



sun tester

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CHANGES IN IDLE AIR-FUEL RATIO FOR 1968 FoMoCo VEHICLES

Recent revisions have been made to previously published idle air-fuel ratio specifications. These revisions apply to both the IMCO and Thermactor equipped vehicles, and have been developed by Ford Motor Company specifically for adjusting the carburetor idle air-fuel ratio with an accurate exhaust gas analyzer. Certain procedures should be followed when making idle mixture adjustments. For example, the final check of the air-fuel ratio should be made with the air cleaner in place. If the air cleaner has to be removed to perform the idle mixture adjustment, any vacuum hose that has to be disconnected should be plugged prior to the actual adjustment. Also, all vacuum hoses to the distributor should be connected before idle mixture adjustments are made. Also, prior to carburetor idle mixture adjustment be sure that the initial timing is set according to manufacturer's specifications.

On vehicles equipped with the Thermactor (air injection) system, the hose that runs between the air pump and the air by-pass valve must be disconnected before making an idle mixture adjustment. When the hose is disconnected a drop in engine RPM will be noticed. Do not compensate for this drop because the idle speed will increase a comparable amount when the hose is re-connected.

Keep in mind that most automotive exhaust gas analyzers in use presently are not designed to measure large quantities of oxygen. Consequently they will give an erroneous indication of a slightly rich mixture while an excessively

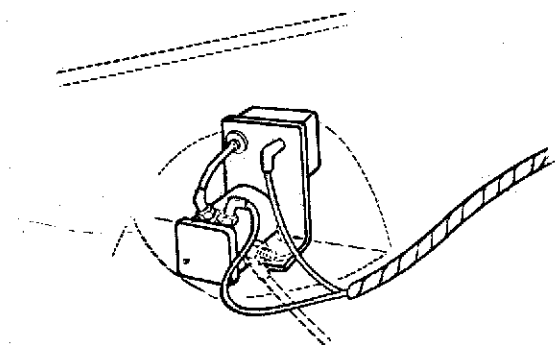
lean mixture actually may exist. To check for this condition when performing an idle air-fuel ratio test, restrict carburetor air inlet slightly and observe combustion meter. (Allow several seconds for meter to react.) If the meter pointer deflects toward the rich side of the scale the meter indication is correct. If the meter pointer deflects toward the lean side of the meter first and then towards "rich", it is due to an excessively lean air-fuel mixture. Perform idle speed and mixture adjustments.

The following list of revised idle air-fuel ratio specifications supersedes all previously published lists.

ENGINE	IDLE AIR-FUEL RATIO	
	IMCO	THERMACTOR
170 Six (1-V)	14.0	12.8
200 Six (1-V)	14.2	14.1
240 Six (1-V)	13.7	12.1
289 V-8 (2-V)	13.8	13.1
302 V-8 (2-V)	13.8	13.1
302 V-8 (4-V)	14.1	13.9
390 V-8 (2-V) Reg. Fuel	14.0	13.1
390 V-8 (2-V) Prem. Fuel	14.5	-
390 V-8 (4-V)	14.3	13.9
390 V-8 (4-V) GT Man. Trans.	-	13.3
390 V-8 (4-V) GT Auto. Trans.	-	14.0
427 V8 (4-V)	-	13.9
428 V8 (4-V)	14.3	13.9
428 V8 (4-V) Cobra Jet & Police	-	13.9
429 V8 (4-V)	13.8	-
460 V8 (4-V)	13.8	-
462 V8 (4-V)	14.5	-

TRUCKS		
ENGINE	IMCO	THERMACTOR
170 Six (1-V)	14.0	12.8
240 Six (1-V)	13.7	12.1
289 V-8 (2-V)	13.8	13.1
300 Six (1-V)	14.0	13.3
302 V-8 (2-V)	13.8	13.1
360 V-8 (2-V)	14.5	13.7
390 V-8 (2-V)	14.5	13.7

TIME DELAY SWITCH FOR CRANKING CIRCUIT - 1968 MERCURY, MONTEGO AND COUGAR



CONTROL CONNECTED

The Lincoln-Mercury Division of Ford Motor Company has recently incorporated a time delay switch into the cranking motor control solenoid.

