1980 Chrysler Corp. V8 Tune-Up

TUNE-UP

ENGINE IDENTIFICATION

Engine identification number is stamped on left front of block, below cylinder head. First letter indicates model year. Next 3 digits are cubic inch displacement.

MODEL IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

Vehicle identification number (VIN) is located on driver's side door body latch post and on equipment identification plate on inner surface of hood. Engine is identified by 4th digit of VIN code.

VIN Engine Codes

Application	VIN Code
318"-1 (5.2L) 2-Bbl.	E
318"-3 (5.2L) 2-Bbl.	G
318"-1 (5.2L) 4-Bbl.	P
360"-1 (5.9L) 4-Bbl.	T
360"-3 (5.9L) 4-Bbl. (Hi. Perf.)	K

TUNE-UP NOTES

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 — *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 — *On vehicles equipped with catalytic converters do not add fuel system cleaning agents to fuel tank or carburetor as their use may be detrimental to the catalytic converter.*

CAUTION — *Before making a compression test or cranking engine using a remote starting switch, disconnect coil wire from distributor and secure to a good ground.*

CAUTION — *IDLE SPEED ADJUSTMENT: Procedures and specifications for idle speed adjustment must be followed exactly as outlined. See "Hot (Slow) Idle RPM" under Tune-Up.*

NOTE — *For other items affecting Tune-Up, see FUEL SYSTEMS Section or EMISSION CONTROL Section.*

NOTE — *For tune-up purposes, "Light Duty" refers to vehicles 8500 lbs. GVW or less and "Heavy Duty" refers to vehicles over 8500 lbs. GVW.*

ENGINE COMPRESSION

Compression Ratio	
318"	8.7:1
360"-1	8.6:1
360"-3	8.0:1
Recommended Fuel	①Regular (87 AKI Minimum)
Compression Pressure	Min. 100 psi
Maximum Pressure Variation	40 psi

① — Unleaded (87 AKI minimum) if equipped with catalytic converter.

With engine warm, spark plugs removed and throttle wide open, compression pressure should be as specified.

VALVE TAPPET CLEARANCE

All (Hydraulic)	Zero Lash

VALVE ARRANGEMENT

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

SPARK PLUGS

Gap	.035"
Torque	30 ft. lbs.

Spark Plug Type

Application	Champion No.
318"	RN-11Y
360"-1	RN-12Y
360"-3	RF-10

HIGH TENSION WIRE RESISTANCE

1) Carefully remove spark plug wire from spark plug and install proper adapter between wire and spark plug. Remove distributor cap with wires attached. Connect an ohmmeter between spark plug adapter and opposite end of wire. If resistance is not within specifications, remove wire from cap and retest. If not within specifications, replace wire.

2) To check coil wire resistance, remove distributor cap from distributor (with wires still attached). Do not remove wire from coil. Connect an ohmmeter between center contact in cap and either primary terminal at coil. If combined resistance of coil and cable is not within specifications, remove coil wire at coil tower and check cable resistance.

3) If resistance is now within specifications, check for a loose connection at coil tower or for a faulty coil. If resistance is not within specifications, replace wire.

Resistance (Ohms)

Application	Maximum
Coil Wire	
Installed	25,000
Removed	15,000
Spark Plug Wire	
To 25" Length	30,000
Over 25" Length	50,000

DISTRIBUTOR

All models are equipped with Chrysler Corp. **Electronic Ignition** System and no adjustments are required.

TUNE-UP (Cont.)

NOTE – *Dwell is not adjustable, even though it may be read with a dwell meter.*

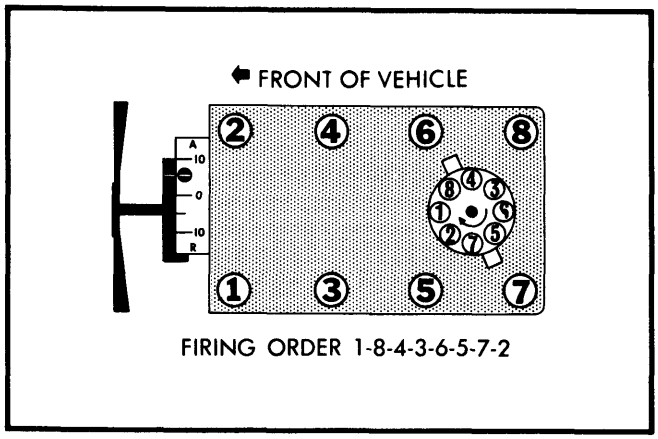

Fig. 1 318" & 360" Engines Firing Order & Timing Mark Identification

IGNITION TIMING

CAUTION – *Always use proper adapters when connecting timing light. Do not puncture cables, boots or nipples with test probes.*

NOTE – *Magnetic probe timing device may be used if instrument is available and engine is so equipped. Timing probe offset is 10°ATDC on all V8 engines.*

1) Connect timing light to number 1 cylinder and tachometer to engine. Start engine, set parking brake and place transmission in Neutral. Bring engine to normal operating temperature.

