

INSPECTING

Journals and Crankpins

Inspect crankshaft for cracks.

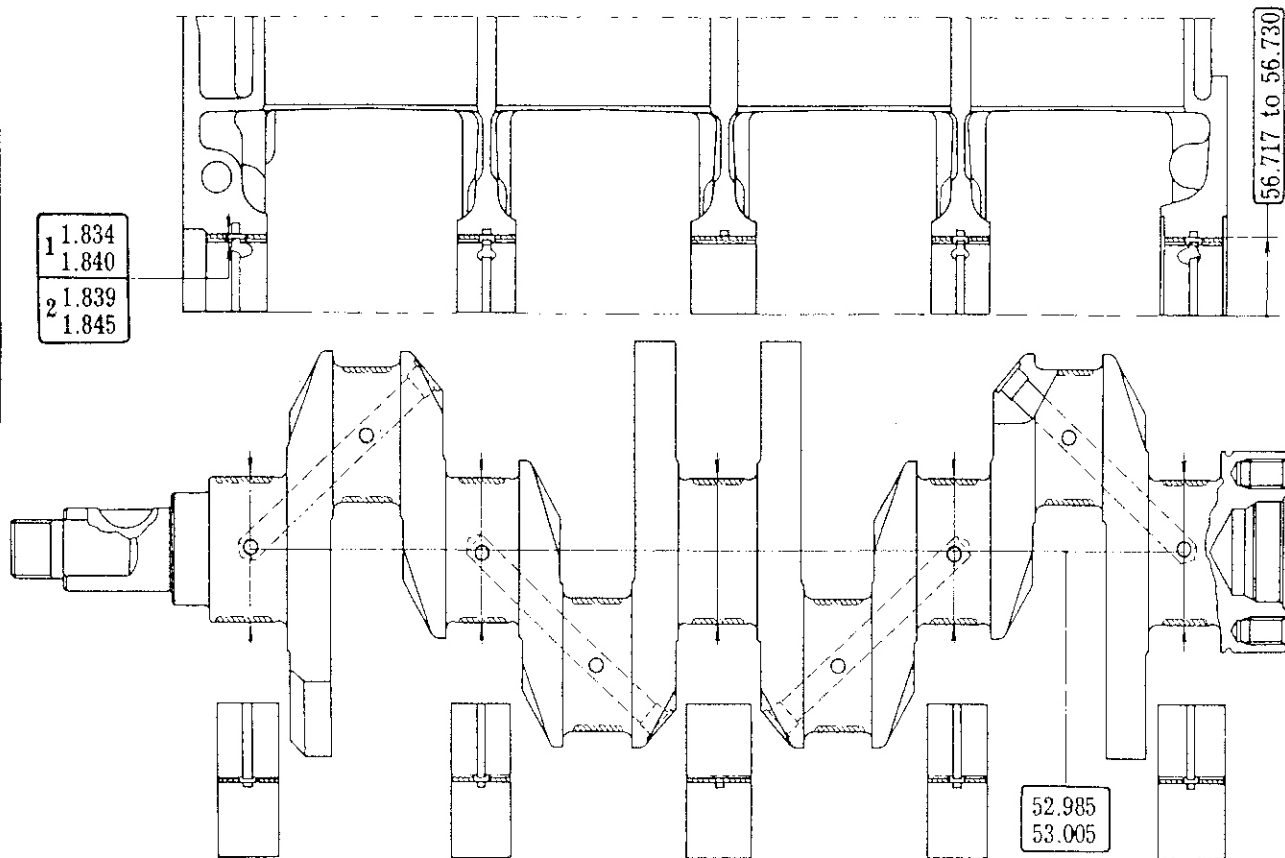
Inspect crankshaft for scoring on journals. Slight scoring can be refinished using extra-fine carborundum stone.

Deep scoring, or if journals show an out-of-round condition in excess of .0002 in. (0.005 mm), must be corrected by grinding journals to next undersize.

Main bearing journals and crankpins should be reground to the undersize diameters called for in the Specifications if they are damaged or worn.

After grinding and polishing, clean crankshaft to remove every trace of abrasive material. Flush the oilways several times.

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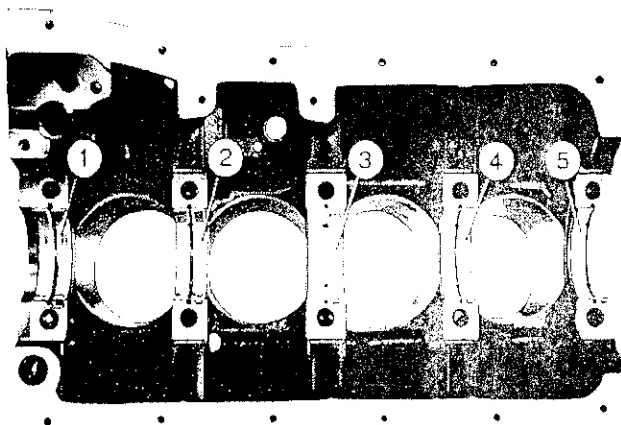
MAIN DATA OF CRANKSHAFT MAIN BEARINGS AND SADDLE BORES IN CRANKCASE

Bearings

If bearings show signs of scoring, seizing or excessive wear, replace them.

If bearings are good, check clearance between bearings and crankshaft.

1. Front bearing 2. Intermediate front bearing 3. Center bearing, without oil groove 4. Intermediate rear bearing 5. Rear bearing

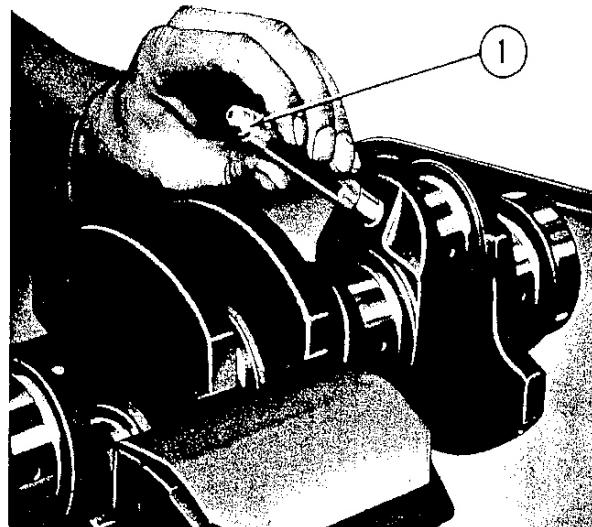


After journals have been ground to size and polished, crankshaft must be thoroughly cleaned to remove all metal and abrasive particles.

To clean oilways properly, welch plugs must be removed. Then ream plug bores using reamer A.94016. Thoroughly flush oilways with solvent and blow dry with compressed air.

After completing above operations, drive new welch plugs into place with driver A.86010 (1) and stake them with a punch.

1. Driver A.86010



Crankshaft Balance

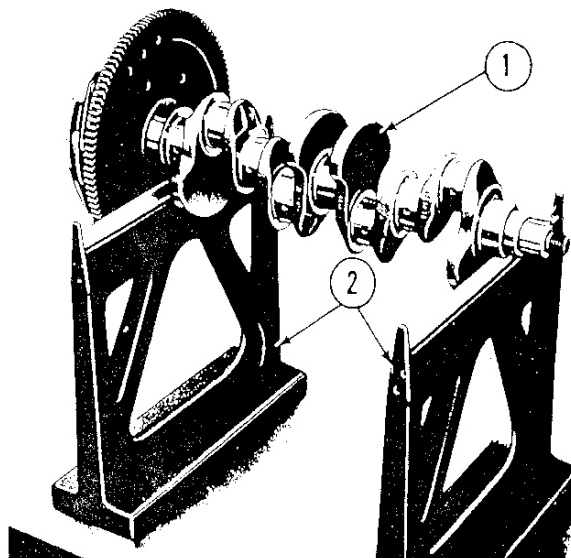
Place two parallel blocks (2) on a surface plate.

Set crankshaft-flywheel-clutch assembly (1) on parallel blocks.

If assembly shows a tendency to roll towards one side, stick some putty on opposite side until assembly stops moving. Weighing amount of putty used will provide an indication of unbalanced weight.

To correct situation, drill holes on flywheel at point D (next figure) as required to remove corresponding weight of metal.

1. Crankshaft-flywheel-clutch assembly 2. Parallel blocks



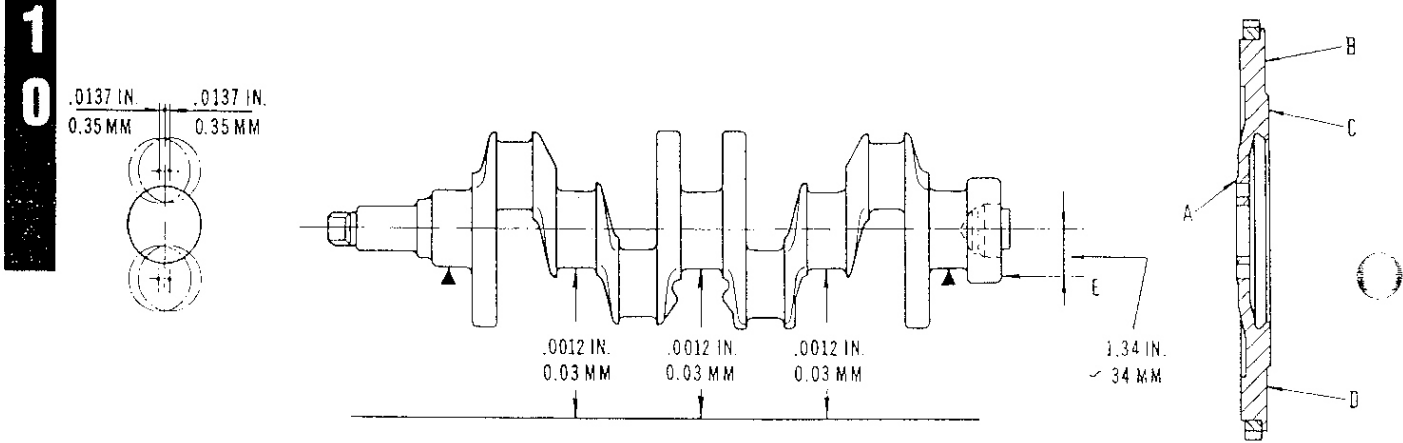
Flywheel and Ring Gear

Inspect condition of ring gear teeth. If there is any obvious damage, replace ring gear.

A hydraulic press should be used to install new ring gear onto flywheel, after heating gear to 176°F (80°C) in an oil bath.

Make sure flywheel contact surfaces with crankshaft and clutch driven disc are smooth and free from scratches or scores. Surfaces should also be perfectly flat and at right angles to flywheel rotation axis.

Rotate flywheel centered on crankshaft: a dial indicator resting at points B and C should not show variations in excess of .004 in. (0.1 mm).



A-B-C-E = points for checking alignment and squareness with respect to rotation axis.
D = drilling points for crankshaft-flywheel-clutch assembly balancing holes.

Checking Main Bearing Journals and Crankpins for Misalignment

Rest crankshaft ends on two parallel blocks and check the following with a dial indicator.

Main journal misalignment: maximum allowable tolerance .0012 in. (0.03 mm) (total dial gauge reading).

Crankpin misalignment: maximum allowable tolerance, with respect to journals, ± 0.0137 in. (± 0.35 mm).

Main bearing journal and crankpin out-of-round: maximum allowable tolerance after regrinding, .0002 in. (0.005 mm).

Main bearing journals and crankpins taper: maximum allowable tolerance after regrinding, .0002 in. (0.005 mm).

Squareness of flywheel: resting face to crankshaft centerline: when rotating crankshaft, a dial indicator resting laterally some 1.34 in. (34 mm) from crankshaft centerline, should not show variations in excess of .001 in. (0.025 mm).

If inspection of main bearing journals and crankpins alignment reveals distortions, the shaft should be straightened using a hydraulic press, taking care not to subject shaft to excessive stress which could damage its internal structure.

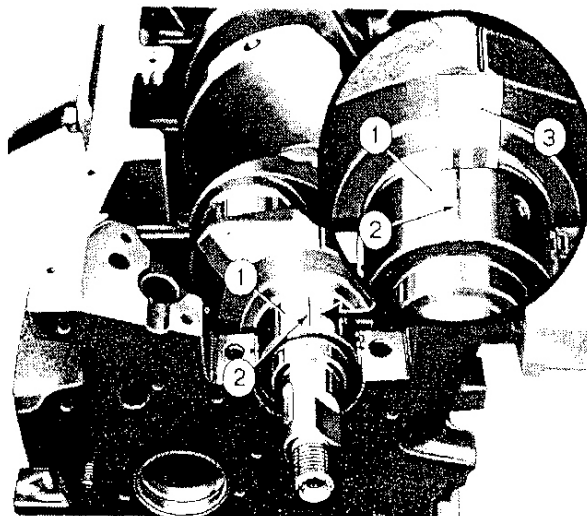
Place a length of calibrated plastic wire (2) on journal (1).

Install bearing caps and shells. Torque cap bolts to 83 ft. lbs. (11.5 kgm).

Torque smaller bolt for front cap to 59 ft. lbs. (8.2 kgm). Remove caps.

Compare width of wire to scale (3) to determine clearance. If clearance is not between 0.0012 to 0.0030 in. (0.032 to 0.077 mm), replace bearings with undersize ones.

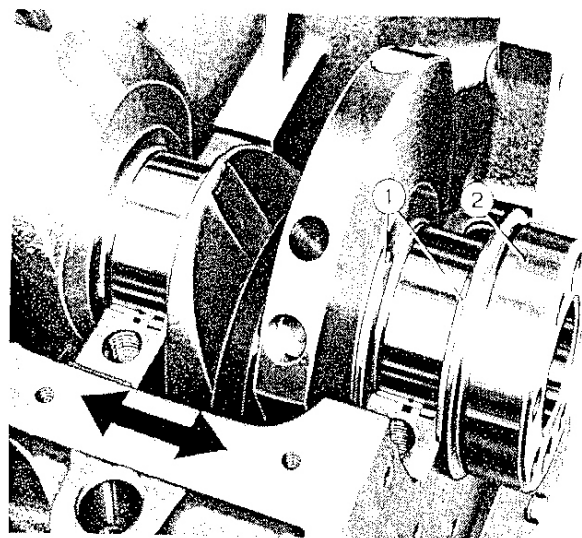
1. Journal 2. Calibrated wire 3. Scale



Check crankshaft end play using a dial indicator. Move the crankshaft (2) axially (arrows) using two screwdrivers. If end play is not between 0.0021 to 0.0120 inch (0.055 to 0.305 mm), replace thrust rings (1).

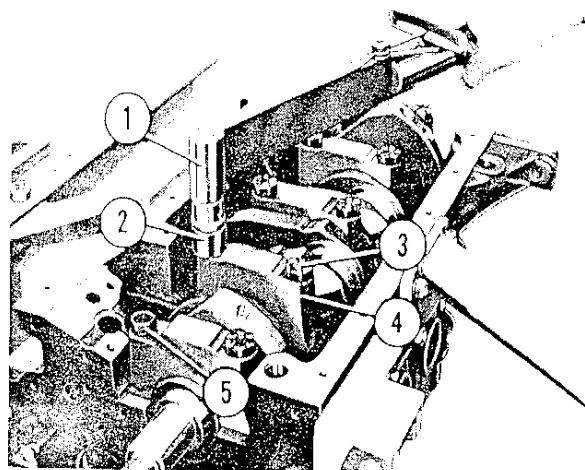
Make sure side of thrust ring with groove faces shoulder of crankshaft.

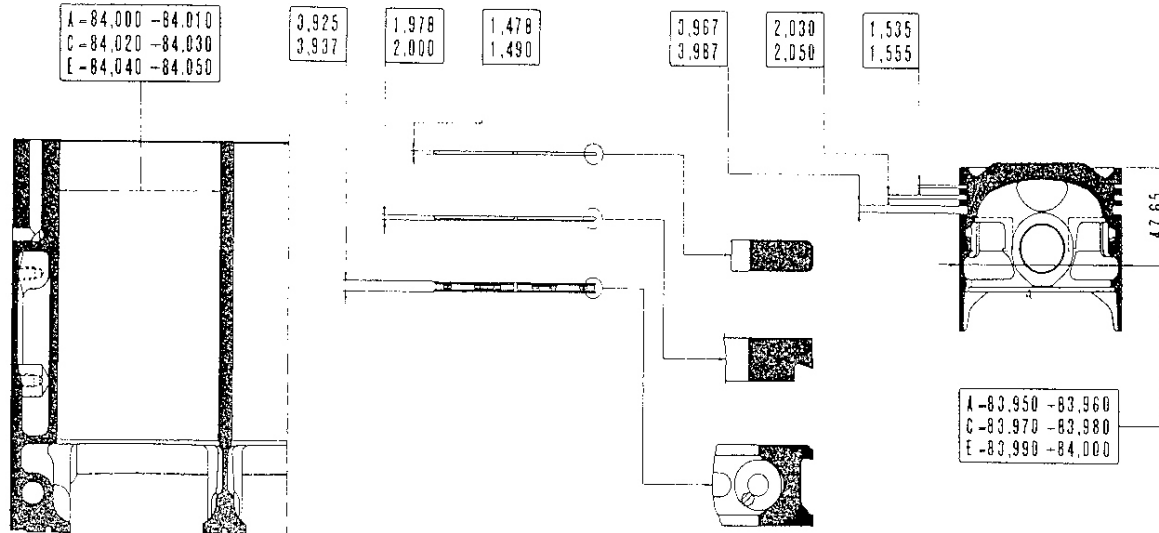
1. Thrust rings 2. Crankshaft



Install bearing cap (4). Torque cap bolts to 83 ft. lbs. (11.5 kgm). Torque smaller cap bolt (5) to 59 ft. lbs. (8.2 kgm).

1. Torque wrench 2. Socket 3. Cap bolt 4. Main bearing cap 5. Small cap bolt



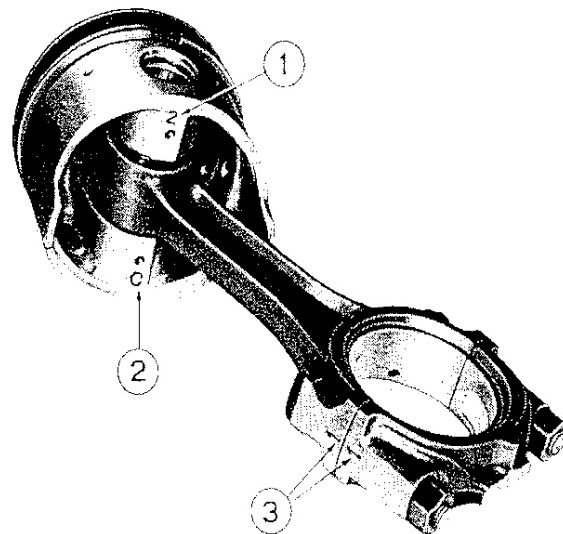


MAIN DATA OF CYLINDER BORE, PISTON, AND RINGS

PISTONS

Piston class and piston bore class are identified by letter and number stamped on underside of piston bosses. Piston pin class is stamped on pin surface.

1. Piston pin class 2. Piston class 3. Connecting rod matching number

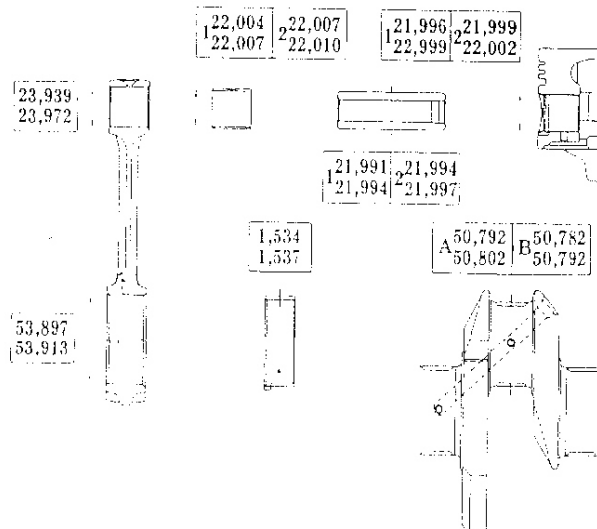


INSPECTING

Before assembling, check that the four pistons are the same weight within ± 0.18 oz. (± 5 g).

