

SECTION 10-F
LIGHTING SYSTEM

CONTENTS OF SECTION 10-F

10-41 HEADLIGHTS AND CONTROLS

a. Description of Lighting Switch

The switch uses a multiple push-on type connector. The switch is a "push-pull" type which also incorporates a manually operated rheostat for controlling the instrument panel lights, and a detent position which completes the dome light circuit. Three "push-pull" positions of the switch knob provide control of the exterior lights as follows:

1. Off position (knob all the way in) cuts off all lights controlled by the switch.

2. Parking position (knob pulled out to first notch) turns on the parking lights, tail lights, and license light. The instrument panel lights also will be turned on if the rheostat is set for these lights.

3. Driving position (knob pulled out to last notch) turns parking lights off and turns headlights on, while the other lights remain as in the parking position. The headlights will be on the upper or lower beams depending on the position of the separate dimmer switch.

In the parking and driving positions, the instrument panel lights are controlled by rotating the light switch knob. With the knob turned counterclockwise, these lights are on maximum brightness. As the knob is turned clockwise, they gradually dim until they are off at the full clockwise position of the knob.

4. Dome light position (knob turned fully counterclockwise) turns the dome light on. The dome light can be turned on regardless of the in-or-out position of the switch.

b. Description of Thermo Circuit Breaker

A thermo circuit breaker is incorporated in the lighting switch assembly, to protect wiring from damage due to short circuits in the headlight and front parking light circuits only.

The thermo circuit breaker consists of a bi-metal blade and set of contact points connected in series with the lighting circuits. An abnormal flow of current throught the circuit breaker, such as would be caused by a short circuit in a lighting circuit, heats the bi-metal blade sufficiently to separate the points and cause them to vibrate. The vibrating blade alternately opens and closes the circuit thus reducing the flow of current and protecting the wiring against overheating and burning. The flickering light produced by the vibrating circuit breaker serves as a warning to the operator of vehicle that a short circuit exists.

c. Test of Lighting Switch

If the lighting switch is suspected of being faulty, the contacts can be tested by connecting a low reading voltmeter between the wire supplying current to the contact and the wire conducting current away. This must be done with the switch in a position where the contact under test is closed. See Figure 10-49.

1. To check the switch contact for the headlights, pull switch knob out to last notch and also make sure dimmer switch is in upper beam position. Connect voltmeter prods between battery and headlight terminals of switch (between red and light blue wires). If voltage loss through switch contacts is over .2 volt, switch must be replaced.

2. To check the contact for the tail lights, connect voltmeter between tail lights and tail light fuse terminals (between two brown wires). If voltage loss is over .1 volt, switch must be replaced.

3. To check the contact for the parking lights, put switch knob in first notch position. Connect voltmeter between battery and parking light terminals (between red and purple wires). If voltage loss is over .1 volt, switch must be replaced.

d. Replacement of Lighting Switch

1. Disconnect battery ground cable to avoid a possible short circuit.

2. Unplug multiple connector from lighting switch.

3. Pull switch knob out to last notch, then depress the spring loaded latch button on left side of switch, while pulling knob and rod assembly out of switch.

NOTE: If latch button is depressed before switch knob is pulled out, knob and rod assembly will not release.

4. Remove switch escutcheon using Wrench J-8563 and remove switch from instrument panel. See Figure 10-65.

5. Install switch in reverse order of above steps, making sure that switch alignment tang lines up with slot in instrument cluster before tightening mounting nut.

e. Test of Thermo Circuit Breaker

To test the thermo circuit breaker, remove lighting switch from instrument cluster to avoid possible damage to adjacent instruments.

Since the current required to open the circuit breaker contacts depends somewhat on outside temperature, the circuit breaker should be tested at normal temperature (70° to 80°F.).

1. Connect an ammeter and a carbon-pile rheostat in series with the battery terminal of lighting switch and positive terminal of a 12-volt battery, and set rheostat to provide maximum resistance. Rheostat must have capacity for 50 amperes and be adjustable down to .3 ohms.

