FORD MOTOR CO. ELECTRONIC INSTRUMENT PANELS

Lincoln Town Car, Mark VI
Thunderbird, XR7

DESCRIPTION

The Electronic Instrument Panel is standard on the Mark VI and optional on Lincoln Town Car, Thunderbird and XR7. On Lincoln and Mark VI, the system includes an electronic speedometer, fuel gauge, message center, keyboard, control module, lamp out warning system and various sensors. The system used on Thunderbird and XR7 includes the electronic speedometer, fuel gauge and lamp out warning system.

OPERATION

The speedometer is driven by a conventional cable and has a mechanical odometer. It can indicate speed in miles-per-hour or kilometers-per-hour. It also provides a speed reading for vehicles equipped with cruise control. The fuel gauge displays a bar graph which indicates fuel level. It is divided into 32 divisions which represent a percentage of fuel in the tank. A low fuel indicator lights when fuel levels are down to the last division on the gauge.

The message center displays warning for low oil pressure, engine temperature, ammeter, etc. In addition, it has a computer which can calculate fuel consumption, distance traveled, distance to destination, average speed, estimated time of arrival and elapsed time. The message center keyboard is used to enter trip data for computer calculations.

The lamp out warning system monitors the headlights, tail lights and brake lights. If a lamp goes out in one of these areas, a change in voltage drop across a special section of the wiring harness provides a signal to the indicator light of the appropriate system.

All sensors used with the electronic instrument panel (except fuel sending unit) are the same as used on conventional systems. Sensor inputs go to the control module and are converted to written messages on the message center.

TROUBLE SHOOTING

NO FUEL GAUGE DISPLAY

Check for minimum of 10 volts between ground and ignition terminals on gauge. If voltage is not present, check wiring. If present, replace gauge.

FUEL GAUGE SYMBOLS FLASH

Disconnect sender at tank and short across terminals. If gauge stops flashing, check sending unit for shorts. If not, check wiring and ground connections.

FUEL GAUGE ERRATIC OR INACCURATE

Check ground and power connections. Test fuel sender.

FUEL GAUGE DISPLAYS OPPOSITE OF TANK LEVEL

Wrong sending unit installed.

SPEEDOMETER READS ZERO AT ANY SPEED

Check for display "188" when ignition is turned on. If not present, replace speedometer. Check odometer operation. If working, check optical sensor location in speedometer housing. If odometer does not work, repair cable.

ERRATIC SPEED READINGS

Check speedometer cable. If ok, replace speedometer.

SPEEDOMETER DISPLAY INCORRECT

If display remains on "188", shows any number but "O" when vehicle is stopped, shows letters, or is much dimmer than fuel gauge, speedometer must be replaced.

LAMP OUT SYSTEM MALFUNCTION

Place ignition in on position and check that all indicators are on. If not, replace bulb. If bulb is okay, check wiring connections between fuse block and warning module. If one circuit does not work, check continuity of wiring. Check warning module and repair or replace as necessary.

TESTING

Fuel Gauge – 1) Remove wiring connector at fuel tank sender. Connect ohmmeter across terminals at sender. Ohmmeter should read between 3-10 ohms at empty, and between 195-211 ohms at full tank.

NOTE – *These readings are opposite those obtained with a conventional fuel tank sending unit.*

2) Connect a 72 ohm resistor across sending unit connector terminals. Gauge should display 10 to 13 segments after initial checkout. Connect a 10 ohm resistor across terminals; gauge should display 1 or no segments and gas pump display will flash.

3) If gauge display is correct, replace sender. If gauge does not display correctly, replace gauge.

Speedometer – Use troubleshooting procedures to test speedometer. Check connections at printed circuit board if speedometer is totally inoperative.

Message Center – The message center can be checked for good ground and power connections. A special tester (T80L-50-EMC) is required for diagnosis and testing of the complete message center. All sending units are identical to conventional warning light units and should be checked for good connections.

Lamp Out Warning System – 1) Turn ignition to "ACCY" position. Turn on low beam headlights and activate brake lights. All outside lights should work. If not, disconnect warning module. If lights now work, replace module. If outside lights still do not work, check fuses, bulbs, sockets or wiring, and repeat test.

FORD MOTOR CO. ELECTRONIC INSTRUMENT PANELS (Cont.)

2) If outside lights work properly, check if any lamp out indicators are on. If not, turn off outside lights, and disconnect both tail lights and one headlight. Turn ignition on. Turn on low beam headlights and activate brake lights. Headlight and tail light out indicators should light, indicating system is working properly.

