

## TUNE-UP

### ENGINE IDENTIFICATION

The Engine Identification Number is located as follows:

- 318" - Left front of block below cylinder head.
- 383" - Right side of block adjacent to distributor.
- 413" - Left side of block adjacent to front tappet rail.

The first three numerals designate engine cubic inch displacement. The premium 318"-3 engine is designated by a "3" stamped below engine number.

Application	Numerals
318" .....	318
383" .....	383
413" .....	413

### MODEL IDENTIFICATION

#### VEHICLE IDENTIFICATION NUMBER

Number is on Vehicle Identification Plate which is located on rear face of driver door. Its location on Motor Home chassis must be supplied by body builder.

**E13AAOU100001**

- First & Second Digits - Model Code.
- Third Digit - Body Type.
- Fourth Digit - Gross Vehicle Weight.
- Fifth Digit - Engine Type.
- Sixth Digit - Model Year.
- Seventh Digit - Plant.
- Remaining Digits - Sequence Built Number.

### TUNE-UP NOTES

► **IDLE SPEED ADJUSTMENT CAUTION** - 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 CARBURETION Section or EMISSION CONTROL Section.

**NOTE** - Due to changes and corrections, 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, decal specifications prevail.

### COMPRESSION PRESSURE

With engine warm, all spark plugs removed and throttle wide open, the maximum variation between cylinders should not exceed 20 psi (40 psi in "B" models and Motor Homes).

Application	PSI
318" (Exc. "B" Models) Man. Trans. ....	120-160
318" (Exc. "B" Models) Auto. Trans. ....	110-140
318" "B" Models.....	100 Min.
318"-3 (Exc. Motor Homes).....	90-130
383" .....	125-155
318"-3 & 413" Motor Homes.....	100 Min.

### 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	
14 mm .....	.035"
18 mm .....	.030"
Torque	
14 mm .....	30 Ft. Lbs.
18 mm .....	20 Ft. Lbs.

### Spark Plug Type

Application	Champion No.	Mopar No.
318" .....	N11Y.....	
318"-3 (18 mm).....	F10.....	P-7-3S
383" .....	J13Y.....	P-3-5P
413" .....	N6.....	P-6-4S

### DISTRIBUTOR

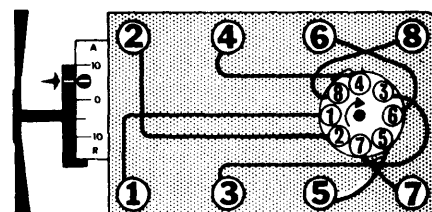
Point Gap ①	
All (Exc. 413") .....	.014-.019"
413" .....	.013-.018"
Cam Angle	
All (Exc. 413") .....	30-35°
413" .....	28-32°
Breaker Arm Spring Tension .....	17-20 ozs.
Condenser Capacity .....	.25-.285 mfd.

① - With solenoid wire (if equipped) disconnected.

### IGNITION TIMING

Check or adjust timing with engine at normal operating temperature, distributor vacuum advance line disconnected and plugged, and transmission in Neutral.

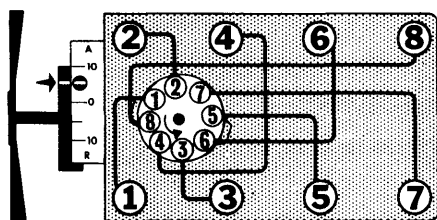
Application	Timing
318" W/Cleaner Air System.....	5° ATDC
318" W/O Cleaner Air System .....	5° BTDC
318"-3 .....	5° BTDC
383" Man. Trans. ....	TDC
383" Auto. Trans. ....	7.5° BTDC
413" .....	5° BTDC



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**FIRING ORDER & TIMING MARKS 318"**

## TUNE-UP (Cont.)



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## FIRING ORDER &amp; TIMING MARKS 383" &amp; 413"

## HOT (SLOW) IDLE RPM

**Without Cleaner Air System** — On engines with automatic transmissions, disconnect transmission throttle rod before making idle adjustment. With air cleaner installed, and choke valve wide open, adjust idle speed screw to obtain specified RPM. Adjust idle mixture screws to obtain highest RPM and readjust idle speed screw to specified RPM. Turn mixture screws in (lean) until speed drops, then out (rich) just far enough to recover highest RPM. Readjust idle speed screw if necessary and check mixture. Adjust idle mixture if necessary. Adjust transmission control rod so that it does not interfere with idle setting and install (automatic transmission only).

