FORD MOTOR CO. ELECTRONIC INSTRUMENT PANELS

Continental, Mark VI,
Thunderbird, Cougar XR-7

DESCRIPTION

The Electronic Instrument Panel is standard on the Mark VI and optional on Continental, Thunderbird, and Cougar XR-7. On Continental and Mark VI, the system includes an electronic speedometer, fuel gauge, message center, keyboard, control module and various sensors. The system used on Thunderbird and Cougar XR-7 includes the electronic speedometer and fuel gauge.

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.

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 12 volts between ground and ignition terminals on gauge. If voltage 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.

SPEEDOMETER AND FUEL GAUGE BOTH ERRATIC

Check instrument panel ground connection. See *Fig. 1*.

MESSAGE CENTER DISPLAY BLANK OR SHOWS CHECKS

Caused by internal short. Replace message center control module.

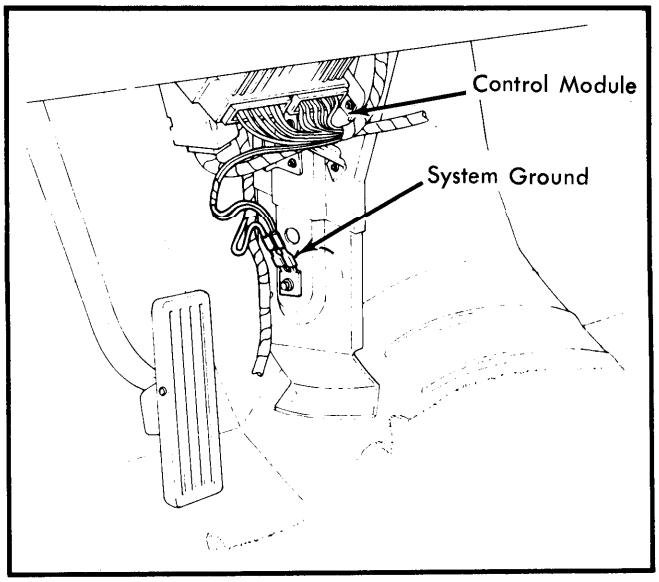

Fig. 1 Electronic Dashboard Control Module Mark VI Shown

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. Connect a 200 ohm resistor; gauge should read full.

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

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message center. All sending units are identical to conventional warning light units and should be checked for good connections.

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.

2) On Continental 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 Cougar XR-7, remove transmission indicator clamp from steering column. On all models, pull cluster forward and disconnect wiring and speedometer cable. On Continental and Mark VI, remove transmission indicator clamp from steering column. Remove cluster.

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 mask and lens. On Continental 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) With instrument cluster removed, remove screws holding mask and lens to housing. Remove mask and lens, then remove retaining nuts from rear of housing.

2) Remove screw attaching odometer to housing and take speedometer/odometer from housing. Remove screw securing optical sensor ("T" shaped component) to odometer and remove sensor. Loosen miles/kilo mode switch nut.

3) On Thunderbird and Cougar XR-7, remove 4 screws from electronic assembly and detach speedometer from odometer. On Continental and Mark VI, remove 4 screws from front of speedometer, then use a screwdriver to carefully move locking tab below odometer reset lever. Remove electronic assembly.

Installation – To install, reverse removal procedure.

