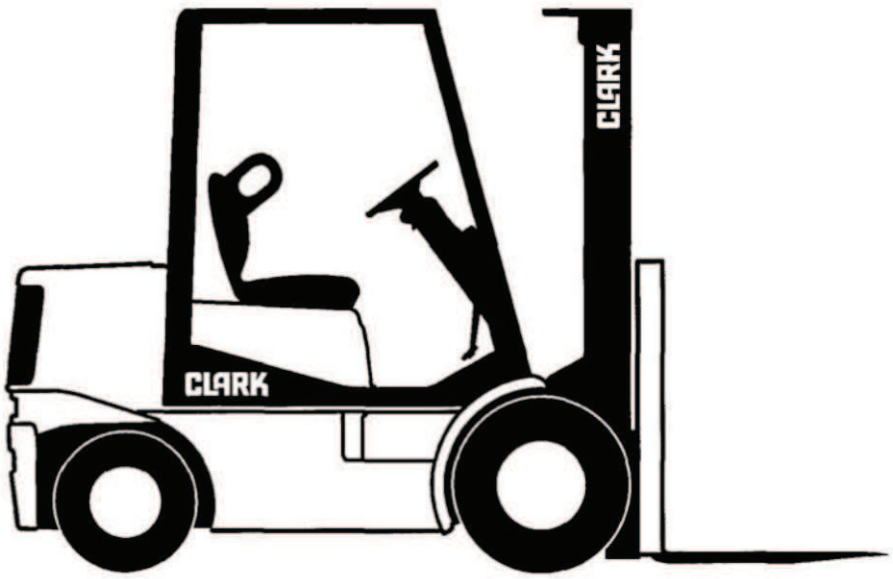
OH-339
C500
OVERHAUL MANUAL



ISO 9001 CERTIFIED CLARK

CLARK Technical Publications
Lexington, KY
40508

TROUBLE SHOOTING

	IGNITION
	Improperly adjusted or defective breaker points.
	Fouled or improperly adjusted spark plugs.
	Incorrect ignition timing.
	Spark plug misfiring.
	ENGINE
	Loose engine mounting bolts or worn engine support insulator.
	Cylinder head bolts not properly torqued.
	Damaged cylinder head gasket.
	Valve adjustment or valve clearance too tight.
	Worn camshaft lobes.
	Perform a manifold vacuum or compression test to determine which mechanical component is at fault.
POOR ACCELERATION	IGNITION SYSTEM
	Incorrect ignition timing.
	Fouled or improperly adjusted spark plugs.
	Improperly adjusted or defective breaker points.
	Distributor not advancing properly.
	Defective ignition wires.
	FUEL SYSTEM
	Float setting incorrect.
	Throttle linkage not properly adjusted.
	Distributor vacuum passages in the carburetor blocked.
	Restricted fuel filter.
	Defective fuel pump.

Water pump retainer removal (Fig. 10569).

1. Captive retainer shown by arrow can be loosened sufficiently to remove water pump but cannot be completely removed until pulley is removed from water pump. If pulley is removed from water pump, always install the retainer before reinstalling pulley.

2. Loosen and remove all retainers securing pump to cylinder block.

3. Check casting for cracks and breakage.

4. Remove thermostat housing retainers, housing gasket and thermostat. Check thermostat for proper operation (should open at [79°-82°C] 175-180°F and be fully open at [91°C] 195°F).

   Note: Engines in Lot 5085 and above have the thermostat mounted on the cylinder head.

5. Engines in Lots before Lot 5085 only- water outlet assembly need not be disassembled unless vaporizer hole cover gasket requires replacement.

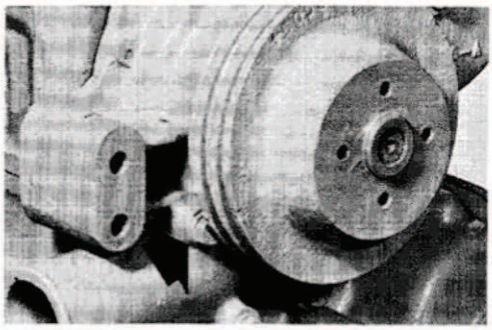


Fig. 10569

Water Pump removal (Fig. 9815).

1. Carefully tap on pump (not the pulley), using a soft faced hammer until pump can be removed.

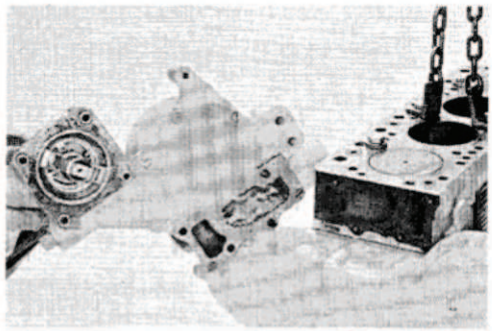


Fig. 9815

CYLINDER HEAD REASSEMBLY:

Install valves (Fig. 9672).

1. Using valve spring compressor, compress the valve springs, replace spring locks and release compressor. This picture shows an early design engine with rectangular hole for the water outlet. Later design engines have a round hole for the water outlet.

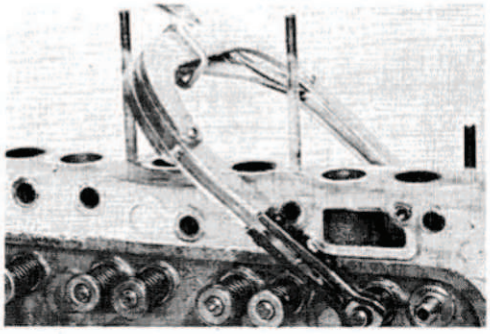


Fig. 9672

Cylinder head and manifold installation (Fig. 20934 and 24644).

1. Install new head gasket into position.

2. Install the cylinder head and head retainers. Torque retainers to specifications and in the correct sequence as shown in Fig. 20934 for early design engines, and Fig. 24644 for late design engines.

I M P O R T A N T

THE NUMBER 9 HEAD RETAINER IN FIG. 20934 IS A SPECIAL RETAINER DRILLED FOR PASSAGE OF OIL, BUT REQUIRES THE SAME TORQUE AS THE OTHER RETAINERS (SEE SPECIFICATIONS)

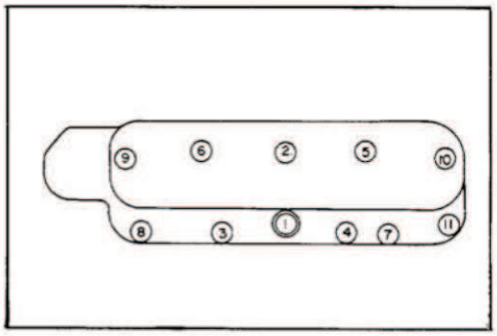


Fig. 20934

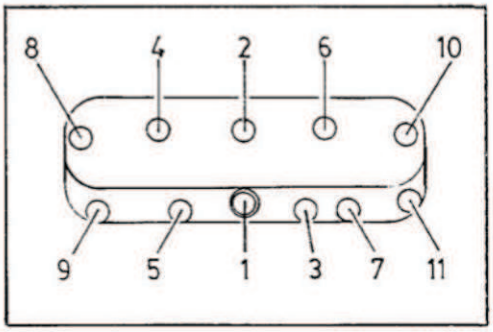


Fig. 24644

Push rod installation (Fig. 9670).

1. Make sure push rods are positioned properly in the lifter sockets.

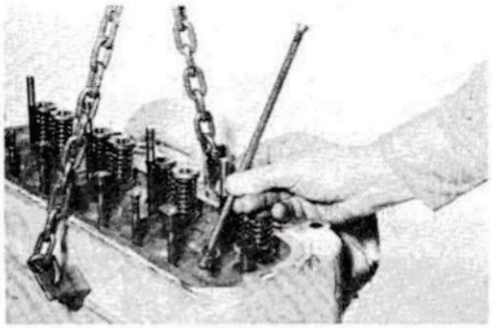


Fig. 9670

DISASSEMBLY (ENGINE FRONT):

Remove the crankshaft pulley retainer (Fig. 10454).

1. Block the flywheel using a piece of soft bar stock and turn pulley retainer out.

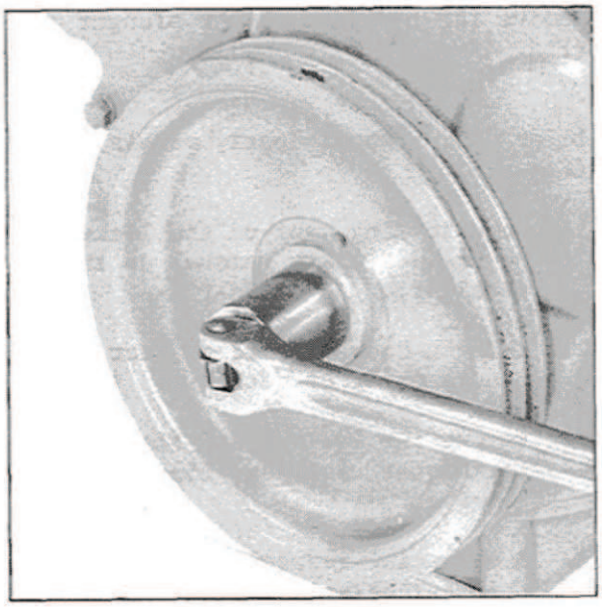


Fig. 10454

Crankshaft pulley removal (Fig. 10455).

1. Using a suitable puller, remove the crankshaft pulley.

2. When using the puller, be careful not to damage the threaded surface of the crankshaft.

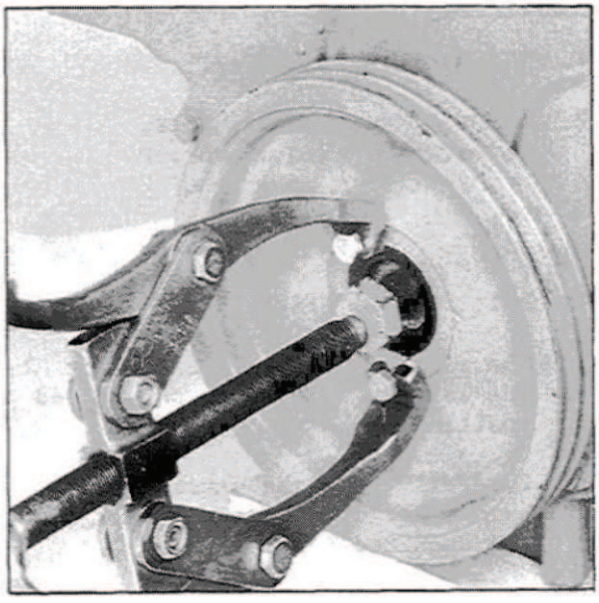


Fig. 10455

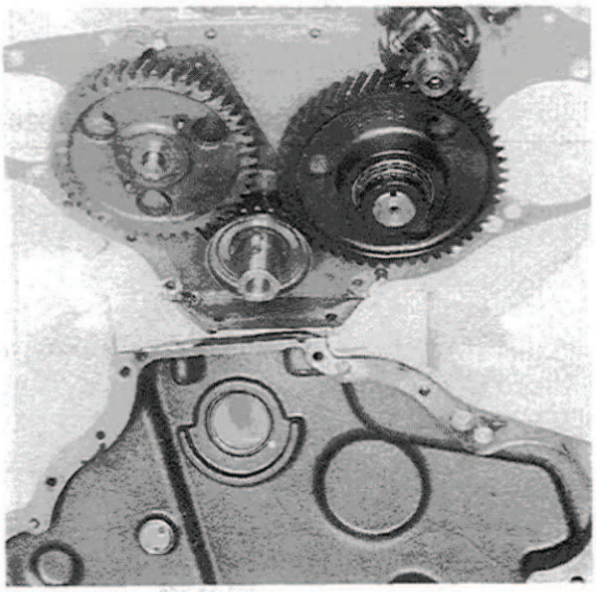
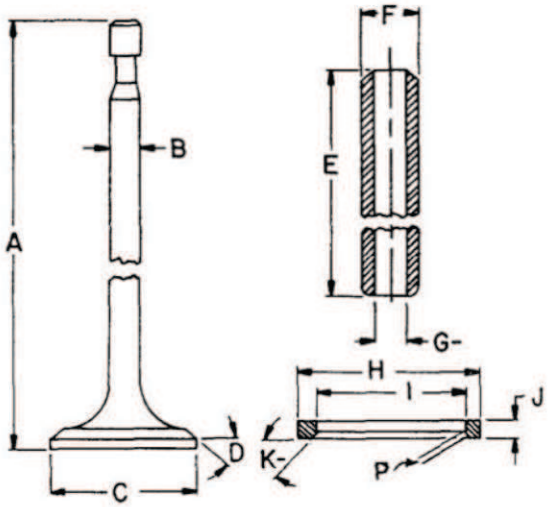


