SECTION 16
ELECTRICAL

INDEX

INTRODUCTION

The body electrical equipment for all body styles is covered in the following sections:

Power Windows
Power Ventilators
Power Tail Gate Window
Power Seats
Tail and Side Marker Lamps.

Each section combines all styles and series together which incorporates the power equipment unless stated otherwise in the procedure.

Round wire is used for body wiring on all styles and for all options.

Typical body wiring circuit diagrams are located at the end of this section.

On styles where power windows are standard equipment, the body wiring circuits are shown in the "Power Window Checking Procedure."

It is important that inspection for mechanical binds and alignments be completed before electrical diagnosis is attempted.

Circuit wiring for power equipment is protected by a circuit breaker (40 ampere in most cases) and is located as follows:

DIVISION	STYLE	LOCATION
Chevrolet	All	Engine Compartment Bulkhead
Pontiac	All	In fuse block (plug-in type)
Oldsmobile	"A"	Engine Compartment - at horn relay
	"B-C"	Engine Compartment - at horn relay
	"E"	Right Fender Filler Plate - at junction block stud
Buick	All Styles	In fuse block (plug-in type)
Cadillac	"C-E"	In fuse block (plug-in type)

POWER WINDOWS AND VENTILATORS

POWER OPERATED WINDOWS— All Series

Description

The wiring harness for the electrically operated windows consists of the following major sections:

1. Cross-over harness
2. Feed harness to rear doors or quarter windows
3. Left and right rear door or quarter window harness
4. Left and right front door window harness

CROSS-OVER HARNESS

This harness is installed beneath the instrument panel and completes the circuit from the right door to the left door windows on all styles except on Cadillac styles.

On Cadillac "C" styles the cross-over harness is part of the body and rear door or quarter feed harness and is installed under the front seat.

On Cadillac "E" styles the cross-over harness is installed at the front of the floor pan.

FEED HARNESS FOR REAR DOORS OR QUARTER WINDOWS

This harness connects to the front cross-over harness on the left side of the shroud (fire wall) and extends rearward in the body wire harness under the driver's seat on all styles except Chevrolet and Pontiac "F" and Cadillac Styles. On all styles, this harness connects directly to the rear quarter window motor on 2-door styles and terminates at the base of the center pillar on 4-door styles.

On Chevrolet and Pontiac "F" styles, the feed harness is connected to the cross-over harness at the left and right shroud and is routed on top of the rocker inner panel on each side to the quarter window.

On Cadillac styles the wire harness is routed from the left shroud, along the left rocker inner panel to the front of the drivers seat, then, on 2-door styles, it crosses over to the body wire harness, is incorporated in the body wire harness conduit and extends rearward to the front of the rear seat area where it separates to each quarter window. On

4-door styles, the wires are routed from the left shroud along the rocker inner panel and separates at the front edge of the drivers seat. The left rear door wiring continues rearward to the left center pillar; the wires to the right center pillar run across the body under the front seat.

REAR DOOR WINDOW HARNESS

The left and right rear door harness connects to the feed harness in the base of the center pillar. To disengage the connector, pull harness inboard at base of center pillar for accessibility.

MOTOR DESCRIPTION

Power windows are operated by a rectangular shaped 12 volt series-wound motor with an internal circuit breaker and a self-locking rubber coupled gear drive. The harness to the door window motor connector is designed with a locking embossment to insure a positive connection. When disengaging the harness connector from the door motor, it is necessary to depress the thumb release. When installing the harness, the thumb release must be held depressed until the embossment on the female connector is locked in the hole of the motor connector.

Some rear quarter window motors and ventilator motors are designed with a locking type connector which should not be disengaged. When testing or removing the motor, the in-line connector located inboard of the inner panel should be disengaged. Tests are made at this location on those styles. The power window circuit is protected by a circuit breaker. Refer to electrical introduction for specific locations.

RELAY

All styles - In addition to the circuit breaker, a relay is used in the circuit, which prevents the operation of the power windows until the ignition switch is turned "on".

The relay is located at the left shroud area on all styles except Pontiac "B" and Buick "E". On Pontiac "B" styles, the relay is located on the parking brake support and on Buick "E" styles, in the center of dash panel under the instrument panel assembly.

CUT-OUT SWITCH

A cut-out switch (Cadillac styles only) installed on the left front door arm rest, is designed to temporarily by-pass the relay circuit so the windows may be operated only from the master control switch when the ignition is in the "off" position.

To perform this operation, the cut-out switch control button is held in the "EMERG" position while the master control switch buttons are actuated. When the cut-out button is released, the button will return to the normal position.

The cut-out switch button should be left in the "NORMAL" position when ignition switch is "ON" to permit normal operation of power windows from all switch locations. If the control button is in the "LOCK" position with the ignition switch on, the windows will operate only from the master control switch.

POWER WINDOW CIRCUIT CHECKING PROCEDURES

Failures in a circuit are usually caused by short circuits or open circuits. Open circuits are usually caused by breaks in the wiring, faulty connection or mechanical failure in a component such as a switch or circuit breaker. Short circuits are usually caused by wires from different components of the circuit contacting one another or by a wire or component grounding to the metal of the body due to a screw through the wire, insulation cut through by sharp metal edge, etc.

It may be necessary to use only one or all of the procedures outlined to locate an electrical failure in the circuit. If the location of the failure is evident follow only the steps required to check the affected wire or component. If the location of the failure is not evident, follow the procedure as outlined. Be sure to check the harness connectors for proper engagement and become familiar with the typical circuit diagrams. (See Figs. 16-1 through 16-10.)

a. Checking Feed Circuit Continuity at Circuit Breaker

1. Connect one test light lead to battery side of circuit breaker and ground other lead. If tester does not light, there is an open or short circuit in feed circuit to breaker.

2. To check circuit breaker, disconnect the output feed wire (the wire opposite the power source feed to the breaker) from the breaker and with test light, check terminal from which wire was disconnected. If tester does not light, circuit breaker is inoperative.

b. Checking Relay Assembly at Shroud

1. With test light, check relay feed. If tester does not light, there is an open or short circuit between relay and circuit breaker.

2. Turn ignition switch on and with test light check output terminal of relay. If tester does not

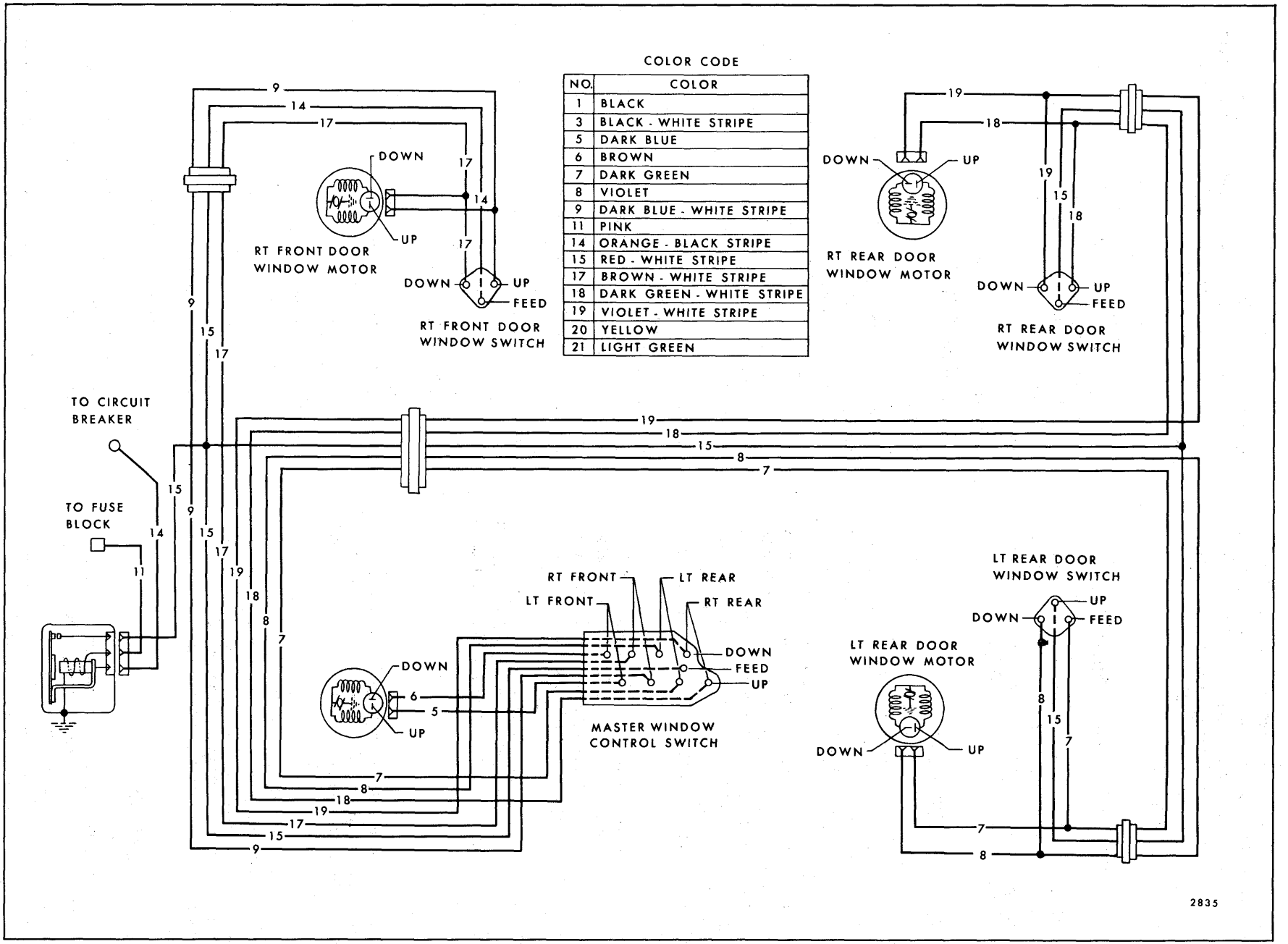


Fig. 16-1—Power Window Circuit - Typical All "A" Styles

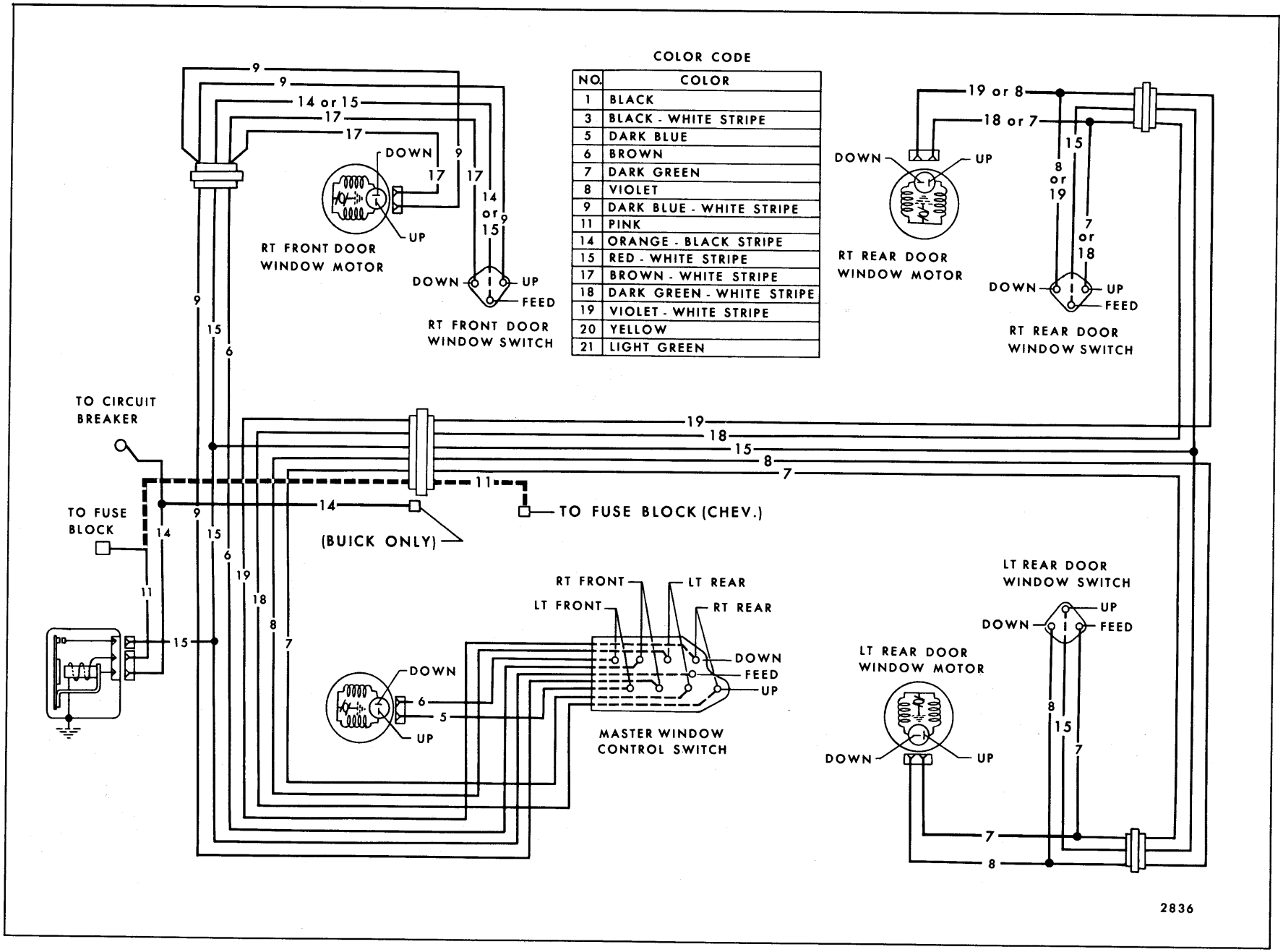


Fig. 16-2—Power Window Circuit - Typical All "B" Styles

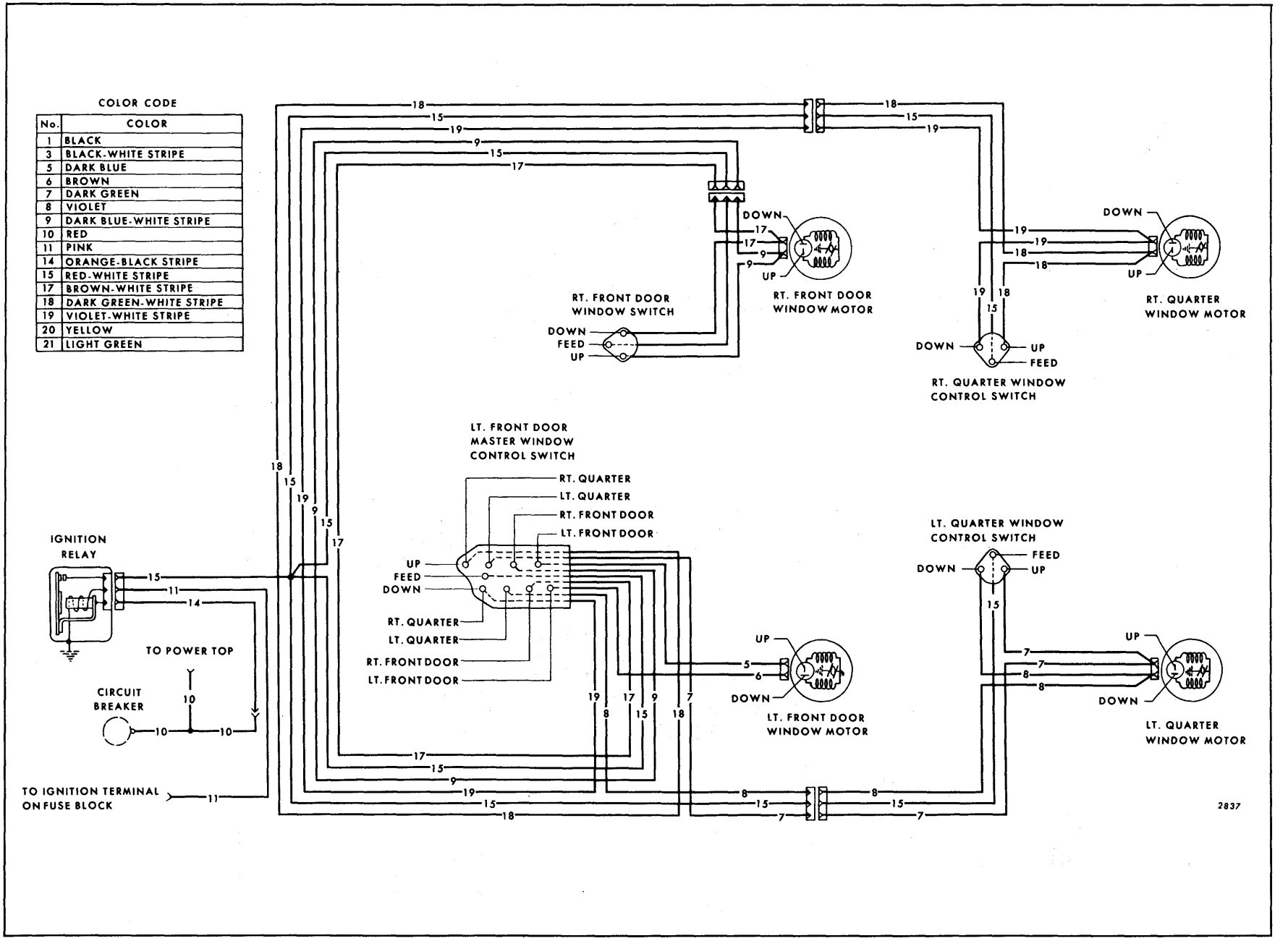


Fig. 16-3—Power Window Circuit - Chevrolet and Pontiac "F" Styles

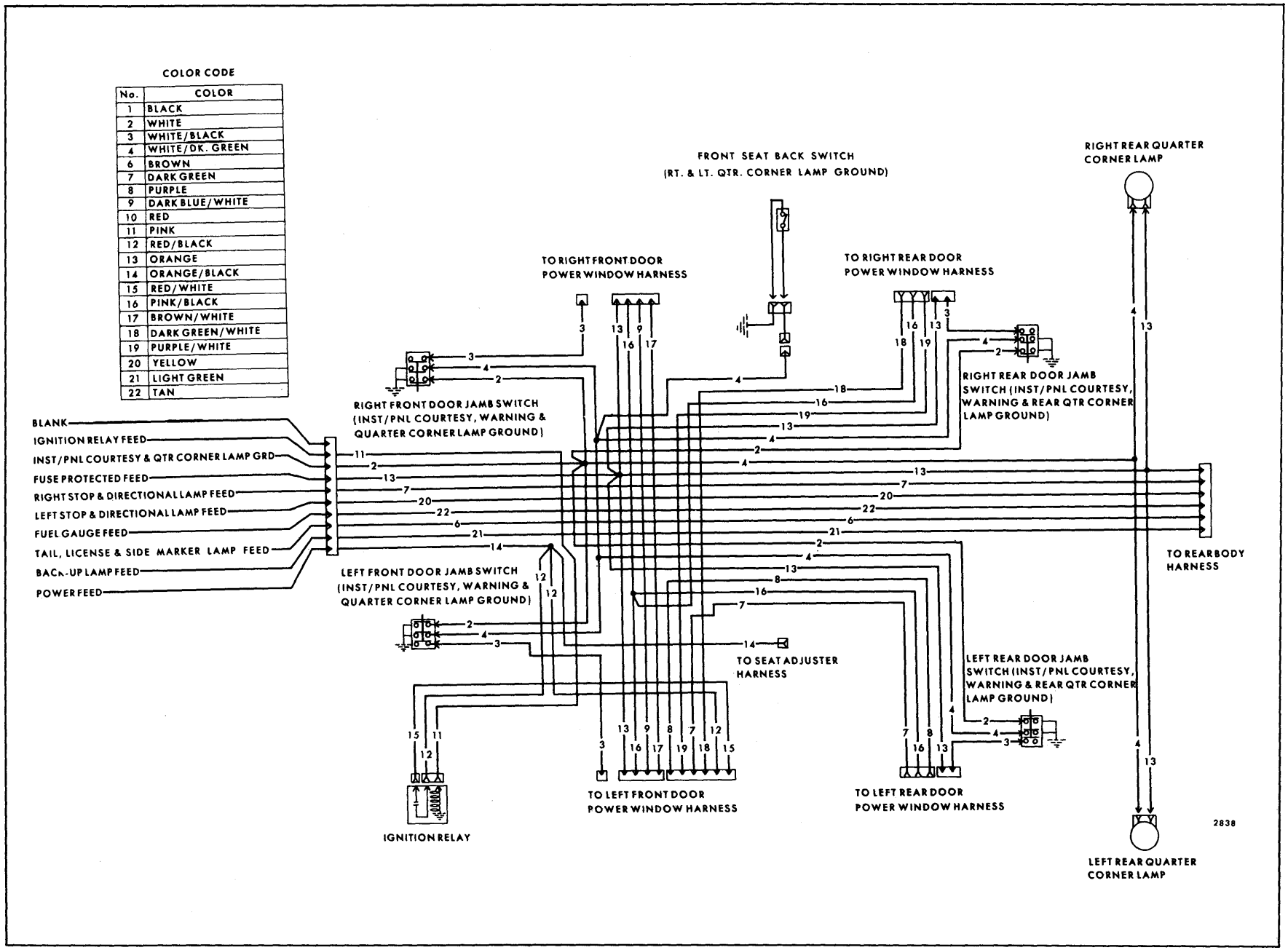


Fig. 16-4—Standard Wiring Circuit - Cadillac 68349 Body Section

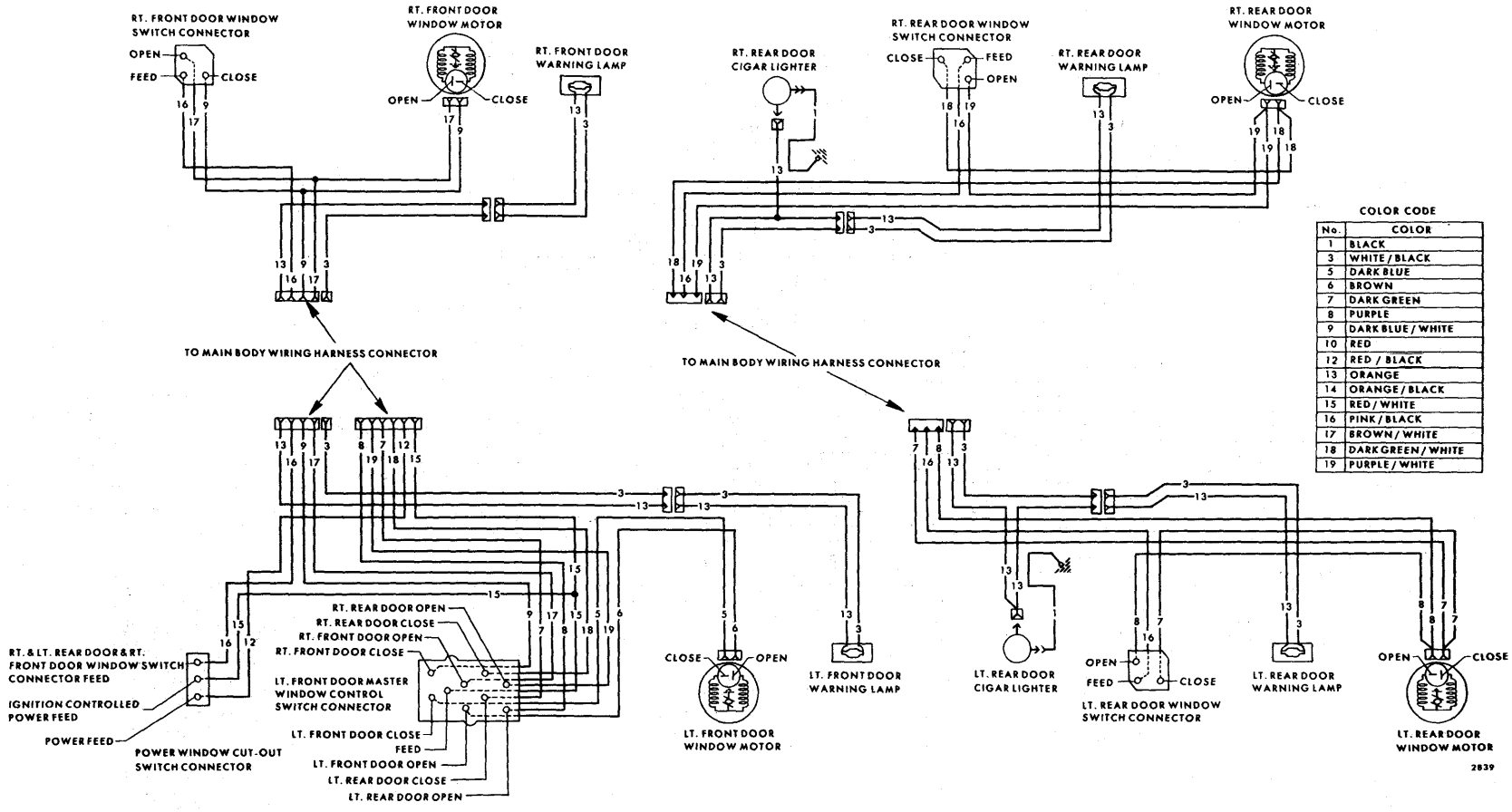
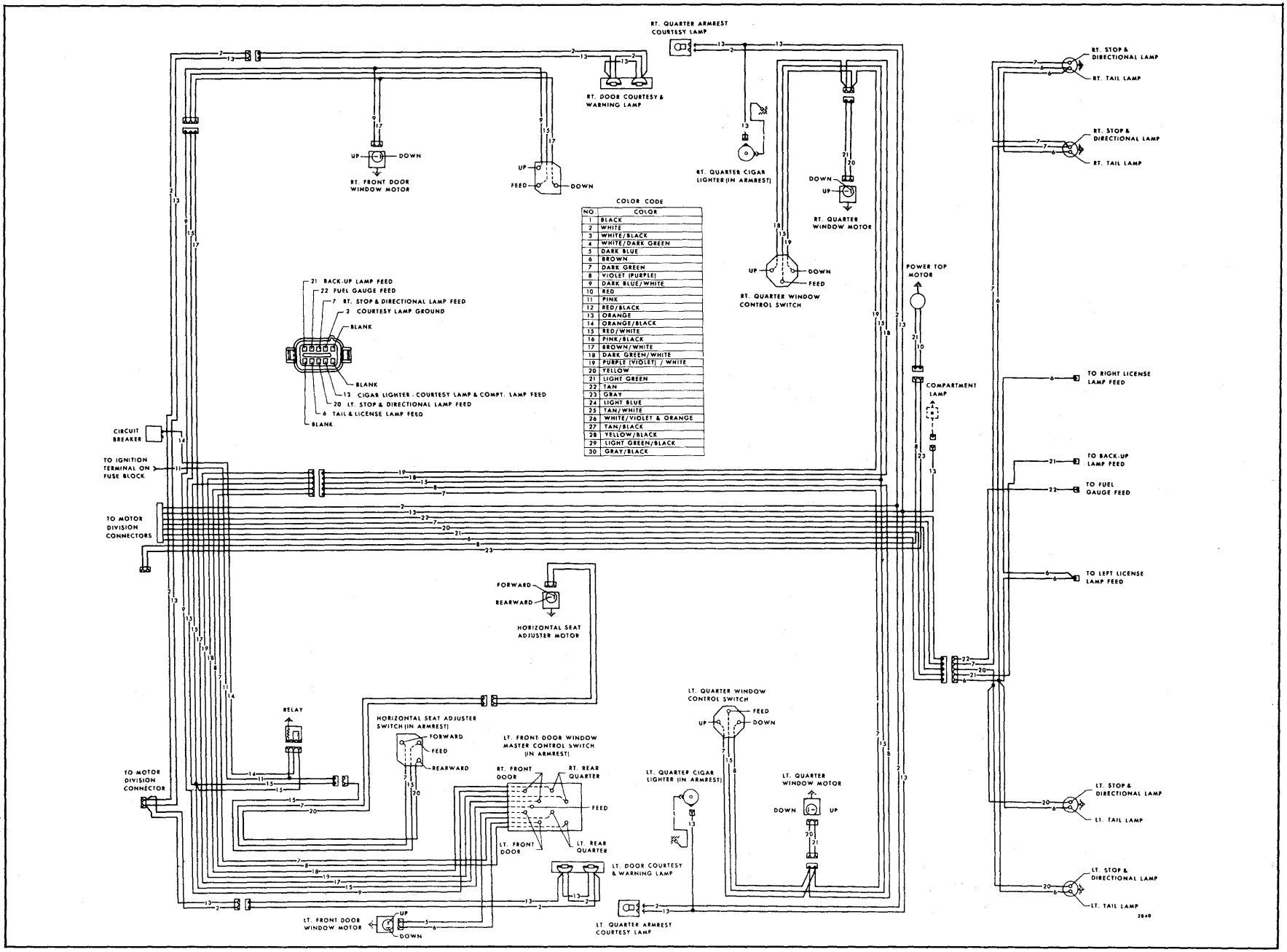


