

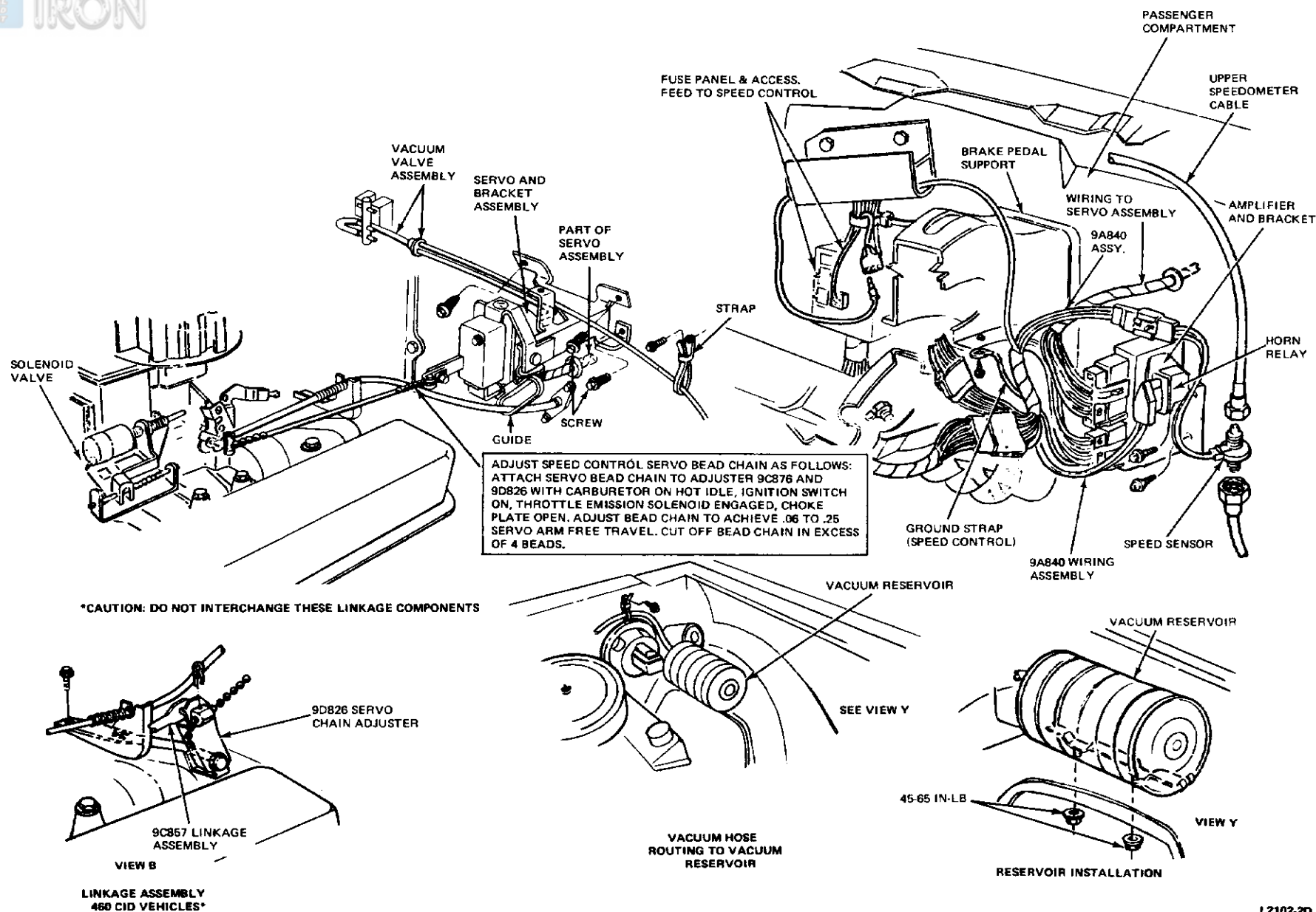


FIG. 5 Speed Control Systems—Ford and Mercury

L2102-2D

CIRCUIT NUMBER	PRIMARY COLOR	SECONDARY ↓	STRIPE	HASH MK.	DOTS
1	DK. BLUE				
460	YELLOW	LT. BLUE			X
57	BLACK				
150	OK. GREEN	WHITE	X		
475	OK. GREEN	WHITE		X	
151	LT. BLUE	BLACK		X	
296	WHITE	PURPLE	X		
149	BROWN	LT. GREEN		X	
148	YELLOW	RED		X	
147	PURPLE	LT. BLUE		X	
146	WHITE	PINK		X	
145	GRAY	BLACK		X	
144	ORANGE	YELLOW		X	
5	ORANGE	LT. BLUE	X		
9	LT. GREEN	ORANGE	X		
511	LT. GREEN				