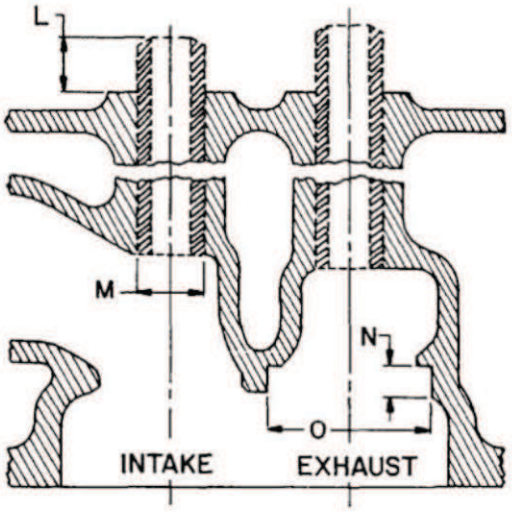
Fig. 20717

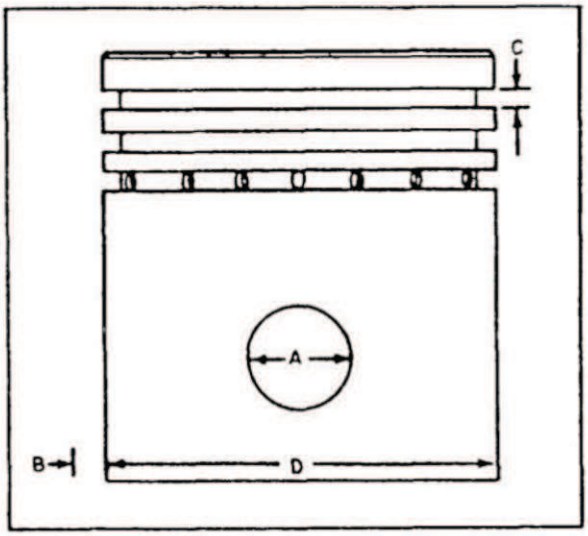
Remove timing gear cover (Fig. 20717).

1. Remove timing gear attaching bolts.

	D155G, D155GA D176G
H. Valve Seat Insert OD	1.502-1.5025" [38.15-38.16 mm]
I. Insert ID	1.245-1.255' [31.62-31.87 mm]
J. Insert Depth	.248-.250" [6.29-6.35 mm]
K. Insert Seat Angle	45°
L. Guide Extends Above Head	15/16" [23.81 mm]
M. Guide Bore in Head	.624-.625" [15.84'15.87 mm]
N. Insert Counter-bore Depth	.260-.263" [6.6-6.68 mm]
O. Insert Counter-bore Dia.	1.499 .500" [38.07-38.1 mm]
Valve Face & Seat Runout	.002" [.0508 mm]
P. Exhaust Valve Seat Width	.080-.090" [2.03-2.28 mm]
P. Intake Valve Seat Width	.056-.076" [1.422-1.930 mm]







PISTON & PIN	D155G	D155GA	D176G
Piston Pin Diameter	1.2494-1.2496" [31.7347-31.7398 mm]	.8741-.8743" [22.202-22.207 mm]	.8741-.8743" [22.202-22.207 mm]
Piston Pin Fit	.0001-.0006" [.0025-.0152 mm]	.0001-.0006" [.0025-.0152 mm]	.0001-.0006" [.0025-.0152 mm]
Piston Skirt Diameter	3.6229-3.6245" [92.0217-92.0623 mm] ("B" size only)	3.6235-3.6245" [92.0369-92.0623 mm]	3.6235-3.6245" [92.0369-92.0623 mm]
A. Piston Pin Hole Bore	1.2497-1.250" [31.742-31.75 mm]	.8744-.8747" [22.209-22.217 mm]	.8744-.8747" [22.209-22.217 mm]
B. Piston Skirt to Sleeve clearance	.0008-.0028" [.0203-.0711 mm]	.001-.003" [.025-.076 mm]	.001-.003" [.025-.076 mm]
C. Groove Width - Top	.096-.097" [2.438-2.464 mm]	.0955-.0965" [2.425-2.451 mm]	.0955-.0965" [2.425-2.451 mm]
2nd	.0955-.0965" [2.425-2.451 mm]	.0955-.0965" [2.425-2.451 mm]	.0955-.0965" [2.425-2.451 mm]
3rd	.188-.189" [4.77-4.80 mm]	.1880-.1895" [4.77-4.81 mm]	.1880-.1895" [4.77-4.81 mm]
Weight Variation	± 5 gram	± 4 gram	± 4 gram
Piston Pin out of Round & Taper Limit	.0001" [.0025 mm]	.0001" [.0025 mm]	.0001" [.0025 mm]

STEP 4A. Fig. 10569. Water pump retainer removal:

A. Remove water pump belts

B. Captive retainer shown by arrow can be loosened sufficiently to remove the water pump but cannot be completely removed until pulley is removed from the water pump. If pulley is removed from water pump, always install the retainer before reinstalling pulley.

C. Loosen and remove all the retainers securing pump to cylinder block.

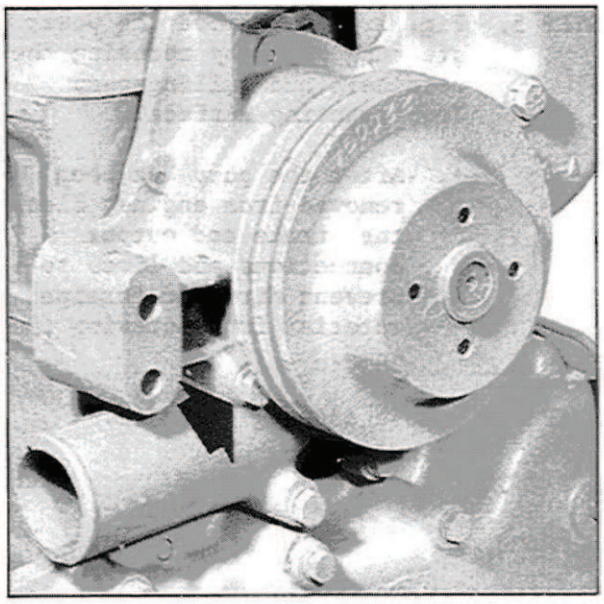


Fig. 10569

STEP 4B. Fig. 9815. Water pump removal:

A. Carefully tap on pump (not the pulley) using a soft faced hammer, until pump can be removed.

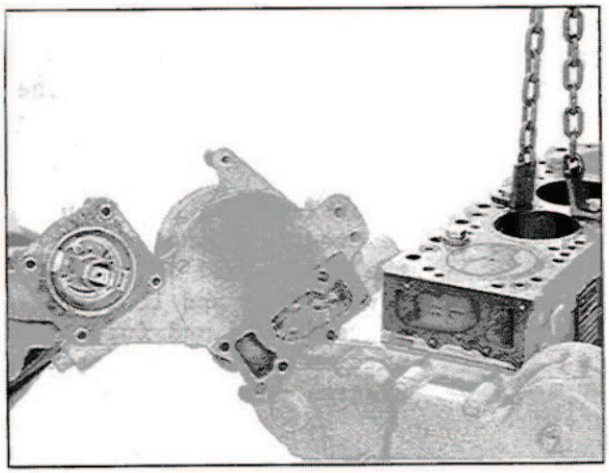


Fig. 9815

STEP 21. Fig. 9677. Grinding the valves.

A. Carefully inspect valves to be ground to insure they do not have excessive runout or excessively deep grooves or pits that cannot be removed by grinding.

B. Be sure refacing wheels are properly dressed.

C. Remove only enough stock to correct runout or to clean up pits and grooves.

D. If the edge of valve head is less than 1/32 inch after refacing, replace the valve as it will run too hot in the engine.

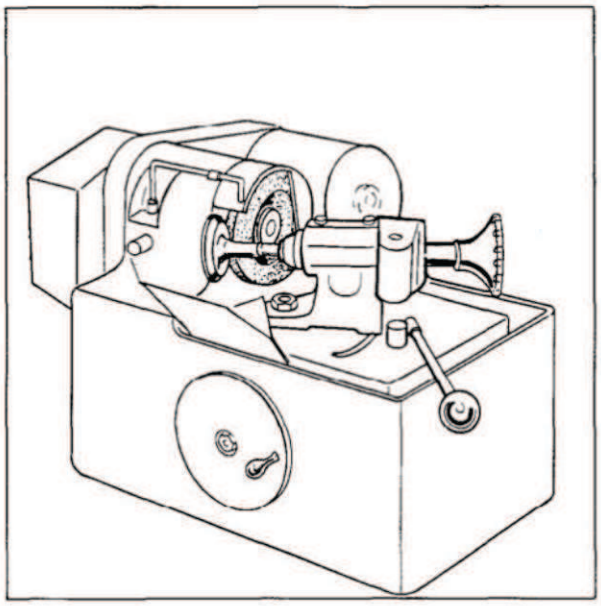


Fig. 9677

STEP 22. Fig. 20933. Refacing the valve seats.

A. Slight pits, grooves and excessive runout can be corrected by grinding the valve seats.

B. Use only proper guide pilots and properly dressed grinding wheels.

C. If valve seats are loose or excessively worn in the head, they must be replaced.

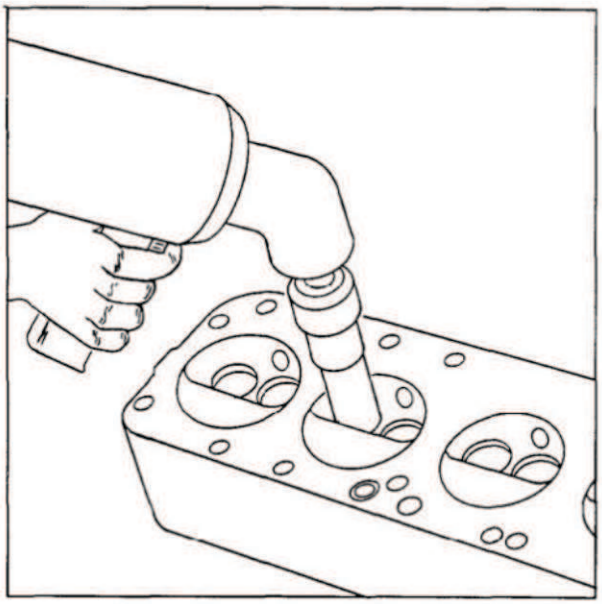


Fig. 20933

STEP 36. Fig. 10421. After the cylinder sleeve has been lifted from its seat, pull sleeve up and out of engine block. Mark sleeves to assure reassembly into same bore.