Fig. 16-5—Standard Wiring Circuit - Cadillac 68349 Door Section



COLOR CODE

NO.	COLOR
1	BLACK
2	WHITE
3	WHITE/BLACK
4	WHITE/DARK GREEN
5	DARK BLUE
6	BROWN
7	DARK GREEN
8	VIOLET (PURPLE)
9	DARK BLUE/WHITE
10	RED
11	PINK
12	RED/BLACK
13	ORANGE
14	ORANGE/BLACK
15	RED/WHITE
16	PINK/BLACK
17	BROWN/WHITE
18	DARK GREEN/WHITE
19	PURPLE (VIOLET) / WHITE
20	YELLOW
21	LIGHT GREEN
22	TAN
23	GRAY
24	LIGHT BLUE
25	TAN/WHITE
26	WHITE/VIOLET & ORANGE
27	TAN/BLACK
28	YELLOW/BLACK
29	LIGHT GREEN/BLACK
30	GRAY/BLACK

Fig. 16-6—Standard Wiring Circuit - Typical for Oldsmobile "C" Body - 38467 Shown

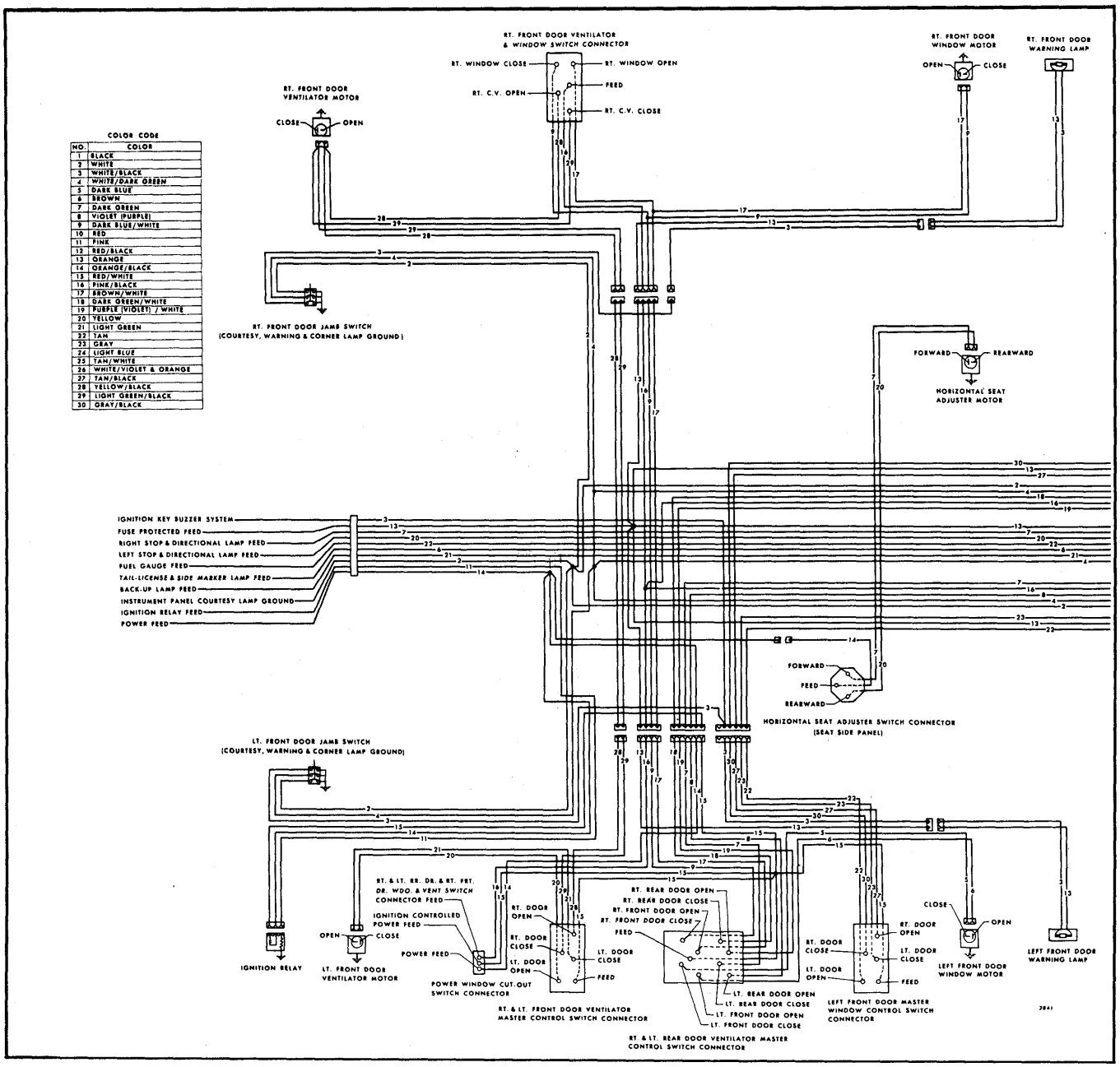
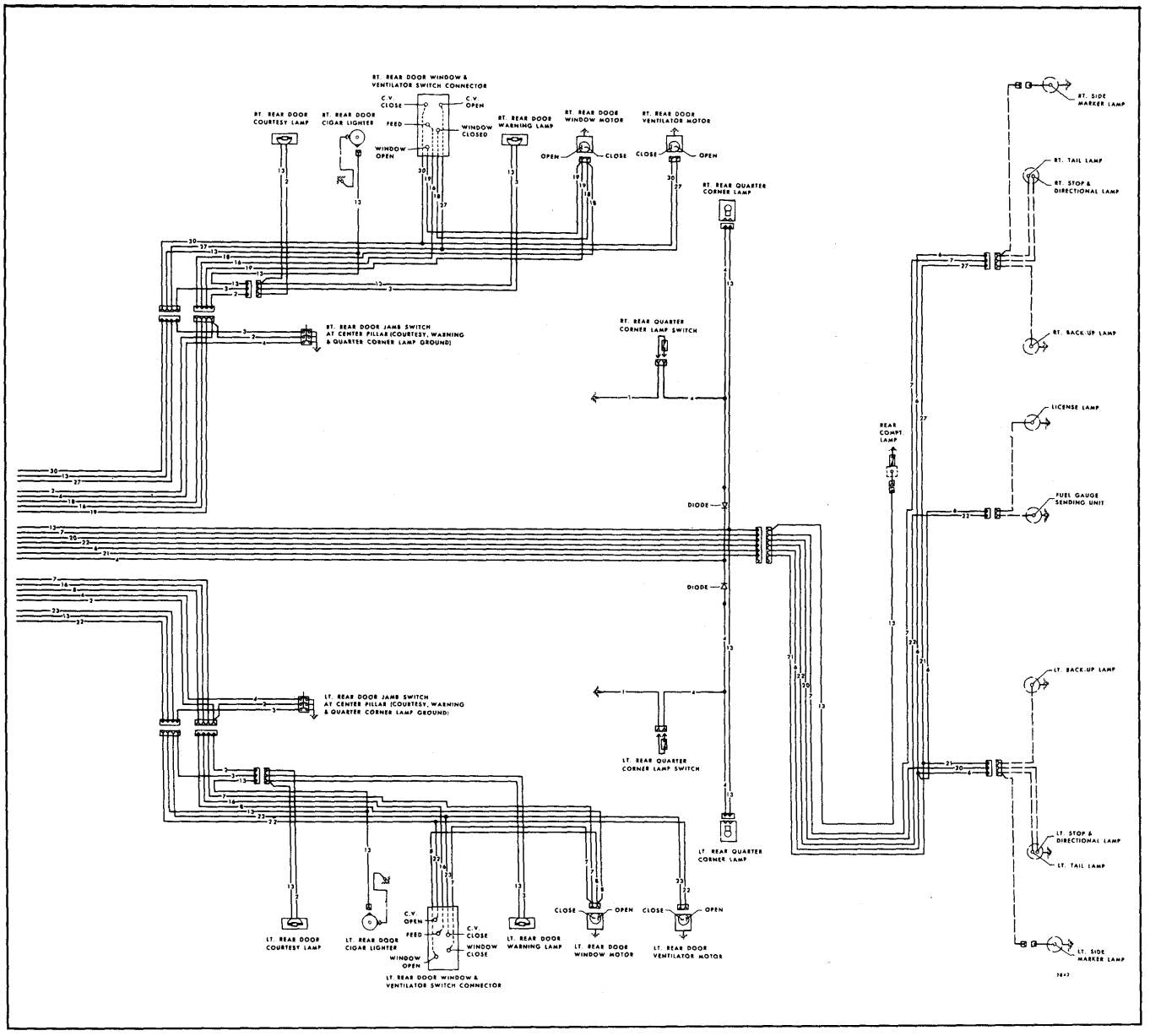


Fig. 16-7—Standard Wiring Circuit - Cadillac 68169


RT. REAR DOOR WINDOW & VENTILATOR SWITCH CONNECTOR
C.V. CLOSE
C.V. OPEN
FEED
WINDOW CLOSED
WINDOW OPEN
RT. REAR DOOR COURTESY LAMP
RT. REAR DOOR CIGAR LIGHTER
RT. REAR DOOR WARNING LAMP
RT. REAR DOOR WINDOW MOTOR
OPEN
CLOSE
RT. REAR DOOR VENTILATOR MOTOR
CLOSE
OPEN
RT. REAR QUARTER CORNER LAMP
RT. SIDE MARKER LAMP
RT. TAIL LAMP
RT. STOP & DIRECTIONAL LAMP
RT. BACK-UP LAMP
LICENSE LAMP
REAR COMPT. LAMP
FUEL GAUGE SENDING UNIT
RT. REAR DOOR JAMB SWITCH AT CENTER PILLAR (COURTESY, WARNING & QUARTER CORNER LAMP GROUND)
RT. REAR QUARTER CORNER LAMP SWITCH
DIODE
DIODE
LT. REAR DOOR JAMB SWITCH AT CENTER PILLAR (COURTESY, WARNING & QUARTER CORNER LAMP GROUND)
LT. REAR QUARTER CORNER LAMP SWITCH
LT. REAR QUARTER CORNER LAMP
LT. BACK-UP LAMP
LT. STOP & DIRECTIONAL LAMP
LT. TAIL LAMP
LT. SIDE MARKER LAMP
LT. REAR DOOR COURTESY LAMP
LT. REAR DOOR CIGAR LIGHTER
C.V. OPEN
FEED
WINDOW OPEN
C.V. CLOSE
WINDOW CLOSE
LT. REAR DOOR WINDOW & VENTILATOR SWITCH CONNECTOR
LT. REAR DOOR WARNING LAMP
CLOSE
OPEN
LT. REAR DOOR WINDOW MOTOR
CLOSE
OPEN
LT. REAR DOOR VENTILATOR MOTOR

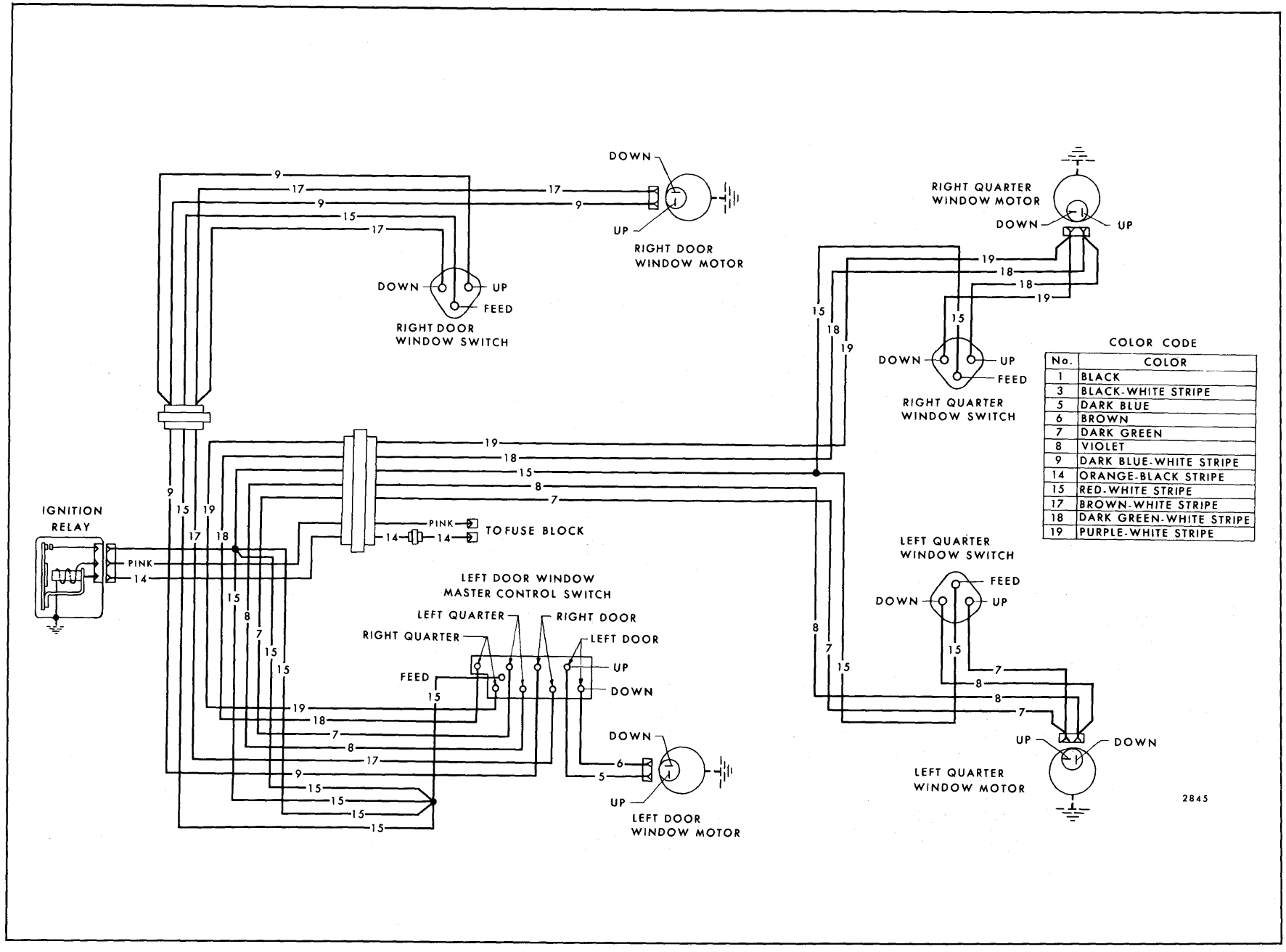


Fig. 16-8—Power Window Circuit - Buick "E" Styles

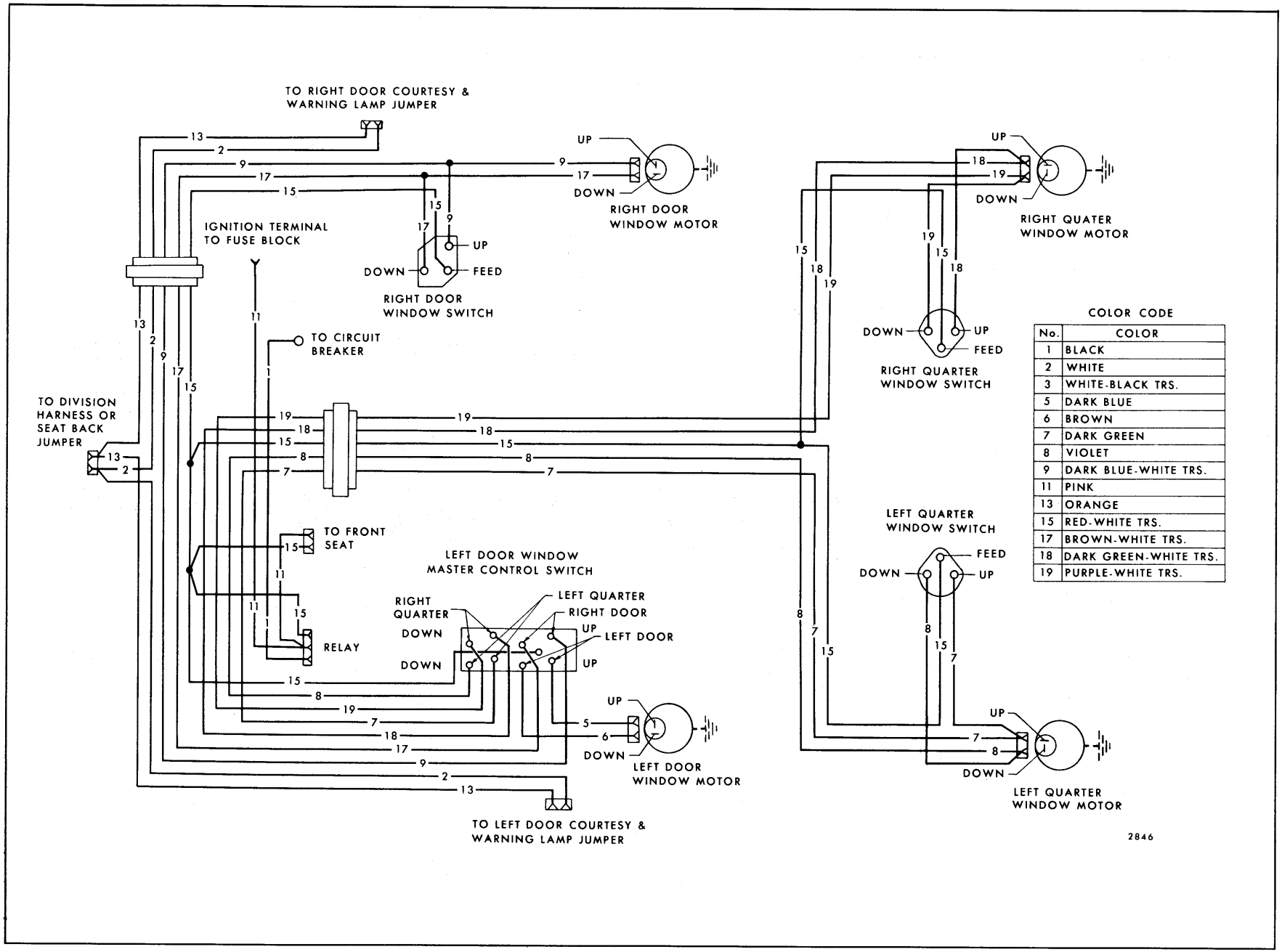


Fig. 16-9—Power Window Circuit - Oldsmobile "E" Styles

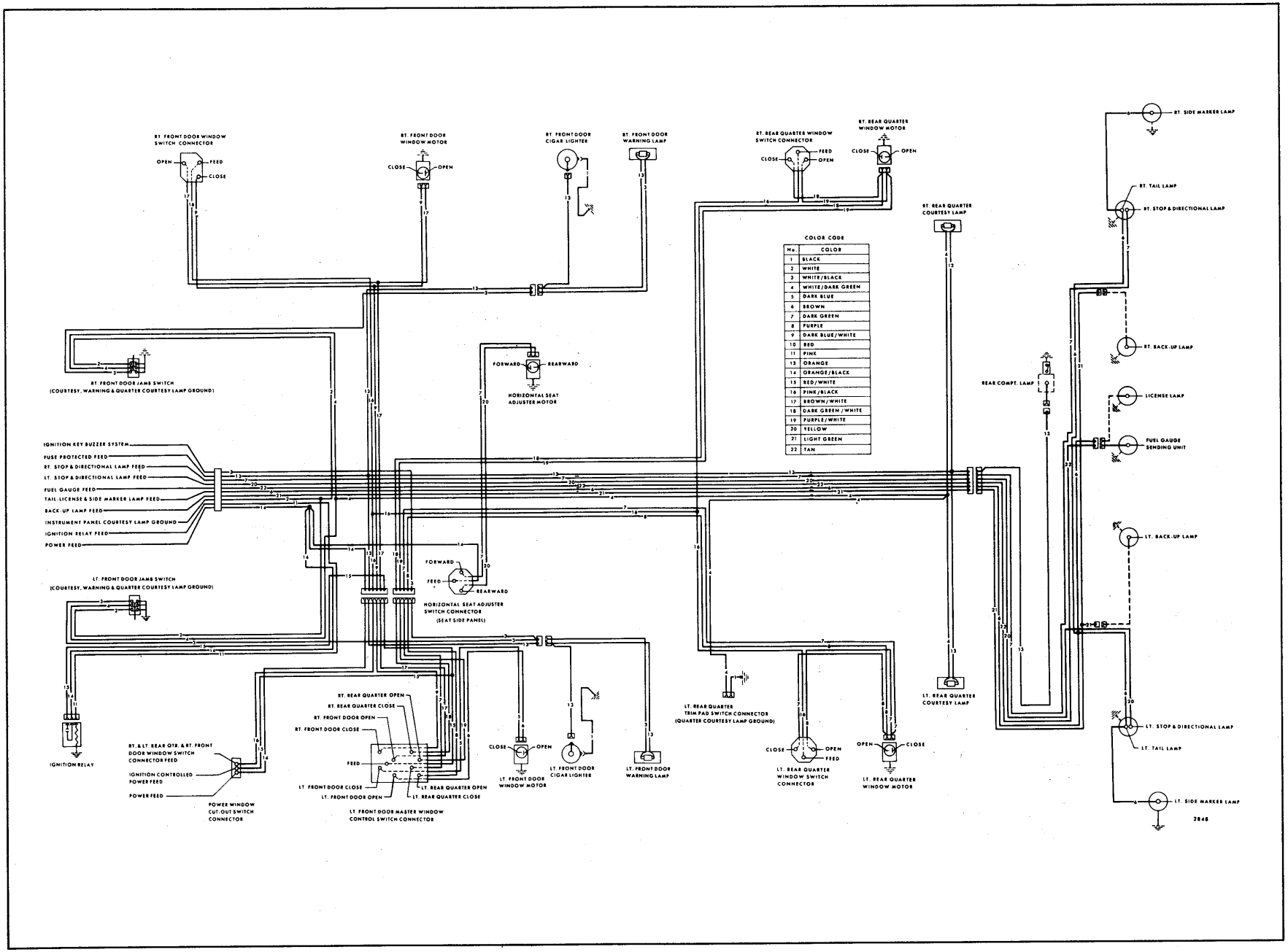


Fig. 16-10—Standard Wiring Circuit - Cadillac "E" Styles

light, the relay is inoperative or there is a short or open circuit between ignition switch and relay assembly. (Check fuse at dash panel.)

c. Checking for Current at Cut-Out Switch—Cadillac Only

1. Connect one test light lead to relay by-pass (over-ride) terminal (orange-black stripe) of the switch block and ground other test lead.

2. If tester does not light, there is an open or short circuit between by-pass feed source and cut-out switch.

   NOTE: Current should be present whether ignition is "on" or "off".

3. With ignition switch on, connect one test light lead to the master window control switch feed terminal (red-white stripe) of the switch block and ground other test lead.

