

TUNE-UP

ENGINE IDENTIFICATION

The Engine Identification Number is located on right side, upper front corner of block on six cylinder engines and on left side, upper front corner of block on four cylinder engines. The first four or five digits indicate engine cubic inch displacement.

Application	ⓄDigits
152"	4-152
196"	4-196
220"	BG-220
241"	BG-241
265"	BG-265

Ⓞ - Suffix "E", if present, indicates an emission control engine.

MODEL IDENTIFICATION

Number is located on rear face of left front door.

613105H587201

- First Four Digits** - Model Code.
- Fifth Digit** - Engine Type.
- Sixth Digit** - Cab or Body Type.
- Remaining Digits** - Chassis Serial 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 engine warm, all spark plugs removed and throttle wide open, the maximum variation between cylinders should not exceed 10 psi.

Application	PSI
4 Cyl.	140
6 Cyl.	130

VALVE TAPPET CLEARANCE

Application	Clearance (Hot)
All Mechanical.....	.024-.026"
All Hydraulic.....	Zero Lash

VALVE ARRANGEMENT

- 4 Cyl. - E-I-E-I-E-I-E-I (Front to rear.)
- 6 Cyl. - E-I-I-E-E-I-I-E-E-I-E (Front to rear.)

SPARK PLUGS

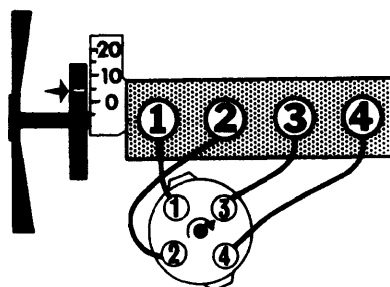
Gap 4 Cyl.025-.030"
Gap 6 Cyl.	
Gas028-.033"
LPG016"
Torque.....	25 Ft. Lbs.

Spark Plug Type

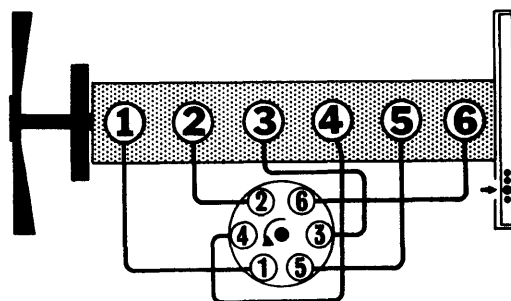
Application	Champion No.
LPG	J-6
6 Cyl. Metro Only.....	J-11Y
All Others	J-10Y

DISTRIBUTOR

Point Gap	
4 Cyl.	
New, Federal.....	.017"
Used, Federal.....	.014"
New, Calif.019"
Used, Calif.016"
6 Cyl.019"
Cam Angle	
152"	69-74°
196"	42-48°
6 Cyl. (Exc. W/Dist. No. 1110429).....	31-34°
6 Cyl. W/ Dist. No. 1110429	28-35°
Breaker Arm Spring Tension	
4 Cyl.	17-20 ozs.
6 Cyl. (Exc. W/Dist. No. 1110429).....	19-23 ozs.
6 Cyl. W/Dist. No. 1110429.....	17-21 ozs.
Condenser Capacity	
All (Exc. W/Dist. No. 1110429).....	.18-.23 mfd.
W/Dist. No. 1110429.....	.21-.25 mfd.



FIRING ORDER & TIMING MARKS 4 CYL.



FIRING ORDER & TIMING MARKS 6 CYL.

IGNITION TIMING

Check or adjust timing with engine at normal operating temperature, distributor vacuum advance line disconnected and plugged, transmission in Neutral, and slow (hot) idle speed set. Timing marks are dots on flywheel on 6 cylinder engines. They indicate, from left to right, 2° BTDC, 4° BTDC, 6° BTDC (large dot), and 9° BTDC.

TUNE-UP (Cont.)

Application	Timing
4 Cyl. Federal.....	5° BTDC
4 Cyl. Calif.	TDC
6 Cyl. 220" & 241"	4° BTDC
6 Cyl. 265"	2° BTDC

HOT (SLOW) IDLE RPM

Gas Only, All Exc. W/Carb. Model 1920 — With vehicle level, engine at normal operating temperature, and choke plate wide open, adjust idle speed screw to obtain specified RPM. Adjust idle mixture screw(s) to obtain highest steady manifold vacuum or, if vacuum gauge is not available, the smoothest maximum idle speed. If necessary, reset idle speed screw to specified RPM.