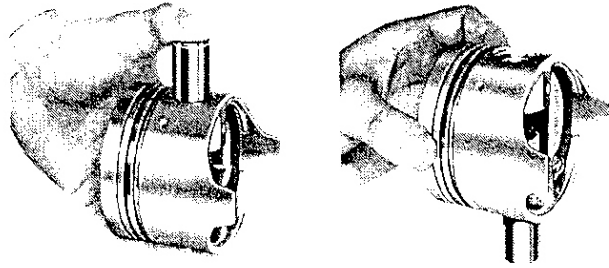
The fit clearance of the piston pin in the small end bushing is 0.0004 to 0.0006 inch (0.010 to 0.016 mm).

The fit clearance of the piston pin in the piston boss is 0.0001 to 0.0003 inch (0.002 to 0.008 mm).



To check pin fit in piston bore, coat piston bore.

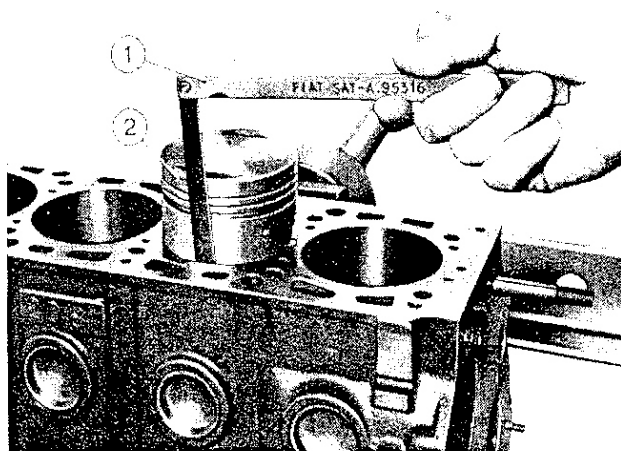
Pin should slide in by thumb pressure and should not fall out when piston is held in vertical position.



Check piston clearance in cylinder bore. Use a feeler gauge.

Clearance should be 0.0016 to 0.0024 inch (0.040 to 0.060 mm) measured at right angles to the pin at 1.876 inches (47.65 mm) from the piston head.

1. Feeler gauge 2. Piston



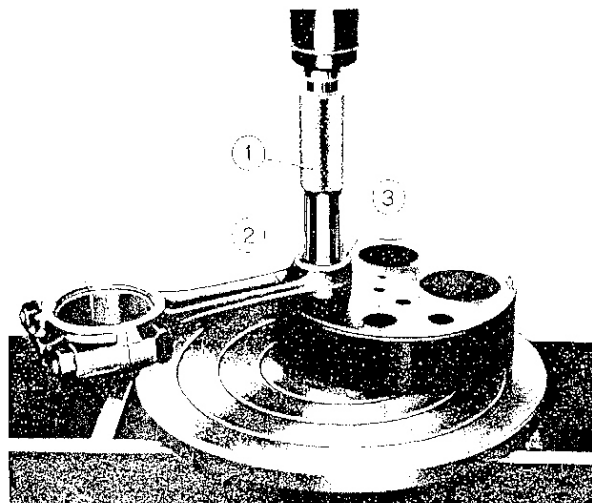
CONNECTING ROD

REPLACING BUSHING

To replace small end bushing, use a press. After installing, grind bushing to obtain the specified clearance for the piston pin.

Grind bushing to eliminate any out-of-round condition or scoring.

1. Bushing installer 2. Connecting rod 3. Small end bushing

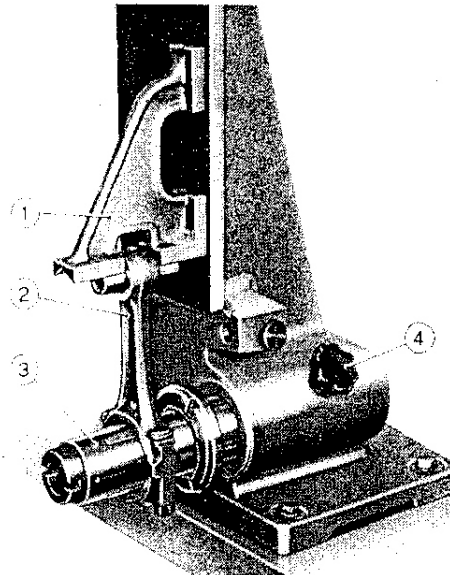


INSPECTING

Check alignment of big-end and small-end axes measured at 4.92 in. (125 mm) from shank.

Maximum allowable misalignment is 0.0031 inch (0.08 mm).

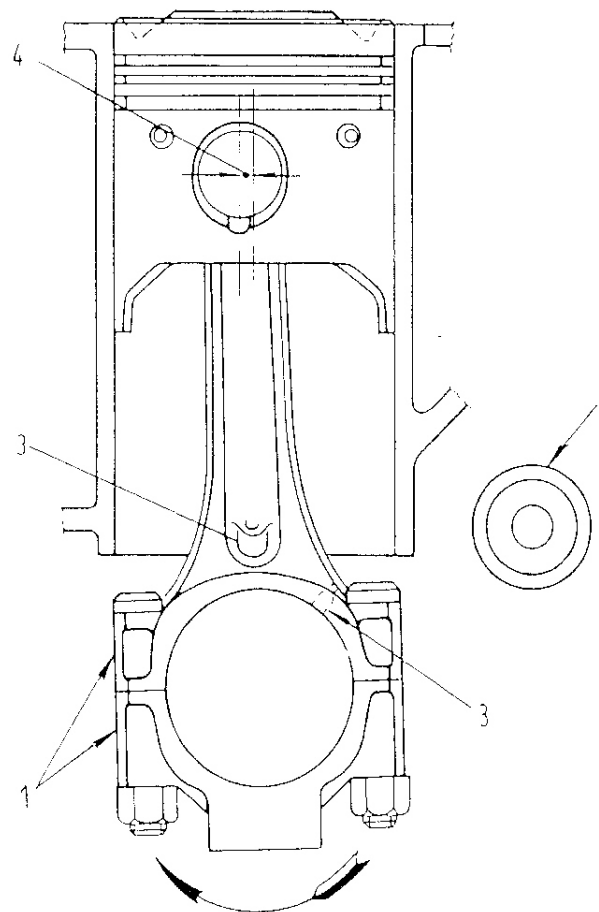
1. Square
2. Connecting rod and pin
3. Expansible blade arbor
4. Arbor lock



Piston boss bore is 0.08 inch (2 mm) offset.

When assembling piston to connecting rod, make sure number on connecting rod faces the piston bore offset.

When installing the assembly, make sure numbers on connecting rod face away from side with auxiliary shaft.



Install piston pin. Secure pin with circlips. Make sure gap in circlip is not in line with slot in piston.

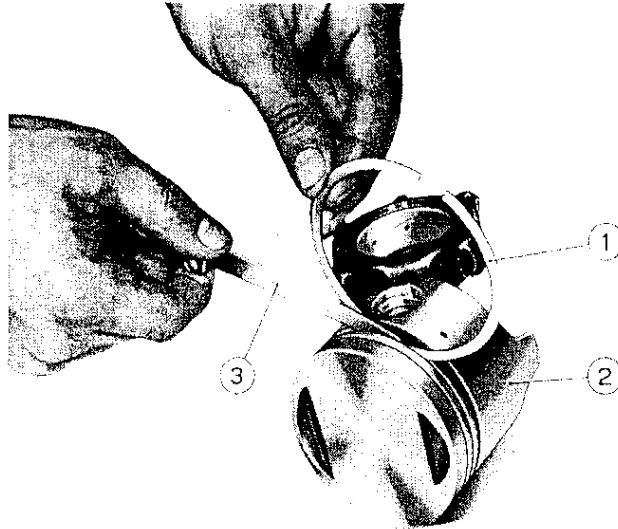
1. Location of connecting rod to cylinder matching number
2. Auxiliary shaft
3. Oil holes
4. Piston pin offset

RINGS

INSTALLING

Before installing rings on pistons, push rings down in groove. Check clearance with feeler gauge. See Specifications.

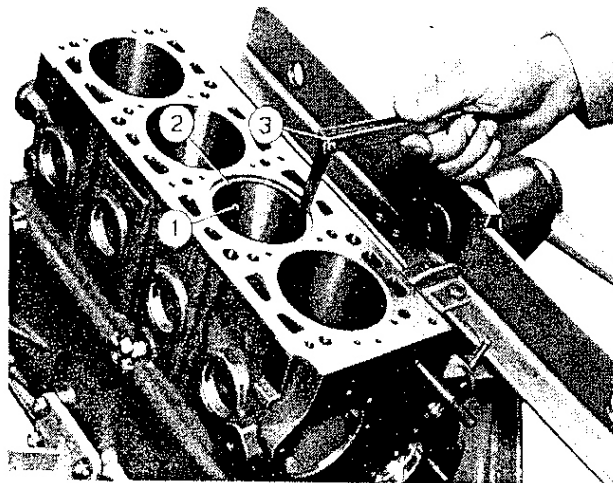
1. Ring 2. Piston 3. Feeler gauge



Push rings squarely into cylinder bore. Using feeler gauge, check ring end gap. See Specifications.

When installing rings, stagger end gaps 120° apart.

1. Cylinder bore 2. Ring 3. Feeler gauge

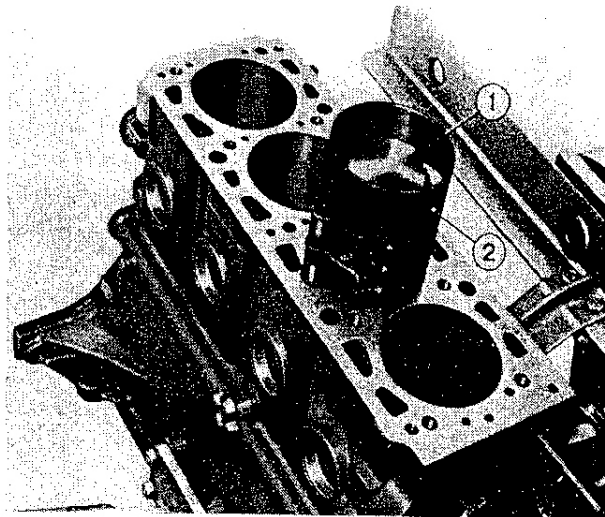


INSTALLATION

Make sure cylinder bores are lubricated with light engine oil before installing connecting rod-piston assemblies.

Install assemblies with numbers on connecting rods facing away from auxiliary shaft.

1. Piston 2. Ring compressor



Place a length of calibrated wire on crankpin. Install connecting rod cap. Torque cap nuts to 38 ft. lbs. (5.1 kgm).

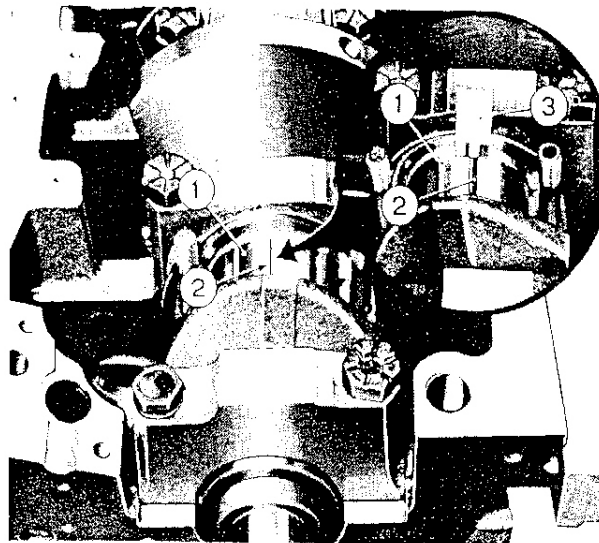
Remove caps.

Compare width of wire with scale to determine clearance.

Clearance should be:

0.0008 to 0.0025 in. (0.021 to 0.065 mm)

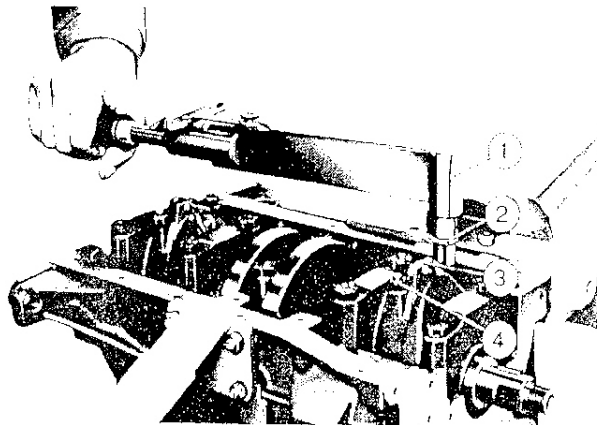
1. Crankpin 2. Calibrated wire 3. Scale



Install caps and nuts.

Torque nuts to value specified in Engine Specifications.

1. Torque wrench 2. Socket 3. Cap 4. Cap nut



TIMING BELT

REPLACING (Engine in car)

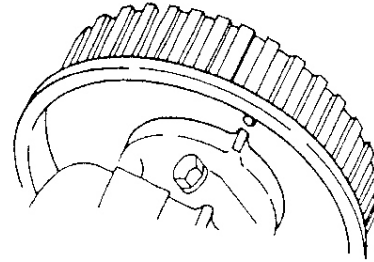
CAUTION: Timing belts cannot be reused. Once tension is relieved, replace timing belt. When a timing belt is removed, do not turn camshaft independent of engine. Valves may be damaged.

Disconnect battery ground cable.

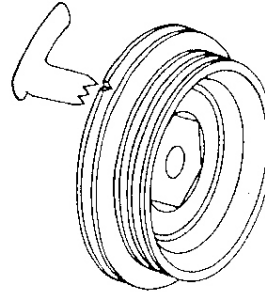
Remove spark plugs.

Turn engine to set timing mark as shown.

Engine is set to fire on No. 4 cylinder.



CAMSHAFT
TIMING



CRANKSHAFT
TIMING

Remove heated air hose from exhaust shroud and air cleaner (carburetor engines only).

Remove all drive belts from crankshaft pulley.

Partially drain cooling system.

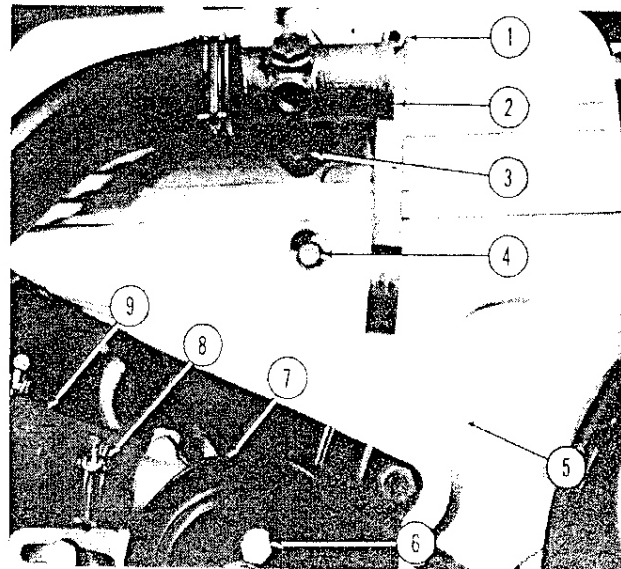
Remove upper radiator hose from union (2).

Remove two bolts (3) and washers, then pull union (2) away from cylinder head.

Remove two bolts (4) and two nuts (1) to remove timing belt cover (5).

Remove three water pump pulley bolts (6) and remove water pump pulley.

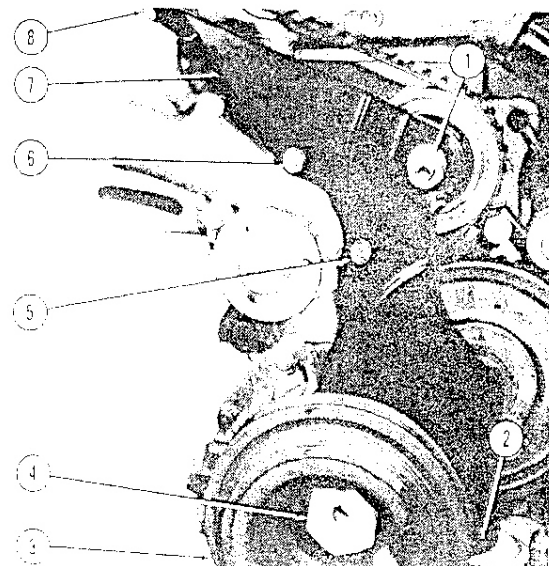
1. Nut 2. Union 3. Bolt 4. Bolt 5. Timing belt cover 6. Bolt
7. Pulley 8. Clamp 9. Hose



Remove nut (4) holding crankshaft pulley (3). Use 38 mm socket. Remove pulley.

Remove four bolts (2, 5 and 8) and two nuts (1 and 6) holding lower sheet metal timing cover (7). Remove cover.

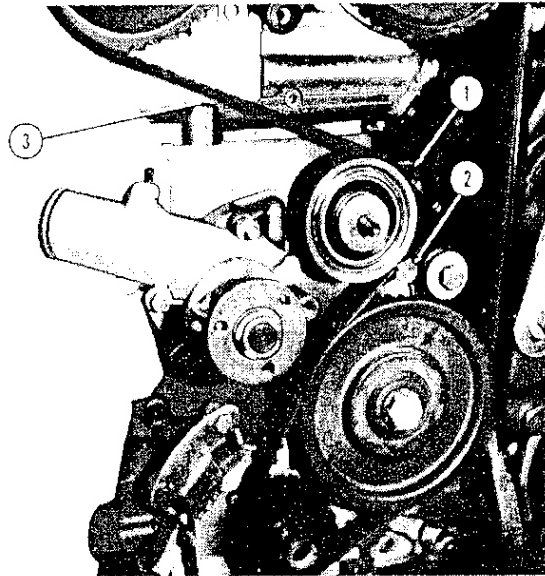
1. Nut 2. Bolt 3. Crankshaft pulley 4. Nut 5. Bolt 6. Nut
7. Timing belt cover 8. Bolt



Loosen bolt (2) for tensioner bracket (1). Pry pulley to release belt tension. Retighten bolt (2) to hold pulley in belt-slackened position.

Remove timing belt (3). Mark belt as not reusable.

1. Tensioner bracket 2. Bolt 3. Timing belt



Turn auxiliary shaft sprocket to align hole (6) in sprocket with sprocket bolt (7) and spring retaining bolt (5).

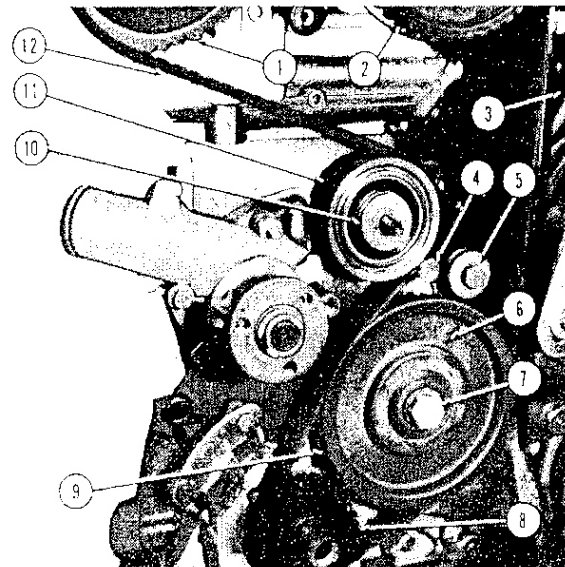
Wrap new timing belt (12) over crankshaft sprocket (8), auxiliary shaft sprocket (9), intake camshaft sprocket (2) and exhaust camshaft sprocket (1).

Make sure all play is between exhaust camshaft sprocket (1) and tensioner pulley (11).

Place timing belt over tensioner pulley. Loosen tensioner bracket bolt (4) and allow tensioner pulley to take out play. DO NOT apply additional force to tensioner pulley.

Turn crankshaft two full turns. Check that timing is correct, then tighten tensioner bracket bolt.