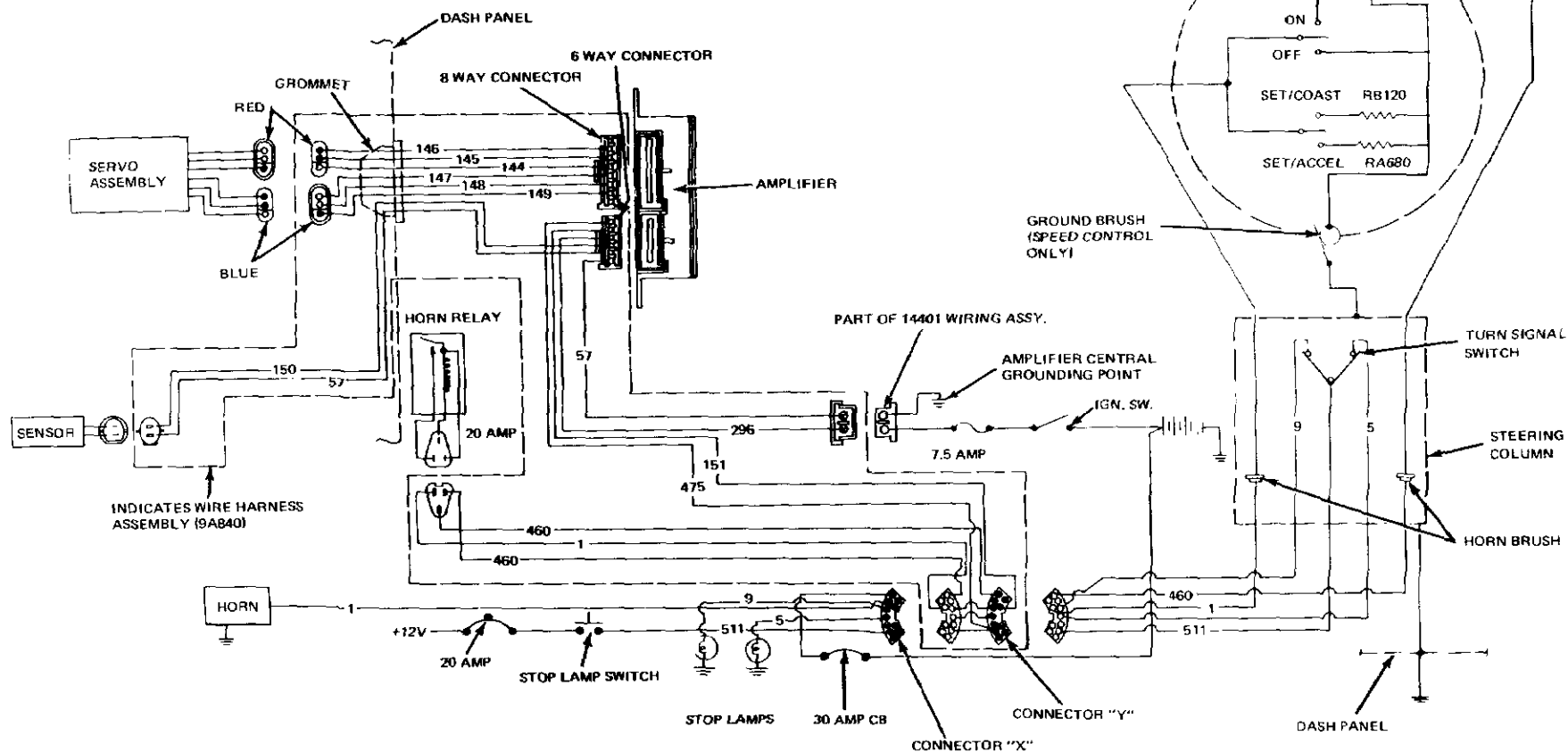


FIG. 6 Wiring Diagram—Continental Mark V

L2099-2A

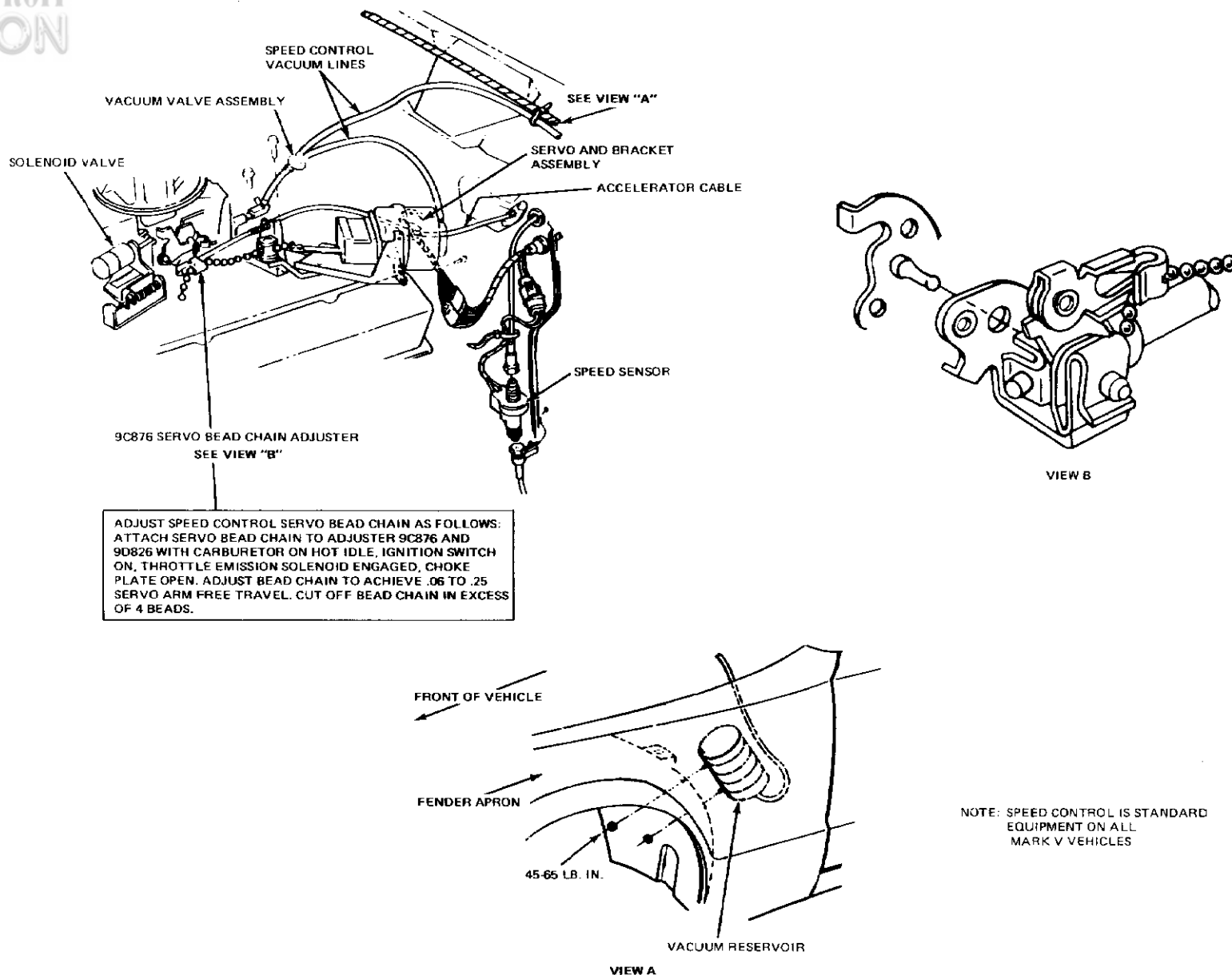


FIG. 7 Speed Control Systems—Continental Mark V

L2103-2C

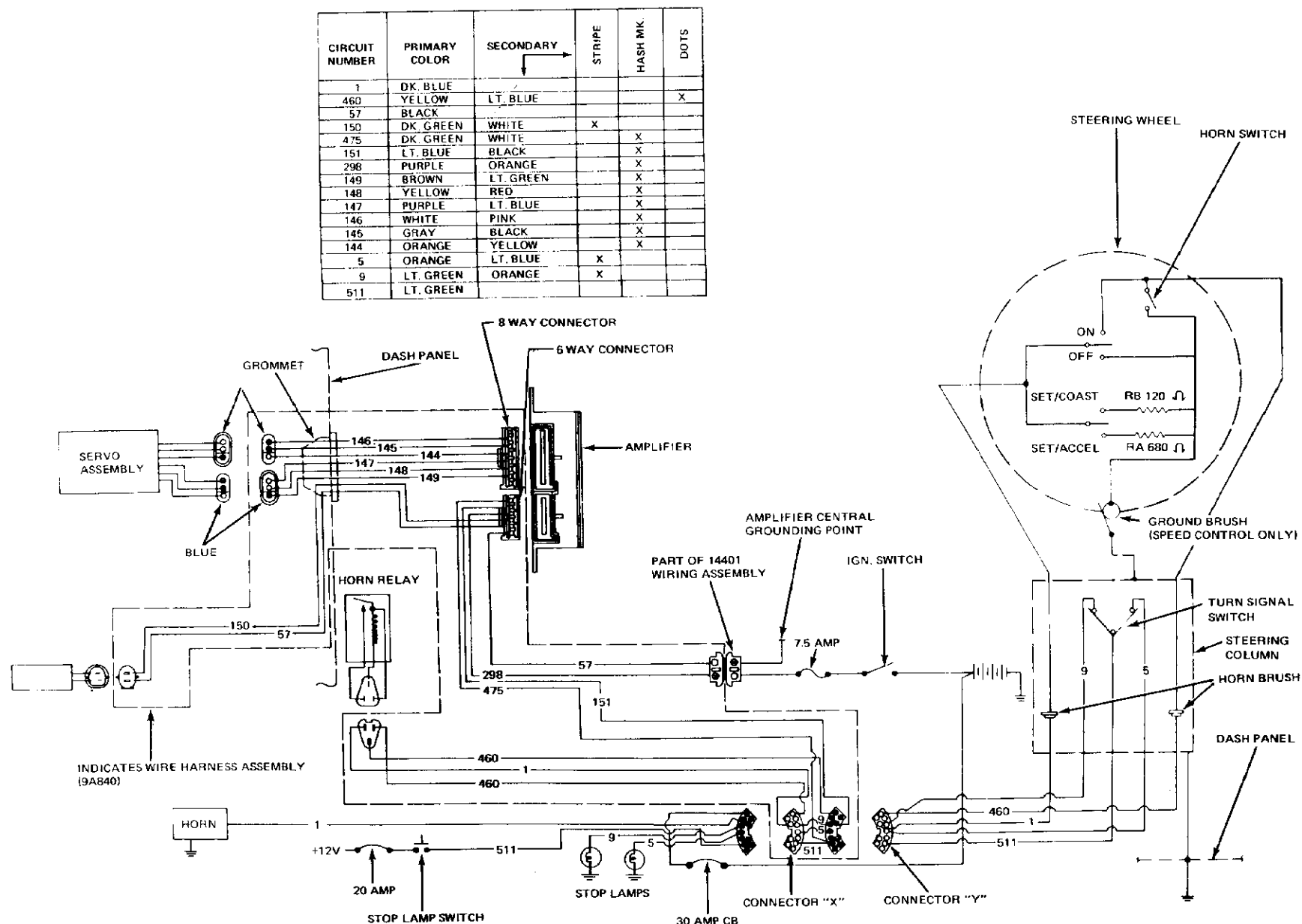
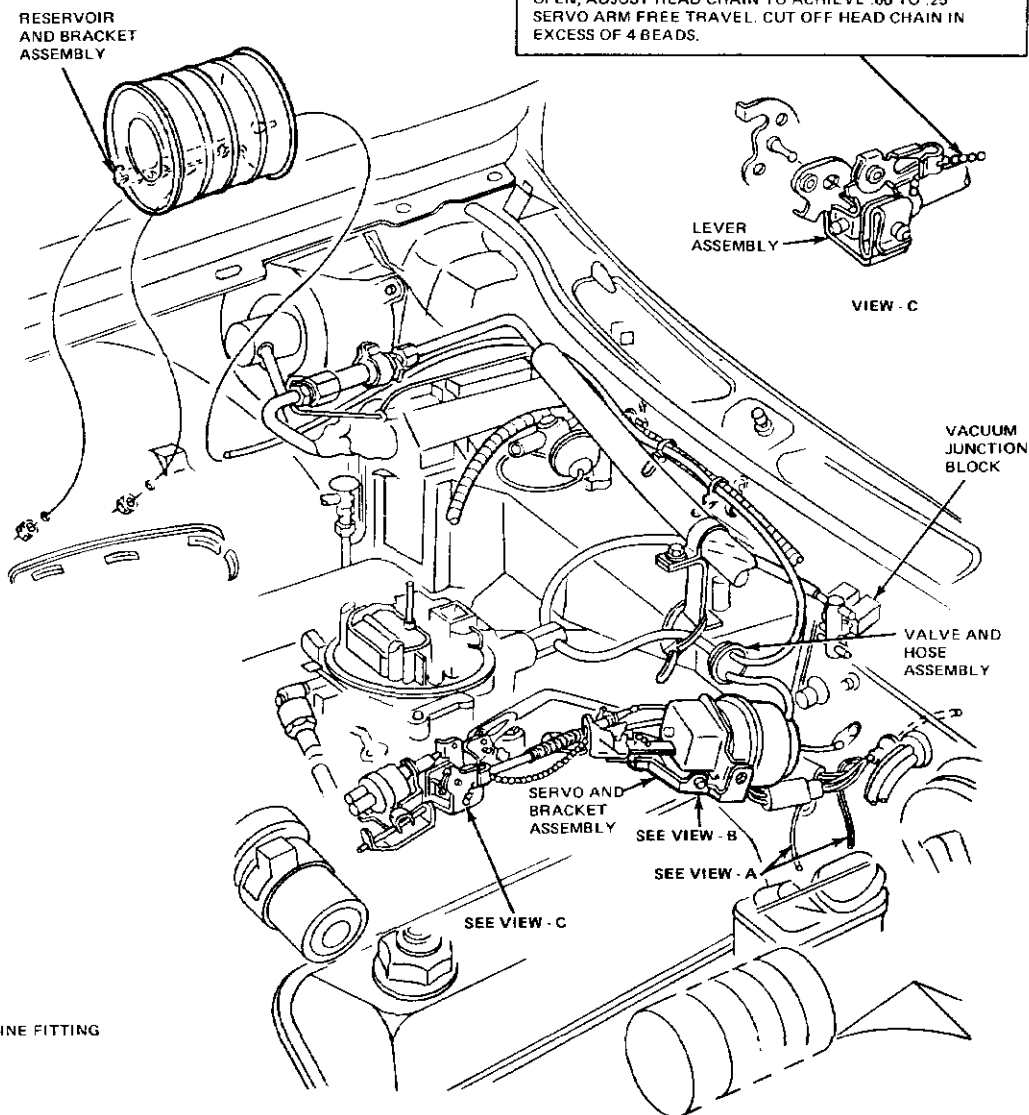
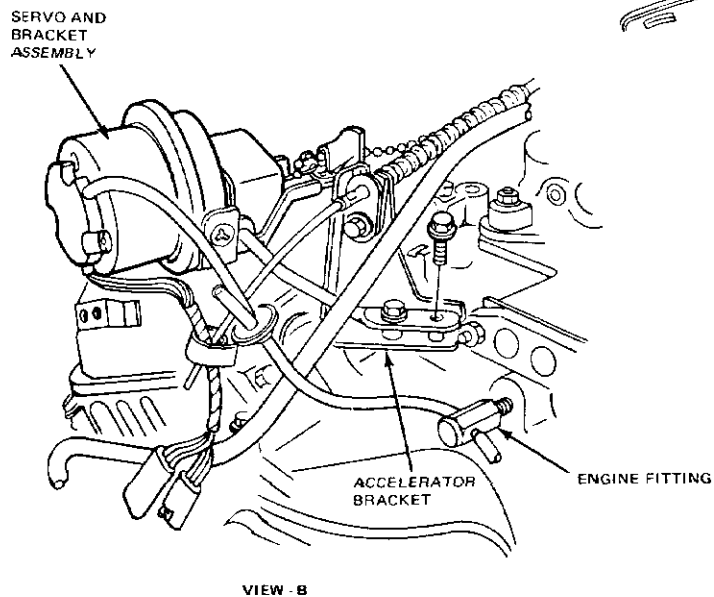
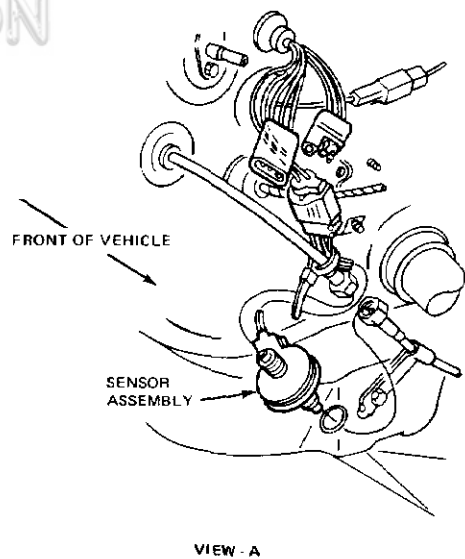


