

TERRAPLANE HUDSON

Service

AND TECHNICAL INFORMATION

Vol. 1

AUGUST • NOVEMBER, 1934

No. 4

Now is the time to give your heater merchandising its most forceful effort. We are right on the edge of severe weather and there isn't any reason why you should not have the heater business of all of your customers.

Use the letters sent to you from the factory in connection with the Fall Service Campaign. Start telephoning the owners of both 1934 cars and previous years.

The boys in the shop can contribute greatly to the sale of heaters. They know good heaters when they see them. The Hudson-Terraplane heater is, without doubt, one of the finest ever produced.

Enthusiasm in merchandising is the answer to large volume.

HOWARD J. HUDSON

Assistant General Service Manager
(In charge of Accessory Merchandising)

Preparations for Winter Service

We are now on the threshold of the most profitable season the Service Department enjoys. Owners are well aware of the rigors of winter driving and readily appreciate the added comforts of heaters, defrosters and other featured winter accessories. Cars must be serviced for continued satisfactory starting and performance as well as protection against low temperatures. The volume of this business and likewise net profit you obtain is directly related to the amount of effort expended.

Prominently display the complete line of winter accessories which includes heaters, windshield defrosters, double windshield wipers, anti-freeze, radiator cleaner and rust inhibitor, batteries, battery chargers, tires and tire chains.

Nearly all of the above items are essentially cold weather accessories but the prospective sales of radios, bumper guards, et cetera, are as numerous at this time as any other. No display is complete without the entire list on exhibit.

Your direct mailing campaign to owners—as suggested and outlined in our letter of September 18th (F. S. D. 28)—should be well under way. If, for any reason, this has not been started, may we again remind you of the opportunity this season affords.

Service salesmen and mechanics have a most important part in this effort. Their daily contact with owners offers a wonderful opportunity to promote the Fall Service Campaign. The telephone can be used as a supplement to the owner mailing. Every owner that enters the building should be told the advantages of heaters and defrosters. With the resulting compensation from such sales, the full co-operation of the Service Department employees is to be expected.

The quality of work done is important. Poor workmanship loses customers and profits to the company. Every man must take an interest in doing his work properly.

The electrical check-up and engine tune-up, in particular, must be done with greater care for cold weather operation. However, all of the following operations are important. Every mechanic should be thoroughly schooled in the handling of this work.

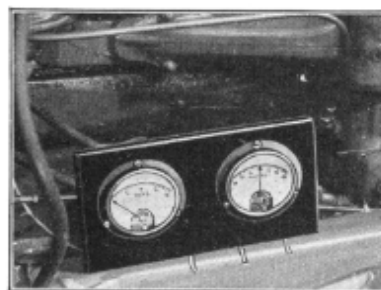
Electrical Inspection

1. Check storage battery solution with a hydrometer. If gravity reading is below 1.175, the battery should be recharged.



HM-1097509—Hydrometer—\$0.75

2. Check each cell of the storage battery for voltage drop on high amperage draw. If drop is excessive, rebuild or replace. (HMO-33 Cell Tester—\$5.25.)
3. Remove battery terminals, clean off corrosion and wipe with cloth moistened with ammonia. (Do not permit ammonia to enter cells.) Scrape terminals and posts to insure good contacts. Coat terminals and posts with vaseline, replace terminals and tighten securely.
4. Check battery ground strap to see that it is tight and makes a good electrical contact at frame. (Use voltmeter.) Check battery cable to see that it is tight on battery and starter switch, and that insulation is in good condition, particularly where cable passes through frame X-member.
5. Check engine ground strap (attached from right of transmission bell housing to rear engine frame support member) to see that it is tight and gives a good electrical connection. (Use voltmeter.)
6. Check all low tension wires to see that they are in good condition and connections tight.
7. Test voltage at breaker points (points open and ignition switch on). Low voltage indicates poor switch contacts, wires or connections, and should be corrected for proper starting.



J-379—Portostat \$13.50

8. Examine all high tension wires for connections and insulation. Electrical leakage through high tension cable insulation is responsible for many cases of hard starting. An ignition coil output tester—connected first between the coil and distributor and then at each spark plug—will give a check on losses.
9. Tighten all lamp and horn connections. See that fuse clips are clean and hold fuses securely. Check operation of switches and lamp bulbs. Adjust headlamps. (See Page 15, Volume 1—No. 1.)
10. Clean inside of distributor cap and rotor. Oil distributor with light engine oil. See that automatic advance works freely. This is easily

checked, while the engine is operating, by use of a synchroscope. (J-578 Synchroscope Price \$12.00.)

