

TUNE-UP

ENGINE IDENTIFICATION

Number is stamped in pad at front right hand side of cylinder block. Engine cubic inch displacement is stamped at start of engine serial number. The 305" engine is stamped 305-E and 351" engine is stamped 351-E.

MODEL IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

The Vehicle Identification Number is found on the GVW Rating plate. Plate is attached to left hand door pillar on all models except "P" and cowl models. Plate location on "P" and cowl models is determined by body builder.

CM20DPB10001

- First Digit - Chassis Designation.
- Second Digit - Engine Designation.
- Third & Fourth Digits - GVW Range.
- Fifth Digit - Body Type.
- Sixth Digit - Assembly Plant.
- Seventh Digit - Model Year (1968).
- 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.

COMPRESSION PRESSURE

With air cleaner removed and throttle and choke wide open, crank engine through a least four compression strokes. Compression should be 125 psi with a maximum variation of 20 psi between cylinders.

VALVE TAPPET CLEARANCE

Application	Intake	Exhaust
All	.012" (Hot)	.018" (Hot)

VALVE ARRANGEMENT

E-I-I-E-I-E (Left side, front to rear.)

E-I-E-I-I-E (Right side, front to rear.)

SPARK PLUGS

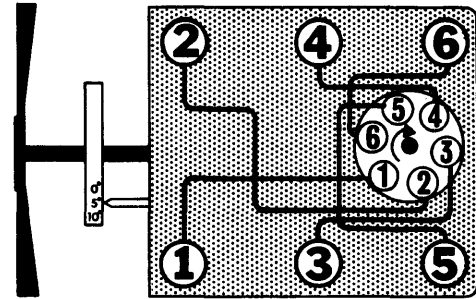
Gap	
305"	.035"
351"	.040"
Torque	25 ft. lbs.

Spark Plug Type

Application	AC No.
305"	C45NS
351"	C44NS

DISTRIBUTOR

Point Gap	
New	.019"
Used	.016"
Cam Angle	31-34°
Breaker Arm Spring Tension	19-23 ozs.
Condenser Capacity	.18-.25 mfd.



5GM01

FIRING ORDER & TIMING MARKS

IGNITION TIMING

Ignition timing is checked or adjusted with engine at normal operating temperature, distributor vacuum line disconnected and plugged and engine at normal idle.

Application	Timing
305"	7.5° BTDC
351"	
Without CCS	10° BTDC
With CCS	7.5° BTDC

HOT (SLOW) IDLE RPM

Start engine and warm to normal operating temperature. Idle speed is checked or adjusted with engine at normal operating temperature, air conditioning "ON", dwell and timing correctly adjusted, air cleaner installed, choke open, manual transmission in Neutral and automatic transmission in "D". If carburetor is equipped with dashpot, adjust dashpot until contact between plunger and throttle lever is eliminated. Adjust idle speed screw to obtain specified idle RPM. Adjust mixture screws out to obtain maximum idle speed. Now adjust screws in until engine speed drops 30 to 50 RPM.

Idle Speed Solenoid Adjustment (If Equipped) - With idle speed RPM correctly adjusted, adjust solenoid plunger with a wrench until it just contacts throttle lever. Disconnect solenoid electrical lead and adjust idle speed screw until an engine speed of 400 RPM is obtained. Reconnect solenoid lead. Idle RPM should be as specified.

Idle Speed (RPM)

Application	RPM
All Without CCS	
Man. Trans.	500-550
Auto. Trans.	525-575
All With CCS	
Man. Trans.	650
Auto. Trans.	550

TUNE-UP (Cont.)

COLD (FAST) IDLE RPM

Fast idle RPM is correctly adjusted when Hot (Slow) Idle RPM and choke are correctly adjusted.

GOVERNOR ADJUSTMENT

SPEED ADJUSTMENT

To adjust governor for higher speed, rotate adjusting cap counterclockwise. To obtain a lower speed, rotate cap clockwise.

SURGE & STABILITY ADJUSTMENT

If a surging condition exists, remove adjusting cap and shaft assembly. Using a suitable hollow wrench (A-24283), hold nut in bore and rotate screw one turn to right with a suitable hex wrench (A-25264). Now turn nut ¼ turn to right without turning screw. If a more sensitive adjustment is required, use same procedures and turn screw and nut to left. Tap lightly on wrench securing nut to ensure nut is seated correctly. Replace shaft assembly and adjusting cap.

CHOKE ADJUSTMENT

Manual type choke is used. Check that choke valve fully opens and closes as cable is actuated. To correctly adjust cable, loosen cable clamp at carburetor bracket, push knob into stop and pull out ¼". Hold choke valve wide open and tighten cable clamp.

FUEL PUMP PRESSURE & VOLUME

Pressure (At Idle)..... 5-6 psi
Volume (At Cranking Speed)..... 1 pt. in 30-45 sec.