2. With switch on, connect the headlight terminal of lighting switch and the negative post of battery. See Figure 10-49.

3. Adjust rheostat to give 26 amperes. The circuit breaker should open within 60 seconds.

4. Adjust rheostat to give 15 amperes on ammeter. The circuit breaker should remain closed indefinitely at 15 amperes.

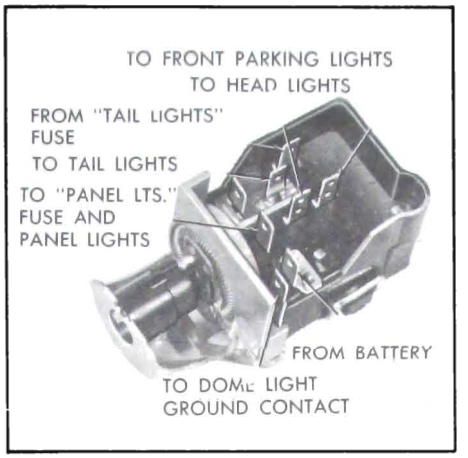

Figure 10-49—Light Switch

5. If circuit breaker does not operate as specified the lighting switch assembly must be replaced since internal repairs cannot be made.

f. Dual Headlamp Assembly

A dual headlamp system is standard equipment on all series and consists of two dual headlamp assemblies, one mounted on each side of the car.

Each dual headlamp includes two 5 3/4" T-3 sealed beam units mounted in a single housing enclosed by one headlamp door. The inboard unit is used for bright lights only and has a single filament. The outboard unit is used for both bright and dim lights and has two filaments. For identification, the inboard unit is marked "1," the outboard unit is marked "2".

When the dimmer switch is in the dim or lower beam position only, the outboard unit of each dual headlamp is on. Both outboard and inboard units of each dual headlamp are on when the dimmer switch is in the bright or high beam position.

The T-3 sealed beam unit has three projections equally spaced around the perimeter of the lens. These projections are ground off at the factory to provide a mounting surface for aiming devices.

These aiming devices are used without having headlights on as described below.

g. Dimmer Switch

The driver may select the upper or lower headlight beam as traffic and road conditions demand by operating the dimmer switch mounted on the toe panel in a convenient position for the left foot.

The dimmer switch opens and closes the circuits to the upper and lower lamp filaments in the sealed beam units, thereby alternately raising and lowering the headlight beams with each successive operation of the switch. Depression of switch button turns the rotary contacts one position within the switch. The spring-loaded button automatically returns to the reset position when released.

The wiring connection to the dimmer switch is made by a multiple connector. The dimmer switch is mounted on the inner side of the toe pan, so the switch, connector and wiring are all inside the car.

h. Headlight Beam Indicator

Whenever the upper headlight beams are lighted, a beam indicator bulb in the instrument cluster also lights, producing a small spot of red light in front of the driver. See Figure 10-61. For safety reasons, never pass an approaching car with the beam indicator showing red.

10-42 HEADLAMP SEALED BEAM UNIT REPLACEMENT AND ADJUSTMENT

a. Replacement of Sealed Beam Unit

1. Raise hood and pull the wiring connector from the sealed beam unit.

2. Remove headlamp door by removing retaining screws.

3. Unhook the spring from retaining ring, then remove sealed beam unit and retaining ring assembly, being careful not to disturb the two beam adjusting screws.

4. Remove two screws fastening retaining ring to mounting ring. Remove retaining ring and sealed beam unit.

5. Install new sealed beam unit by reversing removal procedure. Position lens with the "1" or "2" up. The reflector has three lugs which fit into notches in the headlamp mounting ring.

CAUTION: Make sure that sealed beam unit is marked "1" for an inboard unit or "2" for an outboard unit.

