

Exhaust Emission Systems

1966-74 AMERICAN MOTORS & JEEP 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.

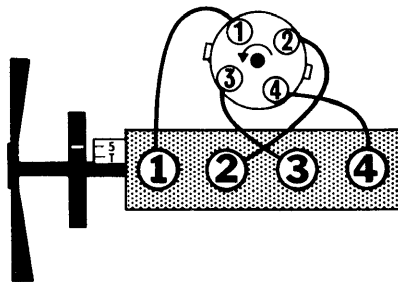
IGNITION SYSTEM

IGNITION TIMING

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

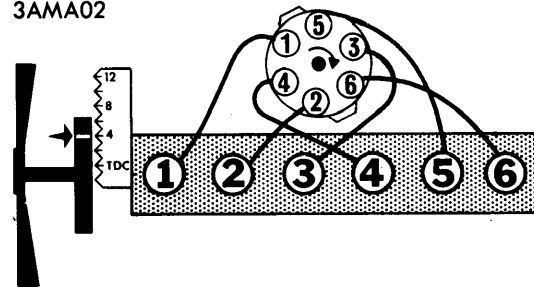
1966-74 All Engines — Check or adjust ignition timing with distributor cam angle correctly set, idle speed adjusted to 500 RPM and distributor vacuum advance line disconnected and plugged. After timing is set, reconnect vacuum line and readjust idle speed to specified idle RPM.

6JEA01



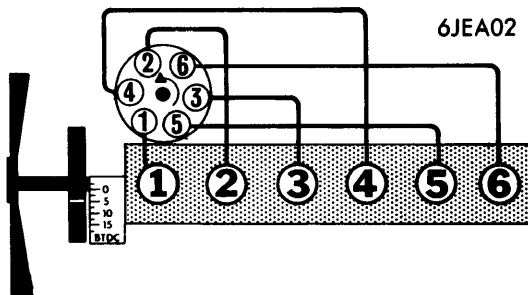
1966-71 JEEP 134" 4-CYL.

3AMA02



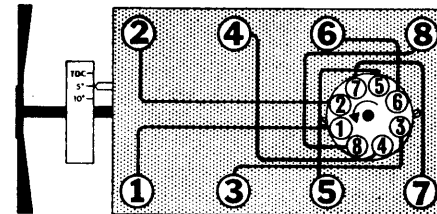
1966-74 AMC & JEEP 199", 232", 258" 6-CYL.

6JEA02



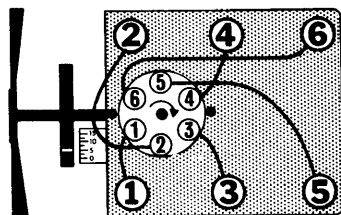
1966 JEEP 230" (OHC) 6-CYL.

6JEA04



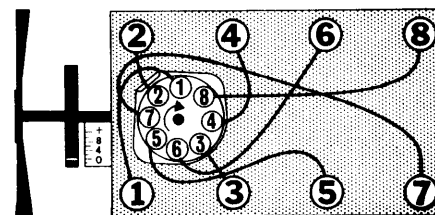
1966-69 JEEP 327" V8

6JEA03



1966-71 JEEP 225" V6

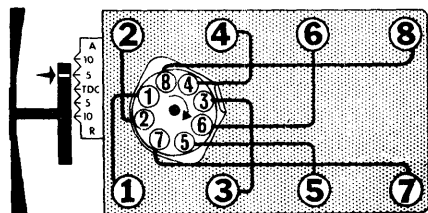
8JEA01



1968-71 JEEP 350" V8

1966-74 AMERICAN MOTORS & JEEP EXHAUST EMISSION TUNE-UP (Cont.)

3AMA01



1966-74 AMC (ALL V8 ENGINES) &
1971-74 JEEP 304", 360" & 401" V8

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.

Application	Carburetor Type
1966-69 6-Cyl. 1-Bbl.	Holley 1931 or Carter RBS
1970-74 6-Cyl. 1-Bbl.	Carter YF
1966-70 6-Cyl. 2-Bbl.	Carter WCD
1966-67 V8 2-Bbl.	Holley 2209
1968-69 V8 2-Bbl.	Ford 6200 or Carter WCD
1970-74 V8 2-Bbl.	Ford (Motorcraft) 2100
1966 290" V8 4-Bbl.	Carter AFB
1966 327" V8 4-Bbl.	Holley 4160
1967-69 V8 4-Bbl.	Carter AFB
1970-74 V8 4-Bbl.	Ford (Motorcraft) 4300

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.