2) Disconnect and plug vacuum hoses to EGR valve and at distributor. Disconnect PCV valve from grommet and vapor canister purge hose at carburetor, leaving connections open. Idle set RPM should be within ±100 RPM of specifications. To adjust, use idle speed screw.

NOTE – *Idle set RPM adjustment is for timing purposes only. If adjusted, it will be necessary to perform propane enrichment procedure to obtain idle set RPM.*

3) Reconnect PCV valve and purge hose and check timing. If not within ±2°, loosen distributor hold-down screw and adjust timing until within specifications. Tighten hold-down screw when timing is correct. Recheck idle set RPM and timing.

[redacted] – *DO NOT use distributor vacuum advance unit as a handle when turning distributor housing.*

4) If timing was adjusted or idle speed screw was turned, perform propane enrichment procedure. Unplug and reconnect all vacuum hoses and remove all test equipment.

Ignition Timing Specifications (Degrees BTDC)

Application	Man. Trans.	Auto. Trans.
318" 2-Bbl.	12	12
318" 4-Bbl.		
Federal	8	8
Calif.	①8	①10
360" 4-Bbl.		
Federal	②12	②12
Calif.	10	10

① – Set Heavy Duty Emission models at 6°BTDC.
② – Set Heavy Duty Emission models at 4°BTDC.

HOT (SLOW) IDLE RPM

Federal – 1) Set parking brake, place transmission in Neutral and connect tachometer to engine. Start engine and bring to normal operating temperature. Return engine to idle. Turn off all lights and accessories. Disconnect and plug EGR vacuum hose at valve.

2) On vehicles equipped with Spark Control Computer, disconnect and plug vacuum hose at transducer. Ground carburetor switch with jumper wire. On all other vehicles, disconnect and plug vacuum hose at distributor. Remove PCV valve from grommet and disconnect vapor canister purge hose at carburetor, leaving connections open.

NOTE – *Propane enriched idle MUST be set before setting curb idle on A/C equipped vehicles.*

3) On vehicles equipped with A/C, remove curb idle screw from idle stop solenoid. Turn A/C on and open throttle slightly to energize solenoid. Place transmission in Drive. Insert Allen wrench into solenoid and adjust idle to "Solenoid Energized" RPM.

4) Turn A/C off, place transmission in Park, reinstall curb idle screw into solenoid and adjust curb idle to specifications. On all other vehicles, adjust idle speed screw (located on top of solenoid) to specified "Curb Idle" RPM.

5) DO NOT adjust mixture screws. If necessary to adjust mixture, follow "Propane Enrichment" procedure. Reconnect and/or install all hoses and remove all test equipment.

Calif. – 1) Set parking brake, place transmission in Neutral and connect tachometer to engine. Ground carburetor switch using jumper wire. Disconnect and ground coolant temperature switch lead with jumper wire. Disconnect and plug EGR vacuum hose at valve.

2) Remove PCV valve from grommet, leaving connection open. Disconnect and plug vapor canister purge hose and carburetor

TUNE-UP (Cont.)

nipple at carburetor. Turn off all lights and accessories. Start engine and bring to normal operating temperature.

NOTE – *If already at normal operating temperature, wait 1-2 minutes before proceeding with adjustment.*

3) Connect jumper wire from positive battery post to solenoid lead wire in 4-way connector at carburetor. DO NOT disconnect connector, just insert jumper wire into connector. Make sure not to insert jumper wire into carburetor switch connector.

4) On vehicles equipped with A/C, turn A/C on and disconnect compressor lead. Open throttle slightly to energize solenoid. Turn screw on throttle shaft lever to adjust idle to "Solenoid Energized" RPM.

5) Turn A/C off, reconnect compressor lead and remove jumper wire from 4-way connector. Adjust curb idle speed screw on back of solenoid to specified "Curb Idle" RPM. DO NOT adjust mixture screws. If necessary to adjust mixture, follow "Propane Enrichment" procedure. Reconnect and/or install all hoses and remove all test equipment.