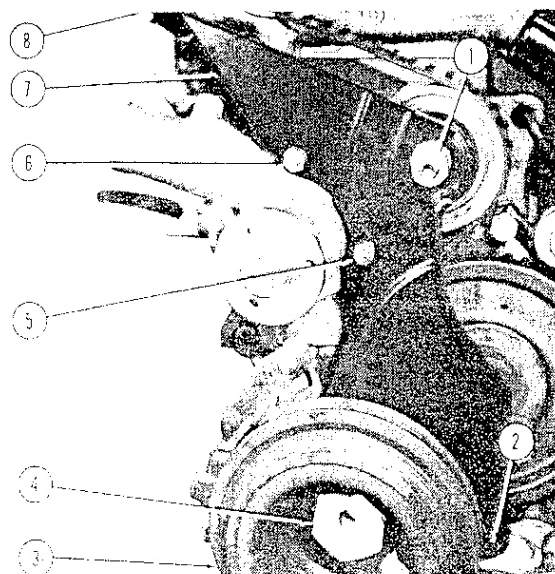
1. Exhaust camshaft sprocket 2. Intake camshaft sprocket 3. Oil dipstick tube 4. Tensioner bracket bolt 5. Spring retaining bolt 6. Hole 7. Bolt 8. Crankshaft sprocket 9. Auxiliary shaft sprocket 10. Spacer 11. Tensioner pulley 12. Belt



Install lower sheet metal timing belt cover with four bolts (2, 5 and 8) and two nuts (1 and 6). Torque nut (1) to 33 ft. lbs. (4.5 kgm).

Coat crankshaft pulley (3) inside diameter with anti-seize compound. Place pulley on crankshaft. Secure pulley with nut (4). With flywheel blocked, torque nut to 181 ft. lbs. (25 kgm).

1. Nut 2. Bolt 3. Crankshaft pulley 4. Nut 5. Bolt 6. Nut 7. Timing belt cover 8. Bolt



Install water pump pulley (7) using three bolts (6).

Install timing belt cover (5) and retain with two bolts (4) and two nuts (1).

Install drive belts on crankshaft pulley and tension to specifications.

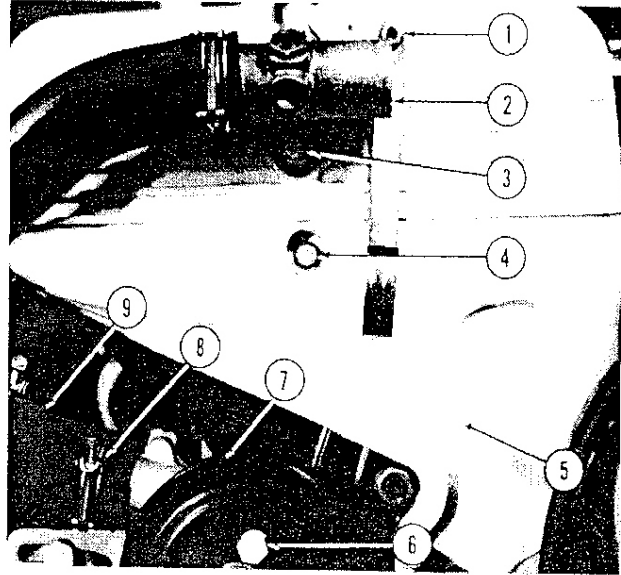
Install union gasket, union (2) and two bolts (3) and washers. Attach upper radiator hose to union.

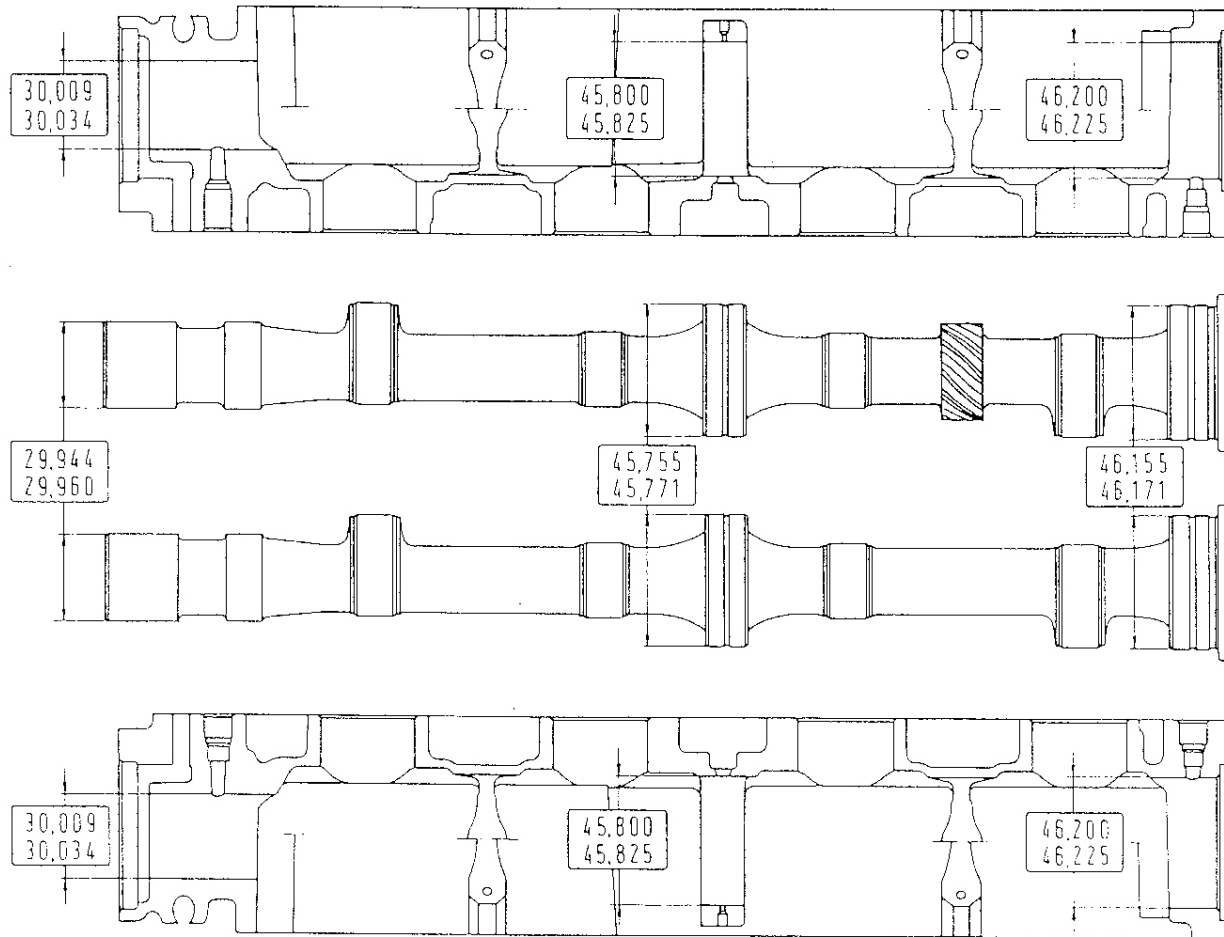
Install heated air hose on exhaust shroud and air cleaner (carburetored engines only).

Install spark plugs.

Fill cooling system.

1. Nut 2. Union 3. Bolt 4. Bolt 5. Timing belt cover 6. Bolt
7. Pulley 8. Clamp 9. Hose

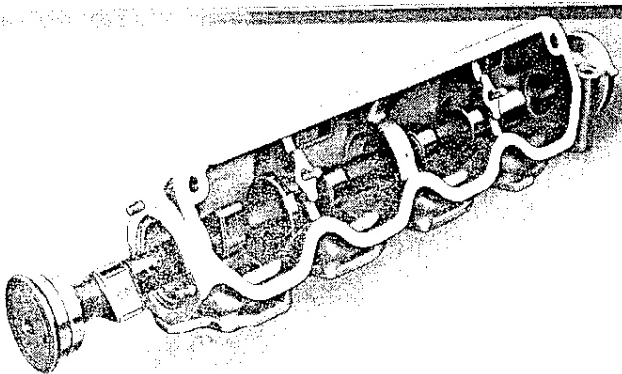




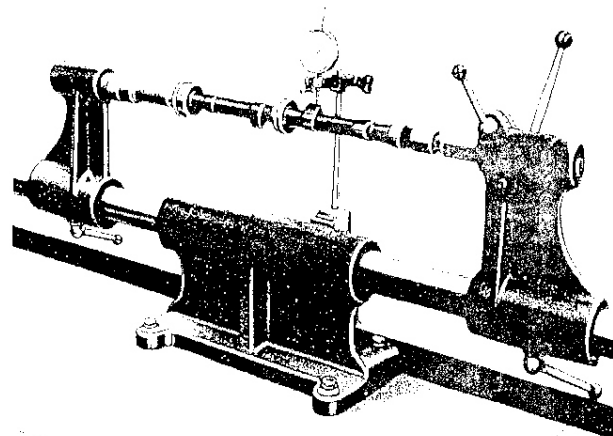
MAIN DATA OF CAMSHAFTS AND SEATS IN CAMHOUSING

INSPECTION

Place camshaft between points. Set dial indicator to check both intake and exhaust camshaft lobe lift. Lobe lift (without play) should be 0.3765 in. (9.564 mm) for both. Check runout. Runout must not exceed 0.0008 in. (0.02 mm).

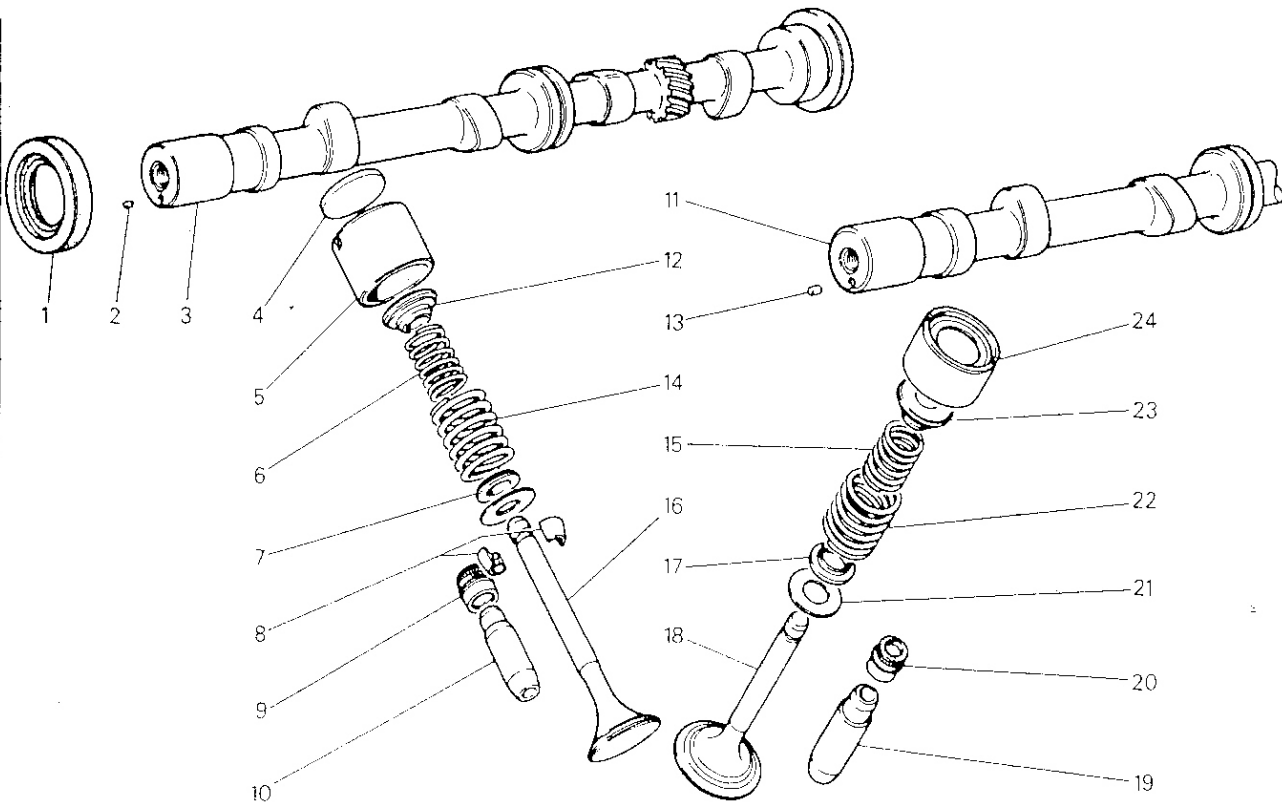


Sliding camshaft out of housing



Checking camshaft lobe lift

10



1. Camshaft seal
2. Exhaust camshaft dowel
3. Exhaust camshaft
4. Tappet plate
5. Exhaust valve tappet
6. Exhaust valve inner spring
7. Lower cup
8. Locks
9. Exhaust valve oil seal
10. Exhaust valve guide
11. Intake camshaft
12. Upper cup

13. Dowel
14. Exhaust valve outer spring
15. Intake valve inner spring
16. Exhaust valve
17. Lower cup
18. Intake valve
19. Intake valve guide
20. Oil seal
21. Washer
22. Intake valve outer spring
23. Upper cup
24. Intake valve tappet

VALVE MECHANISM COMPONENTS

TAPPET CLEARANCE (Engine Cold)

On carbureted engines, remove air cleaner.

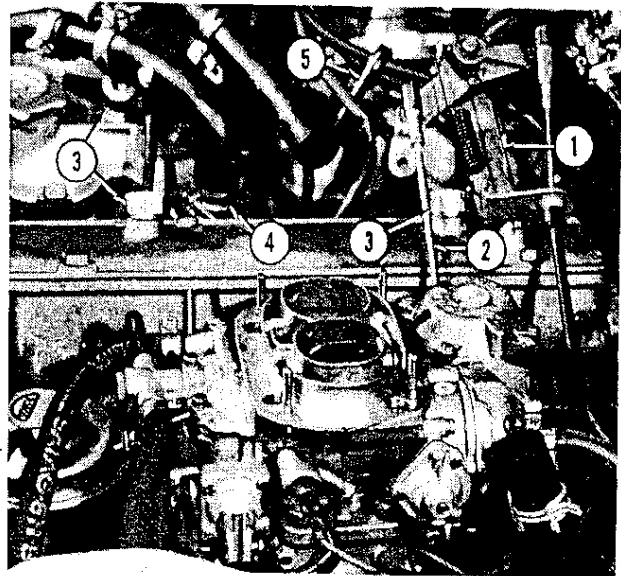
Remove two nuts to disconnect accelerator linkage (1) from cam cover. Lay linkage to one side.

On engines with air pump, remove hose from air pump check valve (4).

Remove spark plug wires from support (5).

Remove four bolts (3) holding cam covers. Remove covers and gaskets.

1. Accelerator linkage 2. Accelerator rod 3. Bolt 4. Check valve
5. Support bracket



On fuel injected engines, loosen clamps (1) to remove air inlet hose (2).

NOTE: On turbo-charged engines, remove auxiliary air regulator fitting from compressor discharge plenum, loosen clamps and mounting bracket to remove plenum.

Loosen auxiliary air regulator (3) line clamp (4) and pull line off regulator.

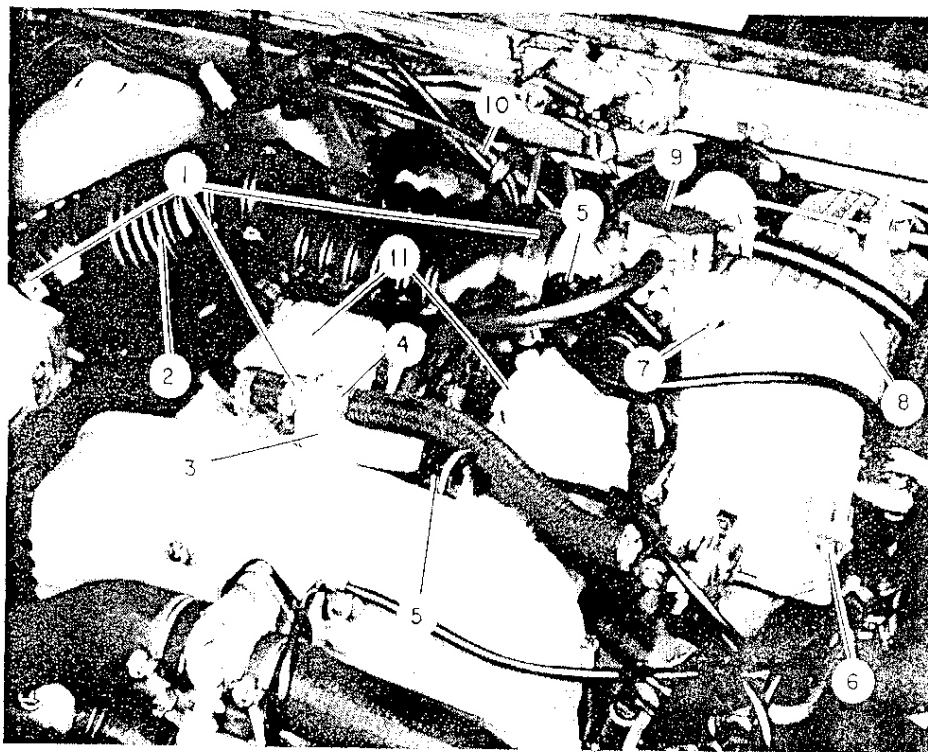
Disconnect electrical connectors (5) on throttle body and auxiliary air regulator.

Remove six bolts (6) and two nuts (7) to separate intake manifold halves (8). Without disconnecting throttle body heater (9) hoses, place intake manifold half away from cam cover.

Remove spark plug wires (10) from support.

Remove four bolts (11) holding cam covers. Remove covers and gaskets.

1. Clamp 2. Air inlet hose 3. Auxiliary air regulator 4. Clamp 5. Electrical connector 6. Bolt 7. Nut 8. Intake manifold 9. Throttle body heater 10. Spark plug wires 11. Bolt

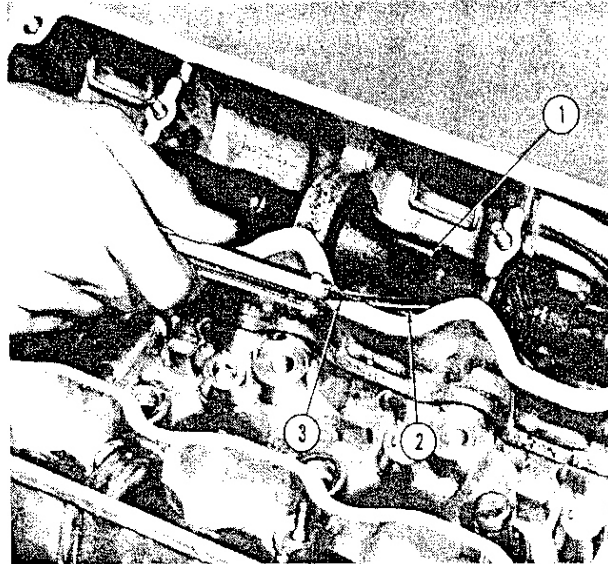


Position camshaft so that lobe (1) for valve being checked is pointing up and at right angle to valve.

Measure clearance between camshaft (1) and tappet plate (2).

Clearance: Intake - 0.015 to 0.019 in.
(0.41 to 0.48 mm)
Exhaust - 0.018 to 0.021 in.
(0.46 to 0.53 mm)

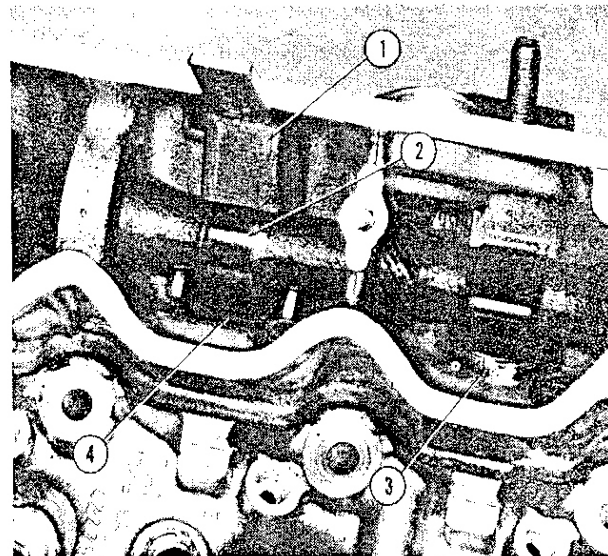
1. Camshaft lobe 2. Tappet 3. Feeler gauge



Rotate tappet (4) so that notch (3) is facing out as shown.

If adjusting is necessary, pry tappet down using tool A.60443. If tool is not available, rotate camshaft (2) down to depress tappet. Install clamping tool A.60594 (1).