1966-68 ALL MODELS

Refer to appropriate carburetor story in CARBURETION Section for Idle Speed and Mixture adjustment.

1969-72 ALL MODELS

Idle Limiter Cap Removal – Remove idle limiter cap(s) by inserting a sheet metal screw in center of cap and turning clockwise. After removal, discard cap(s) and adjust idle mixture by one of the below listed procedures:

Tachometer Procedure – Turn mixture screw(s) counterclockwise (richer) until a loss of engine RPM is indicated, then turn mixture screw(s) clockwise (leaner) until engine RPM increases and continue turning until RPM decreases. Now turn mixture screw(s) counterclockwise (richer) until the highest RPM reading is indicated at a "lean best idle" setting. If carburetor has two mixture screws, turn both equally, unless engine demands otherwise. If idle speed changed more than 30 RPM during this adjustment, reset to specified idle speed, repeat this adjustment. See car model in Tune-Up section for specified idle speed. Install new limiter caps.

Combustion Analyzer Procedure – **NOTE** – Connect combustion analyzer by following instructions of particular manufacturer. Start engine and allow sufficient time for engine and analyzer to stabilize, then recalibrate analyzer before beginning carburetor adjustment. Insert probe of analyzer at least 18 inches into tail pipe (on dual exhaust cars, be sure probe is inserted in tail pipe opposite side of heat manifold valve.) Turn mixture screw(s) counterclockwise (richer) until a definite indication of richness increase is noted (richer than specified air/fuel ratio). Turn mixture screw(s) clockwise (leaner) 1/16 turn at a time, until obtaining specified air/fuel ratio. Allow 10 seconds for meter to stabilize after each adjustment. If idle speed changed more than 30 RPM during mixture adjustment, reset to specified RPM (see car model in Tune-Up section) and repeat mixture adjustments until specified air/fuel ratio is obtained. Adjust final curb idle speed (see car model in Tune-Up section).

NOTE – On Jeep, if idle speed changed more than 30 RPM during adjustment, reset to 50 RPM less than specified idle speed, then repeat adjustment.

Air/Fuel Ratio Setting

American Motors

1969 V8 with "Airguard"	ⓐ 13.0:1
All Other Engines	14.0:1±.2
1970-72 with "Airguard"	ⓐ 13.5:1
without "Airguard"	14.0:1±.2

Jeep

1971 350" V8 Engine	14.0:1±.2
1972 with "Airguard"	ⓐ 13.5:1
without "Airguard"	14.0:1±.2

ⓐ – With "Airguard" by-pass valve air inlet hose disconnected.

Idle Limiter Cap Installation – Install new (blue) idle limiter cap(s) over idle mixture screw(s) with ear(s) positioned against full rich stop(s). Be careful not to disturb idle mixture setting while installing cap(s). Press cap(s) firmly and squarely into place.

1973 ALL MODELS

NOTE – Do not idle engine for over three minutes at a time. If idle mixture adjustment is not completed within three minutes, run engine at 2,000 RPM for one minute before continuing, repeat as necessary.

To adjust idle RPM, engine must be at normal operating temperature and air cleaner installed. Idle RPM may be adjusted by either a preferred Infrared (IR) Analyzer or a standard tachometer procedure. Idle limiter caps must be removed to perform standard tachometer setting. Infrared procedure does not require removal of limiter caps unless specifications cannot be obtained. To remove caps, install a sheet metal screw in center of cap and turn clockwise.

Infrared (IR) Analyzer Procedure – With engine at normal operating temperature, connect analyzer to vehicle and adjust idle RPM to following specifications.

Application	Man. Trans.	Auto. Trans.
6 Cyl. W/O EGR.....	700	600
W/EGR.....	600	550
8 Cyl. (All).....	750	700

NOTE – Adjust idle speed by turning hex screw on throttle solenoid carriage (V8 with Auto. Trans. in "D").

Exhaust Emission Systems

1966-74 AMERICAN MOTORS & JEEP EXHAUST EMISSION TUNE-UP (Cont.)