Fig. 10421

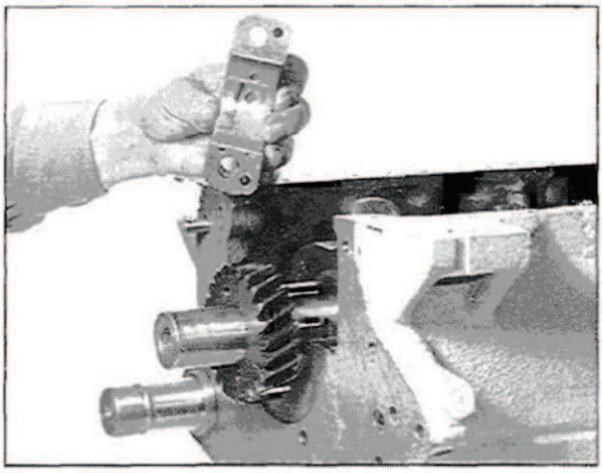


Fig. 9834

Fig. 9835

STEP 37. Fig. 9834. Main bearing and cap removal.

A. As bearing caps are removed, mark for location.

B. Carefully inspect the bearings as removed for indications of failure.

STEP 37A. Removing crankshaft gear.

A. If gear replacement is necessary, a gear puller must be used.

B. Gear installation: Heat gear to [204° C.] 400° F. maximum. Install gear on shaft, making sure key is positioned.

STEP 38. Fig. 9835. Crankshaft removal.

A. Use extreme care when removing crankshaft to prevent damage to machined surfaces.

B. Carefully inspect crankshaft for wear, out of round and rough areas on bearing surfaces.

C. Clean all oil passages and make sure they are free of obstructions and foreign material.

INJECTION PUMP & ENGINE TIMING:
(Pump Removed From Engine)
Figs. 10211 & 10467

I M P O R T A N T

DO NOT START OR ATTEMPT TO START ENGINE UNLESS THE INJECTION PUMP RETAINERS ARE SECURELY TIGHTENED AND ALL FUEL LINES TO AND FROM PUMP ARE CONNECTED.

STEP 1. If the pump is off the vehicle ... and ... if pump throttle is wired in open position, leave it that way until the pump is installed. This prevents the weights in governor from falling into a position that might make shaft entry difficult.

STEP 2. First ... turn the engine over clockwise ... until number 1 cylinder is on the impression stroke and pointer is in line with timing marks on the crankshaft pulley ... if the pulley marks are turned clockwise past pointer ... pulley must be turned 1/4 turn counterclockwise past pointer and pulley marks and ... again turned clockwise into position (3° B.T.D.C.) to remove all gear lash.

STEP 3. Check shaft and shaft opening in pump for any trace of dirt or grit ... grease these parts liberally with light grease. Next ...

STEP 4. ... remove timing cover from side of pump. Using a clear, long blade screwdriver ... insert it into shaft coupling at front end of pump. Turn screwdriver until mark on cam and mark on governor weight retainer are aligned.

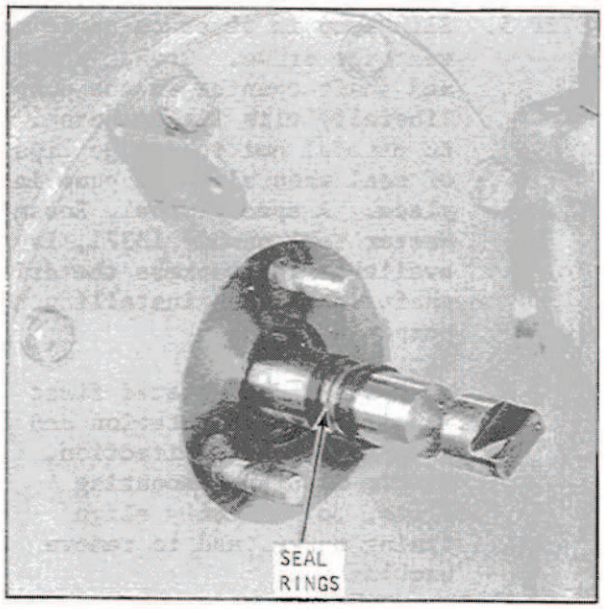


Fig. 10211

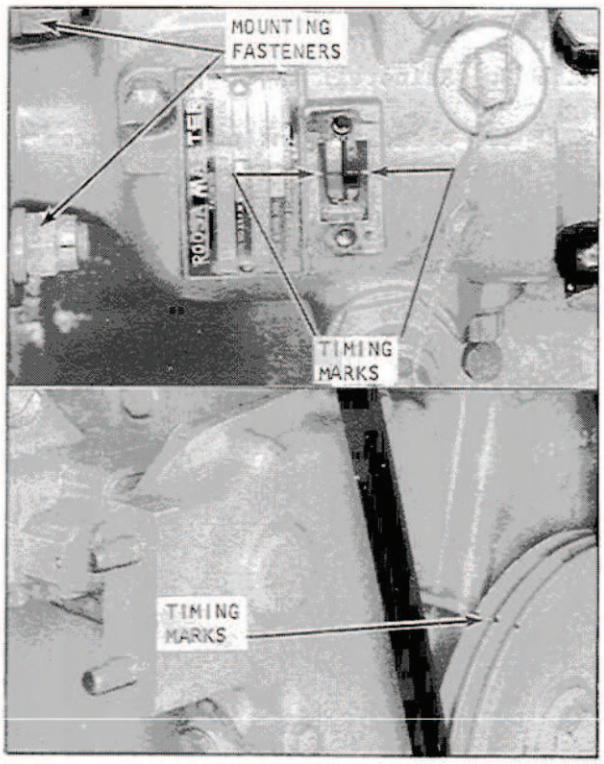
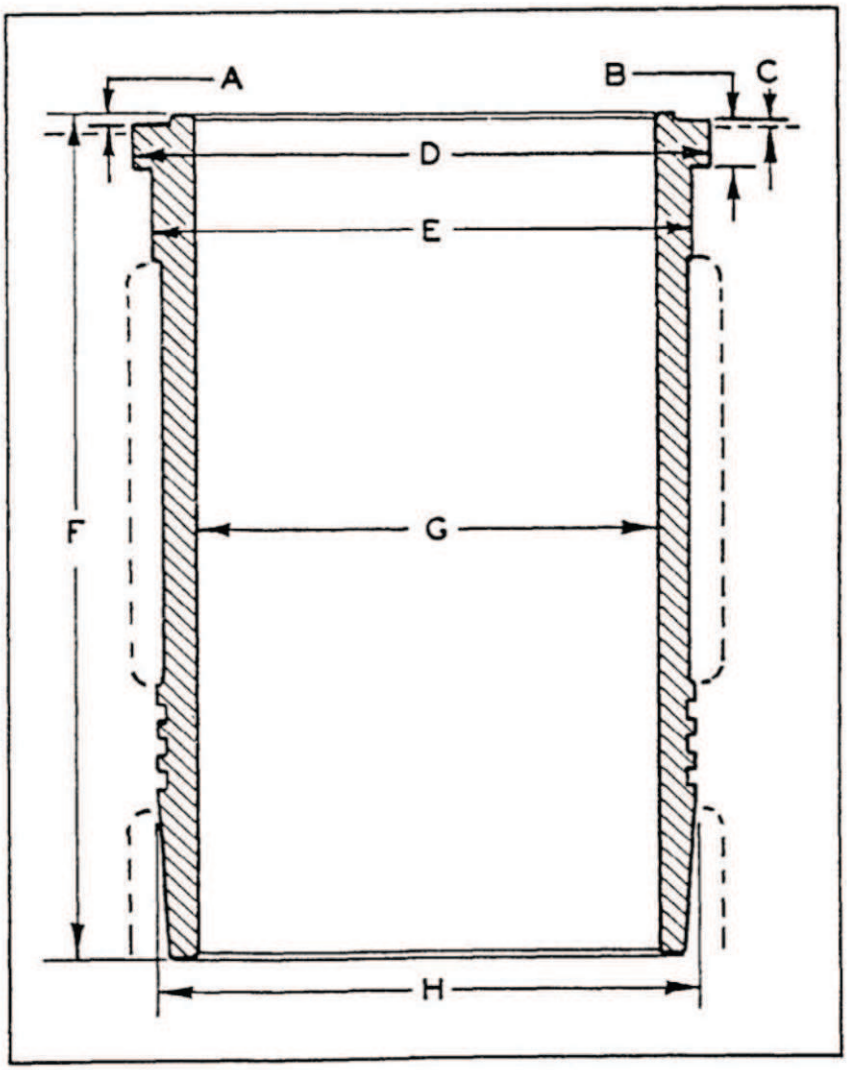


Fig. 10467



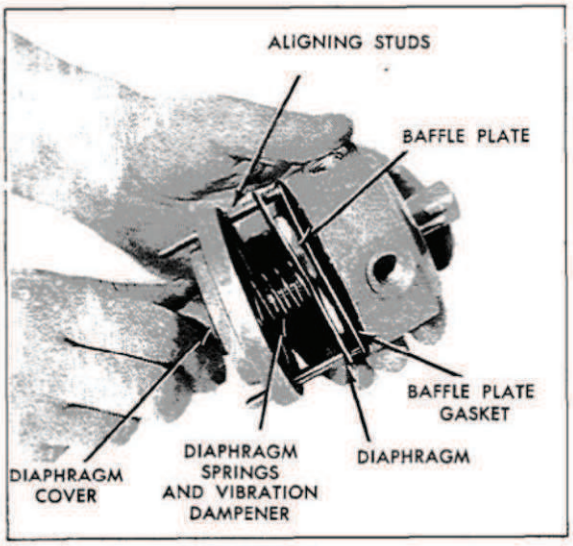


FIG. 7

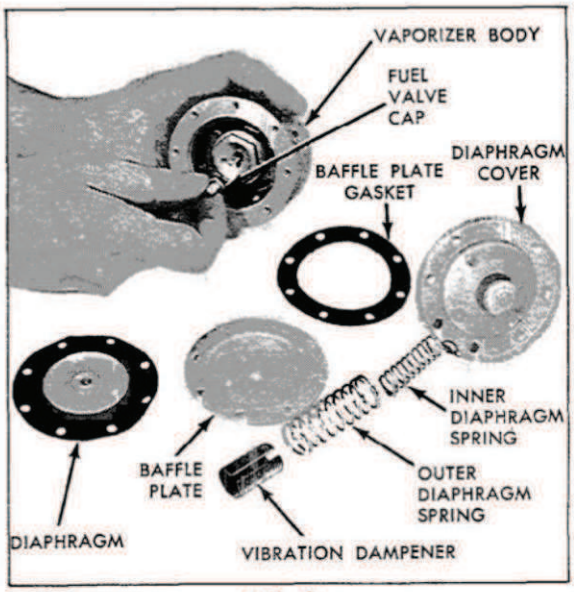


FIG. 8

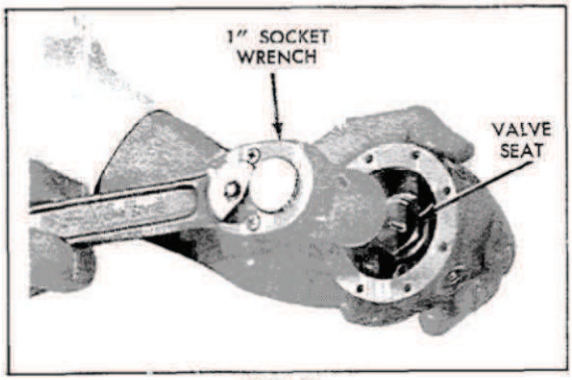


FIG. 9

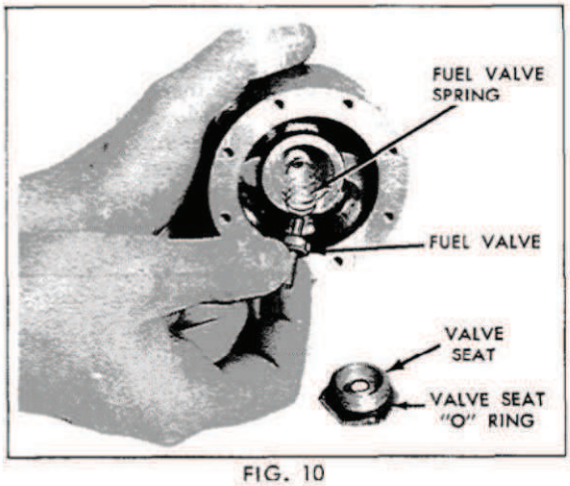


FIG. 10

REASSEMBLY

1. Place fuel valve spring over boss in center of vaporizer body and place fuel valve on spring with shortest stem toward casting. Make sure top of spring is resting on machined shoulder of fuel valve (Fig. 10).