1. Clamping tool A.60594 2. Camshaft lobe 3. Notch on tappet
4. Tappet

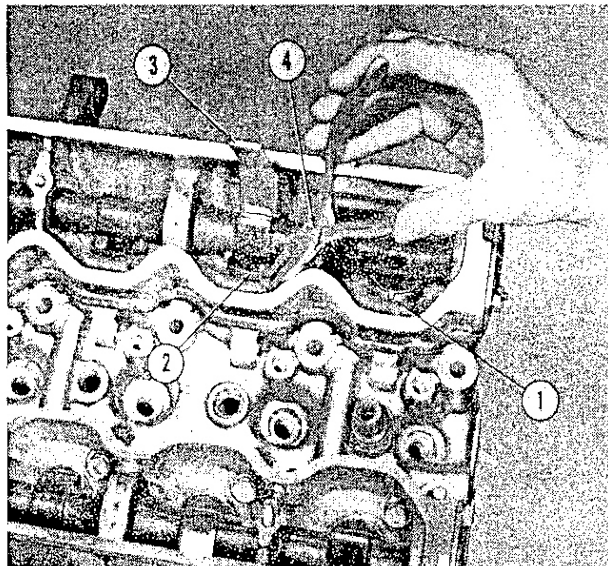


Rotate camshaft up to gain clearance between lobe and tappet plate (2).

Lift plate thru notch (1) with scribe. Remove plate with tool A.87001 (4). Install new tappet.

NOTE: Tappet plate thickness is stamped on face of plate. Install this face toward tappets. If number on plate(s) is not visible, determine needed thickness with a micrometer.

1. Notch on tappet 2. Tappet plate 3. Clamping tool A.60594
4. Tool A.87001



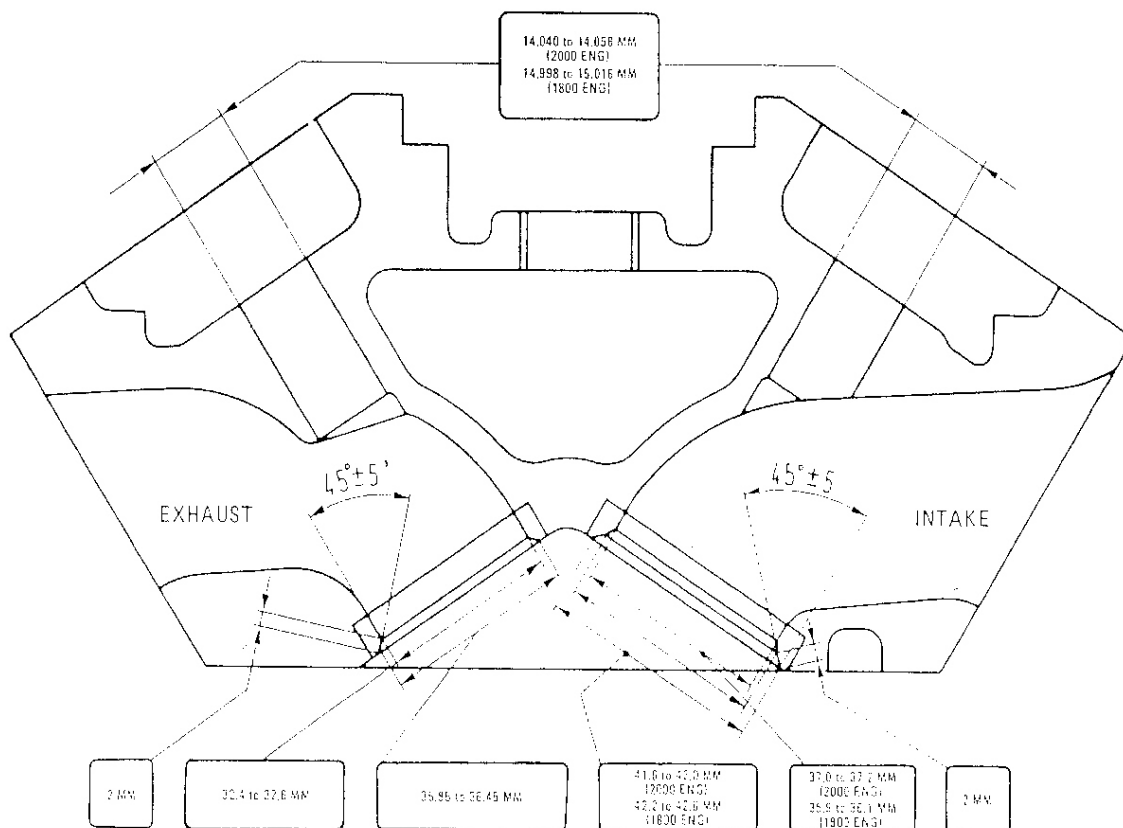
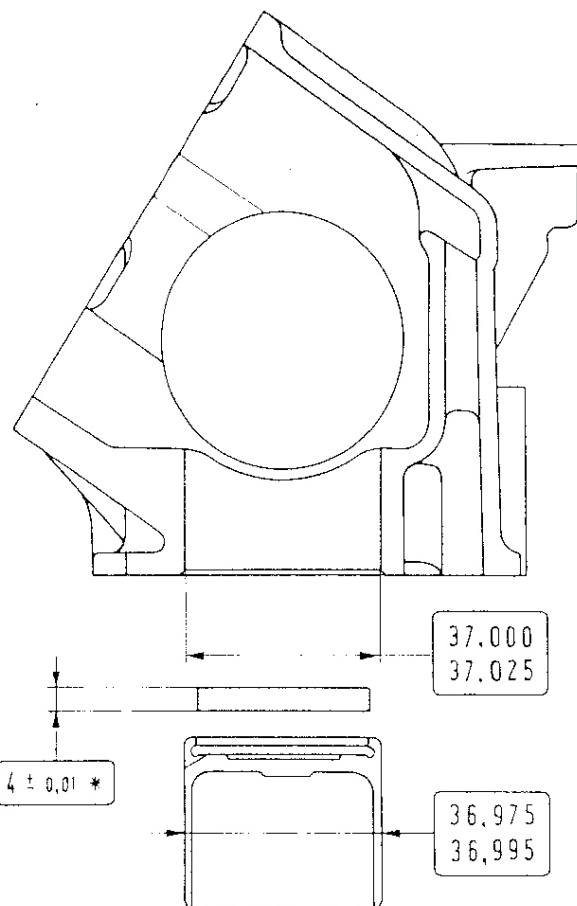
TAPPET

INSPECTING

Make sure tappet plate surface in contact with camshaft lobe is glass-like and shows no signs of dishing or pitting.

Fit clearance between tappets and bores in upper cylinder head is 0.0002 to 0.0019 inch (0.005 to 0.050 mm).

*Basic tappet plate thickness.



MAIN DATA OF VALVE SEATS AND VALVE GUIDE SEATS IN CYLINDER HEAD

REFACING

Valve seats in cylinder head must not show evidence of pitting in contact face. If pitted, they must be refaced.

Make sure grinding stones have a taper of $45^\circ \pm 5'$.

Perform the refacing operation by hand.

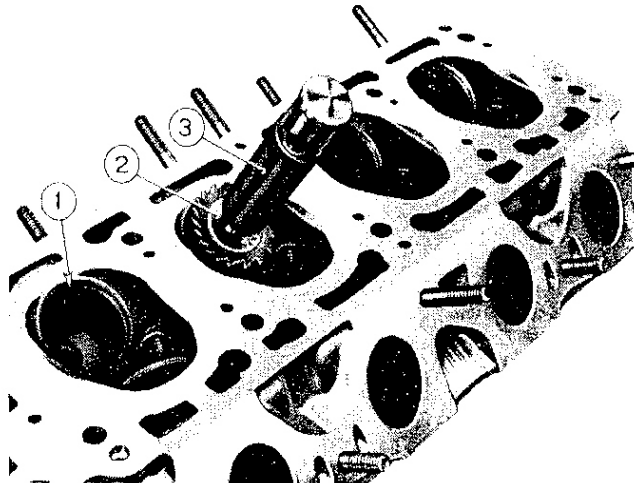
Reface valve seat using 45° .

1. Valve seat 2. Grinding stone 3. Pilot

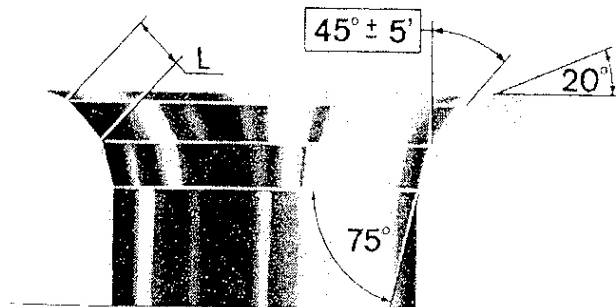


Narrow seat width. Use a 20° valve seat reamer and a 75° reamer alternately.

1. Valve seat 2. Cutter 3. Pilot



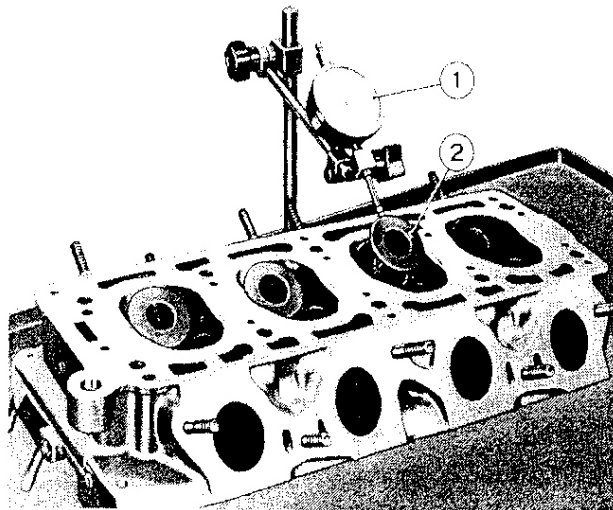
The width of intake and exhaust valve seats, after narrowing should be $L = 0.08$ inch (2 mm) approximately.



Valve stem must not be distorted or cracked. If necessary, replace valve.

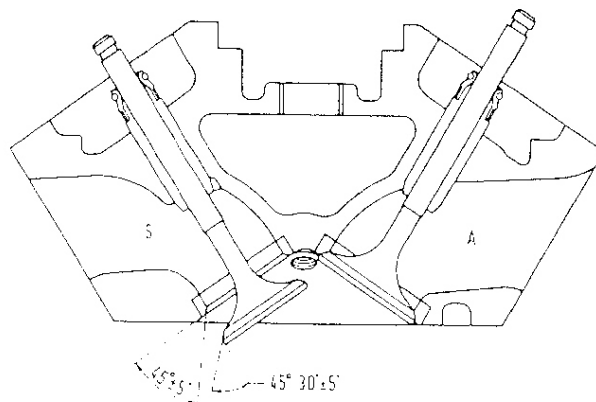
Maximum runout in a full turn, guided by stem with dial indicator resting at center of contact face, should not exceed 0.0012 inch (0.03 mm).

1. Dial indicator 2. Intake valve



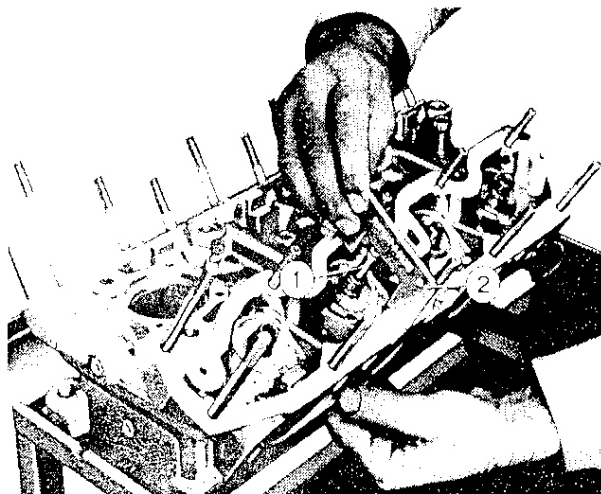
Check valve face for wear or damage. If necessary, reface valve.

After refacing, check that the thickness of the valve at edge of head is not less than 0.02 inch (0.5 mm).



After refacing, valve will seat lower in its seat and result in excessive valve stem (2) height. Check height of valve stem above cylinder head with gage A.96218 (1) as shown. If height exceeds gage check, valve stem must be ground off to reduce height within limits.

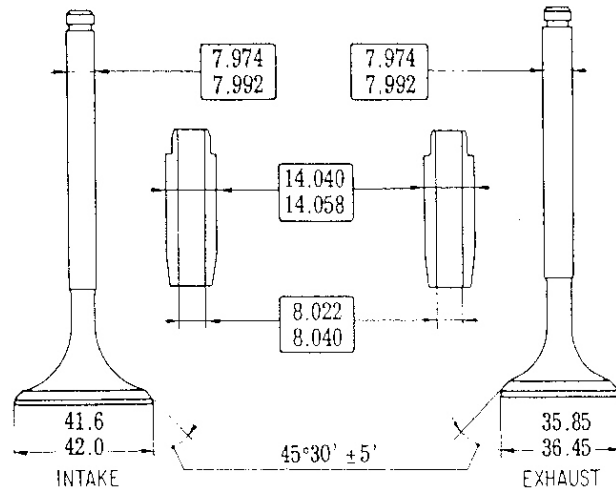
1. Gage A.96218 2. Valve stem



VALVE GUIDES AND SPRINGS

REPLACING

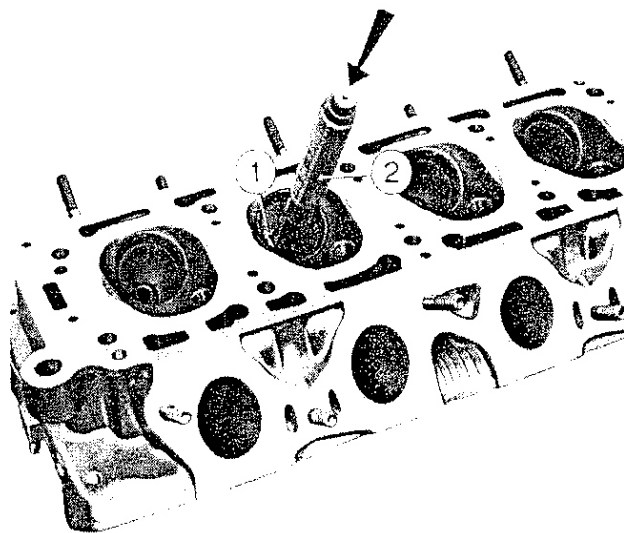
Valve stem to valve guide clearance is 0.0012 to 0.0026 inch (0.030 to 0.066 mm).



Valve guides (1) should be replaced whenever an excessive clearance between valve stem and guide cannot be corrected by replacing the valve or if guides become loose in their bores in the head.

Use tool A.60395 (2) to remove guides.

1. Valve guides 2. Tool A.60395

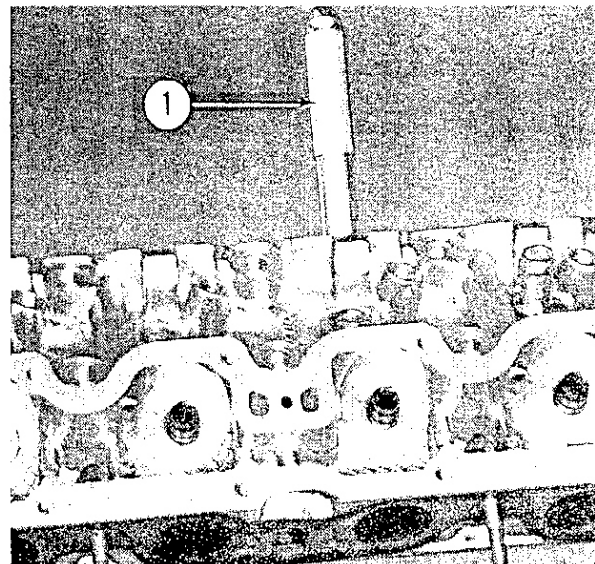


Press guides into lower cylinder head.

Use tool A.60462.

The interference between guide and bore is 0.0024 to 0.0042 in. (0.063 to 0.108 mm).

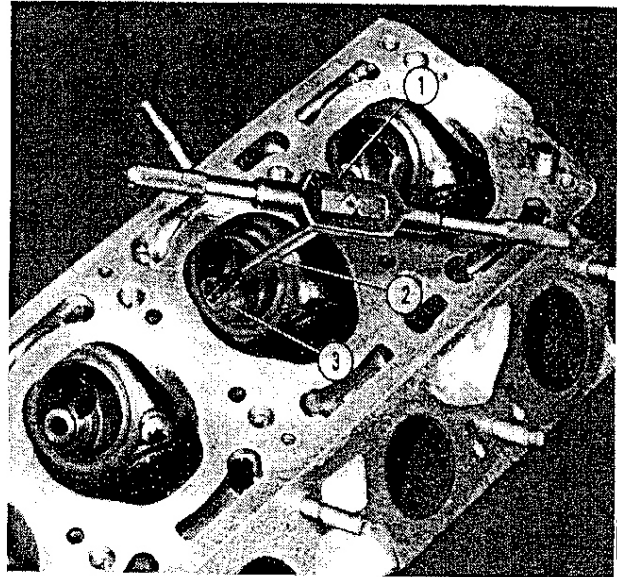
1. Tool A.60462



Replacement guides (3) are prefinished to size on the inside diameter.

If press fitting causes minor faults, refinish guide. Use reamer A.90310 (2).

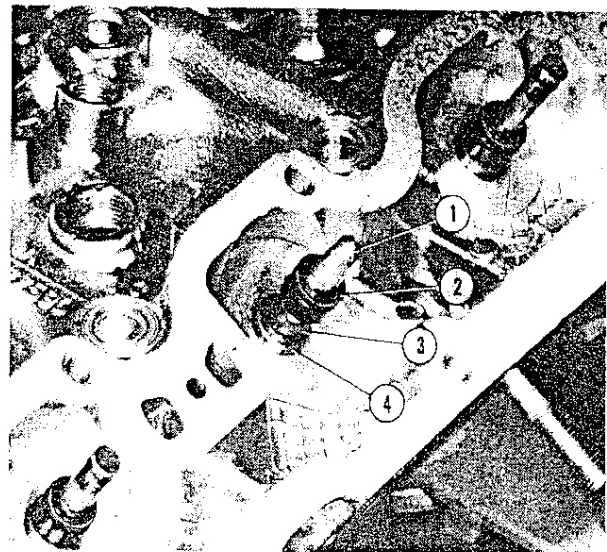
1. Mandrel 2. Reamer A.90310 3. Valve guide



Install oil seal (2) on valve guides (4) as follows:

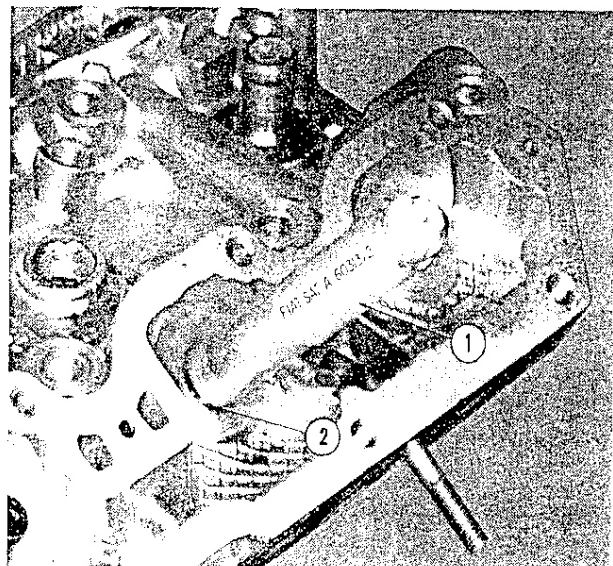
Place oil seal on pilot A.60313 (1). Mount pilot on valve stem (3). Slide seal over stem.

1. Pilot 2. Oil seal 3. Valve stem 4. Valve guide



Press oil seal onto milled upper end of valve guide (2). Use installer A.60313/2 (1).

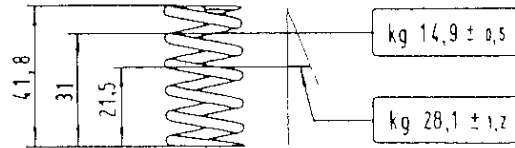
1. Installer A.60313/2 2. Valve guide



Test spring tension using fixture AP.5049.

