

# PONTIAC

## Service Craftsman News



No. 10 S-267

December, 1954

# CHECKING ENGINE OIL LEAKS

## 1955 ENGINE LUBRICATION SYSTEM TROUBLE-SHOOTING

This repeats the recommendation, which was first announced in the Service Craftsman News of October 1952, for the use of a dye in engine oil to assist in tracing the point of leakage.

There are several points on the 1955 engine from which leaking oil could run down between the cylinder block and flywheel housing then drip out the bottom cover and be mistaken for a rear main bearing oil leak. Two of these points are:

1. Connection between the crankcase ventilator outlet pipe and push rod cover.
2. The pipe plug on top of the block to the left of the distributor.

The use of an oil soluble dye available from most chemical suppliers is recommended for addition to the engine oil. A dye that has proven satisfactorily for this purpose is "Oil Red S-O" available from the Eaton Chemical and Dye Stuff Company, 1490 Franklin Street, Detroit 7, Michigan. This dye causes the oil to become red in color and makes the diagnosis of leaks much simpler. Addition of the dye does not make an oil change necessary. With the engine at operating temperature, add one-half teaspoon of the dye and idle the engine a few minutes to permit the dye to mix (if other than "Oil Red S-O" is used, follow the suppliers instructions).

Before conducting the leak test all traces of oil should be wiped from around all exposed gallery plugs, flywheel, torus cover, etc. and a clean piece of paper placed under the power plant. Start the engine and operate at approximately 800 RPM for two minutes. Examine areas around all oil gallery plugs, flywheel, etc. and on the paper for traces of oil containing the red dye. If oil is present on the paper which does not contain the dye, it can be assumed to result from leaks of Hydra-Matic fluid on Hydra-Matic equipped cars.

The dye (in powdered form) is available from the above company only in 1 pound packages at \$4.00 per package.

All cup type and screw type plugs may be the source of a leak. Porosity of the iron adjacent to oil holes and galleries may also be a source of leaks.

Lack of lubrication to the valve train can result in noisy rocker arms and balls. In all such cases valve covers should be removed and the engine operated to check the condition of plugs in the ends of the gallery under the rocker arm studs. Especially check the plug which is placed into the hole drilled between the gallery and the screw hole which feeds the gallery in both heads (See Fig. 6-35, Preliminary Shop Manual). Further observation for lack of lubrication to one or more valve rocker arms can be made at this time. If no oil appears in one rocker arm, inspect the stud to see that the oil holes are drilled through.

If any of the plugs in the oil gallery and cross passage are missing or leak, oil pressure to the rocker arms will be inadequate. The cross passage between the cylinder head screw hole which feeds the oil gallery can be checked by removing the plug and cylinder head screw. If no oil is reaching the head around the screw mentioned above, it will be necessary to remove both heads and measure the distance from the top of the cylinder block banks to the bottom of the feed hole. This should be done with a rod or some other object of a size almost as large as the hole. If the distance from the top face of the block is the same on both banks, the holes in the block extending down to the camshaft bearing shell have been drilled completely through. The next check for lack of lubrication to the head would be to determine whether the small hole in the camshaft bearing shell is drilled and that it is aligned with the hole in the cylinder block. This will necessitate removal of the camshaft.

## SECOND PRINTING OF PONTIAC OWNER'S GUIDE REVISED

In addition to the new 1955 engine oil recommendations which are covered on page 73 of the October-November Service Craftsman News, several other changes have been made in the second printing of the Owner's Guide.

On page 13 under operating the Hydra-Matic Transmission in LO range a note has been added cautioning the owner to keep speed below 40 MPH while in LO to avoid the 2-4 upshift possible with the 1955 transmission.

The towing instructions on page 14 of the Owner's Guide have been revised to agree with those given on page 75 of the October-November News.

On page 23 the paragraph on tire balance has been revised to cover tires that have been balanced by the tire manufacturer and have no red mark locating the light point of the casing.

The cooling system capacities listed on page 5 and page 24 have been changed to agree with the specifications listed elsewhere in this issue.