2. Place a new valve seat O-ring on valve seat (Fig. 10) and install valve seat in vaporizer body. Tighten valve seat with a 1" socket wrench. (Fig. 9).

3. Place fuel valve cap on fuel valve stem. (Fig. 8).

4. Install four (4) studs in alternate holes in top of vaporizer body and then install a new baffle plate gasket, baffle plate, recessed side down, and diaphragm, flanged disc up. Use studs to align parts.

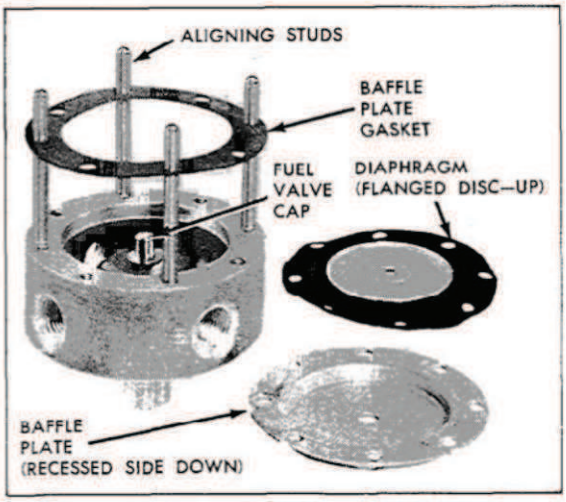


FIG. 11

STEP 2. Inspect valve jet for defects which would affect sealing.

Check for cracks especially at valve body ports and cover flanges.

If damaged, replace valve body or covers.

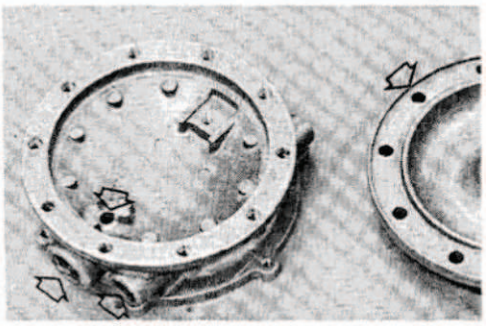


Fig. A1582

STEP 3. Check body and cover sealing surfaces against gasket or diaphragm. Dress burrs and nicks with hard stone where required.

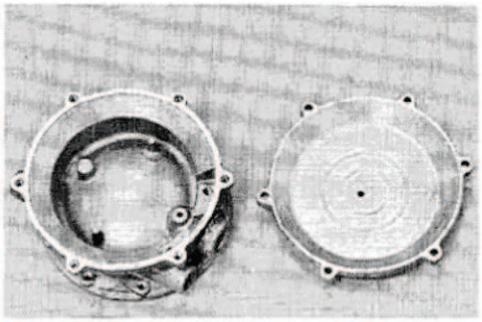


Fig. A1583

STEP 4. Check for damaged threads. Rethread holes with proper size tap, or replace screws.

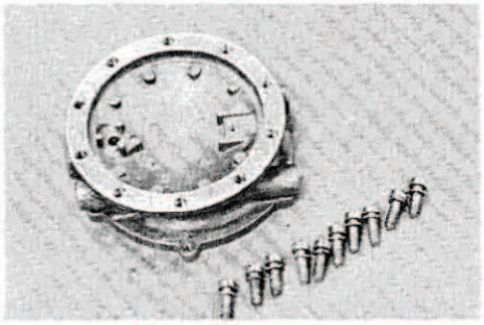


Fig. A1584

REASSEMBLY:

STEP 1. To reassemble valve parts, place new O-ring seal on valve jet as shown. Coat O-ring with silicone grease or equivalent to prevent friction against valve pin.

Use a filter cover screw to press O-ring down into its recess. Rotate screw while pressing down to ease O-ring into position.

Fig. A1568

STEP 2. Fig. A1591 shows location of check valve on underside of secondary cover. Inside diameter of disc varies according to carburetor.

N O T E

Check valve is not used on all models. Refer to Table I.

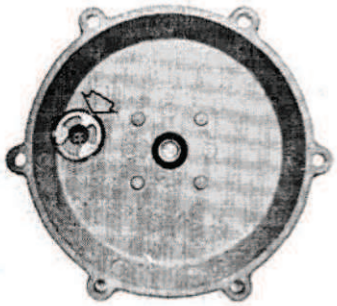


Fig. A1591

STEP 3. Disengage diaphragm link from the secondary regulator lever by moving it toward the LPG inlet port.

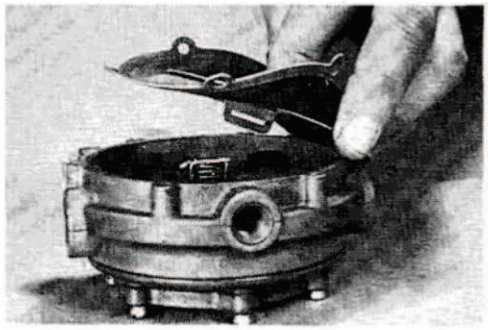


Fig. A1592

STEP 4. Hold secondary regulator lever down while removing screw.

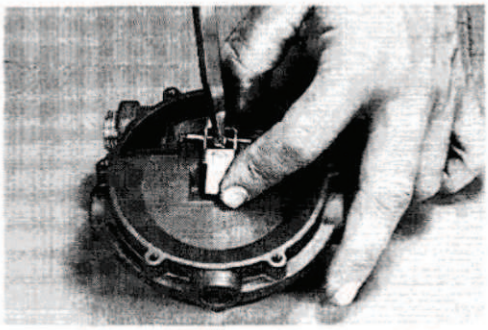


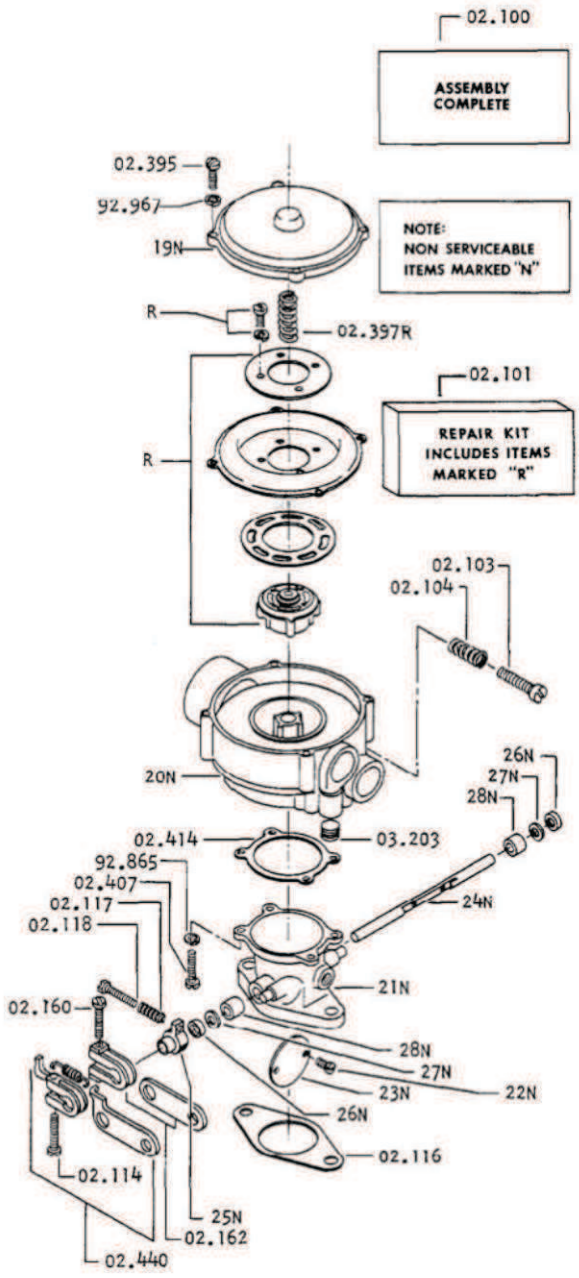
Fig. A1593

STEP 5. Remove lever containing secondary seat and fulcrum pin. Remove secondary spring.

N O T E

Color of secondary spring determines vapor outlet pressure and must agree with letter sticker on secondary cover. Refer to Table I.

Fig. A1594



02.100	CARBURETOR ASSEMBLY
02.101	REPAIR KIT, CARBURETOR
02.103	SCREW, IDLE ADJUSTING
02.104	SPRING, IDLE ADJUSTING SCREW
02.114	SCREW, THROTTLE LEVER CLAMP
02.116	GASKET, CARBURETOR MOUNTING
02.117	SPRING, THROTTLE STOP SCREW
02.118	SCREW, THROTTLE STOP
02.160	SCREW, FLOATING LEVER CLAMP
02.162	LEVER, CARBURETOR FLOATING
02.395	SCREW, METERING VALVE COVER
02.397	SPRING, CARBURETOR METERING
02.407	SCREW, METERING VALVE
02.414	GASKET, METERING VALVE
02.440	LEVER, THROTTLE
03.203	PLUG, AIR HORN
92.865	LOCKWSHR, METER VALVE FASTENER
92.967	LOCKWSHR, METER VALVE COVER FASTENER
*19N	COVER, METERING VALVE
*20N	HOUSING, METERING VALVE
*21N	BODY, CARBURETOR
*22N	SCREW, THROTTLE PLATE
*23N	PLATE, THROTTLE
*24N	SHAFT, THROTTLE
*25N	LEVER, THROTTLE STOP
*26N	RETAINER, THROTTLE SHAFT SEAL
*27N	SEAL, THROTTLE SHAFT
*28N	BUSHING, THROTTLE SHAFT

* USE 02.100

Fig. 19355 Carburetor Part No. 2360141

STEP 7. Check the oil distributor sleeve seals with a flat type feeler gauge as illustrated. All three seals must not have more than a MAXIMUM of .004 side clearance.

