

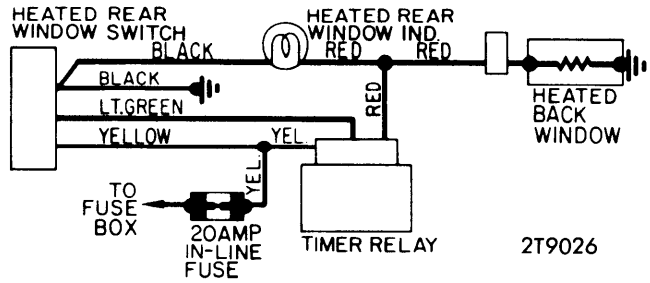
Electric Window Defoggers

1971-73 AMERICAN MOTORS, FORD MOTOR CO. & G.M.

American Motors
Ford Motor Co.
General Motors

DESCRIPTION

American Motors – Components of the system consist of a grid and buss bars fused to the inside of the glass, a control switch, pilot lamp, and a timer-relay.



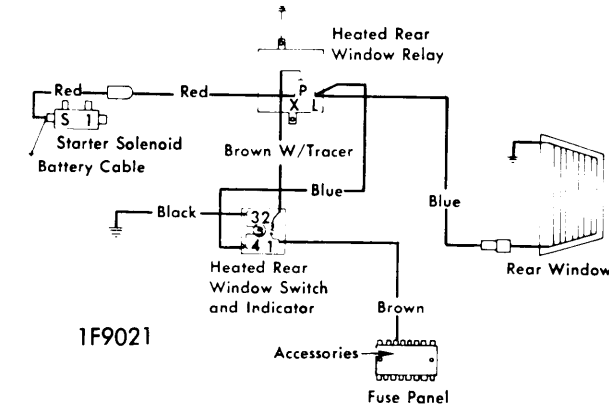
CADILLAC HEATED REAR WINDOW

Ford Motor Co. – This system incorporates a series of grid wires baked on inside of rear window. These grid wires are heated by current delivered from control switch. All systems used are basically the same except for the relays. Some models use a system which incorporates a timer in the relay. Other models use a latching relay.

OPERATION

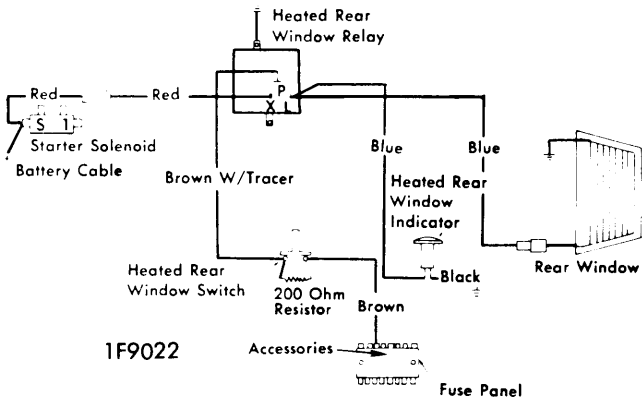
American Motors – Actuating the defogger control switch on the instrument panel when the ignition switch is ON causes the defogger relay points to close. A timer, enclosed in the relay case, will allow the defogger to operate for about 3 to 7 minutes, depending on the ambient temperature or until the ignition switch is turned off. The system can be recycled by again actuating the control switch.

General Motors – System operates on 12 volts with a current draw of approximately 20 amps with the glass at 75° F. Under certain ambient temperature conditions, it is possible that heat from the glass may not be detected by finger touch.



AMERICAN MOTORS (MATADOR & AMBASSADOR) HEATED REAR WINDOW

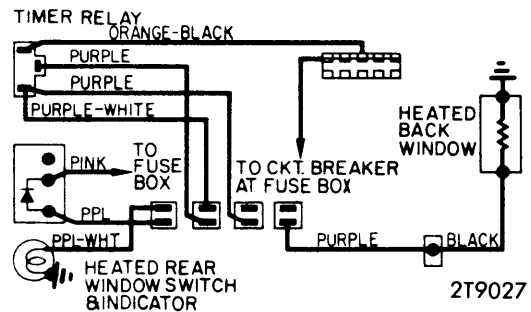
The feed wire to the grid is attached to a separate wire harness which is connected to the defogger relay. Current feed to the relay is by a wire attached to the battery side of the starter solenoid. Included in this wire is a fusible link to protect the circuit.



AMERICAN MOTORS (JAVELIN) HEATED REAR WINDOW

General Motors – Available as an option, the back window defogger system makes use of a number of horizontal ceramic silver compound element lines (conductors) and two vertical bus bars (one at each end of the element lines). These components are baked into the inside surface during the glass forming operation, and form a grid that warms the glass when the control switch is ON.

Braided wire is soldered to the bus bars on each side of the glass. The lead wires (one to ground, one to 12 volts positive) are spliced to the braided wire and then covered with a plastic sleeve insulator.



