

1975-79 TUNE-UP PROCEDURES

Chrysler Corp. V8 Tune-Up

ENGINE IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

Motor home chassis Vehicle Identification Number (VIN Code) is installed by body builder. On all other models the number is found on the left front door rear face or left front door lock pillar. Engine is identified by fifth digit of VIN Code on 1979 models only.

ENGINE IDENTIFICATION CODE

The engine identification number is located as follows:

- 318" & 360"-1** - Left front of block, below cylinder head.
- 360"-3** - Front face of block, below cylinder head on left bank.
- 400" (1976-78)** - Right side of block, next to distributor.
- 440"-1** - Top of block, adjacent to left front tappet rail.
- 440"-3** - Left top of block, adjacent to water pump.

1979 ENGINE CODE

Application	VIN Code
318" 2-Bbl. & 4-Bbl.	E
360"-1 2-Bbl. & 4-Bbl.	F
360"-3 2-Bbl. & 4-Bbl.	¹ K
440"-1 4-Bbl.	D
440"-3 4-Bbl.	¹ A

¹ - Heavy duty engines.

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 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.

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.

ENGINE COMPRESSION

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

COMPRESSION SPECIFICATIONS

Application	Specifications
Compression Ratio	
318"-1 & 3	8.7:1
360"-1	8.6:1
360"-3	8.0:1
400"	8.2:1
440"-1 & 3	8.2:1
Recommended Fuel	¹ Regular (87 AKI Minimum)
Compression Pressure	Min. 100 psi
Maximum Pressure Variation	40 psi

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

VALVE CLEARANCE

Hydraulic Lifters - Zero lash.

VALVE ARRANGEMENT

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

SPARK PLUGS

SPARK PLUG INSTALLATION

Application	Specification
Gap035"
Torque	
1975 318"-3 & All 360"-3	20 ft. lbs.
440"-3	10 ft. lbs.
All Other Engines	30 ft. lbs.

SPARK PLUG TYPE

Application	Champion No.
318"-1/3	¹ RN-11Y
360"-1	RN-12Y
360"-3	RF-10
400" & 440"-1	
1975-76	J-11Y
1977	RJ-11Y
1978	OJ-11Y
1979	OJ-11Y or RJ-11Y
440"-3	OBL-9Y or RBL-9Y

¹ - F-10 on 1975 318"-3 engines.

HIGH TENSION WIRE RESISTANCE

1) Measure resistance of each spark plug wire (with wire still attached to distributor cap). If resistance is not within specification, remove wire from cap and retest. If not within specification, replace wire.

2) To check coil wire resistance, remove distributor cap (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 specification, remove coil wire at coil tower and check cable resistance.

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

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DISTRIBUTOR

All models are equipped with Chrysler Corp. Electronic Ignition System. No adjustments are required.

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

NOTE: Some 1975-76 models may exhibit primary ignition problems. This condition may be caused by a faulty pick-up coil. Ensure the pick-up coil resistance is 250 ohms at 75°F. Replace if necessary. If pick-up coil is okay, check and adjust pick-up coil air gap. Using a non-magnetic feeler gauge, adjust air gap to .010". Apply vacuum to distributor advance and ensure stator does not hit reluctor.