**With Cleaner Air System** — With engine running at normal operating temperature, timing checked, air cleaner installed, and transmission in Neutral, connect tachometer and insert probe of exhaust gas analyzer a minimum of two feet into tail pipe. Warm up and calibrate according to manufacturer's instructions and clamp hose between distributor vacuum control valve and intake manifold. Adjust idle mixture screw  $\frac{1}{8}$  turn richer (out) and wait 10 seconds before reading meter and, if necessary, adjust again until meter shows a definite increase in richness. Adjust carburetor to give a 14.2 air/fuel ratio by moving screw  $\frac{1}{6}$  turn at a time. Adjust idle speed screw if necessary to maintain specified RPM. If idle is rough, the mixture screws may be adjusted independently to smooth it out so long as the 14.2 air/fuel ratio is maintained. Remove clamp from distributor vacuum valve hose. If engine speed changes materially, check and set vacuum valve. See *Distributor Vacuum Control Valve Adjustment*.

## Idle Speed (RPM)

Application	RPM
Man. Trans. ....	750
Auto. Trans. (Exc. Motor Home & 383") ....	700
383" Auto. Trans. ....	650
Motor Home ....	600

## COLD (FAST) IDLE RPM

With engine at normal operating temperature, transmission in Neutral, choke open, hot (slow) idle set, and air cleaner installed (Cleaner Air System engines only), place fast idle speed adjusting screw on lowest step of fast idle cam on standard car-

buretors and on second highest step of cam on Cleaner Air System carburetors. Adjust screw to obtain specified RPM. Reposition cam and screw after every screw adjustment to apply normal throttle closing torque.

## Fast Idle Speed (RPM)

Application	RPM
383" All .....	1700
All Others	
Man. Trans. ....	1600
Auto. Trans. (Exc. W/Carb. No. BBD-4958S).....	2000
Auto. Trans. W/Carb. No. BBD-4958S.....	1900

## GOVERNOR ADJUSTMENTS

**NOTE** — All governor adjustments are made with engine tuned and at normal operating temperature.

**Speed Adjustment** — Remove seal from speed screw adjusting cap and turn cap  $\frac{1}{2}$  turn at a time, out to increase speed and in to decrease speed. More than two turns out from factory setting is not recommended.

## Governor Speed (RPM, No Load)

Application	Factory Setting
900-770 .....	3700

**Surge and Stability Adjustment** — Block throttle linkage to provide surge at governed speed. With suitable hex wrench (A25264) holding speed screw, turn suitable hollow wrench (A24283) on calibrating nut clockwise  $\frac{1}{4}$  turn at a time until surge is minimized. Turn calibrating nut counterclockwise to improve stability. Reset speed screw if necessary.

## AUTOMATIC CHOKE SETTING

Nonadjustable. Check for free movement on pivot by moving choke rod up and down. If unit binds, install new one.

## DISTRIBUTOR VACUUM CONTROL VALVE ADJUSTMENT

Adjust dashpot so that it does not contact throttle, connect tachometer, vacuum gauge (0-30 in. Hg), and remove distributor vacuum tube at distributor and clamp tube closed. Set timing and hot (slow) idle to specifications. Reconnect vacuum tube and run engine at 2000 RPM for five seconds in Neutral. When throttle is released, distributor vacuum should increase to over 16 in. Hg for a minimum of one second and fall below six inches within three seconds. Remove vacuum control cover and turn adjusting screw for adjustment. Readjust dashpot. See *Dashpot Adjustment*. Recheck valve performance. If distributor vacuum does not fall below six in. Hg within four seconds after throttle is released, readjust or replace dashpot.

## DASPOT ADJUSTMENT

With hot (slow) idle speed set to specifications, position throttle lever so that tab on lever is just touching dashpot stem but not depressing it. The engine speed on "B" models should be 2500 RPM and on all others 1000 RPM. To adjust, screw dashpot in or out as required.

## TUNE-UP (Cont.)

### FUEL PUMP PRESSURE & VOLUME

Pressure (At Idle)	
318" .....	5-7 psi
383", 413" .....	3.5-5 psi
Optional (Electric) .....	4-4.75 psi
Volume (At Idle) .....	1 qt. in 1 min.

### MANIFOLD HEAT CONTROL VALVE

Check valve for freedom of movement and lubricate with suitable solvent (Part No. 3419129) every 4,000 miles.