BUICK HEATED REAR WINDOW

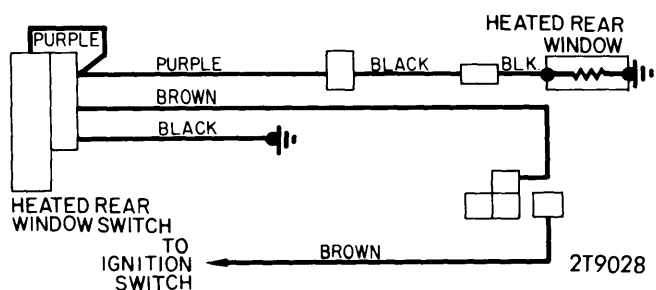
The system is actuated by an instrument panel mounted switch with an integral indicator lamp. Once the switch has been activated, the system operates continuously until the control switch or ignition switch is turned off. Vehicles equipped with A/C and the heated back glass system use a relay to regulate the A/C blower motor speed when the heated back glass system is in operation.

1971-73 AMERICAN MOTORS, FORD MOTOR CO. & G.M. (Cont.)

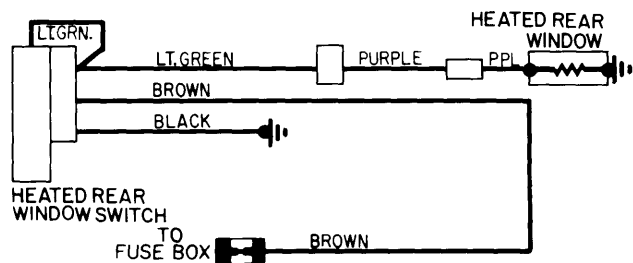
Ford Motor Co. — System is controlled by a three position switch. This switch is spring loaded to return from an ON or OFF position to its center or neutral position. There are two different relays used, the latching relay and time delay relay. These two relays operate as follows:

When the switch is turned to ON, the latching relay is energized and delivers current to grid wires at back window. The term "latching relay" is used since the relay remains energized until either the control switch or ignition switch is turned off.

The time delay relay operates in the same manner as the locking relay system except that the time delay system has an electronic timing circuit in the relay. The timer allows the rear window grid to operate for a specified time and then shuts it off.



1971-72 PONTIAC HEATED REAR WINDOW



1973 PONTIAC HEATED REAR WINDOW

TESTING

American Motors

Control Switch — Disconnect the brown and brown with tracer wires from the switch. With an ohmmeter connected across the switch terminals and the switch in the OFF position, the meter should indicate 200 ohms resistance. When the switch is depressed and held in the ON position, the meter should indicate no resistance.

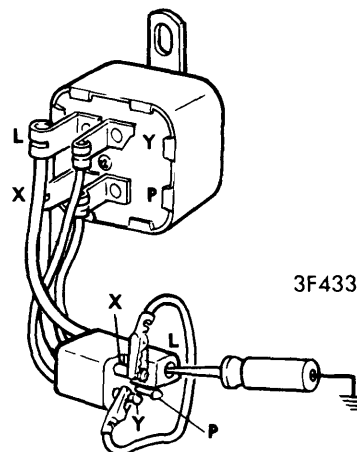
Relay — Disconnect three wire plug from relay. Connect a jumper wire from the accessory terminal of the fuse panel to the "X" terminal on the relay. Connect another jumper wire from the accessory terminal of the fuse panel to the brown terminal of the switch. Connect a third jumper wire from the brown with tracer terminal of the switch to the "P" terminal of the relay. Connect a 12 volt test lamp from the "L" terminal to a good ground. Turn ignition switch to accessory position. The test lamp should not light. Depress the defogger switch, test lamp should light and remain on for 3 to 7 minutes.

Relay Location — Timer-relay is located on a support brace of the instrument panel to the left of the steering column on Javelin models (1971-72) and on right side of brake pedal support bracket on Hornet models (1973). On Matador & Ambassador models, it is located on the inside wall of cowl plenum chamber above and to the left of the steering column.

Ford Motor Co.

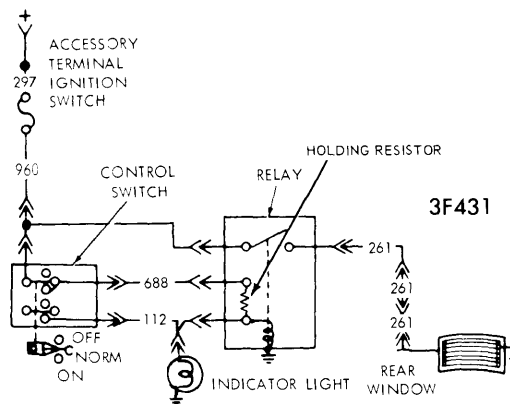
Control Switch (With Latching Relay System) — With switch in NORMAL position, there should be continuity between two terminals. In ON position, there should be continuity between all terminals. In OFF position, there should be no continuity between any terminals.

