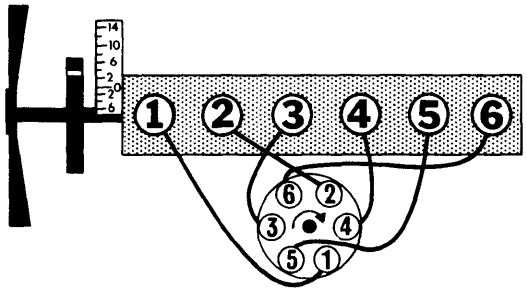

1971-73 1600 cc 4-CYL.



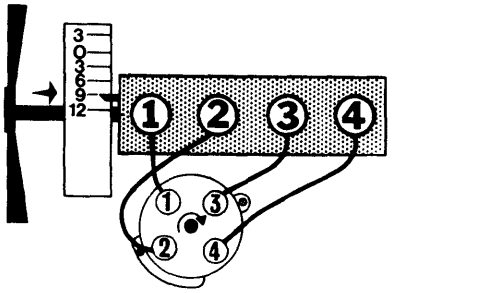

1966-67 6-CYL.



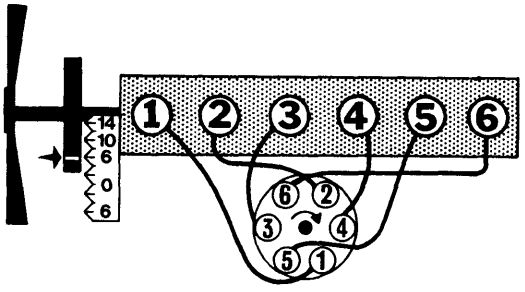

1971-74 2000 cc 4-CYL.




1968-70 6-CYL.

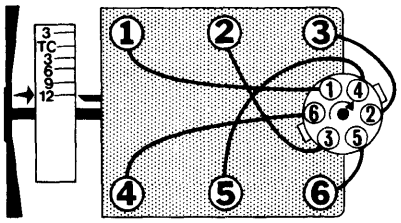



1974 2300 cc 4-CYL.



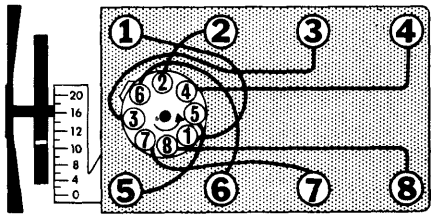

1971-74 6-CYL.

## 1966-74 FORD MOTOR CO. EXHAUST EMISSION TUNE-UP (Cont.)



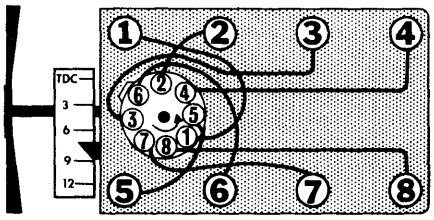

4FOA02

1974 2800 cc V6



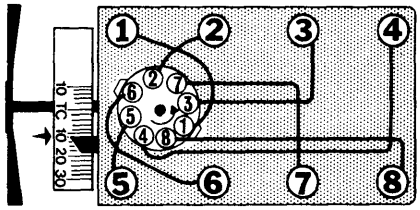

1FOA01

1971 429" H.O. V8



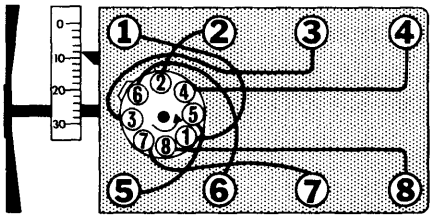

6FOA02

1966-67 289" V8



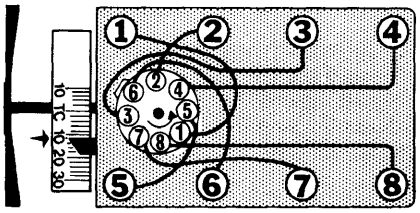

3FOA04

1969-74 351" & 400" V8




6FOA03

1966-70 352", 390", 410", 427", & 428" V8




3FOA05

1968-74 289", 302", 429", & 460" V8

**1966-74 All Models** – 1) Disconnect and plug distributor vacuum advance hose (two hoses on dual diaphragm type units). Connect timing light and tachometer. Start engine and reduce idle speed to 600 RPM. *NOTE – If equipped with idle solenoid, de-energize solenoid and allow engine to idle at solenoid de-energized RPM.* Set timing to specification by rotating distributor.

