

**BATTERY**

The battery on 1934-35 and 36 models is located under the floor of the car and can be reached for inspection or removal by turning back the left side of the front floor mat and removing the two screws holding the cover in place.

The battery on 1937 models is located just back of the radiator on the left side of the car and can be reached by raising the hood.

The battery should be kept charged at all times to preserve its life. The specific gravity should not be allowed to go below 1.225. If the battery is left in a low state of charge sulphation of the plates will take place and the battery capacity will be reduced.

The cell plates should be covered with electrolyte at all times. Distilled water should be added as required to keep the plates covered.

A battery when taken out of service will hold its charge longer if stored in a cold place. Stored batteries should be tested monthly and recharged if the specific gravity is below 1.225.

To prevent corrosion of battery terminals and connections, apply a coating of vaseline over the battery posts and straps and replace the terminals securely.

If corrosion occurs, clean posts and terminals with a soda solution. When using the soda solution be sure the cell caps are in place and be careful to prevent the soda from entering the cells. Flush off well with water and dry the top of the battery.

Road dirt on top of the battery moistened with battery acid will form a conductor and "short" the battery to such an extent to permit it to discharge slowly. Always keep the top of the battery clean. Remove acid with soda solution.

**Battery Testing**

Battery testing is covered under Engine Tune-up, Section 3.

Battery specifications are listed in the Specification Section No. 23.

**GAUGES**

Electric Gauges are standard equipment on all models as follows:

1934—Gasoline Gauge—All models

1934—Water Level Gauge (Radiator)—All models  
except KS Terraplane

1935—Gasoline Gauge—All models

1935—Water Level Gauge—All models except G Terraplane

1936—Gasoline Gauge—All models

1936—Water Temperature Gauge—All models  
except 61 Terraplane

1937—Gasoline Gauge—All models

1937—Water Temperature Gauge—All models

The Electric Gauge consists of two units, the Sending Unit and the Receiver Unit. The following diagrams show the major parts of each unit and the principle of operation is as follows:

When the gasoline or radiator upper tank is empty the two contacts in "Tank Sender" (Figure 616) are

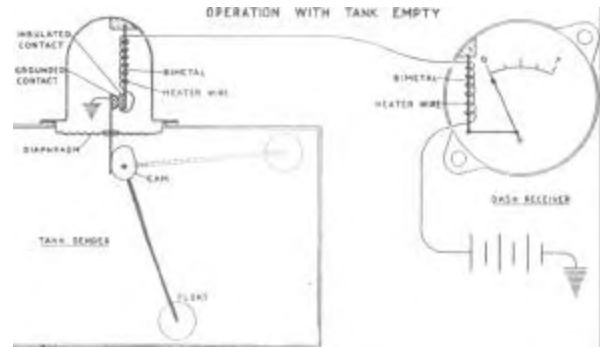


Figure 616—Gasoline Gauge—Tank Empty

just touching. With the ignition switch on, current flows through the circuit warming up the heater wires which causes the bi-metals in both the Sender and Receiver to bend. This bending of bi-metal in "Tank Sender" opens the contacts and circuit is broken—the heater wire then cools and the bi-metal returns to its former position. Contact is then again made and the procedure is repeated at the rate of approximately once per second.

Since both heater wires are in the same circuit, a similar slight bending of the bi-metal in the Dash Receiver occurs which is just sufficient to make the needle register zero.