4. If tester does not light, there is an open or short circuit between the relay and cut-out switch.

d. Checking Cut-Out Switch—Cadillac Only

1. With ignition switch off, connect one end of a #12 gauge jumper wire to by-pass feed terminal (over-ride) (orange-black stripe) and the other end to the center terminal (master control switch feed - red-white stripe).

2. Operate master control switch. If windows operate with jumper wire but not with the cut-out switch, the by-pass side of the switch is defective.

3. With the ignition switch on, connect one end of a #12 gauge jumper wire to <u>center</u> terminal (master control switch feed - red-white stripe) and the other end in the right and left rear quarter or door and right front door feed terminal (pink-black stripe).

4. Operate control switches. If any of the windows operate with the jumper but not with the cut-out switch, the switch is defective.

e. Checking Feed Circuit Continuity at Window Control Switch

1. Connect one test light lead to feed terminal of switch block and ground other tester lead to body metal (See Fig. 16-11).

2. If tester does not light, there is an open or short circuit between switch and power source.

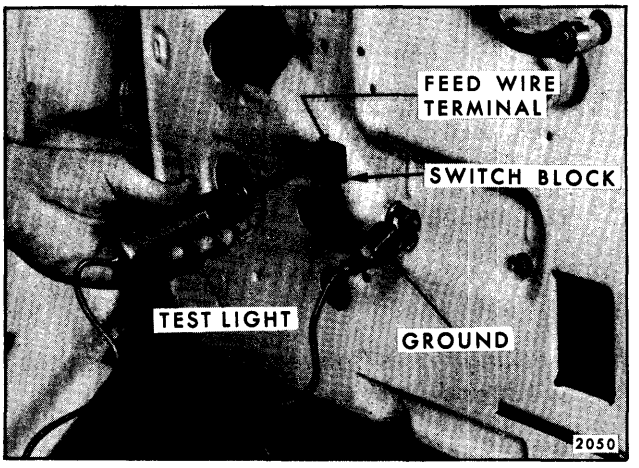


Fig. 16-11—Checking Feed Circuit

f. Checking Window Control Switch

1. Insert one end of a #12 gauge jumper wire to the switch feed terminal and the other end to one of the motor lead terminals in the switch block. Repeat this check on the remaining motor lead terminal (See Fig. 16-12).

2. If the window operates with the jumper wire, but does not operate with the switch, the switch is defective.

g. Checking Wires Between Door Window Switch and Door Window Motor

1. Disengage harness connector from window motor connector. The thumb release on the harness connector must be depressed before it can be disengaged from the motor.

2. Insert one end of a #12 gauge jumper wire to the switch feed terminal and the other end to

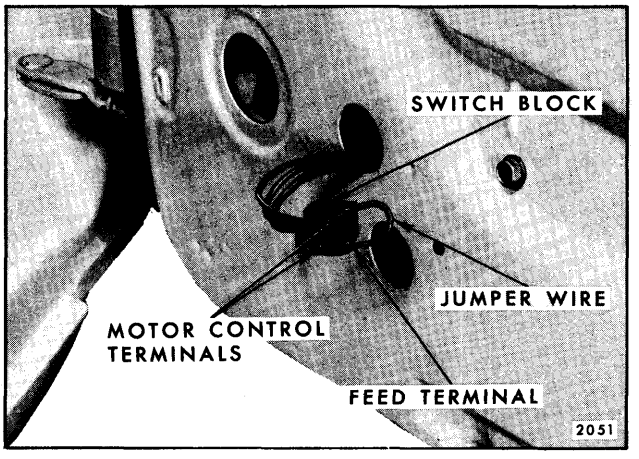


Fig. 16-12—Checking Window Control Switch

one of the motor lead terminals in the switch block (See Fig. 16-12).

3. With test light, check for current at terminal being tested. If tester does not light, there is an open or short circuit in the harness between the control switch and motor connector (See Fig. 16-13).

4. Check other terminal.

h. Checking Wires Between Quarter Window Switch and Quarter Window Motor

1. Disengage the in-line connector located inboard of the quarter inner panel as required.

2. Insert one end of a #12 gauge jumper wire in the switch feed terminal and the other end in one of the motor lead terminals of the switch block (See Fig. 16-12).

3. With a test light, check for current at the corresponding terminal at the in-line motor connector. If tester does not light, there is an open or short circuit between control switch and motor connector (See Fig. 16-13).

4. Check other terminal.

i. Checking Window Motor

1. Check window regulator and channels for possible mechanical bind of window.

2. Check attachment of window motor to insure an effective ground.

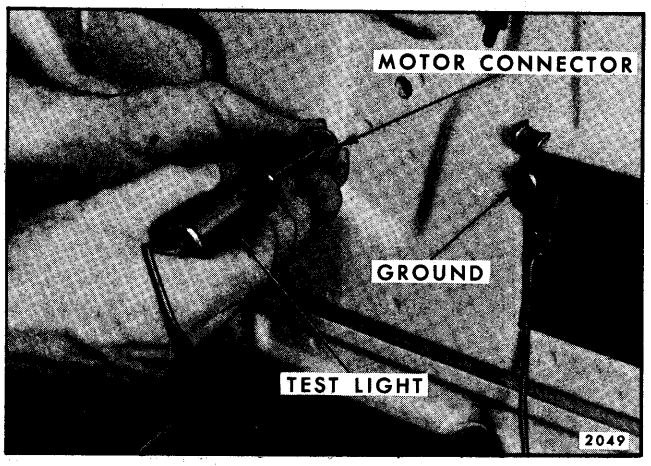


Fig. 16-13—Checking Circuit Between Switch and Motor

3. Connect one end of a #12 gauge jumper wire to the power source and the other end to one of the terminals on the door window motor or the in-line connector for the quarter window motor.

4. If the motor fails to operate with a jumper wire, the motor is defective and should be replaced. Check the other motor lead in the same manner.

j. Trouble Shooting of Power Windows

The following typical failures and corrections have been listed as an aid for eliminating electrical failures in the power window electrical circuit. It should be noted that multiple failures in the circuit may lead to a combination of conditions, each of which must be checked separately.

CONDITION	CAUSE	CORRECTION
1. None of the windows will operate with ignition switch on.	Short or open circuit in power feed circuit.	A. Check circuit breaker operation. B. Check relay operation at left cowl. C. Check feed connection to power harness beneath instrument panel. D. Check the feed circuit wires for possible short or open circuit. E. Check cut-out switch.

CONDITION	CAUSE	CORRECTION
2. Right rear door window does not operate from master control switch on left door or from control switches on right rear door. Left door window operates.	A. Short or open circuit between right rear door harness and power window front harness. B. Short or open circuit in affected window control switch or window motor circuit. C. Possible mechanical failure or bind in window channels. D. Defective window motor.	A. Check harness connectors beneath outer ends of instrument panel for proper installation. B. Check wires in power window front harness for possible short or open circuit. C. Check operation of rear door window control switch. D. Check circuit from window control switch to window motor for short or open circuit. E. Check window regulator and channels for possible mechanical failure or bind. F. Check operation of motor.
3. Right door windows will operate from left door master control switch but will not operate from right door control switches. Left door windows operate.	Open or short circuit in front harness feed wire circuit.	Follow up feed wire in front harness for possible short or open circuit.

POWER OPERATED VENTILATORS

DESCRIPTION

The power ventilators are operated by a rectangular shaped 12 volt series-wound motor with an internal circuit breaker.

The power ventilator circuit is very similar to the power window circuit. The diagnosis outlined for the power windows may also be used in locating and correcting failures in the power ventilator circuit.

A typical illustration showing the ventilator installation is shown in Figure 16-14.

The harness for the ventilator circuit is separate in Pontiac styles. On all other series, the harness is an integral part of the power window harness.

Circuits for power ventilators are shown in Figures 16-7, 16-15 and 16-16.

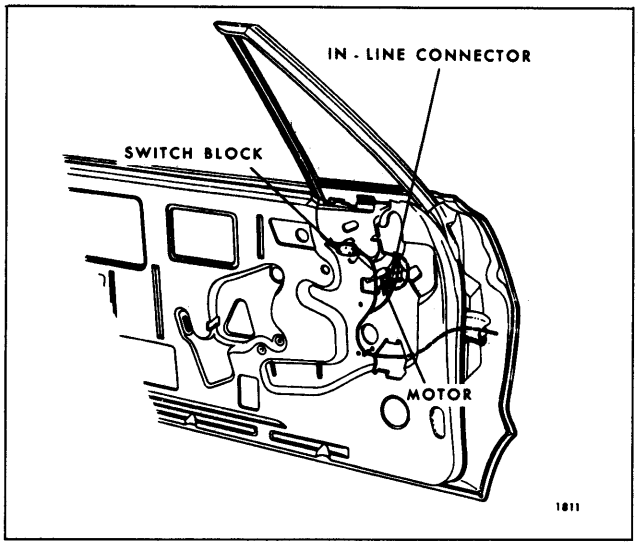


Fig. 16-14—Typical Power Ventilator Wiring Installation

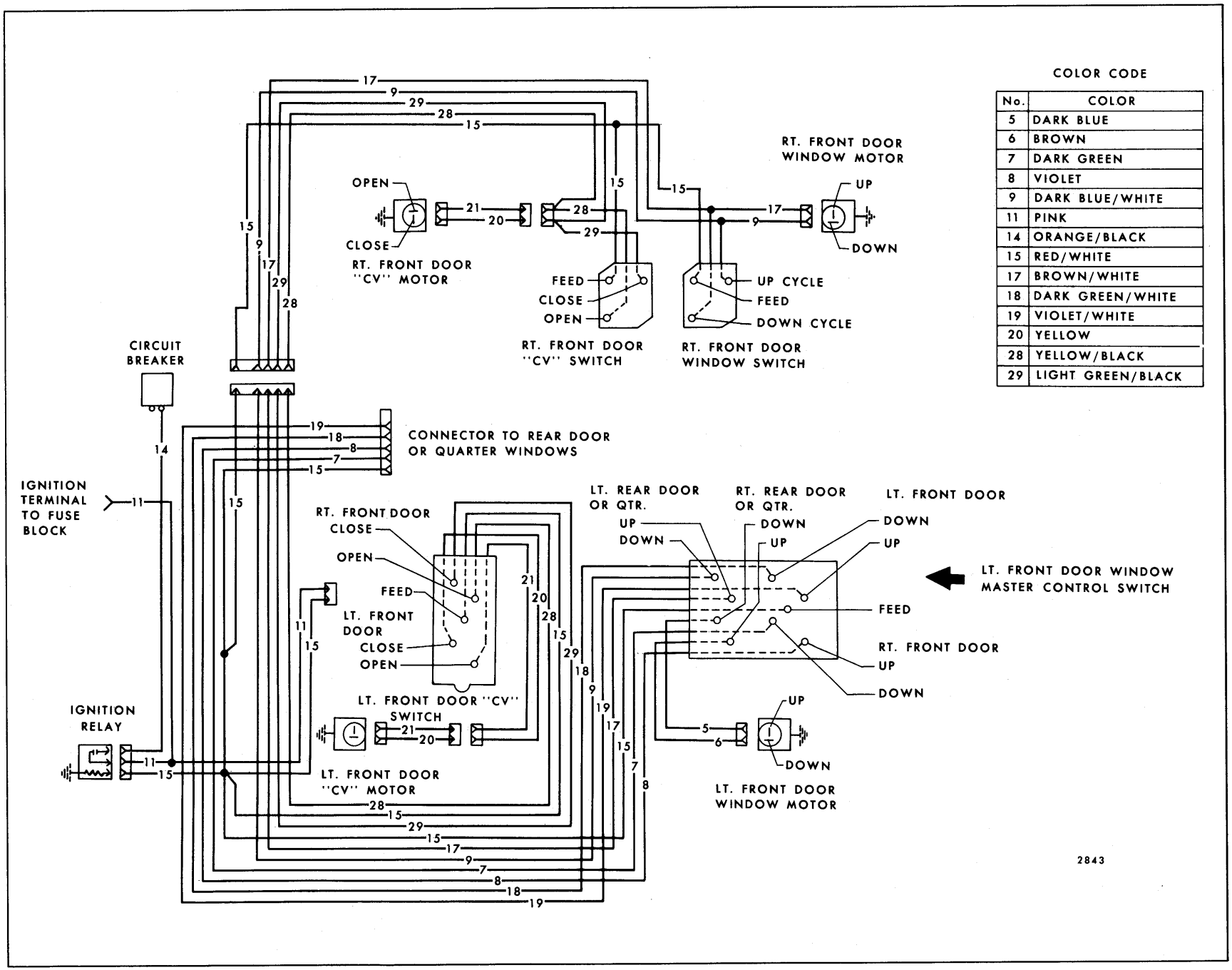


Fig. 16-15—Power Ventilator Circuit - Oldsmobile and Buick Styles

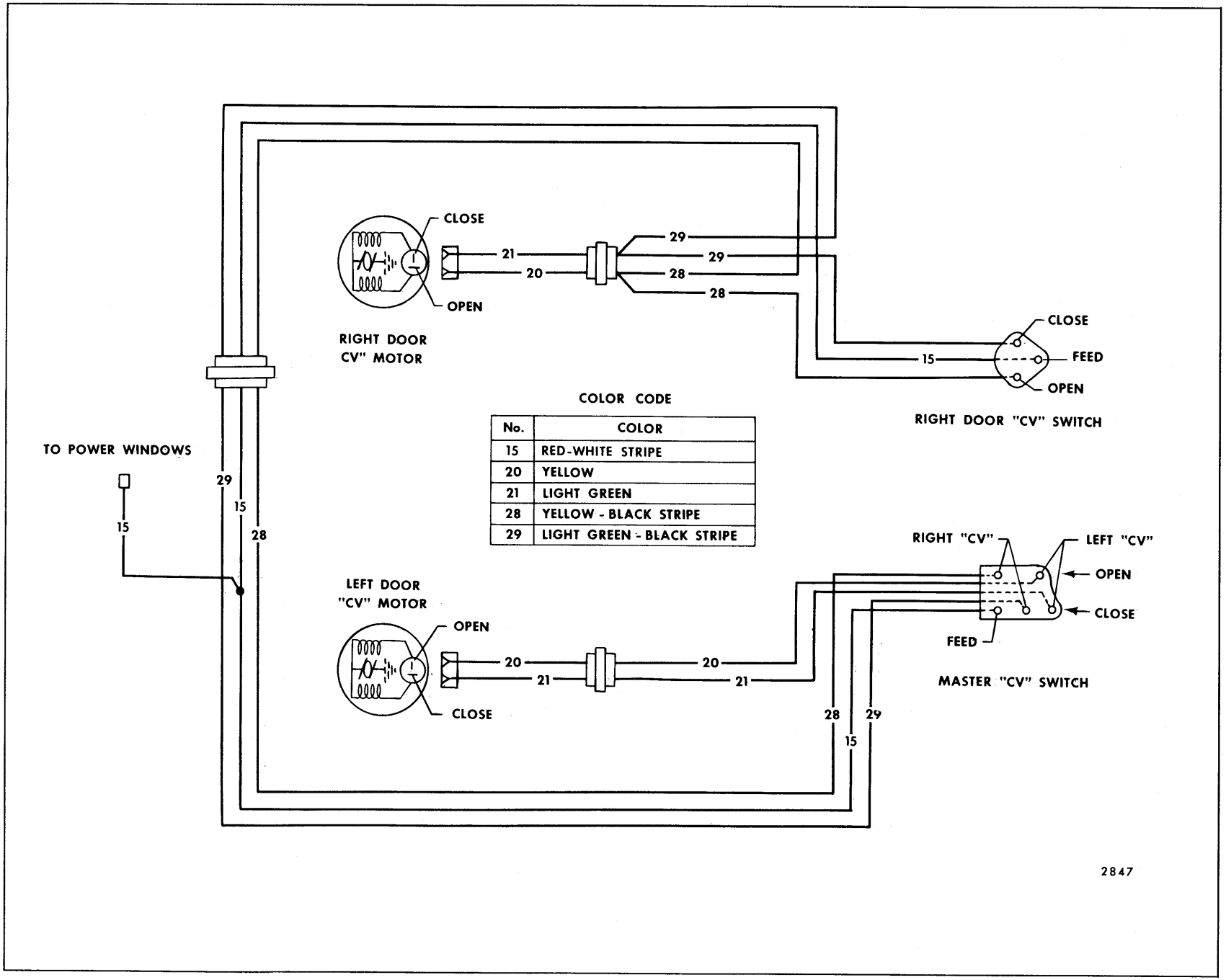


Fig. 16-16—Power Ventilator Circuit - Pontiac Styles

POWER OPERATED STATION WAGON TAIL GATE WINDOW

ELECTRICAL TAIL GATE WINDOW CIRCUIT

The station wagon style power operated tail gate window is controlled by a window regulator assembly, equipped with a rectangular shaped, 12 volt D.C., reversible direction motor with an internal circuit breaker and a self-locking gear drive.

In addition to the internal circuit breaker, the wiring circuit is protected by a 40 amp circuit breaker (See Electrical Introduction for locations).

All Styles - In addition to the circuit breaker, a relay is used in the circuit. The relay prevents the operation of the tail gate window from the instrument panel switch, until the ignition switch is turned "on". The relay is located at the left shroud on all styles except Pontiac "B" which is installed on the parking brake support.

The window may be operated from the instrument panel control switch, or from the tail gate window lock cylinder which rotates to raise or lower the window.

Chevrolet Styles - On the nine passenger station wagon styles, a tail gate window control switch is located at the rear of the left rear quarter inner trim panel.

NOTE: The "up" cycle wire is not engaged in the switch block but may be connected upon owner request.

To prevent the window from being operated to the "up" position when the tail gate has been lowered, a safety switch is located on the tail gate lock pillar. The safety switch opens the ground circuit of the tail gate window motor, making it inoperative.

The tail gate window harness is enclosed in the body wire harness conduit and consists of two sections. The front section extends from the left center of the toe pan to the rear of the right quarter panel. This harness crosses to the right side of the body behind the second folding seat. The rear section extends from the right quarter panel in to the tail gate to the motor and switch (See Fig. 16-17).

CHECKING PROCEDURE

Before performing an intensive checking procedure to determine any failure of the circuit, check all the connectors for proper installation. The checking procedures below may be used to check the operation of a switch or motor after the cause of the electrical failure has been isolated to a particular part of the circuit. Refer to the circuit diagrams (See Figures 16-18 and 16-19).

a. Checking Feed Circuit Continuity at Circuit Breaker

1. Connect one test light lead to battery side of circuit breaker and ground other lead. If tester does not light, there is an open or short circuit in feed circuit to breaker.

2. To check circuit breaker disconnect the output feed wire (the wire opposite the power source feed to the breaker) from the breaker. Connect one test light lead to the output terminal and ground other lead. If tester does not light, circuit breaker is inoperative.

b. Checking Relay Assembly

1. With test light check relay feed. If tester does not light, there is an open or short circuit between relay and circuit breaker.

2. Turn ignition switch on and with test light check output terminal of relay. If tester does not light, the relay is inoperative or there is a short or open circuit between ignition switch and relay assembly. (Check fuse at dash panel.)

c. Checking Feed Circuit Continuity at Control Switch on Instrument Panel

1. Disengage harness connector from switch. Connect one test light lead to feed terminal of switch connector and ground other test lead to body metal. If tester does not light, there is an open or short circuit between switch and power source.

d. Checking Control Switch at Instrument Panel

1. Disengage harness connector from switch.

2. Use a #12 gauge jumper wire and insert one end into the feed terminal and the other end into one of the other terminals. Tail gate window motor should operate.

3. Repeat procedure for the other terminal. If the tail gate window motor operates with the jumper wire but does not operate with the control switch, the switch is defective.

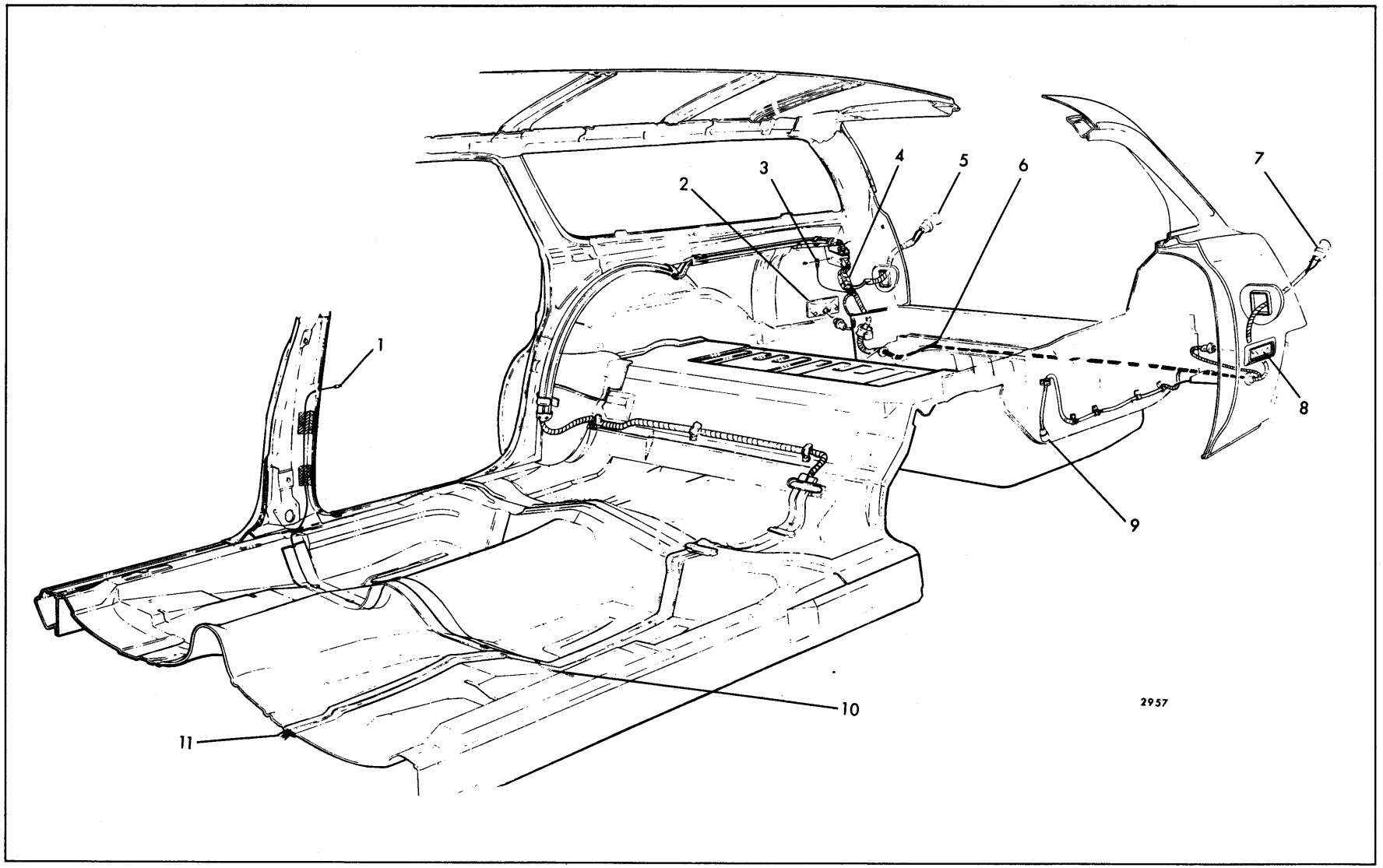
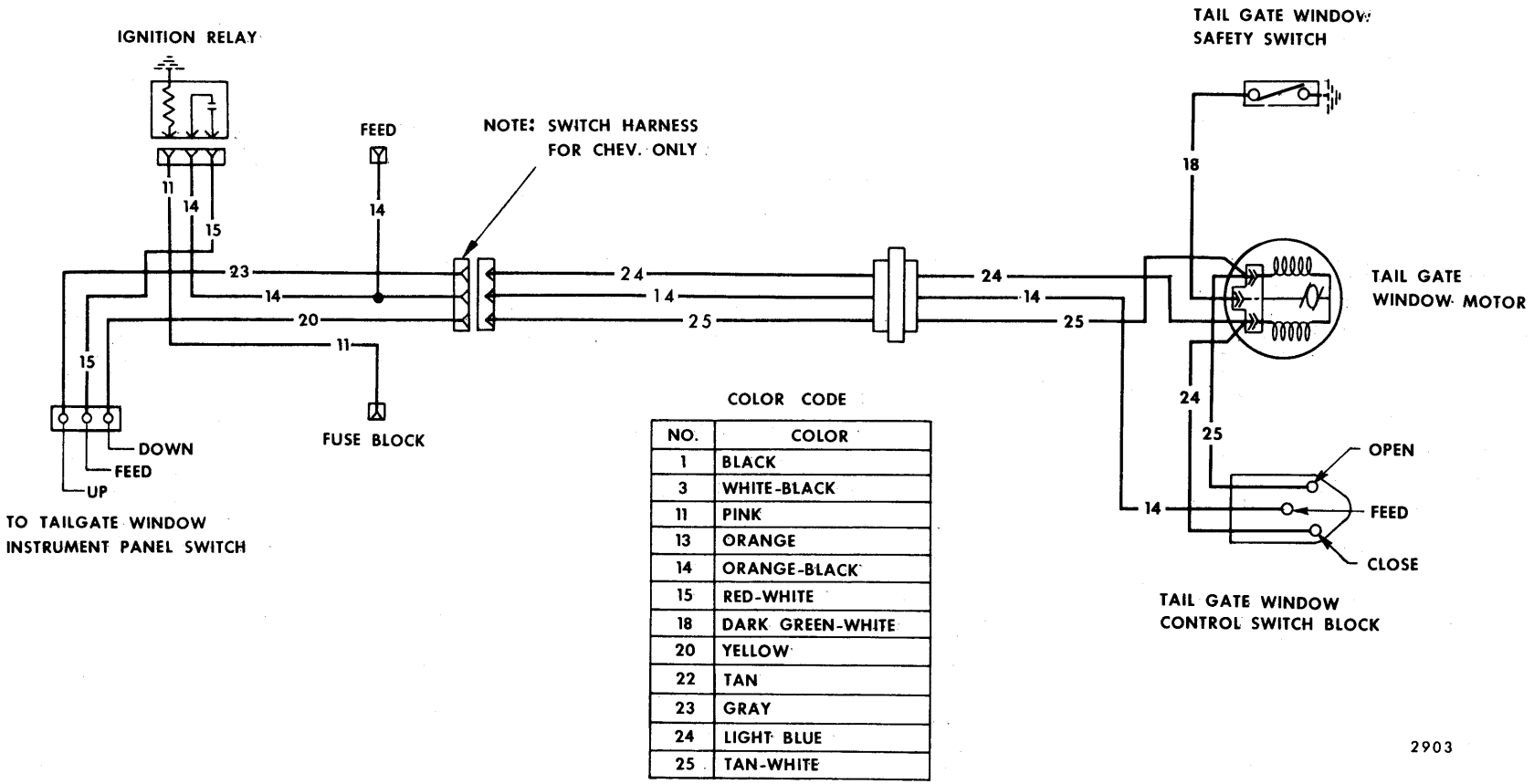