Main data for testing valve inner springs.

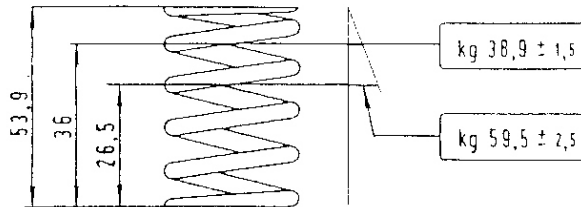
41.8 mm = 1.646 in $14.9 \pm 0.5 \text{ kg} = 33 \pm 1.1 \text{ lbs}$
 31 mm = 1.220 in $28.1 \pm 1.2 \text{ kg} = 64 \pm 2.6 \text{ lbs}$
 21.5 mm = .846 in



Then compare the tension and deflection data read on the test fixture with the spring specifications shown on opposite figures.

Main data for testing valve outer springs.

53.9 mm = 2.122 in $38.9 \pm 1.5 \text{ kg} = 85 \pm 3.3 \text{ lbs}$
 36 mm = 1.417 in $59.5 \pm 2.5 \text{ kg} = 141 \pm 5.5 \text{ lbs}$
 26.5 mm = 1.043 in



MAIN DATA FOR TESTING VALVE SPRINGS

REPLACING AND ADJUSTING DRIVE BELTS

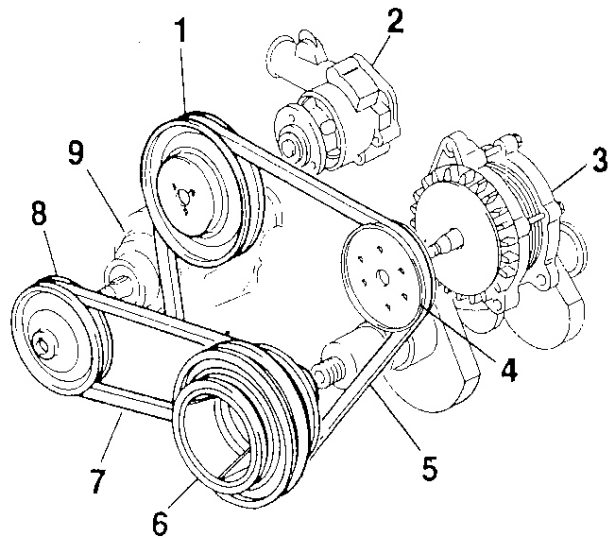
To replace drive belts, loosen alternator (3) mount bolts. Remove belt (5).

On vehicles with air pump, loosen air pump (9) mount bolts. Remove belt (7).

Air Pump Belt

Install new belt (7) on air pump pulley (8) and crankshaft pulley (6). Install belt on rear groove of pulley (6). Fully tighten air pump belt (7) and air pump mount bolts. Check for about ½ inch belt deflection with moderate finger pressure.

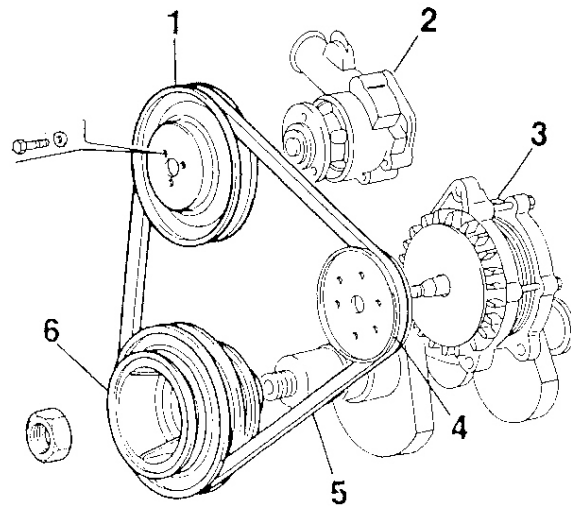
1. Water pump pulley 2. Water pump 3. Alternator
4. Alternator pulley 5. Water pump/alternator belt
6. Crankshaft pulley 7. Air pump belt 8. Air pump pulley
9. Air pump



Alternator/Water Pump Belt

Install new belt (5) on water pump pulley (1), alternator pulley (4) and center groove on crankshaft pulley (6). Fully tighten belt (5) and alternator mount bolts. Check for about ½ inch belt deflection with moderate finger pressure.

1. Water pump pulley 2. Water pump 3. Alternator
4. Alternator pulley 5. Water pump/alternator belt
6. Crankshaft pulley

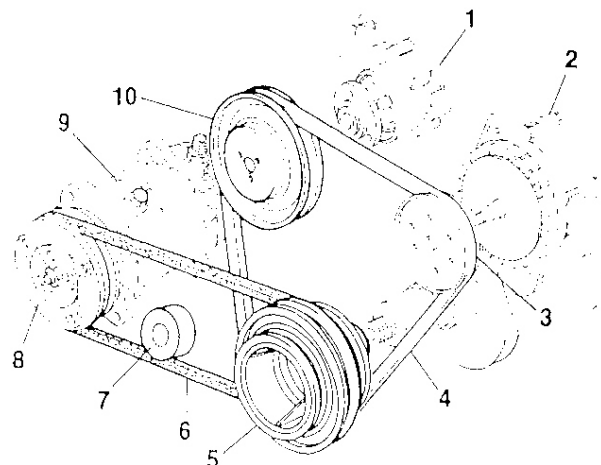


A.C. Belt Without Turbo

Install new belt (6) over rear groove on crankshaft pulley (5) and front groove on compressor clutch (8). Make sure belt is under eccentric idler pulley (7). Make sure compressor (9) mounting bolts are tight.

Rotate idler pulley (7) down to set belt tension. Tighten bolt holding eccentric to bracket. Check for about ½ inch belt deflection with moderate finger pressure.

1. Water pump 2. Alternator 3. Alternator pulley
4. Water pump/alternator belt 5. Crankshaft pulley 6. A.C. belt
7. Eccentric idler pulley 8. Compressor clutch 9. Compressor
10. Water pump pulley



A.C. Belt With Turbo

Place new belt (6) over front groove of compressor clutch (8) and front groove of crankshaft pulley (5).

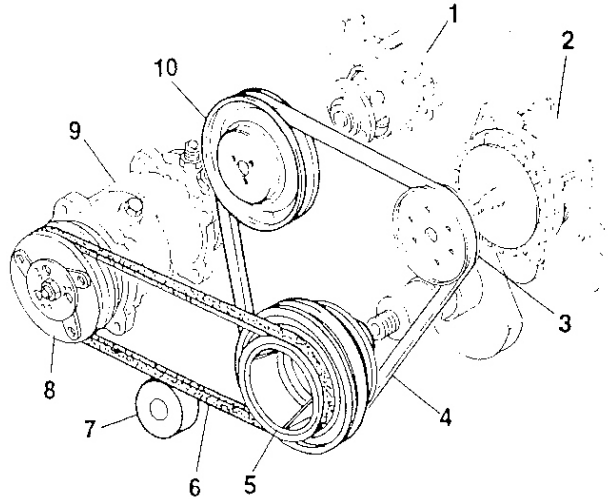
NOTE: Belt is exact fit and must be gently jumped over crankshaft pulley by turning engine with wrench (tool No. 50121).

Gently pull top of compressor (9) out and tighten upper front mounting bolt. Tighten lower front mounting bolt and then remaining two rear mounting bolts.

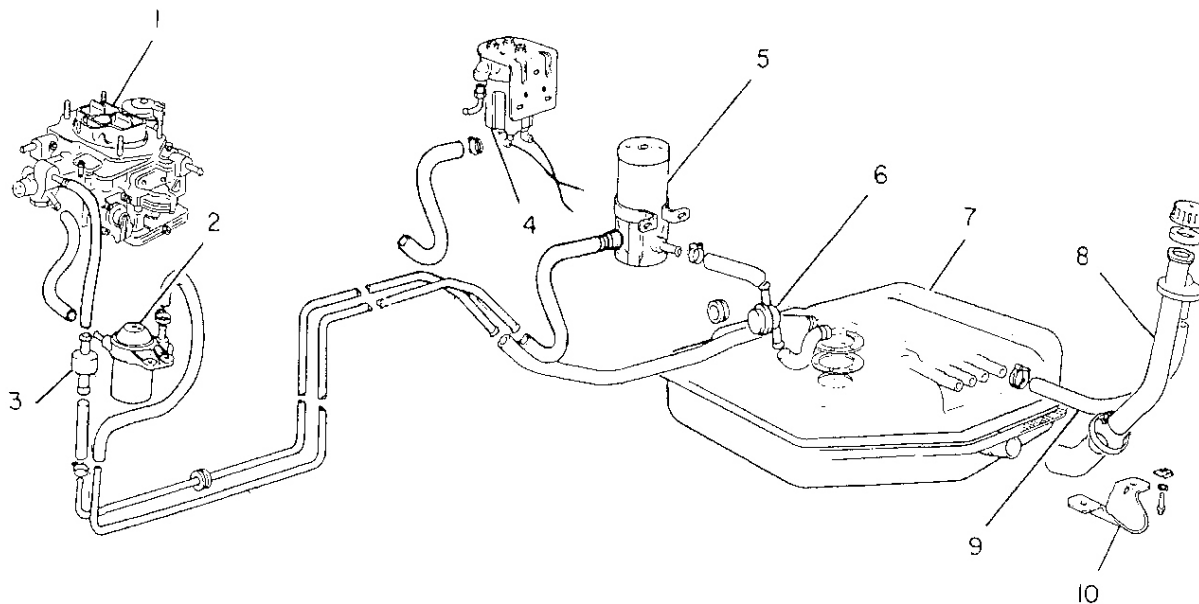
NOTE: This sets the drive belt tension.

Rotate eccentric idler pulley (7) up slightly against the belt (6). Tighten the bolt holding eccentric to compressor bracket.

NOTE: The drive belt (6) is at its proper tension when compressor (9) was adjusted. The idler pulley (7) is used for future belt adjustment if and when necessary.

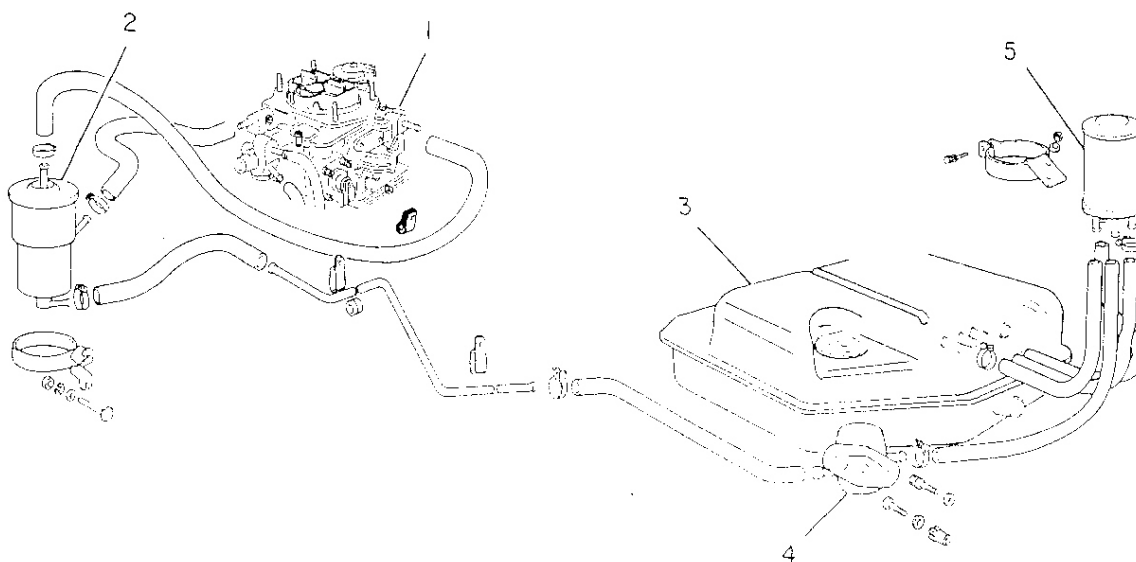


- 1. Water pump 2. Alternator 3. Alternator pulley
- 4. Water pump/alternator belt 5. Crankshaft pulley 6. A.C. belt
- 7. Eccentric idler pulley 8. Compressor clutch 9. Compressor
- 10. Water pump pulley



- | | |
|---|------------------------|
| 1. Carburetor | 6. Check valve |
| 2. Fuel filter | 7. Fuel tank |
| 3. Check valve | 8. Filler line |
| 4. Fuel pump, Carter (replacement for Corona) | 9. Overflow line |
| 5. Fuel pump, Corona | 10. Filler line shield |

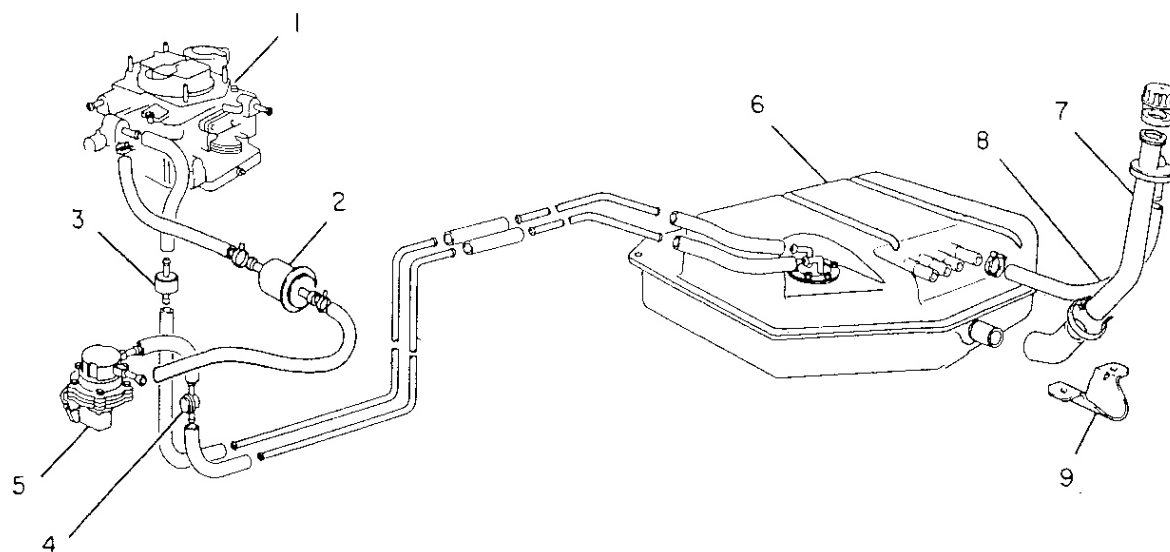
FUEL TANK AND LINES (1975 to early 1977)



- | |
|--|
| 1. Carburetor |
| 2. Charcoal trap |
| 3. Fuel tank |
| 4. Check valve and pressure relief valve |
| 5. Vapor/liquid separator |

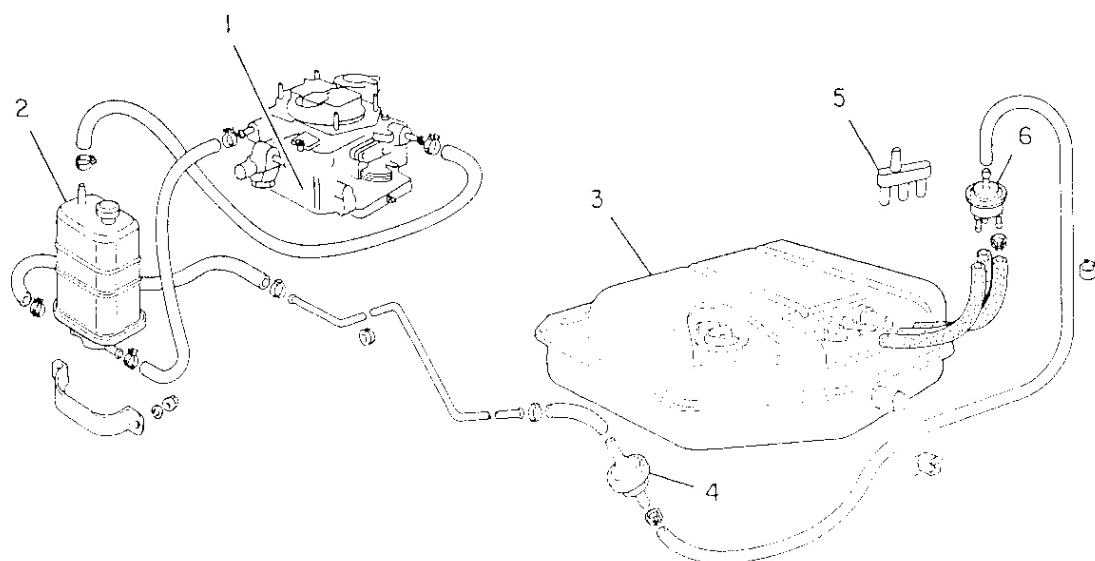
FUEL VAPOR LINES (1975 to early 1977)

10



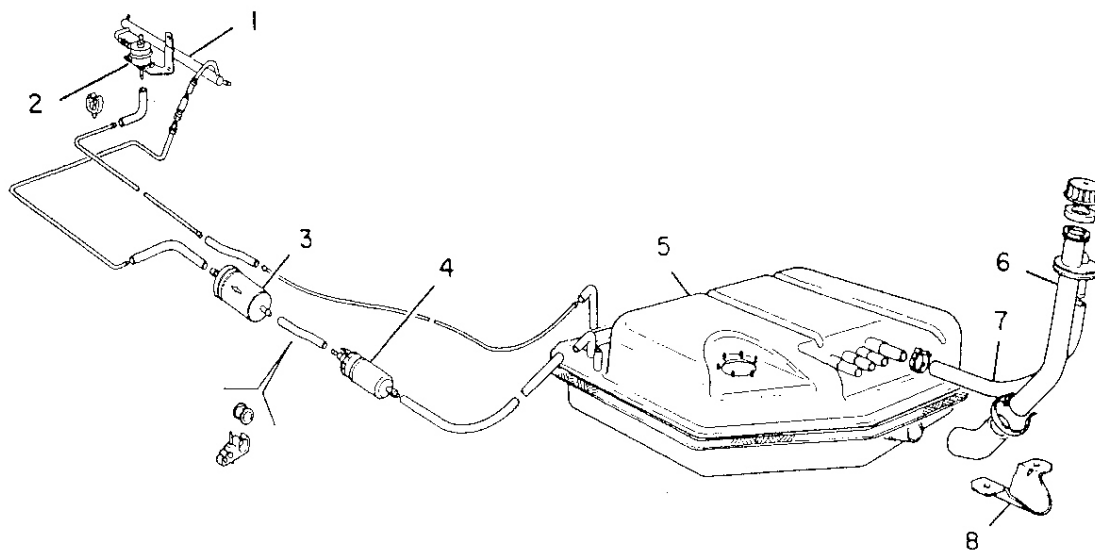
- | | |
|----------------|-----------------------|
| 1. Carburetor | 6. Fuel tank |
| 2. Fuel filter | 7. Filler line |
| 3. Check valve | 8. Overflow line |
| 4. Check valve | 9. Filler line shield |
| 5. Fuel pump | |

FUEL TANK AND LINES (1977 to early 1980)