FIG. 8 Wiring Diagram—Lincoln Continental

L2100-2A



ADJUST SPEED CONTROL SERVO BEAD CHAIN AS FOLLOWS:
ATTACH SERVO BEAD CHAIN TO ADJUSTER 9C876 WITH
CARBURETOR ON HOT IDLE, IGNITION SWITCH ON,
THROTTLE EMISSION SOLENOID ENGAGED, CHOKE PLATE
OPEN, ADJUST HEAD CHAIN TO ACHIEVE .06 TO .25
SERVO ARM FREE TRAVEL. CUT OFF HEAD CHAIN IN
EXCESS OF 4 BEADS.

FIG. 9 Speed Control System—Lincoln Continental

L2104-2C

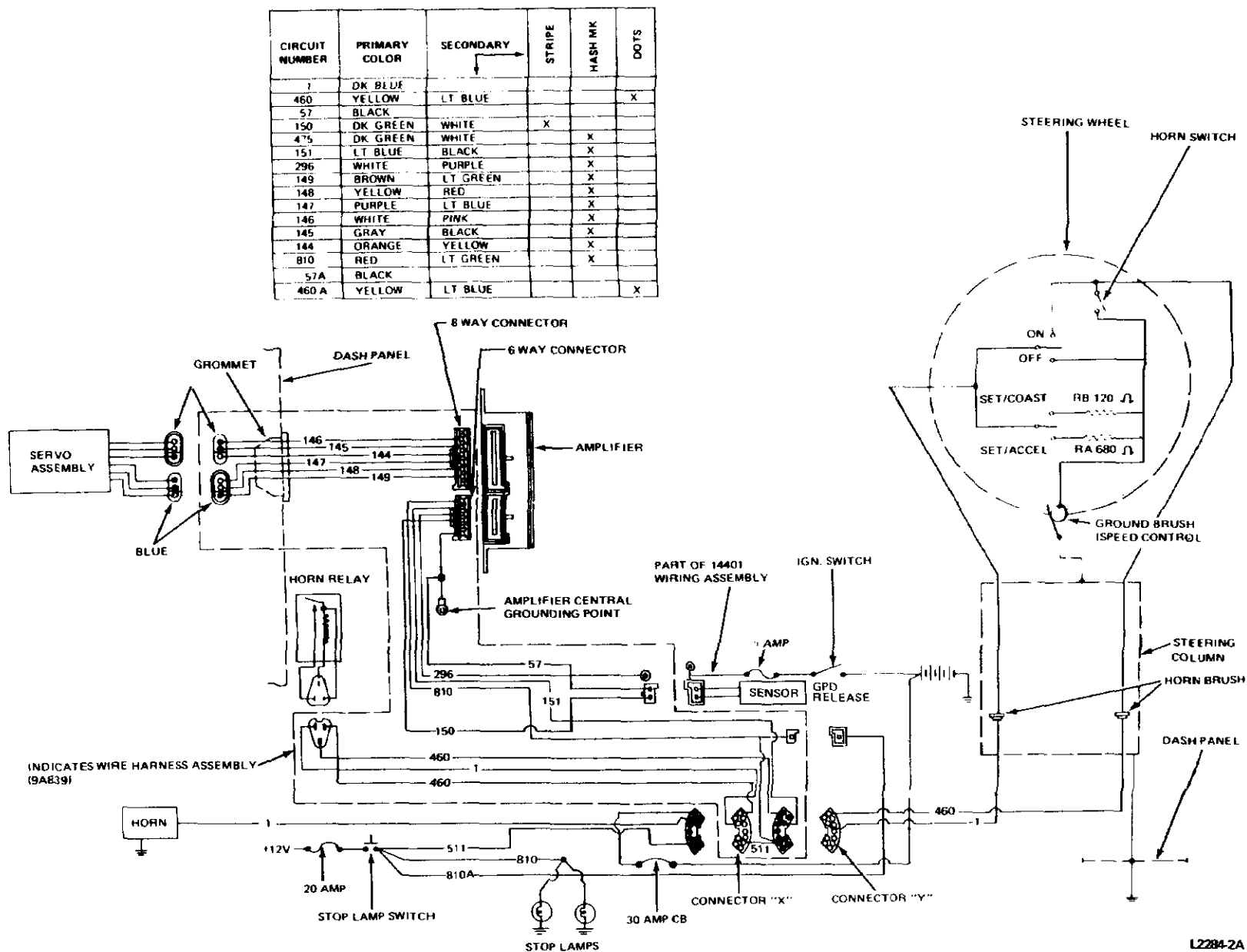
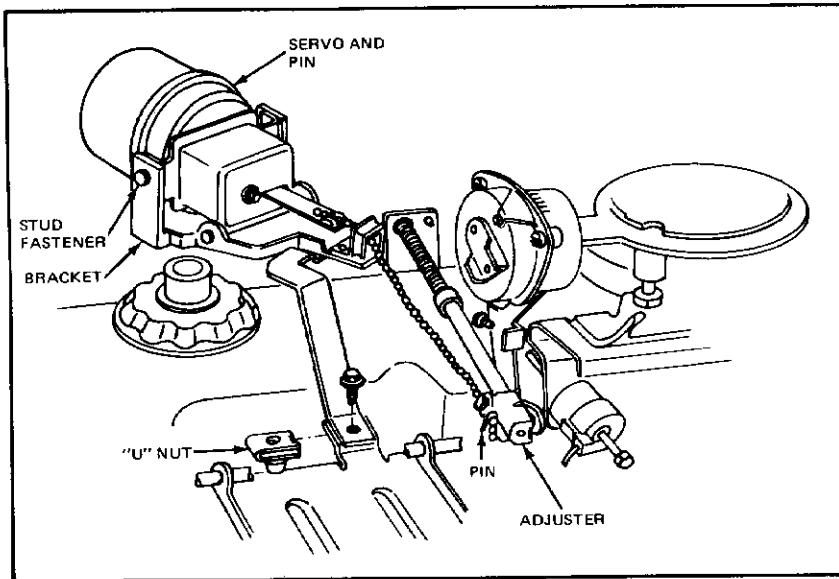


