

SECTION 06-09 Brake System, Anti-Lock

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VEHICLE APPLICATION

Taurus / Sable, Taurus SHO.

DESCRIPTION

WARNING: BRAKE FLUID CONTAINS POLYGLYCOL ETHERS AND POLYGLYCOLS. AVOID CONTACT WITH EYES. WASH HANDS THOROUGHLY AFTER HANDLING. IF BRAKE FLUID CONTACTS EYES, FLUSH EYES WITH RUNNING WATER FOR 15 MINUTES. GET MEDICAL ATTENTION IF IRRITATION PERSISTS. IF TAKEN INTERNALLY, DRINK WATER AND INDUCE VOMITING. GET MEDICAL ATTENTION IMMEDIATELY.

The Taurus / Sable has a 4-wheel anti-lock brake system (ABS) as an option. The system is standard on Taurus SHO. The system prevents wheel lockup by automatically modulating the brake pressure during an emergency stop. By not locking the wheels, the driver can maintain steering control, and stop the vehicle in the shortest possible distance under most conditions.

The brake pedal force required to engage the ABS function may vary with the road surface conditions. A dry surface requires a higher force, while a slippery surface requires much less force.

During the ABS operation, the driver will sense a pulsation in the brake pedal, accompanied by a slight up and down movement in the pedal height and a clicking sound. The pedal effort and pedal feel during normal braking are similar to that of a conventional power brake system.

The ABS consists of the following major components:

- Vacuum booster and master cylinder assembly.
- Hydraulic Control Unit (HCU).
- ABS module.
- Wheel sensors.
- Pedal travel switch.

Vacuum Booster

The diaphragm-type brake booster is self-contained and is mounted on the engine compartment side of the dash panel.

The vacuum brake booster uses engine intake manifold vacuum and atmospheric pressure for its power.

If the brake booster is damaged or inoperative, replace it with a new booster. The brake booster (excluding the check valve) is serviced only as an assembly.

DESCRIPTION (Continued)

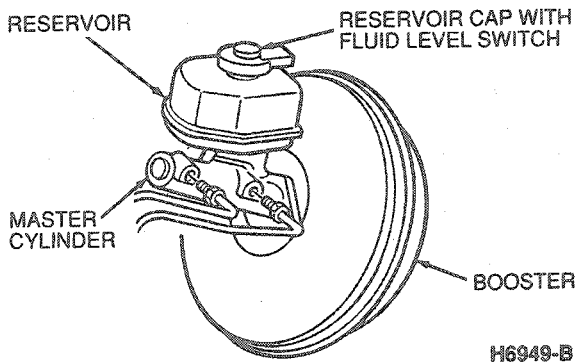
Brake Booster-To-Master Cylinder Push Rod

The vacuum booster push rod (output rod) is not adjustable. If the push rod length is incorrect, replace the booster assembly.

Master Cylinder

The master cylinder is a tandem master cylinder. The primary (rear) circuit feeds the RH front and LH rear brakes. The secondary circuit (front) feeds the LH front and RH rear brakes. It is serviced as a complete assembly.

The master cylinder reservoir is a clear translucent plastic container with three main chambers. An integral fluid level switch is part of the reservoir cap assembly, with one electrical connector pointing rearward for wire harness connection. A low pressure hose is attached to the reservoir which feeds brake fluid to the hydraulic control unit reservoir. The reservoir and cap are serviced separately.



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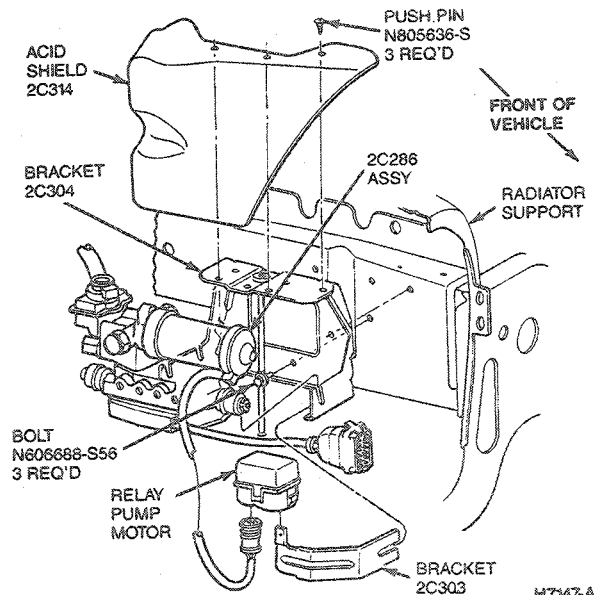
Hydraulic Control Unit (HCU)

3.0L, 3.8L and 3.0L/3.2L SHO

The HCU is located in the front of the engine compartment on the LH side of the vehicle. It attaches to a bracket that is mounted to the LH front inside rail inside the engine compartment. On Taurus/Sable vehicles, the battery and battery tray sit on top of the HCU mounting bracket. On Taurus SHO vehicles, the ABS electronic control unit sits on top of the HCU mounting bracket. The HCU consists of a valve body assembly, pump and motor assembly, and a brake fluid reservoir with fluid level indicator assembly. During normal braking, fluid from the master cylinder enters the HCU through two inlet ports located at the rear of the HCU. The fluid then passes through four normally open inlet valves, one to each wheel. (Refer to the Hydraulic Schematic.) If the ABS module senses that a wheel is about to lock, the ABS module activates the appropriate inlet valve which closes that valve. This prevents any more fluid from entering the affected brake. The ABS module then looks at the wheel again. If it is still decelerating, the ABS module then opens the normally closed outlet valve which decreases the pressure trapped in the line. The valve body, pump and motor, and reservoir are serviced separately. Other than seals and gaskets, no internal parts can be serviced.

Acid Shield

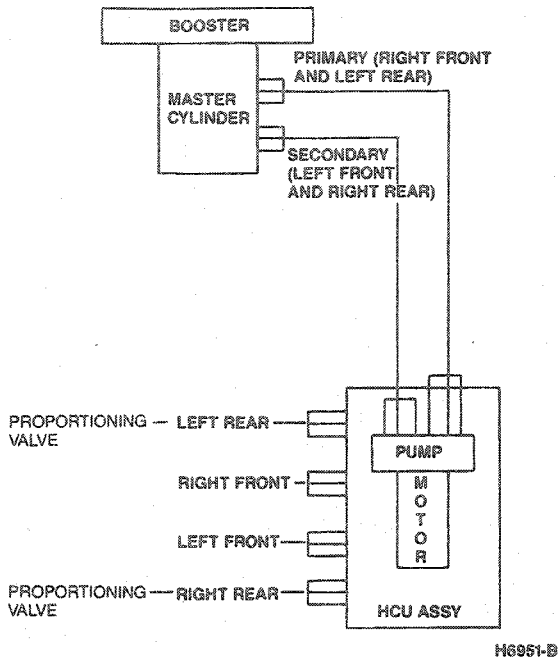
On Taurus/Sable a rubber acid shield is used to protect the HCU and wiring in case of major battery damage. It attaches to the top of the HCU mounting bracket with three plastic push pins. There is also a rubber drain tube that is attached to the HCU mounting bracket. It allows leaking battery acid to drain to the ground.



H7147-A

DESCRIPTION (Continued)

Hydraulic Schematic



Under normal driving conditions, the microprocessors produce short test pulses to the solenoid valves that check the electrical system without any mechanical reaction. Impending wheel lock conditions trigger signals from the ABS module that open and close the appropriate solenoid valves. This results in moderate pulsations in the brake pedal. If brake pedal travel exceeds a preset dimension determined by the pedal travel switch setting, the ABS module will send a signal to the pump to turn on and provide high pressure to the brake system. When the pump starts to run, a gradual rise in pedal height will be noticed. This rise will continue until the pedal travel switch closes and the pump will shut off until the pedal travel exceeds the travel switch setting again. During normal braking, the brake pedal feel will be identical to a standard brake system.

Most malfunctions which occur to the anti-lock brake system will be stored as a coded number in the keep-alive memory of the ABS module. The codes can be retrieved by following the on-board diagnostic procedures. Refer to Diagnosis and Testing.

ABS Module

The ABS Module is located in the engine compartment. On Taurus/Sable vehicles it is located on the front RH side next to the washer bottle. On the Taurus SHO vehicle it is mounted on top of the HCU mounting bracket.

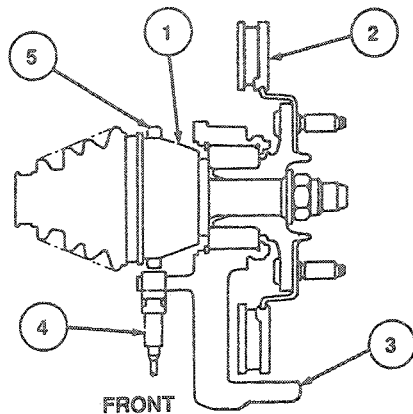
It is an on-board diagnostic non-repairable unit consisting of two microprocessors and the necessary circuitry for their operation. These microprocessors are programmed identically. The ABS module monitors system operation during normal driving as well as during anti-lock braking.

Wheel Sensors

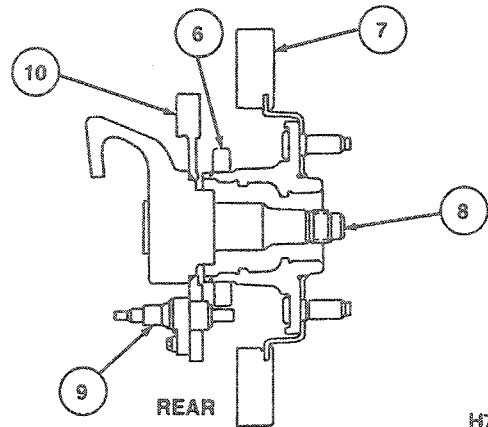
The anti-lock brake system uses four sets of variable-reluctance sensors and toothed speed indicator rings to determine the rotational speed of each wheel. The sensors operate on magnetic induction principal. As the teeth on the speed indicator ring rotate past the stationary sensor, a signal proportional to the speed of the rotation is generated and sent to the ABS module through a coaxial cable and shielded wiring harness.

The front sensors are attached to the suspension knuckles, and the front speed indicators are pressed onto the outer CV joints. The rear sensors are attached to the rear caliper adapter plates, and the rear speed indicator rings are pressed onto the rear wheel hub assemblies.

DESCRIPTION (Continued)



FRONT



REAR

H7149-C

Item	Part Number	Description
1	3B436 RH 3B437 LH	CV Joint
2	1125	Rotor
3	3K170 RH 3K171 LH	Spindle Assy
4	2C204 RH 2C205 LH	Anti-Lock Sensor

(Continued)

Item	Part Number	Description
5	2C182	Anti-Lock Sensor Ring
6	2B664	Anti-Lock Sensor Ring
7	2C026	Rotor
8	—	Rear Spindle
9	2C216 LH 2C190 RH	Anti-Lock Sensor
10	2C101 LH 2C100 RH	Rear Disc Adapter

Pedal Travel Switch

The anti-lock brake system uses a pedal travel switch which monitors brake pedal travel and sends this information to the ABS module through the wire harness. The switch adjustment is critical to pedal feel during ABS cycling.

The switch is mounted in a hole in the RH side wall of the brake pedal support and to a pin on the dump valve adapter bracket.

