INTERNATIONAL HARVESTER CORP.

Scout II
Scout Terra
Scout Traveler
Motor Home Chassis

DESCRIPTION

Instrument cluster is composed of speedometer, ammeter or charge indicator, fuel gauge, oil pressure gauge and temperature gauge. Electrical instrument gauges are connected to the vehicle electrical system either by individual wires or printed circuit boards.

Gauges may be equipped with a constant voltage regulator or a separate constant voltage regulator unit may be used to supply voltage to all gauges. Type of equipment varies on each model.

OPERATION

Constant Voltage Regulator (CVR) – CVR regulates the input voltage from the battery providing an equal and constant voltage of 5.0 volts to each gauge.

The CVR does not produce a steady DC voltage output, but rather a pulsating voltage averaging 5.0 volts. Output voltage averaging lower or higher than 5.0 volts will result in proportionately higher or lower gauge readings.

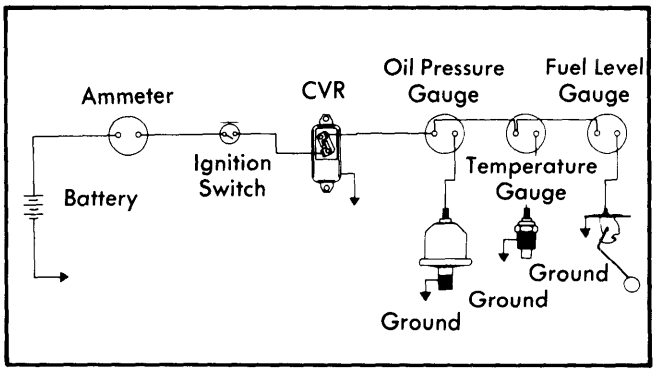

Fig. 1 IHC Constant Voltage Instruments with External Mounted Voltage Regulator

Fuel Level Gauge With "CVR" – Fuel level circuit consists of a fuel gauge, CVR and sending unit. Sending unit is located in fuel tank, gauge and CVR are located on instrument panel.

Gauge is grounded through variable resistance of sending unit. A float attached to a slide rheostat follows fuel level and as the resistance varies, the indicator reading increases or decreases. Stability of indicator reading (elimination of surge fluctuation) is accomplished by use of a bimetal in the fuel gauge.

Fuel Level Gauge (Magnetic) – Fuel gauge system consists of two coils spaced 90 degrees apart with an armature and a pointer at intersection (center) of coil axis. Tank sending unit has a rheostat attached to a float arm. As fuel level changes, the float arm is moved over rheostat changing resistance which changes value of indicating coils and moves the pointer.

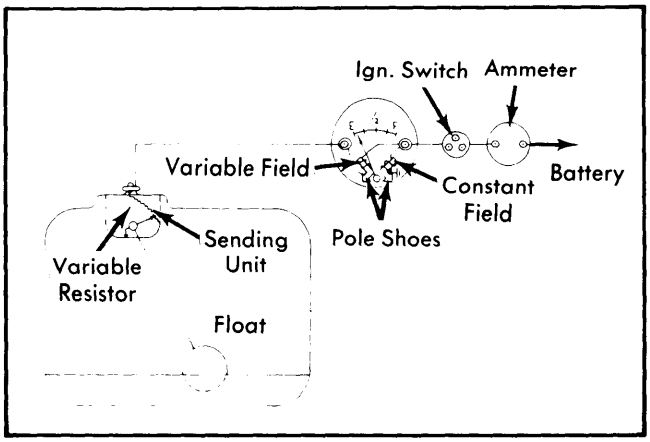

Fig. 2 IHC Magnetic Fuel Gauge System

Temperature Gauge – Indicator circuit consists of a sending unit and gauge. Sending unit has no moving parts. It consists of a material enclosed in a bulb which produces low resistance when hot and high resistance when cold. Changes in coolant temperature cause resistance to vary in the sending unit which increases or decreases indication on the gauge.

Oil Pressure Gauge – Oil pressure circuit consists of a sending unit, gauge and constant voltage regulator. Sending unit has a slide rheostat amd movement is caused by diaphragm movement varying according to pressure delivered by engine oil pump. The varying resistance increases or decreases indicator reading.