MANIFOLD HEAT CONTROL VALVE

Check valve for freedom of movement and lubricate with a suitable solvent (GM Manifold Heat Control Valve Solvent).

EMISSION CONTROL

See appropriate article in EMISSION CONTROL Section.

IGNITION

DISTRIBUTOR

Application	Delco Part No.
305"	
1500 Series.....	1110445
2500 & 3500 Series	1110317
351"	
1500 Series.....	1110446
2500 & 3500 Series	1110359

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

IGNITION COIL

Application	Delco Part No.
All	1115202
Resistance	Ohms @ 75°F
Primary	1.41-1.65
Secondary	3,000-20,000
Ballast Resistor Loom.....	1.8

CARBURETION

CARBURETORS

Bendix-Stromberg Model WW 2-Bbl.

Application	Bendix-Stromberg No.
305"	381287, 381281
351"	381218, 381187

Other Data & Specifications - See Tune-Up and Bendix-Stromberg Carburetors in CARBURETION Section.

ACCELERATOR LINKAGE ADJUSTMENT

Disconnect accelerator return spring and throttle rod at pedal lever. Depress accelerator pedal to floor and place carburetor in wide open position. Adjust swivel on rod until it freely enters hole in pedal lever. Reconnect rod and spring.

DETENT SWITCH ADJUSTMENT

With carburetor in wide open position, adjust switch on mount until .050" clearance is obtained between switch and carburetor lever.

ELECTRICAL

BATTERY

12 Volt - Negative Ground.

Application	Capacity (Amps)
Standard	
305"	53
351"	62
Optional, All.....	70

STARTER

Application	Delco Part No.
Man. Trans.	1107375
Auto. Trans.	1108360
Optional For No. 1107375	1107371
Optional For No. 1108360	1108372

Other Data & Specifications - See Delco Starters in ELECTRICAL Section.

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ELECTRICAL (Cont.)

ALTERNATOR

Application	Amps.	Delco Part No.
Standard.....	37	1100693
Optional.....	42	1100696
Optional.....	61	1100750
Optional.....	62	1117782

Other Data & Specifications - See Delco Alternators in ELECTRICAL Section.

ALTERNATOR REGULATOR

Application	Delco Part No.
For 37, 42, 61 Amp. Alt.	1119515
For 62 Amp. Alt.	1116378

Other Data & Specifications - See Delco Alternator Regulators in ELECTRICAL Section.

ENGINE

INTAKE MANIFOLD TIGHTENING

Tighten intake manifold bolts to 20-25 ft. lbs.

Other Data & Specifications - See Delco Alternator Regulators in ELECTRICAL Section.

CAPACITIES

Application	Quantity
Crankcase	① 5 qts.
Automatic Transmission	
Pow-R-Flow	9 qts.
Turbo Hydra-Matic.....	9.5 qts.
Manual Transmission	
3-Speed.....	2 pts.
Heavy Duty 3-Speed.....	2.75 pts.
Heavy Duty 3-Speed With O.D.	3.25 pts.
4-Speed.....	8 pts.
New Process 4-Speed.....	7 pts.
Four-Wheel Drive Transfer Case	5 pts.
Drive Axles.....	②
Fuel Tank	
"C" & "K" Models	22 gals.
"C" & "K" Suburban & Panel Models	23.5 gals.
Cowl Models.....	20 gals.
Cooling System③	
305"	
Man. Trans.	31.5 qts.
Auto. Trans.	32 qts.
351"	
Man. Trans.	30 qts.
Auto. Trans.	30.5 qts.

- ① - Add one quart with filter change.
- ② - Fill to bottom of filler plug hole.
- ③ - Add one quart if equipped with heater.

BELT ADJUSTMENT

Tension (Lbs.) Using Strand Tension Gauge

Application	New Belt	Used Belt
Water Pump	125±5	75±5
Power Steering	125±5	75±5
Air Conditioning	140±5	95±5
A.I.R. Pump.....	75±5	55±5

FILTERS & CLEANERS

Filter & Cleaner	Service Interval (Miles)
Oil Filter.....	Replace 12,000
Air Cleaner	
Oil Bath Type	① Check 12,000
Element Type	② Replace 24,000
Foam Type.....	Clean 12,000
Crankcase Ventilation Filter.....	③ Clean 6,000
Crankcase Ventilation Valve.....	Replace 12,000
Governor Filter	Replace 12,000
A.I.R. Filter.....	Clean 12,000
Turbo Hydra-Matic Sump Strainer.....	Replace 24,000
Fuel Filter.....	Replace 12,000
Distributor Cam Lubricator.....	Replace 24,000

- ① - Clean and replace with SAE 50 oil.
- ② - Replace if dirty, do not clean.
- ③ - If equipped, clean and replace with SAE 20 oil.