### EMISSION CONTROL

See appropriate article in EMISSION CONTROL Section.

## IGNITION

### DISTRIBUTOR

Application	Chrysler Part No.
318" W/Cleaner Air System .....	2875796
318" W/O Cleaner Air System .....	2875800
318"-3 .....	2875804
383" Man. Trans. ....	2875742
383" Auto. Trans. ....	2875747
413" .....	2875655

Other Data & Specifications — See Tune-Up and Chrysler Distributors in ELECTRICAL Section.

### IGNITION COIL

Application	Chrysler Part No.
All .....	2444242

Resistance	Ohms @ 70-80°F
Primary .....	1.65-1.79
Secondary .....	9,400-11,700
Ballast Resistor .....	.5-.6

## CARBURETION

### CARBURETORS

#### Carter BBD Series 2-Bbl.

Application	Carter Part No.	
	Man. Trans.	Auto. Trans.
318" .....	4721S .....	4722S
318" ① .....	4723S .....	4724S
383" .....	4725S .....	4726S
383" ② .....	4727S .....	4728S
318" ② .....	4819S .....	4820SL
318" ① .....	4821S .....	4822S
318" .....	4823S .....	4824S
318"-3 .....	4827S .....	4827S
383" .....	4834S .....	4835S
318" ③ .....	4957S .....	4958S

- ① — With Evaporation Control System.
- ② — California only.
- ③ — With NOx Emission Control.

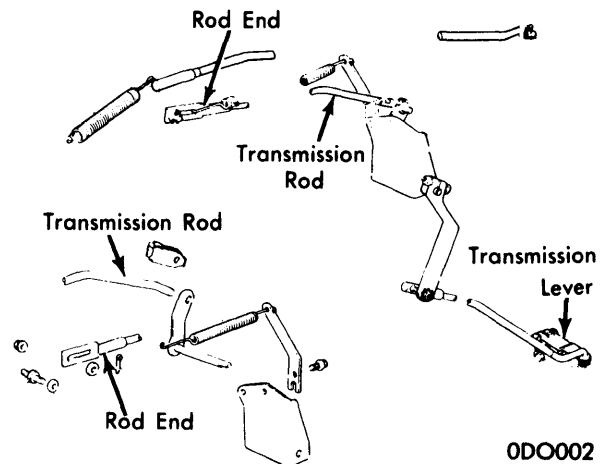
#### Holley No. 4150C 4-Bbl.

Application	Holley Part No.	
	Man. Trans.	Auto. Trans.
413" .....		R-4399A

Other Data & Specifications — See Tune-Up and Carter or Holley Carburetors in CARBURETION Section.

### ACCELERATOR AND DOWNSHIFT LINKAGE ADJUSTMENT

Auto. Trans. 318" "D", "W" Models — Adjust hot (slow) idle speed to specifications. Remove cotter pin, flat washer and transmission throttle rod from the carburetor pin. Unhook spring from adjustable rod end. Hold transmission throttle lever forward against its stop and adjust rod end so front of slot contacts carburetor pin. Replace spring, washer and cotter pin. Road test vehicle. If transmission does not downshift, lengthen transmission throttle rod one turn and repeat road test.

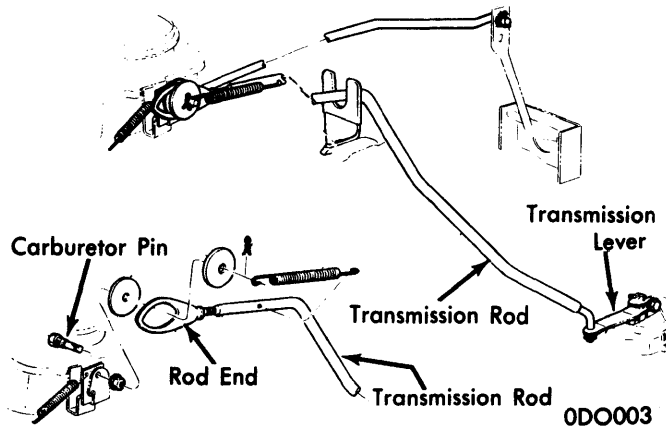


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### ACCELERATOR AND DOWNSHIFT LINKAGE ADJUSTMENT 318" "D", "W" MODELS