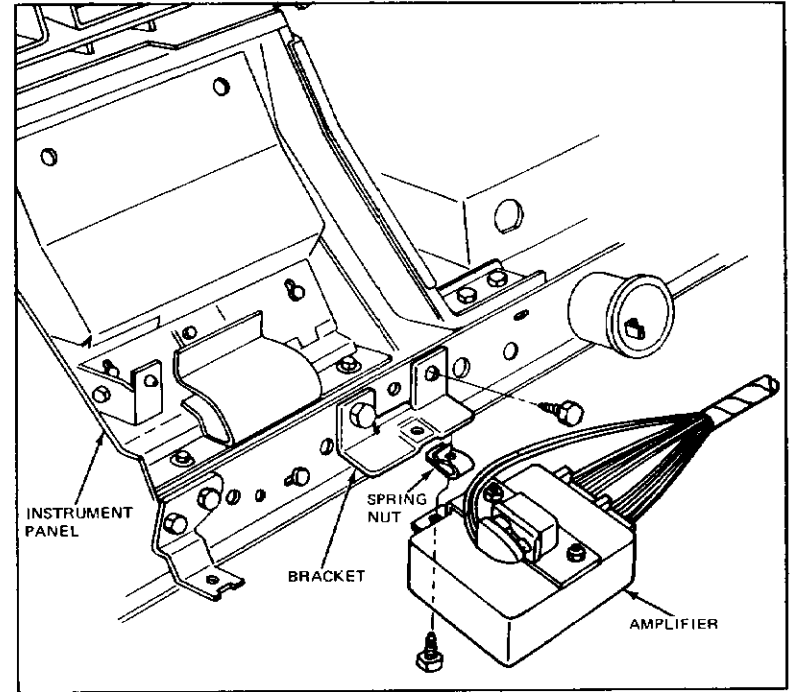
FIG. 10 Speed Control Wiring Schematic—Granada



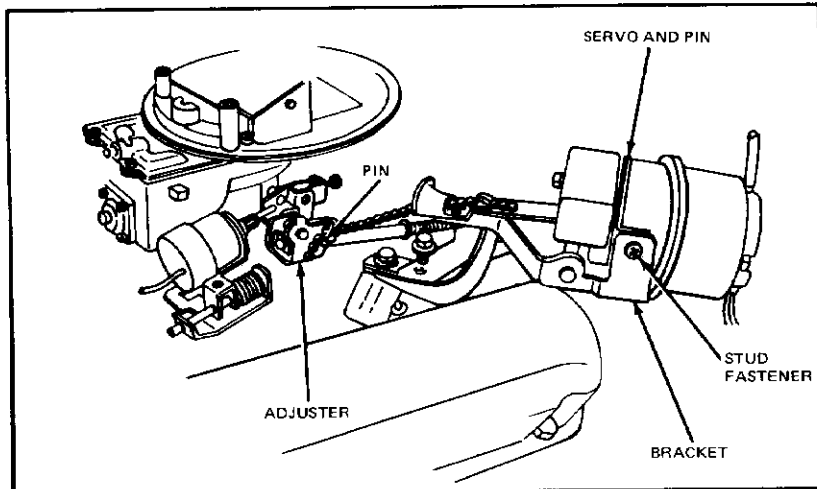
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SERVO WITH 4.1L (250 CID) ENGINE



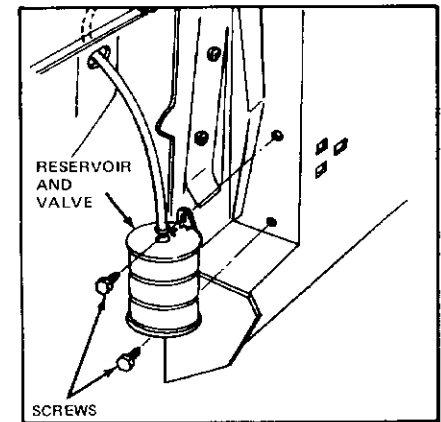
AMPLIFIER AND BRACKET



SERVO WITH 5.0L (302 CID) ENGINE

NOTE:

ADJUST SPEED CONTROL SERVO BEAD CHAIN AS FOLLOWS: ATTACH SERVO BEAD CHAIN TO ADJUSTER 9C876 AND 9D826 WITH CARBURETOR ON HOT IDLE, IGNITION SWITCH ON, THROTTLE EMISSION SOLENOID ENGAGED, CHOKE PLATE OPEN. ADJUST BEAD CHAIN TO ACHIEVE .06 TO .25 SERVO ARM FREE TRAVEL. CUT OFF BEAD CHAIN TO EXCESS OF 4 BEADS.



TANK INSTALLATION

L2294-2A

FIG. 12 Speed Control System—Granada, Monarch and Versailles

SET-ACCELERATE CIRCUIT TEST

With the ignition on, the voltmeter connected to the Light Blue-Black hash mark wire in the 6-way connector-to-ground depress the "ON" switch then hold Set-Accel button on steering wheel. Voltmeter should indicate approximately 10 volts. Rotate the steering wheel back and forth and watch the voltmeter for fluctuations. If the voltage varies more than 0.5 volt, perform the control switch test.

COAST CIRCUIT TEST

With the ignition on and the voltmeter connected to the Light Blue-Black Hash mark wire in the 6 way connector-to-ground depress then "ON" switch, then hold the coast down button on steering wheel. Voltmeter should indicate approximately 6 volts. If all the functions check "OK" perform the servo check and sensor test and hang in a known good amplifier.

Do not substitute a new amplifier for the old amplifier until the actuator coils have been tested. Refer to the Servo Assembly (Throttle Actuator Test).

SIMULATED ROAD TEST

1. Raise the rear wheels clear of the floor. Block front wheels securely. Use floor stands to support the rear axle securely. Never use a floor jack to support the center of the rear axle while making the following tests.
2. Start the engine.
3. Shift the transmission to drive.
4. Turn on the speed control.

CAUTION: IF ANY TIME DURING THE FOLLOWING STEPS THE SYSTEM SHOULD APPEAR TO GO OUT OF CONTROL AND OVERSPEED, BE PREPARED TO TURN THE SYSTEM OFF AT ONCE WITH THE "OFF" SWITCH OR THE IGNITION SWITCH.

5. Accelerate and hold at 35 MPH.
6. Press and release the set speed button. Hold foot pressure very lightly on accelerator pedal. Normally the speed will continue at 35 MPH for a short period of time and then gradually start surging.
7. Press the off button. The engine should drop back to idle. Stop the rear wheels with the brakes.
8. Press "ON" button, accelerate and hold the speed at 35 MPH.
9. Press and hold the set/accel. button. Slowly remove the foot from the accelerator. The engine speed should gradually increase.
10. When the speed reaches 50 MPH, release the set/accel. button. The surging should start soon.
11. Press the "COAST" button and hold. The engine should idle. Slow the rear wheels to 35 MPH.
12. Release the "COAST" button. Speed should set in. Surging should soon start.
13. Press the brake pedal. The system should shut off, the engine to idle and the brakes stop the wheels.