NOTE — When setting idle mixture on Model 1920 carburetor, do not allow engine to idle more than three minutes without increasing engine speed to 2000 RPM for one minute before continuing with adjustment procedure.

Gas Only, W/Carb. Model 1920 — With vehicle level, engine at normal operating temperature, choke open, air cleaner installed, air conditioning "ON", and transmission in Neutral, connect tachometer to engine. Turn idle mixture screw counterclockwise (out) against its tab stop and attach vacuum gauge to engine. Adjust idle speed 20-40 RPM faster than specifications. Turn idle mixture screw clockwise (in) to reduce idle speed to specifications. If idle adjustment cannot be made due to limiter caps, remove them by grinding or filing (not by prying) and use the following procedure. Turn mixture in just to the point that idle RPM starts to drop and install new limiter cap fully counterclockwise against tab stop. Adjust idle speed 20-40 RPM faster than specifications. Turn idle mixture screw clockwise (in) to reduce idle speed to specifications.

Application	Idle Speed (RPM)	RPM
Federal 4 Cyl.	450-500	
Federal 6 Cyl.	350-400	
Calif. All	700	

Idle Screw Adjustment

LPG Only — Loosen lock nut and turn idle adjusting screw on regulator clockwise until it bottoms gently. Then turn screw counterclockwise the specified number of turns. Tighten lock nut.

Application	Idle Screw Specifications	No. Of Turns
241"		7/8
265"		1

STARTING SCREW ADJUSTMENT

LPG Only — Loosen lock nut and turn starting adjusting screw on carburetor clockwise until it bottoms gently. Then turn the screw counterclockwise the specified number of turns. Tighten lock nut.

Application	Starting Screw Specifications	No. Of Turns
241"		3/8
265"		7/8

COLD (FAST) IDLE RPM

Man. Choke — The cold (fast) idle speed is set when hot (slow) idle RPM and manual choke are properly adjusted.

Auto. Choke — With hot (slow) idle set and engine at normal operating temperature, turn fast idle screw in until screw just touches fast idle cam. Back screw out 1/2 to one turn.

CHOKE ADJUSTMENT

Gas, Man. Choke — Loosen choke cable adjusting screw on choke lever at carburetor. With choke knob in cab all the way in, pull choke cable at carburetor to remove excess slack. Release cable and tighten screw. Work choke knob in and out several times and check to see that choke is full open when knob is all the way in.

Gas, Auto. Choke — Non-adjustable. Check for freedom of movement of choke linkage; if binding occurs, replace.

LPG — The choke used on carburetors of LPG engines completely shuts off the service bore and opens another which is used only for cold starting. The choke plate has no intermediate position but must be wide open or closed completely. Adjust by loosening choke cable adjusting screw on choke lever at carburetor. With choke knob in cab all the way in, pull choke cable at carburetor to remove excess slack. Release cable and tighten screw. Work choke knob in and out several times and check to see that choke can be adjusted wide open and completely closed.

LPG ECONOMIZER ADJUSTMENT

LPG Only — Loosen large lock nut on Economizer located behind carburetor. Turn adjusting screw clockwise until all the way in. Then turn screw out the specified number of turns. Tighten lock nut.

Application	Economizer Specifications	No. Of Turns
241"		5
265"		7

DASHPOT ADJUSTMENT

With engine at normal operating temperature and idle speed set, check to see that dashpot stem is fully depressed. Set the dashpot adjusting screw to the clearance specified.

Application	Dashpot Clearance	Clearance
All095-.105"

FUEL PUMP PRESSURE & VOLUME

Pressure (At 1000 RPM)⓪	
4 Cyl.	4-5.5 psi
6 Cyl.	3-4.5 psi
Volume	
4 Cyl. (At 4000 RPM)	3.2 pts. in 1 min.
6 Cyl. (At 3500 RPM)	2.7 pts. in 1 min.

⓪ — Fuel pressure test must be taken at carburetor inlet height.

MANIFOLD HEAT CONTROL VALVE

Check valve periodically for spring tension and freedom of operation.

EMISSION CONTROL

See appropriate article in EMISSION CONTROL Section.

1-60 1968 International 4 & 6 Tune-Up

IGNITION

DISTRIBUTOR

Application	Delco Part No.
152"	ⓐD-3119-P
196"	ⓐD-3857-P
6 Cyl.	
Federal	1110427
Calif.	1110429
LPG	1110428

ⓐ — Holley Part No.