The procedure for setting the clock given on page 45 of the Guide has been modified slightly. It is good practice to make the last movement, when setting the clock in a counterclockwise direction.

The last three pages of the Owner's Guide are now used to give the indian legends connected with the points of interest shown on the cover map.

## NOISY HARMONIC BALANCERS (STANDARD STEERING EQUIPPED CARS)

In many cases extensive diagnosis work has been done on engines to find the cause of a clicking noise which can be heard at regular intervals while the engine is idling. Some service people have started work on lifters as the source of the noise. When such a clicking is heard, it is often the result of loose rivets in the harmonic balancer. This is very easily determined by listening out in front of the radiator grille. It can be further isolated by removing the fan belt.

A satisfactory fix for this condition can be obtained by brazing at the ends of the rivets where they project through the holes in the pulley. The brazing can be accomplished without harm to the remainder of the harmonic balancer by placing the assembly in a shallow pan with water up to about 3/4 of an inch of the surface of the pulley.

Welding should not be used because it does not prove satisfactory.

## HYDRA-MATIC LINKAGE CHANGED

The throttle rear rod is now installed in the lower hole of the transmission throttle lever in order to give free travel of the accelerator linkage and at the same time reduce the T.V. pressure in the transmission. Bracket assembly #521057 has been modified to permit the use of this hole in the throttle lever and at the same time permit proper opening of the carburetor throttle.

On cars now in the field the throttle rear rod can also be installed in the lower hole. After it is changed, however, it is very important to see that the rod does not touch the left rear engine mount any place in its travel.

## CORRECTION OF LOOSENESS IN COMFORT CONTROL SEATS

See Fisher Body Service News "1955 Pontiac Body Information" Pages 61-62. The looseness or forward and back motion reported on comfort front seats is generally caused by the right anchor not properly engaging with the notches of the ratchet. If the hand button on the release lever is installed too far towards the seat, it is possible that the lever will bind on the seat trim board and not return to its normal position when released. This binding condition should be checked first as a possible source of looseness.

The condition may also be caused by a missing anchor spring, or by the rivet attaching the anchor to the adjuster being too tight. On some early production cars the hole for attaching the anchor spring was drilled too near the edge of the bracket and in some cases the spring pulled through the anchor. In cases where this is found, the spring should be repositioned. Another possible cause is the horizontal control rod not being properly positioned. If this rod is improperly located, it becomes too short so that when released the anchor cannot engage the ratchet.

## CORRECTION OF IMPROPERLY ALIGNED 1955 STANDARD ANTENNAS

In some cases the 1955 standard antenna does not have good vertical alignment. The incorrect alignment is caused by an improper position of the mounting hole in the cowl. To correct this difficulty file the hole as necessary using a tracing of Fig. 1 as a guide. It will be necessary to hold the antenna body in the correct position while tightening the body to adapter nut due to the oversize hole.

This condition is being corrected in production.