3) If outside lights worked properly in step **1)**, but indicator lights are on, turn off lights and ignition. Disconnect warning module and turn ignition and headlights on. If indicator lights go off, check voltage between ground and circuits in module connector.

4) Voltage should be 10-15 volts. If not, check for open circuits in connector. If indicator lights remain on with module disconnected, check for shorts between ground and circuits in module connector.

REMOVAL & INSTALLATION

NOTE – *Removal procedures for components not listed here will be found in the Ford Motor Co. Switches, Gauges & Instrument Panels Story in this Section.*

INSTRUMENT CLUSTER

Removal (All Models) – 1) Disconnect battery ground cable. Remove steering column lower cover and lower instrument panel trim cover.

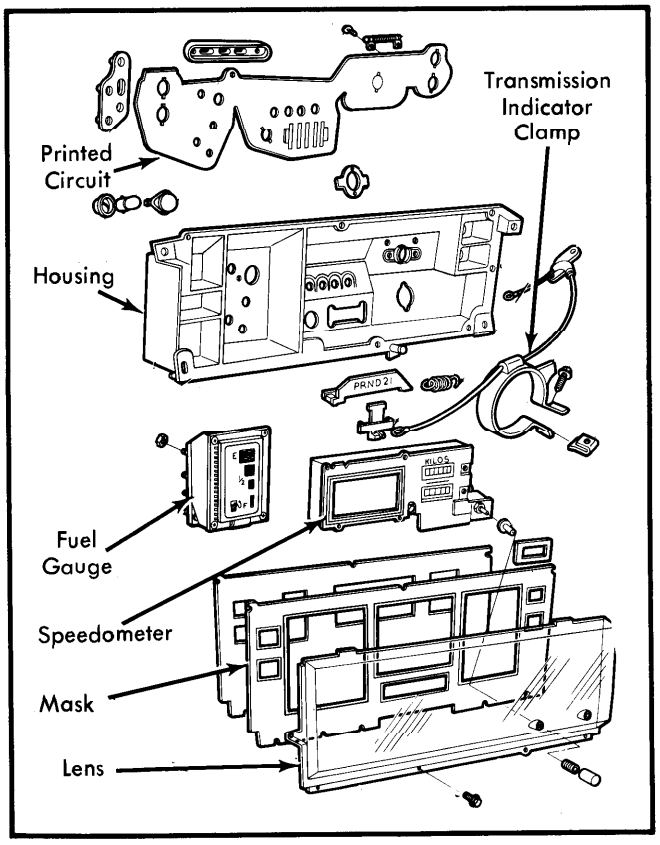

Fig. 1 Electronic Instrument Cluster (Thunderbird and XR7)

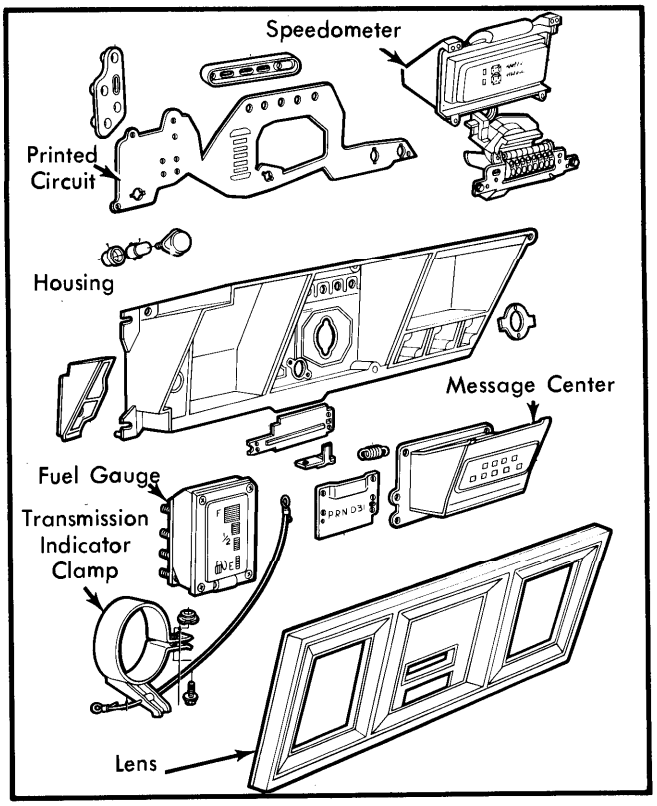

Fig. 2 Electronic Instrument Cluster (Lincoln and Mark VI)

2) On Lincoln and Mark VI, remove keyboard trim panel and left dashboard trim panel. On all models, remove screws and instrument panel trim cover. Remove 4 cluster retaining screws.