The delay switch is designed to open-circuit the starter solenoid control circuit for four seconds after the ignition switch as been released from the "start" position.

The delay switch permits the starter drive pinion to come to a complete stop before the car operator can re-engage the starter motor and thus, helps prevent damage to the flywheel ring gear and the starter pinion. The delay switch, which is a relay, does not affect the cranking circuit during initial starting.

Testing the Delay Switch

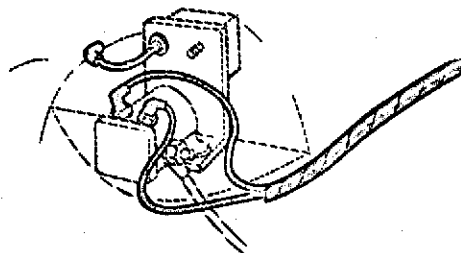
Before proceeding with any tests of the switch be sure the battery is in a good state-of-charge.

Test I - OVERALL OPERATION OF CIRCUIT

1. On vehicles equipped with automatic transmission, place transmission selector lever in "Park" or "Neutral". On vehicles equipped with manual transmissions, place transmission shift lever in "Neutral". (Parking Brake should be set at this point).
2. Turn ignition switch to start position. Starter should engage immediately.
3. Return key to "off" position and quickly back to the "start" position. With the key held in the "start" position, starter motor should not re-engage for approximately four seconds.

Test II - STARTER MOTOR WILL NOT OPERATE

1. Bypass delay device by removing plug-on lead connected to delay device.
2. Remove plug-on lead connected to the "S" terminal of starter relay.
3. Connect the lead that was disconnected from delay control to the "S" terminal of the starter relay (See "Control Disconnected" illustration).



CONTROL DISCONNECTED

When the above three steps are completed, the delay control will be eliminated from the cranking system and will now operate as a conventional system.

4. Repeat step #1 and #2 of Test I.

RESULTS

If the starter operates with the delay control by-passed, the problem is in the delay control.

A new delay control must be installed, these units are not serviceable.

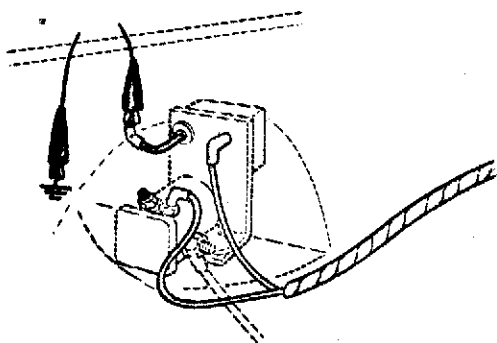
If the starter fails to operate with the delay control by-passed, the problem is in the starter control circuit, starter relay, neutral safety switch, ignition switch, or battery connections. Tests must now be made of starter control circuit and components to locate problem.

Test III - STARTER WILL RE-ENGAGE WITH NO TIME DELAY

Another problem that can exist is one in which the time delay mechanism fails to operate and causes the starting circuit to operate in the normal manner. This situation can cause ring gear and/or starter drive damage.

A few simple checks will quickly prove the delay switch at fault.

1. Disconnect the plug on connector from the "S" terminal of the starter relay.
2. Connect the positive lead of a voltmeter to the end of the disconnected wire and the negative lead of the voltmeter to ground. (See Illustration)



VOLTMETER CONNECTED

3. Turn key to "start" position. Meter will indicate battery voltage.
4. Release key (voltmeter will drop to zero) and immediately return key to the "start" position.

RESULTS

Voltmeter indicates battery voltage immediately upon returning the key to the "start" position. The delay switch is defective and should be replaced.

DISTRIBUTOR ADVANCE CORRECTION - 1968 DODGE

A distributor advance correction has recently been released by Dodge Division. The correction applies to the following cars equipped with a 383 cu. in. engine, two barrel carburetor and automatic transmission: 1968 Dodge Dart, Coronet, Charger, Polara and Monaco.