11. Clean generator commutator. Set the charging rate by shifting of the third brush for a maximum of 22 amperes when the generator is cold ($17\frac{1}{2}$ amperes when hot). To make this adjustment, remove the wire from the terminal of the generator marked "A" and connect one lead from an accurate ammeter (J-379 Portostat) to the terminal "A" and the other to the wire disconnected from the terminal "A." Attach a wire to the generator terminal marked "F" and ground to the engine. This is necessary to render the output regulator inoperative.

After the test has been made, remove the ground wire from the terminal "F" and test generator output. No output indicates burnt out fuse in regulator.

12. Clean starting motor commutator. Be sure brushes seat properly and armature turns freely. Heavy oil accumulation on starting motor bearing, when cold, may reduce cranking speed and voltage for ignition sufficiently to prevent starting.
13. Clean the Bendix drive as explained on Page 25 (Volume 1—No. 2). The re-lubrication of the shaft and screw threads should be done with a slight coating of 10-W engine oil.

Engine Tune-Up

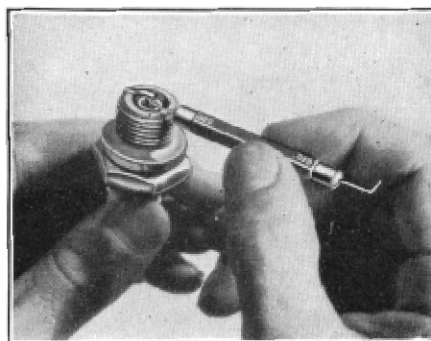
1. Test compression with a good gauge. Compression must be even on all cylinders to insure easy starting. Poor compression may indicate the need of valve grinding, leaks at the cylinder head gasket or poor ring seal.
2. Clean spark plugs. It is advisable to install new plugs if the old ones have seen 10,000 miles of service. An old plug, even though it may appear to be in good condition, is subject to electrical losses due to deterioration of the insulating material. New spark plugs promote easy starting, saving of fuel and increasing power.

Adjust spark plug gap to .022" to .025". *Be accurate.* Flat feeler stock is not satisfactory for this check. We recommend the round wire type (J-434 Spark Plug Gap Gauge).

3. Clean ignition distributor points. See that points contact squarely and that the breaker arm spring has not lost its tension. Adjust the points for maximum opening of .020" on the Terraplane and .015" on the Hudson. (Probably the most common cause of failure to start is incorrect adjustment or corroded points.)

4. Adjust tappets. Set intake tappets to .006" clearance and exhaust to .008" clearance after the engine is well warmed up. Quiet operation is to be obtained by careful, even setting with an accurate gauge, rather than by setting tappets closer than recommended.

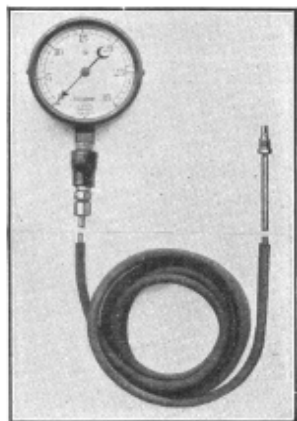
Do not use worn and battered feeler gauges. *Accuracy demands new feeler stock.*



J-434—Spark Plug Gap Gauge—\$0.45 each, \$3.95 doz.

5. See that carburetor choke is closed when engine is standing at room temperature (75° Fahrenheit). This condition should exist with the climatic control set to its normal position (See Pages 48 and 49 of the Service Magazine—Volume 1—No. 3, for instructions on adjustment of Climatic Control).
6. See that screws holding choke body to carburetor body are tight to prevent air leakage below the choke valve.
7. Check metering rod position—using gauge (Carter T-109-15). The position of the metering pin is important for economy and performance.
8. Clean and oil air cleaner. Do not tighten air cleaner clamp strap screw excessively. This might distort the choke housing sufficiently to seize the choke valve.
9. Check for gasoline leak at throttle delay plunger.
10. Check throttle delay plunger for sticking. If necessary, remove cylinder and plunger and clean. If plunger brass washer is rubbing against wall of cylinder, grind washer to obtain free action.
11. Check throttle "high idle" bar to see that it is free and drops into position behind the throttle stop screw when the throttle is opened and the engine is cold (or choke is held closed manually).
12. Clean gasoline lines and fuel pump sediment chamber.
13. Tighten all gasoline line connections.