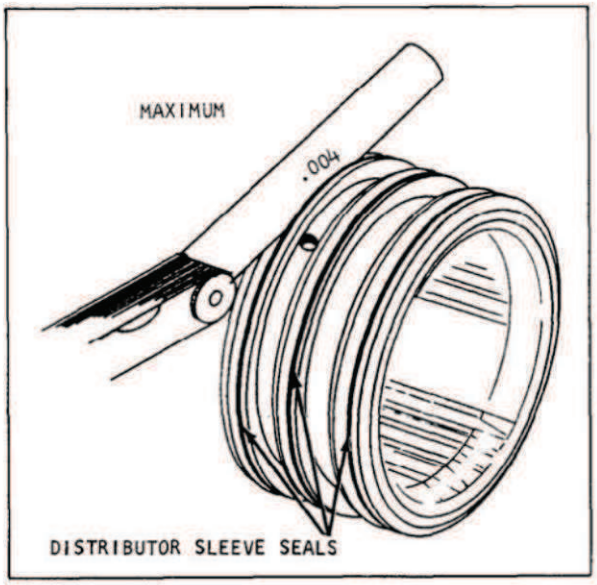


Plate 10334

Plate 10353

STEP 8. Install the sealing rings by starting the split locks first and pressing the ring down and on .... this will prevent the ring from becoming warped or broken.

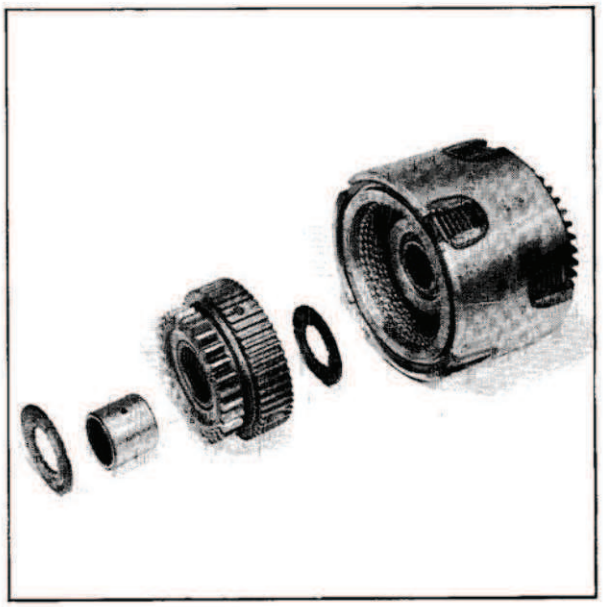


Plate 8038

Step 28: Remove the thrust washers, gear and inner bearing race from the pack.

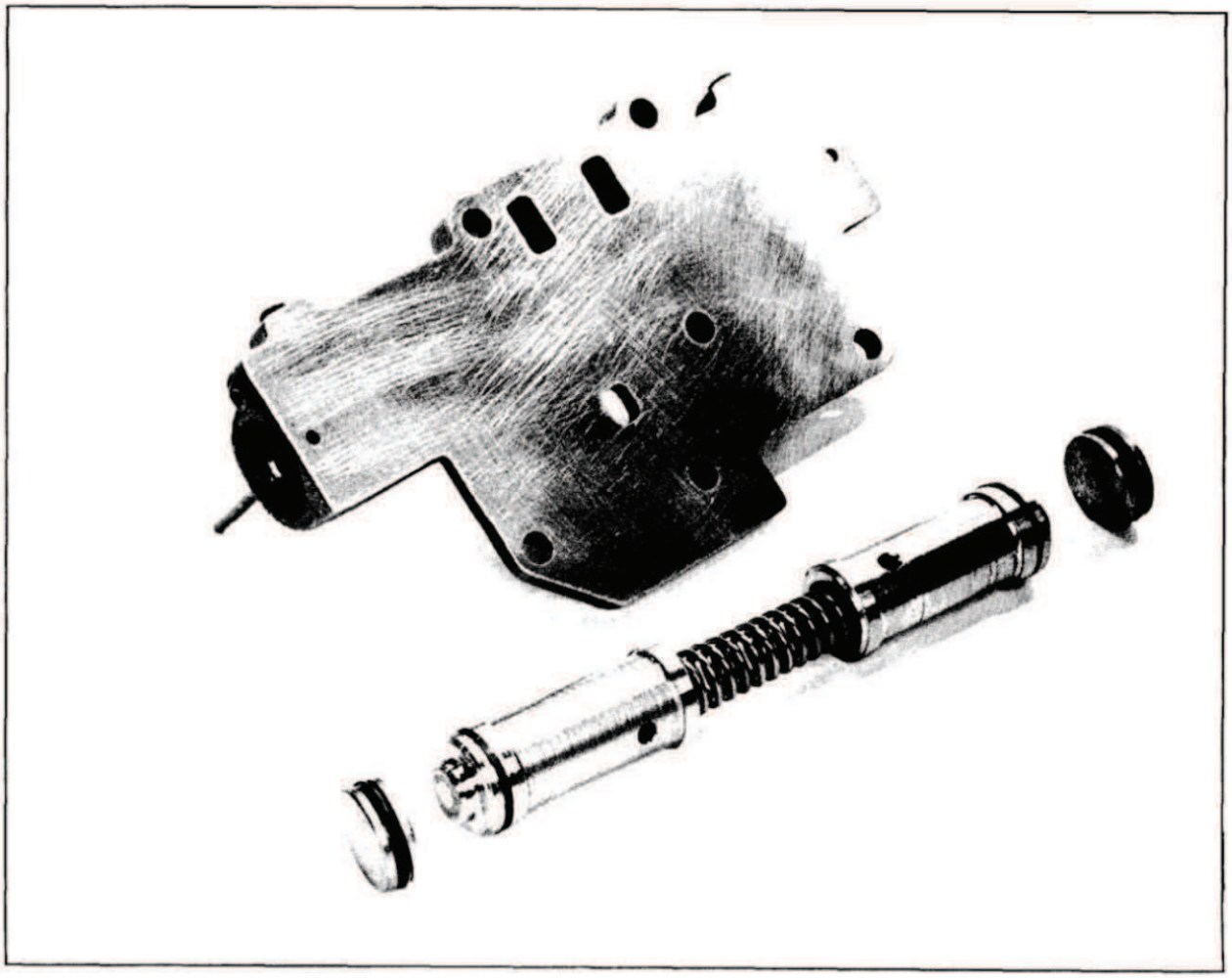


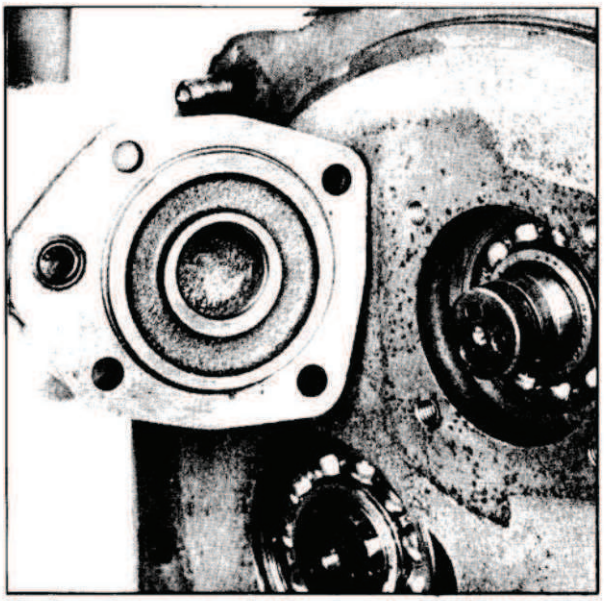
Plate 9900

Step 4. Remove reverse accumulator piston assembly.

A. Check piston assembly for nicks or burrs.

B. Replace "O" rings on piston stops before reassembly.

STEP 15. Remove the transmission input shaft cap on axle adaptor end of transmission.



Step 15. Plate 10229

STEP 16. Check the input shaft cap for ring wear and imbeded foreign material. Cap must be replaced if one or both conditions exist.

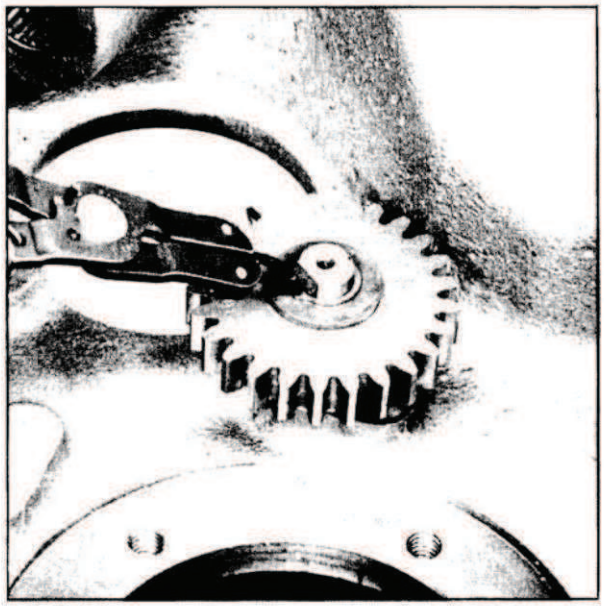
Step 16. Plate 10336

STEP 17. Remove the input shaft retainer ring on the axle adaptor end of transmission.

Step 17. Plate 10230

STEP 35. Remove the converter pump idler gear fastener.

STEP 36. Remove the thrust washer and idler gear from shaft.

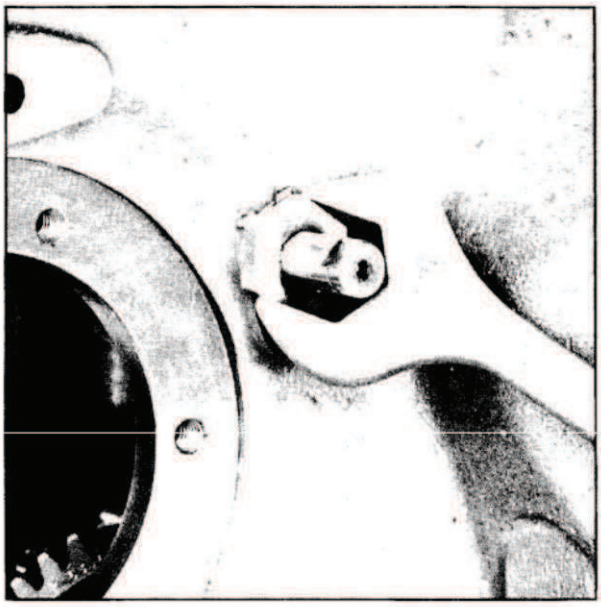


Step 35 - 36. Plate 10342

N O T E

The idler shaft has left hand threads, and must be loosened in a clockwise rotation.

STEP 37. Bend locking tang from shaft flat and remove the shaft from transmission.