When performing these tests keep the vehicle speeds within reasonably low limits. If the system

does not perform as normally expected, make note of the malfunction.

SUPPLY CIRCUIT

Blow the horn with the ignition switch in the ON position and the transmission in neutral. This test will determine whether there is power in the horn circuit to the steering wheel. If the horn does not blow, perform the horn relay circuit and ground circuit tests.

BRAKE STOPLAMP SWITCH AND CIRCUIT TEST

To be performed when brake application will not disconnect the speed control.

1. Check for stoplight operation with a maximum brake pedal effort of 6 lbs. If more than 6 lbs. effort is required, check the brake pedal actuation and stoplight switch. Repair or replace as required.
2. If stoplights work properly check the battery voltage on the White-Purple Stripe or Purple-Orange Hash lead at the 6-way connector. Depress the brake pedal until the stoplights are lit. Check voltage on the Dark Green-White Hash lead at the 6-way connector. The difference between the two voltage readings must not exceed 1.5 volts. If a voltage difference greater than 1.5 volts is found, the high resistance in the stoplight circuit must be found and corrected. There should be no voltage present on the Dark Green-White Hash lead with the brake lights off.
3. If the stoplights do not work, the stoplight switch, supply circuit, or bulbs must be checked.

HORN RELAY CIRCUIT TEST

1. Locate horn relay wire connector marked "X" and "Y" on the wiring diagram (Figs. 1, 4, 5, 8, 10 and 11).
2. Using the connector "X" shown on wiring diagram, locate the yellow-light blue wire. With a voltmeter, measure for battery voltage (approximately plus 12 volts) on the male side of the connector.
3. Using the connector "Y" (shown on wiring diagram) locate the yellow-light blue dot wire. Connect a voltmeter to the female side of the connector and check for approximately plus 12 volts.
4. With the voltmeter still connected to the female lead in Step 3, depress the horn switch. The voltmeter should read zero.
5. If the above checks prove satisfactory, connect the voltmeter to the male side of the dark blue wire in the connector "X" shown on wiring diagram. Depress the horn switch and read the meter. The reading should be 12 volts and the horn should operate.
6. If the horn does not operate, the horn failure is in the circuitry between the connector and the horn and should be repaired. If intermittent horn blow is encountered when a door is closed or when going over road bumps, tap the side of the horn relay. If the horn blows when the relay is tapped, the horn relay should be replaced.

ADJUSTMENTS

LINKAGE ADJUSTMENT

Adjust the bead chain to obtain 1/16-1/4 inch actuator arm free travel when the engine is at hot idle. The adjustment should be made to take as much slack out of the bead chain as possible **without restricting the carburetor lever from returning to idle**. The

tighter the bead chain the better performance on the speed control system. On vehicles equipped with a solenoid throttle positioner, perform this adjustment by opening the throttle slightly with the ignition switch in the ON position.

REMOVAL AND INSTALLATION

CONTROL SWITCHES

Removal

1. Remove the two attaching screws holding the pad assembly to the steering wheel.
2. Lift up the pad assembly to expose the horn and speed control wire terminals. Disconnect and remove the pad assembly.
3. Remove the four lower retaining nuts holding the speed control switches and trim plate retainer to the pad assembly.
4. Disconnect the wiring connector on the rear of the pad assembly and remove the switch and trim retainer assembly.
5. The speed control switch assembly may now be removed by snapping the switches out of the plastic trim retainer.

Installation

1. Snap the switch into the trim plate retainer and position the wires through the center hole in the pad assembly.
2. Install the four trim retaining nuts by pushing them onto the plastic studs of the trim plate. Connect the wiring connector on the rear of the pad assembly.
3. Attach the wires to the steering wheel hub and the high foam pad to the steering wheel with the two retaining screws (Fig. 13).

GROUND BRUSH

Removal

1. Remove the steering wheel for access.
2. Snap the brush assembly out of the turn signal switch.

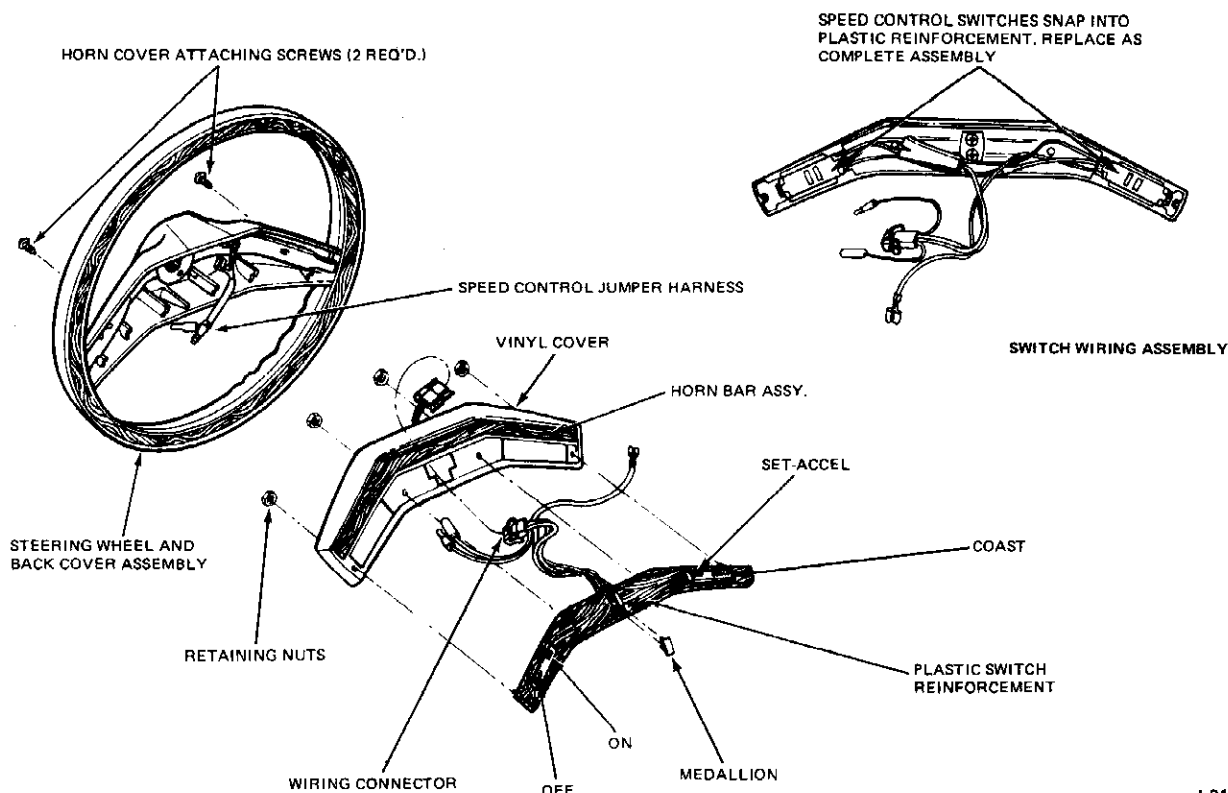


FIG. 13 Speed Control Switch Removal and Installation

Installation

1. Install the ground brush in the turn signal switch. (If the turn signal switch was lifted off the column when removing the ground brush, install the turn signal switch.)
2. Install the steering wheel trim pads and the steering wheel (Fig. 14).

SPEED SENSOR

Removal

1. Separate the electrical connector leading to the amplifier assembly.
2. Disconnect the upper and lower speedometer cables at the speed sensor.
3. Remove the speed sensor.

Installation

1. Install the speed sensor.
2. Install O-ring seals on sensor (Lincoln Continental and Continental Mark V).
3. Connect the upper and lower speedometer cables.
4. Connect the electrical connector leading to the amplifier assembly.

AMPLIFIER ASSEMBLY

NOTE: On some vehicles, the amplifier assembly includes a horn relay. In these cases, the horn relay also has to be disconnected and connected during removal and installation of amplifier.

Removal

1. Disconnect the 6 and 8 way connectors at the amplifier (Figs. 1 through 12).
2. Remove the attaching screws or nuts that fasten the amplifier bracket to the vehicle. On Continental Mark V the attaching screws allow removal of the amplifier alone omitting steps 3 and 4 for these models.
3. Remove the amplifier assembly and mounting bracket from the vehicle.
4. Remove the amplifier assembly from the mounting bracket.

Installation

1. Install the amplifier on the mounting bracket.
2. Attach the amplifier assembly and mounting bracket to the vehicle with the attaching screws or nuts.
3. Connect the 6 and 8 way connectors to the amplifier.
4. Test the system for proper operation.

SERVO ASSEMBLY (THROTTLE ACTUATOR)

Ford, Mercury, LTD II, Thunderbird, Ranchero and Cougar XR-7—All Except 5.0L (302 CID) Engines

Removal

1. Disconnect the wiring harness connector under the instrument panel at the amplifier.
2. In the engine compartment, remove the grommet from the dash panel and carefully pull the harness and connector through the dash panel opening.

