

TUNE-UP

ENGINE IDENTIFICATION

Engine Identification Number is located on right bank, upper front corner. The first four digits indicate displacement.

| | |
|--------------------|---------------|
| Application | Digits |
| 304" | V-304 |
| 345" | V-345 |
| 392" | V-392 |

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 variation between cylinders should not exceed 10 psi.

| | |
|--------------------|------------|
| Application | PSI |
| 304" | 145 |
| 345" | 140 |
| 392" | 143 |

VALVE TAPPET CLEARANCE

| | |
|-------------------------|------------------------|
| Application | Clearance (Hot) |
| Hydraulic Lifters | Zero Lash |

VALVE ARRANGMENT

E-I-E-I-E-I-E-I (Front to rear, right bank.)
 I-E-I-E-I-E-I-E (Front to rear, left bank.)

SPARK PLUGS

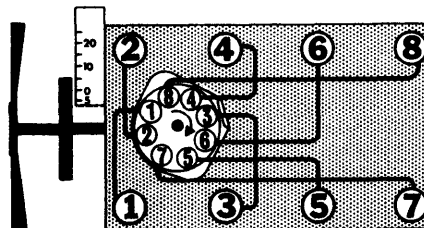
| | |
|---------------------|----------------|
| Gap | |
| Gas | .025-.030" |
| LPG | .016" |
| Torque | 28-30 ft. lbs. |

Spark Plug Type

| | |
|--------------------|---------------------|
| Application | Champion No. |
| Gas | J-10Y |
| LPG | J-6 |

DISTRIBUTOR

| | |
|----------------------------------|-----------------------|
| Point Gap..... | New .019", Used .016" |
| Cam Angle..... | 28-32° |
| Breaker Arm Spring Tension | 17-21 ozs. |
| Condenser Capacity | .21-.25 mfd. |



91HA01

FIRING ORDER & TIMING MARKS

IGNITION TIMING

Check or adjust timing with engine at normal operating temperature, distributor vacuum advance line disconnected and plugged, transmission in Neutral and idle speed set to specifications. Connect timing light to number "8" cylinder.

| | |
|--------------------|---------------|
| Application | Timing |
| Gas | TDC |
| LPG 304" | ⓪ 8° BTDC |
| LPG 345" | ⓪ 10° BTDC |

⓪ - It may be necessary to alter this setting depending on the blend of LPG used.

HOT (SLOW) IDLE RPM

Gas, Models 1000 & 1100 W/2-Bbl. Carb. - With engine at normal operating temperature, choke open, air cleaner installed, air conditioning "ON", and manual transmission in Neutral or automatic transmission in "D", connect tachometer and turn idle mixture screws out against tab stop. Adjust idle speed to 20 RPM higher than specifications for carburetor numbers 3991 and 4078 to 4084, and 40 RPM higher than specifications for carburetor numbers 4574 and 4593 to 4595. Then turn idle mixture screws in (lean) to reduce speed to specified RPM. If idle limiter caps prevent proper idle adjustment, remove them and connect a suitable vacuum gauge. Turn idle mixture screws to obtain "lean best idle" and install colored plastic limiter caps with tab fully counterclockwise against tab stop. Adjust idle speed screw to higher than specified RPM as stated in the beginning of the paragraph and repeat adjustment procedure.

Gas, Models 1200 & 1300 W/2- & 4-Bbl. Carbs. - With engine at normal operating temperature, choke open, air cleaner installed, air conditioning "ON", and manual transmission in Neutral or automatic transmission in "D", connect tachometer and vacuum gauge and adjust idle speed to specifications. Adjust idle mixture screws to obtain "lean best idle" and adjust idle speed screw to 25 RPM higher than specifications. Turn mixture screws in to reduce idle speed to specifications.

TUNE-UP (Cont.)

Gas, Models 1000 & 1100 W/4-Bbl. Carb. — With engine at normal operating temperature, choke open, air cleaner installed, air conditioning "ON", and transmission in Neutral, connect tachometer and turn idle mixture screws out against tab stop. Adjust idle speed to 20 RPM higher than specifications for carburetor numbers 4237, 4264, 4312, and 4313, and 40 RPM higher than specifications for carburetor numbers 4572, 4599, 4601, and 4602. Then turn idle mixture screws in (lean) to reduce speed to specified RPM. If idle limiter caps prevent proper idle adjustment, remove them and connect a suitable vacuum gauge. Turn idle mixture screws to obtain "lean best idle" and install colored plastic limiter caps with tab fully counterclockwise against tab stop. Adjust idle speed screw to higher than specified RPM as stated in the beginning of this paragraph and repeat adjustment procedure.