6. Before installation of headlamp door, adjust headlamp for proper aim as described below.

b. Headlamp Aiming

The headlamps must be properly aimed in order to obtain the maximum road illumination and safety that has been built into the headlighting equipment. With the Guide T-3 type sealed beam units, proper aiming is even more important because the increased range and power of this lamp make even slight variations from recommended aiming hazardous to approaching motorists. The headlamps must be checked for proper aim whenever a sealed beam unit is replaced and after any adjustment or repairs of the front end sheet metal assembly.

Regardless of method used for checking headlamp aim, car must be at normal weight. Tires must be uniformly inflated to specified pressure (par. 1-1). If car will regularly carry an unusual load in rear compartment, or a trailer, these loads should be on car when headlamps are checked. Some states have special requirements for headlamp aiming adjustment and these requirements should be known and observed.

Horizontal and vertical aiming of each sealed beam unit is provided by two adjusting screws which move the mounting ring in the body against the tension of the coil spring. There is no adjustment for focus since the sealed beam unit is set for proper focus during manufacturing assembly.

10-43 PARKING, TAIL, STOP, LICENSE AND BACK-UP LIGHTS

NOTE: See paragraph 10-5 for lamp bulb and fuse specifications.

a. Front Parking and Signal Lights

Each front parking and signal lamp contains one 32-4 CP lamp bulb which provides a 4 CP parking light and a separate 32 CP direction signal light. The pins on lamp bulb and slots in socket are offset to prevent improper installation of bulb in socket. The parking light is controlled by the lighting switch and the circuit is protected by the switch thermo circuit breaker. The turn signal light is separately controlled by the signal switch and the circuit is protected by the 15 ampere "BACK-UP, STOP, TURN" fuse on the fuse block under the instrument panel. The lamp bulb is serviced by removing the lens from the lamp body. Front turn signal lens are amber in color.

b. Tail, Stop, and Signal Lights

Each rear lamp assembly contains a 32-4 CP bulb which is used as a combination tail, stop, and turn signal light. The tail lights are controlled by the lighting switch and the circuit is protected by the 10 ampere "TAIL-CLOCK" fuse on the fuse block.

The combination tail, stop, and directional signal lamp bulb sockets can be snapped out from inside the trunk compartment on sedans. Since the position of the bulb filaments is important in the rear lamps, these sockets have been provided with a tongue and groove index to insure correct positioning. To change the bulb on the station wagon it is necessary to remove the lens.

The stop lights are controlled by a mechanical switch mounted on the brake pedal bracket. This spring-loaded switch makes contact whenever the brake pedal is applied. When the brake pedal is released, it depresses the switch plunger to open the contacts and turn the brake lights off. The turn signal switch is in the circuit, so the stop lights may be flashing or constant depending on the position of the turn signal switch. The turn signal, stop and back-up light circuits are all portected by the 15 ampere "BACK-UP, STOP, TURN" fuse mounted on the fuse block.

c. Rear License Light

The rear license lamp is mounted above the license plate to provide adequate lighting of the plate. The lamp contains one 4 CP lamp bulb which operates in conjunction with the tail lights, and its circuit is also protected by the 10 ampere "TAIL-CLOCK" fuse on the fuse block.

d. Back-up Lamps and Switch

Back-up lamps are optional on all series and are located in the rear bumper. Each lamp contains a 32 CP bulb behind clear plastic lens.

On 3-speed synchromesh transmission cars, the back-up light switch is mounted on the upper side of the steering column mast jacket in approximately the same location as the combined neutral safety back-up light switch on automatic transmission cars. See Figure 10-50. The synchromesh back-up light switch has a spring-loaded switch slide which is engaged by a tang turned up from the control shaft tube metal. When the transmission is shifted into reverse, this tang pushes the slide to the left, closing the back-up switch contacts; when shifted out of reverse, the spring-loaded switch slide returns to the off position. When the transmission is shifted into second gear, the control shaft tang rotates in a different location so that it misses the switch slide.

To check for proper operation of the back-up light switch, turn on the ignition switch, place the shift lever in reverse, and make sure the back-up lights are lit. Then place the shift lever in neutral and make sure the back-up lights are out. Next place the shift lever in second gear and make sure the lights are not lit. The switch mounting screw holes are slotted slightly, allowing some adjustment if necessary. See Figure 10-50.