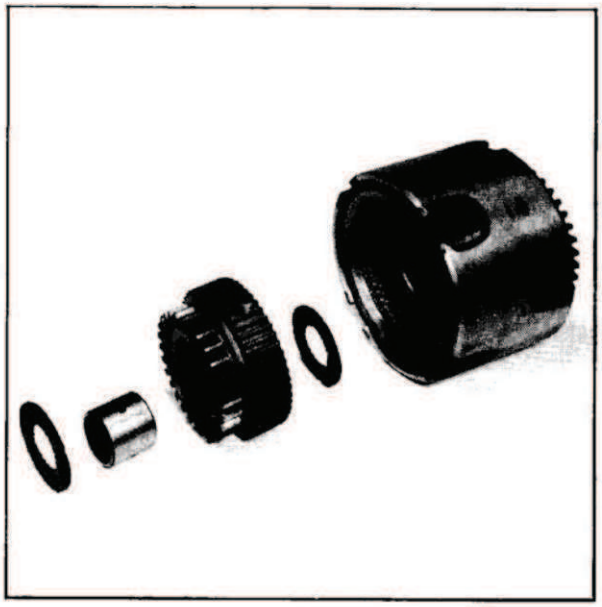


Step 37. Plate 10343

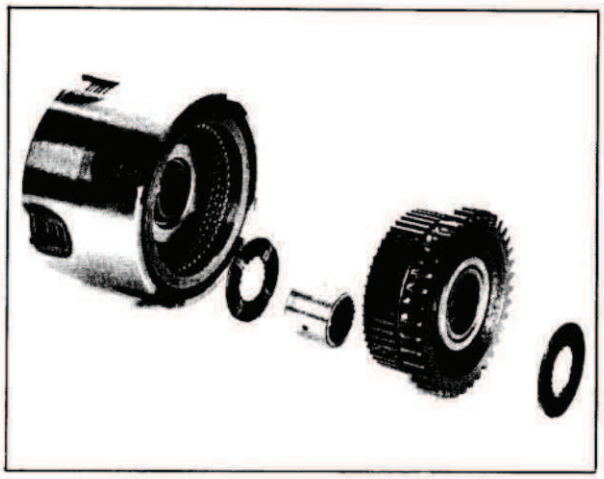
STEP 38. Note the position of the locking tang to the transmission housing.

Step 38. Plate 10344

STEP 21. Parts location of small gear end of clutch pack.



Step 21. Plate 8038



Step 22. Plate 10337

STEP 22. Parts location of large gear end of clutch pack.

1. To prevent generator from operating during this test, connect Generator Field Control into circuit and set knob to OPEN position. (See Generator Field Control section in Handbook.)

2. With tachometer connected, start engine and adjust speed to 1500 RPM. (See Tach Dwell Tester section in Handbook.)

3. Set tester switch to Secondary Resistance position. (Coil Circuit Tester Battery Leads need not be connected to a battery for this test.)

4. Connect Red tester lead to engine ground and connect Black test lead to each spark plug terminal in turn. Observe readings on Secondary Resistance scale (0 to 8) of meter.

Results and Indications

Readings are average for make and type of circuit being tested... secondary circuit in normal condition.

All readings lower than average for make and type of circuit being tested... corroded coil tower terminal, poorly connected or broken coil wire, center cap electrode burned, burned rotor tip, open secondary in coil.

One or more readings lower than average for make and type of circuit being tested... broken or poorly connected spark plug wires, burned or corroded cap terminals, gouged electrodes inside of cap.

Readings higher than average for two or more plugs... Cross fire occuring in the distributor cap or between spark plug cables concerned.

Meter reads off scale to the left with red test clip grounded... Coil secondary polarity reversed: may be due to coil primary wires connected in reverse, wrong coil, or vehicle battery connections reversed.

NOTE On vehicles utilizing suppression type ignition cables, readings can be expected to be somewhat uneven with the lowest readings on the longest cables. Although suppression results in lower test readings, normal suppression does not impare ignition efficiency.

Use of Ohmmeter

The ohmmeter facilities of the coil circuit tester may be used for measuring resistance values which fall within the range of zero to one hundred thousand ohms. Use the scale of the tester with red numerals, and note that the letter "K" represents one thousand ohms.

1. Turn test selector switch to the OHM position.

2. Attach battery leads of the tester to either a 6 or a 12 volt battery.

3. To calibrate, attach test leads together and adjust the ohm calibrator until the meter pointer reads on the OHM SET LINE.

4. Separate test leads and attach one to each end of resistance to be measured, and read the ohm scale.

Calibration of Coil Circuit Tester

To assure accurate tests of ignition coils, the calibration of the Coil Circuit Tester should be checked and/or adjusted periodically. The calibration of the coil circuit tester may vary slightly after long periods of use, due to normal wear of the point rubbing block in the breaker assembly. The calibration should be checked and adjusted as described below.

1. Zero meter pointer to the left end of the scale, using the adjustment on the face of the meter.

2. Connect the tester test lead clips together.

3. Connect the battery leads to a 6 or a 12 volt battery and turn the battery selector to the proper voltage.

4. Turn test selector switch to OHM position, and use the ohm calibrator to adjust the meter pointer to the ohm set line.

5. Turn test selector switch to POINT SET position.

6. Meter now reads the dwell of the coil breaker unit. The pointer should now be on the red 6 of the coil set scale, plus or minus one half division.

If meter does not read within these limits, remove breaker cover located on side of tester. Adjust spacing of tester contacts, with breaker motor running until proper meter reading is obtained. Replace breaker cover, and disconnect test leads. Tester is now properly calibrated for accurate test indications.

ASSEMBLY STARTER COMPONENTS:

1. On 2 piece lever housing install the armature in the bearing area of the lever housing.
2. Install clutch drive assembly on armature.
3. Put snap ring retainer on armature shaft with beveled side up.
4. Install snap ring on shaft as shown, and slide down into ring groove.
5. Put a washer on armature shaft.
6. Install the retainer over the snap ring with pliers.
7. If your starter has a 2 piece nose housing, install nose housing to lever housing in its original position.
8. If your starter has a single piece nose housing install armature in housing.
9. Install field frame to lever housing.
10. Hold the starter up on the nose housing and place brushes over the commutator edge.
11. Slide the field frame into position against lever housing.
12. If brushes were replaced make sure wide side of brush compared to offset mounting hole is toward riser bars.
13. On some models fasten the field frame to the lever housing with the mounting bolts.
14. Install the commutator end cup and mounting bolts.

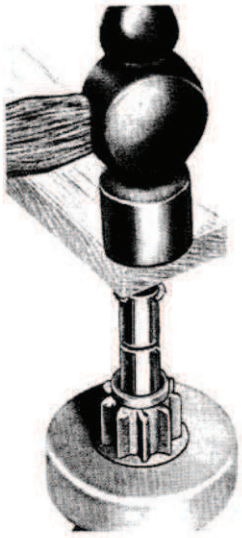


Fig. 20653

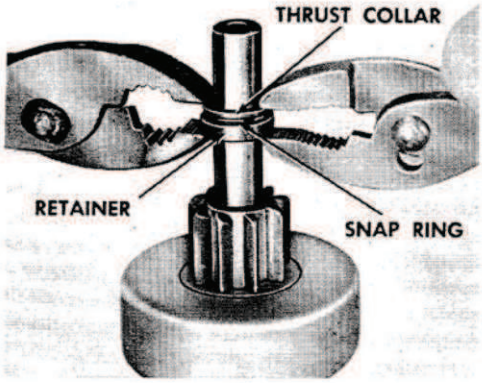


Fig. 20654

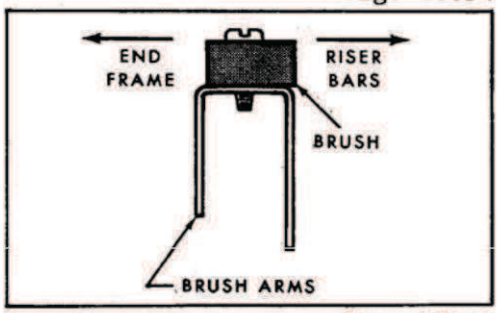


Fig. 20656

8. Remove the insulated screw, and remove the diode trio.

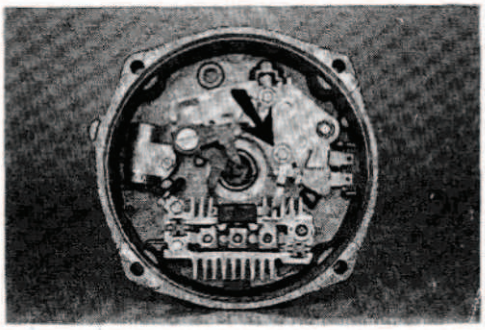


Fig. 24353

9. Remove the other insulated screw, and the brush screw.

IMPORTANT

Two of the brush assembly mounting screws have insulating sleeves over the screw body and above the threads. The third mounting screw may, or may not have this insulating sleeve, according to the model of alternator. If not, do not interchange this screw with either of the other two, or a ground may result.

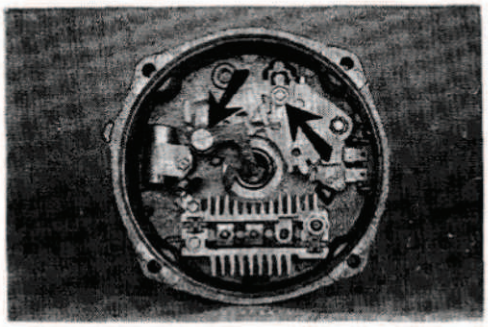


Fig. 24354

10. Remove the brush assembly, and inspect the brushes. If they can be used again, clean them with a soft, dry cloth. Fig. 18213 and 24355 show two different types of brush assemblies.

Fig. 18213

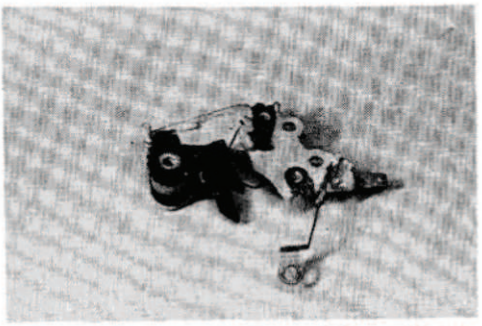


Fig. 24355

9. Remove the tape from the slip ring end frame bearing.

Fig. 18222

10. Remove the tape from the rotor shaft. Make sure the shaft is clean.

Fig. 18212

11. Install the rotor shaft into the end frame assembly. Do not damage the seal in the retaining plate.

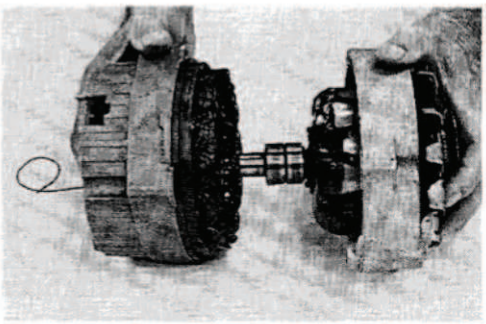


Fig. 18228

12. Align the marks on the end frames.

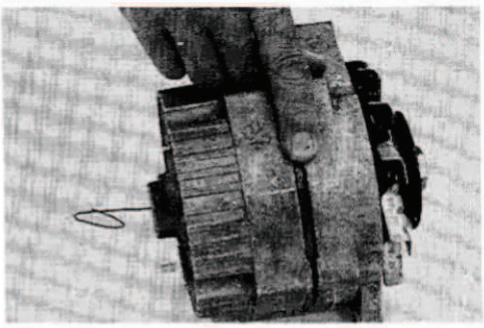


Fig. 18219

c. If voltage reading in Step "a" is below 13.2 volts, follow the procedure described in Step "b" without the 15 minute warm-up period, and adjust regulator to 14.5 to 15.0 volt range. If no adjustment of the regulator is possible, replace regulator and check for improved battery performance over a reasonable service period. If adjustment can be made, then follow the complete procedure of Step "b" including the 15 minute warm-up period.

d. On those regulators that have been adjusted, remove lead from "V" terminal of three-unit regulator, or remove wiring adapter connector body from one- and two-unit regulators. Replace regulator cover. Reconnect wiring or wiring adapter connector body to regulator and note voltmeter reading. A voltage reading of 13.5 to 15.2 volts is within permissible range. However, setting should be higher than that first noted in Step "a".

e. Remove test instruments and check battery for improved charging performance over a reasonable service period. At a later date, it might be necessary to repeat this procedure to raise voltage even further.

DRIVE AXLE, DIFFERENTIAL AND AXLE ADAPTOR TYPE UNITS.

STEP 1. Excessive rear axle noise.