3. Disconnect the ball chain. Disconnect the vacuum hose at the servo assembly.
4. Remove the pins retaining the servo assembly to the mounting bracket. Remove the servo assembly.

Installation

1. Position the servo assembly to the bracket and install the retaining pins. Connect the vacuum hose.
2. Route the lead through the dash panel and push the grommet in place.
3. Under the instrument panel, connect the servo assembly connector to the amplifier.
4. In the engine compartment connect the chain to the lever assembly. Refer to Adjustments.

LTD II, Thunderbird, Cougar, Granada, Monarch and Versailles—With 5.0L (302 CID) Engines

Removal

1. Disconnect the wiring harness connectors under the hood at the servo assembly (Figs. 1, 3, 6, 7, 8, 9, 10, 11 and 12).
2. Disconnect the ball chain at the carburetor. Disconnect the vacuum hose at the servo assembly.
3. Remove the pins retaining the servo assembly to the mounting bracket and remove the servo assembly.

Installation

1. Position the servo assembly to the bracket and install the retaining pins. Connect the vacuum hose.
2. Connect the ball chain at the carburetor (Refer to Adjustments).
3. Connect the wiring harness connectors under the hood at the servo assembly.

VACUUM RESERVOIR

LTD II, Thunderbird, Ranchero and Cougar (Figs. 1 and 2)

Removal

1. Under the hood, locate the vacuum line to the vacuum reservoir. Disconnect the line at the vacuum valve and remove the line from the attaching straps along the dash panel.
2. Working inside the left front fender well, remove three screws retaining the plastic splash shield to the fender apron. Remove the shield.
3. Remove the two screw/washer assemblies in the fender apron above the splash shield area and three screws attaching the lower rear underside of the fender to the body and sound deadner panel.
4. Remove four screws holding the fender apron to the fender starting at the lower rear edge of the wheel opening and working toward the center.
5. Remove the two nuts holding the vacuum reservoir to the fender apron. Remove the reservoir by spreading the lower rear portion of the fender and fender apron sufficiently to allow clearance for the reservoir and vacuum line assembly. Care should be taken not to damage the vacuum line which must be pulled through from the engine compartment during reservoir removal.

Installation

1. Install the vacuum reservoir and hose assembly behind the fender apron and thread the vacuum line through the proper opening into the engine compartment.
2. Install the reservoir to the fender apron and securely attach the two retaining nuts.
3. Install and tighten to specification: three lower fender to body screws; four fender to fender apron attaching screws; and two screw/washer assemblies to the fender apron above the splash shield area.
4. Install the splash shield and retaining screws. Tighten screws securely.
5. Install the vacuum line through the retaining straps at the dash panel and attach to the vacuum valve.

Continental Mark V (Figs. 6 and 7)

Removal

1. Under the hood, locate the vacuum hose to the vacuum reservoir. Disconnect the line at the vacuum valve and remove the line from the attaching strap along the upper cowl.
2. Inside the left front fender well, starting at the rear and continuing to the centerline of the wheel opening, remove all the fender apron attaching screws.
3. Remove the two screws attaching the lower rear flange of the fender to the body.
4. Remove the two nuts holding the vacuum reservoir to the fender apron. Remove the reservoir by spreading the lower rear portion of the fender and fender apron sufficiently to allow clearance for the reservoir and vacuum hose assembly to drop down and out from behind the apron.

CARE SHOULD BE TAKEN NOT TO DAMAGE THE VACUUM LINE OR THE CHROME ROCKER MOULDING TRIM DURING THE REMOVAL PROCEDURE.

Installation

1. Install the vacuum reservoir and hose assembly behind the fender apron and thread the hose through the proper opening into the engine compartment.
2. Install the reservoir to the fender apron and securely attach the two retaining nuts.
3. Install and tighten to specification: two lower rear fender to body attaching screws, and all fender apron attaching screws.
4. Install the vacuum line through the retaining strap at the upper cowl and attach to the vacuum valve.

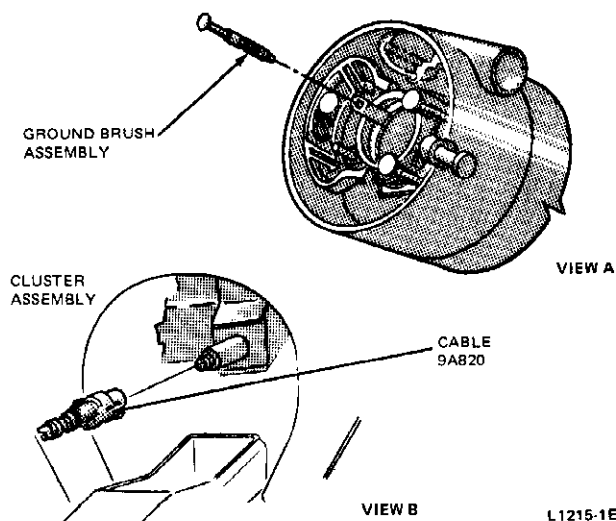


FIG. 14 Ground Brush Installation

Ford, Mercury and Lincoln Continental (Figs. 4 and 5)

Removal

1. From the underside of the fender well, remove two nuts that hold the vacuum reservoir to the fender apron.
2. Inside the engine compartment, remove the vacuum line from the reservoir and remove the reservoir.

Installation

1. Install the vacuum reservoir to the fender apron with two retaining nuts. Tighten to 45-65 in-lbs torque.
2. Install the vacuum line to the reservoir.

Granada, Monarch and Versailles (Figs. 10, 11 and 12)

Removal

1. Under the hood, locate the vacuum line to the vacuum reservoir. Disconnect the line at the vacuum valve and remove the line from the the attaching straps along the dash panel.
2. Working inside the left fender well, remove the plastic splash shield.
3. Remove the two screws holding the vacuum reservoir to the left-hand door pillar and remove reservoir.

Installation

1. Install the vacuum reservoir to the left-hand door pillar with 2 screws.
2. Install the plastic splash shield and retaining screws. Tighten screws securely.
3. Install the vacuum line through the attaching straps along the dash panel and connect to the vacuum valve.

Sure-Track Brake System

PART
37-20

Applies to Lincoln Continental and Continental Mark V

SUBJECT	PAGE	SUBJECT	PAGE
DESCRIPTION		DIAGNOSIS AND TESTING	
Actuator Assembly	20-1	Failure Switch Test	20-7
Computer Control Module	20-1	Function Test	20-5
Sensor Assembly	20-1	Electrical Control System	20-5
		Sensor Output Voltage Test	20-6
OPERATION		Sensor Test	20-6
Actuator	20-4	Solenoid Test	20-6
Computer Control Module	20-4	System Ground Test	20-6
Sensor	20-4	Testing	20-6
		REMOVAL AND INSTALLATION	20-10

CL2309-2B

DESCRIPTION

The Sure-Track brake system is available as optional equipment on the Lincoln Continental and Continental Mark V passenger cars when equipped with 4-wheel power disc brakes.

The design features are as follows:

1. A hydraulic rear brake actuator is powered by hydraulic pressure from the power steering pump.
2. The location of the actuator is on the left-hand frame rail behind the No. 1 cross-member.
3. A new computer control module with solid state electronic components.

Figs. 1 through 3 show the complete sure-track systems for each of the subject car lines.

SENSOR ASSEMBLY

The sensor is mounted on the rear axle drive pinion on all Sure-Track equipped vehicles.

COMPUTER CONTROL MODULE

The computer is mounted on a bracket on the forward surface of the glove box on Lincoln Continental; behind the right side dash applique on Continental Mark V.

ACTUATOR ASSEMBLY

The hydraulic actuator differs in appearance and size from the vacuum actuator used in prior years. It is a two piece iron casting approximately 7 inches long and 4 inches in diameter. The two castings are separated by a gasket which divides the power steering section (front half) from the brake section (rear half). Externally there are five fluid ports, three for power steering and two for hydraulic brake connections as shown in Fig. 4.

NOTE: The hydraulic actuator is serviced as a unit and under no circumstances should it be disassembled in the field.