The switch is normally closed. When brake pedal travel exceeds the switch setting during an anti-lock stop, the electronic controller senses that the switch is open and grounds the pump motor relay coil. This energizes the relay and turns the pump motor on. When the pump motor is running, the master cylinder is filled with high pressure brake fluid and the brake pedal will be pushed up until the switch closes. When the switch closes, the pump is turned off and the pedal will drop some with each ABS control cycle until the travel switch opens again and the pump is turned on again. This minimizes pedal feedback during ABS cycling.

If the pedal travel switch is not adjusted properly or is not electrically connected, it will result in objectionable pedal feel during ABS stops. Most concerns with the switch or its installation will result in the pump running during the entire ABS stop. The pedal will become very firm, pushing the driver's foot up to an unusually high position.

OPERATION

When the brakes are applied, fluid is forced from the master cylinder outlet ports to the hydraulic control unit (HCU) inlet ports. This pressure is transmitted through four normally open solenoid valves contained inside the HCU, then through the outlet ports of the HCU to each wheel. The primary (rear) circuit of the master cylinder feeds the right front and left rear brakes. The secondary (front) circuit of the master cylinder feeds the left front and right rear brakes. If the ABS module senses that a wheel is about to lock, based on wheel speed sensor data, it pulses the normally open solenoid valve closed, for that circuit. This prevents any more fluid from entering that circuit. The ABS module then looks at the sensor signal from the affected wheel again. If that wheel is still decelerating, it opens the normally closed solenoid valve for that circuit. This dumps any pressure that is trapped between the normally open valve and the brake back to the reservoir. Once the affected wheel comes back up to speed, the ABS module returns the valves to their normal condition allowing fluid flow to the affected brake.

The ABS module monitors the electro-mechanical components of the system. Malfunction of the anti-lock brake system will cause the ABS module to shut off or inhibit the system. However, normal power assisted braking remains. Malfunctions are indicated by one or two warning indicators inside the vehicle.

Loss of hydraulic fluid in the HCU reservoir will disable the anti-lock system.

OPERATION (Continued)

The 4-wheel anti-lock brake system is self monitoring. When the ignition switch is placed in the RUN position, the ABS module will perform a preliminary self check on the anti-lock electrical system indicated by a three to four second illumination of the amber ANTI-LOCK indicator in the instrument cluster. During vehicle operation, including normal and anti-lock braking, the ABS module monitors all electrical anti-lock functions and some hydraulic operations.

In most malfunctions of the anti-lock brake system, the amber ANTI-LOCK BRAKE and / or red BRAKE indicator(s) will be illuminated. The sequence of illumination for these warning indicators combined with the symptoms, can determine the appropriate diagnostic tests to perform. However, most malfunctions are recorded as a coded number in the ABS module memory and assist in pinpointing the component needing service.

- RH Rear
- LH Front
- LH Rear
- RH Front

DIAGNOSIS AND TESTING

Warning Indicator Functions

The anti-lock brake system uses two warning indicators to alert the driver of malfunctions in the system.

The red BRAKE warning indicator will come on for only two reasons. If the brake fluid level in the master cylinder reservoir falls below the level which is determined by the switch point of the Fluid Level Switch (FLS), the BRAKE indicator will come on. Also, if the parking brake is applied, the BRAKE indicator will come on.

The amber CHECK ANTI-LOCK BRAKE warning indicator will come on for numerous reasons. It warns the driver that the ABS has been turned off due to a condition that exists in the system. Normal power-assisted braking remains but the wheels can lock during a panic stop while the indicator is on. Certain procedures must be followed to find the fault in this situation. They are explained in this section.

Ensure the diagnostic procedures are followed step-by-step in order as indicated.

WARNING: FOLLOWING THE WRONG SEQUENCE OR BYPASSING STEPS WILL LEAD TO UNNECESSARY REPLACEMENT OF PARTS, AND/OR INCORRECT RESOLUTION OF THE SYMPTOM.

The diagnostic procedure consists of four sections:

1. On-Board Diagnostics
2. Manual Quick Tests
3. Warning Indicator Symptom Chart
4. Diagnostic Tests (including electrical schematics.)

BRAKE SYSTEM BLEEDING

Tools Required:

- Anti-Lock Test Adapter T90P-50-ALA
- Rotunda EEC-IV Breakout Box 014-00322

The anti-lock brake system must be bled in two steps:

1. The master cylinder and hydraulic control unit must be bled using the Anti-Lock Test Adapter T90P-50-ALA. If this procedure is not followed, air will be trapped in the Hydraulic Control Unit which will eventually lead to a spongy brake pedal.

To bleed the master cylinder and HCU, disconnect the 55-pin plug from the ABS module and install the Anti-Lock Brake Breakout Box / Bleeding Adapter to the wire harness 55-pin plug.

- a. Place Bleed / Harness switch in Bleed position.
 - b. Turn ignition to ON position. At this point the red OFF indicator should turn on.
 - c. Push motor button on adapter down. This starts the pump motor. The red OFF indicator will turn off and the green ON indicator will turn on. The pump motor will run for 60 seconds once the motor button is pushed. If the pump motor is to be turned off for any reason before this 60 seconds has elapsed, push the abort button and the pump motor will turn off.
 - d. After 20 seconds of pump motor operation, push and hold the valve button down. Hold valve button for 20 seconds then release.
 - e. The pump motor will continue to run for an additional 20 seconds after the valve button is released.
2. The brake lines can be bled in the conventional manner, as outlined in Section 06-06.
Bleed in the following sequence:

On-Board Diagnostics

Tools Required:

- Rotunda SUPER STAR II Tester 007-0041B

The anti-lock brake system (ABS) module is capable of performing a self-test using Rotunda SUPER STAR II Tester 007-0004 1B or equivalent. The procedures for using the SUPER STAR II Tester are covered in the Anti-Lock Diagnostic Section.

If the SUPER STAR II Tester is not available, the Anti-Lock Quick Check Sheet should be used as outlined.

DIAGNOSIS AND TESTING (Continued)

The anti-lock brake control module monitors system operation and can store all defined Diagnostic Trouble Codes (DTCs) in its memory. It is important to understand that the ABS module CANNOT recognize some failures, therefore if a condition exists and no DTCs are stored by the ABS module, other diagnostic steps must be followed.

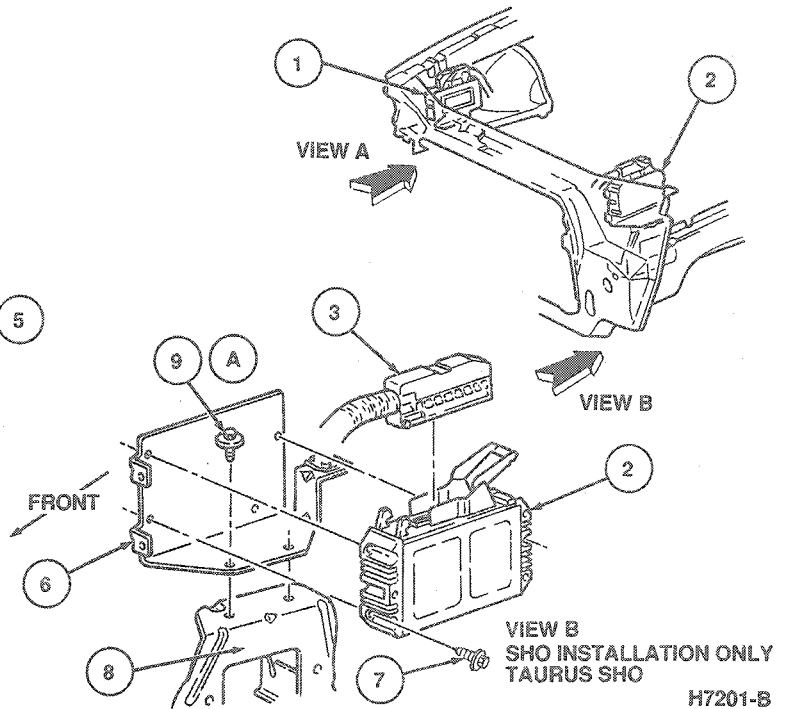
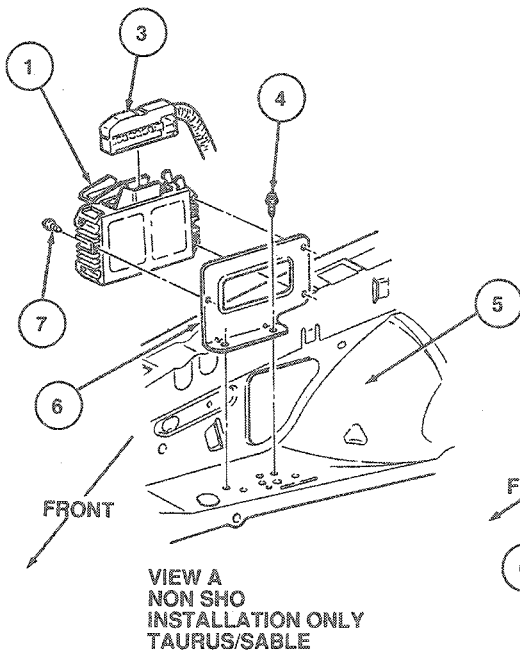
The module cannot store a DTC if there is no power to the module. This condition can be found by using the Quick Check Sheet.

A 20 series code will override any other stored code and will not allow other codes to be output if the failure exists while the on-board diagnostic is being run. If the failure is intermittent or if the code was left in the ABS module due to improper erasing procedures, the code will be output during on-board diagnostic but the next code will also be output.

STAR Tester Connection and Battery Check

1. Turn ignition switch to OFF position.
2. Locate SUPER STAR II Tester connector in engine compartment behind LH shock tower.
NOTE: Only one multi-pin connector is used.
3. Connect SUPER STAR II Tester connector to vehicle connector.

ABS Module



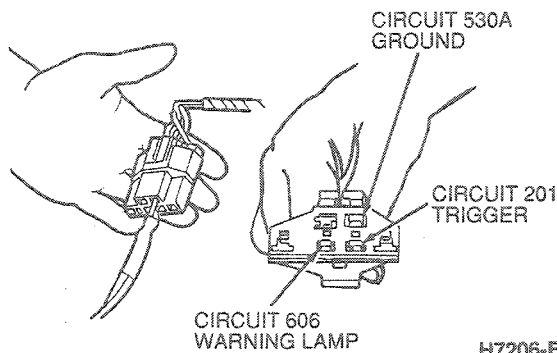
Item	Part Number	Description
1	2C219	ABS Module 3.0L and 3.8L
2	2C218	ABS Module SHO Only
3	—	Harness Assy
4	N611194-S2	Bolt (2 Req'd)
5	—	RH Engine Compartment

Item	Part Number	Description
6	2C214	Bracket
7	N805640-S2	Screw (3 Req'd)
8	—	LH Engine Compartment
9A	N800935-S55	Bolt (3 Req'd)
A	—	Tighten to 8-12 N·m (6-8 Lb·Ft)

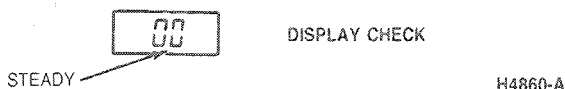
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DIAGNOSIS AND TESTING (Continued)

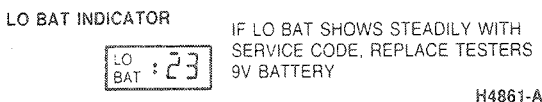
SUPER STAR II Tester Connections



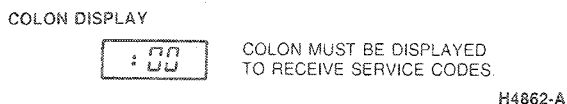
- Turn on power switch on RH side of SUPER STAR II Tester. A steady 00 or blank screen will appear to signify that SUPER STAR II Tester is ready to start on-board diagnostics and receive DTCs.