## CARBURETION

*For service procedures and specifications, refer to the following individual carburetor stories in CARBURETION Section, or for idle speed and mixture specifications, refer to appropriate Tune-Up Chart in TUNE-UP SPECIFICATION Section*

## 1966-74 FORD MOTOR CO. EXHAUST EMISSION TUNE-UP (Cont.)

| Application | Carburetor Type |
|---|---|
| 1971-73 1600 cc 4-Cyl. 1-Bbl. | Belfast 1-Bbl. or Ford 1250 |
| 1971-74 2000 cc 4-Cyl. 2-Bbl. | Weber DFAV or Ford 5200 |
| 1974 2300 cc 4-Cyl. 2-Bbl. | Ford 5200 |
| 1966-69 6-Cyl. 1-Bbl. | Ford 1100,1101 or Carter YF |
| 1970-74 6-Cyl. 1-Bbl. | Carter YF or Carter RBS |
| 1974 2800 cc V6 2-Bbl. | Ford 5200 |
| 1966-67 V8 | |
| 390" GT & GTA | Holley 4-Bbl. |
| 427" With 1 or 2 Carbs. | Holley 4160 |
| Lincoln 462" | Carter AFB |
| All Others | Ford 2-Bbl. or 4-Bbl. |
| 1968 V8 | |
| 390" GT & 427" | Holley 4150 |
| Lincoln 462" | Carter AFB |
| All Others | |
| 2-Bbl. | Ford 2100 |
| 4-Bbl. | Ford 4100 or 4300 |
| 1969 V8 | |
| 428" | Holley 4150C |
| All Others | |
| 2-Bbl. | Ford 2100 |
| 4-Bbl. | Ford 4100 or 4300 |
| 1970-71 V8 | |
| 302" Boss, 428" CJ & CJS, 429" Boss & CJS | Holley 4150C |
| 429" CJ | Rochester 4MV |
| All Others | |
| 2-Bbl. | Ford 2100-D |
| 4-Bbl. | Ford 4300 |
| 1972-74 V8 | |
| All 2-Bbl. | Ford 2100-D |
| All 4-Bbl. | Ford 4300 |
| 460" Calif. (1974 Only) | Carter Thermo-Quad |

### IDLE SPEED & MIXTURE ADJUSTMENT

*NOTE – Correct mixture for emission compliance and idle quality are pre-set by manufacturer. Following procedures should only be used when normal tune-up procedures fail to give satisfactory idle performance at specified air/fuel ratio, or CO level, or after major carburetor overhaul or part replacement.*

#### 1966-73 ALL MODELS

*Refer to appropriate carburetor story in CARBURETION Section for idle speed and mixture adjustment. If these procedures fail to give satisfactory idle performance, use the following exhaust gas analyzer procedure to adjust idle speed and mixture.*

*NOTE – Air/fuel ratio exhaust gas analyzers that depend on thermal conductivity detection principle are not recommended for idle CO values of less than 0.9% or air/fuel ratio values higher (leaner) than 14.5. These mixtures are too lean to be accurately measured with anything but a CO Analyzer. Testing should be performed on Rotunda Exhaust Emission Analyzer model JJRE-21-1 (Sniffer) or equivalent.*

With engine at normal operating temperature, automatic transmission in Drive, choke valve fully open, hot idle compensator valve closed, headlights on high beam, air conditioner ON (except 1968 302" 2-Bbl. and all 1970-72 models), and air cleaner installed, set idle speed as shown in car model Tune-Up section. Following manufacturers instructions, install a suitable exhaust gas analyzer and proceed as follows:

1) On Thermactor equipped engine, disconnect Thermactor pump air supply hose at pump or at check valves. Do not adjust for drop in engine RPM (occurs when hose is disconnected) but note amount of drop for later use. Observe analyzer reading (air cleaner installed).