14. Replace flexible hose connections if they show signs of leakage or cracks.
15. Tighten all oil line connections.
16. Remove plunger from oil check valve and clean out bleeder hole.



J-89—Vacuum Gauge—\$2.25

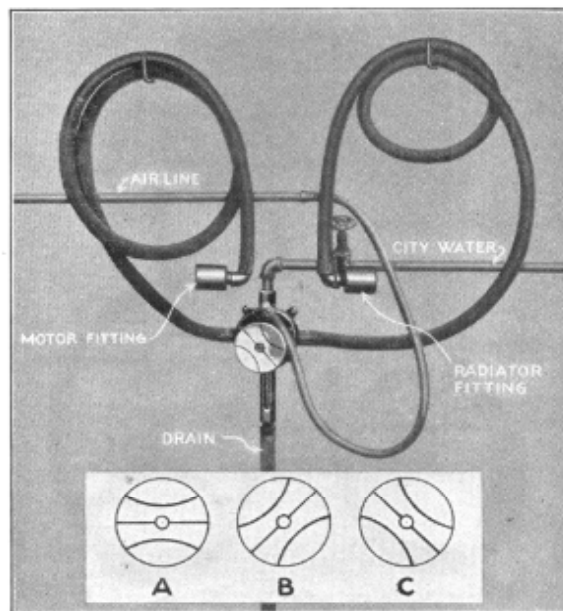
17. Tighten exhaust manifold stud nuts and check exhaust system for leaks.
18. Make final engine adjustment (carburetor and ignition timing) with a vacuum gauge. A synchroscope will also aid in adjusting timing.

Preparing for Anti-Freeze Solution

The cooling system of all cars should be flushed with Terraplane-Hudson Radiator Cleaner and treated with Terraplane-Hudson Rust and Corrosion Inhibitor. Reverse flushing of the system is advisable in all cases.

1. Run engine for a few minutes to stir up rust and sediment.
2. Stop engine and immediately open drain cock or remove lower hose connections to completely drain system before sediment settles.
3. Close drain cock (and or replace lower hose), add Terraplane-Hudson Radiator Cleaner and fill with water.
4. With radiator covered and filler cap on tight, run the engine for about twenty minutes, but avoid boiling.
5. Stop engine, and after a few minutes, completely drain system. Refill with fresh water and run engine for fifteen minutes, and drain. Refill and leave water run continuously through radiator filler neck with drain pet cock open, for sufficient time to remove all traces of cleaning compound.

6. Inspect water pump packing. With engine running, tighten gland nut with the fingers only. If leaking continues after tightening, install one or two rings of service packing (part No. 45277) to build up packing to original thickness. It is not necessary to remove the old packing except when the pump has been disassembled.
7. Adjust fan belt. It must have sufficient tension to prevent slippage on the pulleys without causing excessive pressure on the pump and generator bearings. If the fan belt is worn, it should be replaced.



K-404—Radiator Reverse Flusher—\$20.00

8. Tighten cylinder head studs. Start with center nut and work toward the outside, drawing nuts down gradually, each a little at a time. (See Page 22, Volume 1—No. 2.)
9. Check for leaks at cylinder head gasket, cylinder side plates, Welch plugs, radiator and radiator hose. Replace hose and gaskets as necessary. Be sure drain cock is closed and does not leak.
10. Put about one gallon of water in radiator, add anti-freeze and Terraplane-Hudson Rust and Corrosion Inhibitor. Add water until upper radiator tank is about half-full, allowing the remaining space for expansion.

Anti-Freeze

The types of anti-freeze recommended for the 1934 Terraplane and Hudson cars are: Alcohol, Glycerine and solutions of Ethylene Glycol type marketed under various trade names.

Solutions containing calcium salts or other ingredients which promote electrolytic action should be avoided. They will cause serious corrosion of aluminum alloy used in the high compression cylinder head as well as soldered joints in the radiator.

Also avoid the use of solutions containing glucose or honey which tend to clog the system. Kerosene or fuel oil also are undesirable solutions as, when hot, they liberate inflammable vapors.

Since alcohol lowers the boiling point, it is necessary to govern the quantity by the temperatures being encountered, increasing the quantity as the weather becomes colder.