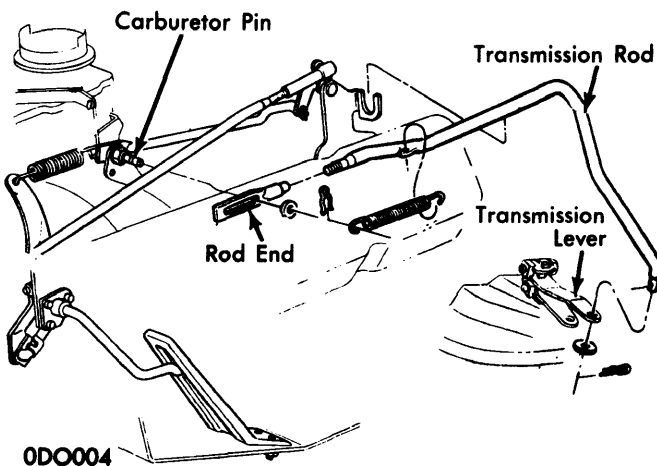
## CARBURETION (Cont.)

**Auto. Trans. 383" "D", "W" Models** — Adjust hot (slow) idle speed to specifications. Remove clip, spring, flat washer, and transmission throttle rod from carburetor pin. Hold throttle rod forward so that transmission lever is against its stop and adjust rod end so that rear of slot is against carburetor pin. Replace washer, spring and clip and road test vehicle. If transmission does not downshift, lengthen transmission throttle rod one turn and repeat road test.



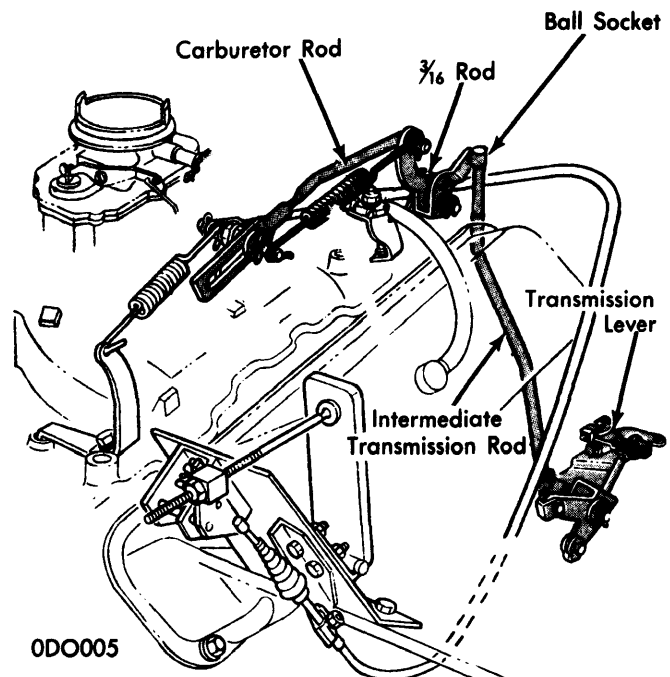
**ACCELERATOR AND DOWNSHIFT LINKAGE ADJUSTMENT 383" "D", "W" MODELS**

**Auto. Trans. "B" Models** — Adjust hot (slow) idle speed to specifications and block choke wide open. With linkage properly lubricated, remove return spring from carburetor pin and tab on transmission throttle rod. Remove clip, washer and slotted throttle rod end from carburetor pin. Have someone hold throttle rod forward firmly against its internal stop and adjust threaded rod end so that rear edge of slot contacts carburetor pin with throttle rod in the full forward position. Install flat washer and clip to retain throttle rod on carburetor pin. Install spring and unblock choke.



**ACCELERATOR AND DOWNSHIFT LINKAGE ADJUSTMENT "B" MODELS**

**Auto. Trans. 318" Motor Home W/Three Section Throttle Rod** — With linkage properly lubricated and hot (slow) idle speed set to specifications, block choke wide open. Have someone hold transmission throttle rod forward during the following steps. Insert a  $\frac{3}{16}$ " diameter rod in holes in upper bellcrank and lever. Adjust length of intermediate transmission rod by turning threaded ball socket at upper end so that ball socket lines up with ball end with a slight downward pressure on rod. Reassemble and remove  $\frac{3}{16}$ " rod. Disconnect return spring, clip and washer and adjust length of carburetor rod so that rear of slot contacts carburetor pin with no forward force on pin. Reassemble and check freedom of operation by moving slotted link at carburetor to full rearward position, then allowing it to return slowly. It must return to full forward position. Unblock choke and check to see that transmission throttle rod begins to move simultaneously with carburetor.