Idle Speed W/2-Bbl. Carburetor

| Application | RPM |
|---|---------|
| All Trans. W/Carb. No. 2520, 2976, 2977, 3679, 3936, 3937, 4306, 4307, 4308, 4309..... | 450-500 |
| All W/Governor..... | 450-500 |
| Man. Trans. W/Carb. No. 4574, 4593..... | 600 |
| 3991, 4078, 4081, 4082..... | 700 |
| Auto. Trans. W/Carb. No. 4079, 4080, 4083, 4084, 4594, 4595..... | 550 |

Idle Speed W/4-Bbl. Carburetor

| Application | RPM |
|---|---------|
| All (Exc. Carb. No. 4264 & 4313 or W/Governor)..... | 700 |
| W/Carb. No. 4264 & 4313 (Auto. Trans. in "D")..... | 550 |
| All W/Governor..... | 450-500 |

LPG Only — Set throttle for fast idle by turning idle speed screw in three or four turns. Start engine and adjust idle adjusting screw on drag link until engine runs smooth. Turn idle speed screw out until engine idles at 600 RPM. Readjust idle adjusting screw to obtain maximum idle speed. Readjust idle speed screw to specified idle speed.

Idle Speed

| Application | RPM |
|-------------|-----|
| All..... | 400 |

COLD (FAST) IDLE RPM

Gas Only, Without Governor — Set idle speed screw so that screw just touches fast idle cam at hot (slow) idle.

Gas Only, With Governor — Adjust fast idle stud for specified clearance between stud and fast idle cam with choke plate full open and hot (slow) idle set.

| Application | Clearance |
|-------------|------------|
| All..... | .018-.020" |

LPG Only — There is no choke or fast idle adjustment on Century LPG carburetors.

GOVERNOR ADJUSTMENTS

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

CENTRIFUGAL-TYPE GOVERNOR

Connect tachometer and race engine to determine maximum, no-load RPM. If adjustment is necessary, stop engine, remove governor clamp and gasket assembly. Turn engine over until adjusting screw hole plug appears in the opening. Remove plug and insert suitable tool (SE-2072-2) engaging adjusting tang. Turn tool handle clockwise to decrease speed and counterclockwise to increase speed: ¼ turn will change engine RPM approximately 100 RPM.

Governed Speed (No Load)

| Application | RPM |
|------------------|------|
| 304"..... | 3900 |
| 345" & 392"..... | 3800 |

FUEL PUMP PRESSURE & VOLUME

| | |
|-----------------------------|--------------------|
| Pressure (At 1000 RPM)..... | 4.5-5.75 psi |
| Volume (At 4000 RPM)..... | 3.6 pts. in 1 min. |

EMISSION CONTROL

See appropriate article in EMISSION CONTROL Section.

IGNITION

DISTRIBUTOR

IHC Model 1510

| Application | ① IHC Part No. |
|--------------------------------|----------------|
| 304" & 345" W/Governor..... | 359217-C91 |
| W/Governor & Tachometer..... | 383150-C91 |
| 392" All Others..... | 359206-C91 |
| W/Governor..... | 359218-C91 |
| W/Governor & Tachometer..... | 383151-C91 |
| All Others..... | 379282-C91 |

① — Manufactured by Holley.

Electronic Ignition

| Application | Delco Part No. |
|---------------------------------|----------------|
| 304"..... | 1111197 |
| 304" & 345" W/Gov. & Tach. | 1111316 |
| 392" W/Gov. & Tach. | 1111320 |

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

1969 International V8 Tune-Up

IGNITION (Cont.)

IGNITION COIL

| Application | IHC Part No. |
|-----------------------------------|----------------|
| All W/Breaker Point Ignition..... | 191455-R91 |
| Application | Delco Part No. |
| All W/Electronic Ignition | ① 1115207 |

| Resistance | Ohms @ 80°F |
|------------------------------|-------------|
| Primary | 1.28-1.42 |
| Secondary | 7,200-9,500 |
| Ballast Resistor (Loom)..... | 1.75-1.85 |

① - Specifications not available.