On 4-speed synchromesh transmission cars, the back-up light switch is mounted on the side cover of the transmission. See Figure 10-51. The switch is actuated by a small diameter rod connected to the reverse shift lever. Switch timing can be changed, if necessary, by bending the rod.

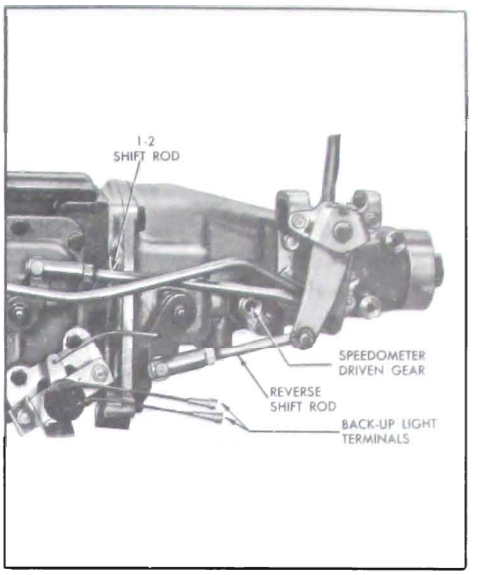

Figure 10-51—Back-Up Light Switch-4-Speed Transmission

On automatic transmission cars, the back-up light switch is combined with the neutral safety switch. It is mounted on the mast jacket under the instrument panel. The switch is actuated by a flange turned up from the transmission control shaft; a slotted portion of the plastic switch slide projects through the opening in the mast jacket to engage this metal flange. When the neutral safety portion of the switch is correctly timed, the back-up portion is properly timed