Fig. 16-17—Typical Wiring Installation for Wagons

1. Rear Door Jamb Switch Wire
2. Right Side Marker Lamp
3. Right Side Marker Lamp Ground
4. Front to Rear Wire Harness Connector
5. Right Tail Lamp
6. Wiring to Tail Gate
7. Left Tail Lamp
8. Left Side Marker Lamp
9. Gas Gage Feed
10. Wiring to Left Center Pillar (Dome Light, Door Jamb Switch)
11. Wiring to Front End



COLOR CODE

NO.	COLOR
1	BLACK
3	WHITE-BLACK
11	PINK
13	ORANGE
14	ORANGE-BLACK
15	RED-WHITE
18	DARK GREEN-WHITE
20	YELLOW
22	TAN
23	GRAY
24	LIGHT BLUE
25	TAN-WHITE

Fig. 16-18—Power Tail Gate Window Wiring Circuit - All Styles Except Chevrolet "45" Style

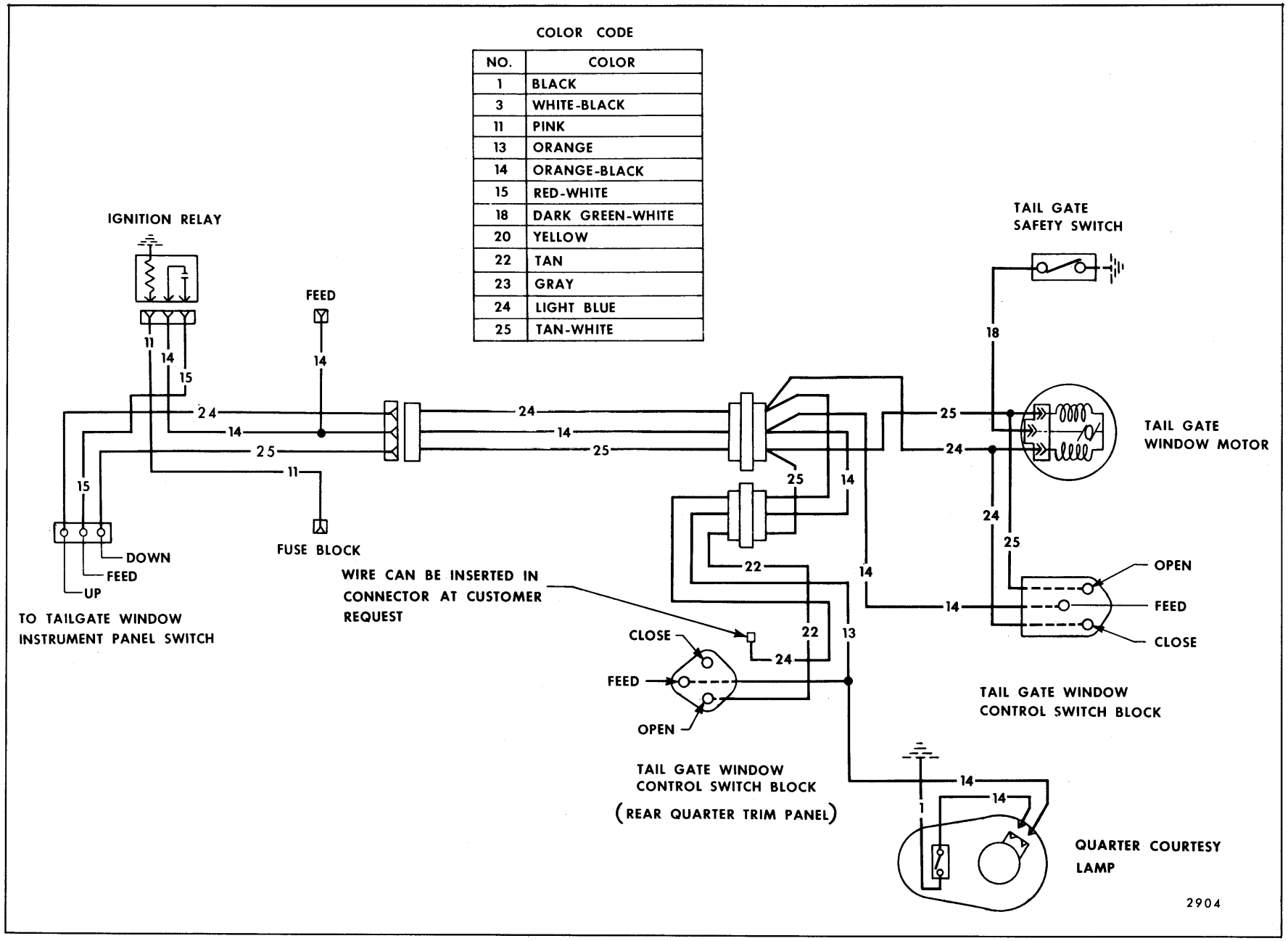


Fig. 16-19—Power Tail Gate Window Wiring Circuit - Chevrolet "45" Style

e. Checking Control Switch on Tail Gate

Remove tail gate switch and escutcheon as described in tail gate section. Disengage connector from switch and determine that there is current at terminal block; then, use a 12 gauge jumper and perform the same checking procedure as outlined for the control switch at the instrument panel.

f. Checking the Tail Gate Window Motor

1. Disconnect harness connector from motor.

2. Connect the positive side of power source to the light blue wire terminal (close cycle) on the motor connector and the negative lead to the white - dark green (ground) wire terminal. Motor should operate. To check the reverse operation of the motor connect the power source to the tan - white wire terminal (open cycle). If motor does not operate in both directions, replace motor.

g. Checking Operation of Safety Switch

1. With tail gate open, depress switch arm to simulate the tail gate being closed. Operate control switch. If motor does not operate, either switch is defective or the circuit is open from the motor to the switch.

2. To check for defective switch, connect one end of test light to a source of power and the other lead to the safety switch terminal. If the tester lights when the switch lever is actuated, the switch is operative.

   NOTE: Safety switch completes the ground circuit from the motor.

h. Trouble Shooting

CONDITION	CAUSE	CORRECTION
1. The tail gate window operates up and down from the tail gate switch but does not operate from the switch at the instrument panel.	A. Open or short circuit from power source to control switch at instrument panel. B. Defective or inoperative control switch.	A. Check affected wiring for open or short circuit and check connector at switch for proper installation. B. Check operation of switch.
2. With the tail gate closed, the window operates downward but does not operate upward when the switch at the instrument panel or tail gate is actuated.	A. Open or short circuit in up cycle feed wire. B. Defective motor.	A. Check affected wiring for open or short circuit. B. Check operation of motor.
3. The window will not operate up or down from any of the control switches.	A. Open or short circuit in circuit from power source to switches or motor. B. Safety switch not connected or poor ground. C. Mechanical bind or failure in tail gate window regulator mechanism. D. Defective tail gate window regulator motor.	A. Check operation of circuit breaker. B. Check affected circuit for open or short circuit. C. Check connectors to safety switch and motor for proper engagement. D. Check tail gate mechanical parts for bind or failure. E. Check operation of motor.

POWER SEATS

HORIZONTAL SEATS

Description

The seat adjusters for the bench-type and bucket-type seat are actuated by a 12 volt series-wound motor located near the front left side of the seat bottom frame, and are energized through a control switch installed in the seat side panel or in the door arm rest. For typical wiring installations see Figure 16-20 for bucket-type seats and Figures 16-21 and 16-22 for bench-type seats.

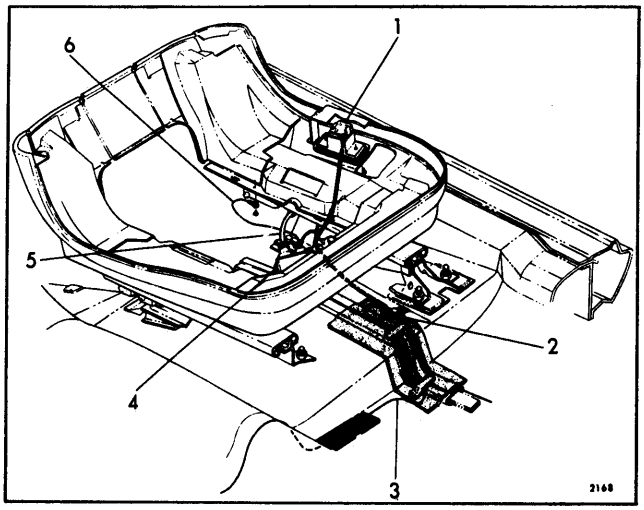


Fig. 16-20—Horizontal Bucket Seat Wiring

1. Control Switch
2. Feed Harness Connector
3. Feed Wire to Passenger Seat
4. Motor
5. Control Cable
6. Ground Wire

For circuit diagrams see Figures 16-23 and 16-24.

The horizontal seat circuit is protected by a circuit breaker (refer to Electrical Introduction for specific location).

Oldsmobile styles only - In addition to the circuit breaker a relay is used in the circuit which prevents the operation of the seat until the ignition switch is turned "on".

The trouble diagnosis chart will help locate typical problems which may occur.

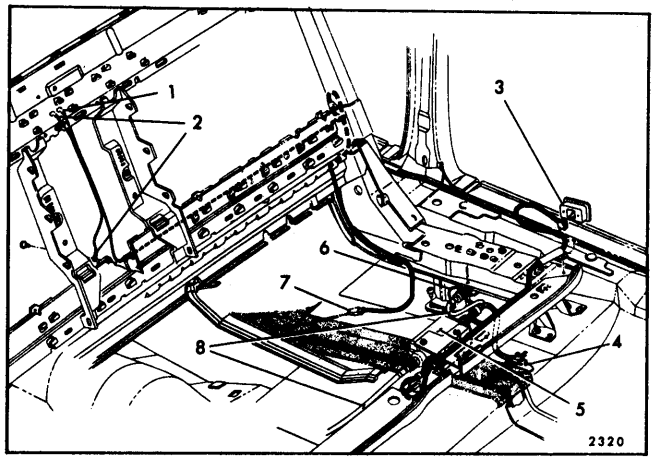


Fig. 16-21—Horizontal Bench Seat Wiring

1. Front Seat Back Switch Feed - White
2. Front Seat Back Switch Ground - Black
3. Control Switch
4. Harness Feed Connector
5. Motor
6. Ground Wire
7. Front Seat Back Courtesy Lamp Feed Connector (Cadillac Only)
8. Horizontal Control Cable

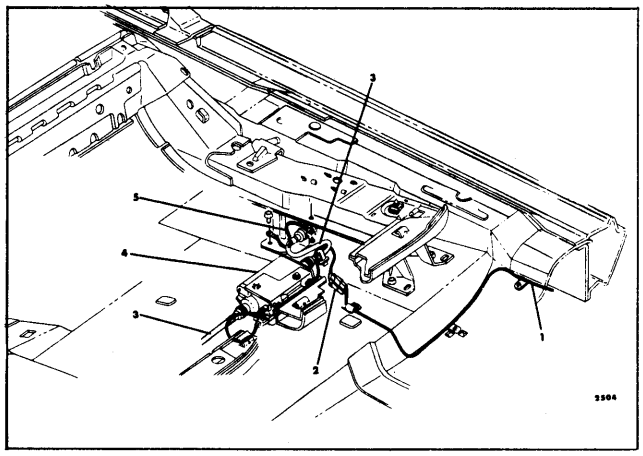
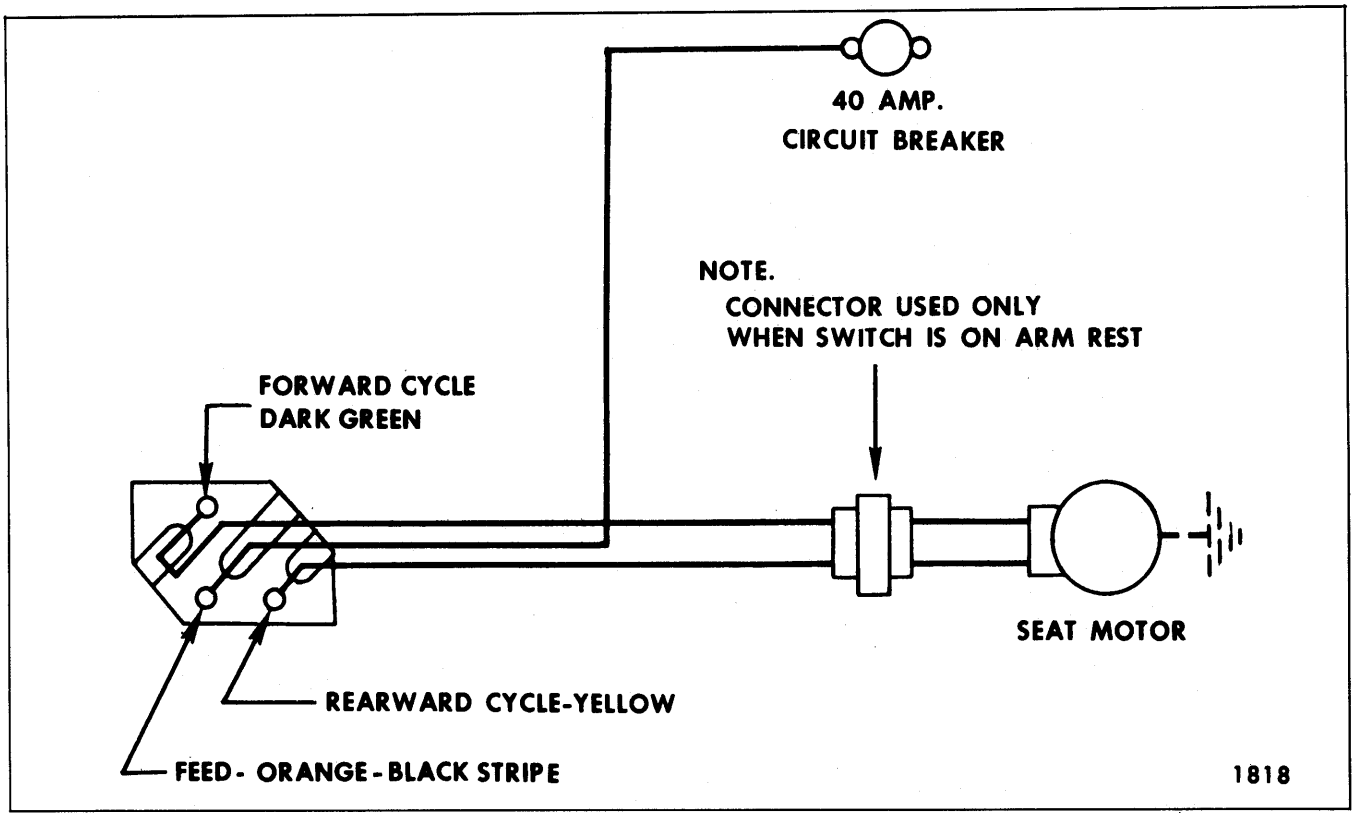


Fig. 16-22—Horizontal Bench Seat Wiring - Buick and Oldsmobile "C" Body

1. Wiring to Door Arm Rest Switch
2. Feed Harness Connector
3. Control Cable
4. Seat Motor
5. Ground Wire



Figl 16-23—Horizontal Seat Circuit - Oldsmobile Styles

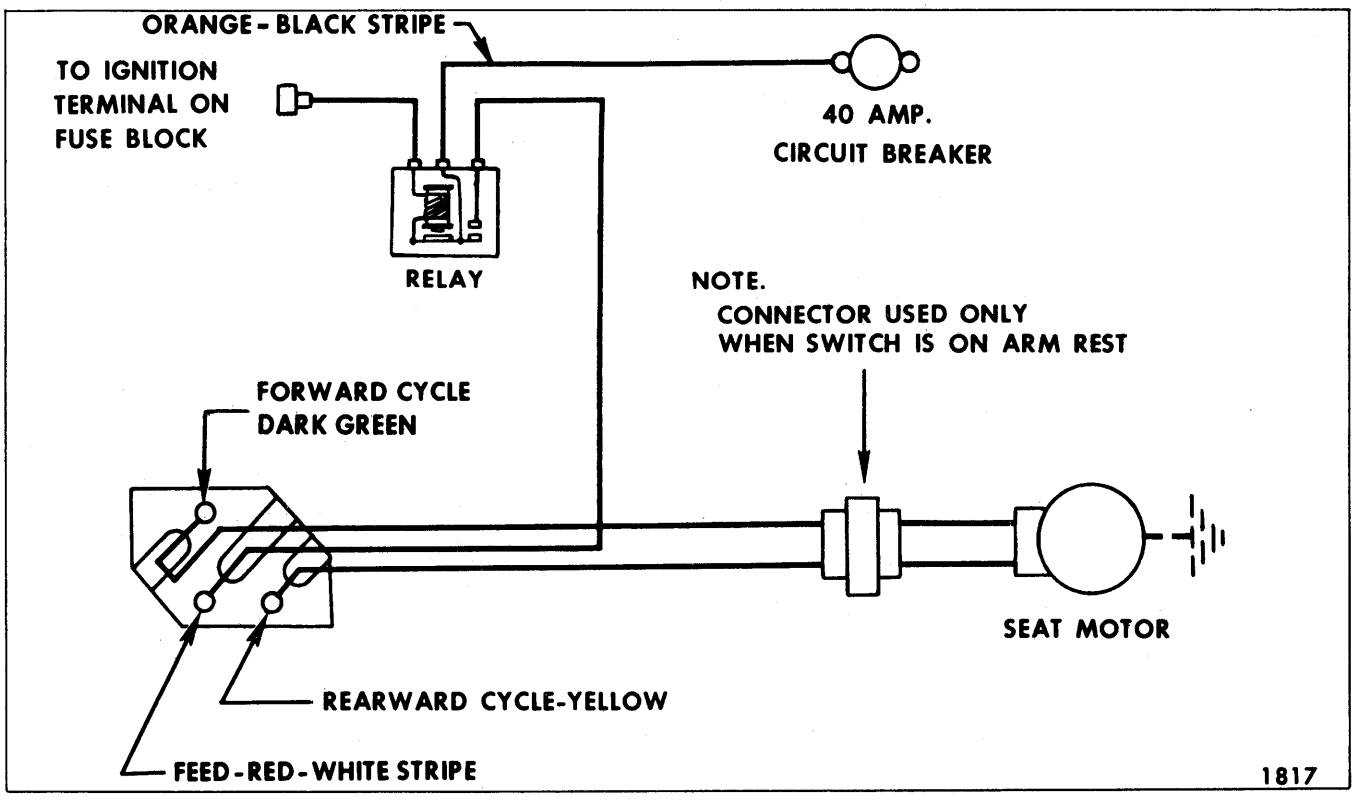


Fig. 16-24—Horizontal Seat Circuit - Buick, Cadillac Styles

Trouble Shooting of Horizontal Seat Circuit

CONDITION	CAUSE	CORRECTION
1. The seat motor does not operate in either the forward or rearward direction.	A. Open or short circuit in feed harness.	A. Connect one test light lead to feed terminal of switch block and ground other tester lead to body metal. If tester does not light, there is an open or short circuit between switch and power source.
	B. Inoperative motor.	B. Check operation of seat control switch with jumper wire. See "Checking Door Window Control" for similar operation. C. Check circuit from control switch to motor for short or open circuit and check ground wire attachment at adjuster. D. Check operation of motor with #12 gauge jumper wire. Connect one end of jumper wire to power source and the other end to one of the seat motor terminals. Motor should operate. Perform same check at the other motor terminal. If motor does not operate, repair or replace motor as required.
2. The seat motor operates in only one direction.	A. Defective switch.	A. Check operation of seat control switch with jumper wire.
	B. Open or short circuit in motor feed wires.	B. Check circuit from control switch to motor for short or open circuit.
	C. Defective seat motor.	C. Check operation of motor with #12 gauge jumper wire. Connect one end of jumper wire to power source and the other end to one of the seat motor terminals. Motor should operate. Perform same check at the other motor terminal. If motor does not operate, repair or replace motor as required.

FOUR-WAY TILT SEAT

Description

The seat adjusters for the bench-type and bucket-type seats are actuated by a 12 volt, reversible, shunt-wound motor with a built-in circuit breaker. See Figures 16-25 and 16-26 for the bench seat installation and Figure 16-27 for the bucket seat installation.

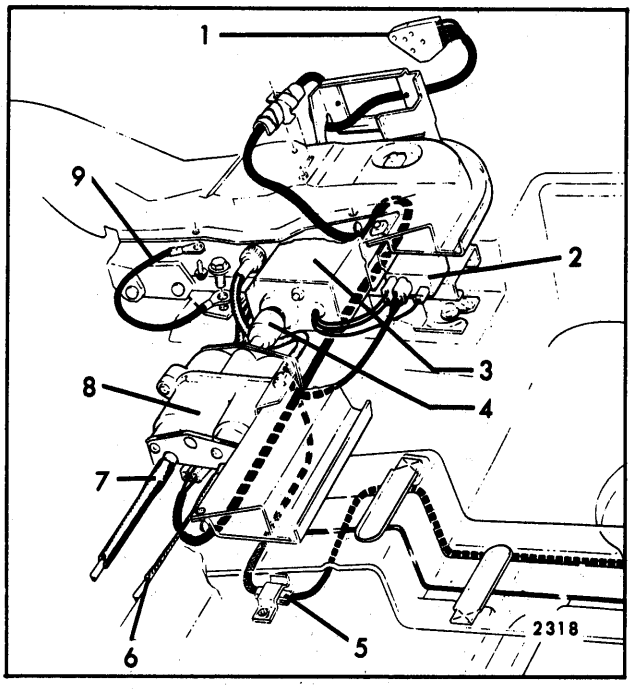


Fig. 16-25—Four-Way Bench Seat Wiring - "A" Body Styles

1. Control Switch Block
2. Motor Control Relay
3. Motor
4. Rubber Coupler
5. Harness Feed Connector
6. Vertical Drive Cable (Yellow)
7. Horizontal Drive Cable (Black)
8. Transmission Assembly
9. Seat Ground Wire

The seat motor is energized by a toggle-type control switch installed in the left seat side panel or in the left front door arm rest.

The four way seat circuit is protected by a circuit breaker (refer to Electrical Introduction for specific location).

Oldsmobile styles only - In addition to the circuit breaker a relay is used in the circuit which prevents the operation of the seat until the ignition switch is turned "on".

The seat adjuster operating mechanism incorporates a transmission assembly which includes two

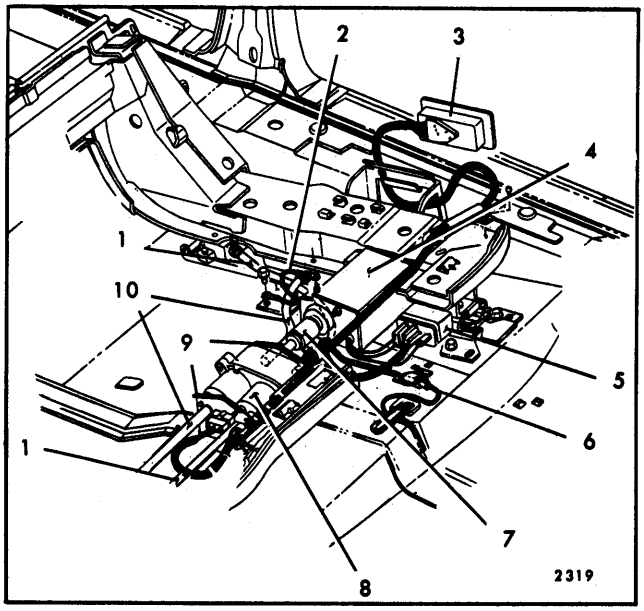


Fig. 16-26—Four-Way Bench Seat Wiring - "B & C" Body Styles

1. Vertical Control Cable (Yellow)
2. Ground Wire
3. Control Switch
4. Motor
5. Motor Control Relay
6. Harness Feed Connector
7. Rubber Coupler
8. Transmission Assembly
9. Transmission End Plates
10. Horizontal Control Cable (Black)

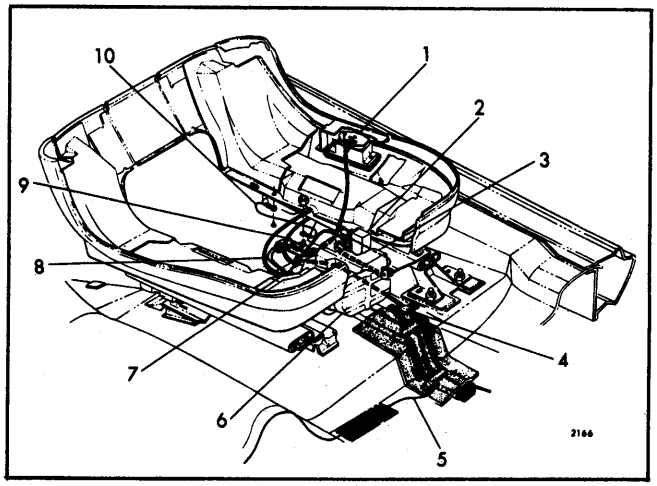


Fig. 16-27—Four-Way "Strato" Bucket Seat Wiring - All Styles

1. Control Switch
2. Motor Control Relay
3. Motor
4. Harness Feed Connector
5. Feed to Passenger Seat
6. Pulley Cover Plate
7. Transmission and Solenoid Assembly
8. Vertical Control Cable (Orange)
9. Horizontal Control Cable (Black)
10. Ground Wire

solenoids and four drive cables on bench-type seats and two drive cables on bucket seats, leading to the seat adjusters. One solenoid controls the rear vertical movement of the seat while the other solenoid controls the horizontal movement of the seat. When the control switch is actuated, the motor and one of the solenoids are energized simultaneously. Then the solenoid plunger causes the shaft dog to engage with the large gear dog.