When using radiator glycerine or the ethylene glycol solutions, it is advisable to use sufficient at the initial filling to give protection in the coldest weather expected during the winter.

Direct reading hydrometers are available to show the temperature to which protection is given by the solution in the radiator. These should be used regularly—preferably weekly—to check the contents of the radiator.



HM-1097508—Anti-freeze Tester—\$2.25

The following tables give the freezing protection afforded by these solutions when mixed with water in different proportions:

Alcohol		Radiator Glycerine (G. P. A. or Equivalent)		Ethylene Glycol (Prestone or Equivalent)	
Per cent of Alcohol	Protects to	Per cent of Glycerine	Protects to	Per cent of Glycol	Protects to
20%	+20°	55%	+10°	20%	+16°
30%	+10°	70%	0°	25%	+10°
37%	0°	80%	-10°	33%	0°
43%	-10°	90%	-20°	40%	-12°
50%	-20°	Full		50%	-34°
60%	-30°	Strength	-30°	60%	-62°

Also see table, Page 11, Volume 1—No. 1.

On cars equipped with hot water heater, the cooling system capacity will be increased from one to three quarts. Never fill the radiator full to the top. Always leave from three to four inches of air space at the top of the radiator to provide for expansion and avoid unnecessary loss.

Lubrication

Engine—Two new oils, which are available on the market, are now being recommended for winter use in Hudson and Terraplane cars.

The ease with which an engine may be started depends largely upon the cranking speed. Cranking speed depends upon the viscosity of the oil at the starting temperature. IT IS, THEREFORE, IMPORTANT THAT YOU PROCURE AND FURNISH TO YOUR OWNERS AN OIL WHICH WILL ALLOW STARTING AT THE LOWEST TEMPERATURE EXPECTED.

We have previously recommended S. A. E. 20 and S. A. E. 10 for zero and sub-zero temperatures. This is no longer done because we have found that some S. A. E. 20 oils become so thick as to prevent starting at +15° degrees; and there are some S. A. E. 10 oils which will not allow the engine to start at zero degrees.

The new "W" oils are classified according to their viscosity at zero degree F. They will allow starting at the temperatures for which they are recommended and will satisfactorily lubricate the engine under normal driving conditions.

Our new table of winter recommendations is as follows:

WINTER

For air temperatures above 40° F.

S. A. E. 30 (Pour test +20° F. Maximum)

For air temperatures between 40° F. and 0° F.

20-W (Pour test 0° F. Maximum)

For air temperatures between 0° F. and -15° F.

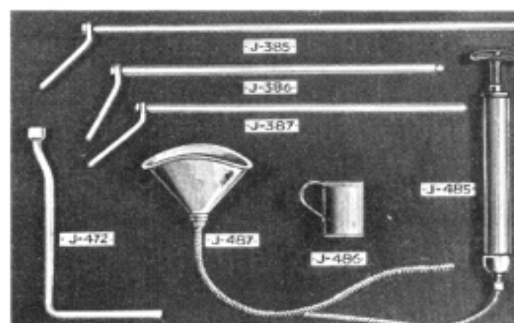
10-W (Pour test under 0° F.)

For air temperatures below -15° F.

10-W (Plus 10% kerosene)

The 10-W and 20-W are new numbers (note the addition of "W" denoting winter). In the interests of easy starting, efficient lubrication and customer satisfaction, it is advisable that you purchase and sell oils in accordance with these latest numbers.

Transmission—Drain and refill with a good S. A. E. 80 transmission oil.



Clutch Drain and Refill Set—\$6.75

Clutch—Drain and refill with one-third pint of Hudsonite Clutch Compound.

Differential—Drain and refill with S. A. E. 90 differential lubricant.

Steering Gear—Use a good grade of mineral oil—S. A. E. 110.

Chassis—Keep all chassis parts well lubricated to prevent entrance of water. Exposed brake control pins and yokes should be covered with grease to prevent an accumulation of ice.

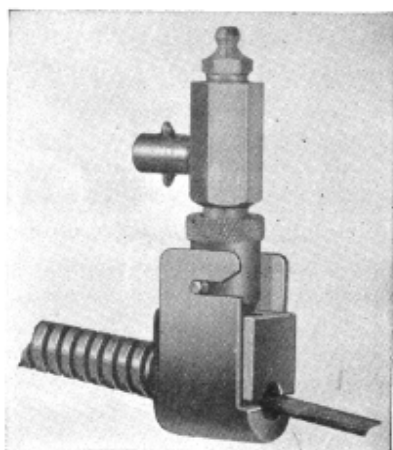
Body—Lubricate hinges—striker plates—latch bars and lock cylinders (use light oil in lock cylinder).