NOTE: If the message LO BAT appears in upper LH corner of read-out display and stays on, replace SUPER STAR II Tester's 9-volt battery before continuing with on-board diagnostic. The message LO BAT will appear momentarily when power switch is turned off.



- With ignition still off, push self-test button in center of SUPER STAR II Tester.
- Push self-test button again. This deactivates self-test sequence.



- If SUPER STAR II Tester passes above test (00 or blank screen with button in TEST position), proceed with On-Board Diagnostic procedure. If any DTCs appear during On-Board Diagnostic, refer to the On-Board Diagnostic Trouble Code Index.

On-Board Self-Test Procedure

The anti-lock brake system has self-diagnostic capabilities, however, the module as received from manufacturing is equipped with a stored error code (61). This will affect the service procedure.

The error codes can be retrieved from the ABS module in the following manner.

- Connect SUPER STAR II Tester to connector located in engine compartment behind LH shock tower.
- Turn on SUPER STAR II Tester and latch button down in TEST position.
- Turn ignition switch to RUN position.
- Read first code output. After approximately 15 seconds the next code will be output. Leave button latched until all codes are output.

NOTE: Ensure that all codes are written down.

The diagnostic procedure should be as follows providing that the CHECK ANTI-LOCK BRAKE indicator stays on all the time or flashes intermittently.

NOTE: If the BRAKE warning indicator is on or intermittently comes on, refer to the warning indicator symptom chart in this Section.

- If the first code received is in the 20s and no other code is received, service the indicated component. No other codes can be output if a 20s DTC exists. After servicing the indicated 20s code, repeat the procedure for retrieving error codes.

NOTE: If there are more codes stored in the ABS module memory, no codes will erase until all codes have been output by the SUPER STAR II Tester, all malfunctions have been serviced and the vehicle is driven above 40 Km/h (25 mph). This means that if a 20s code originally existed and was serviced, it can be ignored when running the On-Board Diagnostic the second time.

- If a Code 61 is received with any other code, ignore the code 61 and service the other indicated malfunctions. If after correcting all other indicated malfunctions, the CHECK ANTI-LOCK BRAKE indicator is still on, service the FLS circuit.
- If a Code 61 is received and no other DTCs are received, service the FLS Circuit.
- If no code, or only a Code 11 is received, use the Anti-Lock Quick Check Sheet since some possibilities are not recognized and retained in the ABS module memory.

Memory Erasing

- The original error codes in the ABS module from the assembly plant will erase automatically if everything is in working order and the vehicle is driven above 40 Km/h (25 mph).

NOTE: If self diagnostic PINPOINT TEST STEPS continually lead to REVERIFY symptom, go to ANTI-LOCK QUICK TEST CHECK.

- All error codes must be output, all malfunctions corrected (anti-lock indicator off), and vehicle driven above 40 Km/h (25 mph) before the memory will clear.

NOTE: Each time the engine is started the ABS module will count 2 run cycles.

- The ABS module will erase all stored codes if it counts 250 consecutive run cycles without recognizing a malfunction.

DIAGNOSIS AND TESTING (Continued)

ON-BOARD DIAGNOSTIC TROUBLE CODE INDEX

DIAGNOSTIC TROUBLE (COMPONENT)	PINPOINT TEST STEP
11 (ABS Module)	AA1
22 (LH Front Inlet Valve)	BB1
23 (LH Front Outlet Valve)	BB4
24 (RH Front Inlet Valve)	BB6
25 (RH Front Outlet Valve)	BB8
26 (RH Rear Inlet Valve)	BB10
27 (RH Rear Outlet Valve)	BB12
28 (LH Rear Inlet Valve)	BB14
29 (LH Rear Outlet Valve)	BB16
31 (LH Front Sensor)	CC1
32 (RH Front Sensor)	CC8
33 (RH Rear Sensor)	CC15
34 (LH Rear Sensor)	CC22
35 (LH Front Sensor)	CC1
36 (RH Front Sensor)	CC8
37 (RH Rear Sensor)	CC15
38 (LH Rear Sensor)	CC22
41 (LH Front Sensor)	CC1
42 (RH Front Sensor)	CC8
43 (RH Rear Sensor)	CC15
44 (LH Rear Sensor)	CC22

(Continued)

**ON-BOARD DIAGNOSTIC TROUBLE CODE INDEX
(Cont'd)**

DIAGNOSTIC TROUBLE (COMPONENT)	PINPOINT TEST STEP
51 (LH Front Outlet Valve)	DD1
52 (RH Front Outlet Valve)	DD5
53 (RH Rear Outlet Valve)	DD9
54 (LH Rear Outlet Valve)	DD13
55 (LH Front Sensor)	CC1
56 (RH Front Sensor)	CC8
57 (RH Rear Sensor)	CC15
58 (LH Rear Sensor)	CC22
61 (FLS Circuits)	EE1
62 (Travel Switch)	EE1
63 (Pump Motor Speed Sensor)	EE7
64 (Pump Motor Pressure)	EE29
67 (Pump Motor Relay)	E1
71 (LH Front Sensor)	CC1
72 (RH Front Sensor)	CC8
73 (RH Rear Sensor)	CC15
74 (LH Rear Sensor)	CC22
75 (LH Front Sensor)	CC1
76 (RH Front Sensor)	CC8
77 (RH Rear Sensor)	CC15
78 (LH Rear Sensor)	CC22

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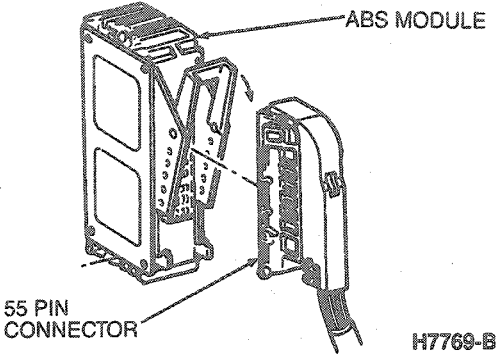
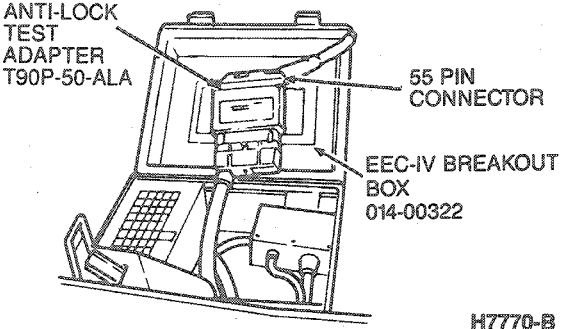
PINPOINT TEST AA: ABS MODULE DIAGNOSIS

TEST STEP	RESULT	ACTION TO TAKE
AA1 DTC 11: ELECTRICAL DISTURBANCE <ul style="list-style-type: none"> ● Read all DTC's and record. ● After all DTC's are read and written down, drive vehicle above 40 km/h (25 mph) to clear memory. ● Read all DTC's again. 	DTC 11 repeated Memory erased or other DTC's present except code 11	<ul style="list-style-type: none"> ▶ REPLACE ABS module. ▶ PERFORM test step associated with DTC's. REFER to On-Board Diagnostic Trouble code index, and SERVICE next code.

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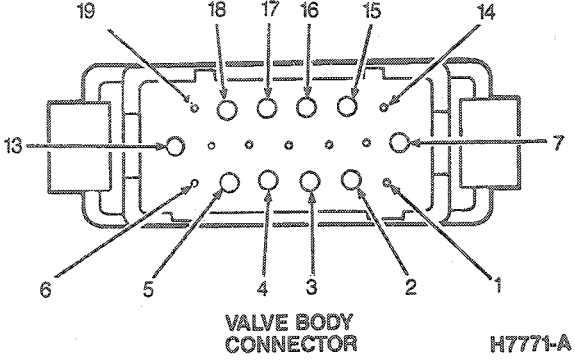
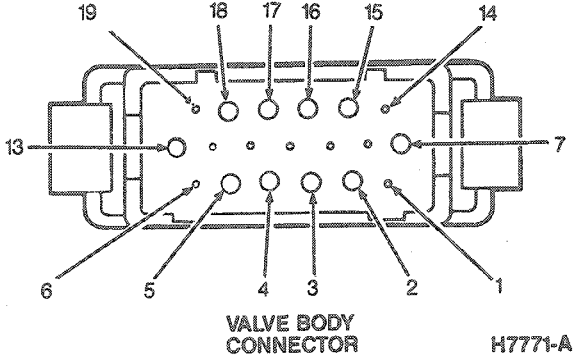
DIAGNOSIS AND TESTING (Continued)

**PINPOINT TEST BB:
SOLENOID VALVE DIAGNOSIS**

TEST STEP	RESULT	ACTION TO TAKE
<p>BB1 DTC 22: NO REFERENCE VOLTAGE OR LH FRONT INLET VALVE</p> <ul style="list-style-type: none"> Disconnect 55-pin plug from ABS module.  <ul style="list-style-type: none"> Connect EEC-IV Breakout Box 014-00322 with Anti-Lock Test Adapter T90P-50-ALA or equivalent to the anti-lock 55-pin plug wiring harness.  <ul style="list-style-type: none"> Connect a jumper between Pins 34 and 19. With ignition switch ON, measure voltage between breakout box Pins 3 and 60. 	<p>10 volts minimum</p> <p>Less than 10 volts</p>	<p>▶ REMOVE jumper. GO to Step BB2.</p> <p>▶ REPLACE or SERVICE cable harness Circuits 640, 532, or 606.</p> <p>NOTE: If test for code 22 continually leads to REVERIFY code 22, GO to Anti-Lock quick test-check.</p>
<p>BB2 CHECK LH FRONT INLET VALVE AND CIRCUIT</p> <ul style="list-style-type: none"> Measure resistance between breakout box Pins 3 and 20. Is resistance between 5 and 8 ohms? 	<p>Yes</p> <p>No</p>	<p>▶ REVERIFY code 22.</p> <p>NOTE: If other codes are output, SERVICE next code.</p> <p>▶ GO to BB3.</p>

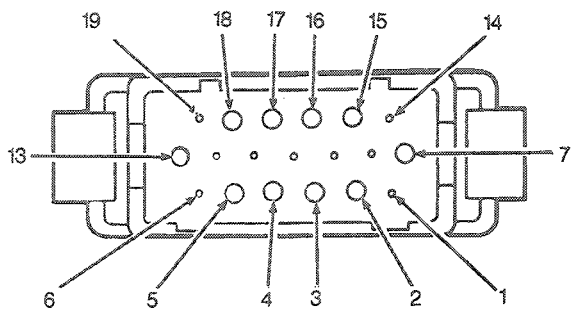
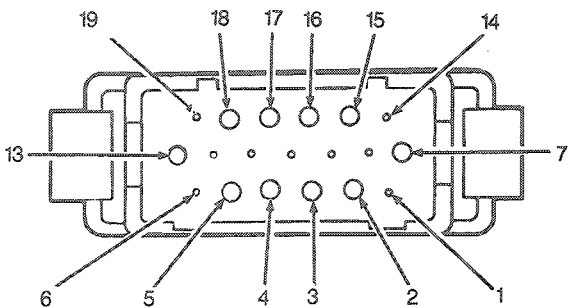
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST BB:
SOLENOID VALVE DIAGNOSIS (Continued)