A. Since gears in mesh usually make noise during operation, some rear axle noise is normal. However, excessive noise often indicates the beginning of other troubles in the axle.

A road test of the truck can help determine whether the noise is being caused by trouble in the rear axle or in some other parts of the truck. Before road-testing the truck make sure that lubricant level in the rear axle housing is filled to specifications. Then drive the truck far enough to warm the axle lubricant to it's normal operating temperature.

With the transmission in neutral run the engine at various speeds. If the noise still exists during this test, it probably comes from the engine or the exhaust system.

Noise caused by a worn or damaged wheel bearing is often loudest when the truck is coasting at low speeds, at it usually stops when the brakes are gently applied. To find the noisy bearing, jack up each wheel and check each bearing for roughness while the wheel is rotating.

An important point to remember when trying to determine what is causing excessive noise, is that sound will travel, and transmission noise and even engine noise can easily be mistaken for excessive noise from axle or differential.

STEP 2. Excessive rear axle backlash.

Excessive backlash in the axle driving parts may be caused by worn axle shaft splines, loose axle shaft flange nuts, excessive backlash between the drive pinion and ring gear, excessive backlash in the differential gears, or bearings which are worn or out of adjustment.

STEP 3. Standard test for proper installation and operation (Standard-Type Nospin).

A. Raise the driving axle from the floor, so that the tires are completely free to rotate.

B. Place the vehicle transmission in gear.

C. With an assistant on the other side, start the test by rotating both wheels in a forward direction as far as possible (normally, both wheels will be stopped after rotating a few inches).

D. With one person firmly holding the left wheel forward (against the internal stop), rotate the right rear wheel rearward while listening for a regular indexing or clicking sound (the left wheel must be held firmly against the stop or the right wheel will not disengage freely).

E. Now rotate both wheels rearward as far as possible (again, both wheels will be stopped after rotating on a few inches).

F. With an assistant on the other side firmly holding the left wheel in rearward position (against the stop), rotate the right wheel forward, again listening for an indexing or clicking sound (again, the left wheel must be held firmly against the stop or the right wheel will not disengage freely).

G. Repeat STEPS 3, 4, 5 and 6 as above, but substitute holding the right wheel instead of the left, so that the locking action of the left side of the Nospin may be checked.

H. If either wheel does not rotate or cam freely in both directions when the OPPOSITE wheel is held against the stop, the unit must be disassembled and inspected. (Check brakes for drag, first.)

STEP 4. Standard test for proper Installation and operation (Silent-Type Nospin).

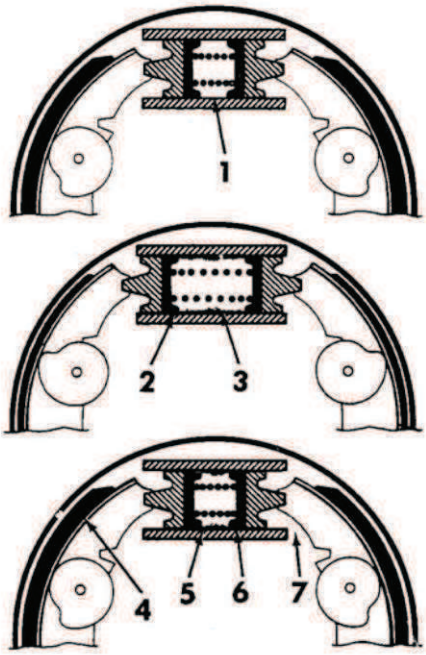
A. Follow all steps EXACTLY THE SAME as detailed for the STANDARD models, except that a faint clicking or indexing noise (or possibly no noise at all) may be heard.

B. The rotating wheel should cam out easily by hand and should rotate freely.

C. If you DO hear a LOUD indexing or clicking sound when rotating one wheel and holding the other, the Silent-Type holdout ring and clutch assembly may not be properly assembled to the spider. If the brakes are not dragging and causing this condition, the unit must be disassembled and inspected.

STEP 5. Both wheels appear to be locked together while the vehicle is turning - or there is a complaint of tire scuffing on turns.

A. Drive the vehicle in a light circle on concrete. The outside tire should rotate faster than the inside tire, due to its greater arc of travel. There should be no evidence of tire slipping or scuffing. Perform the Standard Test given above. If a constant lock condition is indicated, remove and inspect the Nospin unit.



REASON FOR REPAIRING OR REPLACING WHEEL CYLINDERS WHEN RELINING

1. With new lining and new wheel cylinder all seals are tight and brakes will function properly.

2. As lining wears, wheel cylinder rubber cups move back and forth over a new,widened smooth area.

3. Corrosion and foreign matter builds up on part of the cylinder walls where cups do not work.

4. When new, thick lining is installed ...

5. Cups are pushed closer together and must do their work over the roughtened surface.

6. Since cups can no longer seal against smooth cylinder walls they allow fluid to leak out.

7. New rubber boots should be used to keep the dirt out.

Plate 8710

Swollen Cup or Seized Wheel Cylinder Piston

The excessive friction of a swollen cup or a sticking piston will usually cause a seizure in the applied position and cause the brake to drag upon release. A cup expander will sometimes cause excessive cup lip friction, resulting in brake drag. Should dirt or corrosion freeze the piston while the brake is released, the opposite brake will pull when brakes are applied. A swollen cup or corrosion indicates fluid contamination. The cylinder should be overhauled or replaced and the entire hydraulic system drained and flushed.

WHEEL CYLINDERS SHOULD BE OVERHAULED OR REPLACED AT RELINE PERIODS

On all hydraulic brakes (except the Huck type) pistons and cups are pushed inward when new lining is installed. Since each piston and cup has been operating toward their outward limits for a long time, due to the thin (worn) lining, it is only natural for some residue to be deposited on the swept surface of the cylinder wall, between the cups. Foreign material or corrosion may also be present. Unless cylinders are reconditioned when new linings are installed, both pistons and cups are forced inward in the cylinder into contact with these deposits. The cup lip may be forced away from the cylinder wall enough to cause leakage, and severe deposits will damage the sealing surface of the cup. For the sake of safety, and to prevent early destruction of an other-wise good brake reline job by hydraulic leakage, many shops automatically clean the cylinders and install wheel cylinders kits on every reline job.

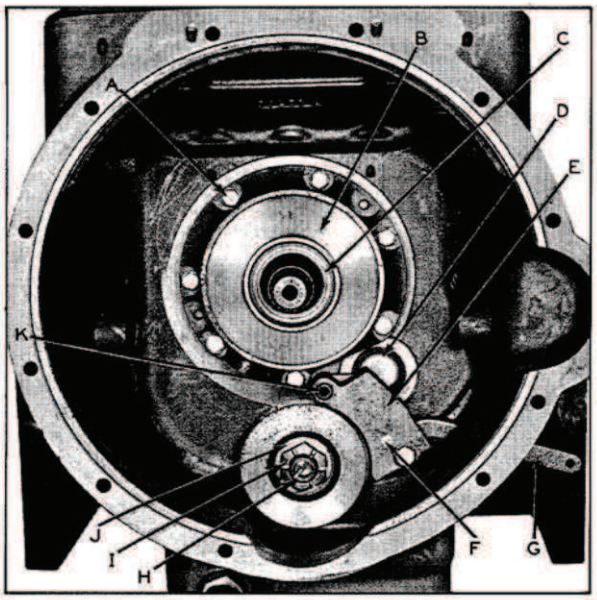


Plate 5669. (Typical) Parking Brake Assembly

PARKING BRAKE

This parking brake consists of a "V" pulley type drum mounted on the end of the pinion shaft, and a "V" shaped shoe that fits in the drum groove (see Plate 5669). When pressure is applied to the shoe, it presses against the drum and thus stops the machine.

Removal

To remove the brake it is first necessary to pull the transmission from the machine (see Master Maintenance Sections 6 thru 8). After the transmission has been removed, separate the converter and transmission. (Drain converter at drain plug before removing.) To remove brake assembly proceed as follows:

1. Remove the two capscrews which hold the shoe housing (E) and shoe to the transmission housing. The shoe housing can now be removed with the shoe cam lever (G).

2. Remove cotter (H) from pinion shaft and unscrew nut (I).

3. Using a suitable puller, if available, remove brake drum from shaft. If not available, use two bars placed directly opposite one another in back of the brake drum and pry drum from shaft. Remove key from shaft.

After brake has been removed from transmission, inspect all parts for further serviceability. Using new parts where necessary, reassemble brake in housing using the reverse procedure of disassembly.

Adjustment

Only one adjustment is necessary on this parking brake at reassembly. The adjustment is made after the brake is installed and all linkage is connected, with the transmission installed in machine. See Plate 5709. Adjustment of clevis at points (A) should be made so two notches of ratchet (B) show when the parking brake is in its applied position (see Plate 5709).

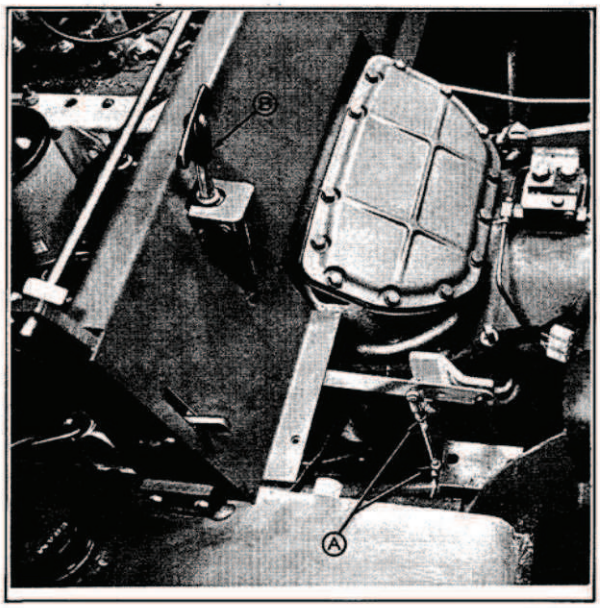


Plate 5709. Parking Brake Adjustment

CAUTION

REFER TO "TRANSMISSION" SECTIONS 6 THRU 8 IN THIS MANUAL FOR CORRECT PINION SHAFT BEARING "PRELOAD".