Hood—Lubricate hood hooks and hood side panel hinges. This hinge lubrication is important. If it becomes seized, the long leverage imposed when lifting the hood may distort the metal around the hinge or even tear it.

The lubricants applied to new cars at the factory are of the highest grade, made to exacting standards to meet the specific demands of Hudson and Terraplane automobiles, and under no consideration should they be replaced until the specified mileage has been reached. During new car inspection the various units should be checked and lubricant added only where necessary to bring it up to the recommended quantity.

Comfort and Safety

Brakes—Test and adjust, if necessary, to insure that brakes are effective and operate easily. The



Brake Cable Lubricator—\$2.95

importance of well equalized brakes is emphasized on slippery streets likely to be encountered in winter. Proper lubrication of brake cable conduits is essential to easy brake application, particularly in cold weather (See Item 11—Page 29—Volume 1—No. 2—Service Magazine—for methods and lubricants for lubricating conduits).

Remember that brake adjustments can never compensate for variations in tire grip on the road

due to differences in tread of tires on opposite sides of the car.

Heater—A source of comfort to the owner and profit to your shop is the installation of a Terraplane-Hudson hot water heater.

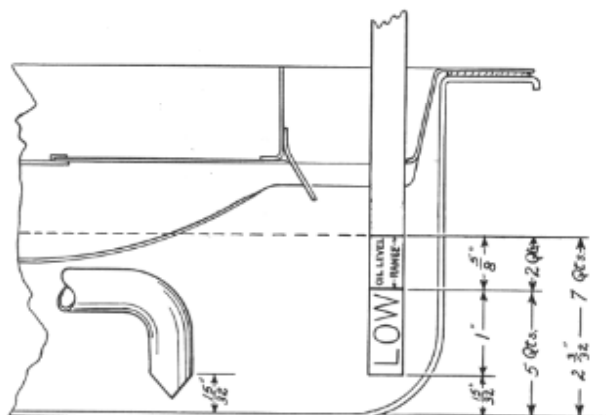
Remember that the hot water heater employs a radiator which requires cleaning at intervals to maintain its efficiency. This should be a part of the cooling system flushing operation.

Shock Absorbers—These will be subjected to severe service and should be at their highest efficiency in winter. Fill all units with the correct quantity of the recommended fluid to insure correct control.

Windshield Wiper—See that motor operates, blades wipe clean, and rubber tube connections are in good condition.

Oil Level Measurement

The partial sectional views of the Terraplane and Hudson oil reservoirs and dip trays show the actual relation of the position of the oil suction line, the oil level gauge and the oil levels for various quantities of oil.

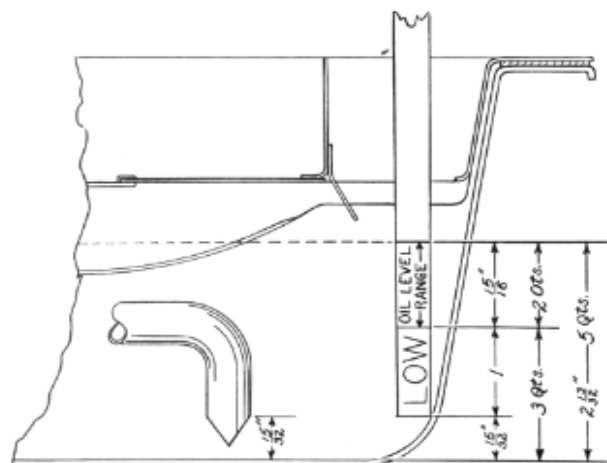


Hudson Oil Reservoir

It will be noted that the gauge does not extend to the bottom of the reservoir but rather down to the level of the bottom of the oil suction line. Oil will be delivered by the pump, therefore, so long as the oil level is maintained high enough to show on the level gauge. The actual quantity of oil required to maintain this level in the Terraplane is approximately one quart, while three pints will give a similar level in the Hudson.

Although this is sufficient for the functioning of the lubrication system, surging of the oil due to movement of the car would momentarily uncover the suction line. Also, the short time required to circulate this total quantity of oil through the system would not permit proper cooling of the oil before recirculation.