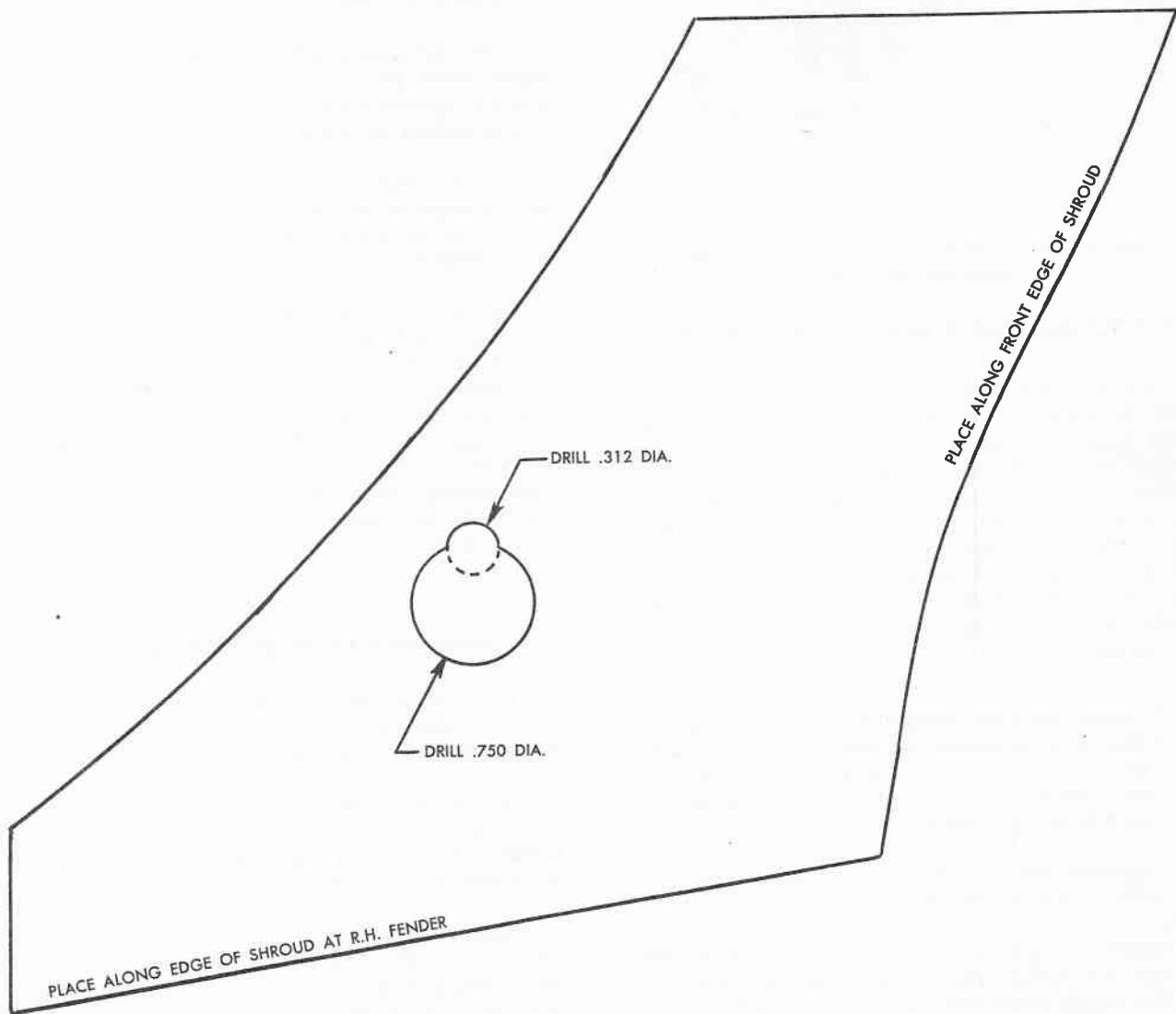


Fig. 1 Template For Correct Location of Antenna Mounting Hole

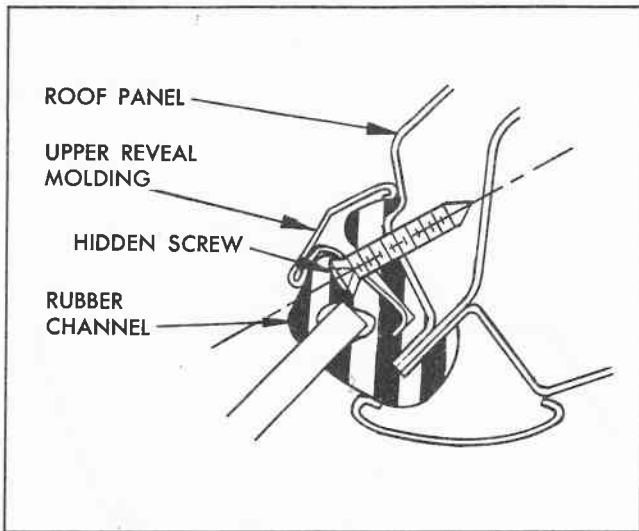


Fig. 2 Cross-Section of Upper Reveal Molding and Windshield Weatherstrip

## WINDSHIELD GLASS REMOVAL PROCEDURE

If a windshield glass is to be removed, a check must be made to determine whether the windshield upper reveal molding is fastened to the roof panel by screws through the tee flange of the molding. As the rubber channel and upper reveal molding must be removed with the glass, any screws fastening the molding to the roof panel must be located and removed before any attempt is made to remove the glass from the body. The following procedure may be used to check for the screws and to remove screws which are located:

1. Remove garnish moldings, rear view mirror support, lower reveal molding, side reveal moldings, and lower reveal molding retaining clips. (See Fisher Body Service News No. 1 - Windshield Glass Removal - Steps 1 through 7.)
2. Lubricate the end of a narrow, thin-bladed putty knife or similar tool with a rubber lubricant.
3. Insert the blade between the upper reveal molding and the rubber channel and slide the blade along the length of the molding. See Figure 2.
4. If the blade strikes the head of a screw, the screw should be removed. This operation may also be facilitated by applying rubber lubricant to the end of the screw driver to permit the screw driver to be more easily inserted between the molding and the rubber channel.
5. When it has been determined that the upper reveal molding is not attached to the roof panel, the normal removal procedure can again be followed. (See Fisher Body Service News No. 1 - Windshield Glass Removal - Steps 8 through 11.)

## IGNITION TIMING

It has been observed from Product Information Reports that some "Tune-N-Test" men are setting ignition timing as high as 10° BTDC. This practice should be discouraged. It is true that some slight gain can be shown in road horsepower on service type chassis dynamometers, however, when timing acceleration on the road, no gain in performance can be shown due to the 10° advance as against the 5° advance recommended.

The distributor advance characteristics for the engine were established by carefully controlled laboratory dynamometer tests to provide maximum torque without detonation at the various engine speeds.

A new engine with clean combustion chambers may operate at 10° advance without detonation but at some time accumulations in the combustion chamber will probably cause detonation with such a setting.

In connection with the above statements recommending only 5° advance, it should be pointed out that timing should be done with a timing light with the engine running at 400 RPM (460 RPM with Synchro-Mesh transmission). The 1955 distributor centrifugal advance starts at 500 RPM. It is, therefore, important that idle speed be set with an electric tachometer when making timing adjustments. After timing is adjusted the distributor hold-down clamp bolt should be tightened to 20 lb. ft. of torque.

## CORRECTION OF POWER STEERING NOISE

Noise in the power steering unit may be attributed to either power steering pump or to air in the fluid passages or cylinder.

Air in the power steering unit can be removed by cycling the steering from extreme right to extreme left while the pump is running until there is no evidence of air bubbles in the reservoir.

Should the fluid be cloudy, i.e., have the appearance of a mixture of coffee with cream, it is due to water being in the system. Once water is in the system there is no way to clarify the fluid so it is necessary that the fluid be replaced. This can best be done by removing the pump return pipe or flexible hose and catching the discarded fluid in a container. Pump the system as clear as possible, then fill with new fluid and cycle the steering from extreme right to extreme left and in this way force out all of the contaminated fluids. When the fluid being pumped through the return hose shows clean of this clouded mixture, connect the hose to the pump, fill the reservoir and again cycle the unit while the pump is operating until there is no evidence of air bubbles in the reservoir. Again fill the reservoir to level and install cover.