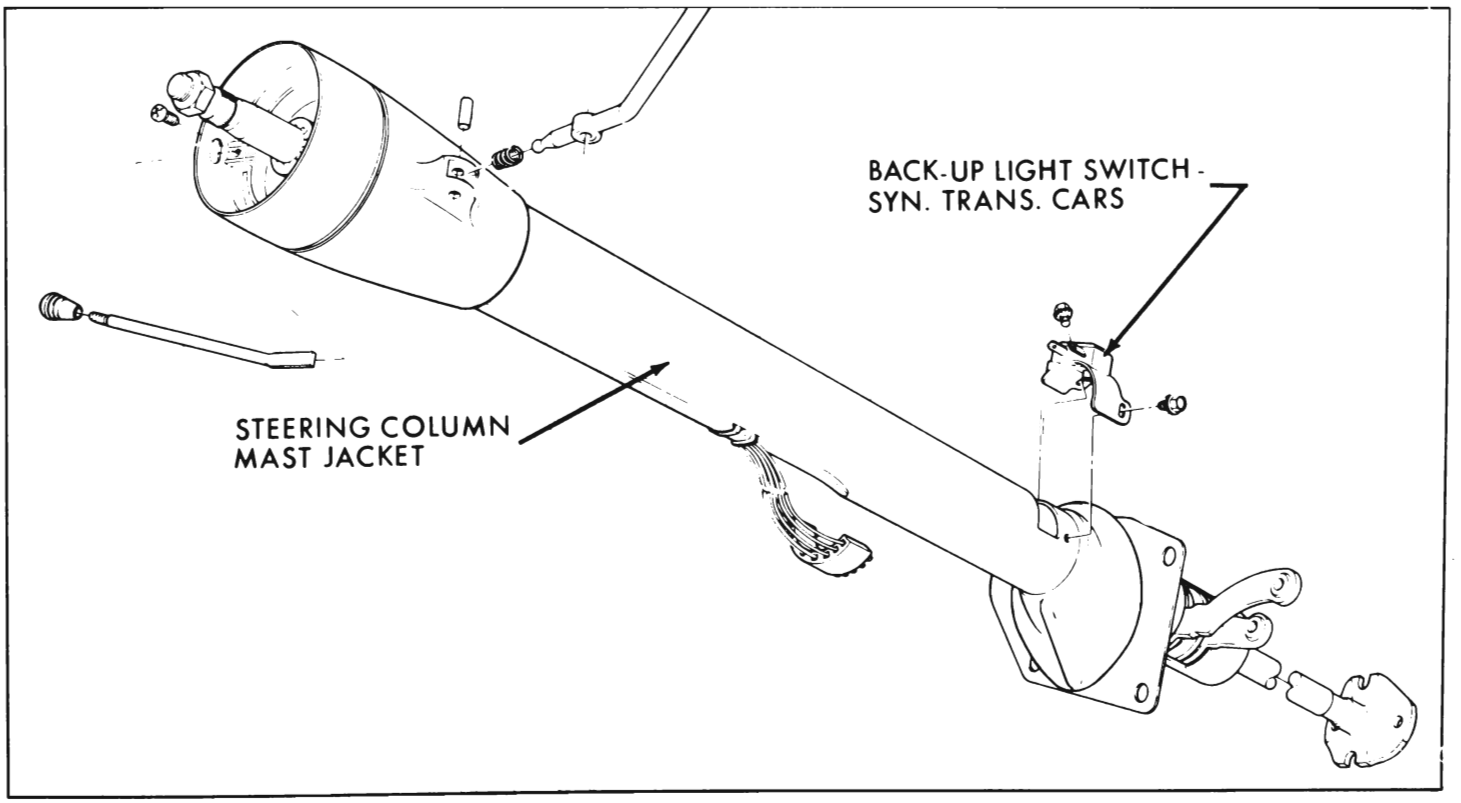

Figure 10-50—Back-Up Light Switch Installation - Synchromesh Transmission Cars

automatically. Slotted mounting screw holes permit sidewise movement of the switch for proper timing. See Figure 10-52.

See subparagraph e for the adjusting procedure for the neutral safety and back-up light switch. The back-up light circuit is protected by the 15 ampere "BACK-UP, STOP, TURN" fuse on the fuse block.

e. Neutral Safety Switch Adjustment (All Automatic Transmission Cars)

Adjust neutral safety switch as follows:

1. Check shift control linkage and adjust if necessary (par. 5-12).

2. Place shift control lever in Drive position.

3. Insert a 3/32" drill or a No. 42 drill through gauging hole in right forward face of switch and into gauging hole in center of switch slide.

4. If gauging drill enters hole in switch slide (approximately 1/4 inch), neutral safety switch adjustment is OK. If gauging drill will not enter hole in switch slide, loosen two switch mounting screws and move switch sidewise until gauge enters hole. Then retighten screws.

5. To recheck adjustment, turn on ignition switch, place shift control lever in reverse, and make sure back-up lights are lit. Set parking brake, place shift lever in Neutral and make sure engine will start. Then place shift lever in Park and try starting engine again. Engine must not start in Drive or Reverse.

10-44 INTERIOR LIGHTS AND CIGAR LIGHTER

NOTE: See paragraph 10-5 for lamp bulb and fuse specifications.

a. Instrument Panel Lights

The speedometer, heater-defroster controls and clock are illuminated by lamp bulbs mounted to provide indirect lighting.

The instrument panel lights are controlled by the lighting switch as described in paragraph 10-41 and the circuits are protected by the 3 ampere "PANEL" fuse on the fuse block.

To replace any of the instrument cluster light bulbs, remove the socket and bulb assembly from the instrument cluster by rotating counterclockwise. Replace the bulb and reinstall the assembly by rotating it clockwise. See Figure 10-63 for the location of any instrument cluster bulb.