In order to guard against both of these conditions, the lowest recommended level (the bottom mark of "Oil Level Range") is one inch above the bottom of the gauge and the bottom of the oil suction line. This level is obtained with three quarts of oil in the Terraplane reservoir and five quarts in the Hudson.



Terraplane Oil Reservoir

If these quantities are maintained in the respective reservoirs, the lubrication system will function properly, giving maximum protection to the engine parts. In order, however, to make it unnecessary to constantly check the oil level, two additional quarts of oil are recommended in both the Terraplane and Hudson. This additional oil will bring the level up to the top of the "Oil Level Range" and checking at intervals of 500 miles should insure against the level getting below the bottom of the "Oil Level Range."

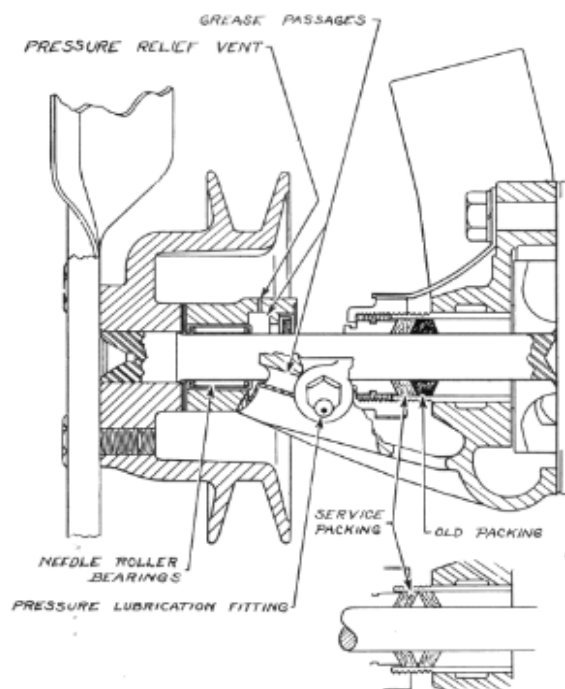
When the bottom of the "Oil Level Range" is reached, two quarts of oil should be added unless the mileage for a change has been reached or if only a few hundred miles more are to be driven, one quart of oil may be added to raise the level sufficiently to insure against it going below the "Range" before the change point is reached.

There is no necessity under any driving condition to carry the oil level higher than the "Oil Level

Range." This does not give additional protection and may cause "Flooding" of the dip troughs, increase the rate of oil consumption and tend to build up carbon accumulation on the pistons and piston rings.

Water Pump Packing

In Volume 1—No. 2, Page 54, information was given on a new split ring type water pump packing (Part No. 45277) for use in service. In order to make



Water Pump

clear the use of this new packing, we are reproducing a sketch showing its installation where one ring is added to the original packing to make up for wear, and also where two rings are used to completely repack the pump.

Two rings installed as shown in the insert give the same overall length as the original packing.

Hill Hold

In order to correct an apparent misunderstanding in reference to the operation of hill hold, the following is offered in addition to the paragraphs on "Operation" found on Page 46—Volume 1—No. 3.

After the hill hold has been made inoperative by shifting into reverse, whether or not it has been subsequently returned to neutral to permit the car to roll freely in either direction, it is necessary to move the shifting lever into LOW in order to make the unit again effective. If the shift is not completed to LOW before going into second or high, the release lock (18, Fig. 1) will not release the sliding plate

(1, Fig. 2) and the prawl will continue to ride over the teeth on the drum. This obviously will cause rapid wear on the prawl and eventually render the hill hold unit ineffective in that it will not prevent the car from rolling backward.

ALWAYS SHIFT DIRECTLY INTO LOW GEAR AFTER USING REVERSE ON ALL CARS EQUIPPED WITH HILL HOLD.

NOTE: The last paragraph under "Operation" on Page 46 (Vol. 1, No. 3) should read: "To again render the hill hold operative, the gears are shifted into LOW"—(not—LOW or SECOND).

DO NOT WAIT FOR THE FIRST SNOW OR SLEET TO SELL DEFROSTERS

This kind of weather always occurs when the owner is least prepared to meet it. Whether or not the frame is installed on the windshield at the time of purchase is not important. It is highly important, however, that the instrument panel switch installation be made immediately so the owner may install the frame at a moment's notice. This is easily and quickly accomplished because each package contains an especially prepared compound to attach the vacuum cups to the windshield.

Defrosters offer you another very fine source of revenue and profit.

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