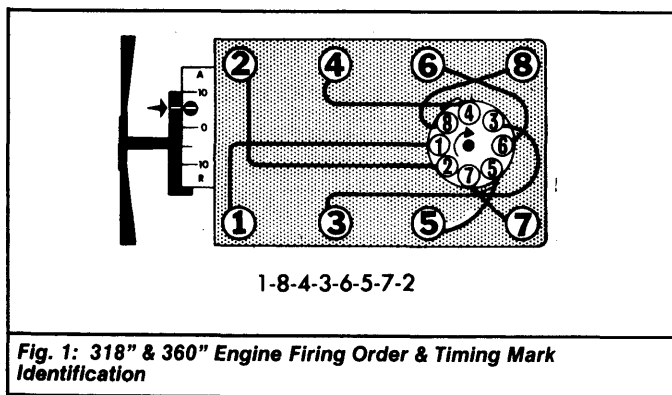


Fig. 1: 318" & 360" Engine Firing Order & Timing Mark Identification

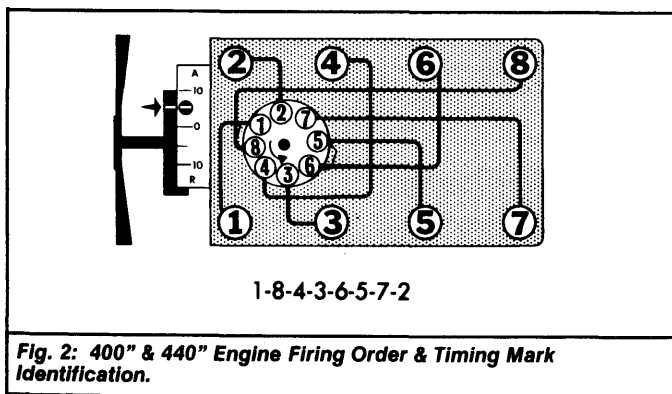


Fig. 2: 400" & 440" Engine Firing Order & Timing Mark Identification

IGNITION TIMING

NOTE: To make timing setting easier, some models have additional timing marks on torque converter. Marks are viewed through a hole in torque converter housing.

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

- 1) Check or adjust ignition timing with engine at specified hot (slow) idle speed, transmission in "NEUTRAL", and distributor vacuum advance hose disconnected at distributor and plugged.
- 2) If adjustment is required, loosen distributor hold down arm screw and turn distributor. When timing is correct, tighten hold down arm screw and recheck timing.

CAUTION: Do not use distributor vacuum advance unit as a handle when turning distributor.

- 3) When timing is correct, reconnect vacuum hoses and readjust curb idle speed if necessary. Do not reset timing after connecting hoses.

IGNITION TIMING SPECIFICATIONS¹

Application	Calif.	Federal
1975		
Light Duty		
318"-1	0°TDC	2°BTDC
Heavy Duty		
318"-1	0°TDC	2°ATDC
318"-3	2°BTDC	0°TDC
360"	4°BTDC	0°TDC
440"	8°BTDC	8°BTDC
1976		
Light Duty		
318"	0°TDC	2°BTDC
360"-1	4°BTDC	6°BTDC
Heavy Duty		
318"	2°ATDC	2°ATDC
360"-1	4°BTDC	0°TDC
360"-3	0°TDC	0°TDC
400"		2°BTDC
440"	8°BTDC	8°BTDC
1977		
Light Duty		
318"		
Hi. Alt.		6°BTDC
All Others	2°BTDC	2°BTDC
360"-1		2°ATDC
Heavy Duty		
318"	0°TDC	2°ATDC
360"-1	0°TDC	0°TDC
360"-3	0°TDC	0°TDC
400"		2°BTDC
440"	8°BTDC	8°BTDC
1978		
Light Duty		
318"		12°BTDC
360"-1	6°BTDC	6°BTDC
Heavy Duty		
318"		2°ATDC
360"-1	6°BTDC	4°BTDC
360"-3	0°TDC	0°TDC
400"		2°BTDC
440"	8°BTDC	8°BTDC
1979		
Light Duty		
318" 2-Bbl.		
Man. Trans.		12°BTDC
Auto. Trans.		12°BTDC
318" 4-Bbl.		
Man. Trans.	6°BTDC	
Auto. Trans.	6°BTDC ²	
360"-1 2-Bbl.		
Man. Trans.		10°BTDC
Auto. Trans.		10°BTDC
360"-1 4-Bbl.		
Man. Trans.	10°BTDC ³	4°BTDC
Auto. Trans.	10°BTDC	4°BTDC
360"-3 2-Bbl.	TDC	TDC
Heavy Duty		
360"-3 4-Bbl.		
Man. Trans.	4°BTDC	4°BTDC
Auto. Trans.	4°BTDC	4°BTDC
440"-1 & 440"-3	8°BTDC	8°BTDC

¹ - Timing is ± 2°.

² - 8°BTDC on some models with Auto. Trans.

³ - 4°BTDC or 6°BTDC on some Man. Trans. models.

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IDLE SPEED & MIXTURE

NOTE: All 1977-79 Federal and High Altitude vehicles use the propane enrichment procedure, while all 1975-76 vehicles and 1977-79 California vehicles use the exhaust gas analyzer procedure.

NOTE: Some 1975-76 Federal light duty vehicles and without catalytic converters may also use the propane enrichment method. If the vehicle you are working on is not listed in the adjustment specifications table, use the exhaust gas analyzer method.

NOTE: Some 1973 M300, RM300 and RM350 with 318" engine and carburetor No. 63675 may exhibit poor driveability. This condition may be corrected by installing a driveability kit 3837606.