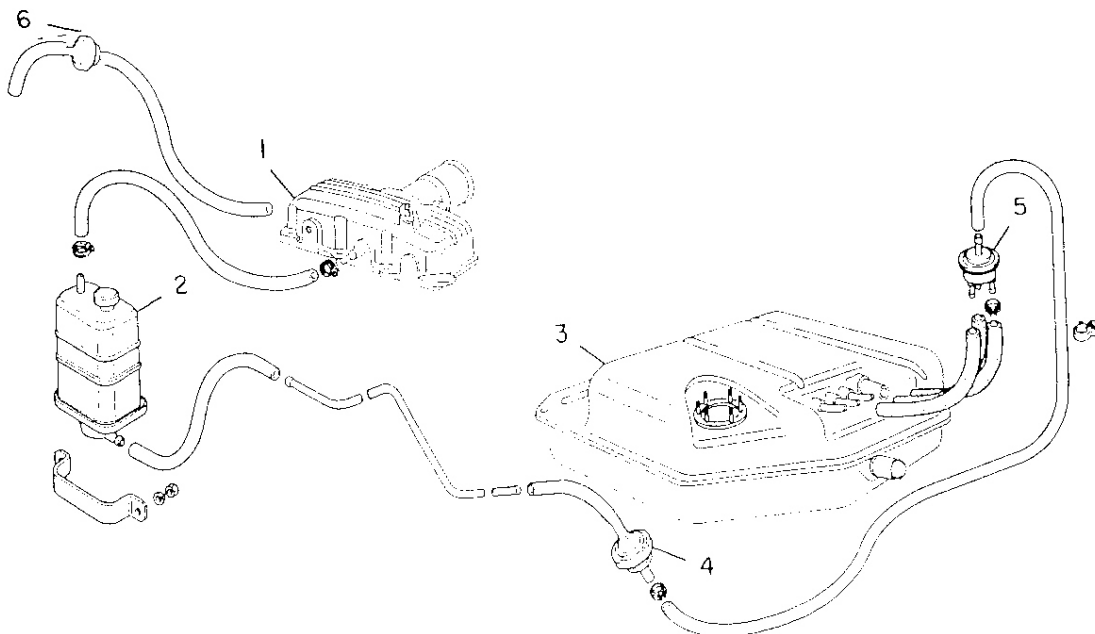
- | |
|---------------------------|
| 1. Carburetor |
| 2. Charcoal trap |
| 3. Fuel tank |
| 4. Two-way valve |
| 5. Vapor/liquid separator |

FUEL VAPOR LINES (1977 to early 1980)



- | | |
|----------------------------|-----------------------|
| 1. Fuel manifold | 5. Fuel tank |
| 2. Fuel pressure regulator | 6. Filler line |
| 3. Fuel filter | 7. Overflow line |
| 4. Fuel pump | 8. Filler line shield |

FUEL TANK AND LINES (1980 and on, fuel injected)



- | |
|------------------------------------|
| 1. Intake manifold |
| 2. Charcoal trap |
| 3. Fuel tank |
| 4. Two-way valve |
| 5. Vapor/liquid separator |
| 6. Check valve (Spider Turbo only) |

FUEL VAPOR LINES (1980 and on, fuel injected)

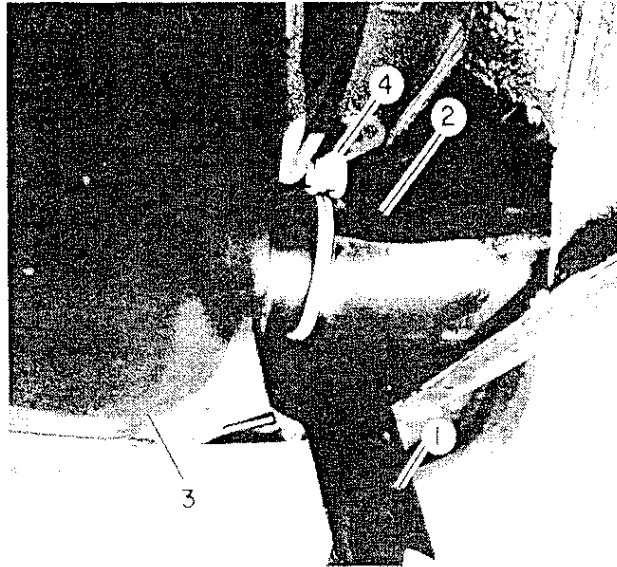
FUEL TANK

REMOVAL AND INSTALLATION

Drain or siphon fuel tank.

From under vehicle, remove two screws holding filler line shield (1). Loosen clamp (4) holding filler line (2) to tank (3) and pull line from tank.

1. Filler line shield 2. Filler line 3. Fuel tank 4. Clamp



Open trunk and remove carpeting, spare tire cover, fuel tank cover and spare tire.

Disconnect two electrical connectors (1) from fuel sending unit (2).

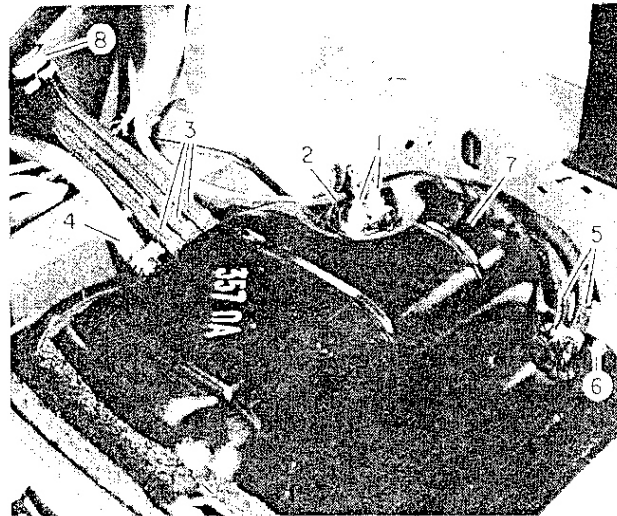
Loosen clamps on fuel vapor lines (3) and overflow line (4). Pull lines off.

Loosen clamps on fuel lines (5) and pull lines off (on carburetor vehicles, fuel lines are attached to sending unit).

Remove four nuts (6) holding tank (7) to body. Lift tank out of trunk area.

Installation is reverse of removal.

1. Electrical connector 2. Fuel sending unit 3. Fuel vapor lines
4. Overflow line 5. Fuel lines 6. Nut 7. Fuel tank
8. Vapor/liquid separator



SENDING UNIT

REMOVAL AND INSTALLATION

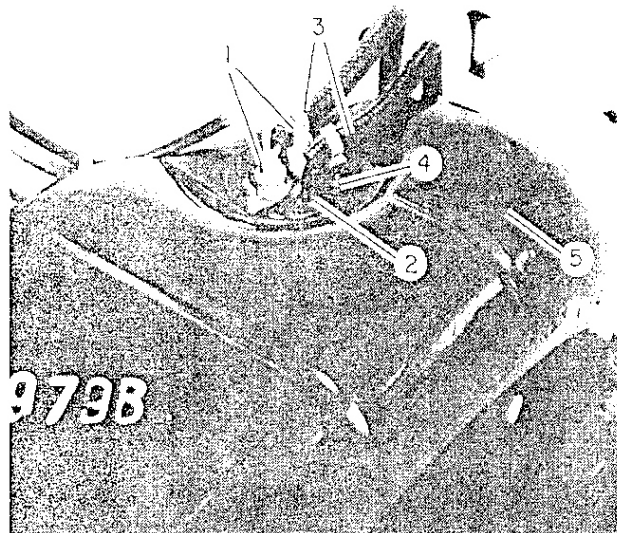
Open trunk and remove carpeting and fuel tank cover.

Disconnect two electrical connectors (1) from fuel sending unit (2). On carburetor vehicles (shown) loosen clamps on two fuel lines (3) and remove lines.

Remove six nuts (4) holding sending unit to tank (5) and carefully remove sending unit and gasket.

Installation is reverse of removal. Replace gasket during installation.

1. Electrical connector 2. Fuel sending unit 3. Fuel lines 4. Nut
5. Fuel tank



FUEL PUMP (1975 to early 1977)

REMOVAL AND INSTALLATION

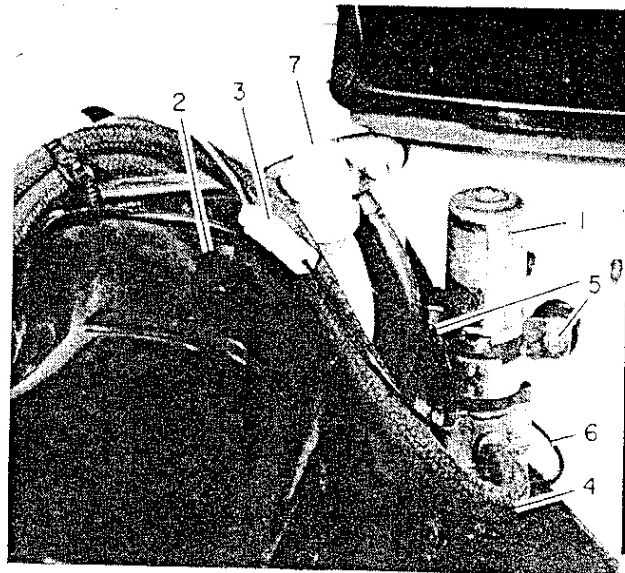
The electric fuel pump (1), either a Carter or a Corona (shown), is located in trunk area next to fuel tank (2).

From trunk compartment, remove carpeting, fuel tank cover, spare tire cover and spare tire.

Disconnect electrical connector (3) to pump. Loosen clamps on fuel inlet and outlet lines (4) and pull lines from pump. Remove two nuts (5) holding pump to body, remove pump.

Installation is reverse of removal.

1. Fuel pump 2. Fuel tank 3. Electrical connector 4. Fuel lines
5. Nut 6. Ground wire 7. Vapor system pressure relief valve



FUEL FILTER/PRESSURE REGULATOR (1975 to early 1977)

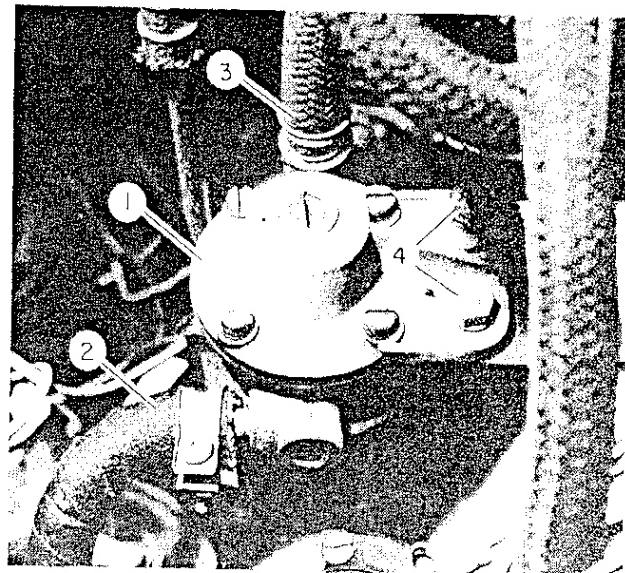
REMOVAL AND INSTALLATION

The fuel filter/pressure regulator (1) is located in engine compartment, mounted on left side just forward of and below carburetor.

Loosen clamps on inlet (2) and outlet (3) lines and pull lines from filter/pressure regulator. Remove two bolts (4) holding unit to body and remove filter/pressure regulator.

Installation is reverse of removal.

1. Fuel filter/pressure regulator 2. Fuel inlet line 3. Fuel outlet line
4. Bolt



FUEL PUMP (1977 to early 1980)

REMOVAL AND INSTALLATION

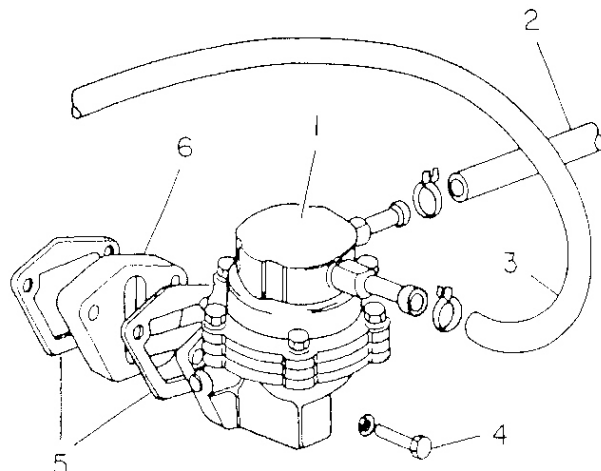
The mechanical fuel pump (1) is bolted to left side of engine.

From underneath vehicle, remove front splash pan.

Loosen clamps on inlet (2) and outlet (3) lines and pull lines from pump. Remove two bolts (4) holding pump to engine and remove pump.

Installation is reverse of removal. Install new gaskets (5).

1. Fuel pump 2. Fuel inlet line 3. Fuel outlet line 4. Bolt
5. Gasket 6. Spacer



FUEL FILTER (1977 to early 1980)**REMOVAL AND INSTALLATION**

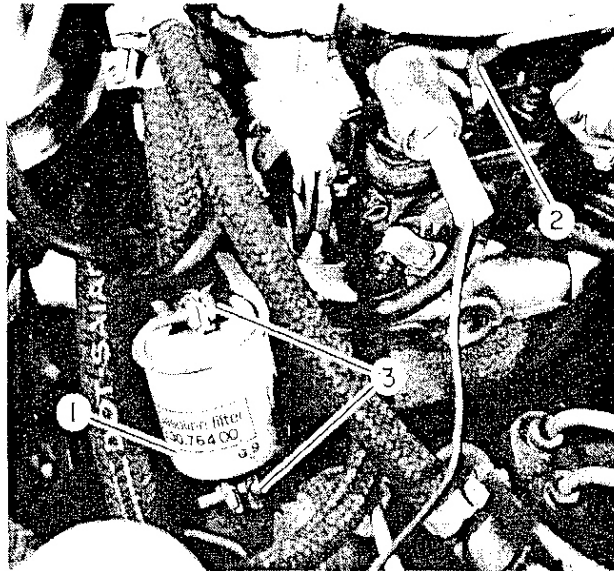
The fuel filter (1) is located in engine compartment near carburetor (2).

Loosen clamps (3) on inlet and outlet lines and pull lines from filter.

Installation is reverse of removal.

NOTE: Be certain that arrow on filter points towards carburetor.

1. Fuel filter 2. Carburetor 3. Clamp

**FUEL PUMP (1980 and on, Fuel Injected)****REMOVAL AND INSTALLATION**

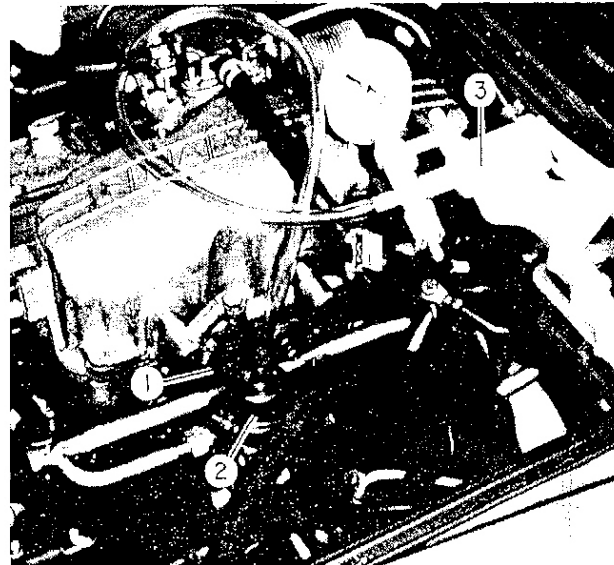
Before disconnecting fuel lines, fuel pressure must first be released.

Remove fuel tank filler cap.

Remove vacuum hose (1) from fuel pressure regulator (2).

Using a hand vacuum pump (3) apply about 25 inches of vacuum to pressure regulator as shown. Fuel system pressure will then be released into fuel tank.

1. Vacuum hose 2. Fuel pressure regulator 3. Hand vacuum pump



The electric fuel pump (1) is located underneath vehicle on left side, just forward of rear axle.

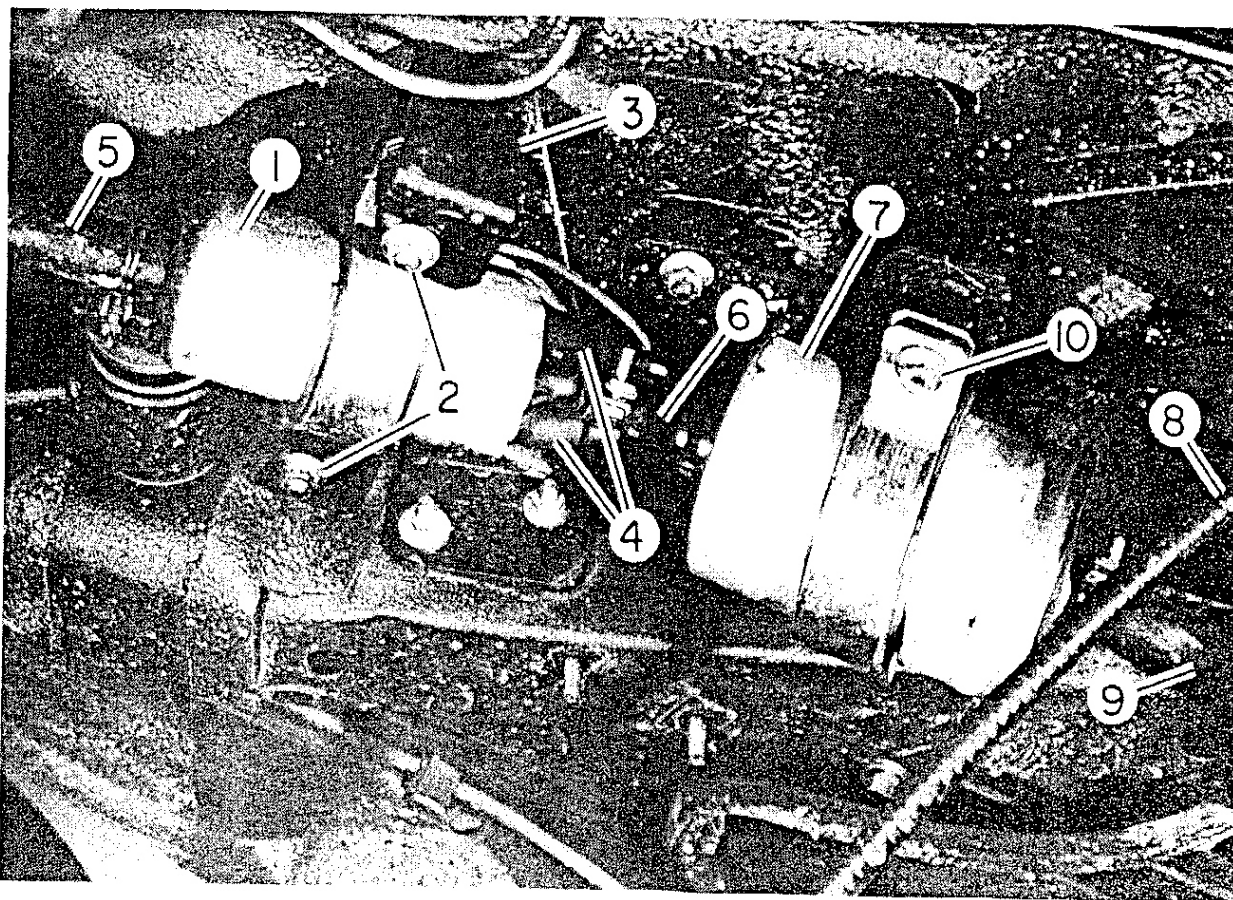
Loosen two nuts (2) holding shield and pump to body mount (3), remove shield.

Disconnect two electrical connectors (4) from pump.

Loosen clamps on fuel inlet (5) and outlet (6) lines and pull lines from pump. Remove pump from outlet.

Installation is reverse of removal.

1. Fuel pump 2. Nut 3. Mount 4. Electrical connector 5. Fuel pump inlet line 6. Fuel line, pump to filter 7. Fuel filter 8. Emergency brake cable 9. Filter outlet line 10. Nut



FUEL FILTER (1980 and on, Fuel Injected)

REMOVAL AND INSTALLATION

The fuel filter (7) is located underneath vehicle on left side, just forward of rear axle.

Before disconnecting fuel lines, system pressure must first be released (see procedure under FUEL PUMP).

Remove two bracket nuts holding emergency brake cable (8) to body. Lower cable out of way, as shown.

Loosen clamps on inlet (6) and outlet (9) lines and pull lines from filter.

Remove two nuts (10) holding shield and filter to body mount. Remove shield and filter.

Installation is reverse of removal.

NOTE: Be certain that arrow on filter points toward front of vehicle.

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AIR CLEANER

REMOVAL AND INSTALLATION (Without Fuel Injection)

Remove three nuts (2) holding cover (1) on air cleaner assembly (3). Remove filter element.