Idle Mixture Adjustment — Observe CO level, if less than specified, turn screws counterclockwise (1/16 turn at a time) until specified reading is obtained. If greater than specified, turn screws clockwise until specified reading is obtained. Allow 10 seconds for meter to stabilize after each adjustment. If idle speed changed more than 30 RPM during adjustment, reset to specified RPM and repeat procedure.

Engine Idle Carbon Monoxide (CO) Level

Application	CO Level
6 Cyl. W/O Air Guard.....	1.0-1.5%
W/Air Guard.....	0.5-1.0%
8 Cyl. (All).....	0.5-1.0%

NOTE — If unable to obtain specified CO levels at either stop, remove limiter caps and adjust idle as outlined above.

Tachometer (Speed Drop) Procedure — With engine at normal operating temperature, limiter caps removed, adjust idle speed 30 RPM above specified RPM.

Specified Curb Idle RPM

Application	Man. Trans.	ⓐ Auto. Trans.
6 Cyl. W/O EGR.....	700	600
W/EGR.....	600	550
8 Cyl. (All).....	750	700

ⓐ — Auto. Trans. in "D".

Idle Mixture Adjustment — From full rich stops turn mixture screws clockwise (leaner) until a loss of engine RPM is indicated, then turn mixture screws counterclockwise until the highest RPM reading is obtained at the "lean best idle" setting. **NOTE** — On carburetors incorporating two mixture screws, turn both screws equally unless engine demands otherwise. If idle speed changed more than 30 RPM during adjustment, reset to 30 RPM above specified RPM and repeat adjustment. As a final adjustment, turn mixture screws clockwise until the following specified drop in engine RPM is obtained:

Application	Specified RPM Drop
232" & 258" Auto. Trans.	20
232" & 258" Man. Trans.	35
8 Cyl. (All).....	40

1974 ALL MODELS

Preparations for Adjustments — Block wheels and apply parking brake. Start and warm engine to normal operating temperature. Turn air conditioning off and place manual transmission in Neutral or automatic transmission in "D". Verify that dwell and timing are properly set. Leave air cleaner installed.

NOTE — Do not allow engine to idle more than two minutes at one time. If adjustments take longer, raise engine speed to 2000 RPM to stabilize engine temperature, then continue with adjustment.

Exhaust Gas Analyzer Procedure — 1) Preparations for adjustment must be completed. Connect analyzer to vehicle and adjust idle speed 30 RPM above specified idle RPM. If equipped with solenoid, adjust 30 RPM above specified idle RPM with solenoid energized.

2) Disconnect solenoid and place automatic transmission in "N". Adjust carburetor speed screw to obtain 500 RPM and reconnect solenoid.

3) On all models, if CO level is not within specifications, turn mixture screws in or out 1/16 turn at a time, until correct CO level is obtained at specified RPM. **NOTE** — Allow ten seconds between each adjustment, for meter stabilization.

4) If idle speed changes more than 30 RPM during adjustments, reset to specified RPM. Repeat adjustments until correct CO level is obtained at specified idle RPM.

IDLE CO LEVEL

Application	% CO
All with Air Injector.....	0.5-1.0
All without Air Injector.....	1.0-1.5

Tachometer (Speed Drop) Procedure — 1) Preparations for adjustment must be completed. Adjust idle mixture screw(s) to full rich stop and remove idle mixture limiter cap(s). Adjust idle 30 RPM above specified idle RPM.

2) If equipped with solenoid, leave solenoid energized and adjust solenoid in or out to obtain 30 RPM above specified idle RPM. Disconnect solenoid and place automatic transmission in "N". Adjust carburetor speed screw to obtain 500 RPM, then reconnect solenoid.

3) On all models, turn mixture screws in (lean) until RPM loss is indicated. Turn mixture screws out (richer) until highest RPM is obtained with "lean best idle" condition. **NOTE** — If speed changes more than 30 RPM during mixture adjustment, reset idle speed to 30 RPM above specified idle RPM and repeat adjustment. After obtaining "lean best idle" (within specified idle RPM range), turn mixture screws in (lean) until specified idle RPM drop is obtained

LEAN DROP RPM

Application	RPM Drop
232" & 258"	
Auto. Trans.	20 RPM
Man. Trans.	35 RPM
All V8 Engines.....	40 RPM