When the tank is filled with gasoline, however, the action of the float and cam as shown (Figure 617) pushes the grounded contact against the insulated bi-metal contact, bending the bi-metal in the Tank Sender. Now if the ignition switch is on, the action described in the preceding paragraph occurs but

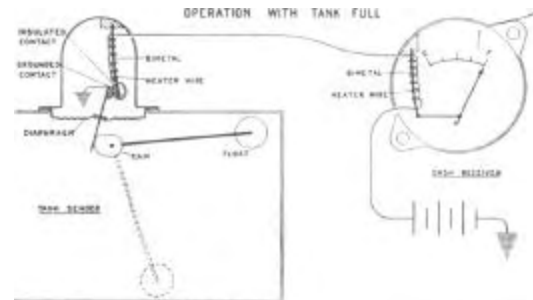


Figure 617—Gasoline Gauge—Tank Full

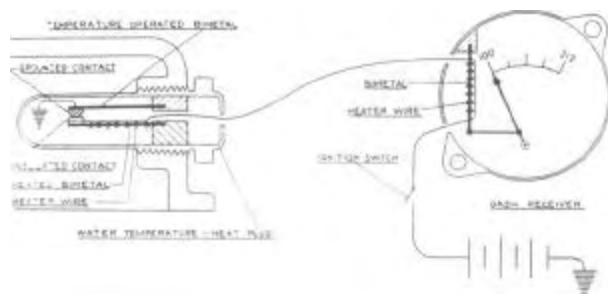


Figure 618—Water Temperature Gauge—Cold

because the bi-metal is already under a strain a much greater amount of current is required to heat the bi-metal so that it will bend sufficiently to break contact in this position. A similar greater bending of the bi-metal in the Dash Receiver occurs and this action pulls the dial needle over to the full point.

The movement of the dial needle in any position caused by the make and break of the circuit is so minute that it cannot be detected.

It can be seen that this principle of operation gives absolute steadiness of reading—a very desirable feature in automotive gauges. Because the bimetal heat and cool slowly, any sudden change in gasoline level caused by driving over rough roads, etc., are dampened out, and a steady reading of the average level in the tank is given.

### WATER TEMPERATURE GAUGE

The receiver (dash instrument) of the water temperature gauge (Figure 618) is identical with the gasoline gauge in construction and consists of an electrical heating element mounted on a bi-metal strip. As the bi-metal strip is heated it bends and the indicating hand is moved through the connecting link.

The sender (cylinder head unit) differs from the gasoline gauge tank unit only in that the moveable point which is controlled by the movement of the float in the gas tank is mounted on a bi-metal strip (Figure 618) which determines its position according to the temperature of the water.

The heated bi-metal strip with the heating unit connected in series with the heating unit in the receiver is identical with the one used in the gasoline gauge.

When the water in the cooling system is cold the temperature operated bi-metal strip is straight (Figure 618) and only slight heating of the heated bimetal strip is necessary to open the contact. The bi-metal in the receiver does not become heated and a low reading is obtained on the gauge

As the temperature controlled bi-metal strip is warmed by the water in the cooling system it bends as shown in Figure 619 toward the heated bi-metal strip so that more heat is required from the heating coil to open the contact. This causes the bi-metal strip in the receiver to reach a similar higher temperature and bend, moving the indicating hand to a higher reading.

If the Gasoline, Water Level or Water Temperature Gauge are not functioning properly, the following procedure will assist in locating the cause of the trouble:

1. Short out Sending Unit by grounding wire leading to unit. Use an extra lead wire for this purpose with clip terminals. Clip one end to terminal screw of Sending Unit and the other end to car frame.
2. Turn on ignition switch. If Receiver Unit now registers, then the Receiving Unit and connecting wire are okeh and the Sending Unit is the source of trouble and should be replaced.

**CAUTION:** In making this test, turn off ignition switch as soon as Receiving Unit registers three-quarters of scale. Never short out Sending Unit with ignition switch on except momentarily. This subjects Receiving Unit to full 6 volts which will cause it to burn out if left in this manner for any period of time.

3. If Receiving Unit fails to register with Sending Unit shorted out and ignition switch on, then check wiring and connections. If these are okeh then replace Receiving Unit and check again.

**NOTE:** A short anywhere in the circuit will cause the Receiving Unit to over read. If a direct short exists for any appreciable time this will burn out the Receiving Unit. Merely replacing the Receiving Unit in such cases will not remedy the trouble. The short must be located and eliminated otherwise the new Receiving Unit will burn out also.