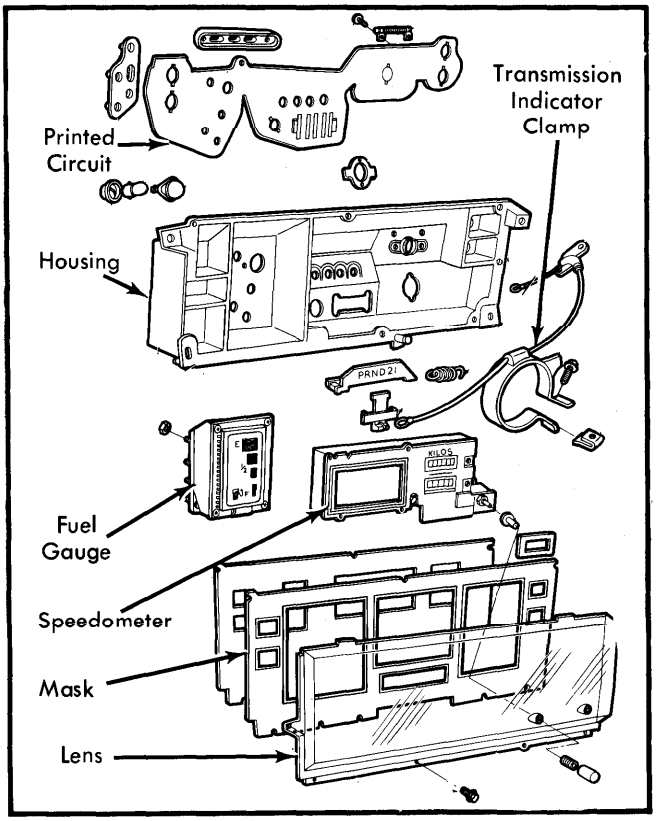

Fig. 2 Electronic Instrument Cluster Thunderbird, Cougar XR-7

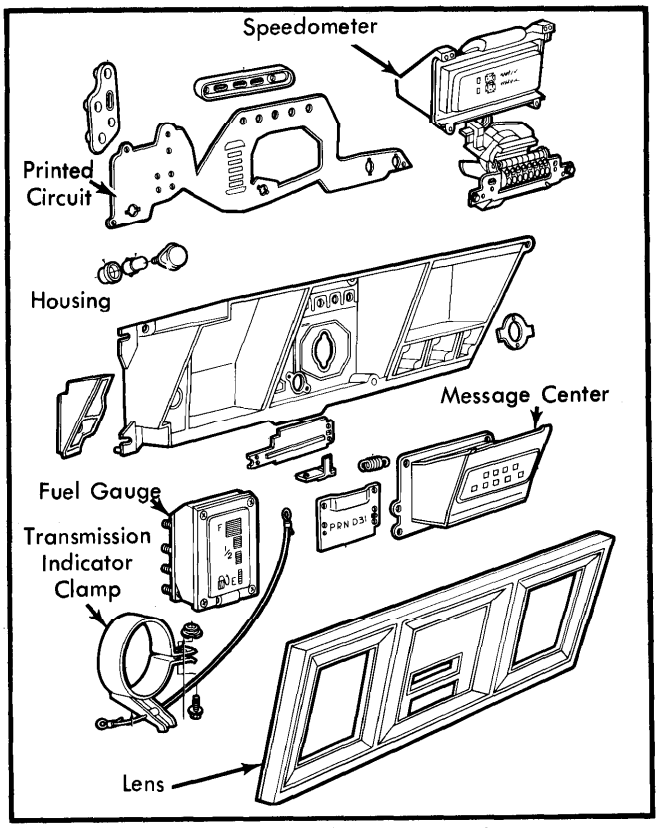

Fig. 3 Electronic Instrument Cluster Continental, Mark VI

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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.

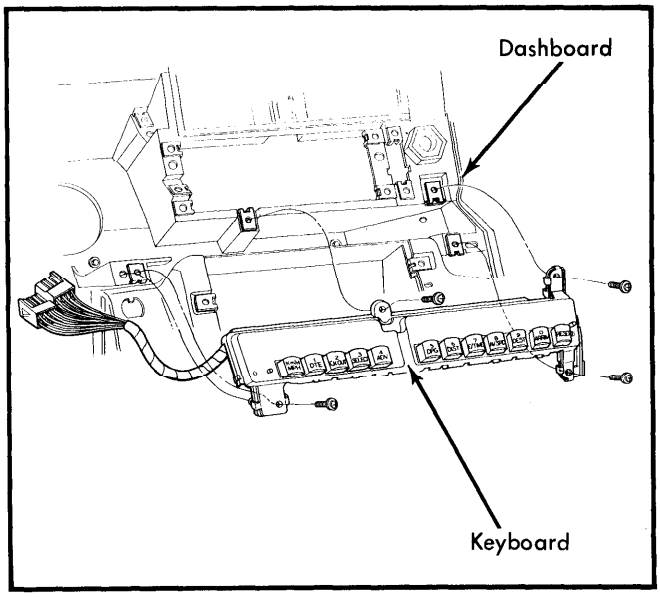

Fig. 4 Message Center Keyboard Mounting