Power is then transmitted through the transmission shaft on bench seats and through the pulleys on bucket seats, which in turn drives the actuator cables. When the adjusters reach their limit of travel, the drive cables stop their rotating action and torque is absorbed by the rubber coupler connecting the motor and transmission on bench seats. On bucket seats torque is absorbed through the belt on the pulley. When the control switch lever is released the switch contacts open, a spring returns the shaft dog and solenoid plunger to their original position disengaging the shaft dog from the large gear dog. See "Seat Section" for exploded view of transmission.

CHECKING PROCEDURE

It may be necessary to use only one or all of the procedures outlined to locate an electrical failure in the circuit. If the location of the failure is evident follow only the steps required to check the affected wire or component. If the location of the failure is not evident, follow the procedures as outlined. Before performing any extensive check procedures, check the seat adjuster drive cables for proper attachment. In addition, study the seat circuit diagrams to become familiar with the seat circuit. (See Figs. 16-28 and 16-29).

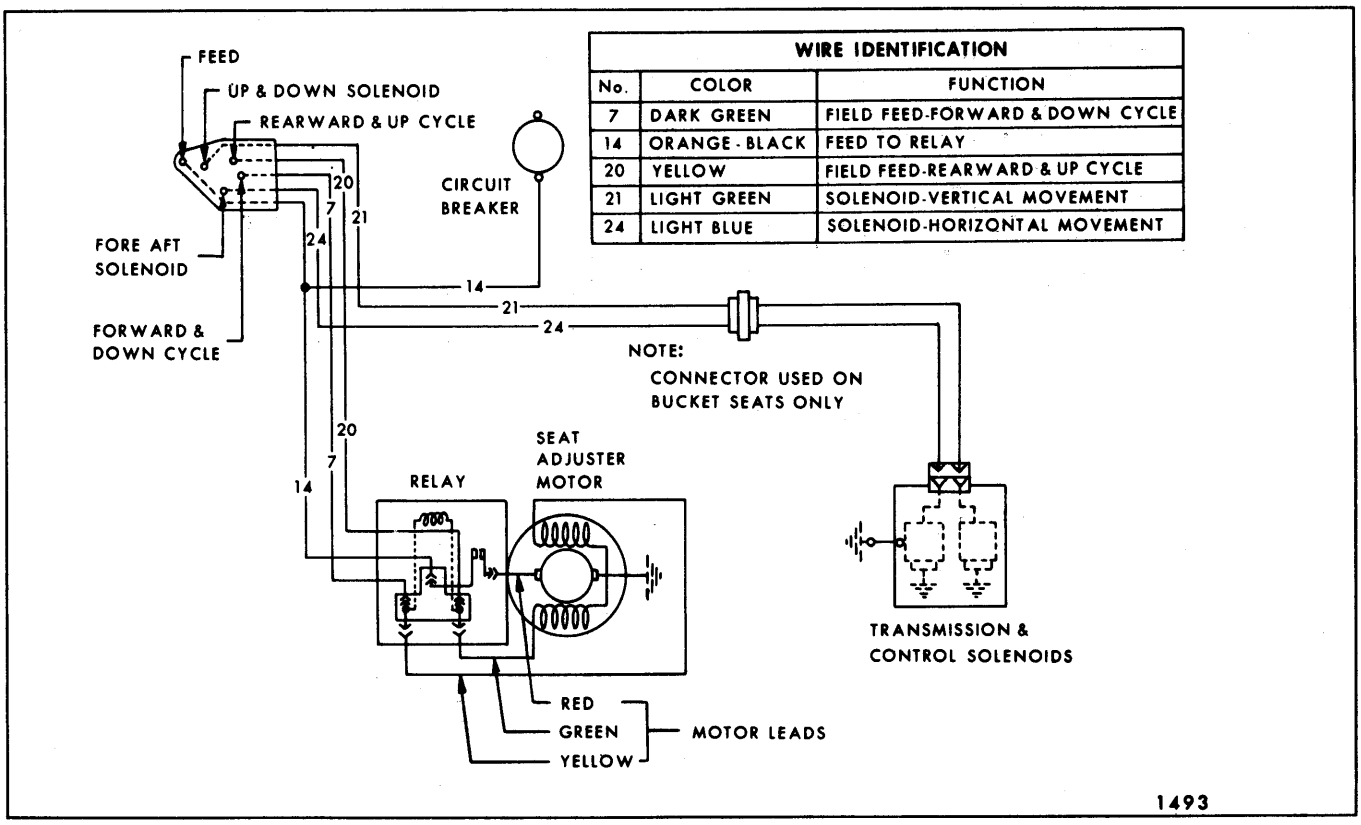
a. Checking for Current at Circuit Breaker

1. Connect one test light lead to battery side of circuit breaker. If tester does not light, there is no current at battery side of circuit breaker.

2. To check circuit breaker, disconnect switch feed wire from breaker, and with a test light check for current at switch side of circuit breaker. If tester does not light, there is no current flowing through circuit breaker.

b. Checking the Ignition Relay Assembly—Oldsmobile "B & E" Styles Only

1. With test light check for current at circuit breaker side of relay. If tester does not light, there is a short or open circuit between circuit breaker and relay assembly.



WIRE IDENTIFICATION		
No.	COLOR	FUNCTION
7	DARK GREEN	FIELD FEED-FORWARD & DOWN CYCLE
14	ORANGE-BLACK	FEED TO RELAY
20	YELLOW	FIELD FEED-REARWARD & UP CYCLE
21	LIGHT GREEN	SOLENOID-VERTICAL MOVEMENT
24	LIGHT BLUE	SOLENOID-HORIZONTAL MOVEMENT

Fig. 16-28—Four-Way Seat Circuit - All Styles Except Oldsmobile "B & E" Styles

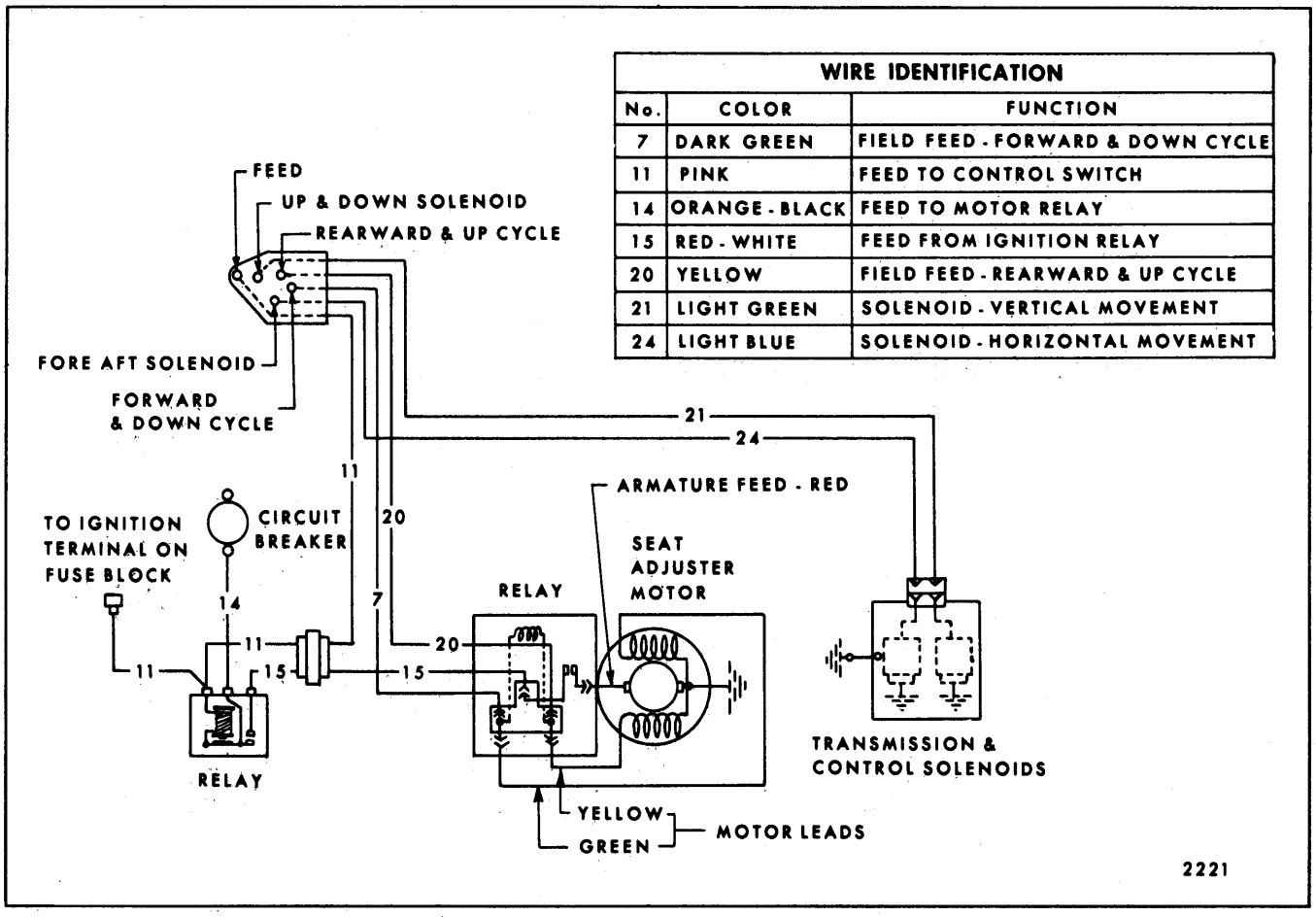


Fig. 16-29—Four-Way Seat Circuit - Oldsmobile "B & E" Styles

2. Turn ignition switch on and with a test light check for current at output side of relay. If tester does not light, the relay is defective or there is a short or open circuit between ignition switch and relay assembly. Check wires before replacing relay.

   NOTE: Oldsmobile "B & E" Styles Only – Ignition switch must be on for performing the remainder of checking procedure.

c. Checking Feed Circuit Continuity at Relay on Seat Motor—All Styles

1. Disengage three-way connector body from the seat motor relay.

2. Insert one test light lead into the relay power feed connector slot on the harness, and ground other tester lead.

3. If tester does not light, there is no current at end of feed wire. Failure is caused by an open or short circuit in feed circuit.

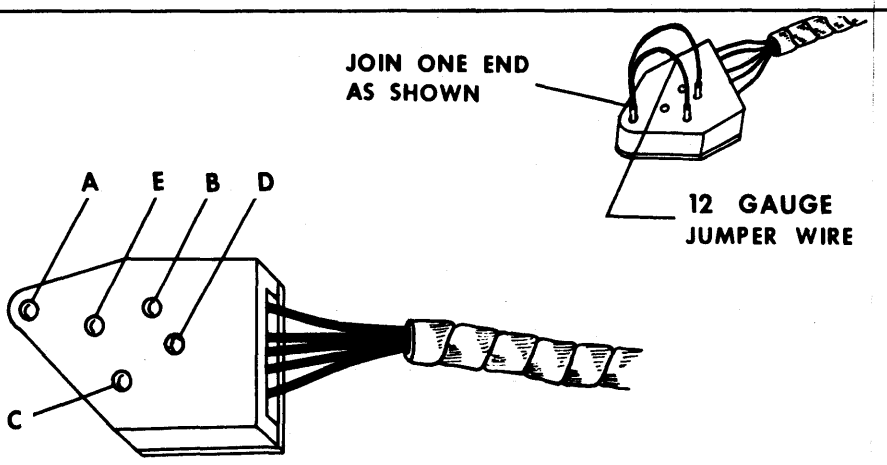
d. Checking for Current at Seat Control Switch

1. Connect one test light lead to feed terminal of switch block and ground other test light lead to body metal.

2. If tester does not light, there is no current at switch block. Failure is caused by an open or short circuit between switch block and power source.

e. Checking the Seat Control Switch

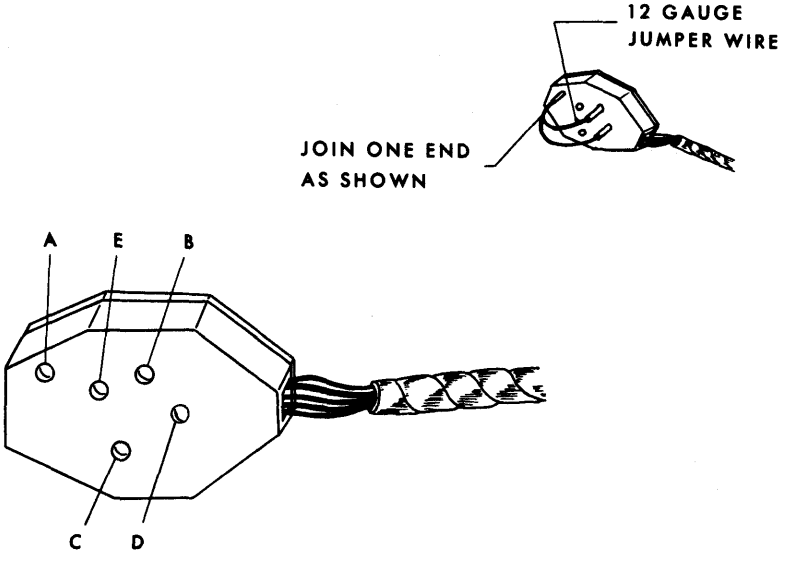
In the following operations which specify the seat control switch to be actuated, a switch that has been checked for proper operation may be connected to the switch block. If a switch is not available, a three-way jumper wire can be made to perform the switch function. The method of making the jumper wire and the switch locations to be connected to obtain a specific movement of the seat are shown in Figures 16-30 and 16-31. If a jumper wire is used, number the locations on the switch block as indicated in the illustration.



LOCATION	WIRE COLOR	FUNCTION
A	ORANGE - BLACK	SWITCH FEED
B	YELLOW	FIELD FEED-REARWARD & UP CYCLE
C	LIGHT BLUE	SOLENOID-HORIZONTAL MOVEMENT
D	DARK GREEN	FIELD FEED-FORWARD & DOWN CYCLE
E	LIGHT GREEN	SOLENOID-VERTICAL MOVEMENT

1849

Fig. 16-30—Four-Way Seat Switch Block - All Styles Except Oldsmobile "B & E"



LOCATION	WIRE COLOR	FUNCTION
A	PINK	SWITCH FEED
B	YELLOW	FIELD FEED—REARWARD & UP CYCLE
C	LIGHT BLUE	SOLENOID—HORIZONTAL MOVEMENT
D	DARK GREEN	FIELD FEED—FORWARD & DOWN CYCLE
E	LIGHT GREEN	SOLENOID—VERTICAL MOVEMENT

1850

Fig. 16-31—Four-Way Seat Switch Block - Oldsmobile "B & E" Styles

NOTE: To make jumper wire, obtain two pieces of #12 gauge wire, each 4-1/2" long. Join one end of each wire as shown in diagram. The joined end can be inserted in the feed location in the switch block; one of the remaining ends can be inserted into one of the solenoid locations.

1. Obtain switch or jumper wire and connect to switch block.
2. Operate switch if used. If adjusters operate with switch or jumper wire, but did not operate with original switch, the original switch is defective or connector block was not sufficiently engaged.

   IMPORTANT: To obtain a seat movement using a three-way jumper wire at the switch block, the switch feed location, one of the motor field wire locations and one of the solenoid locations have to be connected simultaneously.

   The switch locations to be connected to obtain a specific seat movement are outlined as follows:

   (a) To raise seat, place jumper wire in locations "A, B & E".

   (b) To lower seat, place jumper wire in locations "A, D & E".

   (c) To operate seat forward, place jumper wire in locations "A, C & D".

   (d) To operate seat rearward, place jumper wire in locations "A, B & C".

f. Checking Wires Between Control Switch and Motor Relay

1. Disengage three-wire harness connector from relay at motor.
2. Insert one test light lead into the motor field connector slot on harness and ground other lead.
3. Actuate seat switch to energize field wire being tested.
4. If tester does not light, there is no current at end of wire. Failure is caused by an open or short circuit between end of wire and switch. Check other motor field wire in the same manner.

g. Checking the Relay Assembly

1. Disconnect three leads from relay assembly. These are the wires leading from the motor to the relay.
2. Connect one end of a jumper wire to one of the motor field feed studs on the relay and ground the other end of the jumper wire.
3. Connect one test light lead to motor armature feed stud on relay and ground other tester lead.
4. With jumper wire, energize the field stud which is not grounded.

   CAUTION: Do not energize grounded side. If tester does not light, the relay is defective.

h. Checking the Motor Assembly

1. Disconnect motor field feed wires from motor.
2. Connect one end of a #12 gauge jumper wire to battery positive pole and other end to one of the motor field and the armature wires.
3. If motor does not operate, motor is defective. Check the remaining motor field wire in the same manner.

i. Checking Wires Between Switch and Solenoids

1. Disconnect harness connector from transmission assembly.
2. Connect one test light lead to one terminal of power feed and ground other test light lead to body metal.
3. Operate switch to wire being tested. If tester does not light, there is no current at the end of harness wire. Failure is caused by an open or short circuit between end of wire and switch or defective switch.
4. Check other wire is same manner.

   NOTE: One wire in connector is a blank. Check wiring diagram for colors of wires actually used.

j. Checking the Solenoid

1. Check solenoid ground strap attachment for proper ground.
2. Connect one end of a #12 gauge jumper wire to the battery positive pole and the other end to the lead of the solenoid being checked.

   CAUTION: To prevent damaging the solenoid, do not energize solenoid for more than one minute.

3. Operate switch, actuate adjuster motor and solenoid being checked.
4. If adjusters do not operate and there is no mechanical failure of the adjusters, the solenoid is defective.

   NOTE: If solenoid is functioning properly, a "click" may be heard when solenoid plunger operates.

k. Trouble Shooting

CONDITION	CAUSE	CORRECTION
1. Seat adjuster motor does not operate.	A. Short or open circuit between power source or switch and motor.	A. Check circuit from power source and switch to motor to locate failure.
	B. Defective motor relay.	B. Replace relay.
	C. Defective motor.	C. Check Motor. If defective, repair or replace as required.
	D. Defective switch.	D. Replace switch.
	E. Defective circuit breaker.	E. Replace circuit breaker.
2. Seat adjuster motor operates in both directions but seat adjusters are not actuated.	A. Short or open circuit between switch and affected solenoid.	A. Check circuit from switch to solenoid to locate failure.
	B. Defective solenoid.	B. Check solenoid. If defective, repair or replace as required.
	C. Defective switch.	C. Replace switch.
3. Seat Adjuster motor operates in one direction only, seat moves down and forward, but does not move up and rearward.	A. Short or open circuit between one of the motor relay wires and seat control switch.	A. Check circuit between affected motor relay wire and seat switch.
	B. Defective field coil in motor.	B. Check motor. If defective, repair or replace as required.
	C. Defective switch.	C. Replace switch.

SIX-WAY TILT SEATS

Description

The seat adjuster for the standard and "STRATO" type 6-way seats are actuated by a 12-volt motor installed at the left side of the seat assembly (See Figs. 16-32 and 16-33). The motor is energized by a three button-type control switch located in the left seat side panel in the left front door arm rest.

The power seat circuit is protected by a circuit breaker (refer to Electrical Introduction for location).

Oldsmobile Styles Only - In addition to the circuit breaker a relay is used in the circuit which prevents the operation of the seat until the ignition switch is turned "on".

The electrical portion of the six way seat operates as follows:

When the control switch is actuated, current flows to the transmission solenoid which controls the desired seat movement. The energizing of the solenoid coil results in the solenoid plunger dog engaging the gear mechanism to rotate the control cable. The same switch action which energized the solenoid produces a current flow through the motor control relay to one of the motor field coils. The current flows through the relay, closes the contacts between the relay power source and the armature motor lead wire, and results in the operation of the seat motor. When the control switch lever is released, the switch contacts open, a spring returns the shaft dog and solenoid plunger to their original position disengaging them from the gear dog.

Circuit Checking Procedures

It may be necessary to use only one or all of the procedures outlined to locate an electrical failure in the circuit. If the location of the failure is evident, follow only the steps required to check the affected wire or component. If the location of the failure is not evident, follow the procedure as outlined. Before performing any extensive check procedures, check the seat adjuster drive cables for proper attachment. In addition, study the seat

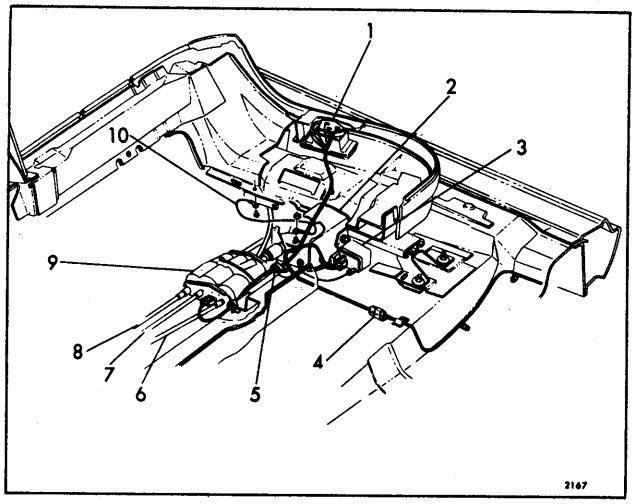


Fig. 16-32—Six-Way "Strato" Seat

1. Control Switch
2. Motor
3. Motor Control Relay
4. Harness Feed Connector
5. Rubber Coupler
6. Front Vertical Control Cable (Yellow)
7. Rear Vertical Control Cable (Blue)
8. Horizontal Control Cable (Black)
9. Transmission and Solenoid Assembly
10. Ground Wire

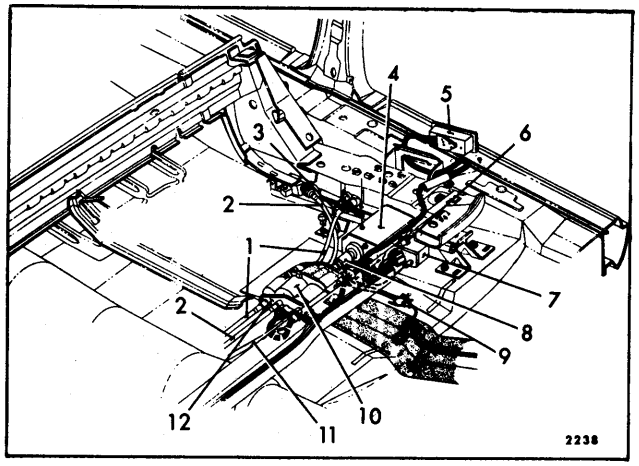


Fig. 16-33—Six-Way Standard Bench Seat

1. Horizontal Control Cable (Black)
2. Rear Vertical Control Cable (Blue)
3. Ground Wire
4. Motor
5. Control Switch
6. Front Vertical Control Cable (Yellow)
7. Motor Control Relay
8. Rubber Coupler
9. Harness Feed Connector
10. Transmission and Solenoid Assembly
11. Front Vertical Control Cable (Yellow)
12. Transmission End Plate

circuit diagrams to become familiar with the seat circuit (See Figures 16-34, 16-35 and 16-36).

a. Checking Feed Circuit Continuity at Circuit Breaker

1. Connect one test light lead to battery side of circuit breaker and ground other lead. If tester does not light, there is an open or short circuit in feed circuit to breaker.

2. To check circuit breaker, disconnect the output feed wire (the wire opposite the power source feed to the breaker) from the breaker and with test light check terminal from which the wire was disconnected. If tester does not light, circuit breaker is inoperative. Buick and Cadillac Styles - Check feed circuit continuity at fuse block.

b. Checking Relay Assembly at Shroud—Oldsmobile Styles

1. With test light check relay feed (orange-black stripe). If tester does not light, there is an open or short circuit between relay and circuit breaker.

2. Turn ignition switch on and with test light check output terminal of relay (red-white stripe). If tester does not light, the relay is inoperative or there is a short or open circuit between ignition switch (pink) and relay assembly. (Check fuse at dash panel.)