Ammeter – Ammeter gauge indicates the direction and amount of current flow (charge or discharge). The charge indicator light, installed on some models, replaces the ammeter and with engine running; indicates system is charging when light is out and discharging when light is on.

TESTING

Ammeter or Charge Indicator Light – Check bulb on indicator light, all connections and wiring from ammeter-to-alternator and battery. If good, check alternator and battery. If all preceding checks are good, replace ammeter gauge.

Fuel Level Gauge (Magnetic Type) – Obtain a good sending unit and two test wires approximately 6 feet in length. Turn ignition switch to "OFF", disconnect battery ground and remove wire from back of the gauge that goes to the sending unit. Connect test sending unit to gauge, connect battery and turn ignition switch to "ON".

2) Move float arm on test sending unit slowly from empty-to-full. If pointer does not move freely from empty-to-full, replace fuel gauge.

3) If gauge is good on preceding test, reconnect wire-to-gauge. Disconnect wire from sending unit-to-gauge at the tank and connect wire to the test sending unit. Connect other lead to ground.

INTERNATIONAL HARVESTER CORP. (Cont.)

4) Move float arm on test sending unit slowly from empty-to-full. If pointer moves freely, wiring and gauge are good. Replace sending unit.

5) If pointer does not move freely, check wiring from sending unit-to-gauge. If good, check printed circuit board.

Constant Voltage Regulator – 1) Check CVR ground connection. If all gauges read top of scale, replace CVR.

2) If all gauges read zero, check voltage at the CVR ignition terminal (5.0 volts) lead wire between CVR load terminal and gauges for an open or short. If good, replace CVR unit.

REMOVAL & INSTALLATION

SPEEDOMETER & GAUGES

All Models – Instrument panel must be removed to gain access to speedometer and gauges for repair or replacement.

INSTRUMENT CLUSTER

All Models (Exc. Motor Home) – Remove faceplate retaining screws, then remove radio control knobs. Remove screws from each cluster. Disconnect speedometer cable and all wiring, then remove cluster from vehicle. To install, reverse removal procedures.

PRINTED CIRCUITS

All Models – Remove instrument cluster. Printed circuit board is removed by disconnecting all snap connectors and light sockets. Remove four attaching screws securing board to dash panel. Remove printed circuit board from vehicle. To install, reverse removal procedures.

HEADLIGHT SWITCH

Light Switch Without Fuse & With Circuit Breaker – Pull headlight switch out to "ON" position. Loosen Allen screw in the knob and remove knob from shaft. Remove ferrule nut and disconnect all wires from switch while noting positions of wires to help in installation. Remove switch from vehicle. To install, reverse removal procedures.

All Other Headlight Switches – Pull headlight switch to "ON" position, depress shaft release button on switch body and pull knob and shaft from switch body. Remove ferrule nut and disconnect all wires from switch while noting positions of wires to help in installation. Remove switch from vehicle. To install, reverse removal procedures.

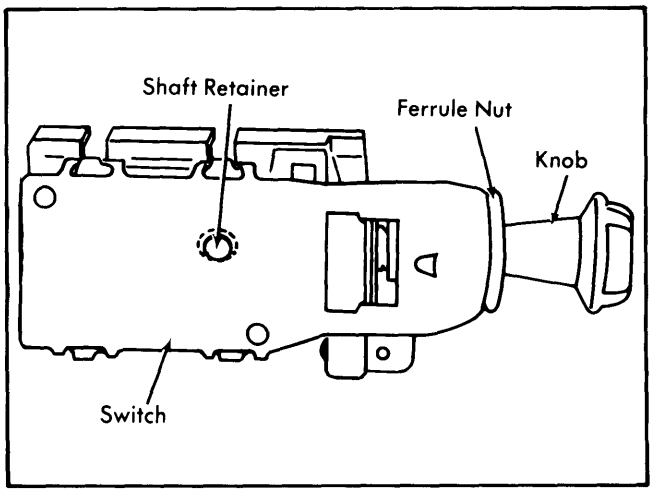

Fig. 3 IHC Headlight Switch (with Fuse & Circuit Breaker)