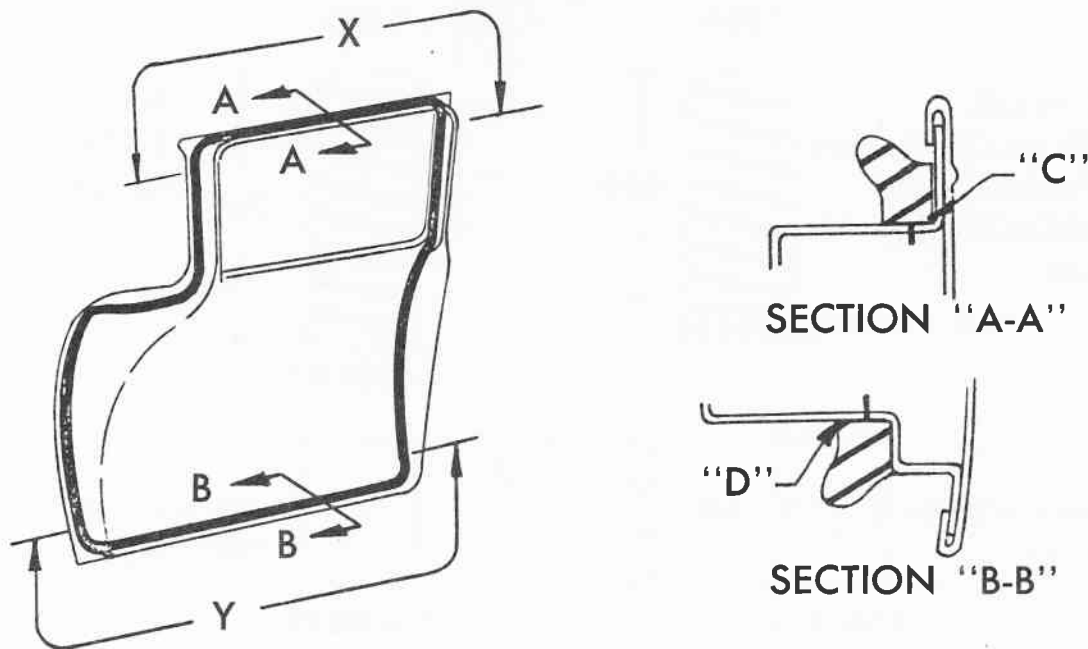


Fig. 3 Locations For Application of Weatherstrip Cement

**RE-WORK OF MECHANICALLY RETAINED DOOR WEATHERSTRIPS**

If conditions are encountered where the mechanically retained door weatherstrips are not supplying an adequate weather seal, the following two (2) re-work procedures may be used to insure a proper weatherseal in the critical areas.

The two (2) separate procedures are presented with the applicable styles for each procedure. They are as follows:

1. Additional seal along door header.
2. Additional seal along door bottom.

**Application of Additional Seal Along Door Header**

1955 Pontiac: All Styles Except "37" and "67" Styles.

If a condition is encountered wherein water passes through the weatherstrip clip retaining holes in the door header facing and enters the body on the inside of the door glass, the following procedures may be used to eliminate the condition:

Apply a 1/8 inch bead of weatherstrip cement in location "C" shown in Section "A-A" of Fig. 3 along distance "X" on drawing. Cement may be applied by inserting a pressure type gun behind the weatherstrip.

**Application of Additional Seal Along Door Bottom**

1955 Pontiac: All Styles.

If a condition is encountered where normal water drainage between door panels enters the body through the weatherstrip clip retaining holes along the bottom of the door, it may be eliminated by cementing the inboard edge of the weatherstrip to prevent tilting of the weatherstrip when the door is closed. Remove the weatherstrip along distance "Y" on Fig. 3 and cement to door bottom as follows:

Cement the inboard edge of the weatherstrip to the door facing at "D" shown in Section "B-B" of Fig. 3 along distance "Y" on drawing, using weatherstrip cement. NOTE: Follow instructions of manufacturer when applying weatherstrip cement.

**NEW COOLING SYSTEM CAPACITIES**

Checks on production cars indicate that it is necessary to change cooling system capacity specifications slightly. Following are the revised specifications:

All Models . . . . .	22 3/4 qts.
W/Underseat Heater . . . . .	24 1/2 qts.
W/Air Conditioning. . . . .	23 qts.
W/Air Conditioning and Underseat Heater . . . . .	25 qts.