Latching Relay — Ground relay case, and connect a jumper wire between pins 1 and 2. Connect a 12 volt test light between pin 3 and ground. Apply power to pin 2. The test light should not light. Momentarily short pins 2 and 4, the test light should come on and stay on after the short is removed.



TIME DELAY RELAY TEST — MONTEGO, TORINO

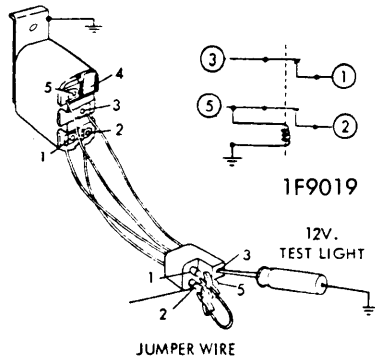
Time Delay Relay — Ground the relay case and connect a jumper wire between terminals X and Y. Connect a 12 volt test light between terminal L and ground. Apply power to terminal X. Test light should not light. Momentarily short the X and P terminals. The test light should come on and stay on for 6 to 14 minutes.



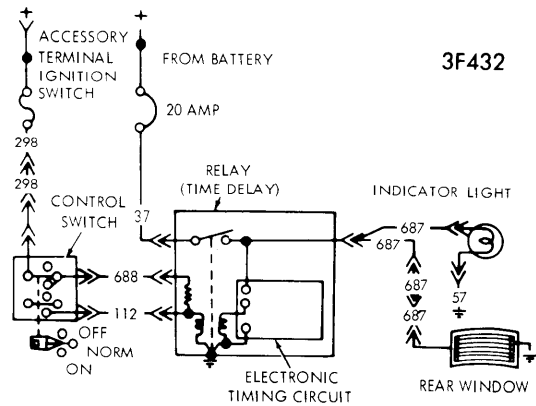
LATCHING RELAY CIRCUIT — LINCOLN

Electric Window Defoggers

1971-73 AMERICAN MOTORS, FORD MOTOR CO. & G.M. (Cont.)



LATCHING RELAY TEST



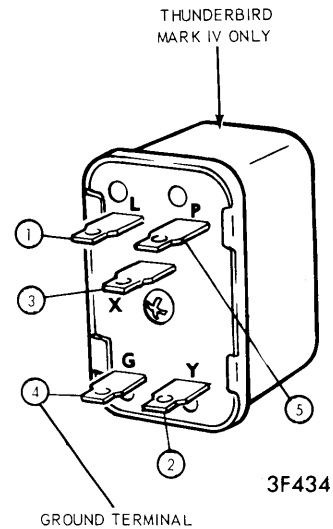
TIME DELAY CIRCUIT - MONTEGO, TORINO

1971-72

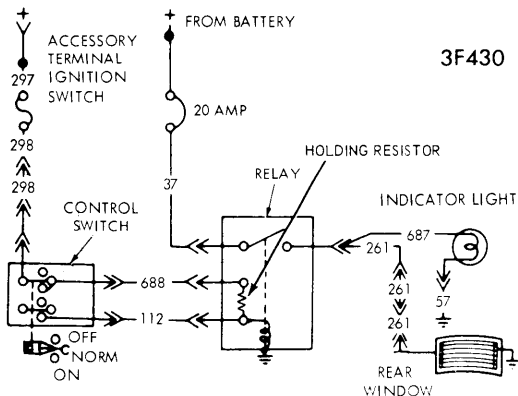
Relay Location - On Continental Mark III and Thunderbird, relay is mounted on the brake pedal support bracket. On Mustang and Cougar, relay is mounted on the relay panel

1973

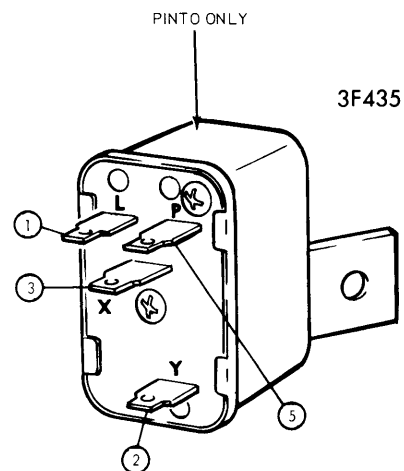
Relay Location - Ford, Mercury, Meteor; on bracket under lower edge of instrument panel at left side. Torino, Montego; on bracket on instrument panel left end above headlight switch. Panel pad must be removed for access. Pinto; on upper portion of instrument panel to right side of glove box. Mustang, Cougar; on relay panel at right upper corner of instrument panel behind glove box. Thunderbird, Mark IV; plugged into a connector which is mounted on relay bracket beside glove box. Continental; mounted to a bracket on package tray support at left side in luggage compartment area.



THUNDERBIRD & MARK IV RELAY



LATCHING RELAY CIRCUIT - EXC. LINCOLN, MONTEGO, TORINO



PINTO RELAY