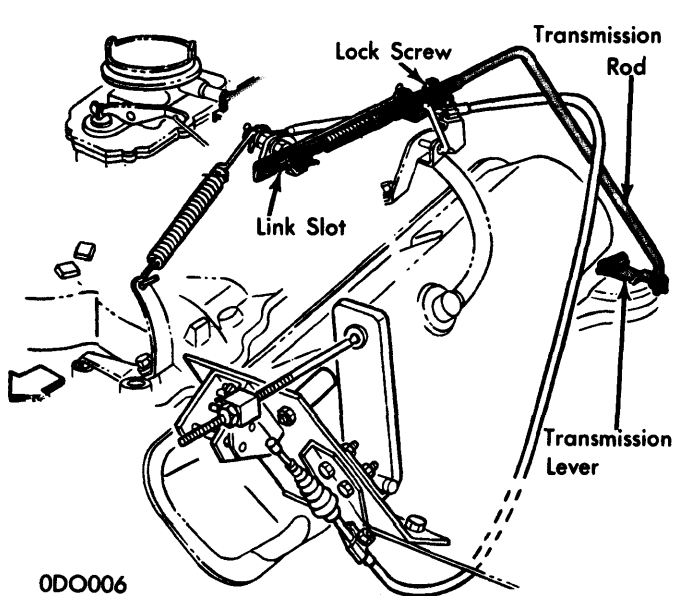
**ACCELERATOR AND DOWNSHIFT LINKAGE 318" MOTOR HOME W/3 PIECE ROD**

**Auto. Trans. 318" Motor Home W/Single Section Throttle Rod** — With linkage properly lubricated and hot (slow) idle speed set to specifications, block choke wide open. Loosen transmission throttle rod adjustment lock screw. Have someone hold transmission throttle lever forward against its stop and adjust the transmission rod at the carburetor by pushing forward on the retainer and rearward on the rod with a slight force to remove all backlash. Tighten transmission rod adjustment locking screw to 100 INCH lbs. The rear edge of link slot must be against the carburetor lever pin during this adjustment. Check linkage freedom of operation by moving slotted link at carburetor to full rearward position and allowing it to return slowly. It must return to the full forward position. Unblock choke and visually check adjustment to see that transmission throttle rod begins to move simultaneously with carburetor.

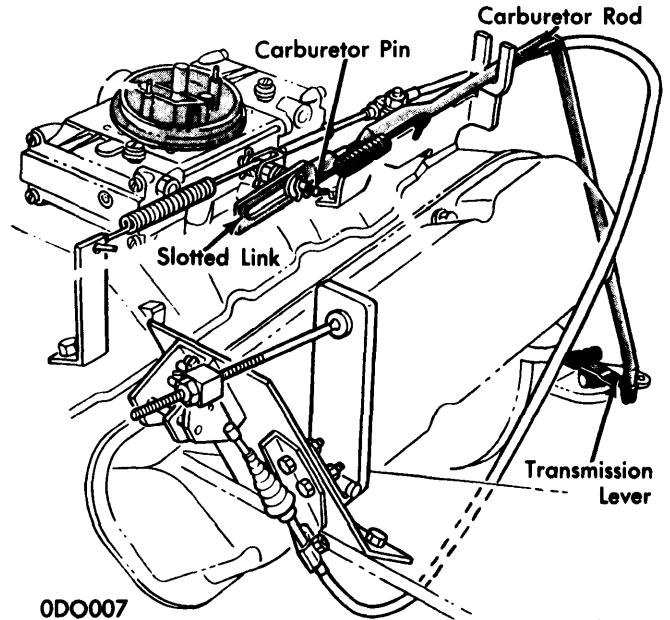
## CARBURETION (Cont.)

**Auto. Trans. 413" Motor Home** – With linkage properly lubricated and hot (slow) idle speed set to specifications, block choke wide open. Have someone hold transmission throttle lever forward against its stop during following procedures. Disconnect return spring, clip and washer, then adjust length of carburetor rod by pushing rearward on rod with a slight effort to remove all backlash by turning the threaded adjustment. Rear end of slot should contact carburetor lever pin without ex-

erting any forward force on pin when slotted adjuster link is in its normal operating position. Assemble slotted adjustment to carburetor lever pin and install washer and retainer clip. Replace return spring. Release transmission throttle lever. Check freedom of operation by moving the slotted link at carburetor to full rearward position and allowing it to return slowly. It must return to the full forward position. Unblock choke and visually check adjustment to see that transmission throttle rod begins to move simultaneously with carburetor.