TEST STEP	RESULT	ACTION TO TAKE
BB3 CHECK LH FRONT INLET VALVE <ul style="list-style-type: none"> ● Disconnect valve body 19-pin connector. ● Measure resistance between Pins 17 and 7. ● Is resistance between 5 and 8 ohms?  <p style="text-align: center;">VALVE BODY CONNECTOR H7771-A</p>	Yes No	▶ REPLACE or SERVICE cable harness Circuits 495. ▶ REPLACE valve body.
BB4 DTC 23: CHECK LH FRONT OUTLET VALVE AND CIRCUIT <ul style="list-style-type: none"> ● Measure resistance between breakout box Pins 3 and 2. ● Is resistance between 3 and 6 ohms? 	Yes No	▶ GO to BB.. NOTE: If any other codes are output, SERVICE next code. ▶ GO to BB5.
BB5 CHECK LH FRONT OUTLET VALVE <ul style="list-style-type: none"> ● Disconnect valve body 19-pin connector. ● Measure resistance between Pins 18 and 7. ● Is resistance between 3 and 6 ohms?  <p style="text-align: center;">VALVE BODY CONNECTOR H7771-A</p>	Yes No	▶ REPLACE or SERVICE cable harness Circuit 498. ▶ REPLACE valve body.
BB6 DTC 24: CHECK RH FRONT INLET VALVE AND CIRCUIT <ul style="list-style-type: none"> ● Measure resistance between breakout box Pins 3 and 38. ● Is resistance between 5 and 8 ohms? 	Yes No	▶ GO to BB8. NOTE: If other codes are output, SERVICE next code. ▶ GO to BB7.

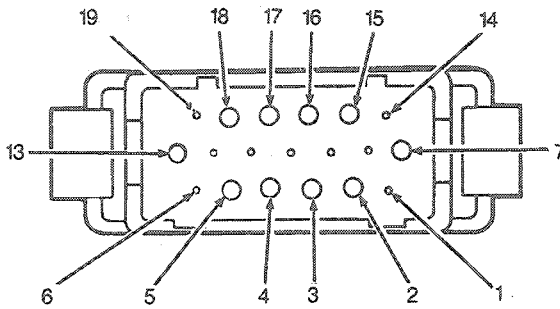
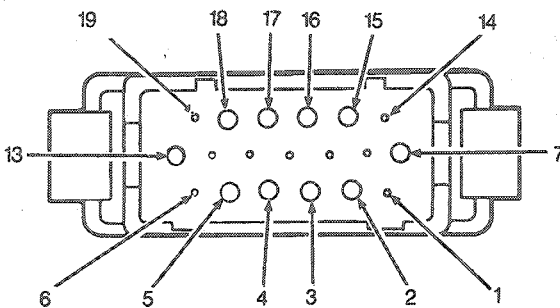
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST BB:
SOLENOID VALVE DIAGNOSIS (Continued)

	TEST STEP	RESULT	ACTION TO TAKE
BB7	<p>CHECK RH FRONT INLET VALVE</p> <ul style="list-style-type: none"> ● Disconnect valve body 19-pin connector. ● Measure resistance between Pins 15 and 7. ● Is resistance between 5 and 8 ohms?  <p>VALVE BODY CONNECTOR H7771-A</p>	<p>Yes</p> <p>No</p>	<p>REPLACE or SERVICE cable harness Circuit 510.</p> <p>REPLACE valve body.</p>
BB8	<p>DTC 25: CHECK RH FRONT OUTLET VALVE AND CIRCUIT</p> <ul style="list-style-type: none"> ● Measure resistance between breakout box Pins 3 and 21. ● Is resistance between 3 and 6 ohms? 	<p>Yes</p> <p>No</p>	<p>GO to BB10.</p> <p>NOTE: If other codes are output, SERVICE next code.</p> <p>GO to BB9.</p>
BB9	<p>CHECK RH FRONT OUTLET VALVE</p> <ul style="list-style-type: none"> ● Disconnect valve body 19-pin connector. ● Measure resistance between Pins 16 and 7. ● Is resistance between 3 and 6 ohms?  <p>VALVE BODY CONNECTOR H7771-A</p>	<p>Yes</p> <p>No</p>	<p>REPLACE or SERVICE cable harness Circuit 497.</p> <p>REPLACE valve body.</p>

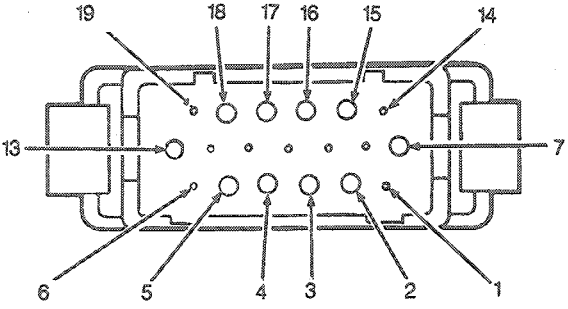
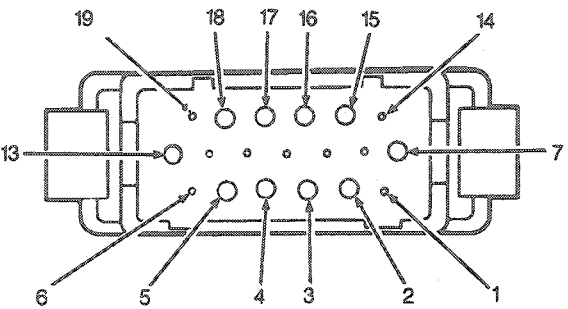
DIAGNOSIS AND TESTING (Continued)

**PINPOINT TEST BB:
SOLENOID VALVE DIAGNOSIS (Continued)**

	TEST STEP	RESULT	ACTION TO TAKE
BB10	<p>DTC 26: CHECK RH REAR INLET VALVE AND CIRCUIT</p> <ul style="list-style-type: none"> ● Measure resistance between breakout box Pins 3 and 55. ● Is resistance between 5 and 8 ohms?  <p style="text-align: center;">VALVE BODY CONNECTOR H7771-A</p>	<p>Yes</p> <p>No</p>	<p>▶ GO to BB12.</p> <p>NOTE: If other codes are output, SERVICE next code.</p> <p>▶ GO to BB11.</p>
BB11	<p>CHECK RH REAR INLET VALVE</p> <ul style="list-style-type: none"> ● Disconnect valve body 19-pin connector. ● Measure resistance between Pins 2 and 7. ● Is resistance between 5 and 8 ohms?  <p style="text-align: center;">VALVE BODY CONNECTOR H7771-A</p>	<p>Yes</p> <p>No</p>	<p>▶ REPLACE or SERVICE cable harness Circuit 455 (Taurus / Sable). Circuit 678 (Taurus SHO).</p> <p>▶ REPLACE valve body.</p>
BB12	<p>DTC 27: CHECK RH REAR OUTLET VALVE AND CIRCUIT</p> <ul style="list-style-type: none"> ● Measure resistance between breakout box Pins 3 and 18. ● Is resistance between 3 and 6 ohms? 	<p>Yes</p> <p>No</p>	<p>▶ GO to BB14.</p> <p>NOTE: If other codes are output, SERVICE next code.</p> <p>▶ GO to BB13.</p>

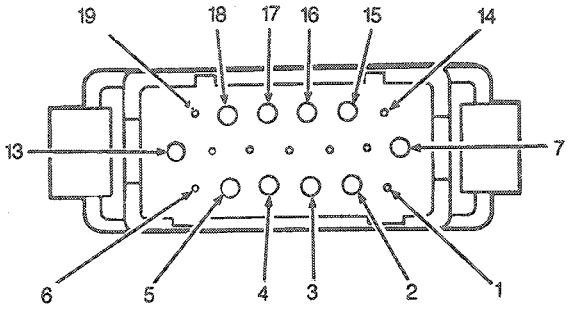
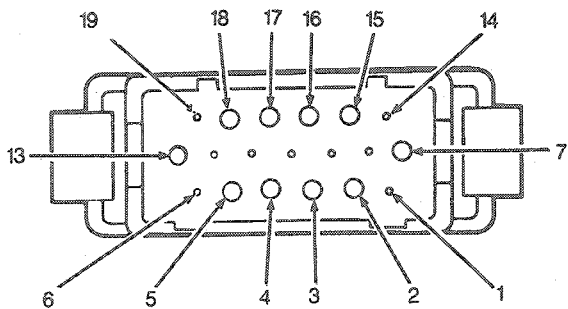
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST BB:
SOLENOID VALVE DIAGNOSIS (Continued)

TEST STEP	RESULT	ACTION TO TAKE
<p>BB 13 CHECK RH REAR OUTLET VALVE</p> <ul style="list-style-type: none"> ● Disconnect valve body 19-pin connector. ● Measure resistance between Pins 3 and 7. ● Is resistance between 3 and 6 ohms?  <p>VALVE BODY CONNECTOR H7771-A</p>	<p>Yes</p> <p>No</p>	<p>▶ REPLACE or SERVICE cable harness Circuit 599 (Taurus / Sable). Circuit 685 (Taurus SHO).</p> <p>▶ REPLACE valve body.</p>
<p>BB 14 DTC 28: CHECK LH REAR INLET VALVE AND CIRCUIT</p> <ul style="list-style-type: none"> ● Measure resistance between breakout box Pins 3 and 54. ● Is resistance between 5 and 8 ohms? 	<p>Yes</p> <p>No</p>	<p>▶ GO to BB 16.</p> <p>NOTE: If other codes are output, SERVICE next code.</p> <p>▶ GO to BB 15.</p>
<p>BB 15 CHECK LH REAR INLET VALVE</p> <ul style="list-style-type: none"> ● Disconnect valve body 19-pin connector. ● Measure resistance between Pins 4 and 7. ● Is resistance between 5 and 8 ohms?  <p>VALVE BODY CONNECTOR H7771-A</p>	<p>Yes</p> <p>No</p>	<p>▶ REPLACE or SERVICE cable harness Circuit 496.</p> <p>▶ REPLACE valve body.</p>
<p>BB 16 DTC 29: CHECK LH REAR OUTLET VALVE AND CIRCUIT</p> <ul style="list-style-type: none"> ● Measure resistance between breakout box Pins 3 and 36. ● Is resistance between 3 and 6 ohms? 	<p>Yes</p> <p>No</p>	<p>▶ GO to BB 18.</p> <p>NOTE: If other codes are output, SERVICE next code.</p> <p>▶ GO to BB 17.</p>

DIAGNOSIS AND TESTING (Continued)