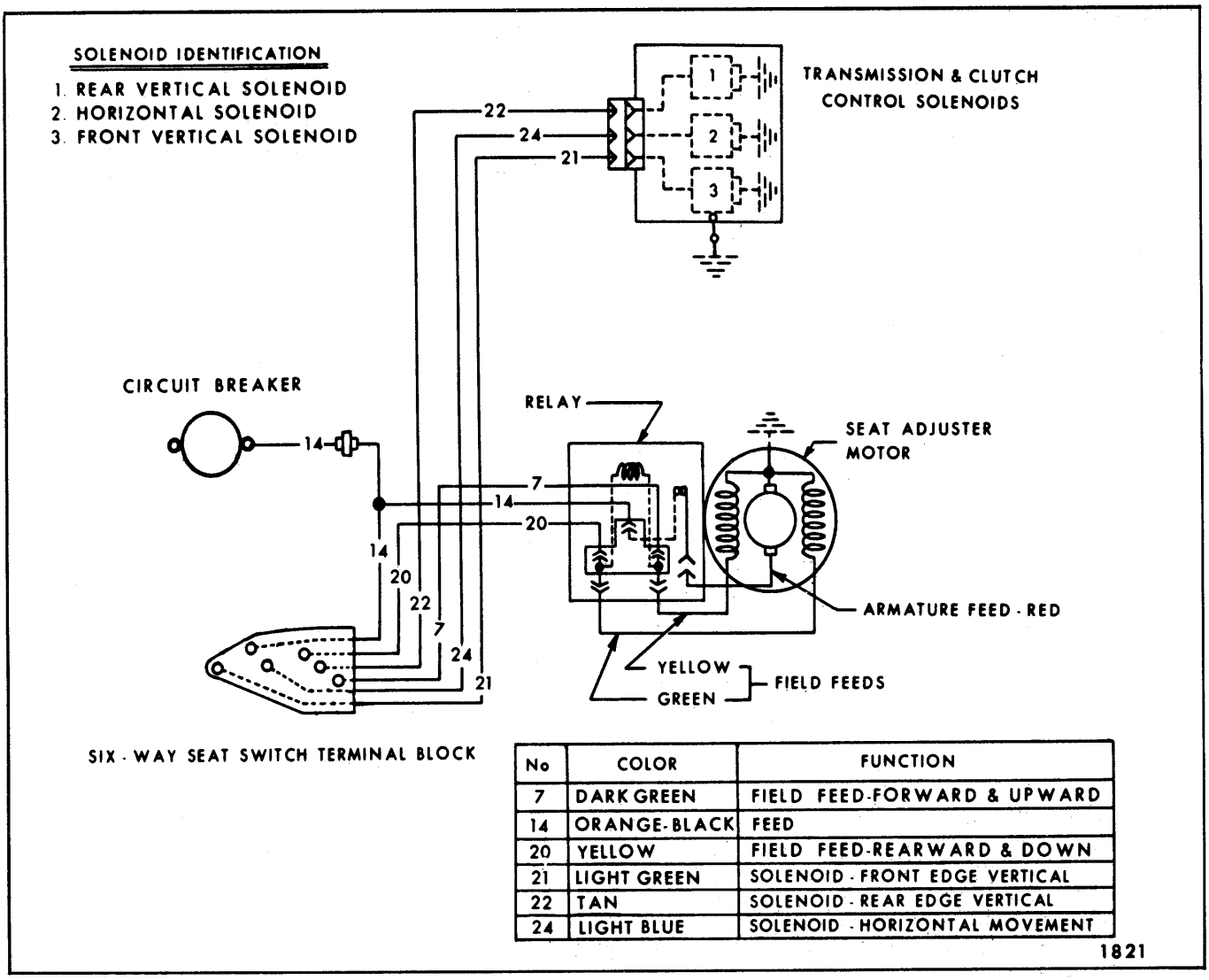
c. Check Feed Circuit Continuity at Seat Control Switch

1. Connect one test light lead to feed terminal of switch block and ground other test lead to body metal.

2. If tester does not light, there is an open or short circuit between switch and power source.

d. Checking the Seat Control Switch

NOTE: In the following operations which specify the seat control switch to be actuated, a switch that has been checked for proper operation may be connected to the switch block. If a switch is not available, a three-way jumper wire can be made to perform the switch function. The jumper wire and the switch locations to be connected to obtain a specific movement of the seat are shown in Figures 16-37 - Oldsmobile styles with switch in seat side panel; 16-38 - Oldsmobile styles with switch in arm rest; 16-39 - Chevrolet, Pontiac, Buick and Cadillac styles. If a jumper



No	COLOR	FUNCTION
7	DARK GREEN	FIELD FEED-FORWARD & UPWARD
14	ORANGE-BLACK	FEED
20	YELLOW	FIELD FEED-REARWARD & DOWN
21	LIGHT GREEN	SOLENOID - FRONT EDGE VERTICAL
22	TAN	SOLENOID - REAR EDGE VERTICAL
24	LIGHT BLUE	SOLENOID - HORIZONTAL MOVEMENT

Fig. 16-34—Six-Way Seat Circuit - All Styles Except Oldsmobile Styles

wire is used, letter the locations on the switch block as indicated in the illustration. Details outlining the making and use of the jumper wire follow the checking procedure.

1. Obtain switch or jumper wire and connect to switch block.

2. Operate switch. If adjusters operate with new switch or jumper wire, but did not operate with original switch, the original switch is defective.

3. Check all six movements of seat adjuster.

e. Checking Feed Circuit Continuity at Relay on Seat Motor

1. Disengage 3-wire connector body from the seat motor relay terminal.

2. Insert one test light lead into the relay power feed connector slot on the harness, and ground the other test light lead.

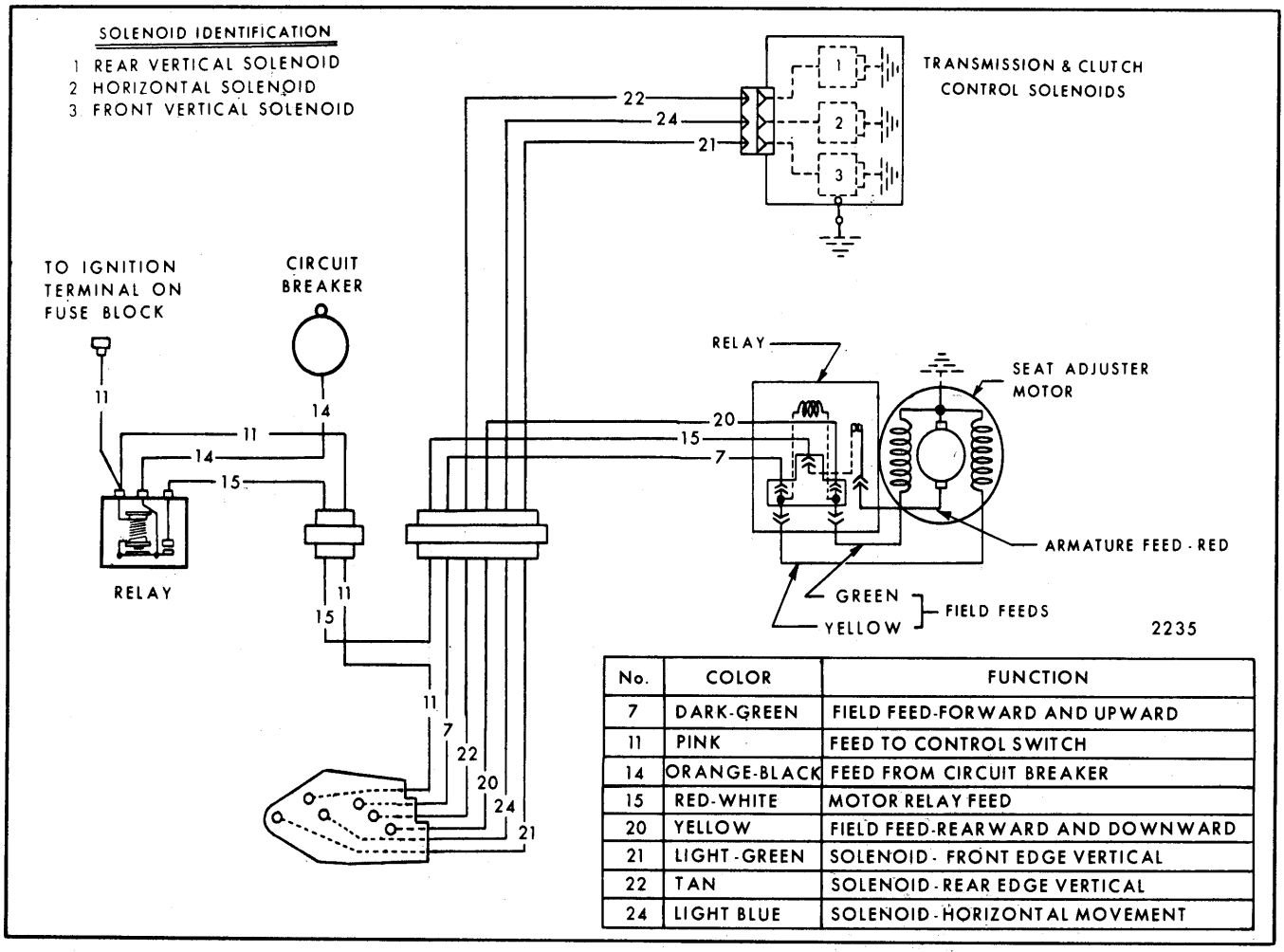
3. If tester does not light, there is no current at end of feed wire. Failure is caused by an open or short in feed circuit.

f. Checking Wires Between Control Switch and Motor Relay

1. Disengage 3-wire harness connector from relay at motor.

2. Insert one test light lead into the motor field connector slot on harness and ground the other lead.

3. Actuate seat switch to energize field wire being tested.



No.	COLOR	FUNCTION
7	DARK-GREEN	FIELD FEED-FORWARD AND UPWARD
11	PINK	FEED TO CONTROL SWITCH
14	ORANGE-BLACK	FEED FROM CIRCUIT BREAKER
15	RED-WHITE	MOTOR RELAY FEED
20	YELLOW	FIELD FEED-REARWARD AND DOWNWARD
21	LIGHT-GREEN	SOLENOID - FRONT EDGE VERTICAL
22	TAN	SOLENOID - REAR EDGE VERTICAL
24	LIGHT BLUE	SOLENOID - HORIZONTAL MOVEMENT

Fig. 16-35—Six-Way Seat Circuit - Switch in Arm Rest - Oldsmobile Styles

4. If tester does not light, there is no current at end of wire. Failure is caused by an open or short circuit between end of wire and switch. Check other motor field wire in the same manner.

g. Checking the Relay Assembly

1. Disconnect three motor leads from relay assembly. These are the wires leading from the motor to the relay.

2. Connect one end of a jumper wire to one of the motor field feed studs on the relay and ground the other end of the jumper wire.

3. Connect one end of test light to motor armature feed stud on relay and ground other tester lead.

4. With a jumper wire, energize the field stud which is not grounded. If tester does not light the relay is defective.

h. Checking the Motor Assembly

1. Disconnect the motor armature feed lead and one of the motor field feeds from the relay assembly.

2. With a jumper wire, energize the armature feed and one of the field feeds.

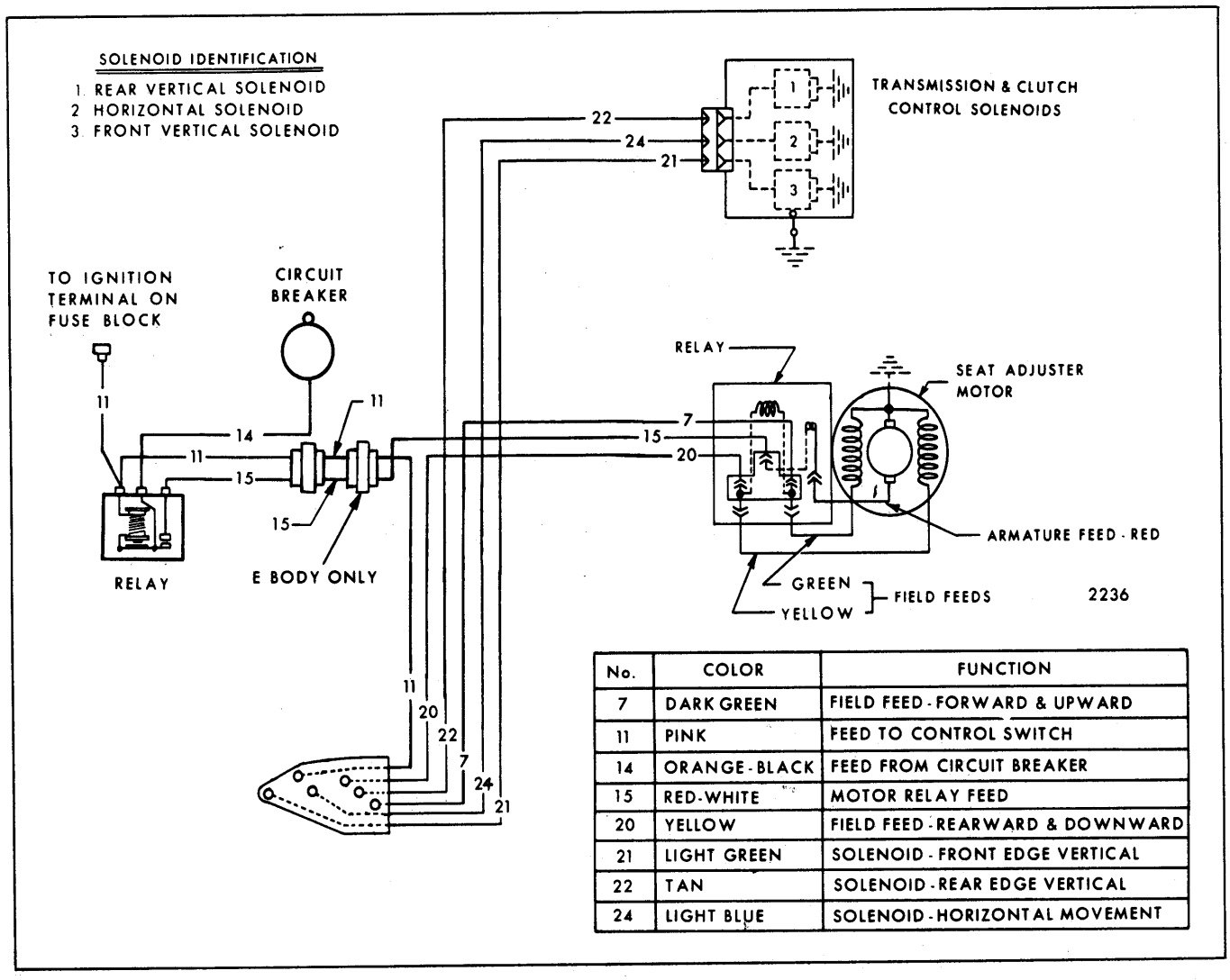
3. If motor does not operate, it is defective. Check the other motor field feed in the same manner.

i. Checking the Wire Between the Solenoid and Switch

1. Disengage harness connector from transmission.

2. Connect one test light lead to end of harness wire being tested and ground other lead.

3. Operate switch to energize wire being tested. If tester does not light, there is no current at end of wire. Failure is caused by an open



No.	COLOR	FUNCTION
7	DARK GREEN	FIELD FEED - FORWARD & UPWARD
11	PINK	FEED TO CONTROL SWITCH
14	ORANGE - BLACK	FEED FROM CIRCUIT BREAKER
15	RED-WHITE	MOTOR RELAY FEED
20	YELLOW	FIELD FEED - REARWARD & DOWNWARD
21	LIGHT GREEN	SOLENOID - FRONT EDGE VERTICAL
22	TAN	SOLENOID - REAR EDGE VERTICAL
24	LIGHT BLUE	SOLENOID - HORIZONTAL MOVEMENT

Fig. 16-36—Six-Way Seat Circuit - Switch in Seat Side Panel - Oldsmobile Styles

or short circuit between end of wire and switch.

j. Checking the Solenoid

1. Check solenoid ground strap attachment for proper ground.

2. Energize solenoid being checked with jumper wire.

   NOTE: If solenoid is functioning, a "click" should be heard when solenoid plunger operates "in" and "out".

   CAUTION: To prevent damaging the solenoid, do not energize solenoid for more than one minute.

3. With solenoid energized, actuate seat control switch to energize adjuster motor.

4. If adjusters do not operate, and there is no mechanical failure in the seat unit, the solenoid is defective.

Three-Way Jumper Wire for Checking Seat Switch

To make jumper wire, obtain two pieces of #12 gauge wire, each 4-1/2" long, join one end of each wire as shown in Figure 16-39. The joined end can be inserted in the feed location in the switch block; one of the remaining ends can be inserted into one of the field locations in the switch block; the other end can be inserted into one of the solenoid locations.

IMPORTANT: To obtain a seat movement using a 3-way jumper wire at the switch block, the switch feed location, one of the motor field wire locations and one of the solenoid locations must be connected simultaneously.

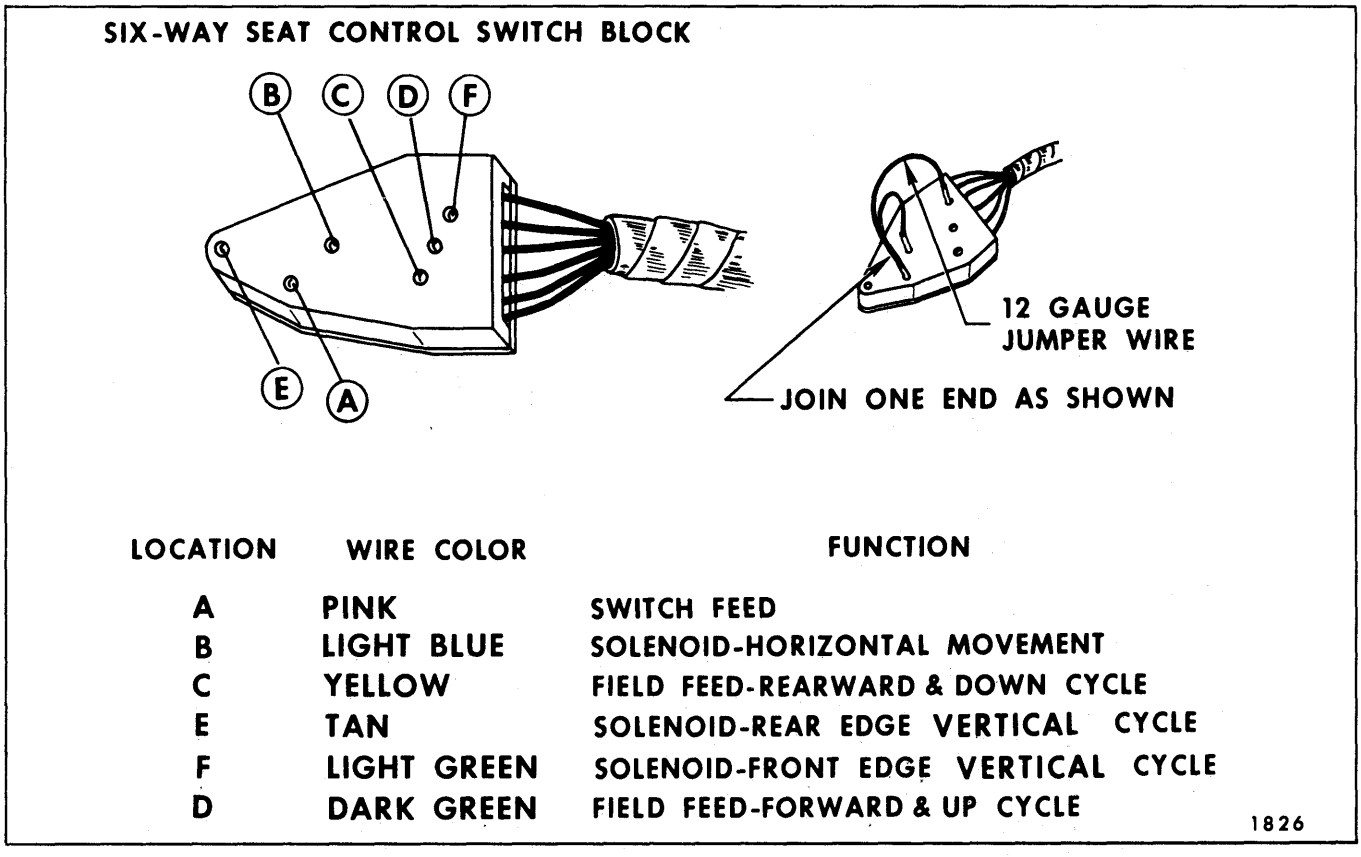


Fig. 16-37—Six-Way Seat Switch Block - Switch in Seat Side Panel - Oldsmobile

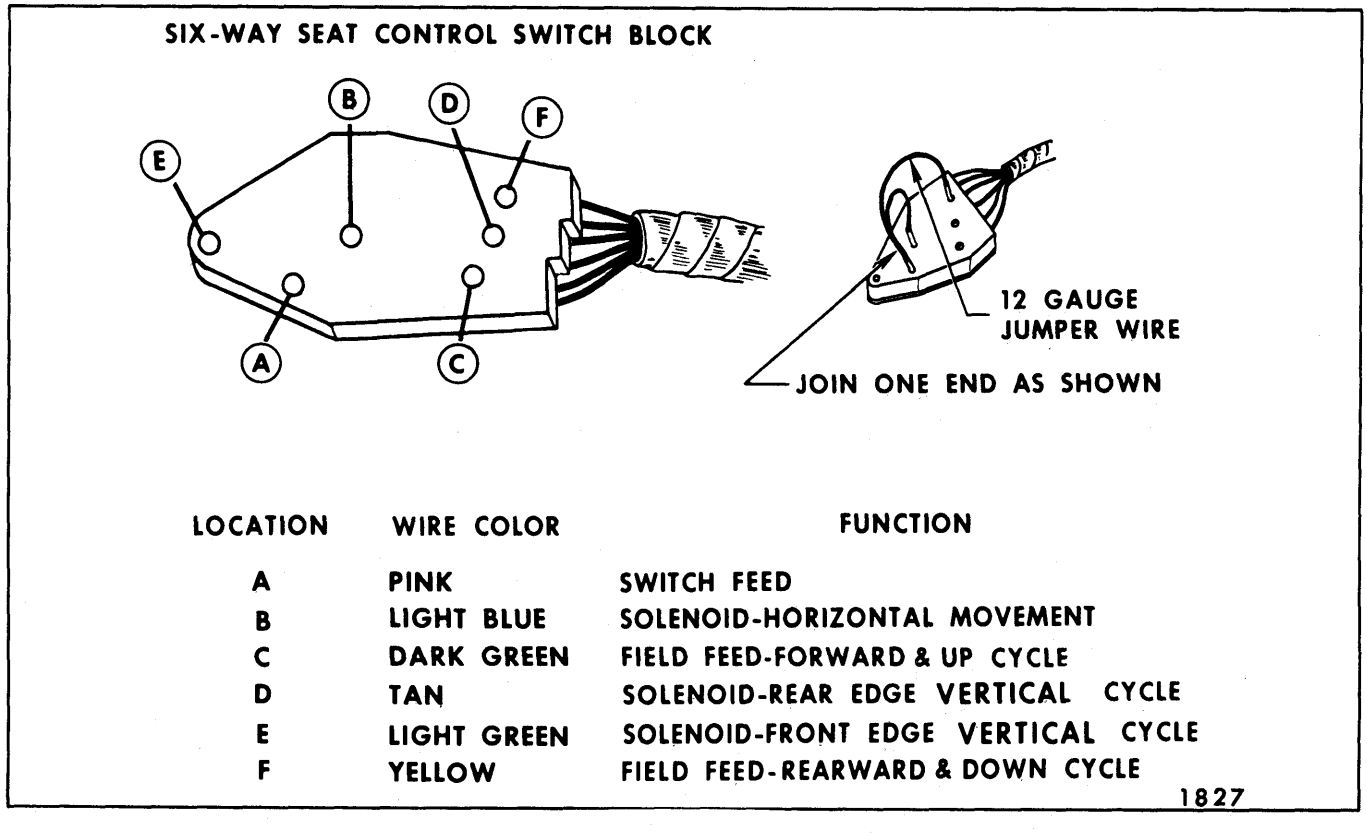
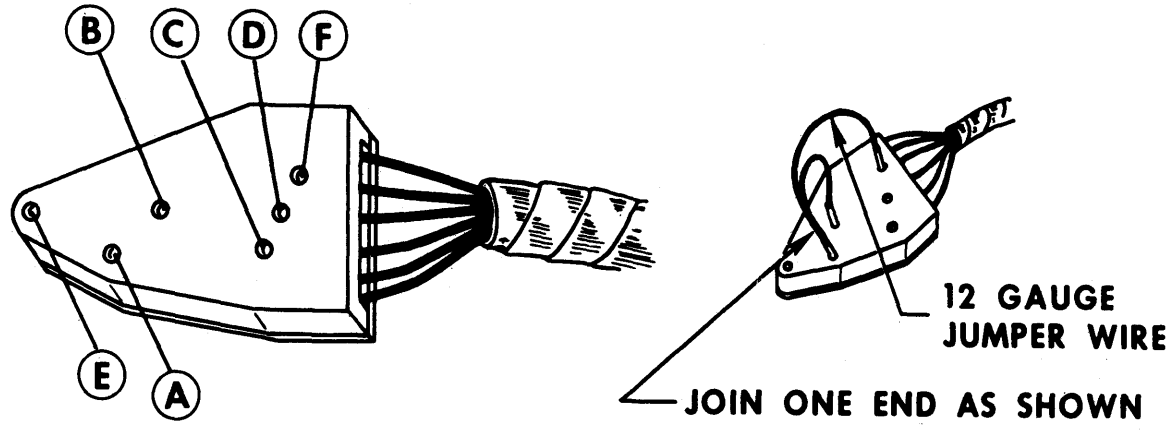


Fig. 16-38—Six-Way Seat Switch Block - Switch in Arm Rest - Oldsmobile

SIX-WAY SEAT CONTROL SWITCH BLOCK



LOCATION	WIRE COLOR	FUNCTION
A	ORANGE-BLACK	SWITCH FEED
B	LIGHT BLUE	SOLENOID-HORIZONTAL MOVEMENT
C	YELLOW *	FIELD FEED-REARWARD & DOWN CYCLE
D	TAN	SOLENOID-REAR EDGE VERTICAL CYCLE
E	LIGHT GREEN	SOLENOID-FRONT EDGE VERTICAL CYCLE
F	DARK GREEN *	FIELD FEED-FORWARD & UP CYCLE

* ON STYLES WITH SWITCH IN ARM REST-
DARK GREEN CONTROLS FORWARD & UP CYCLE
YELLOW FIELD CONTROLS REARWARD & DOWN CYCLE

1825

Fig. 16-39—Six-Way Seat Switch Block - All Styles Except Oldsmobile

On Bodies with Switch in Seat Side Panel:

1. To raise front edge of seat, place jumper in locations, A, F and E.
2. To lower front edge of seat, place jumper in locations A, C and E.
3. To raise rear edge of seat, place jumper in locations A, F and D.
4. To lower rear edge of seat, place jumper in locations A, C and D.
5. To move seat forward, place jumper in locations A, B and F.
6. To move seat rearward, place jumper in locations A-C and B.