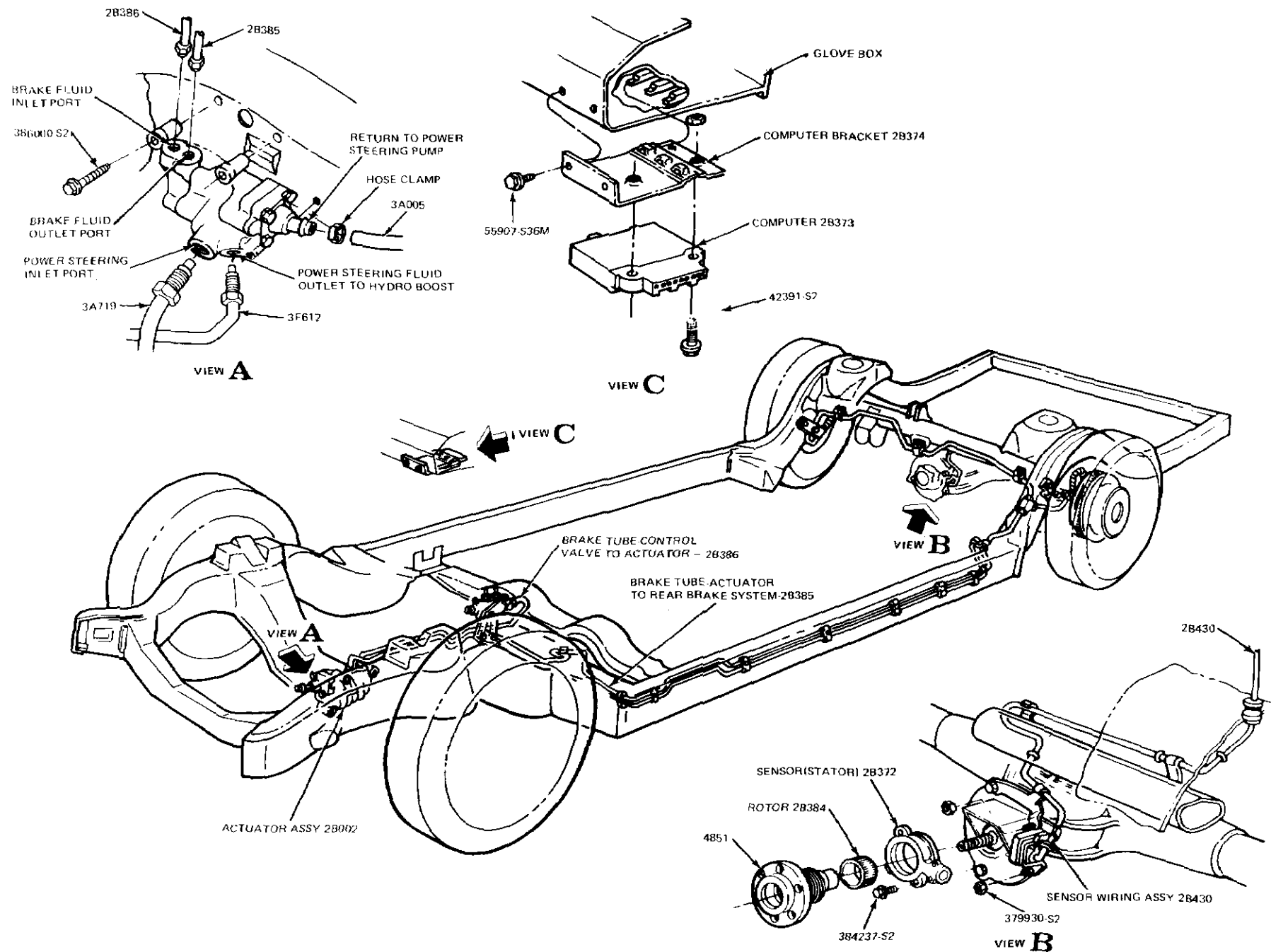


FIG. 1 Sure-Track Brake System—Lincoln Continental

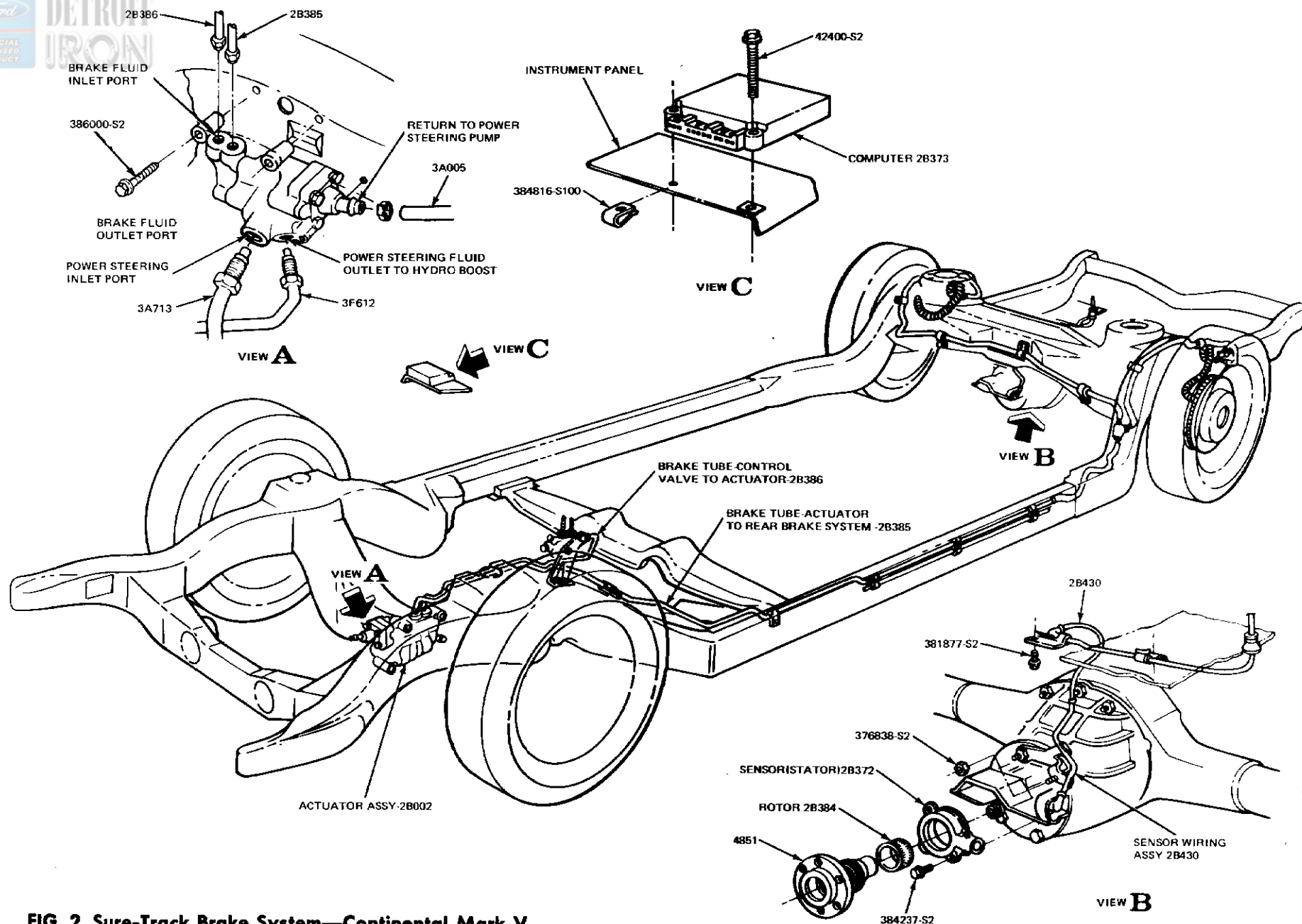


FIG. 2 Sure-Track Brake System—Continental Mark V

L2068-2A

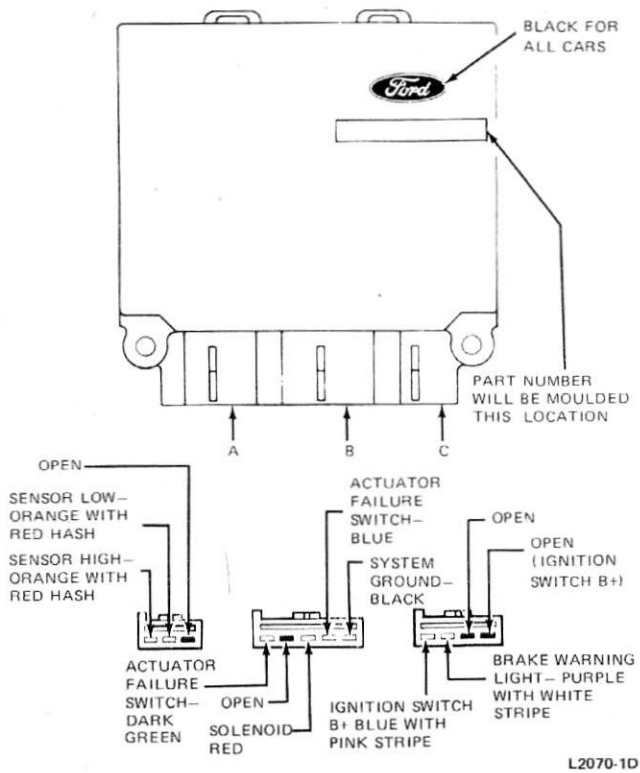


FIG. 3 Computer Control Module—Sure-Track Brake System

OPERATION

SENSOR

When the driveshaft rotates, a variable frequency AC voltage is generated by the sensor in proportion to the speed of the driveshaft. This voltage is transmitted to the computer control module.