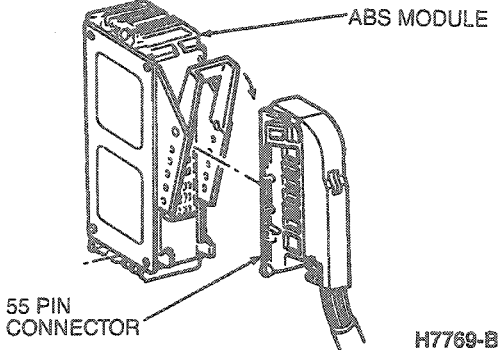
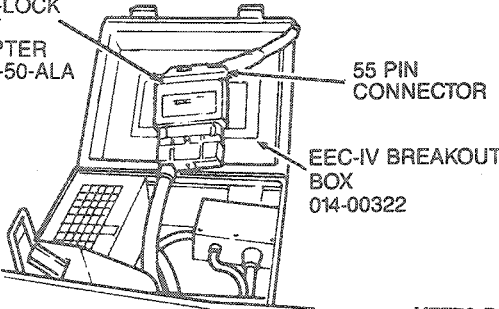
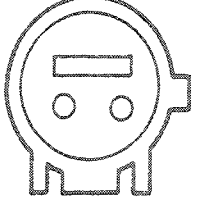
PINPOINT TEST BB:
SOLENOID VALVE DIAGNOSIS (Continued)

TEST STEP	RESULT	ACTION TO TAKE
<p>BB 17 CHECK LH REAR OUTLET VALVE</p> <ul style="list-style-type: none"> ● Disconnect valve body 19-pin connector. ● Measure resistance between Pins 5 and 7. ● Is resistance between 3 and 6 ohms?  <p style="text-align: center;">VALVE BODY CONNECTOR H7771-A</p>	<p>Yes</p> <p>No</p>	<p>▶ REPLACE or SERVICE cable harness Circuit 499.</p> <p>▶ REPLACE valve body.</p>
<p>BB 18 CHECK VALVE BODY POWER FEED AND CIRCUITRY</p> <ul style="list-style-type: none"> ● Remove main power relay from harness connector. ● Check for continuity between breakout box Pins 3 and 33. ● Is there continuity? 	<p>Yes</p> <p>No</p>	<p>▶ GO to BB 19.</p> <p>▶ REPLACE or SERVICE cable harness circuit 532.</p>
<p>BB 19 CHECK VALVE BODY INTERNAL POWER FEED CIRCUITS</p> <ul style="list-style-type: none"> ● Disconnect valve body 19-pin connector. ● Check for continuity between Pins 7 and 13 on valve body.  <p style="text-align: center;">VALVE BODY CONNECTOR H7771-A</p> <ul style="list-style-type: none"> ● Is there continuity? 	<p>Yes</p> <p>No</p>	<p>▶ REVERIFY symptom.</p> <p>▶ REPLACE valve body.</p> <p>NOTE: If symptom is reverified and no malfunction is found, GO to Anti-Lock Quick Test Check.</p>

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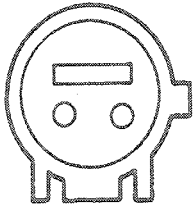
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST CC:
WHEEL SENSOR DIAGNOSIS

TEST STEP	RESULT	ACTION TO TAKE
<p>CC1 DTC's 31, 35, 41, 55, 71 OR 75: CHECK LH FRONT SENSOR</p> <ul style="list-style-type: none"> ● Turn ignition switch OFF. ● Disconnect 55-pin connector from ABS module.  <p>ABS MODULE</p> <p>55 PIN CONNECTOR</p> <p>H7769-B</p> <ul style="list-style-type: none"> ● Connect EEC-IV Breakout Box 014-00322 with Anti-Lock Test Adapter T90P-50-ALA or equivalent to the 55-pin connector on wiring harness.  <p>ANTI-LOCK TEST ADAPTER T90P-50-ALA</p> <p>55 PIN CONNECTOR</p> <p>EEC-IV BREAKOUT BOX 014-00322</p> <p>H7770-B</p> <ul style="list-style-type: none"> ● Measure resistance between Pins 30 and 48. ● Is resistance between 800 and 1400 ohms? 	<p>Yes</p> <p>No</p>	<p>▶ GO to CC3.</p> <p>▶ GO to CC2.</p>
<p>CC2 CHECK LH FRONT SENSOR RESISTANCE</p> <ul style="list-style-type: none"> ● Disconnect LH front wheel sensor plug. ● Measure resistance of sensor at sensor plug. ● Is resistance between 800 and 1400 ohms?  <p>LH FRONT SENSOR</p> <p>H7773-A</p>	<p>Yes</p> <p>No</p>	<p>▶ SERVICE or REPLACE cable harness Circuit 521 or 522.</p> <p>▶ REPLACE LH front sensor.</p>

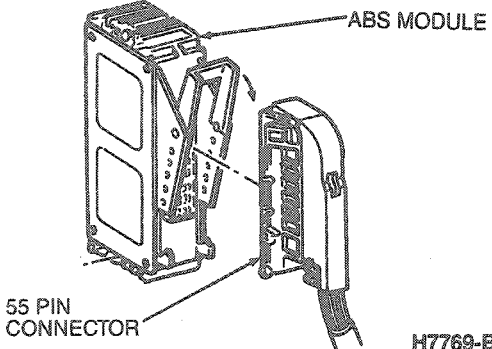
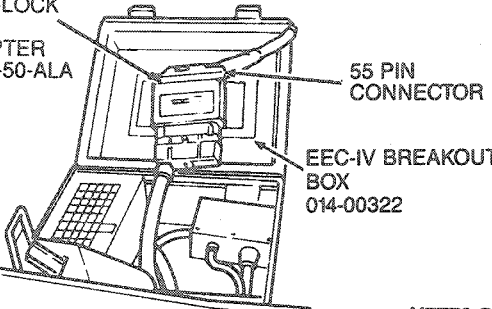
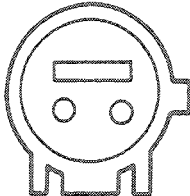
DIAGNOSIS AND TESTING (Continued)

**PINPOINT TEST CC:
WHEEL SENSOR DIAGNOSIS (Continued)**

TEST STEP		RESULT	ACTION TO TAKE
CC3	CHECK LH FRONT SENSOR VOLTAGE		
	<ul style="list-style-type: none"> ● Turn ignition switch OFF. ● Place vehicle on hoist and raise wheels clear of ground. Refer to Section 00-02. ● Set multi-meter to voltage range (2 volts AC). ● Measure voltage between Pins 30 and 48 at breakout box while spinning LH front wheel at approximately 1 revolution per second. 	Between 0.10 and 1.40 volts AC Less than 0.10 or more than 1.40 volts AC	GO to CC4 . CHECK sensor mounting, air gap or toothed wheel mounting. CORRECT as required.
CC4	CHECK LH FRONT SENSOR CIRCUIT CONTINUITY TO GROUND		
	<ul style="list-style-type: none"> ● Check continuity between breakout box Pins 30 and 60. ● Is continuity present? 	No Yes	GO to CC6 . GO to CC5 .
CC5	CHECK LH FRONT SENSOR TO GROUND		
	<ul style="list-style-type: none"> ● Disconnect LH front wheel sensor plug. ● Check for continuity between each sensor plug pin (sensor side) and vehicle ground. ● Is continuity present? 	Yes No	REPLACE LH front sensor. SERVICE or REPLACE cable harness Circuit 521 or 522. RECONNECT sensor plug.
 <p>LH FRONT SENSOR H7773-A</p>			
CC6	CHECK ABS MODULE TO GROUND WIRE		
	<ul style="list-style-type: none"> ● Check continuity between breakout box Pin 60 and body ground. ● Was continuity present? 	Yes No	GO to CC7 . SERVICE or REPLACE cable harness Circuit 530 (Taurus/Sable). Circuit 57 or 530 (Taurus SHO).
CC7	CHECK LH FRONT WHEEL BEARING		
	<ul style="list-style-type: none"> ● Check front wheel bearing end play. ● Inspect toothed sensor ring visually for damaged teeth. ● Were loose or damaged parts found? 	Yes No	REPLACE damaged parts. REVERIFY symptom.

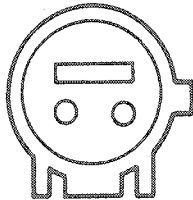
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST CC:
WHEEL SENSOR DIAGNOSIS (Continued)

TEST STEP	RESULT	ACTION TO TAKE
<p>CC8 DTC'S 32, 36, 42, 56, 72 OR 76: CHECK RH FRONT SENSOR</p> <ul style="list-style-type: none"> ● Turn ignition switch OFF. ● Disconnect 55-pin connector from ABS module.  <p>ABS MODULE</p> <p>55 PIN CONNECTOR</p> <p>H7769-B</p> <ul style="list-style-type: none"> ● Connect EEC-IV breakout box 014-00322 with Anti-Lock Test Adapter T90P-50-ALA or equivalent to the 55-pin connector on wiring harness.  <p>ANTI-LOCK TEST ADAPTER T90P-50-ALA</p> <p>55 PIN CONNECTOR</p> <p>EEC-IV BREAKOUT BOX 014-00322</p> <p>H7770-B</p> <ul style="list-style-type: none"> ● Measure resistance between Pins 29 and 47. ● Is resistance between 800 and 1400 ohms? 	<p>Yes</p> <p>No</p>	<p>▶ GO to CC10.</p> <p>▶ GO to CC9.</p>
<p>CC9 CHECK RH FRONT SENSOR RESISTANCE</p> <ul style="list-style-type: none"> ● Disconnect RH front sensor plug. ● Measure resistance of sensor at sensor plug. ● Is resistance between 800 and 1400 ohms?  <p>RH FRONT SENSOR</p> <p>H7774-A</p>	<p>Yes</p> <p>No</p>	<p>▶ SERVICE or REPLACE cable harness Circuit 514 or 516.</p> <p>▶ REPLACE RH front sensor.</p>

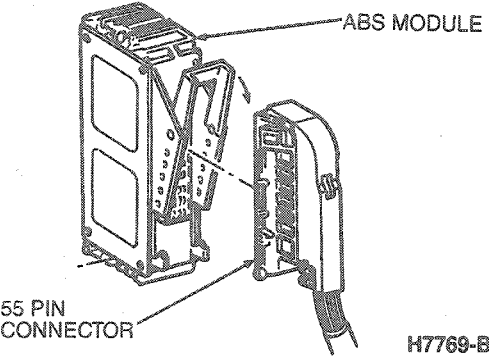
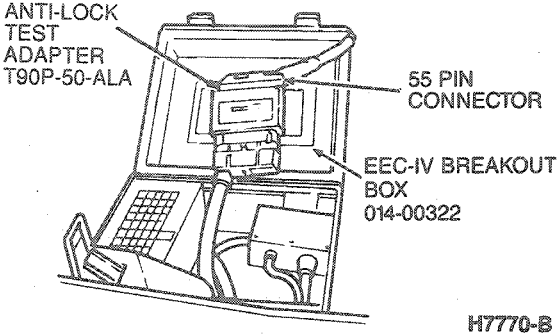
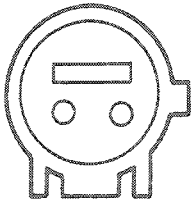
DIAGNOSIS AND TESTING (Continued)