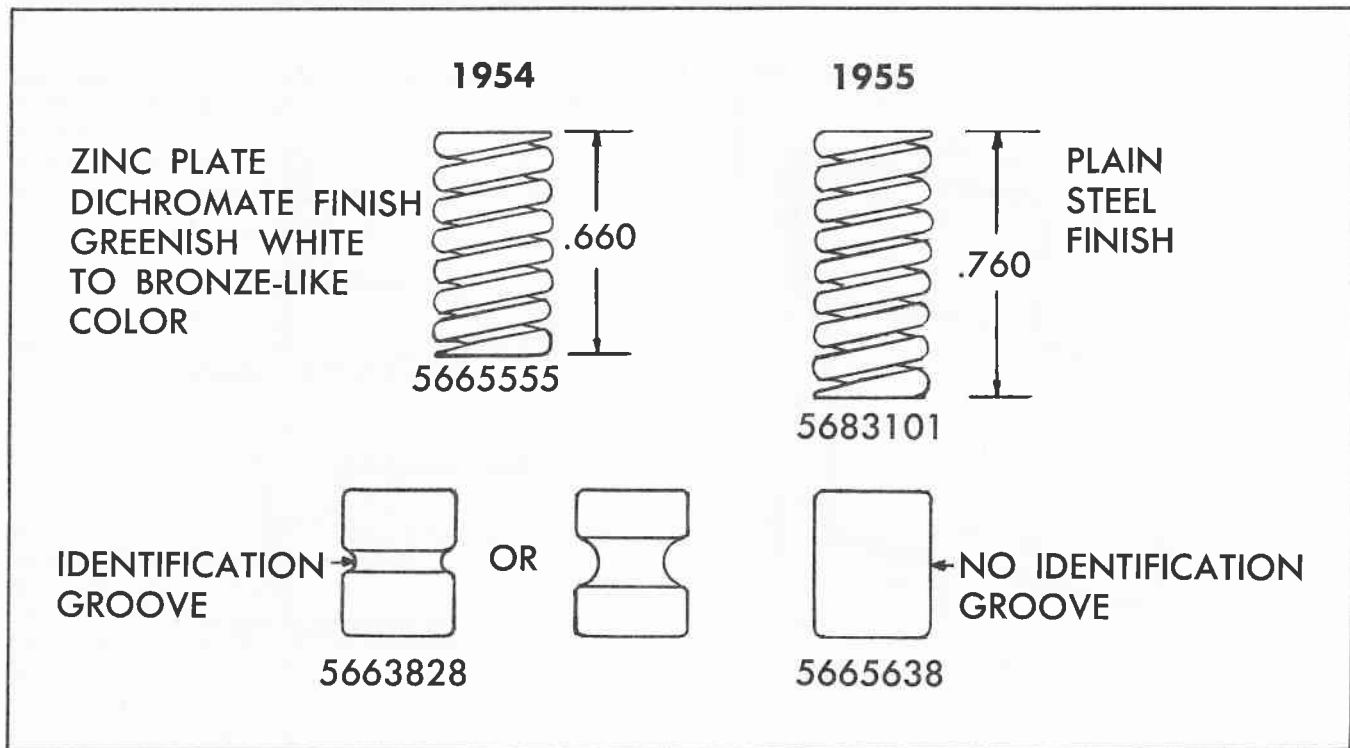


Fig. 4 Comparison of 1954 and 1955 Power Steering Valve Centering Springs and Plungers

#### USE OF POWER STEERING VALVE CENTERING SPRINGS AND PLUNGERS

The power steering valve assemblies for 1954 and 1955 are interchangeable. Some early production 1955 power steering gears will be equipped with 1954 valve assemblies. The valve centering springs and plungers (page 234 Master Parts Catalogue) are also interchangeable; that is, 1954 springs and plungers may be used as replacement parts in 1955 valve assemblies and vice-versa.

Because of the difference in lengths of springs and plungers for these two years it is imperative that these parts be replaced in sets. A "set" in this instance means two plungers and one spring.

The part numbers, lengths, and identification features of the springs and plungers for 1954 and 1955 are given in Fig. 4.