Curb Idle Speed (RPM)①

Application	Man. Trans.	Auto. Trans.
318" 2-Bbl.	650/800	650/800
318" 4-Bbl.		
Federal	②650/950	②650/950
Calif.	②650/950	②650/950
360" 4-Bbl.		
Federal	650/950	650/950
Calif.	750/950	750/950

① – 1st RPM is with solenoid disconnected, 2nd RPM is with solenoid connected.
② – Curb idle is 700 RPM with hoses connected and air cleaner installed.

IDLE MIXTURE

PROPANE ENRICHMENT PROCEDURE

Federal – 1) Set parking brake, place transmission in Neutral and connect tachometer and timing light to engine. Start engine and bring to normal operating temperature. Return engine to idle. Turn off all lights and accessories. Disconnect and plug EGR vacuum hose at valve.

2) On vehicles equipped with Spark Control Computer, disconnect and plug vacuum hose at transducer. On all other vehicles, disconnect and plug vacuum hose at distributor. Ground carburetor switch using jumper wire. Remove PCV valve from grommet, disconnect vapor canister purge hose at carburetor, leaving connections open.

3) Adjust engine timing if necessary, remove timing light. Disconnect heated air door vacuum hose at 4-way connector at air cleaner and install propane supply hose to connector. Propane bottle MUST be in upright position and both valves fully closed. With engine idling and air cleaner in place, open main propane valve.

4) Slowly open propane metering valve until maximum engine speed is obtained. With propane flowing, adjust idle speed screw to "Enriched" RPM setting. Check propane flow and adjust metering valve to insure maximum idle speed. Turn off main propane valve and allow engine speed to stabilize.

NOTE – *Too much propane will cause engine speed to drop.*

5) Adjust mixture screws to obtain smoothest curb idle speed. Pause between adjustments to allow engine speed to stabilize. Turn on main propane valve. If maximum engine speed varies more than 25 RPM from setting, repeat steps **3) - 5)**. If idle speed is correct, remove propane, reconnect and/or install all vacuum hoses and remove all test equipment.

NOTE – *After reconnection of all hoses, variation in engine RPM may occur; DO NOT readjust.*

Calif. – 1) Set parking brake, place transmission in Neutral and connect tachometer and timing light to engine. Start engine and bring to normal operating temperature. Return engine to idle. Turn off all lights and accessories and turn engine off.

2) Insert propane supply hose into air cleaner snorkel, past the vapor containment and heated air doors and disconnect breather hose at air cleaner. Propane bottle MUST be in upright position and both valves fully closed. Disconnect and plug EGR vacuum hose at valve.

3) Ground carburetor switch using jumper wire. Disconnect and ground coolant temperature switch lead with jumper wire. Remove PCV valve from grommet, leaving connection open. Disconnect vapor canister purge hose at carburetor and plug carburetor nipple and turn screw on back of solenoid until seated.

4) Start engine, open main propane valve. With engine idling and air cleaner in place, slowly open propane metering valve until maximum engine speed is obtained. Adjust idle speed screw to "Enriched" RPM setting.

NOTE – *Too much propane will cause engine speed to drop.*

5) Check propane flow and adjust metering valve to insure maximum idle speed. Turn off main propane valve and allow engine speed to stabilize. Adjust mixture screws to obtain smoothest curb idle speed. Pause between adjustments to allow engine speed to stabilize.

6) Turn on main propane valve and recheck "Enriched" RPM setting, if maximum engine speed varies more than 25 RPM from setting, repeat steps **2) - 7)**. Turn A/C on and disconnect compressor lead. Adjust engine speed to "Solenoid Energized" RPM using screw located on carburetor throttle shaft lever.

7) Reconnect compressor lead and turn A/C off. Adjust engine speed to specified "Curb Idle" RPM using screw on back of solenoid. If idle speed is correct, remove propane, reconnect and/or install all vacuum hoses and remove all test equipment.

NOTE – *After reconnection of all hoses, variation in engine RPM may occur; DO NOT readjust.*

TUNE-UP (Cont.)

Propane Enrichment (RPM)

Application	Man. Trans.	Auto. Trans.
318" 2-Bbl.	740	740
318" 4-Bbl.		
Federal	800	800
Calif.	800	850
360" 4-Bbl.		
Federal	①750	①750
Calif.	①875	①875

① – Heavy duty is 800 RPM.

EXHAUST GAS ANALYZER PROCEDURE (CALIFORNIA ONLY)

1) Connect an exhaust analyzer following manufacturer's instructions.