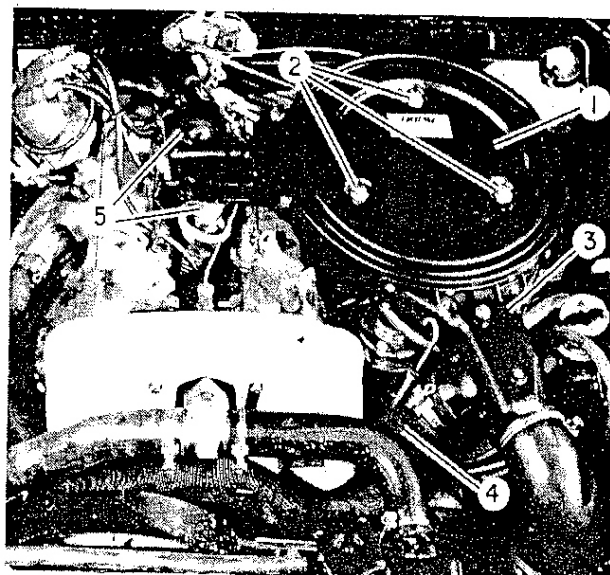
On engines with air induction (shown), remove reed valve hoses (5) from air cleaner. On engines with air pump, remove air injection hose from air cleaner.

If equipped with hot air hose (4), loosen clamp and remove hose from snorkel.

Remove four nuts holding air cleaner to carburetor. Lift air cleaner, then disconnect two hoses from bottom. Remove air cleaner.

Install in reverse order. Make sure metal bushings are installed in rubber spacer.

1. Cover 2. Nut 3. Air cleaner assembly 4. Hot air hose
5. Reed valve hose



AIR CLEANER

REMOVAL AND INSTALLATION (With Fuel Injection)

NOTE: The air filter element should be changed every 30,000 miles. If vehicle is frequently driven in heavy traffic or sandy or dusty areas, it is recommended to replace filter every 15,000 miles.

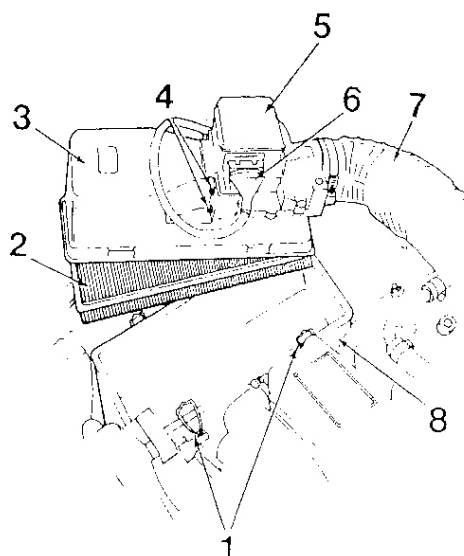
Using a screwdriver, release the four catches (1).

Lift the cover (3) off and remove the filter (2).

Install new filter and replace cover.

Secure catches by pressing on curved section.

1. Catch 2. Filter 3. Cover 4. Bolts 5. Air flow sensor
6. Connector 7. Air hose 8. Housing



CARBURETOR

REMOVAL AND INSTALLATION

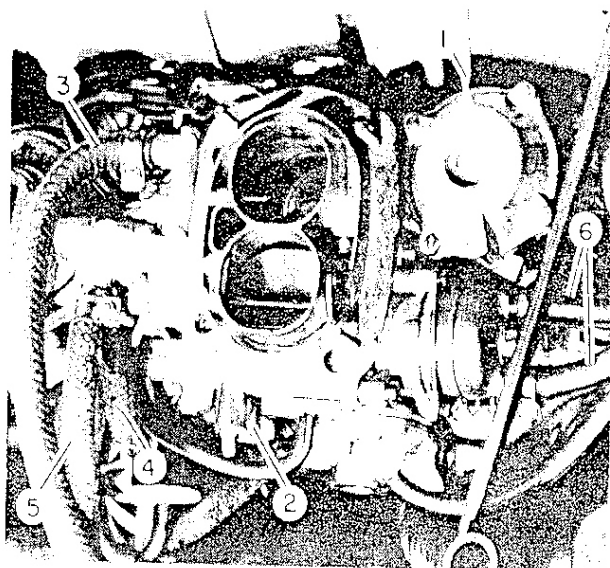
Remove air cleaner.

Remove spring clip and disconnect accelerator rod (1). Disconnect wire from idle stop solenoid (2). Disconnect vacuum lines from carburetor. Disconnect float bowl vapor line (3). Disconnect fuel inlet (4) and return (5) lines. Disconnect hot water lines (6) to automatic choke.

Remove four nuts at base of carburetor and remove carburetor.

NOTE: As an aid to connecting vacuum lines, there are color coded plastic clips at the base of five vacuum connectors on carburetor. These colors match colors on lines that are attached to connectors.

1. Accelerator rod 2. Idle stop solenoid 3. Vapor line 4. Fuel inlet line
5. Fuel return line 6. Hot water lines



AIR CLEANER

REMOVAL AND INSTALLATION (Without Fuel Injection)

Remove three nuts (2) holding cover (1) on air cleaner assembly (3). Remove filter element.

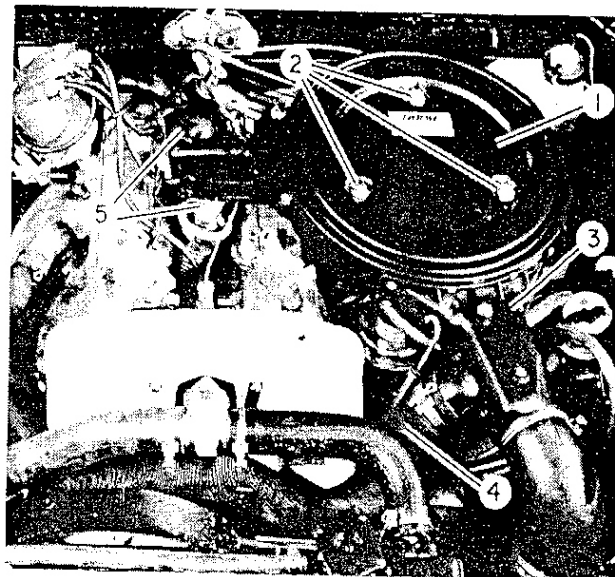
On engines with air induction (shown), remove reed valve hoses (5) from air cleaner. On engines with air pump, remove air injection hose from air cleaner.

If equipped with hot air hose (4), loosen clamp and remove hose from snorkel.

Remove four nuts holding air cleaner to carburetor. Lift air cleaner, then disconnect two hoses from bottom. Remove air cleaner.

Install in reverse order. Make sure metal bushings are installed in rubber spacer.

1. Cover 2. Nut 3. Air cleaner assembly 4. Hot air hose
5. Reed valve hose



AIR CLEANER

REMOVAL AND INSTALLATION (With Fuel Injection)

NOTE: The air filter element should be changed every 30,000 miles. If vehicle is frequently driven in heavy traffic or sandy or dusty areas, it is recommended to replace filter every 15,000 miles.

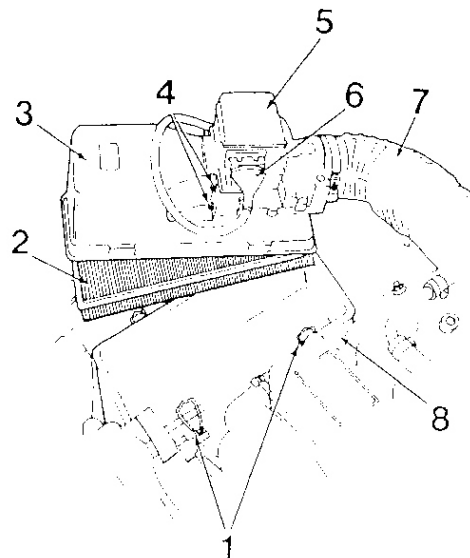
Using a screwdriver, release the four catches (1).

Lift the cover (3) off and remove the filter (2).

Install new filter and replace cover.

Secure catches by pressing on curved section.

1. Catch 2. Filter 3. Cover 4. Bolts 5. Air flow sensor
6. Connector 7. Air hose 8. Housing



CARBURETOR

REMOVAL AND INSTALLATION

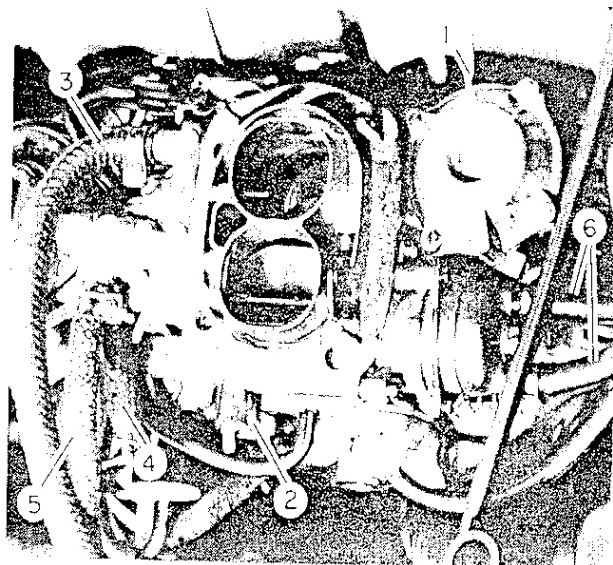
Remove air cleaner.

Remove spring clip and disconnect accelerator rod (1). Disconnect wire from idle stop solenoid (2). Disconnect vacuum lines from carburetor. Disconnect float bowl vapor line (3). Disconnect fuel inlet (4) and return (5) lines. Disconnect hot water lines (6) to automatic choke.

Remove four nuts at base of carburetor and remove carburetor.

NOTE: As an aid to connecting vacuum lines, there are color coded plastic clips at the base of five vacuum connectors on carburetor. These colors match colors on lines that are attached to connectors.

1. Accelerator rod 2. Idle stop solenoid 3. Vapor line 4. Fuel inlet line 5. Fuel return line 6. Hot water lines



ADJUSTMENT

Float Level Adjustment

Remove six screws holding float bowl cover to carburetor. Remove cover, being careful not to damage gasket.

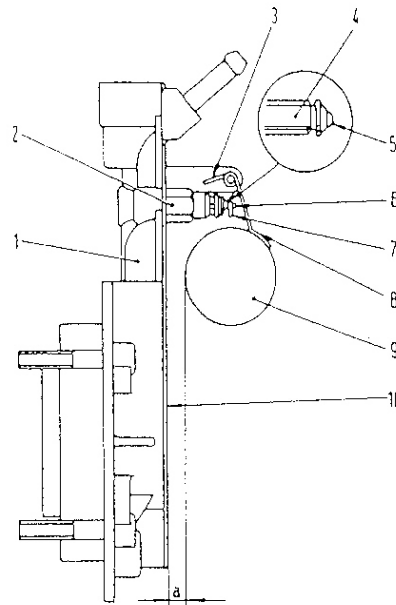
Check that needle valve (2) is screwed down in housing. Check that float (9) is free of dents or punctures.

Check that float can move freely on hinges.

Check distance (a) between float and cover face gasket with float in vertical position.

$a = 0.236$ to 0.275 in. (6 to 7 mm)

1. Carburetor cover 2. Needle valve 3. Lug 4. Valve needle
5. Movable ball 6. Return hook 7. Tang 8. Float arm 9. Float
10. Gasket



Idle and CO Adjustment

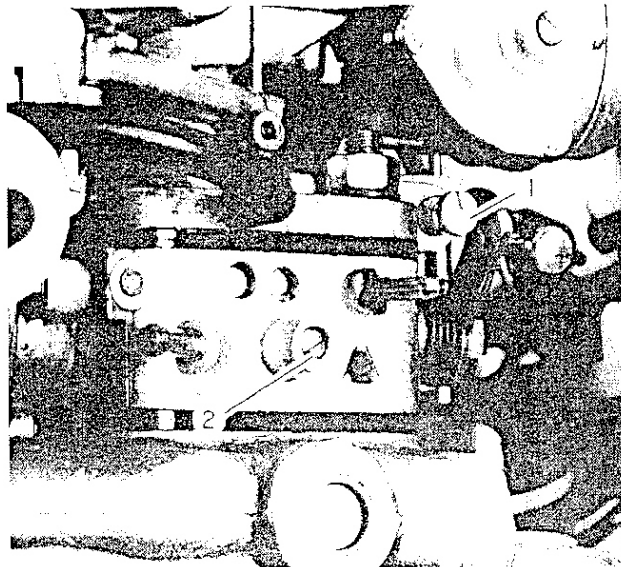
On engines with air induction, remove air cleaner cover and block inlet to reed valves. Reinstall cover.

On engines with air pump, pinch off air injection hose between check valve and tee fitting.

In all engines, connect tachometer. Apply handbrake. Start engine and allow it to warm up. Insert CO tester probe in tailpipe.

Check normal idle and CO. On cars with manual transmission, normal idle speed should be 800 to 900 rpm. On cars with automatic transmission, normal idle speed should be 700 to 800 rpm in drive. Check information tag in engine compartment for correct CO setting.

1. Idle speed screw 2. Idle mixture screw



High Idle Speed (1975 to 1978 only)

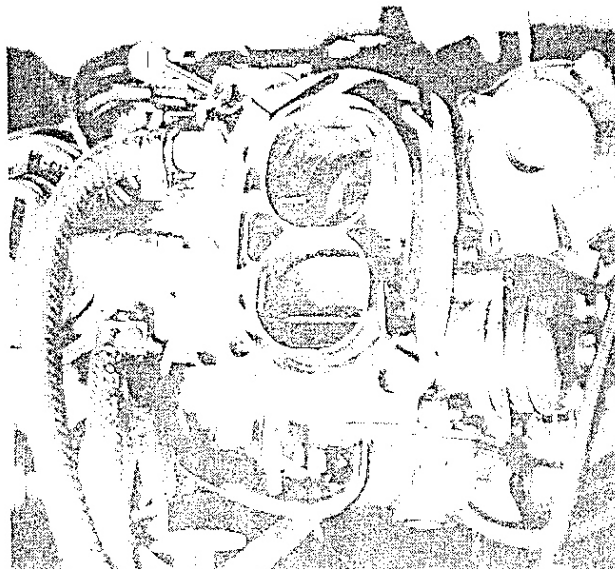
Let engine idle. Place transmission in NEUTRAL.

Move throttle linkage to obtain 2500 rpm. Hold linkage and push high idle button, located on left fender well, down. Hold button down and release carburetor linkage. Allow engine to decelerate to high idle. Check that high idle is 1550 to 1650 rpm (manual trans.) or 1250 to 1350 rpm (auto. trans.).

If high idle is not correct, adjust screw (1). Turn screw in to decrease or out to increase rpm.

While button is kept depressed, accelerate engine several times to check whether fast idle rpm is correct. If not, readjust.

1. High idle speed screw



AUTOMATIC CHOKE

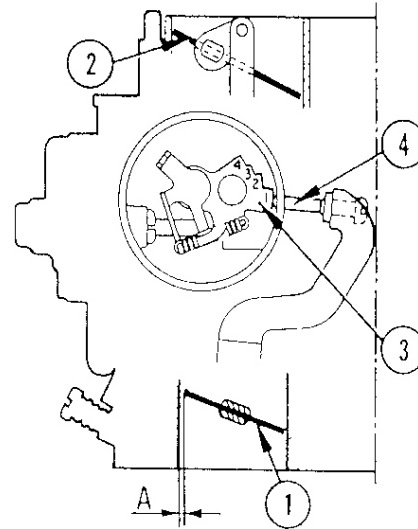
CHECKS AND ADJUSTMENTS

Remove carburetor from car. Remove 3 screws holding automatic choke cover. Remove cover and gasket.

Choke Fast Idle

Set fast idle screw (4) on first (highest) step of cam (3). Check that primary throttle opening (dimension A) is 1.05 to 1.15 mm (0.042 to 0.046 in.). If dimension A is not correct, adjust screw (4).

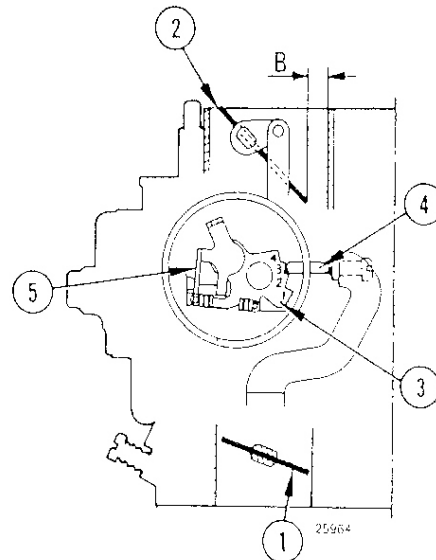
1. Primary throttle plate 2. Choke plate 3. Fast idle cam
4. Fast idle adjustment screw



Fast Idle Cam

Set fast idle screw (4) on third step of cam (3). Check that choke plate opening (dimension B) is 6.25 to 6.74 mm (0.246 to 0.266 in.). Use 1/4 inch and 17/64 inch drill bits to check dimension. If dimension B is not correct carefully bend arm (5).

1. Primary throttle plate 2. Choke plate 3. Fast idle cam
4. Fast idle screw 5. Choke lever arm



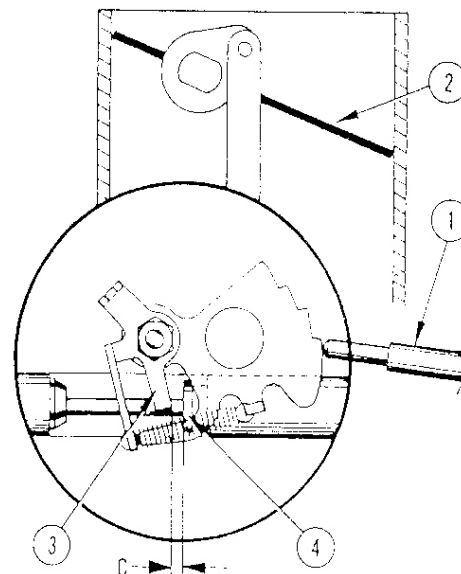
Choke Unloader

Pull fast idle linkage (1) back. Close choke plate (2). Release linkage (1).

Measure gap (c) between lever (3) and shoulder of bushing (4). A spark plug gap gauge of the bent wire type can be used.

Gap should be 0.3 to 1.0 mm (0.012 to 0.039 in.). If gap is not correct, carefully bend tang (3).

1. Fast idle linkage 2. Choke plate 3. Tang 4. Spring bushing



Choke Plate Minimum Opening

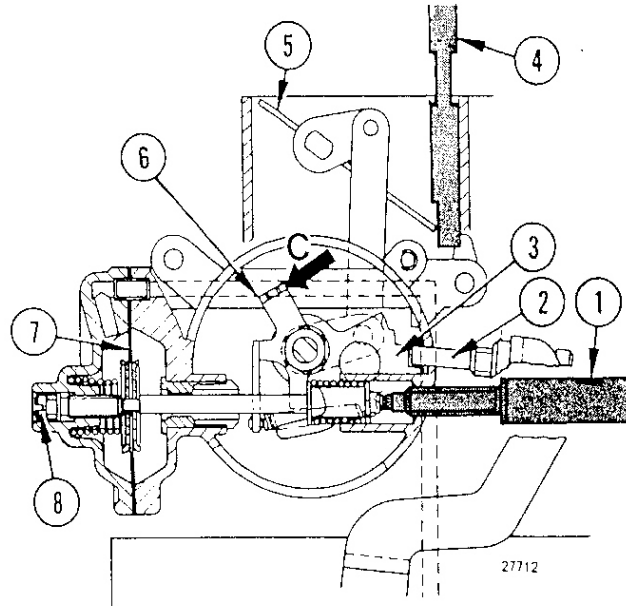
Set fast idle screw (2) on second step of cam (3). Separate tool 4900 into its 3 parts by unscrewing. Thread tool (1) into end of vacuum piston bore as far as it will go without forcing.

Push lever (6) in direction of arrow (C) and hold it. Measure choke plate opening using tool gauge (4). Opening should be 4.7 mm (0.177 in.).

NOTE: Notch on tool (4) is 4.5 mm. If opening is too small, back off stop screw (8) and turn tool half (1) further in until 4.5 mm is obtained. Turn stop screw in until it contacts piston.

If opening is too large, back off tool (1) until 4.5 mm is obtained. Turn stop screw (8) in until it contacts piston.

Leave tool (1) in place for next check.