CARBURETION

CARBURETORS

Holley Series 2300 2-Bbl.

| Application | Holley Part No. |
|--------------------------------|------------------------------|
| Man. Trans., Man. Choke | 2977, 3991, 4081, 4574 |
| Man. Trans., Auto. Choke | 3679, 4078, 4082 |
| Man. Trans. W/Governor | 4310 |
| Auto. Trans., Man. Choke.... | 2976, 4079, 4083, 4308, 4594 |
| Auto. Trans., Auto. Choke..... | 2520, 4080, 4084 |
| Auto. Trans. W/Governor..... | 4311 |

Holley Series 4150 4-Bbl.

| Application | Holley Part No. |
|--------------------------------|------------------|
| Man. Trans. Man. Choke | 4237, 4318, 4572 |
| Man. Trans., Auto. Choke | 4312, 4599 |
| Man. Trans. W/Governor..... | 4323 |
| Auto. Trans., Man. Choke..... | 4264, 4320, 4601 |
| Auto. Trans., Auto. Choke..... | 4313, 4599 |
| Auto. Trans. W/Governor..... | 4324 |

LPG Carburetors

| Application | Century Model No. |
|-------------|-------------------|
| 304" | 3C-705DTL-2101 |
| 345" | 3C-G705DTL-2090 |

Other Data & Specifications - See *Tune-Up and Holley or Century 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 when carburetor throttle plate is wide open.

Downshift Adjustment - The downshift switch is located under pedal. Loosen lock nut and adjust screw so that there is 1/4" between switch and pedal when it is lightly depressed to the floor.

CHOKE ADJUSTMENT

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 knob in and out several times and check that choke is full open when knob is all the way in.

Auto. Choke - Loosen cover retaining screws and rotate assembly to specified setting. Tighten cover retaining screw.

Automatic Choke Setting

| Application | Setting |
|---|--|
| 2-Bbl. Carb. (Exc. No. 4593)..... | One Notch Lean Carb. No. 4593..... |
| 4-Bbl. Carb. (Exc. Nos. 4599 & 4602)..... | Two Notches Lean Carb. Nos. 4599 & 4602..... |

DASHPOT ADJUSTMENT

With idle speed set, hold throttle in closed position and turn dashpot adjusting screw out until head of screw pushes dashpot rod up to end of its travel. Hold dashpot rod in this position and back off adjusting screw four turns to obtain specified clearance between adjusting screw and dashpot rod when rod is fully compressed.

| Application | Clearance |
|-------------|-----------|
| All | .100" |

ELECTRICAL

BATTERY

12 Volt - Negative Ground.

STARTER

| Application | Delco Part No. |
|-------------|----------------|
| All | 1107709 |

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

ALTERNATOR

| Application | Amps. | Delco Part No. |
|-------------|----------|----------------|
| All | 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

Manifold bolts are tightened to 40-45 ft. lbs.

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 |
| Fuel Filter..... | ④ |
| Distributor Shaft & Pivot Point..... | Oil 3,000-5,000 |
| Distributor Cam | Lubricate 3,000-5,000 |
| PCV Valve..... | Check 12,000 |

- ① - Or every oil change.
- ② - Oil with same viscosity oil in crankcase.
- ③ - Replace at 15,000-20,000 miles.
- ④ - Clean when bowl shows sediment.

BELT ADJUSTMENT

Adjust power steering belt tension to obtain $\frac{3}{8}$ " deflection at belt midpoint; adjust all other belts for $\frac{1}{2}$ " deflection.

CAPACITIES (EXCEPT COOLING)

| Application | Quantity |
|------------------------------------|----------|
| Crankcase (Includes Filter)..... | 6 qts. |
| Automatic Transmission..... | 9.5 qts. |
| Man. Trans. & Rear Axle | ① |
| Front Axle & Transfer Case | ① |
| Four Wheel Drive Knuckle Ends..... | ① |
| Oil Bath Air Cleaner | 1 qt. |
| Fuel Tank | |
| Scout | 10 gals. |
| Pickup | 16 gals. |
| Utility Body | 15 gals. |
| Travelall | 21 gals. |
| Metro | |
| 700 to 1100 | 15 gals. |
| 1200..... | 17 gals. |

- ① - Fill to bottom of filler plug hole.

COOLING CAPACITIES

| Application | Quantity W/Heater |
|------------------------------|-------------------|
| 304" | 18 qts. |
| 345" | 19 qts. |
| 392" | 20 qts. |
| All W/Increased Cooling..... | ① |

- ① - Fill to one inch below top of radiator upper tank.