**ACCELERATOR AND DOWNSHIFT LINKAGE  
318" MOTOR HOME W/1 PIECE ROD**



**ACCELERATOR AND DOWNSHIFT LINKAGE ADJUSTMENT 413" MOTOR HOME**

## ELECTRICAL

### BATTERY

12 Volt – Negative Ground.

Application	Capacity (Amps.)
All Standard.....	48
All Optional.....	59, 70
Motor Home Optional.....	90

### STARTER

Application	Chrysler Part No.
All (Exc. Motor Homes).....	2875560
Motor Homes.....	3656650

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

### ALTERNATOR

Application	Amps.	Chrysler Part No.
All (Exc. Motor Home)		
Standard.....	45, 50.....	3438173
Optional.....	46, 50.....	3438178
Optional.....	60.....	3438174
Optional.....	60.....	3438180
Motor Home		
Standard.....	46, 50.....	3438165
Optional.....	60.....	3438168

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

### ALTERNATOR REGULATOR

Application	Chrysler Part No.
All.....	3438150

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

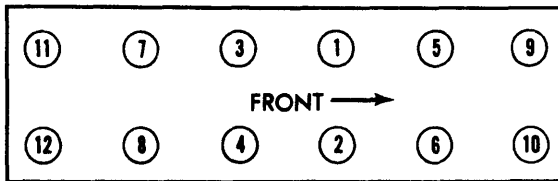
# 1970 Dodge V8 Tune-Up

## ENGINE

### INTAKE MANIFOLD TIGHTENING

Tighten bolts in sequence shown in diagram.

Application	Ft. Lbs.
318" .....	35
383" .....	50
413" .....	45



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### INTAKE MANIFOLD TIGHTENING

### CAPACITIES (EXCEPT COOLING)

Application	Quantity
<b>Crankcase</b>	
318" (Exc. Motor Home) .....	① 5 qts.
383" .....	① 5 qts.
318"-3 Motor Home .....	① 6 qts.
413" Motor Home .....	① 7 qts.
Automatic Transmission .....	19 pts.
Manual Transmissions .....	②
Front & Rear Axles & Transfer Case .....	②
Four-Wheel Drive Knuckle Ends .....	②
<b>Fuel Tank</b>	
"B", "D", "W" Models .....	25 gals.
M300 (Exc. 104" Wheelbase) .....	40 gals.
M300 104" Wheelbase .....	25 gals.
M375 .....	50 gals.

- ① - Add 1 quart with filter change.
- ② - Fill to bottom of filler plug hole.

### COOLING CAPACITIES

Application	Quantity
318" (Exc. Motor Home) .....	① 18 qts.
383" .....	② 17 qts.
<b>Motor Homes</b>	
318" .....	22 qts.
413" .....	27 qts.

- ① - Add 2 quarts if equipped with heater.
- ② - Add 1 quart if equipped with heater.

### FILTERS & CLEANERS

Filter or Cleaner	Service Interval (Miles)
Oil Filter .....	Replace 8,000
Air Cleaner	
Oil Bath .....	① Clean 12,000
Paper Element .....	② Clean 6,000
Breather Cap .....	① Clean 4,000
<b>Fuel Filter</b>	
Paper Element .....	Replace 10,000
Disposable Canister .....	Replace 20,000
Distributor Wick .....	① Oil 12,000

- ① - Use SAE 30.
- ② - Replace at 24,000 miles.

### BELT ADJUSTMENT

Deflection Applied At Belt Midpoint Under 5 Lb. Load

Application	① Used Belt	New Belt
Power Steering .....	$\frac{5}{32}$ "	$\frac{3}{32}$ "
A/C Idler .....	$\frac{3}{16}$ "	$\frac{1}{8}$ "
Fan Belt Idler .....	$\frac{3}{32}$ "	$\frac{1}{16}$ "
Alternator (Exc. 383") .....	$\frac{3}{16}$ "	$\frac{1}{8}$ "
Alt. 383" W/Air Cond. ....	$\frac{9}{32}$ "	$\frac{3}{16}$ "
Alt. 383" .....	$\frac{3}{16}$ "	$\frac{3}{32}$ "

- ① - Any belt operated for ½ hour or more.