Other Data & Specifications — See *Tune-Up and Holley or Delco Distributors in ELECTRICAL Section.*

IGNITION COIL

Application	Delco Part No.
All	1115202

Resistance	Ohms @ 80°F
Primary	1.81-1.95
Secondary	7,200-9,500
Ballast Resistor (Loom).....	1.3-1.35

CARBURETION

CARBURETORS

Holley Series 1904 1-Bbl.

Application	Holley Part No.	
	Man. Trans.	Auto. Trans.
152" Federal.....	R-2569	ⓐ
152" Calif.	R-4171	ⓐ
220"	R-3499	R-3499
241"	R-3443	R-3444
265"	R-4134	R-4135

ⓐ — Not applicable.

Holley Series 1920 1-Bbl.

Application	Holley Part No.	
	Man. Trans.	Auto. Trans.
196"	R-3993	ⓐ

ⓐ — Not applicable.

LPG Carburetors

Application	Ensign Model No.
241"	XG
265"	XG-1

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

ACCELERATOR AND DOWNSHIFT LINKAGE ADJUSTMENT

Accelerator Adjustment — With accelerator linkage clean and lubricated, adjust pedal stop screw so that pedal will just strike screw before carburetor throttle plate is wide open.

Downshift Adjustment — The downshift switch is located under the pedal on conventional chassis and on a bracket under the floorboard on the Metro chassis. Loosen lock nut and adjust screw so that there is ¼" between switch and pedal on conventional chassis and ¼" between switch and pad on throttle linkage on Metro chassis.

ELECTRICAL

BATTERY

12 Volt — Negative Ground.

STARTER

Application	Delco Part No.
6 Cyl. Conventional Cab.....	1107678
All Others	1107709

Other Data & Specifications — See *Delco Starters in ELECTRICAL Section.*

ALTERNATOR

Application	Amps.	Delco Part No.
Scout	37	1100687
All Others	37	1100688

Other Data & Specifications — See *Delco Alternators in ELECTRICAL Section.*

ALTERNATOR REGULATOR

Application	Delco Part No.
All	1119507

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

ENGINE

INTAKE MANIFOLD TIGHTENING

4 Cyl. — Manifold bolts are tightened to 40-45 ft. lbs.

6 Cyl. — Manifold bolts are tightened to 25-30 ft. lbs. Intake to exhaust manifold bolts are tightened to 25-30 ft. lbs. (¾-16 thread size) or 23-28 ft. lbs. (¾-24 thread size).

BELT ADJUSTMENT

Belts are adjusted just tight enough to prevent slipping. Too tight of an adjustment will damage bearings of water pump or accessories.

ENGINE (Cont.)

FILTERS & CLEANERS	
Filter or Cleaner	Service Interval (Miles)
Oil Filter.....	① Replace 3,000-4,000
Air Filter	
Oil Bath	② Clean 5,000
Dry Type	③ Clean 5,000
PCV Valve.....	Clean 10,000
Fuel Filter	④
Distributor Shaft & Pivot Point.....	Oil 3,000-5,000
Distributor Cam	Lubricate 3,000-5,000
① - Or every oil change. ② - Oil with same viscosity oil in crankcase. ③ - Replace 15,000 to 20,000 miles. ④ - Clean when bowl shows sediment.	

COOLING CAPACITIES	
Application	Quantity
Standard	
4 Cyl.	① 12 qts.
6 Cyl.	① 16 qts.
Optional.....	②
① - Add 1.5 qts. if equipped with heater. ② - With increased capacity radiator, fill to one inch below top of radiator upper tank.	

CAPACITIES (EXCEPT COOLING)	
Application	Quantity
Crankcase	
4 Cyl.	① 4 qts.
6 Cyl.	① 6 qts.
Oil Bath Air Cleaner	
4 Cyl.	1 pt.
6 Cyl.	1 qt.
Automatic Transmission.....	9.5 qts.
Man. Trans. & Rear Axle	②
Front Axle & Transfer Case	②
Four-Wheel Drive Knuckle Ends.....	②
Fuel Tank	
Scout.....	10 gals.
Conventional Cab & Travelall	
1000B.....	17 gals.
All Others Standard	19 gals.
All Others Optional.....	15 gals.
Metro	
700 to 1100	15 gals.
1200.....	17 gals.
① - Add 1 quart with filter change. ② - Fill to bottom of filler plug hole.	