b. Direction Signal Indicator Lights

The direction signal indicator consists of a 2 CP bulb mounted

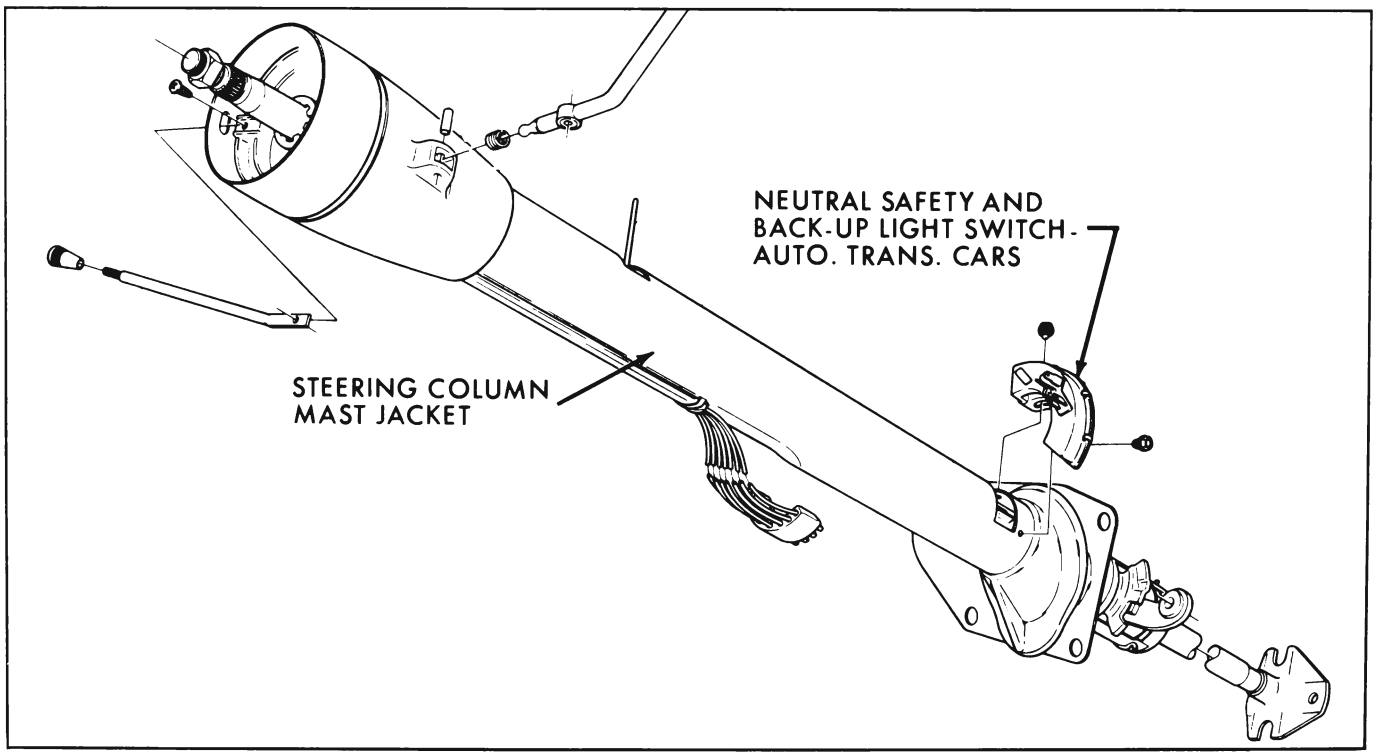

Figure 10-52—Neutral Safety and Back-Up Light Switch Installation - Automatic Transmission Cars