NOTE: Some 1979 360" Federal vehicles with 2-Bbl. carburetor and dual vapor canisters may exhibit poor idling. To correct this condition, install a vacuum reducer (4186229) to the vacuum hose marked "Dist" on the 4-port canister. The reducer is installed 4" from the canister.

PROPANE ENRICHMENT PROCEDURE

1977-79 Federal & High Altitude Models - 1) Place transmission in "NEUTRAL", set parking brake and turn off all lights and accessories. Connect a tachometer and timing light. Start engine and let it warm up to normal operating temperature with fast idle screw on second highest step of fast idle cam. Then let engine return to idle speed.

2) Disconnect and plug EGR vacuum hose (if so equipped) and distributor vacuum hose. Check timing and adjust if necessary. Remove timing light.

3) Disconnect heated air door vacuum hose at carburetor nipple (or air cleaner vacuum supply hose from carburetor or carburetor choke vacuum diaphragm on carburetor in the case of motor homes). Connect propane supply hose to nipple, making sure propane bottle is vertical and in a safe location.

NOTE: On engine with 4-Bbl. carb. and 440" engines without heated air, insert supply hose 12 inches into air cleaner snorkel.

4) Remove PCV valve from cylinder head cover and disconnect purge hose to vapor canister at carburetor end. Leave connections open.

5) Open propane main valve. With air cleaner installed, slowly open metering valve until maximum RPM is reached. If too much propane is added, engine RPM will decrease. Fine tune for highest RPM.

6) With propane flowing, adjust curb idle screw to obtain Propane Enriched RPM specified. Readjust propane control for maximum engine speed.

7) Turn off propane main valve and allow engine to stabilize. With air cleaner installed, slowly adjust mixture screws to achieve smoothest idle at specified curb idle RPM.

NOTE: If necessary to remove limiter caps to achieve idle RPM, check for engine malfunctions or vacuum leaks. If limiter caps are removed, new service caps must be installed with tang against maximum rich stop.

8) Turn on propane main valve. If maximum speed is greater than specification + 25 RPM, repeat steps 5) through 8). On 318" High Altitude engines, reset idle speed by adjusting idle speed solenoid.

9) Turn off propane main valve and metering valve. Remove tachometer and propane supply hose. Reinstall all vacuum lines and components previously removed. If engine RPM varies when PCV valve and canister purge hose are reconnected, DO NOT readjust.

1975-79 FEDERAL & HIGH ALTITUDE IDLE SPEED (RPM)

Application	Curb Idle	Propane Enriched
1975 Light Duty		
318" Fed.	750	900
1976 Light Duty		
318" Fed.	750	900
360" Auto. Trans.	700	850
1977		
Light Duty		
318" High Alt.		
Below 4000 ft.	750	920
Above 4000 ft.	750	885
360"-1	700	820
Heavy Duty		
318"		
Man. Trans.	750	800
Auto. Trans.	750	820
360"-1 ²		
Man. Trans.	750	790
Auto. Trans.	750	810
400" & 440"		
Man. Trans.	700	740
Auto. Trans.	700	760
1978		
Light Duty		
318" & 360"	750	890
Heavy Duty		
318"		
Man. Trans.	750	800
Auto. Trans.	750	820
360"		
Man. Trans.	750	790
Auto. Trans.	750	810
400" & 440"		
Man. Trans.	700	740
Auto. Trans.	700	760
1979		
318" 2-Bbl.		
Man. Trans.	680	820
Auto. Trans.	680	820
360"-1 2-Bbl.		
Man. Trans.	750	1000
Auto. Trans.	750	975
360"-3 2-Bbl.		
Auto. Trans.	750	810
360"-1 4-Bbl.		
Man. Trans.	700	750
Auto. Trans. ²	700	² 750
360"-3 4-Bbl.		
Auto. Trans.	700	820
400"-1 4-Bbl.		
Auto. Trans.	700	780
440"-3 4-Bbl.		
Auto. Trans.	700	880

¹ - See Emission Control Tune-Up Decal under hood.

² - Light Duty vehicles with Distributor No. 4111487 have curb idle of 750 RPM and propane enriched speed of 830 RPM.

1975-79 TUNE-UP PROCEDURES

Chrysler Corp. V8 Tune-Up (Cont.)