A short is generally caused by the connecting wire between the Sending and Receiving Units becoming grounded because of faulty insulation or the wire

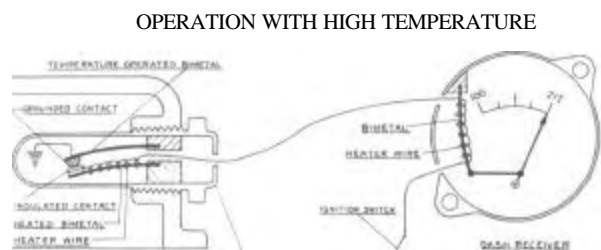


Figure 618—Water Temperature Gauge—Hot

terminal touching the case of the Sending Unit. In radio equipped cars it may be caused by the connections on the condenser or the condenser itself. (The Sending Units of all radio equipped cars must be equipped with condensers to prevent interference which would otherwise result from the make-and-break contact in the Sending Unit. Use standard type condenser only.)

#### ACCURACY TEST

If equipment is available any Receiving Unit can be tested for accuracy in the field. Forty milliamps of current applied directly to any Receiving Unit should make it register at the low mark and 200 milliamps at the high mark.

#### Removal of Gasoline Tank Unit

The gasoline tank units on 1934 and 1935 cars can be

tested or removed through the opening provided in the body floor at the rear of the rear seat. This opening is covered by a cover plate attached by two screws.

The gasoline tank units on the 1936 and 1937 cars can be removed from under the car by simply disconnecting the wire and removing the six attaching screws.

Before removing gasoline tank units clean the outside of the tank around the gauge. When the gauge is removed, remove all of the cork gasket carefully so that none will be allowed to fall into the tank.

When replacing the gasket put a light coating of shellac or gasket cement on the gasket—not on the tank.

## HEADLAMPS

The headlamps on all models are mounted on a single stud with a ball and socket to permit aiming and aligning of the lamps in all directions.

To aim the lamps, loosen the mounting stud nut and turn the lamp to the proper position. Then tighten the nut.

The mounting stud nut on the 1934-35 and 36 models can be reached from beneath the fender as shown in Figure 624.

#### 1934 Hudson and Terraplane

The headlamps use double filament bulbs so that each lamp has a high and a low beam. When the lighting switch is pulled out to the second position both lamps use the low beam for city driving.

When the lighting switch is pulled out to the third position, the lamps may use both high beams for country driving or one high and one low beam for passing. This is controlled by the toe board switch. Care must be taken in aiming the lamp which uses the high beam for passing as

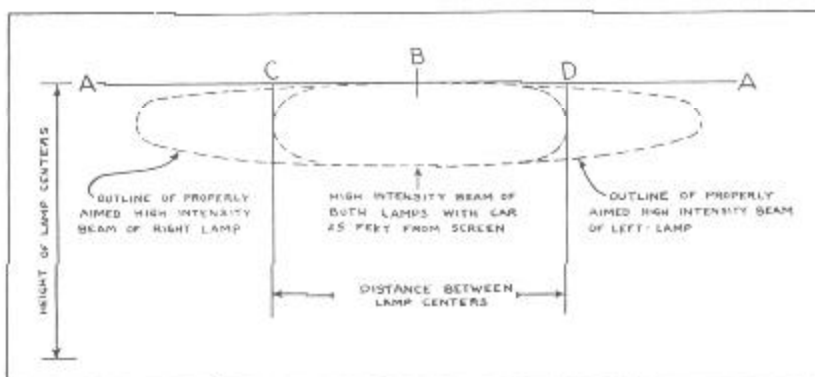


Figure 620—Headlamp Pattern (1934 Terraplane)

The J-868 Headlamp Nut Wrench should be used as shown.

The mounting stud nut on the 1937 models can be reached through an opening in the bottom of the headlamp bracket as shown in Figure 625.

none of the intense light must be allowed to go to the left where it would "blind" the driver of the oncoming car. This high beam is intended to give maximum illumination of the right side of the road.