**PINPOINT TEST CC:
WHEEL SENSOR DIAGNOSIS (Continued)**

TEST STEP		RESULT	ACTION TO TAKE
CC10	CHECK RH FRONT SENSOR VOLTAGE		
	<ul style="list-style-type: none"> ● Turn ignition switch OFF. ● Place vehicle on hoist and raise wheels clear of ground. Refer to Section 00-02. ● Set multi-meter to voltage range (2 volts AC) ● Measure voltage between Pins 29 and 47 at breakout box while spinning RH front wheel at approximately 1 revolution per second. 	Between 0.10 and 1.40 volts AC Less than 0.10 or more than 1.40 volts AC	GO to CC11 . CHECK sensor mounting, air gap or toothed wheel mounting. CORRECT as required.
CC11	CHECK RH FRONT SENSOR CIRCUIT CONTINUITY TO GROUND		
	<ul style="list-style-type: none"> ● Check continuity between breakout box Pins 29 and 60. ● Is continuity present? 	No Yes	GO to CC13 . GO to CC12 .
CC12	CHECK RH FRONT SENSOR TO GROUND		
	<ul style="list-style-type: none"> ● Disconnect RH front wheel sensor plug. ● Check for continuity between each sensor plug pin (sensor side) and vehicle ground. ● Is continuity present? 	Yes No	REPLACE RH front sensor. SERVICE or REPLACE cable harness Circuit 514 or 516. RECONNECT sensor plug.
 <p>RH FRONT SENSOR H7774-A</p>			
CC13	CHECK ABS MODULE TO GROUND WIRE		
	<ul style="list-style-type: none"> ● Check continuity between breakout box Pin 60 and body ground. ● Is continuity present? 	Yes No	GO to CC14 . SERVICE or REPLACE cable harness Circuit 530 (Taurus/Sable). Circuit 57 or 530 (Taurus SHO).
CC14	CHECK RH FRONT WHEEL BEARING		
	<ul style="list-style-type: none"> ● Check front wheel bearing end play. ● Inspect toothed sensor ring visually for damaged teeth. ● Were any parts loose or damaged? 	Yes No	REPLACE damaged parts. REVERIFY symptom.

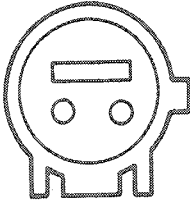
DIAGNOSIS AND TESTING (Continued)

**PINPOINT TEST CC:
WHEEL SENSOR DIAGNOSIS (Continued)**

TEST STEP	RESULT	ACTION TO TAKE
<p>CC15 DTC'S 33, 37, 43, 57, 73 OR 77: CHECK RH REAR SENSOR</p> <ul style="list-style-type: none"> ● Turn ignition switch OFF. ● Disconnect 55-pin connector from ABS module.  <ul style="list-style-type: none"> ● Connect EEC-IV breakout box 014-00322 with Anti-Lock Test Adapter T90P-50-ALA or equivalent to the 55-pin connector on wiring harness.  <ul style="list-style-type: none"> ● Measure resistance between Pins 27 and 45. ● Is resistance between 800 and 1400 ohms? 	<p>Yes</p> <p>No</p>	<p>▶ GO to CC17.</p> <p>▶ GO to CC16.</p>
<p>CC16 CHECK RH REAR SENSOR RESISTANCE</p> <ul style="list-style-type: none"> ● Disconnect RH rear sensor plug. ● Measure resistance of sensor at sensor plug. ● Is resistance between 800 and 1400 ohms? 	<p>Yes</p> <p>No</p>	<p>▶ SERVICE or REPLACE cable harness Circuit 523 or 524.</p> <p>▶ REPLACE RH rear sensor.</p>

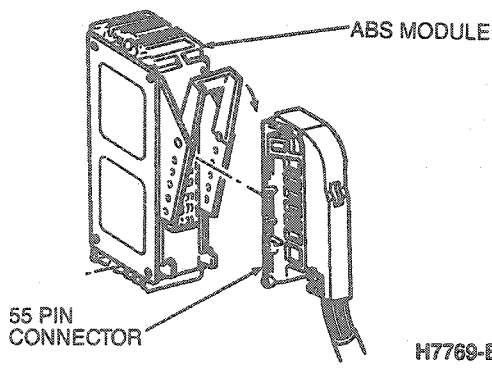
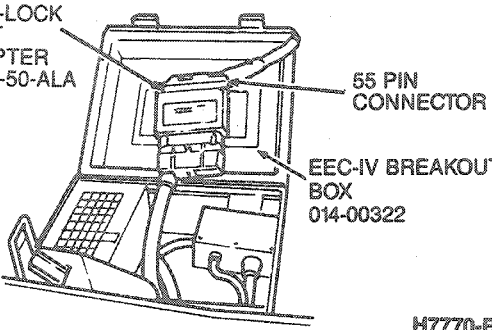
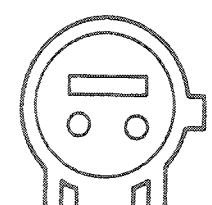
DIAGNOSIS AND TESTING (Continued)

**PINPOINT TEST CC:
WHEEL SENSOR DIAGNOSIS (Continued)**

TEST STEP		RESULT	ACTION TO TAKE
CC17	CHECK RH REAR SENSOR VOLTAGE		
	<ul style="list-style-type: none"> ● Turn ignition switch OFF. ● Place vehicle on hoist and raise wheels clear of ground. Refer to Section 00-02. ● Set multi-meter to voltage range (2 volts AC). ● Measure voltage between Pins 27 and 45 at breakout box while spinning RH rear wheel at approximately 1 revolution per second. 	Between 0.10 and 1.40 volts AC Less than 0.10 or more than 1.40 volts AC	GO to CC18. CHECK sensor mounting, air gap or toothed wheel mounting. CORRECT as required.
CC18	CHECK RH REAR SENSOR CIRCUIT CONTINUITY TO GROUND		
	<ul style="list-style-type: none"> ● Check continuity between breakout box Pins 27 and 60. ● Is continuity present? 	No Yes	GO to CC20. GO to CC19.
CC19	CHECK RH REAR SENSOR TO GROUND		
	<ul style="list-style-type: none"> ● Disconnect RH rear wheel sensor plug. ● Check for continuity between each sensor plug pin (sensor side) and vehicle ground. ● Is continuity present? 	Yes No	REPLACE RH rear sensor. SERVICE or REPLACE cable harness Circuit 523 or 524. RECONNECT sensor plug.
 <p style="text-align: center;">RH REAR SENSOR H7775-A</p>			
CC20	CHECK ABS MODULE TO GROUND WIRE		
	<ul style="list-style-type: none"> ● Check continuity between breakout box Pin 60 and body ground. ● Is continuity present? 	Yes No	GO to CC21. SERVICE or REPLACE cable harness Circuit 530 (Taurus/Sable). Circuit 57 or 530 (Taurus SHO).
CC21	CHECK FOR EXCESSIVE AXLE VIBRATION		
	<ul style="list-style-type: none"> ● Check differential housing for excessive play. ● Check rear axle bearings for excessive play. ● Inspect toothed sensor ring for damaged teeth. ● Were any parts loose or damaged? 	Yes No	SERVICE or REPLACE damaged parts. REVERIFY symptom.

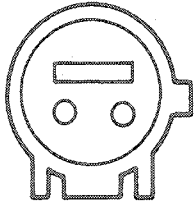
DIAGNOSIS AND TESTING (Continued)

**PINPOINT TEST CC:
WHEEL SENSOR DIAGNOSIS (Continued)**

TEST STEP	RESULT	ACTION TO TAKE
<p>CC22 DTC'S 34, 38, 44, 58, 74 OR 78: CHECK LH REAR SENSOR</p> <ul style="list-style-type: none"> ● Turn ignition switch OFF. ● Disconnect 55-pin connector from ABS module. ● Measure resistance between Pins 28 and 46. ● Is resistance between 800 and 1400 ohms?  <ul style="list-style-type: none"> ● Connect EEC-IV breakout box 014-00322 with Anti-Lock Test Adapter T90P-50-ALA or equivalent to the 55-pin connector on wiring harness. 	<p>Yes</p> <p>No</p>	<p>▶ GO to CC24.</p> <p>▶ GO to CC23.</p>
<p>CC23 CHECK LH REAR SENSOR RESISTANCE</p> <ul style="list-style-type: none"> ● Disconnect LH rear sensor plug. ● Measure resistance of sensor at sensor plug. ● Is resistance between 800 and 1400 ohms? 	<p>Yes</p> <p>No</p>	<p>▶ SERVICE or REPLACE cable harness Circuit 518 or 519.</p> <p>▶ REPLACE LH rear sensor.</p>

DIAGNOSIS AND TESTING (Continued)

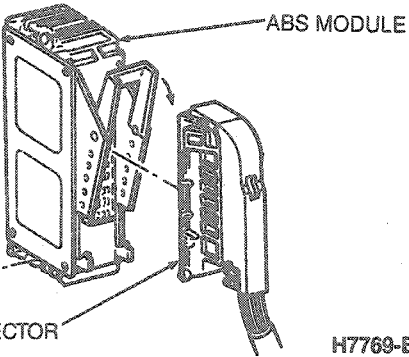
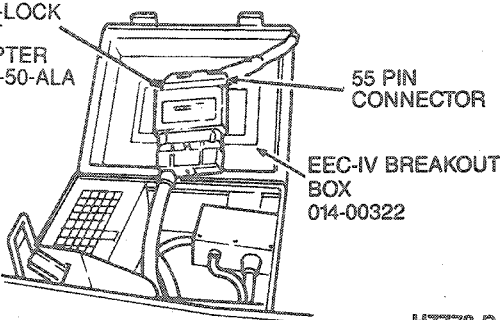
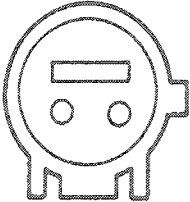
PINPOINT TEST CC:
WHEEL SENSOR DIAGNOSIS (Continued)

TEST STEP		RESULT	ACTION TO TAKE
CC24	CHECK LH REAR SENSOR VOLTAGE <ul style="list-style-type: none"> ● Turn ignition switch OFF. ● Place vehicle on hoist and raise wheels clear of ground. Refer to Section 00-02. ● Set multi-meter to voltage range (2 volts AC) ● Measure voltage between Pins 28 and 46 at breakout box while spinning LH rear wheel at approximately 1 revolution per second. 	Between 0.10 and 1.40 volts AC Less than 0.10 or more than 1.40 volts AC	▶ GO to CC25. ▶ CHECK sensor mounting, air gap or toothed wheel mounting. CORRECT as required.
CC25	CHECK LH REAR SENSOR CIRCUIT CONTINUITY TO GROUND <ul style="list-style-type: none"> ● Check continuity between breakout box Pins 28 and 60. ● Is continuity present? 	No Yes	▶ GO to CC27. ▶ GO to CC26.
CC26	CHECK LH REAR SENSOR TO GROUND <ul style="list-style-type: none"> ● Disconnect LH rear wheel sensor plug. ● Check for continuity between each sensor plug pin (sensor side) and vehicle ground. <div style="text-align: center;">  LH REAR SENSOR H7776-A </div>	Yes No	▶ REPLACE LH rear sensor. ▶ SERVICE or REPLACE cable harness Circuit 518 or 519. RECONNECT sensor plug.
CC27	CHECK ABS MODULE TO GROUND WIRE <ul style="list-style-type: none"> ● Check continuity between breakout box Pin 60 and body ground. ● Is continuity present? 	Yes No	▶ GO to CC28. ▶ SERVICE or REPLACE cable harness Circuit 530 (Taurus/Sable). Circuit 57 or 530 (Taurus SHO).
CC28	CHECK FOR EXCESSIVE AXLE VIBRATION <ul style="list-style-type: none"> ● Check differential housing for excessive play. ● Check rear axle bearings for excessive play. ● Inspect toothed sensor ring for damaged teeth. ● Were any parts loose or damaged? 	Yes No	▶ SERVICE or REPLACE damaged parts. ▶ REVERIFY symptom.