On Bodies with Switch in Arm Rest:

1. To raise front edge of seat, place jumper in locations A-C and E.
2. To lower front edge of seat, place jumper in locations A-F and E.
3. To raise rear edge of seat, place jumper in locations A-C and D.
4. To lower rear edge of seat, place jumper in locations A-F and D.
5. To move seat forward place jumper in locations A-C and B.
6. To move seat rearward, place jumper in locations A-F and B.

Trouble Shooting

CONDITION	CAUSE	CORRECTION
1. Seat adjuster motor does not operate.	A. Short or open circuit between power source or switch and motor. B. Defective motor.	A. Check circuit from power source and switch to motor to locate failure. B. Check ignition switch circuit through relay at left shroud – Oldsmobile styles only. C. Check motor. If defective, repair or replace as required.
2. Seat adjuster motor operates, but seat adjusters are not actuated. or 3. Seat adjuster motor operates, front edge of seat moves up and down and seat moves forward and rearward. The rear edge of seat cannot be operated.	A. Short or open circuit between switch and affected solenoid. B. Defective solenoid.	A. Check circuit from switch to solenoid to locate failure. B. Check solenoid. If defective, repair or replace as required.
4. Seat adjuster motor operates and seat adjusters move front and rear edge of seat up and forward but will not move the seat down and rearward. or 5. Seat adjuster motor operates and seat adjusters move front and rear of seat down and rearward, but will not move the seat up and forward.	A. Short or open circuit between one of the motor field wires and seat control switch. B. Defective field coil in motor.	A. Check circuit between affected motor field wire and seat switch. B. Check motor. If defective, repair or replace as required.

TAIL AND SIDE MARKER LAMPS

DESCRIPTION

Various methods are employed to remove and install the components of tail lamp assemblies. The following charts (Figs. 16-40, 16-41, 16-42, 16-43 and 16-44) will provide a quick reference for performing the three basic service operations for each Car Division (Bulb Replacement, Lens Replacement and Housing Replacement) on styles where the tail lamp assembly is installed on the body. If the tail lamp assembly is installed in the bumper refer to the chassis manual for service operations.

CAUTION: Do not rework or alter the reflective surface of tail lamps or side marker lamps.

SEALING

Caution should be exercised to prevent waterleaks at the tail lamp area when sealing surfaces are disturbed. Damaged gaskets should be replaced. If new gaskets are not installed, the use of sealer (body caulking compound or equivalent) is recommended at critical areas and where the old gaskets have taken a set.

The recommended torque for attaching nuts to zinc die cast studs on tail lamp housings and rear fender extensions is 46 to 72 inch pounds. If additional tightening of casting to panel is required, a maximum of 90 inch pounds of torque may be used without stripping the nut.

SIDE MARKER LAMPS

All styles except Oldsmobile "A" Station Wagons are equipped with rear quarter side marker lamps. The lamps operate in conjunction with the tail lamp circuit.

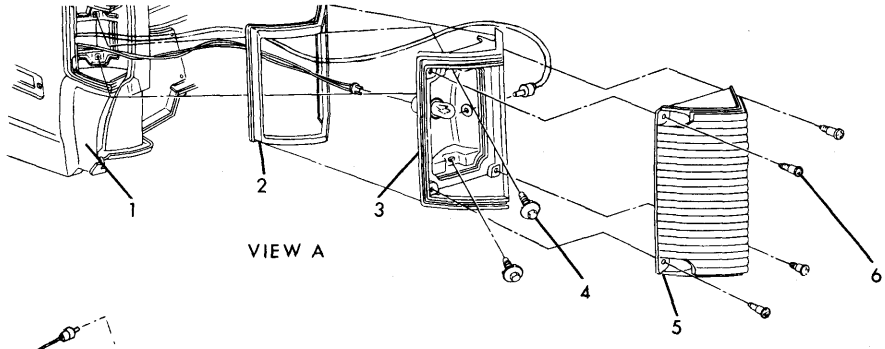
There are three basic methods of retention for these lamp housings.

1. External Screws - Used on all station wagons.
2. Studs with Nuts Accessible from the Rear Compartment - all Except Buick and station wagons.
3. Slide-on Spring Retainer - Used on Buick styles only.

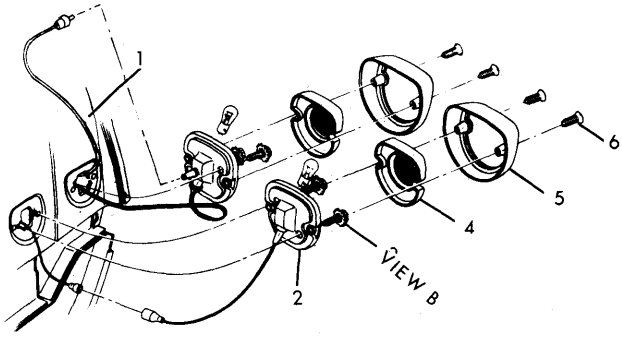
Views depicting lamp installations are shown with the respective tail lamp installation drawings.

TAIL LAMP BULB USAGE CHART

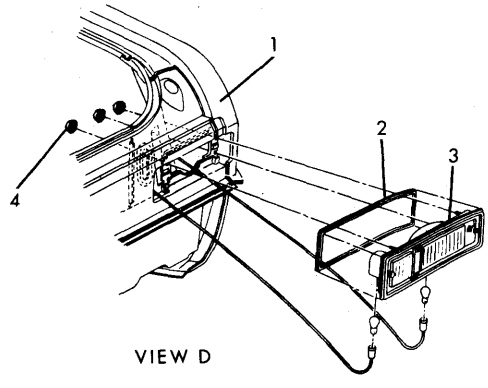
Trade No.	Candle Power	Use
1155	4	Tail Lamp
1156	32	Back-Up Lamp
1157	32 and 4	Combination Tail, Stop and Directional
193	2	Side Marker - Olds. & Cad. "E"
194	2	Side Marker - Chev. - Buick
1895	2	Side Marker - Pontiac



VIEW A



VIEW B



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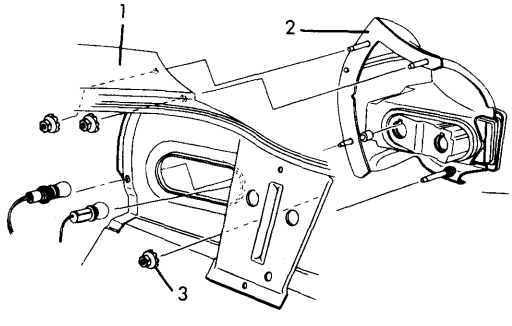
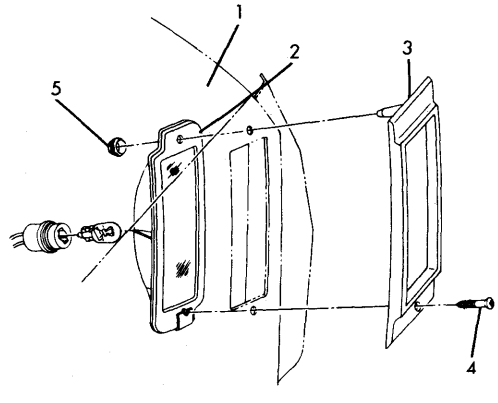


VIEW C



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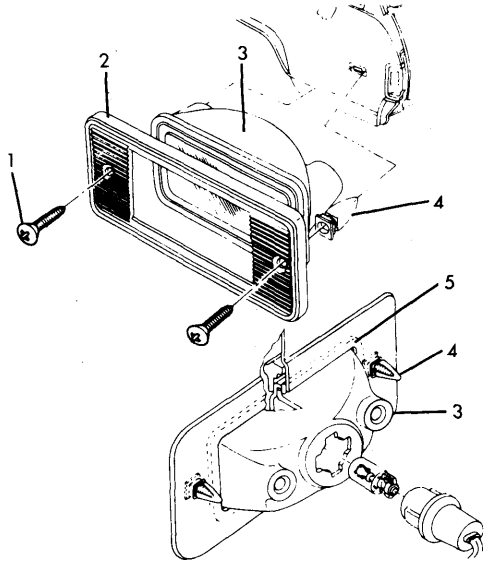


VIEW F

2958

TAIL LAMP OPERATION — CHEVROLET — ACADIAN, BEAUMONT (CANADIAN)

FIG. 16-40

OPERATION	METHOD		BODY TYPE			
		A	A "35"	B "35 - 45"	F	X
Bulb Replacement	Remove Lens Outside		X	X		
	Remove Socket (Inside Rear Compartment)	X			X	X
Lens Replacement	Remove Retaining Screws (Outside)		X	X		X
	Remove Housing and Disassemble	X			X	
Housing Replacement	Remove from Outside (Retaining) Nuts in Rear Compartment)	X VIEW "C"			X	X VIEW "D"
	Remove from Inside					
	Remove from Outside (Retaining Bolts Under Lens)		X VIEW "A"	X VIEW "B"		
	Lower Rear Bumper					

CHEVROLET

VIEW "A"
1. Quarter Panel
2. Lamp Housing Gasket
3. Lamp Housing
4. Lamp Housing Screw
5. Lens
6. Lens Screw

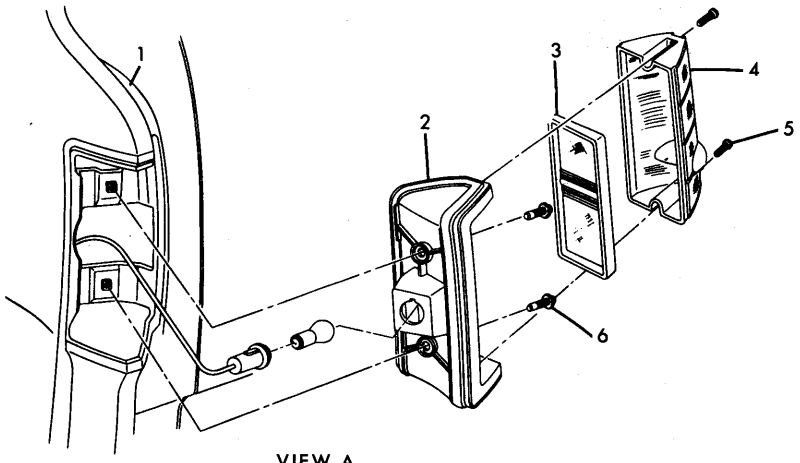
VIEW "B"
1. Quarter Panel
2. Lamp Housing
3. Lamp Housing Screw
4. Lens
5. Bezel
6. Bezel and Lens Screw

VIEW "C"
1. Quarter Panel
2. Quarter Extension and Lamp Housing
3. Quarter Extension Nut

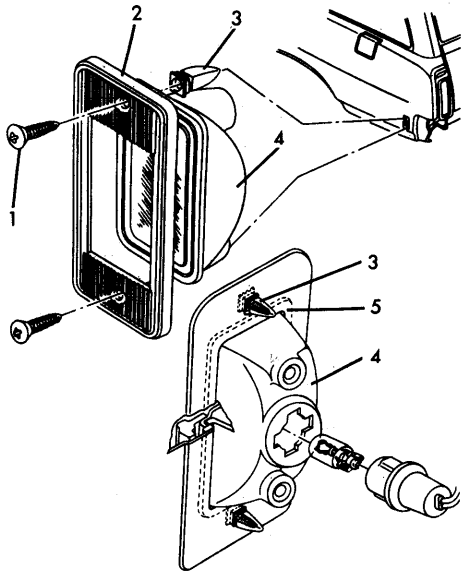
VIEW "D"
1. Quarter Panel
2. Lamp Housing Gasket
3. Lamp Housing
4. Lamp Housing Nut

VIEW "E"
1. Quarter Panel
2. Lamp Housing
3. Bezel
4. Lamp Housing and Bezel Screw
5. Lamp Housing and Bezel Nut

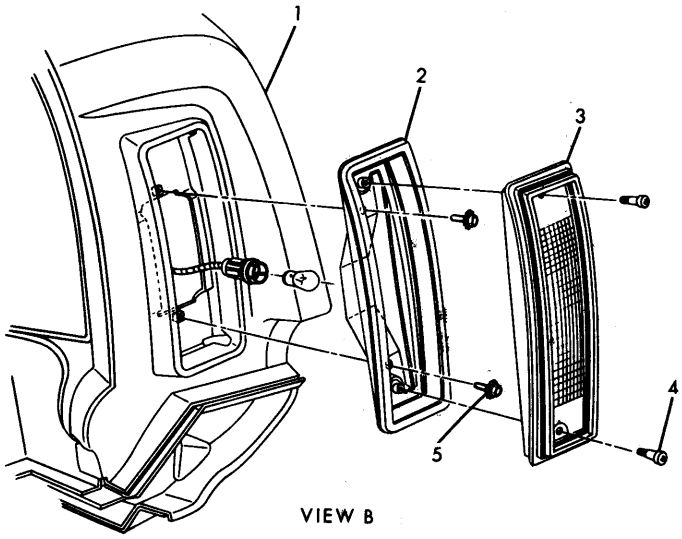
VIEW "F"
1. Lamp and Bezel Screw
2. Bezel
3. Lamp Housing
4. Panel Nut
5. Gasket



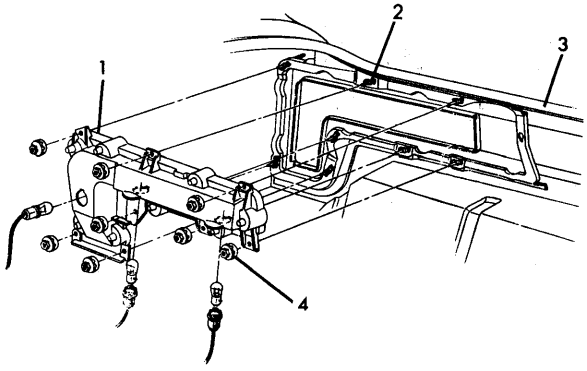
VIEW A



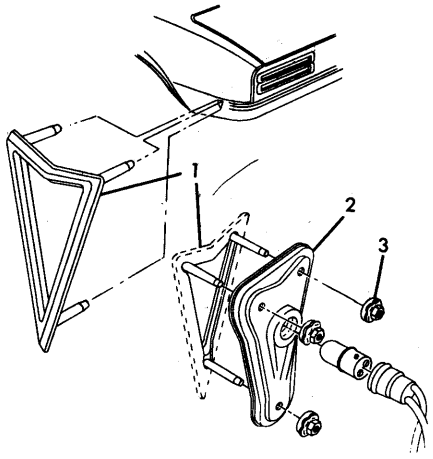
VIEW D



VIEW B



VIEW C



VIEW E

2959

TAIL LAMP OPERATION – PONTIAC

FIG. 16-41

OPERATION	METHOD	BODY TYPE			
		A "35"	B "35-45"	B 26600	F
Bulb Replacement	Remove Lens Outside	X	X		
	Remove Socket (Inside Rear Compartment)			X	X
Lens Replacement	Remove Retaining Screws (Outside)	X	X		
	Remove Housing and Disassemble			X	X
Housing Replacement	Remove from Outside (Retaining) Nuts in Rear Compartment)				
	Remove from Inside			X VIEW "C"	X
	Remove from Outside (Retaining Bolts Under Lens)	X VIEW "A"	X VIEW "B"		
	Lower Rear Bumper				

PONTIAC

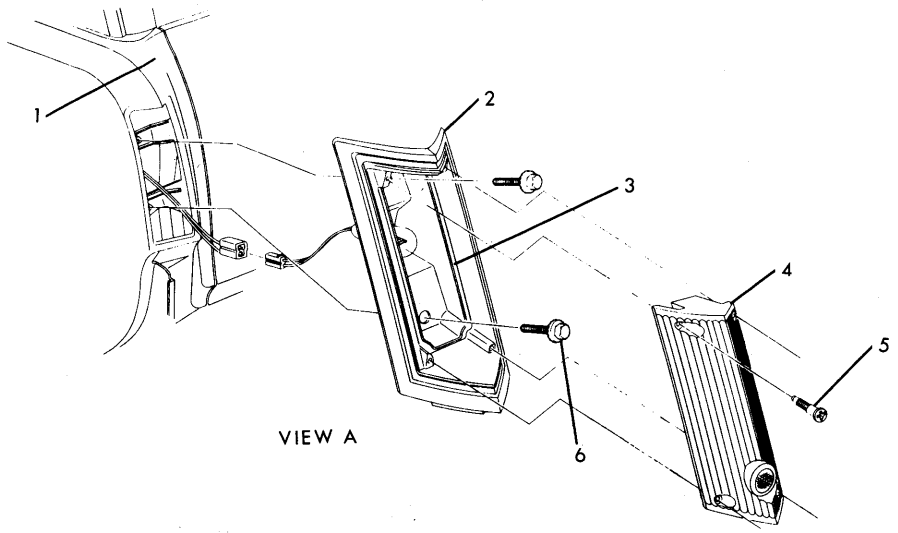
VIEW "A"
1. Quarter Panel
2. Lamp Housing
3. Inner Lens
4. Outer Lens
5. Lens Screw
6. Housing Screw

VIEW "B"
1. Quarter Panel
2. Lamp Housing
3. Lens
4. Lens Screw
5. Housing Screw

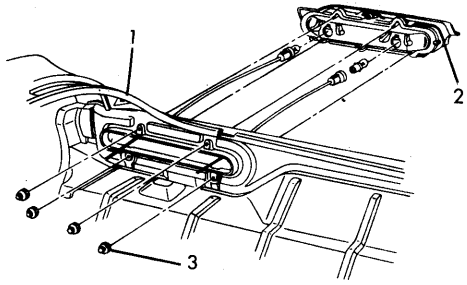
VIEW "C"
1. Lamp Housing
2. Bolt and Clip Assembly
3. Rear End Panel
4. Housing Nut

VIEW "D"
1. Lamp and Bezel Screw
2. Bezel
3. Panel Nut
4. Lamp Housing
5. Gasket

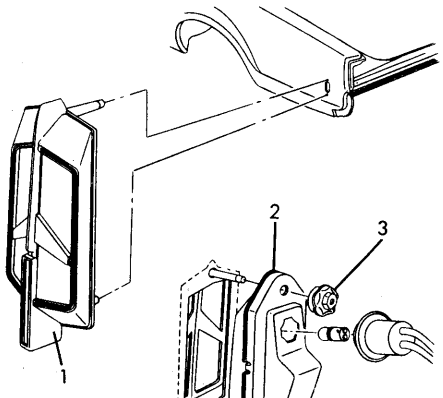
VIEW "E"
1. Bezel
2. Lamp Housing
3. Lamp and Bezel Nut



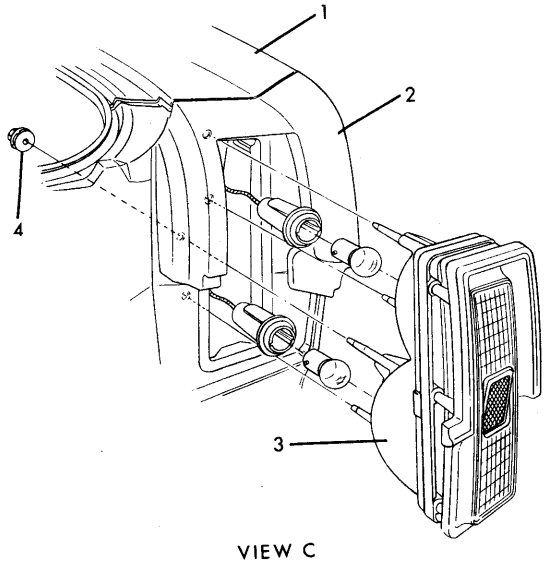
VIEW A



VIEW B



VIEW D



VIEW C

TAIL LAMP OPERATION – OLDSMOBILE

FIG. 16-42

OPERATION	METHOD	BODY TYPE		
		A	A "35"	C
Bulb Replacement	Remove Lens Outside		X	
	Remove Socket (Inside Rear Compartment)	X		
Lens Replacement	Remove Retaining Screws (Outside)		X	
	Remove Housing and Disassemble	X		
Housing Replacement	Remove from Outside (Retaining Nuts in Rear Compartment)	X VIEW "B"		X VIEW "C"
	Remove from Inside			
	Remove from Outside (Retaining Bolts Under Lens)		X VIEW "A"	
	Lower Rear Bumper	X		X

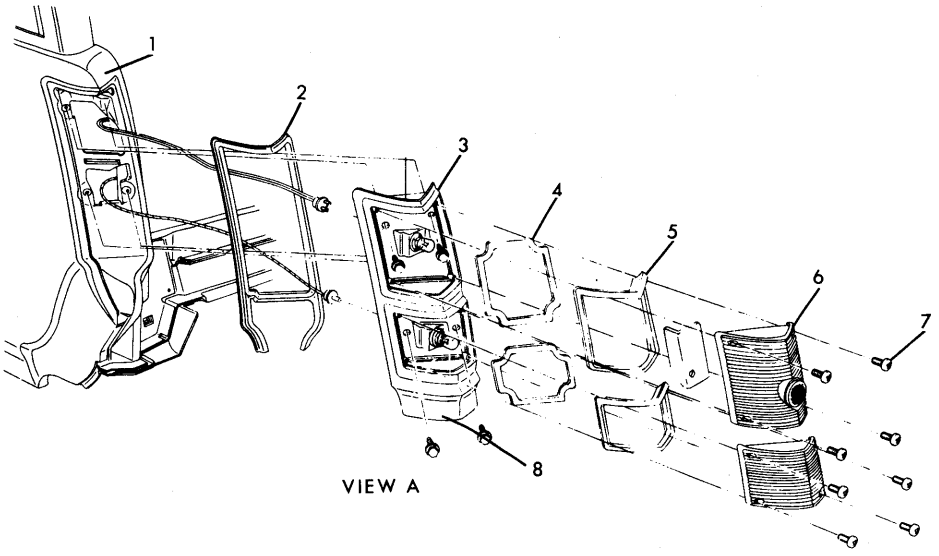
OLDSMOBILE

VIEW "A"
1. Quarter Panel
2. Lamp Housing
3. Lens Gasket
4. Lens
5. Lens Screw
6. Housing Screw

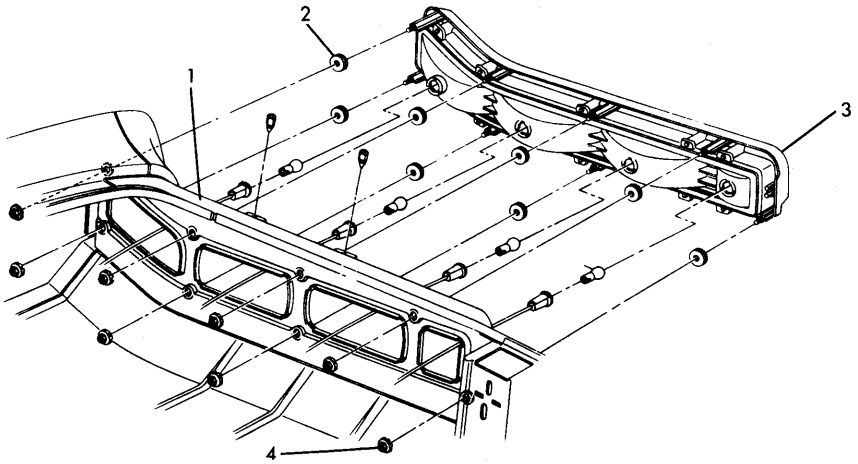
VIEW "B"
1. Rear End Panel
2. Lamp Housing
3. Housing Nut

VIEW "C"
1. Quarter Panel
2. Quarter Extension
3. Lamp Housing
4. Housing Nut

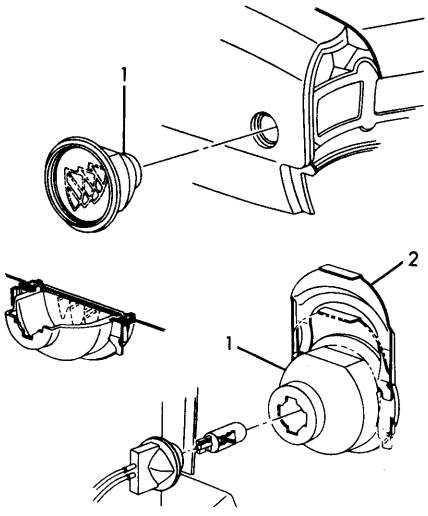
VIEW "D"
1. Lamp Bezel
2. Lamp Housing
3. Bezel Nut



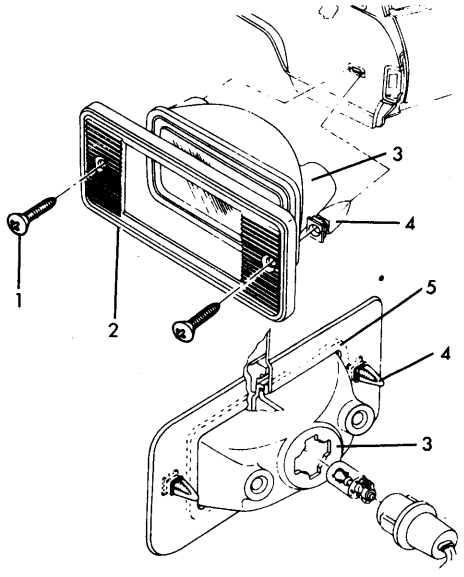
VIEW A



VIEW B



VIEW C



VIEW D

2961

TAIL LAMP OPERATION – BUICK

FIG. 16-43

OPERATION	METHOD	BODY TYPE	
		A "35-55-65"	B
Bulb Replacement	Remove Lens Outside	X	
	Remove Socket (Inside Rear Compartment)		X
Lens Replacement	Remove Retaining Screws (Outside)	X	
	Remove Housing and Disassemble		X
Housing Replacement	Remove from Outside (Retaining Nuts in Rear Compartment)		X VIEW "B"
	Remove from Inside		
	Remove from Outside (Retaining Bolts Under Lens)	X VIEW "A"	
	Lower Rear Bumper		

