KING-SEELEY "CV" CONSTANT VOLTAGE GASOLINE, OIL PRESSURE, & TEMPERATURE GAUGES.

DESCRIPTION & OPERATION: King-Seeley "CV" or constant-voltage gauges differ from previous types in that the tank and engine units (senders) consist of variable resistances (rheostats) which regulate the current in the heating coil of the receivers (dash units) and control the deflection of the bi-metal arm linked to the gauge pointer. All dash units are of similar design. The feature of these gauges is the "Gauge Voltage Regulator" which regulates input voltage in the gauge circuits and insures accurate gauge readings regardless of the line voltage fluctuations.

Gauge Voltage Regulator: Consists of a vibrating unit (contacts controlled by bi-metal arm on which a heater winding is located) connected in the line between the ignition switch and the gauges. Regulator produces a pulsating voltage, at an effective constant amperage value, of 5.0 volts for all normal input voltage variations (between 5.6 and 8.0 volts). Input voltages lower than 5.0 volts will result in proportionately lower gauge readings while voltages greater than 8.0 volts will not affect gauge accuracy but will overload regulator contacts and may cause premature wear. Regulator is temperature compensated and is intended to be mounted near the gauge dash units and at approximately the same ambient temperature.

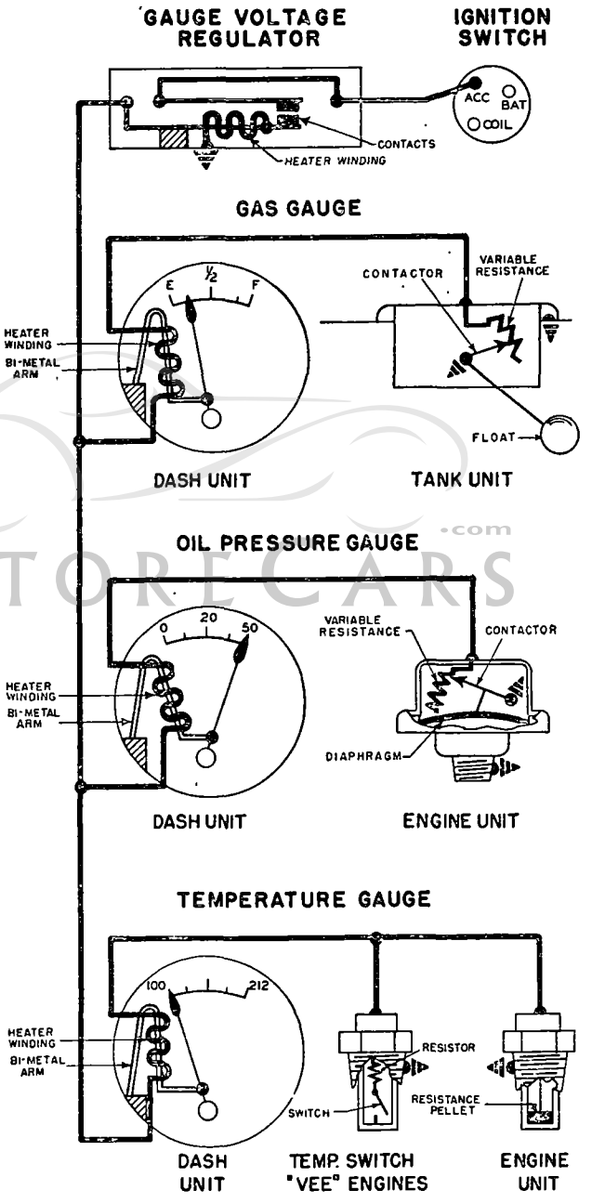
Gauge Indicators (Dash Units): All units are of similar design. Gauge pointer is linked to a bi-metal arm on which a heater coil is wound. This coil is connected in series with the tank or engine unit rheostat so that the gauge reading is in proportion to the current in the circuit (zero reading with maximum resistance and minimum current, high reading with minimum resistance and maximum current).

Gauge Tank & Engine Units (Senders): All units are not of same design:

Fuel Gauge Tank Unit—The rheostat contactor acts as a ground for the gauge circuit and is linked to the gauge float so that it sweeps across the resistance as the float follows the level of fuel in the tank When the tank is empty the entire resistance is in the gauge circuit and the current is at a minimum. When the float rises as the tank is filled, the resistance is cut out of the gauge circuit and the increase in current causes the dash unit to read higher.

Oil Pressure Gauge Engine Unit—Operates in same manner as fuel gauge (above) except that rheostat contactor is linked to a diaphragm which is deflected by the engine oil pressure.

Temperature Gauge Engine Unit—New design (no moving parts). Gauge circuit is grounded through a small block of special sintered material which has a variable resistance in response to temperature changes. This block is sealed in the end of the engine unit bulb in close contact to the engine coolant. It has a comparatively high resistance when cold so that the current in the gauge circuit is, at a minimum. This resistance decreases as the engine temperature increases and the consequent increase in current in the gauge circuit causes the dash unit to read higher.



KING-SEELEY GAUGE CIRCUITS

►**Auxiliary Temperature Gauge Switch (for "V" Engines)**—The regular temperature gauge engine unit is mounted in one block of the engine, and the auxiliary switch is intended to be mounted in the other block as a warning of abnormal temperatures in this block. Switch is connected in parallel with the regular engine unit (see diagram) and consists of a switch (normally open) and resistance. At high temperatures, the switch closes and the resistance is shunted across the regular engine unit and causing the dash unit to read "hot."

TROUBLE SHOOTING: Units should not be removed from the car until testing has been done to determine which units are defective. See Testing (following).

All Gauges read Too High or Too Low—Voltage Regulator defective (see Regulator Test) or not properly grounded (regulator MUST be grounded). Battery voltage at regulator (or ignition switch) below 5.0 volts (check with voltmeter).

►***CAUTION—Gauge Voltage Regulator provides an intermittent voltage averaging 5.0 volts and regulator output voltage can not be tested with a voltmeter.***

One Gauge Reads Too High or Too Low—Test unit as directed below.

TESTING: Use a Fuel Level Gauge Tank Unit which is known to be OK. as a test unit. Connect one test lead to the terminal on the unit and a second test lead to the case to act as a ground wire (CAUTION—unit will not operate if not properly grounded). Make tests as follows:

Voltage Regulator: Requires use of an OK. dash unit also. Connect these test units together (dash unit and tank unit) in normal manner and ground tank unit, connect the other dash unit terminal to the output terminal of the voltage regulator. Check battery voltage (must be within operating limits). Hold tank unit float in Empty position, turn on ignition switch, note reading on test dash unit (should read Empty). Start engine and run at faster than normal idle speed. Gauge reading should not change if voltage regulator functioning normally. Move tank unit float to Full position. Dash unit gauge should read Full. If voltage regulator not operating correctly, replace unit.

Gauge Units: Disconnect lead at tank or engine unit on car and hook test unit in circuit at this point (CAUTION—make certain test unit is grounded.) Move test unit float to Empty position, turn on ignition switch, note dash unit reading (gauge pointer should be at lower end of scale—Empty, Zero, Cold, etc.). Move float to Full position, gauge pointer should then be at upper end of scale. If dash unit reads OK. in both positions, replace original tank or engine unit with correct type unit. If dash unit does not test OK., connect test unit directly to terminal on dash unit (eliminating the car wire). If dash unit then tests OK., check lead between dash unit and tank or engine unit for broken wire or shorted insulation and replace this wire. If dash unit still does not function correctly, replace original dash unit with correct type unit.

REPAIRING UNITS: Repair or calibration of units is not practical in the field and defective units should be replaced.