EXHAUST GAS ANALYZER PROCEDURE

NOTE: Emission Control Tune-Up Decal in engine compartment will specify where exhaust gas sample is to be taken.

1975-76 & 1977-79 Calif. Models - 1) Connect an exhaust analyzer following manufacturer's instructions. 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 second highest step of fast idle cam. Engine should run for at least 5 to 10 minutes. On 1977-78 models, disconnect vacuum hose at transducer of Lean Burn Computer, (if equipped).

3) Disconnect and plug engine side of air pump air supply tube. Insert analyzer probe ahead of mini-catalyst. Install tachometer. 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 specification. See appropriate IDLE SPEED (RPM) & IDLE CO (%) SPECIFICATIONS table.

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 specification, remove analyzer and reconnect all vacuum hoses and components previously removed.

1975-77 IDLE SPEED (RPM) & IDLE CO (%) SPECIFICATIONS

Application	Curb Idle	Idle CO%
1975 ¹		
Light Duty		
318"	750	0.3
Heavy Duty		
318"		
Calif. ²	700	1.0
Federal	700	1.0
360"		
Calif.	700	1.0
Federal	750	1.0
440"	700	1.0
1976 ¹		
Light Duty		
318" & 360"	750	0.3
Heavy Duty		
318" & 360"		
Calif.	700	0.3
Federal	750	1.0
400"	700	1.0
440"	700	1.0
1977		
Light Duty		
318" & 360"	750	0.3
Heavy Duty		
318"	700	0.3
360"	700	1.0
400"	700	0.5
440"	700	0.5

¹ - Exhaust sample is from tailpipe on non-catalytic vehicles or in front of catalytic, (if equipped).

² - 750 RPM on Motor Home Chassis with Auto. Trans.

1978-79 IDLE SPEED (RPM) & IDLE CO (%) SPECIFICATIONS

Application	Curb Idle	Idle CO%
1978		
Light Duty		
318" 4-Bbl.	750	0.3
360"-1 & 440"	750	0.3
Heavy Duty		
360"-1	700	0.3
360"-3	700	1.0
440"		
Models B, PB & M	700	1.0
All Others	700	0.3
1979		
Light Duty		
318" 4-Bbl.		
Man. Trans.	750	0.3
Auto. Trans.	750	0.3
360"-1 4-Bbl.		
Man. Trans.	750	0.5
Auto. Trans.	750	0.5
Heavy Duty		
360"-3 2-Bbl. ¹		
Auto. Trans.	700	1.0
360"-3 4-Bbl.		
Auto. Trans.	700	0.5
440"-1 & 440"-3 4-Bbl.		
Auto. Trans.	700	1.0

¹ - Used in Motor Home Chassis (MHC).

COLD (FAST) IDLE RPM

NOTE: Some 1978 California Heavy Duty trucks with 360" engine and 2-Bbl. carburetor may develop die-out on cold starting. This condition may be corrected by installing a vacuum delay valve (404195). To install, cut vacuum line between vacuum kick and vacuum source. Install delay valve with Black side to vacuum source.

NOTE: Some 1978 California Heavy Duty trucks with 360" engine and automatic transmission may have driveability problems during cold engine operation. To correct this, install the driveability kit (4106040)

1) Set ignition timing and hot (slow) idle speed. Turn off engine. Remove air cleaner and disconnect vacuum hoses from carburetor, leading to heated air control and OSAC valve. If not equipped with OSAC valve, disconnect hose that leads directly to distributor. Disconnect EGR hose and cap all vacuum ports at carburetor.

2) With engine off, transmission in "NEUTRAL", and parking brake set, 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 second highest step of cam. Start engine and let speed stabilize. Turn fast idle screw to achieve specified fast idle speed.

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FAST IDLE SPEED (RPM)

Application	Man. Trans.	Auto. Trans.
1975		
318"-1	¹ 1500	1500
318"-3		
Federal	1900	² 1900
Calif.	1500	1500
360"		
Federal	³ 1700	1800
Calif.	1600	1600
440"	1700	1700
1976		
318"	⁴ 1500	1500
360"-1		
Carb. 22101	1700	1800
Carb. 2245		1600
360"-3		1800
400"		1400
440"		1700
1977		
318"	⁵ 1500	⁶ 1500
360"-1		
Carb. 2210	1700	1800
Carb. 2245	1600	1600
360"-3		1800
400"		1600
440"	1700	1700
1978		
318"		
Federal		
Models B & PB	⁷ 1700	1500
All Others	1500	⁸ 1500
Calif.	1600	1600
360"-1		
Models B & PB	⁸ 1600	⁸ 1600
All Others	1600	⁹ 1600
Calif.	1700	1600
360"-3	1600	1600
400"	1600	1600
440"	1400	¹⁰ ¹¹ 1400
1979		
318" 2-Bbl.		
Federal	1400	1500
318" 4-Bbl.		
Calif.	1600	1600
360"-1/360"	1600	¹² 1600
440"-1/440"-3		1400

¹ - 1700 RPM on Federal Heavy Duty.