NOTE – *Make adjustments with engine fully warmed up, transmission in "NEUTRAL", all lights and accessories turned off, and vacuum hoses to EGR valve (if equipped) and distributor disconnected and plugged. Purge hose should be disconnected at carburetor and PCV valve removed from cylinder head cover, with both being left open.*

2) Allow vehicle to sit for at least an hour without running. Start engine and run in "NEUTRAL" with fast idle screw on 2nd highest step of fast idle cam. Engine should run for at least 5 to 10 minutes.

3) Disconnect and plug engine side of air pump air supply tube. Insert analyzer probe ahead of mini-catalyst, install tachometer and adjust idle speed and mixture screws to achieve specified carbon monoxide percentage, lowest hydrocarbon level and smoothest idle speed at specified RPM.

4) Reconnect air supply tube and reset curb idle RPM to specifications.

NOTE – *Before each curb idle RPM and carbon monoxide measurement, run engine at 2000 RPM for 10 seconds and let engine return to idle.*

5) When adjusted to specifications, remove analyzer and reconnect all vacuum hoses and components previously removed.

California Idle Speed (RPM) & Idle CO (%)

Application	Curb Idle	Idle CO%
318" 4-Bbl.	①650	0.3
360" 4-Bbl.	750	0.3

① – Should be 700 RPM with hoses connected and air cleaner installed.

COLD (FAST) IDLE RPM

1) Set ignition timing and idle speed to specifications. Turn off engine, remove air cleaner, then disconnect vacuum hoses from carburetor leading to heated air control and OSAC valve (if equipped). If not equipped with OSAC valve, disconnect vacuum hose to distributor.

2) Disconnect EGR hose and cap all vacuum ports at carburetor. With engine off, transmission in Neutral, and parking brake applied, open throttle and close choke. Close throttle to place fast idle speed screw on highest step of fast idle cam.

3) Move cam until screw drops to 2nd highest step of cam. Start engine and let speed stabilize. Turn fast idle screw to achieve specified fast idle speed.

Fast Idle Speed (RPM)

Application	Man. Trans.	Auto. Trans.
318" 2-Bbl.	1600	1600
318" 4-Bbl.		
Federal	1800	1800
Calif.	1500	1500
360" 4-Bbl.		
Federal	①1600	1600
Calif.	1600	1600

① – Set Heavy Duty Emission models at 800 RPM.

THROTTLE POSITIONER ADJUSTMENT

1) Start engine and allow it to idle in "NEUTRAL." Increase engine speed to 2000 RPM. Check that vacuum positioner unit operates properly and can withstand a hand applied load in the operating position. If not, determine cause of failure.

2) If unit operates properly, adjust to operate at specified speed. Accelerate engine manually to 2000 RPM. Loosen positioner adjustment lock nut and rotate complete vacuum positioner assembly until positioner just contacts throttle lever.

3) Release throttle. Then slowly adjust positioner to decrease engine speed until a sudden drop in speed occurs (over 1000 RPM). At this point, continue adjusting vacuum positioner in decreasing direction an additional ¼ turn and tighten lock nut.

4) Accelerate engine manually to approximately 2300 RPM and release throttle. Engine should return to normal idle.

AUTOMATIC CHOKE SETTING

All models use an electric assist choke which requires no adjustment.

FUEL PUMP

Pressure	5-7 psi
Volume (At Idle)	1 quart in 1 minute

MANIFOLD HEAT CONTROL VALVE

Every 30,000 (Light Duty) or 18,000 (Heavy Duty) miles, apply a suitable solvent to both ends of valve shaft where it rotates in bushing. Work valve back and forth a few times.

NOTE – *Apply solvent only when manifold is cool.*

EMISSION CONTROL SYSTEMS

See appropriate article in Emission Control Section.

GENERAL SERVICING

ELECTRICAL

BATTERY

12 Volt – Negative Ground

Application	Ampere Hours	Cranking Rating Amperes @0°F
Standard	48	305
Optional	59	375
Optional		
Main. Free	70	430
Long Life Main. Free	85	500

FUEL SYSTEMS

CARBURETORS

Application	Carb. Model
318" 2-Bbl.	Holley 2280
318" 4-Bbl.	Carter Thermo-Quad
360" 4-Bbl.	Carter Thermo-Quad

Other Data & Specifications – *See Tune-Up and Holley or Carter Carburetors in FUEL SYSTEMS Section.*

IGNITION

DISTRIBUTOR

All models are equipped with Chrysler Corp. Electronic Ignition System. Units are entirely self-contained and require no outside adjustments.