TO ELEVATE DRIVE WHEELS

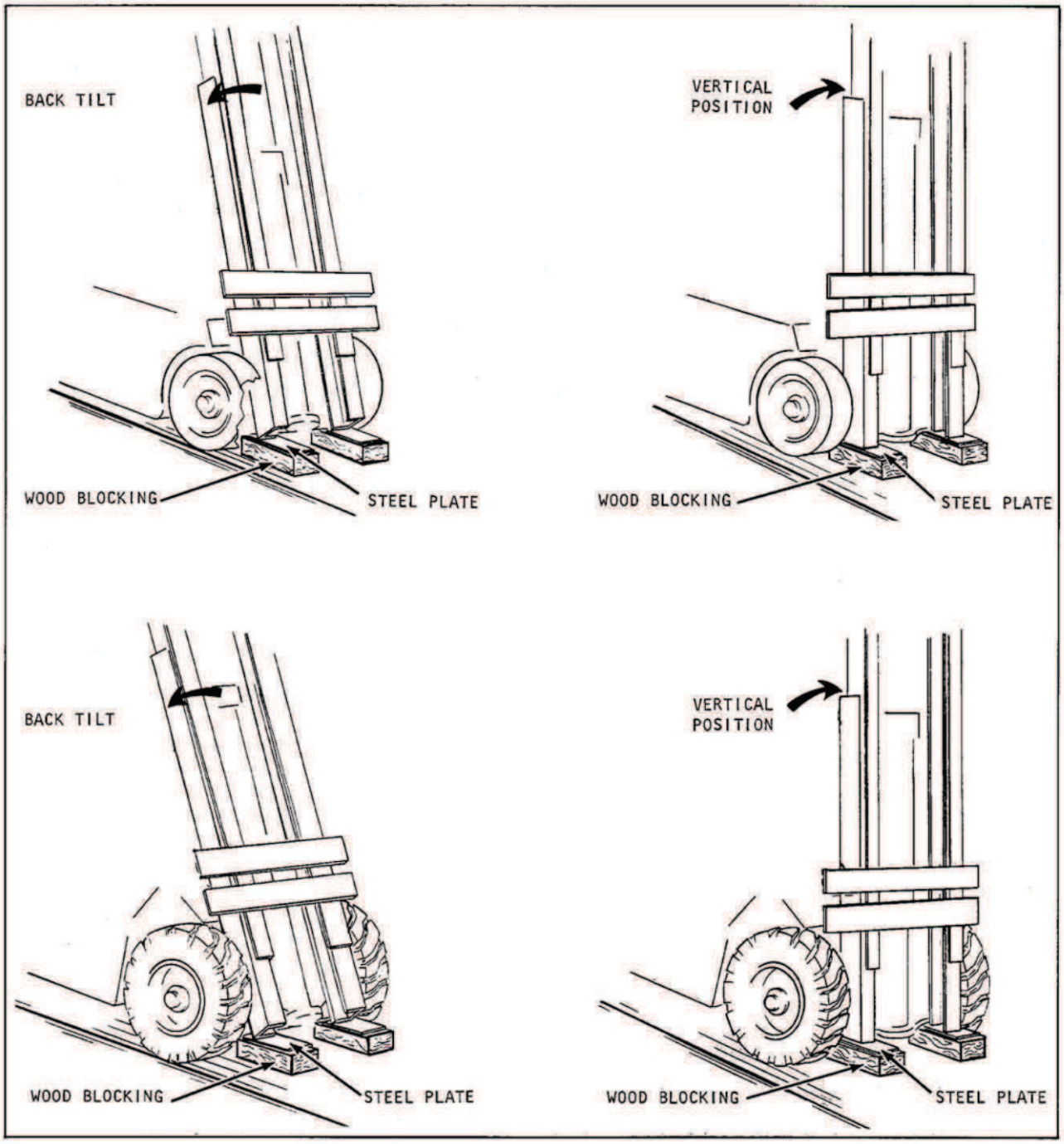


Plate 10317

TO ELEVATE DRIVE WHEELS, PLACE UPRIGHT BLOCKING AS SHOWN ABOVE.

ADJUSTMENTS - BRAKE SYSTEM

Check brake fluid level in the master cylinder. Brake fluid should be within 1/4-inch of the top. Fill with S.A.E. 70R-3 Heavy Duty Hydraulic Brake Fluid (Clark Part No. 1800200).

Master Cylinder Filler Cap Vent Hole: Check cap vent hole for obstruction. Vent hole must be open at all times. Clean if necessary (see Plate 6633).

Brake Pedal

WARNING

CORRECT BRAKE PEDAL FREE TRAVEL IS IMPORTANT FOR SAFE OPERATING BRAKES.

A correctly adjusted brake pedal is important so that the internal ports in the master cylinder are not blocked by the cylinder piston. The following paragraphs list two important reasons for proper brake pedal free travel.

Inadequate Pedal Free Travel will block the internal ports so that upon releasing the brake pedal, fluid will be trapped in the lines and will hold the brake linings in contact with the brake drums. This will result in lining wear .

Brake Pedal Adjustment: Refer to Plate 7042 on preceeding page and follow the instructions and diagrams.

N O T E

Inching is controlled by the brake master cylinder. Improper free pedal adjustment will affect inching qualities.

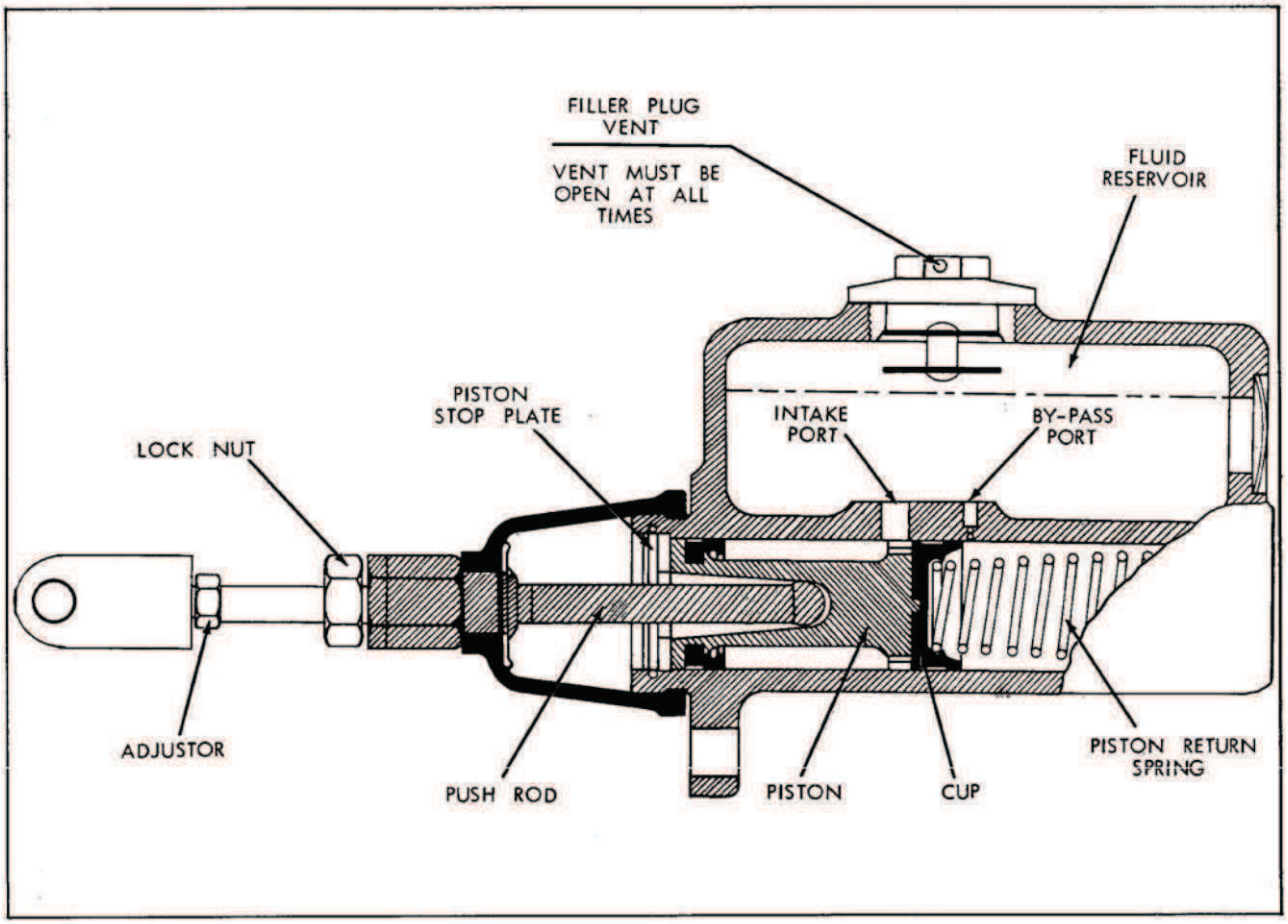


Plate 6633. Brake Pedal Adjustment

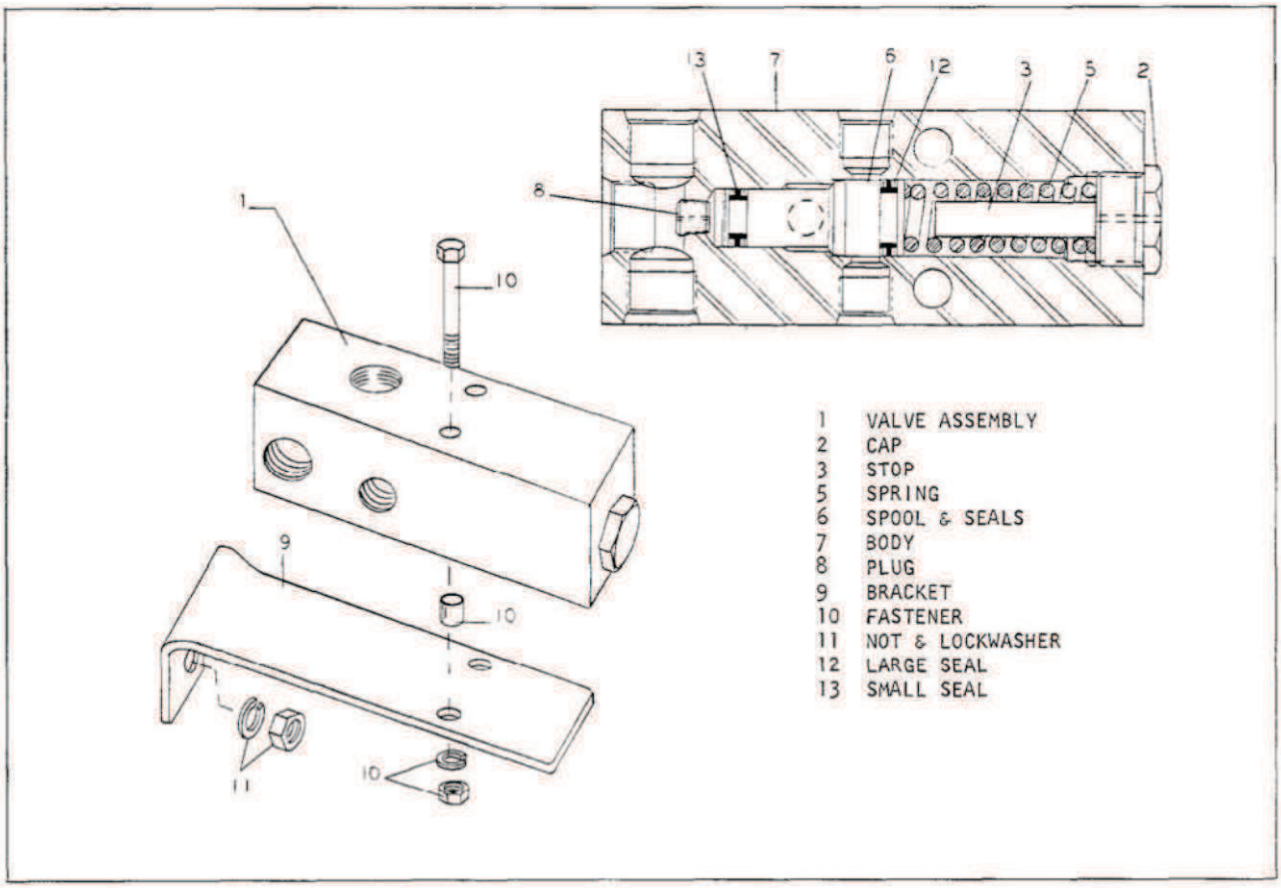


Plate 9405. TILT LOCK VALVE (CLARK)

The spool plug and spool are swaged together by a process of heating one and cooling the other. This is the anti-cavitation device and for no reason should be repaired, replace if necessary.

The only parts that should be serviced are the "O" rings, springs and spool (as an assembly). Check spool for excessive scratches and replace if needed. If leaks are present check "O" rings and replace if needed.

Maintenance for all tilt lock valves is fundamentally the same.