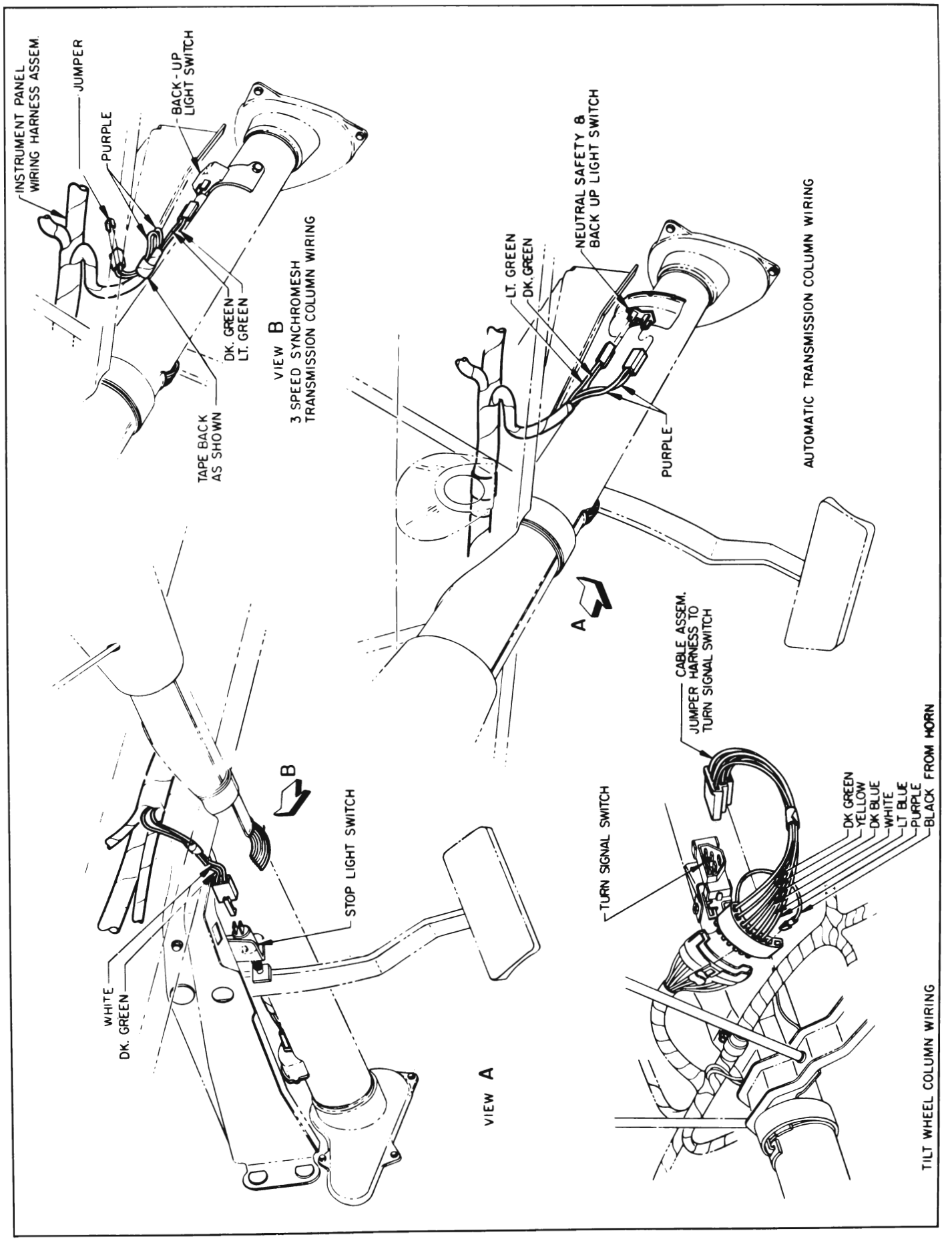

Figure 10-53—Neutral Safety, Back-Up and Stop Light Switches

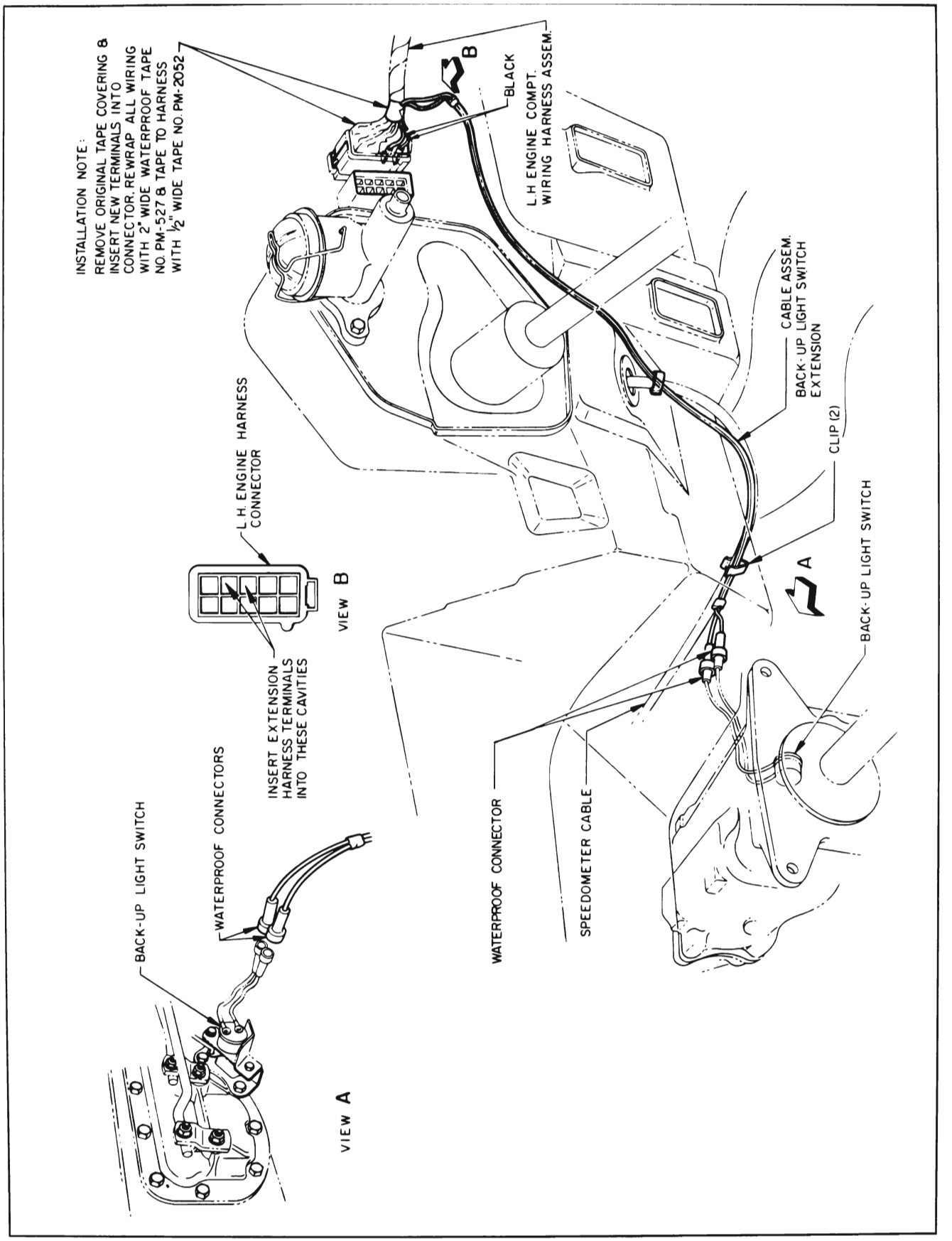

Figure 10-54—Back-Up Light Wiring - 4 Speed Transmission

at each end of the instrument cluster. See Figure 10-63 for the location of either indicator bulb socket.

c. Cigar Lighter

The cigar lighter is heated by pressing the knob in until it latches; the knob will automatically unlatch and return to "off" position when heated to proper temperature.

The lighter is equipped with an ash guard, to prevent ashes and loose tobacco from falling on the user's clothing and to permit the lighter to be passed around with less danger of burning the fingers.

A thermal operated circuit breaker is used to protect the element. The circuit breaker is reset manually simply by removing the plastic covered cup on the back of the lighter base and depressing the spring plunger until it indexes in position.

d. Automatic Transmission Dial Light

The transmission control dial is illuminated by a 2 CP bulb located just below the point where the speedo cable enters the speedometer. See Figure 10-99.

The light intensity is controlled by the light switch in the same manner as the instrument panel lights.