Other Data & Specifications – *See Tune-Up and Chrysler Corp. Distributors in ELECTRICAL Section.*

IGNITION COIL

Resistance

Primary (at 70-80°F)	
Prestolite	1.60-1.79 ohms
Essex	1.34-1.55 ohms
Secondary (at 70-80°F)	
Prestolite	9400-11,700 ohms
Essex	9000-12,200 ohms
Ballast Resistor (at 70-80°F)	1.12-1.38 ohms

STARTER

All models use a Chrysler Corp. reduction gear type starter.

Cranking Amp. Draw	
318"	165-180 Amps.
360"	180-200 Amps.
Locked Resistance @ 4 Volts	475-550 Amps.
Free Running Test	
@ 11 Volts & 3700 RPM Minimum	90 Amps.

Other Data & Specifications – *See Chrysler Corp. Starters in ELECTRICAL Section.*

ALTERNATORS

All models use Chrysler Corp. alternator.

Tag Color	Rated Amp. Output
Violet	41
Yellow	60
Yellow ("D", "W", "AD", "PD", "AW" & "PW")	117

Other Data & Specifications – *See Chrysler Corp. Alternator in ELECTRICAL Section.*

ALTERNATOR REGULATOR

All models use Chrysler Corp. Electronic Voltage Regulator. Unit is nonadjustable.

Operating Voltage (@80°F) – 13.9-14.6 Volts

Other Data & Specifications – ***See Chrysler Corp. Electronic Regulators in ELECTRICAL Section.***

ENGINE

INTAKE MANIFOLD TIGHTENING

Tighten bolts in sequence shown to 40 ft. lbs.

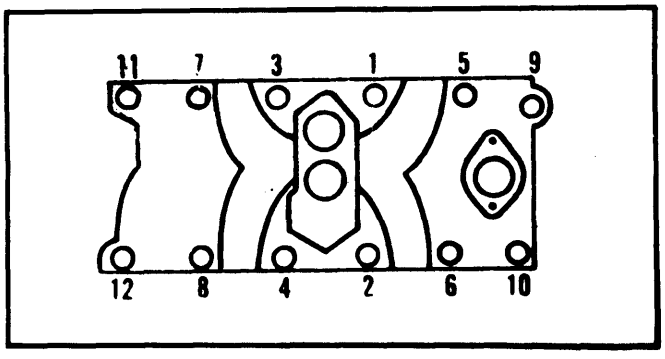

Fig. 2 Intake Manifold Tightening Sequence

GENERAL SERVICING (Cont.)

BELT ADJUSTMENT

NOTE – *Do not use either the gauge or torque method when checking belt adjustment. Instead, use belt deflection method.*

Application	Deflection New Belt①	Deflection Used Belt①
All	1/4 - 1/2"	1/4 - 5/16"

① – With 10 pounds deflection pressure midway between pulleys. Used belts are any operated more than 15 minutes.

COOLING CAPACITIES

Application	Quantity (Qts.)
318"	①16.0
360"	①14.5

① – Add 1 quart for A/C or increased cooling.

FILTERS & CLEANERS

Filter Cleaner	Service Interval (Miles) Schedule A	Schedule B
Air Cleaner	30,000	30,000
Oil Filter	①15,000	①15,000
Fuel Filter	.....	30,000
PCV Valve	.....	②30,000
Canister Filter	.....	30,000
Crankcase Inlet Air Cleaner	.....	③30,000

① – Replace first time at 7,500 miles.
② – Check at 15,000 and 45,000 miles.
③ – Clean rather than replace.

CAPACITIES (EXCEPT COOLING)

Application	Quantity
Crankcase	①5.0 qts.
Automatic Transmission (Dexron II)	②7.7 pts.
Manual Transmission	
4-Speed Overdrive (A-833) (Dexron II)	7.5 pts.
4-Speed N.P. 435 (SAE 80W-90)	7.0 pts.
Transfer Case	
N.P. 205 (SAE 80W-90)	4.5 pts.
N.P. 208 (SAE 10W-30)	4.0 pts.
Rear Axle (SAE 80W-90)	
8 3/8" Ring Gear	4.5 pts.
9 1/4" Ring Gear	4.5 pts.
9 3/4" Ring Gear	6.0 pts.
10 1/2" Ring Gear	6.5 pts.
Front Axle (SAE 80W-90)	
Model 44	3.5 pts.
Model 60	6.5 pts.
Fuel Tank	
"AD", "PD", "AW" & "PW" Models	
Standard	24.0 gals.
Extra	35.0 gals.
"D" & "W" Models	
Ahead of Rear Axle	18.0 gals.
Behind Rear Axle	21.0 gals.
"B", "PB" & "CB" Models	
Standard	22.0 gals.
Optional	36.0 gals.

① – Add 1 quart with filter change.
② – Without torque converter drain.