COMPUTER CONTROL MODULE

The computer module receives the voltage generated by the sensor, and continually measures driveshaft speed by monitoring the frequency of the sensor output. When the frequency drops abruptly below a predetermined level due to rapid deceleration (maximum braking condition), the module sends an electric current to the actuator solenoid. This current energizes the solenoid, which activates the actuator and releases the rear brakes. When the driveshaft rpm increases, the module interrupts the current flow to the solenoid, reapplying the rear brakes. This sequence of events occurs at a rate of up to 4 cycles per second until the vehicle speed drops below 6 mph or the brakes are released by the driver.

ACTUATOR

When the Sure-Track is not operating (normal driving), the solenoid is in the released position (Fig. 5). In this position the solenoid is not energized, and the solenoid valve spring holds the solenoid valve (vent to power steering reservoir) closed. The expansion piston is balanced between

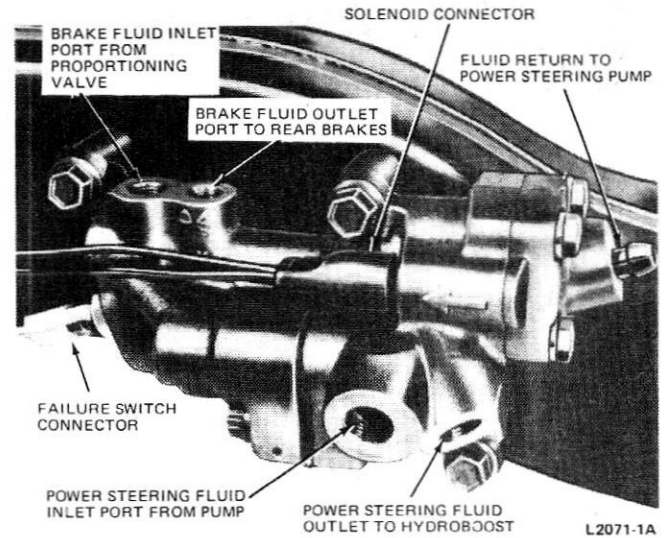


FIG. 4 Actuator Assembly—Sure-Track Brake System

power steering pressure and brake pressure, and the brake fluid inlet check valve is held open by the expansion piston, allowing rear brake fluid to flow through the expansion chamber to the rear brakes.

When the car wheels decelerate rapidly (impending skid during braking), the computer module sends an electric current to the actuator solenoid. The energized

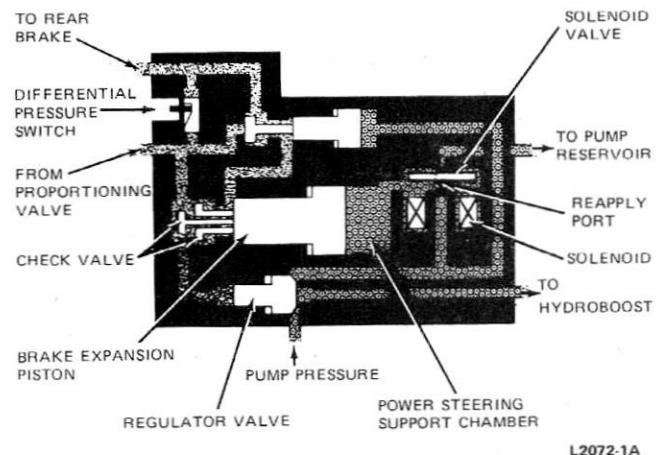


FIG. 5 Schematic—Actuator In Normal Position

solenoid opens the solenoid valve and closes the reapply port (power steering pump fluid pressure). This vents the support chamber to the power steering pump reservoir, resulting in decreased pressure. As the pressure decreases, the expansion piston is forced forward by brake fluid pressure. Forward movement of the piston closes the brake fluid inlet check valve. As the piston continues to move forward, the volume of the expansion chamber is continuously increasing, reducing rear brake lines pressure and releasing the rear brakes (Fig. 6).

With the solenoid in the activated position, the rear brakes are released and the driveshaft speed increases as the rear wheels return to vehicle speed. As the driveshaft speed increases, the computer module shuts off the electrical signal and de-energizes the solenoid. The solenoid valve returns to its original position, causing the power steering pressure in the support chamber to increase, moving the piston back in the brake pressure chamber, opening the brake fluid inlet check valve and reapplying the rear brakes.

The actuator continues to cycle (release, reapply, release, reapply) until the brakes are released by the driver.

Since the skid control actuator cycles only if the rear wheels approach lockup, it is desirable to provide another method of actuating the system to exercise the

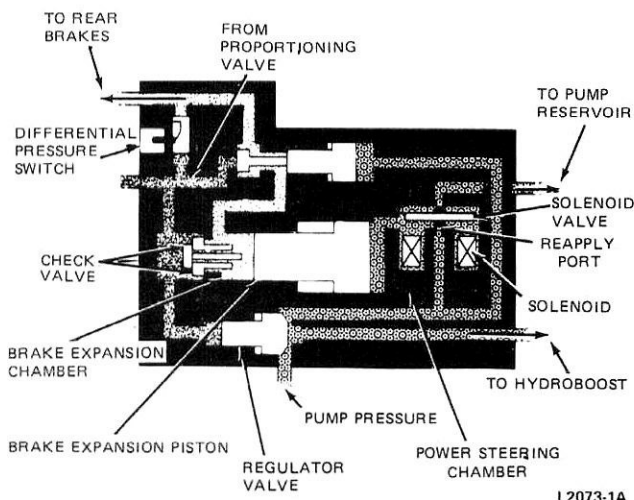


FIG. 6 Schematic—Actuator In Activated Position

seals periodically. Therefore, the control solenoid is functioned through one cycle each time the ignition key is turned to RUN. When this cycle occurs, an extremely faint click may be heard near the actuator.

DIAGNOSIS AND TESTING

See Fig. 14 for Diagnostic Chart.

The Sure-Track assembly is only one component in the braking system. Complaints concerning the Sure-Track may be related to problems in either the power steering circuit or with the service brakes. Therefore, before performing any tests, check and eliminate them as a possible source of the problem. Note the customer complaint, then verify the problem by driving the vehicle and comparing to a known quality vehicle.

CAUTION: A ROAD TEST SHOULD BE MADE ONLY WHEN THE OPERATOR IS SURE THAT THE BRAKES WILL STOP THE VEHICLE.

A functional test of the system can be performed if a road test is not advisable. To check skid control function, proceed as follows:

FUNCTION TEST

1. Raise the rear wheels of the vehicle off the floor.
2. Start engine, place transmission in drive and bring wheel speed up to 30 mph.
3. Apply the brakes quickly and firmly (spike) with throttle still applied and observe the rear wheels. If the skid control system is functioning properly, it will cycle 5 or 6 times or until the brake pedal is released.

ELECTRICAL CONTROL SYSTEM

Electrical power is provided to the Sure-Track brake system when the ignition switch is turned to the "run" position. The brake warning light will

come on for a short period (approximately .2 seconds) indicating the Sure-Track system is functioning. Fig. 7 is a wiring schematic of the Sure-Track brake system.

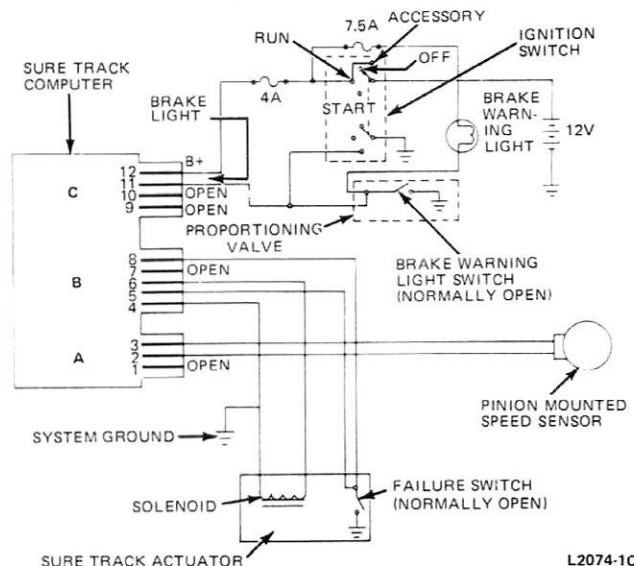


FIG. 7 Wiring Diagram—Sure-Track Brake System

Circuit protection is provided by a four ampere fuse located in the fuse panel on Continental Mark V and Lincoln Continental.

TO PREVENT DAMAGE TO THE COMPUTER MODULE, DO NOT USE A FUSE OTHER THAN FOUR AMPERES (AGA4)