The change concerns the distributor (P/N 2875354) used on the above vehicles. The correct vacuum advance specifications are:

- 0° @5" to 8" Hg.
- 5° to 8° @10" Hg.

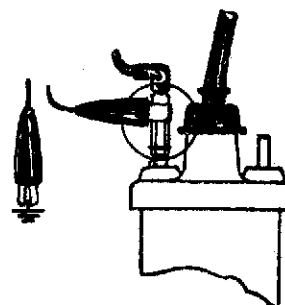
The correct centrifugal advance specifications

are:

7° to 9° @750 RPM

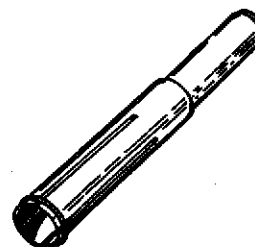
FORD IGNITION PRIMARY ADAPTER

A new adapter that permits tester connections to the ignition coil primary terminals on all Ford Motor Company vehicles is now available from Sun. (See Fig. below)



The adapter exposes the primary terminals of the coil, which are normally concealed by a rubber covered plug-on connector. Exposing the primary terminals allows connection of a primary scope lead, a dwell meter, tachometer and/or a voltmeter to the ignition coil primary terminals.

This adapter is available under Sun part number 3676-501



1968 CORVETTE 427 WITH A/C TUNE UP AND TIME SAVER

Checks in the field indicate that the #2 and 4 spark plugs, located under the air conditioner compressor, are easily accessible through the fender skirt opening. Access to this opening is gained by removal of the wheel. Normal methods such as loosening of the compressor, fail to provide sufficient room for efficient removal and replacement of these plugs.

TUNE UP SPECIFICATIONS

1968 Mercury, Montego and Cougar. Equipped with Cobra Jet 428 cu. in. engine with 4 BBL Carb.

Specifications for this engine are the same as those contained on 1968 Sun Specification Service Card #034 with the following exceptions.

IDLE SPEED

Manual Trans.	700 W/Air Cond. On
Auto. Trans. (Dr)	650 W/Air Cond. On.

IGNITION ADVANCE (Degrees @ 2500 RPM)

	Cent. & Vac.	Cent. Only
Manual Trans.	33-42	19-23
Auto. Trans.	37-45	21-23

DWELL (Degrees) *	Manual Trans.	Auto. Trans.
At Idle	26-31	26-31

CARBURETOR

Manual Trans.	Holley 4150C - C80F9510 - AA
Auto. Trans.	Holley 4150C - C80F9510 - AB

IGNITION TIMING (Degrees)

Dist. Vac. Lines disconnected and plugged	
Manual Trans.	6° BTDC @ Idle RPM
Reconnect Dist. Vac. Lines - Should retard 5-7°	
Auto. Trans.	6° BTDC @ Idle RPM

DISTRIBUTOR

	Manual Trans.	Auto. Trans.
FoMoCo	C80F12127D	C70F12127F
Rotation	CC	CC
Spring Tension (oz)	17-21	17-21
Gap (inches)	.017	.017
Dwell (Degrees)	26-31	26-31
Variation (Degrees)	6	6
Condenser Capacity	.21 - .25 MFD	

MECHANICAL ADVANCE

C80F12127D (Manual Trans.)

Dist. RPM	Dist. Deg.
350	0-½
500	¾-2¾
750	7½-9½
1000	8½-10½
1500	10¾-12½
2000	12-14½
2375	Max. 16°

C70F12127F (Auto. Trans.)

Dist. RPM	Dist. Deg.
350	0-½
500	2-3
750	8½-9½
1000	9½-10½
1500	11¾-12½
2000	13-14½
2375	Max. 16°

VACUUM ADVANCE

In. Vac.	Dist. Deg.
5	0-¾
10	1¾-4¾
15	6¾-9½
20	7-9½
25	Max. 9½

In. Vac.	Dist. Deg.
5	0-1
10	1-4¾
15	7-10
20	8-11
25	Max. 11

VACUUM ADVANCE

In. Vac.	Dist. Deg.
5	0
10	¼-3½
15	2½-3½
20	Max. 3½

In. Vac.	Dist. Deg.
None	