#### INTERFERENCE BETWEEN SELECTOR ROD AND EXHAUST MANIFOLD (SYNCHRO-MESH TRANSMISSION)

The trunnion at the steering column end of the Synchro-Mesh Transmission selector rod is installed with the pin pointing away from the center of the car. On some 1955 cars the trunnion touches the exhaust manifold causing inability to shift gears. When this occurs change the trunnion so the pin is pointing toward the center of the car.

#### CORRECTION OF POOR WINDSHIELD WASHER PERFORMANCE

As a result of Product Information Reports indicating unsatisfactory stream of fluid from the left hand washer outlet changes have been initiated to replace the copper tube with a hose for great capacity.

The copper tube due to its small diameter could easily be restricted by bending, by installing attaching clips too tightly, or by accidental striking.

#### ENGINE LACQUER

Some inquiries have been received asking what paint is used on Pontiac engines and where it can be procured.

Pontiac engines are painted with engine lacquer. This lacquer can be purchased from the Pontiac Varnish Company, 30 Brush Street, Pontiac 12, Michigan, under their number PMO-106 in the following quantities and prices f.o.b. Pontiac, Michigan:

- One quart containers, \$1.25 each.
- One gallon containers, \$4.20 each.
- Five gallon containers, \$20.25 each.

The proper spraying consistency for this engine lacquer is five (5) parts engine lacquer to four (4) parts lacquer thinner.

## REAR SPRING SQUEAKS 1955 STAR CHIEF MODELS

Rear spring squeaks have been experienced on Star Chief models on which springs identified "GM-E" were used. The squeak originates at the top of the main leaf where the spring clips are folded over. The squeak can be eliminated by opening the clamp and reforming it to relieve the pressure at this point.

Rear springs from three manufacturers are used. They can be identified as follows: One has a "Keystone" with a S (Standard Steel Spring Division) imprinted therein on the rear eye of the spring. The other two springs can be identified by the letters "GM-E" (Eaton Manufacturing Co.) and "GM-M" (Mather Spring Co.) stamped on the bottom face of the shortest leaf toward the rear end. When reporting difficulties with rear springs, please include the above identification.

## DIAGNOSIS OF FLOODING—STALLING

When stalling or flooding out is experienced it is desirable to remove the carburetor and be sure that all assembly screws, jets, needle seat, etc. are tight and in good condition. All adjustments should be checked and corrected to specifications given in the Preliminary Shop Manual. Give special attention to the fast idle adjustments and unloader adjustments. Inspect float needle and seats with a magnifying glass for good condition. Replace them if there is any doubt about their seating. Check all vacuum passages to make sure that they are completely drilled through and not obstructed. Also be sure that plugs used to cover ends of cross drilled passages are in place and not leaking.

Make sure the choke heat suction tube from the carburetor to the manifold is inserted in the manifold. Inspect for restriction in the vertical hole in the manifold into which the suction tube is inserted. If the choke stove tube inside the manifold is not pressed in far enough, it can shut off hot air to the choke housing.

If opening in manifold is over one half covered by the choke stove tube it will be necessary to enlarge the opening by drilling through the vertical hole in the manifold.

## 1955 HEATER PERFORMANCE

Product Information Reports indicate that in some cases the steel pipes in the heater water system are positioned so that they distort the connecting hoses to such an extent that water supply was completely cut off or seriously restricted. Check for this condition first when diagnosing for causes of improper heater operation.

## ENGINE OIL DISCOLORATION

Engine oil having a "coffee with cream" color has been found in a few 1955 engines as cars are given final inspection. This color is caused by traces of water in the oil. Laboratory tests have revealed that as low as one-quarter of one percent of water will cause the discoloration.

It has not been determined exactly how the water gets into the crankcase. It happens somewhere during the course of assembly. Oil out of the supply tanks has not been found to be contaminated. In all cases found to date, the crankcases were drained while hot and refilled with the prescribed oil. The discoloration did not reappear in any of these cases.

This is to advise that discolored oil should be drained and replaced with new oil of the recommended type and the car driven a reasonable distance to test for recurrence of discoloration. If no further discoloration is encountered, there is no reason for concern. If discoloration re-occurs after the oil is changed, an internal water leak is indicated and the engine must be disassembled to find cause. In other words, do not look for water leaks in the cylinder block or heads until it is definitely established that water in the original-fill oil resulted from leaks in that engine.