² - 1700 RPM on Motor Home.

³ - 1600 RPM on engines w/Holley R-7103A.

⁴ - 1700 RPM on Carb. No. BBD-6536S.

⁵ - 1600 RPM on Carb. No. BBD-8146S and 1900 RPM on Carb. No. BBD-6585S.

⁶ - 1900 RPM on Carb. No. BBD-6586S.

⁷ - 1400 RPM on Carb. No. BBD-8154S.

⁸ - 1700 RPM on Carb. No. R-7871A.

⁹ - 1700 RPM on Carbs. No. R-8453A and TQ-8135.

¹⁰ - 1700 RPM on Carbs. No. TQ-9118S and TQ-9151S.

¹¹ - 1700 RPM on Carbs. No. TQ-9117S and TQ-9150S.

¹² - 1750 RPM on Fed. Auto. Trans. w/Carb. No. TQ-9226S.

DASHPOT ADJUSTMENT

NOTE: Adjustment applies only to vehicles with manual transmission and Carter BBD 2-Bbl. carburetor.

With hot (slow) idle speed set to specification, position throttle lever so that tab on lever is just touching dashpot stem but not depressing it. Allow 30 seconds for engine speed to stabilize. Engine speed should be 2300 RPM. Adjust by loosening lock nut and screwing dashpot in or out as required.

THROTTLE POSITIONER ADJUSTMENT

NOTE: Adjustment applies only to 1979 vehicles.

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. On Carter carburetors, accelerate engine manually to 2000 RPM. Loosen positioner adjustment lock nut and rotate complete vacuum positioner assembly until positioner just contacts throttle lever.

3) On Holley 2245 carburetor, accelerate engine to 2000 RPM and adjust positioner screw using standard or special driver until screw just contacts throttle lever.

4) On all carburetors, 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.

5) Accelerate engine manually to approximately 2500 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 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.

IGNITION SYSTEM

DISTRIBUTOR

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

Other Data & Specifications - See Chrysler Corp. Electronic Ignition system article in DISTRIBUTOR & IGNITION SYSTEMS section.

1975-79 TUNE-UP PROCEDURES

Chrysler Corp. V8 Tune-Up (Cont.)

IGNITION COIL

IGNITION COIL SPECIFICATIONS

Application	Specification
Primary (at 70-80°F)	
Prestolite	1.60-1.79 Ohms
Essex	
D, W, AD, PD, AW & PW	1.41-1.55 Ohms
B, PB, CB & MB	1.34-1.55 Ohms
Motor Homes	1.41-1.62 Ohms
Secondary (at 70-80°F)	
Prestolite	9400-11,700 Ohms
Essex	1 8000-11,200 Ohms
Ballast Resistor	
Coil Side (at 70-80°F)	0.5-0.6 Ohms
Control Unit Side (at 70-80°F)	4.75-5.75 Ohms

¹ - 9000-12,200 ohms on 1979 B, PB, CB & MB models.

FUEL SYSTEM

CARBURETORS

Application	Carb. Model
318"	
1975-77	Carter BBD 2-Bbl.
1978-79	
Federal & High Alt.	Carter BBD 2-Bbl.
Calif.	Carter Thermo-Quad 4-Bbl.
360"-1 & 3	
1975-76	Holley 2210 or 2245 2-Bbl.
1977-79	
Federal	Holley 2245 2-Bbl. or Carter Thermo-Quad 4-Bbl.
Calif.	Carter Thermo-Quad 4-Bbl.
360"-3 (1979 Only)	
Motor Home	Holley 2210 or 2245 2-Bbl.
All Other Models	Carter Thermo-Quad 4-Bbl.
400"	Holley 2210 2-Bbl.
440"	Carter Thermo-Quad 4-Bbl.

Other Data & Specifications - See Holley or Carter Carburetors in FUEL SYSTEMS section.