1. Tool (threaded end) 2. Fast idle screw 3. Fast idle cam
4. Tool gauge 4.5 mm (notched end) 5. Choke plate
6. Choke plate opening lever 7. Diaphragm 8. Stop screw

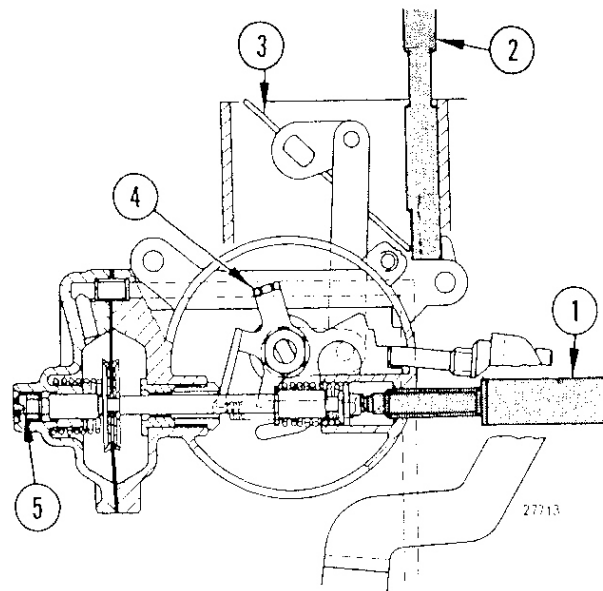
Choke Plate Maximum Opening

After having checked minimum opening setting and with tool (1) in place, release lever (4). Check that opening is 6.7 mm (0.264 in.).

Use tool gauge (2) to check opening.

NOTE: Notch on tool is 6.7 mm.

If opening is not within specifications, replace vacuum diaphragm assembly.



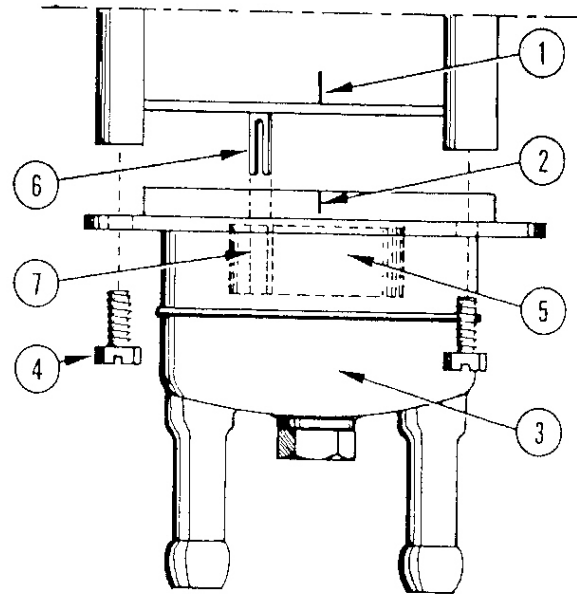
1. Tool (threaded end) 2. Tool gauge 6.7 mm 3. Choke plate
4. Choke plate opening lever 5. Diaphragm travel stop screw

Choke Cover Indexing

Place choke cover (3) on housing so that lug (7) on spring (5) inside cover is in fork (6) of choke opening lever. Rotate cover to align index marks (2) on cover with marks (1) on housing. Secure cover (3) with 3 screws (4).

With index marks aligned and carburetor at room temperature of 77°F, check that choke plate closes fully and remains closed when primary throttle is opened.

1. Housing mark 2. Cover mark 3. Choke cover 4. Screw
5. Thermostatic spring 6. Choke opening lever fork 7. Spring lug



SECONDARY THROTTLE PLATE GAP

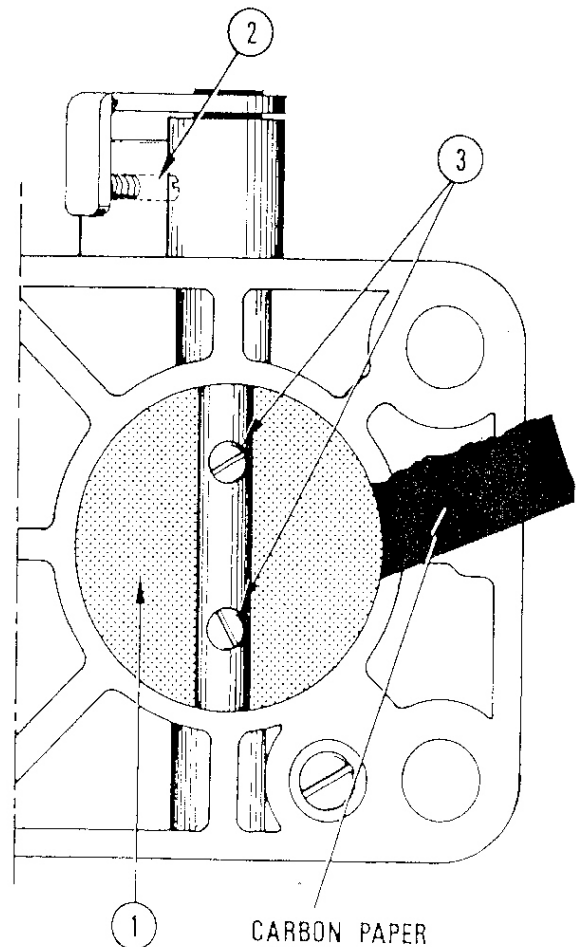
CHECK AND ADJUSTMENT

With throttle linkage released, secondary throttle plate (1) should have an opening of 0.04 to 0.05 mm (0.0015 to 0.0019 in.). This dimension is about the thickness of a piece of type-writer carbon paper.

To check opening, open secondary throttle plate (1). Place a strip of carbon paper inside barrel. Release secondary throttle plate. Turn screw (2) as necessary until a resistance is felt when pulling strip out of barrel without tearing it.

Using a light from behind throttle plate (1), check that gap is even around plate. If not, loosen 2 screws (3) holding plate to shaft. Center plate and tighten screws. Check gap again.

1. Throttle plate 2. Secondary throttle plate screw
3. Throttle plate mounting screws



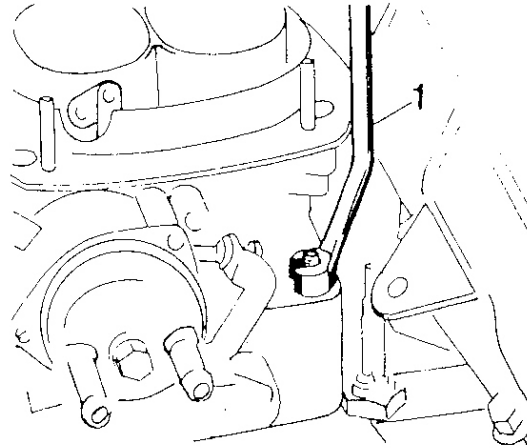
CARBURETOR

ENGINE COLD CHECKS

If carburetor was removed, install it. Do not install air cleaner cover. If carburetor was not removed, remove air cleaner cover.

Make sure the four 13 mm nuts holding carburetor are tight. Use wrench A.50146 (1) to tighten two inboard nuts.

1. Wrench A.50146



Idle Cut-Off Solenoid Check

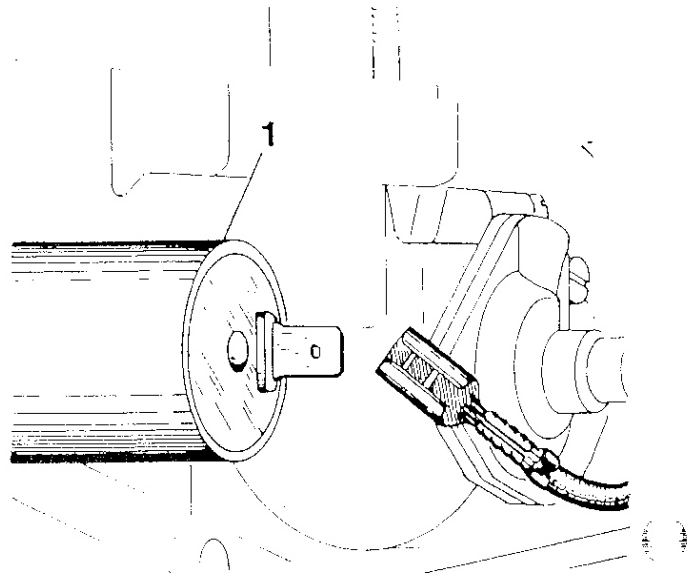
Disconnect wire from solenoid (1). Turn ignition switch to ON without cranking engine.

Listen closely while reconnecting wire to solenoid. A click from solenoid should be heard while connecting wire.

Repeat as necessary to confirm.

If click is not heard, check for voltage at solenoid connection. If no voltage, troubleshoot electrical system. If voltage is present, remove solenoid. Clean or replace solenoid as necessary.

1. Idle cut-off solenoid

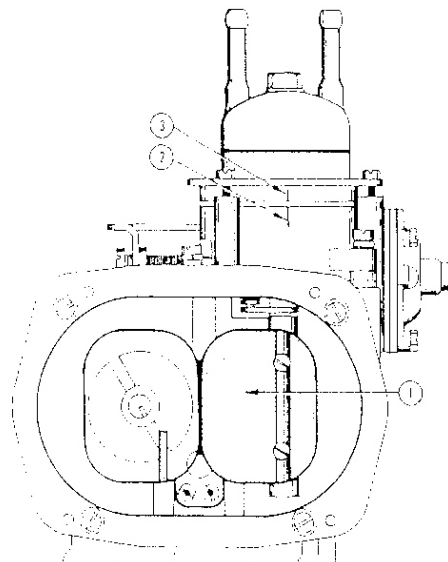


Closed Position of Choke Plate

Pull carburetor linkage to open throttles. Release linkage. With engine cold and temperature of 77°F or less, check that choke plate (1) is fully closed.

If plate is not fully closed, check choke plate for binding. Check that plate is centered. If plate is not centered and not binding, check alignment of marks (2 and 3) on choke housing. If marks are aligned, replace thermostatic spring in choke housing.

1. Choke plate 2. Housing alignment mark 3. Cover alignment mark



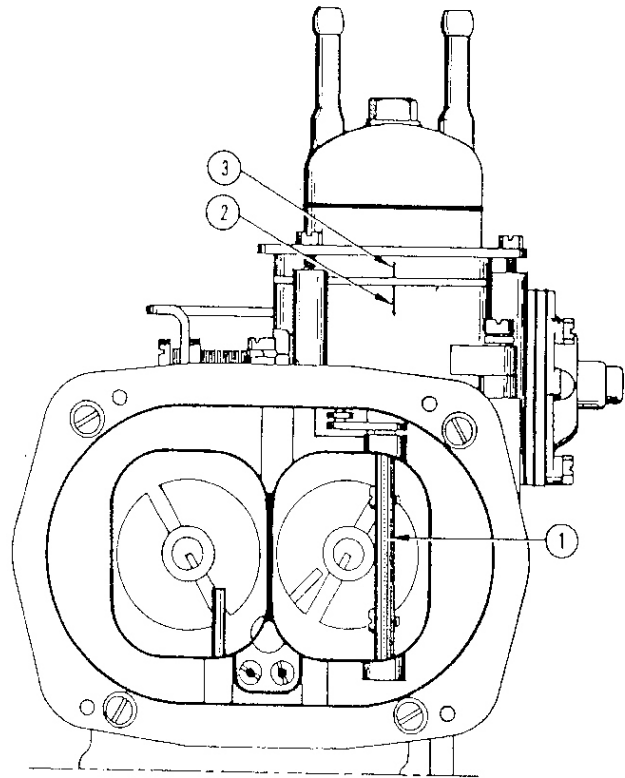
Open Position of Choke Plate

Run engine until it reaches normal operating temperature (radiator fan starts running).

Check that choke plate (1) is fully open.

If plate is not fully open check linkage for binding. Check that plate is centered in barrel. If plate is centered and not binding, check alignment of marks (2 and 3) on choke housing. If marks are aligned, replace the thermostatic spring in choke housing.

1. Choke plate 2. Housing alignment mark 3. Cover alignment mark



Air Cleaner Cover Indexing (1975 to 1978)

If air cleaner is not installed, install it. Before installing cover, align letter on cover with arrow on air cleaner duct as follows:

I = outside temperatures 60°F (15°C) or less

E = outside temperatures above 60°F (15°C)

CATALYTIC CONVERTER TACHIMETRIC SWITCH (1975 and 1976)

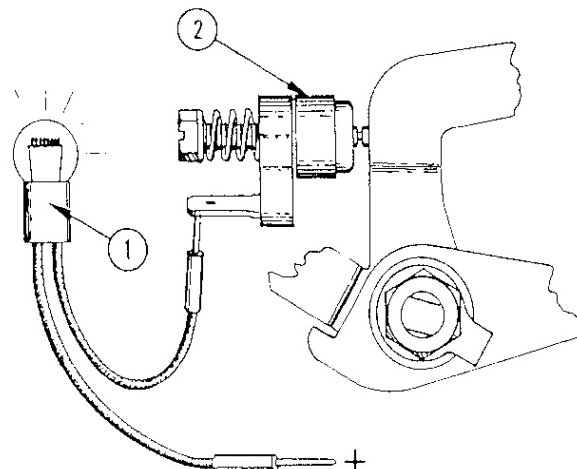
CHECKS

Inhibitor Switch Check

Run engine until normal operating temperature is reached. Shut engine off. Turn ignition ON.

Disconnect wire from inhibitor switch (2) and ground wire for later checks. Connect lead of test lamp (1) to terminal of inhibitor switch. Connect other lead of test lamp to power. Lamp should be on.

Open carburetor throttle linkage slowly. Lamp should remain on for a while and then go out. If test lamp did not indicate proper operation, troubleshoot electrical system. (Refer to schematic in exhaust emissions portion of this section.)



1. Test lamp 2. Inhibitor switch

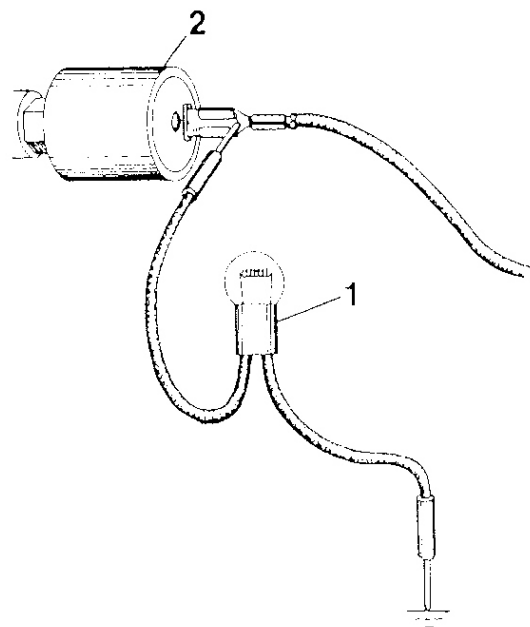
Tachimetric Switch Calibration Check

Connect tachometer. Connect test lamp between idle cutoff solenoid and ground. Run engine and let it idle.

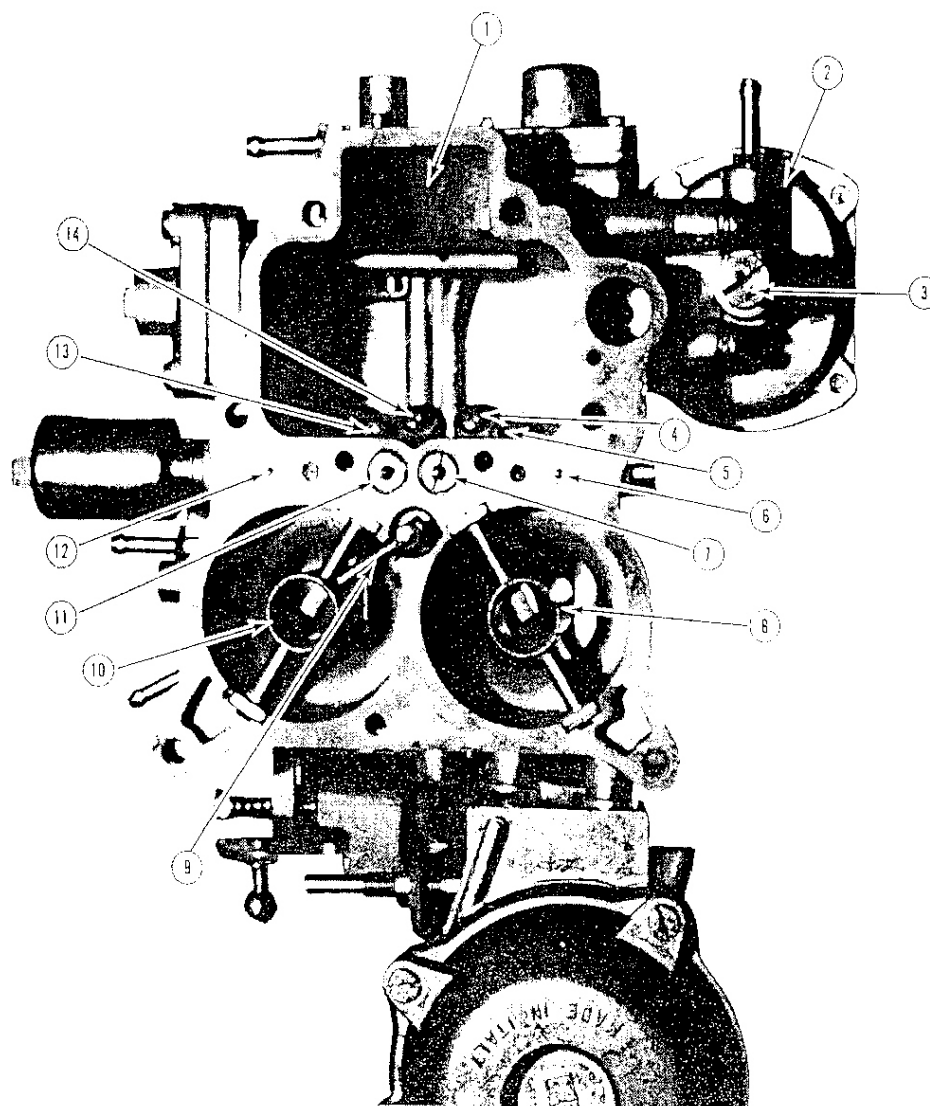
Check that test lamp is lit. Slowly increase engine speed to 2800 rpm. Check that test lamp goes out between 2600 and 2700 rpm. Slowly allow engine speed to decrease to idle. Check that test lamp comes on at 2600 rpm or above.

If test lamp did not indicate proper operation, troubleshoot tachimetric system. (Refer to schematic in exhaust emissions portion of this section.)

Shut off engine. Disconnect test equipment. Connect wire to inhibitor switch.

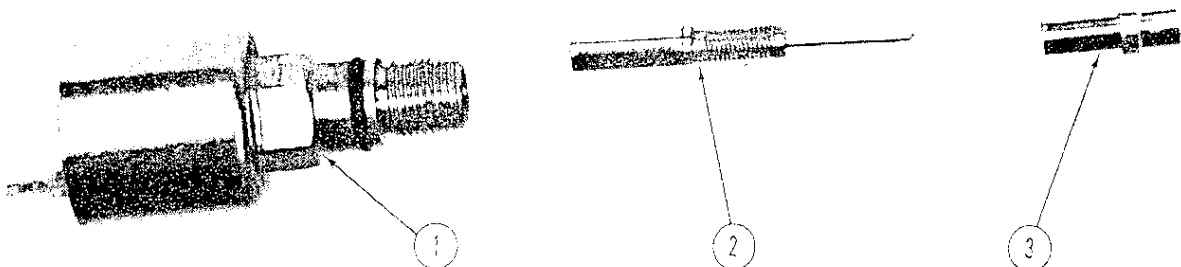


1. Test lamp 2. Idle cutoff solenoid



- | | |
|--|--|
| 1. Float bowl | 9. Acceleration pump nozzle |
| 2. Fast idle diaphragm (not functional on 28/32 ADHA) | 10. Primary venturi |
| 3. Fast idle adjustment screw (not functional on 28/32 ADHA) | 11. Air correction jet-primary |
| 4. Main jet-secondary | 12. High speed air passage |
| 5. High speed gas inlet | 13. High speed gas inlet |
| 6. High speed air passage | 14. Main jet-primary |
| 7. Air correction jet-secondary | 15. Idle shutoff control |
| 8. Secondary venturi | 16. Secondary throttle control (28/32 ADHA only) |

CARBURETOR WITH TOP COVER REMOVED



1. Idle shutoff solenoid 2. Shutoff plunger 3. Idle jet

IDLE SHUTOFF CONTROL

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