## USING ENGINE SUPPORT FIXTURE IN REPAIR OPERATIONS

A new tool, J-4732, Engine Support Fixture has been released for use when changing motor mounts, changing transmissions, and performing other service operations where it is necessary to support the engine. Below is the correct procedure to follow in using this tool.

To support rear of engine:

1. Hoist car and place on stands.
2. Clamp fixture bar end hooks to frame, at rear of oil pan in front of transmission. Hooks must open outward entering hole in frame. Lock hooks securely to frame with jamb bolt forcing pointed end of bolt into frame.

**CAUTION:** Be sure fixture is locked securely to prevent slipping out of place when holding engine.

3. Position two large support screws under two oil pan bolts. Hold support screws in position by running lock nut down to holding fixture cross-over bar. **NOTE:** Securely fasten lock nuts to bar if engine is to be supported over long periods or car is to be moved with the fixture in back of front engine mount.

### WRONG DIFFERENTIAL CARRIER BODY BUMPER BRACKET INSTALLED ON SOME MODELS

As covered on page 4-0 of the 1955 Preliminary Shop Manual a rubber bumper is mounted on the underside of the body above the differential to prevent the propeller shaft from striking the underside of the body when the car is under fast acceleration or being driven over severe bumps. The bumper and bracket assembly is so designed that the bumper will contact a pad near the nose of the differential. Different brackets are used on the Chieftain and Star Chief to maintain the same relative position of the bumper. In some cases these brackets have been interchanged resulting in an improper contact. If the Star Chief bracket (#519258) is installed on the Chieftain, the result will be a contact on the face of the differential behind the pad. If the Chieftain bracket (#519256) is installed on the Star Chief, contact will be at the rear universal joint. A third bracket (#519257) is used on station wagons but is of entirely different design than the others due to the station wagon floor pan construction.

### WEAR ON 1955 FUEL PUMP ARM AND ECCENTRIC

It has been found that the camshaft thrust plate, Part #518116, used in early production can be assembled in such a way as to cut off the lubrication to the fuel pump eccentric on the camshaft resulting in wear on the eccentric and fuel pump arm.

Production tolerances permit assembly of the inside diameter of the thrust plate too close to the hub of the camshaft sprocket. The diameter of the

hole in the plate has been changed from 1-1/2" to 1-9/16" to eliminate the possibility of shutting off lubrication. This change went into production approximately November 5. All service stock will have the 1-9/16" diameter hole.

In cases where eccentric and pump arm wear is found and new parts installed, a thrust plate having the 1-9/16" hole should also be installed.

### CORRECTION OF NOISY VALVE LIFTERS

Clicking valve action which cannot be corrected by a rocker arm adjustment usually is a result of the lifter plunger being stuck or due to looseness of the plunger in the body permitting excessive "leak-down". In both cases lifters should be removed, disassembled, cleaned, inspected, reassembled and tested on a leak-down tester. If within specification on this test, they should be reinstalled in the engine. Engine oil level in the crankcase should always be checked before diagnosing lifter noise. Overfilling the crankcase must be avoided because foaming which results will cause lifter noise.

### OIL PUMP DRIVE SHAFT INTERFERENCE

Some cases have been found at the factory where the upper end of the oil pump drive shaft rubs against the hole in the cylinder block causing an objectional grinding noise. Evidence of this interference can be seen on the outer diameter of the shaft above the upset "nibs". This condition can be relieved by decreasing the diameter of the shaft at the areas showing effects of rubbing either by turning in a lathe or by grinding. Use care not to turn or grind off the "nibs".

## SERVICE MANAGER—IMPORTANT

This News contains important service information on Pontiac cars. Each subject should be cross-referenced in the space provided at the end of each section in the Shop Manual or its Supplement. **Be sure and cover every point with your entire organization.**

Each service man should sign in the space below after he has read and understands the information in this issue.