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DIAGNOSIS AND TESTING (Continued)

**PINPOINT TEST DD:
WHEEL SENSOR DIAGNOSIS**

TEST STEP	RESULT	ACTION TO TAKE
<p>DD1 DTC 51 AND/OR 71: CHECK LH FRONT SENSOR CIRCUIT CONTINUITY</p> <ul style="list-style-type: none"> ● Turn ignition switch OFF. ● Disconnect 55-pin plug from ABS Module. ● Check for continuity between breakout box Pins 60 and 30. ● Is continuity present?  <p>● Connect EEC-IV breakout box, 014-00322 with Anti-Lock Test Adapter, T90P-50-ALA or equivalent to the anti-lock 55-pin plug harness.</p> 	<p>Yes</p> <p>No</p>	<p>▶ GO to DD2.</p> <p>▶ GO to DD3.</p>
<p>DD2 CHECK LH FRONT SENSOR CONTINUITY</p> <ul style="list-style-type: none"> ● Disconnect LH front wheel sensor plug. ● Check for continuity between each sensor plug pin (sensor side) and vehicle ground. ● Is continuity present? 	<p>Yes</p> <p>No</p>	<p>▶ REPLACE LH front sensor.</p> <p>▶ SERVICE or REPLACE cable harness Circuit 521 or 522. RECONNECT sensor plug.</p>

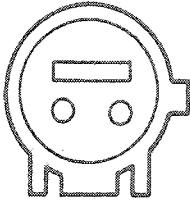
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST DD:
WHEEL SENSOR DIAGNOSIS (Continued)

TEST STEP	RESULT	ACTION TO TAKE
<p>DD3 CHECK ABS MODULE TO GROUND WIRE</p> <ul style="list-style-type: none"> ● Check continuity between breakout box Pin 60 and body ground. ● Is continuity present? 	<p>Yes No</p>	<p>▶ GO to DD4. ▶ SERVICE or REPLACE cable harness Circuit 530 (Taurus/Sable). Circuit 57 or 530 (Taurus SHO).</p>
<p>DD4 CHECK ANTI-LOCK OPERATION LH FRONT WHEEL</p> <ul style="list-style-type: none"> ● Lift vehicle and rotate wheels to ensure they turn freely. ● Apply moderate brake pedal effort and check that LH front wheel will not turn. ● Jump Pins 34 and 19. ● Short Pins 2, 20 and 60 to each other at breakout box. ● Check that LH front wheel turns freely with ignition switch ON. <p>CAUTION: Do not leave ignition on for more than 1 minute, or valve damage may result.</p>	<p>Wheel turns freely Wheel does not turn freely or pedal drops</p>	<p>▶ REVERIFY symptom. ▶ REPLACE solenoid valve body.</p>
<p>DD5 DTC 52 AND/ OR 72: CHECK RH FRONT SENSOR CIRCUIT CONTINUITY</p> <ul style="list-style-type: none"> ● Turn ignition switch OFF. ● Disconnect 55-pin plug from ABS Module. ● Check for continuity between breakout box Pins 60 and 29. ● Is continuity present? <div data-bbox="257 1052 756 1410"> <p>H7769-B</p> </div> <ul style="list-style-type: none"> ● Connect EEC-IV breakout box 014-00322 with Anti-Lock Test Adapter T90P-50-ALA or equivalent to the anti-lock 55-pin plug wiring harness. <div data-bbox="196 1563 756 1890"> <p>H7770-B</p> </div>	<p>Yes No</p>	<p>▶ GO to DD6. ▶ GO to DD7.</p>

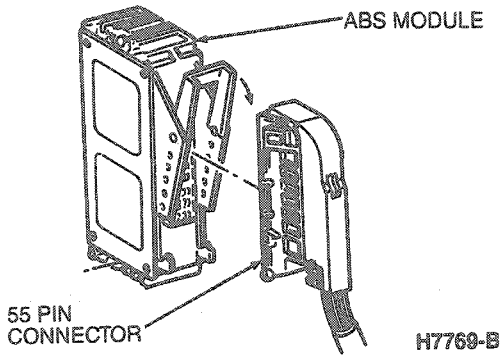
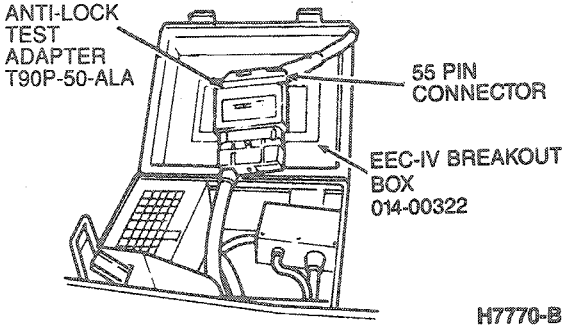
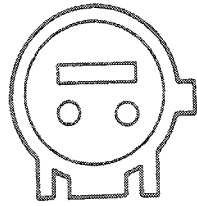
DIAGNOSIS AND TESTING (Continued)

**PINPOINT TEST DD:
WHEEL SENSOR DIAGNOSIS (Continued)**

TEST STEP		RESULT	ACTION TO TAKE
DD6	CHECK RH FRONT SENSOR CONTINUITY		
	<ul style="list-style-type: none"> ● Disconnect RH front wheel sensor. ● Check for continuity between each sensor plug pin (sensor side) and vehicle ground. ● Is continuity present? <div style="text-align: center;">  <p>RH FRONT SENSOR H7774-A</p> </div>	<p>Yes</p> <p>No</p>	<p>▶ REPLACE RH front sensor.</p> <p>▶ SERVICE or REPLACE cable harness Circuit 514 or 516. RECONNECT sensor plug.</p>
DD7	CHECK ABS MODULE TO GROUND WIRE		
	<ul style="list-style-type: none"> ● Check continuity between breakout box Pin 60 and body ground. ● Is continuity present? 	<p>Yes</p> <p>No</p>	<p>▶ GO to DD8.</p> <p>▶ SERVICE or REPLACE cable harness Circuit 530 (Taurus/Sable). Circuit 57 or 530 (Taurus SHO).</p>
DD8	CHECK ANTI-LOCK OPERATION RH FRONT WHEEL		
	<ul style="list-style-type: none"> ● Lift vehicle and rotate wheels to ensure they turn freely. ● Apply moderate brake pedal effort and check that RH front wheel will not turn. ● Jump Pins 34 and 19. ● Short Pins 21, 38 and 60 to each other at breakout box. ● Check that RH front wheel turns freely with ignition switch ON. 	<p>Wheel turns freely</p> <p>Wheel does not turn freely or pedal drops</p>	<p>▶ REVERIFY symptom.</p> <p>▶ REPLACE solenoid valve body.</p>

DIAGNOSIS AND TESTING (Continued)

**PINPOINT TEST DD:
WHEEL SENSOR DIAGNOSIS (Continued)**

TEST STEP	RESULT	ACTION TO TAKE
<p>DD9 DTC 53 AND/OR 73: CHECK RH REAR SENSOR CIRCUIT CONTINUITY</p> <ul style="list-style-type: none"> ● Turn ignition switch OFF. ● Disconnect 55-pin plug from ABS Module. ● Check for continuity between breakout box Pins 60 and 27. ● Is continuity present?  <p>● Connect EEC-IV breakout box 014-00322 with Anti-Lock Test Adapter T90P-50-ALA or equivalent to the anti-lock 55-pin plug wiring harness.</p> 	<p>Yes</p> <p>No</p>	<p>▶ GO to DD 10.</p> <p>▶ GO to DD 11.</p>
<p>DD 10 CHECK RH REAR SENSOR CONTINUITY</p> <ul style="list-style-type: none"> ● Disconnect RH rear wheel sensor plug. ● Check for continuity between each sensor plug pin (sensor side) and vehicle ground. ● Is continuity present? 	<p>Yes</p> <p>No</p>	<p>▶ REPLACE RH rear sensor.</p> <p>▶ SERVICE or REPLACE cable harness Circuit 523 or 524. RECONNECT sensor plug.</p>

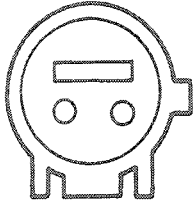
DIAGNOSIS AND TESTING (Continued)

**PINPOINT TEST DD:
WHEEL SENSOR DIAGNOSIS (Continued)**

TEST STEP	RESULT	ACTION TO TAKE
<p>DD11 CHECK ABS MODULE TO GROUND WIRE</p> <ul style="list-style-type: none"> ● Check continuity between breakout box Pin 60 and body ground. ● Is continuity present? 	<p>Yes No</p>	<p>▶ GO to DD12. ▶ SERVICE or REPLACE cable harness Circuit 530 (Taurus / Sable). Circuit 57 or 530 (Taurus SHO).</p>
<p>DD12 CHECK ANTI-LOCK OPERATION RH REAR WHEEL</p> <ul style="list-style-type: none"> ● Lift vehicle and rotate wheels to ensure they turn freely. ● Apply moderate brake pedal effort and check that RH rear wheel will not turn. ● Jump Pins 34 and 19. ● Short Pins 18, 55 and 60 to each other at breakout box. ● Check that RH rear wheel turns freely with ignition switch ON. 	<p>Wheel turns freely Wheel does not turn freely or pedal drops</p>	<p>▶ REVERIFY symptom. ▶ REPLACE solenoid valve body.</p>
<p>DD13 DTC 54 AND/OR 74: CHECK LH REAR SENSOR CIRCUIT CONTINUITY</p> <ul style="list-style-type: none"> ● Turn ignition switch OFF. ● Disconnect 55-pin plug from ABS Module. ● Check for continuity between breakout box Pins 60 and 28. ● Is continuity present? <div data-bbox="173 977 672 1328"> <p>ABS MODULE</p> <p>55 PIN CONNECTOR</p> <p>H7769-B</p> </div> <ul style="list-style-type: none"> ● Connect EEC-IV breakout box 014-00322 with Anti-Lock Test Adapter T90P-50-ALA or equivalent to the anti-lock 55-pin plug wiring harness. <div data-bbox="173 1481 672 1808"> <p>ANTI-LOCK TEST ADAPTER T90P-50-ALA</p> <p>55 PIN CONNECTOR</p> <p>EEC-IV BREAKOUT BOX 014-00322</p> <p>H7770-B</p> </div>	<p>Yes No</p>	<p>▶ GO to DD14. ▶ GO to DD15.</p>

DIAGNOSIS AND TESTING (Continued)