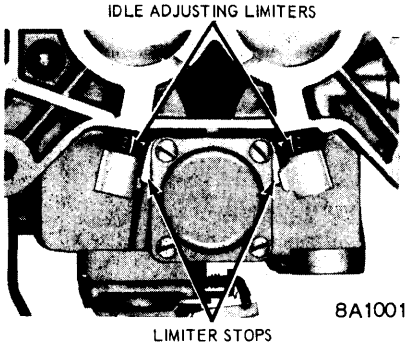
2) Turn idle mixture adjusting screw(s) within range of idle limiters until specified air/fuel ratio or CO reading is obtained. *NOTE – On 2 & 4-Bbl. carburetors, turn screws by equal amounts.* Correct for any changes in engine RPM as idle mixture screws are turned. *NOTE – Refer to drop in RPM obtained when Thermactor supply hose was disconnected, then correct idle speed to RPM noted.* Allow at least 10 seconds after each mixture screw adjustment for analyzer reading to stabilize.

3) Verify analyzer reading. Thermal conductivity exhaust gas analyzers will give an erroneously rich reading if air/fuel mixture is extremely lean. To check, partially hand choke carburetor, or rapidly open and close throttle 3 or 4 times to enrich air/fuel mixture. Analyzer meter will reflect the momentary rich condition, then will deflect in lean direction as rich condition subsides and will gradually return to a richer reading as the excessively lean air/fuel ratio is produced. *NOTE – Automatic Transmission must be in Neutral while this is being done.*

4) If air/fuel ratio or CO reading meets specifications and various engine systems are functioning correctly, no further adjustments should be made. If air/fuel ratio or CO reading is not to specifications, it will be necessary to correct controlled limits of idle fuel system, see "Idle Limiter Cap Replacement".

#### 1974 ALL MODELS

*Refer to appropriate carburetor story in CARBURETION Section for idle speed and mixture adjustment.*

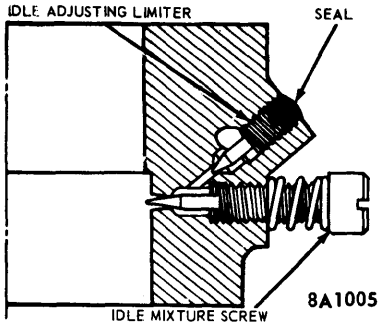



FORD CARBURETORS IDLE MIXTURE SCREWS & LIMITER STOPS

**Idle Limiter Cap Replacement** – Remove plastic limiter caps by cutting with side-cutter pliers and knife. After cut is made, pry limiter apart. On Holley carburetors, pry

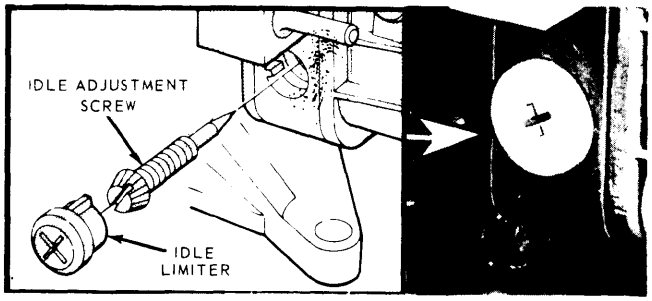
## 1966-74 FORD MOTOR CO. EXHAUST EMISSION TUNE-UP (Cont.)

caps off with screwdriver. *NOTE – It may be necessary to remove carburetor.* Adjust carburetor to specified air/fuel ratio or CO reading using exhaust gas analyzer. Install a new colored limiter cap on each screw. Position cap so it is in maximum counterclockwise position with tab of limiter against stop on carburetor. Press cap on with a straight, forward pushing force.




**CARTER CARBURETORS IDLE MIXTURE SCREW, LIMITER & SEAL**

**Lead Seal Replacement (1968 Carter 1-Bbl.)** – Remove lead seal by picking out with a sharp pointed tool. If necessary, drill out center of seal with 1/8" diameter drill. With idle adjusting needle at maximum rich setting, slowly back out idle limiter 1/16 -turn at a time until specified air-fuel ratio is obtained. Install new lead seal over idle limiter and drive into hose with small punch until seal just contacts head of screw. Be sure to stamp or scribe "R" or carburetor identification tag above "Autolite" to indica' modification.




HOLLEY SUPER COBRA JET CARBURETORS IDLE MIXTURE SCREWS & LIMITER STOPS