3) On Thunderbird and XR7, remove transmission indicator clamp from steering column. Detach cable loop from pin of steering column. On all models, pull cluster away from panel.

4) Disconnect feed plugs, ground wire and speedometer cable. On Lincoln and Mark VI, remove transmission indicator cable bracket and detach cable loop from pin on column. On all models, remove the cluster assembly.

Installation – 1) Lubricate speedometer cable head and reposition cluster on instrument panel. Connect speedometer cable and wiring, then install cluster retaining screws.

2) Place transmission indicator clamp on steering column and fit cable loop over pin. Place transmission in "D" and rotate clamp on column until indicator covers both calibration dots on cluster. Tighten clamp screw.

3) Replace instrument panel trim covers and steering column cover. Connect battery ground cable.

FUEL GAUGE

Removal (All Models) – With instrument cluster removed, remove screws that hold mask and lens to housing. Remove

FORD MOTOR CO. ELECTRONIC INSTRUMENT PANELS (Cont.)

mask and lens. On Lincoln and Mark VI, remove lamp baffle from rear of housing. On all models, remove retaining nuts and pull fuel gauge assembly out of housing.

Installation – To install, reverse removal procedures.

SPEEDOMETER AND ODOMETER

Removal (All Models) – **1)** Disconnect battery ground cable and remove instrument cluster. Remove screws attaching dial and lens to cluster and remove dial and lens.

2) Remove insulator and retaining nuts securing speedometer housing to cluster. Remove screws attaching speedometer frame to cluster and remove speedometer assembly.

3) Remove 4 screws attaching dial to bridge. Separate dial from electronic chassis. Remove screw attaching optical sensor ("T" shaped component) to bridge, and pull sensor from its hole.

Installation – To install, reverse removal procedure.

PRINTED CIRCUIT

Removal (All Models) – With instrument cluster removed from dashboard, remove indicator and illumination bulbs. Take off resistor assembly and retaining nuts from rear of housing. Remove printed circuit.

Installation – To install, reverse removal procedure.

MESSAGE CENTER KEYBOARD

Removal – Disconnect battery ground cable. Remove keyboard trim panel and lower instrument panel cover. Remove keyboard retaining bracket screws, lower bracket, and remove wiring connectors. Remove keyboard screws and keyboard.

Installation – To install, reverse removal procedure.

MESSAGE CENTER INDICATOR

Removal – With instrument cluster removed, unplug two bulb and socket assemblies. Lift corner of printed circuit and remove message center screws and message center.

Installation – To install, reverse removal procedure.

MESSAGE CENTER CONTROL MODULE

Removal – Disconnect negative battery cable. Disconnect both control module feed connectors and remove 3 retaining screws from module bracket. Remove 1 screw from brake pedal support bracket. Lift and tilt rear of module up and pull straight down to remove.

Installation – To install, reverse removal procedure.

LAMP OUT WARNING MODULE

Removal & Installation (Thunderbird and XR7) – Remove glove compartment. Remove 2 screws attaching module to instrument panel at right of glove compartment. Disconnect electrical connection. Remove module. To install, reverse removal procedures.

Removal & Installation (Lincoln and Mark VI) – Remove 2 screws attaching module to brace beneath instrument panel to right of accelerator. Disconnect electrical connectors and remove module. To install, reverse removal procedure.

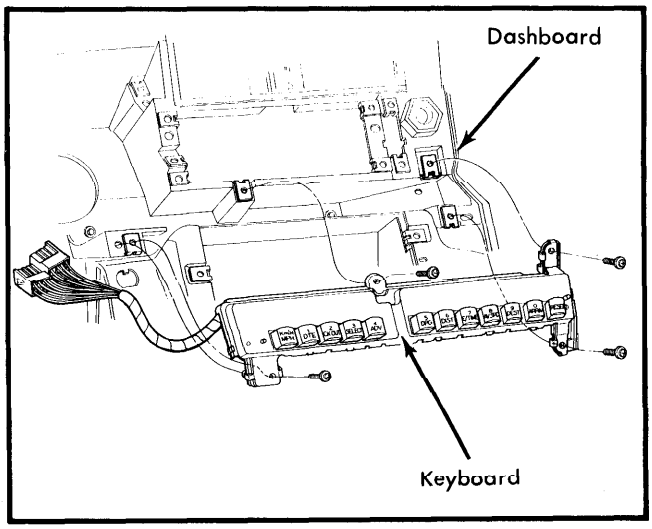

Fig. 3 Message Center Keyboard Mounting