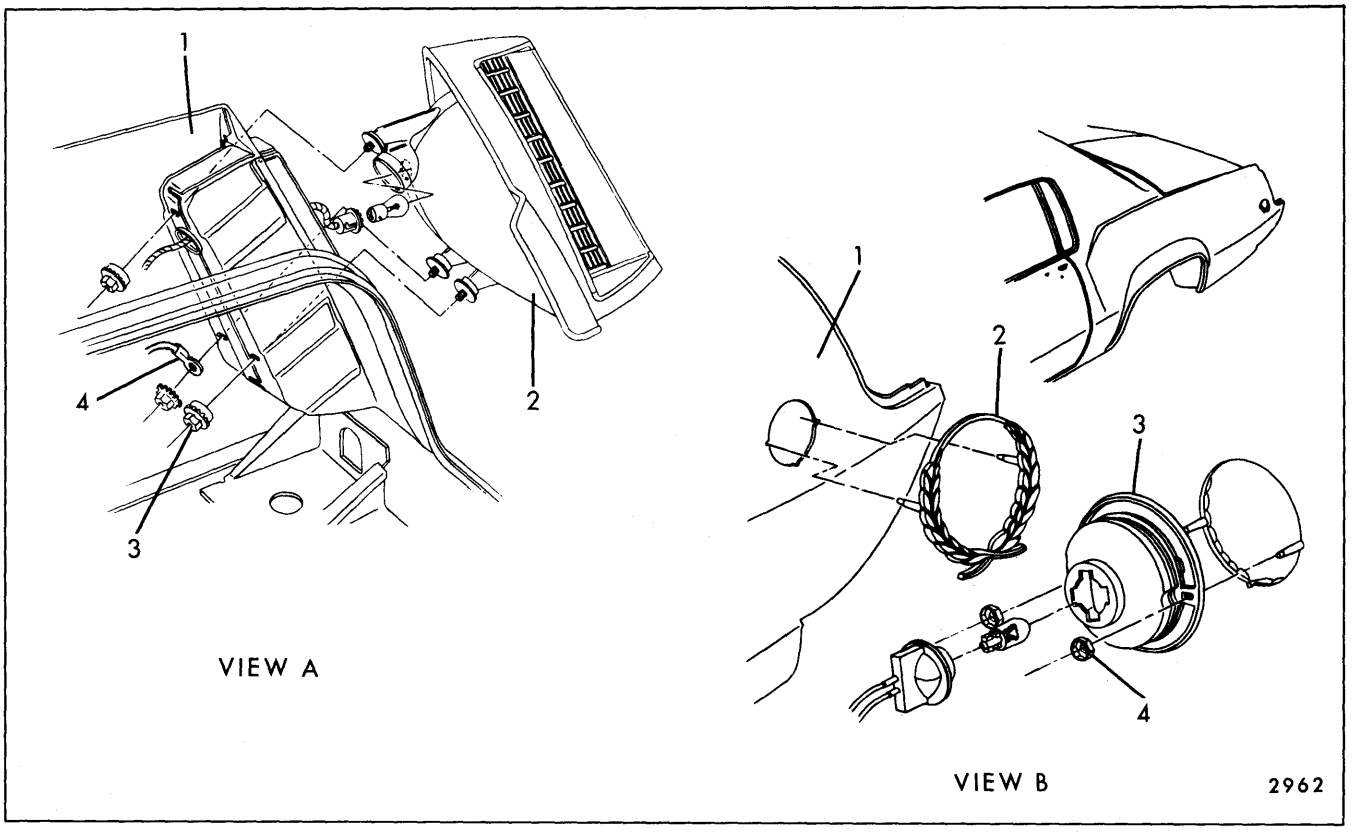
BUICK

VIEW "A"
1. Quarter Panel
2. Housing Gasket
3. Lamp Housing
4. Lens Gasket - Upper and Lower
5. Bezel - Upper and Lower
6. Lens - Upper and Lower
7. Lens Screw
8. Housing Screw

VIEW "B"
1. Rear End Inner Panel
2. Lamp Housing Washer
3. Lamp Housing
4. Housing Nut

VIEW "C"
1. Lamp Housing
2. Spring Clip Retainer

VIEW "D"
1. Lamp and Bezel Screw
2. Bezel
3. Lamp Housing
4. Panel Nut
5. Gasket


1
2
3
4
VIEW A
1
2
3
4
VIEW B
2962

TAIL LAMP OPERATION – CADILLAC "E"

FIG. 16-44

OPERATION	METHOD	BODY TYPE
Bulb Replacement	Remove Lens Outside	
	Remove Socket (Inside Rear Compartment)	X
Lens Replacement	Remove Retaining Screw (Outside)	
	Remove Housing and Disassemble	X
Housing Replacement	Remove from Outside (Retaining Nuts in Rear Compartment)	X VIEW "A"
	Remove from Inside	
	Remove from Outside (Retaining Bolts Under Lens)	
	Lower Rear Bumper	

CADILLAC

VIEW "A"
1. Quarter Panel
2. Lamp Housing
3. Lamp Housing Nut
4. Ground Wire

VIEW "B"
1. Quarter Panel
2. Bezel
3. Lamp Housing
4. Bezel Nut

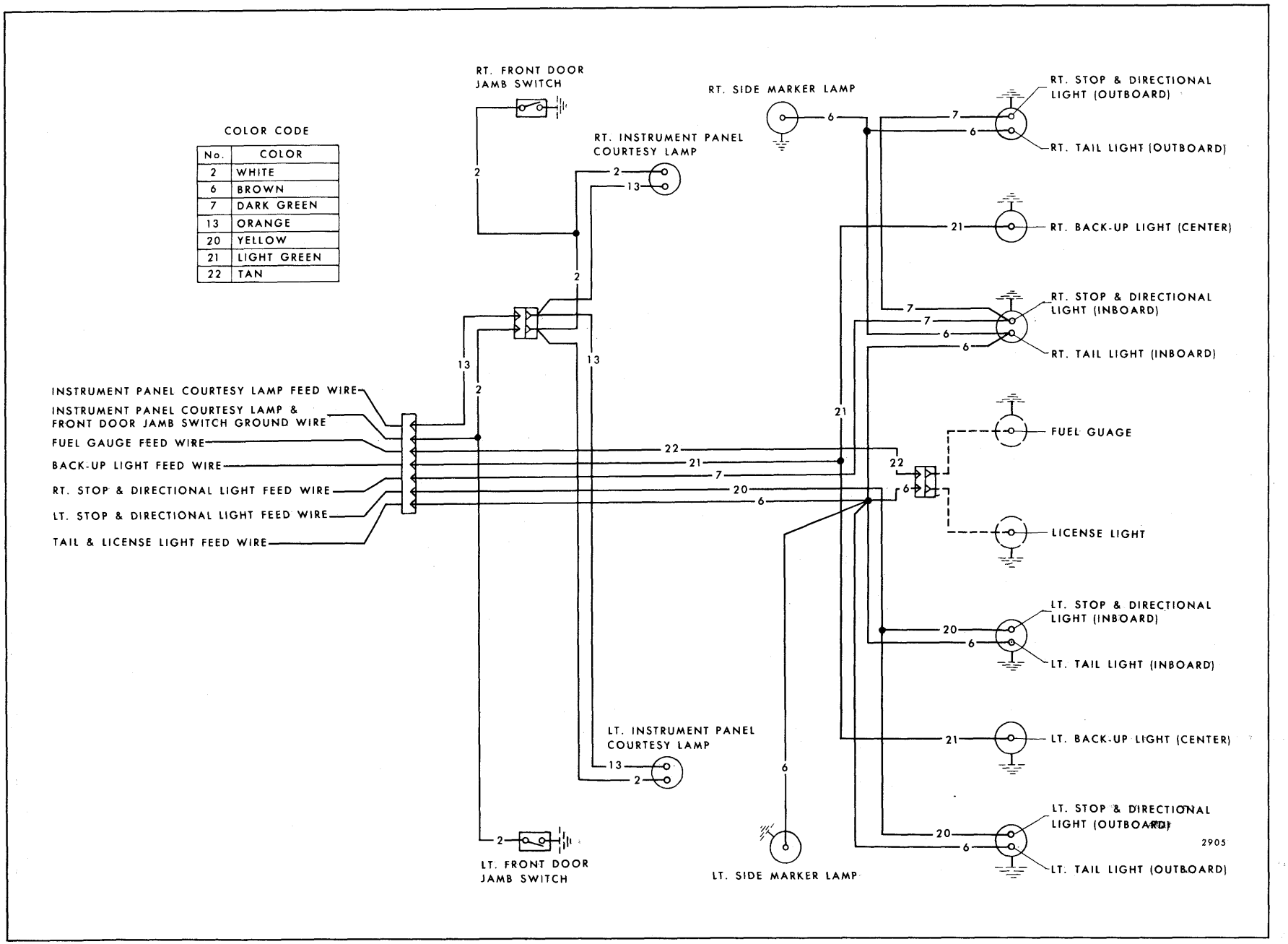


Fig. 16-45—Body Wiring Circuit Pontiac "F" 67 Style

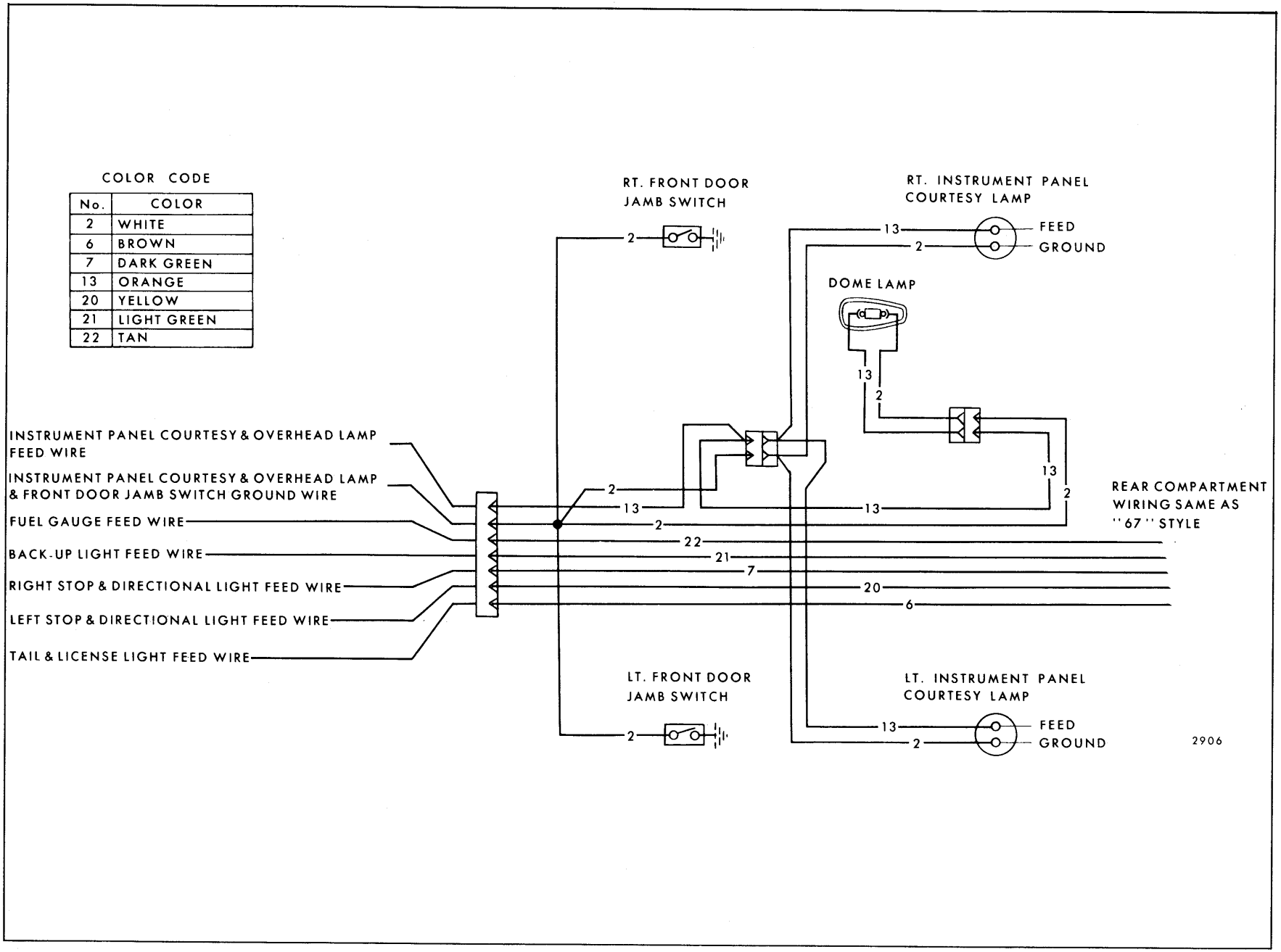


Fig. 16-46—Body Wiring Circuit - Pontiac "F" 37 Style

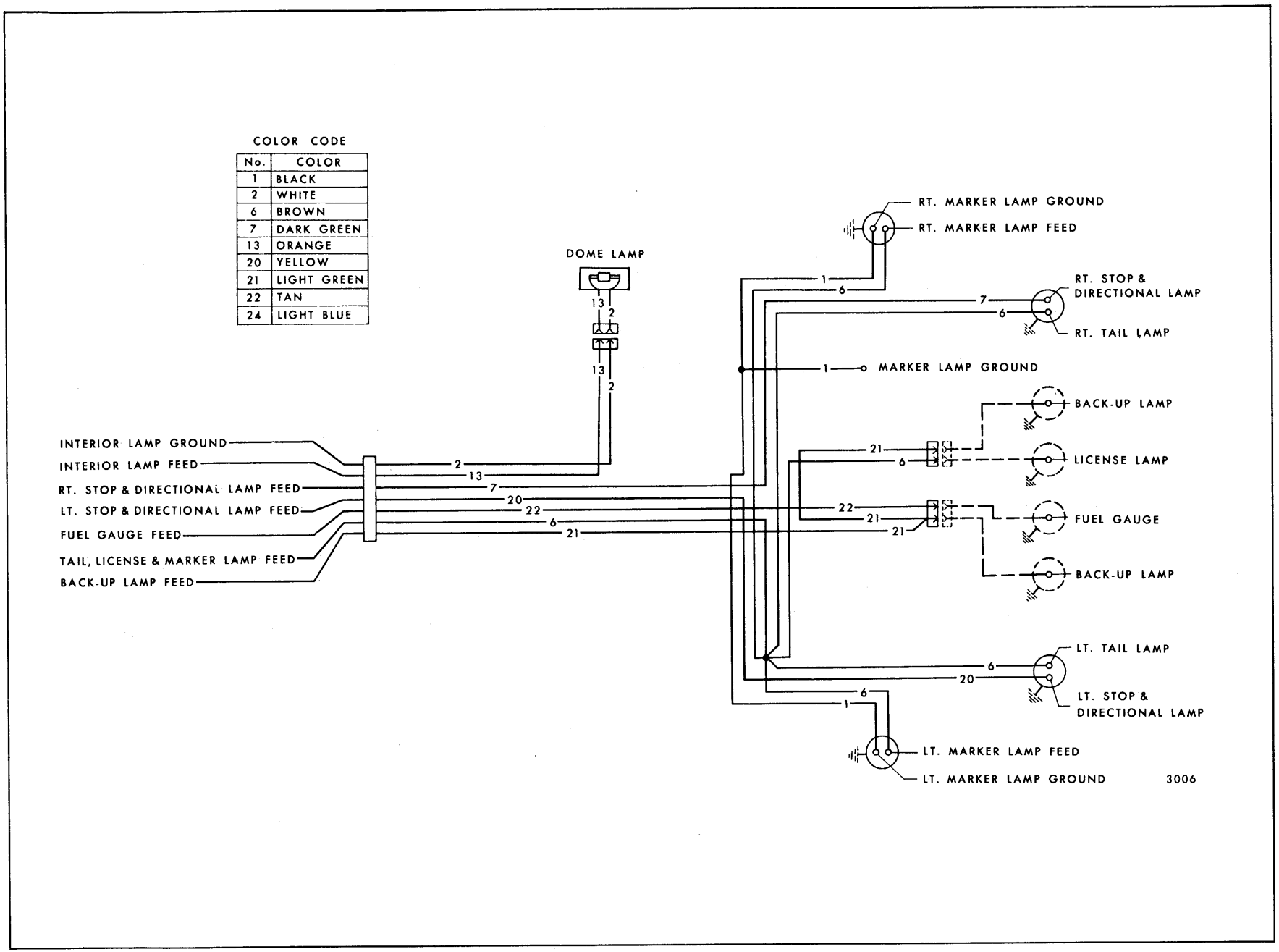


Fig. 16-47—Body Wiring Circuit - Chevrolet "A" Body Style

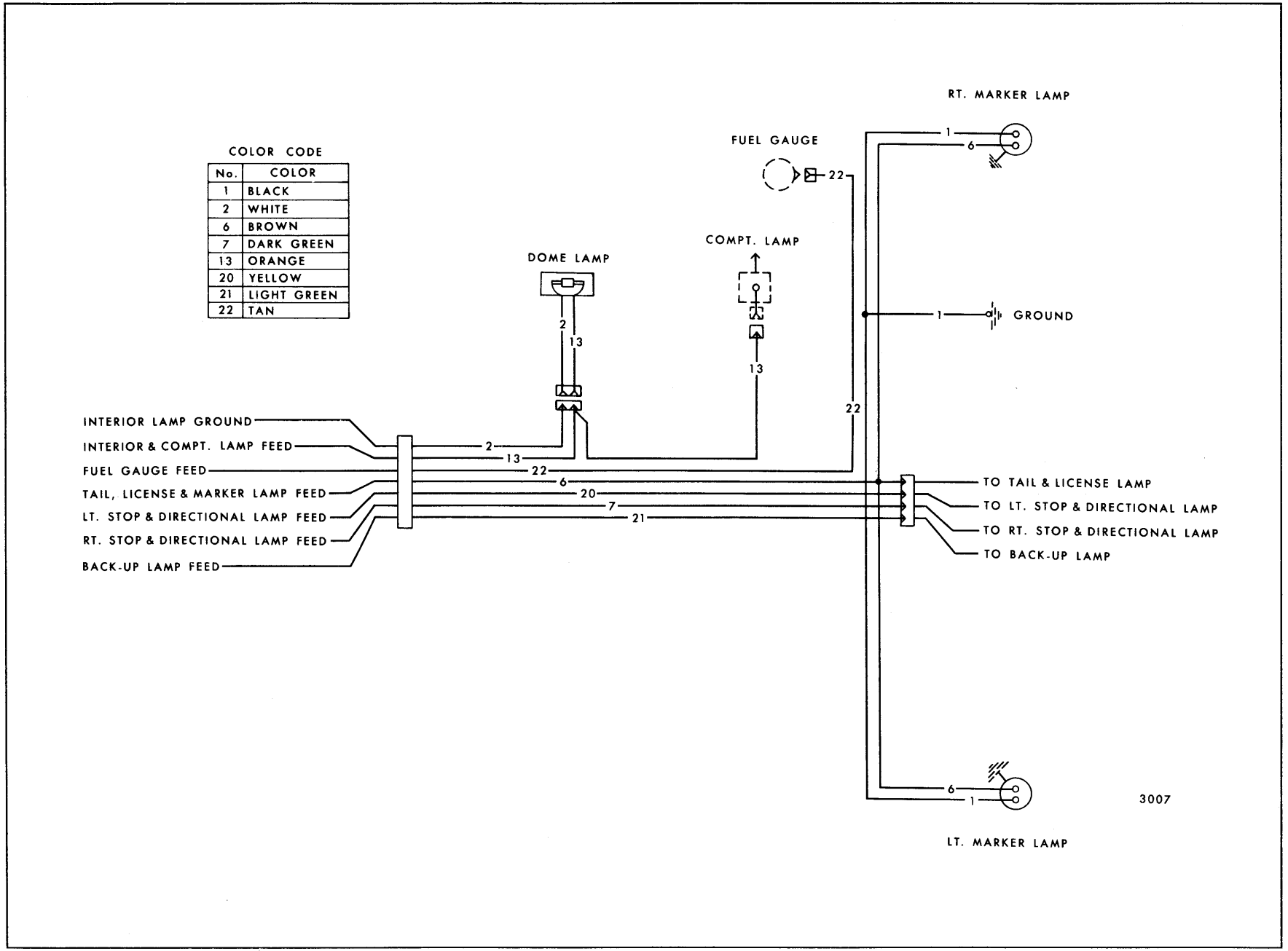


Fig. 16-48—Body Wiring Circuit - Buick "A" Body Style

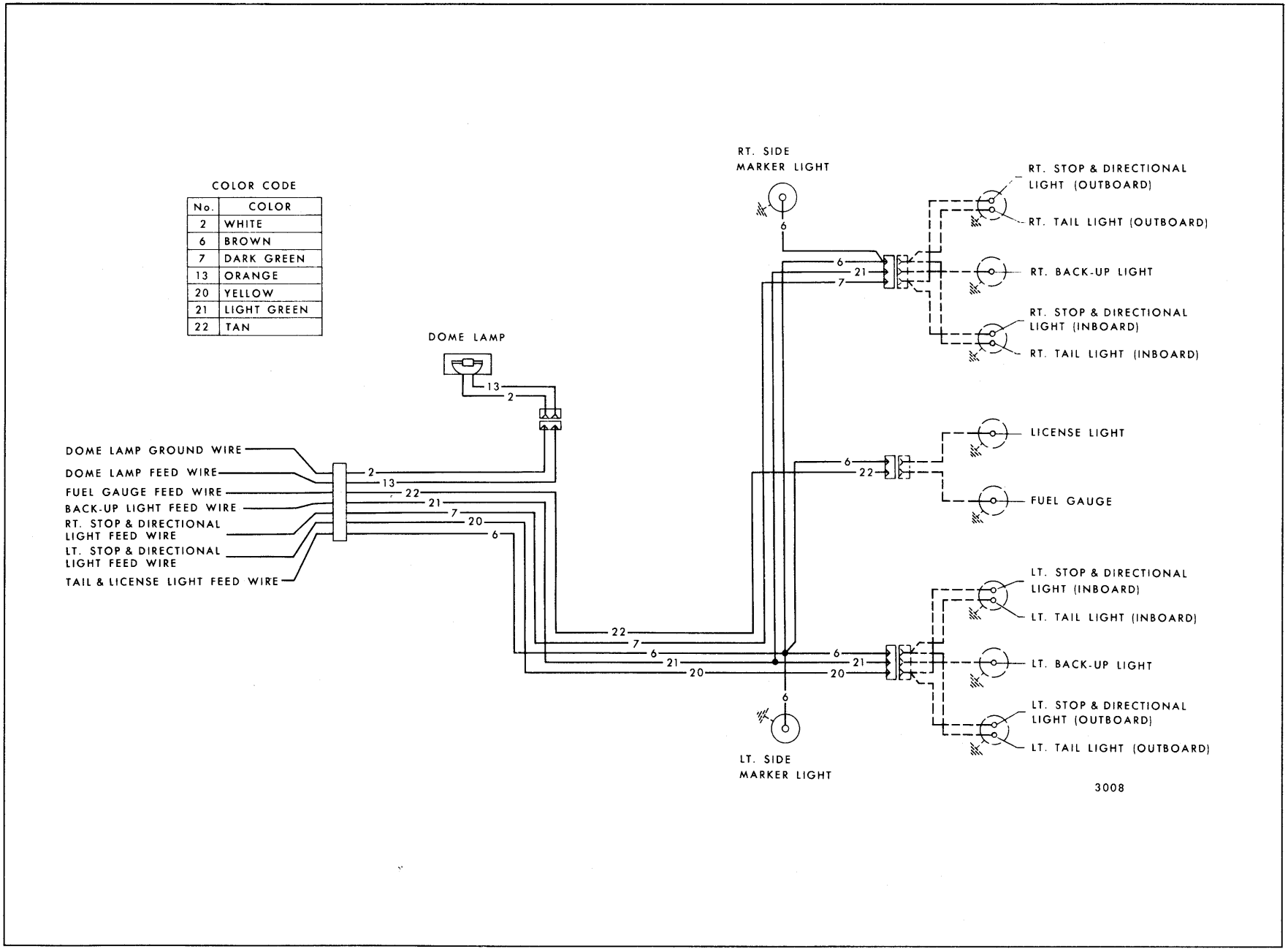


Fig. 16-49—Body Wiring Circuit - Pontiac "A" Body Style

INTERIOR LAMPS—ABOVE BELT

Lens Retention and Bulb Chart

METHOD OF RETENTION	#1* DISENGAGE LENS THRU SLOTS IN RIM			#2* REMOVE LENS AND RIM TOGETHER			#3 REMOVE LENS ONLY - FINGER PRESSURE						#4 SET SCREW
LENS SHAPE	RECT.		ROUND	ROUND			ROUND			OVAL	RECT.		
BULB TYPE	12CP CART	6CP CART	6CP CART	12CP BAY	12CP CART	6CP CART	6CP CART	6CP BAY	15CP BAY	12CP CART	6CP CART	15CP BAY	15CP BAY
CHEVROLET													
A	X												
B					X								
Z - F - X										X			
PONTIAC													
A	X												
F										X			
B - Standard					X								
B - Opt. Reading											X	X	
OLDSMOBILE													
A - Except 34287, 34239	X												
A - 34239			X										
A - 34287		X											
A - 55-65 Over Gate		X											
B - Except 39-87				X									
B - 39-87 and All C								X					
E											X		
BUICK													
A - Except 44437, 44637	X												
A - 44437, 44637 Opt. 43437 & 43537		X											
A - 55-65 Over Gate		X											
B - Except 44639-87				X									
B - 46639-87, C and E								X					
CADILLAC													
C - Except 68069-169								X					
68069						X							
68169													X
E							X						
D - FT Compt.								X					
D - A/C Grill									X				

*Use a small thin bladed screw driver for disengagement