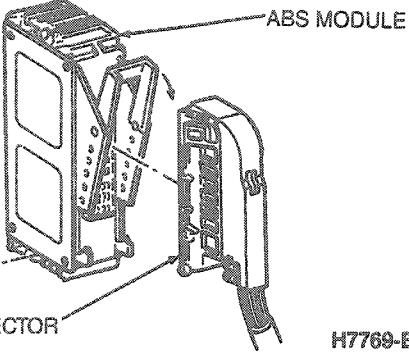
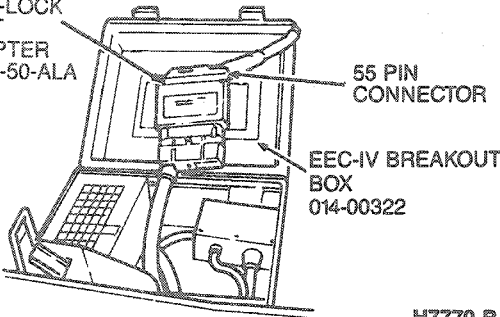
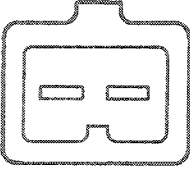
PINPOINT TEST DD:
WHEEL SENSOR DIAGNOSIS (Continued)

TEST STEP		RESULT	ACTION TO TAKE
DD14	CHECK LH REAR SENSOR CONTINUITY		
	<ul style="list-style-type: none"> ● Disconnect LH rear wheel sensor plug. ● Check for continuity between each sensor plug pin (sensor side) and vehicle ground. ● Is continuity present? <div style="text-align: center;">  <p>LH REAR SENSOR H7776-A</p> </div>	Yes No	REPLACE LH rear sensor. SERVICE or REPLACE cable harness Circuit 518 or 519. RECONNECT sensor plug.
DD15	CHECK ABS MODULE TO GROUND WIRE		
	<ul style="list-style-type: none"> ● Check continuity between breakout box Pin 60 and body ground. ● Is continuity present? 	Yes No	GO to DD 16. SERVICE or REPLACE cable harness Circuit 530 (Taurus/Sable). Circuit 57 or 530 (Taurus SHO).
DD16	CHECK ANTI-LOCK OPERATION LH REAR WHEEL		
	<ul style="list-style-type: none"> ● Lift vehicle and rotate wheels to ensure they turn freely. ● Apply moderate brake pedal effort and check that LH rear wheel will not turn. ● Jump Pins 34 and 19. ● Short Pins 36, 54 and 60 to each other at breakout box. ● Check that LH rear wheel turns freely with ignition switch ON. <p>CAUTION: Do not leave ignition on for more than 1 minute, or valve damage may result.</p>	Wheel turns freely Wheel does not turn freely or pedal drops	REVERIFY symptom. REPLACE solenoid valve body.

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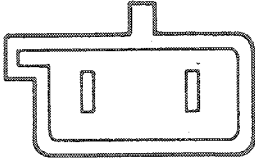
DIAGNOSIS AND TESTING (Continued)

**PINPOINT TEST EE:
FLUID LEVEL INDICATOR/PEDAL TRAVEL SWITCH/PRESSURE SWITCH DIAGNOSIS**

TEST STEP	RESULT	ACTION TO TAKE
<p>EE1 DTC 61, AND/OR 62: CHECK FLS NO. 2, PEDAL TRAVEL SWITCH AND PRESSURE SWITCH</p> <ul style="list-style-type: none"> ● Turn ignition switch OFF. ● Disconnect 55-pin plug from ABS module.  <p>ABS MODULE 55 PIN CONNECTOR H7769-B</p> <ul style="list-style-type: none"> ● Connect EEC-IV Breakout Box 014-00322 with Anti-Lock Test Adapter T90P-50-ALA or equivalent to the anti-lock 55-pin plug harness.  <p>ANTI-LOCK TEST ADAPTER T90P-50-ALA 55 PIN CONNECTOR EEC-IV BREAKOUT BOX 014-00322 H7770-B</p> <ul style="list-style-type: none"> ● Check for continuity between breakout box Pins 8 and 60. ● Is continuity present? 	<p>No Yes</p>	<p>▶ GO to EE3. ▶ GO to EE2.</p>
<p>EE2 CHECK FLS NO. 2 SWITCH</p> <ul style="list-style-type: none"> ● Disconnect 2-pin plug on FLS located on small reservoir on hydraulic control unit.  <p>2 PIN CONNECTOR ON SMALL RESERVOIR ON HCU H7777-A</p> <ul style="list-style-type: none"> ● Check for continuity between each pin and body ground. ● Is continuity present? 	<p>Yes No</p>	<p>▶ REPLACE HCU reservoir. ▶ SERVICE or REPLACE cable harness (Circuit 542, 535, or 549 Taurus/Sable). Circuit 550, 535, or 549 (Taurus SHO).</p>

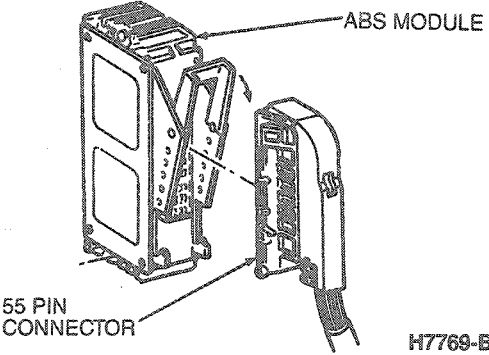
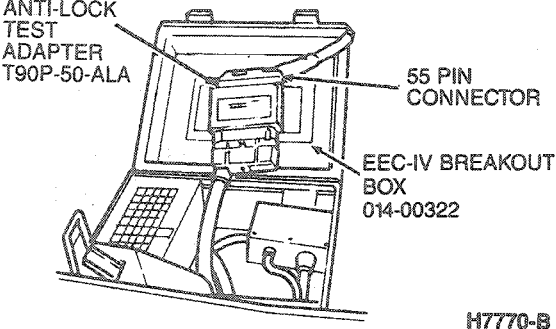
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST EE:
FLUID LEVEL INDICATOR/PEDAL TRAVEL SWITCH/PRESSURE SWITCH DIAGNOSIS (Continued)

TEST STEP		RESULT	ACTION TO TAKE
EE3	CHECK FOR VOLTAGE ON FLS NO. 2 SWITCH AND CIRCUITRY		
	<ul style="list-style-type: none"> ● Turn ignition switch to ON position. ● Measure voltage between breakout box Pins 8 and 60. 	No voltage 12 volts	<ul style="list-style-type: none"> ▶ GO to EE4. ▶ SERVICE or REPLACE cable harness circuit 542, 535, or 549 (Taurus/Sable). Circuit 550, 535, or 549 (Taurus SHO).
EE4	CHECK PEDAL TRAVEL SWITCH AND CIRCUITRY		
	<ul style="list-style-type: none"> ● Check for continuity between breakout box Pins 5 and 60. ● Is continuity present? 	No Yes	<ul style="list-style-type: none"> ▶ GO to EE6. ▶ GO to EE5.
EE5	CHECK PEDAL TRAVEL SWITCH		
	<ul style="list-style-type: none"> ● Disconnect 2-pin plug on pedal travel switch. <div style="text-align: center;">  <p>2 PIN BRAKE PEDAL POSITION SWITCH H7778-A</p> </div> <ul style="list-style-type: none"> ● Check for continuity between each pin and body ground. ● Is continuity present? 	Yes No	<ul style="list-style-type: none"> ▶ REPLACE pedal travel switch. ▶ SERVICE or REPLACE cable harness (Circuit 535 or 549).
EE6	CHECK FOR VOLTAGE ON PEDAL TRAVEL SWITCH AND CIRCUITRY		
	<ul style="list-style-type: none"> ● Turn ignition switch to ON position. ● Measure voltage between breakout box Pins 5 and 60. 	No voltage 12 volts	<ul style="list-style-type: none"> ▶ VERIFY code 61 and/or 62. ▶ SERVICE or REPLACE cable harness circuit 542, 535 or 549 (Taurus/Sable). Circuit 550, 535 or 549 (Taurus SHO).

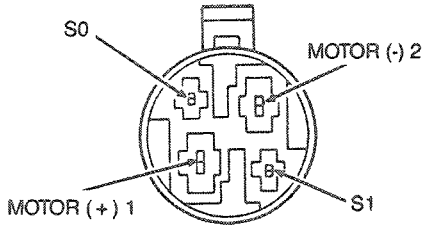
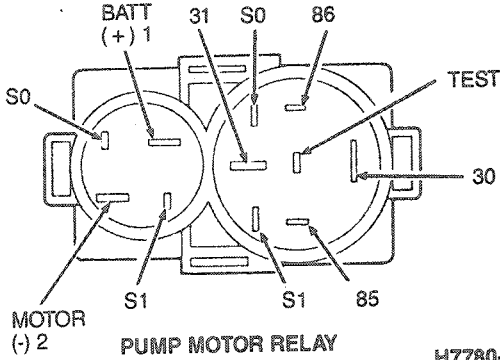
DIAGNOSIS AND TESTING (Continued)

**PINPOINT TEST EE:
FLUID LEVEL INDICATOR/PEDAL TRAVEL SWITCH/PRESSURE SWITCH DIAGNOSIS (Continued)**

TEST STEP	RESULT	ACTION TO TAKE
<p>EE7 DTC 63: CHECK PUMP MOTOR SPEED SENSOR AND CIRCUIT</p> <p>NOTE: The ABS module will check the pump speed sensor and circuitry by running the pump for about 0.5 second each time the ignition is switched on and the vehicle speed reaches 30 km/h (19 mph).</p> <ul style="list-style-type: none"> ● Turn ignition switch OFF. ● Disconnect 55-pin plug from ABS Module.  <p>H7769-B</p> <ul style="list-style-type: none"> ● Connect EEC-IV breakout box 014-00322 with Anti-Lock Test Adapter T90P-50-ALA or equivalent to the anti-lock 55-pin plug harness.  <p>H7770-B</p> <ul style="list-style-type: none"> ● Check resistance between breakout box Pins 31 and 49. ● Is resistance between 5 and 100 ohms? 	<p>Yes</p> <p>No</p>	<p>▶ GO to EE 13.</p> <p>▶ GO to EE8.</p>

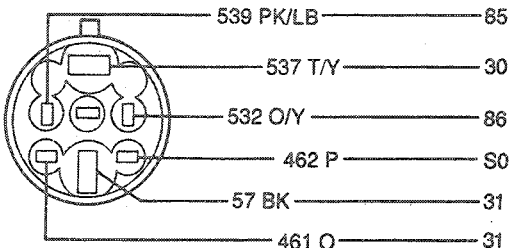
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST EE:
FLUID LEVEL INDICATOR/PEDAL TRAVEL SWITCH/PRESSURE SWITCH DIAGNOSIS (Continued)

TEST STEP		RESULT	ACTION TO TAKE
EE8	CHECK PUMP MOTOR SPEED SENSOR <ul style="list-style-type: none"> ● Disconnect 4-pin plug on pump motor. ● Measure resistance between Pins S0 and S1 on pump motor. ● Is resistance between 5 and 100 ohms?  <p>4 PIN PUMP MOTOR CONNECTOR H7784-B</p>	Yes No	GO to EE9. REPLACE pump and motor.
EE9	CHECK PUMP MOTOR RELAY <ul style="list-style-type: none"> ● Disconnect 7-pin plug on pump motor relay and remove relay. ● Check continuity from Pin S0 on 7-pin side to Pin S0 on 4-pin side of relay. ● Is continuity present?  <p>PUMP MOTOR RELAY H7780-B</p>	Yes No	GO to EE 10. REPLACE pump motor relay.
EE 10	CHECK PUMP MOTOR RELAY <ul style="list-style-type: none"> ● Check continuity from Pin S1 on 7-pin side to Pin S1 on 4-pin side of relay. ● Is continuity present? 	Yes No	GO to EE 11. REPLACE pump motor relay.

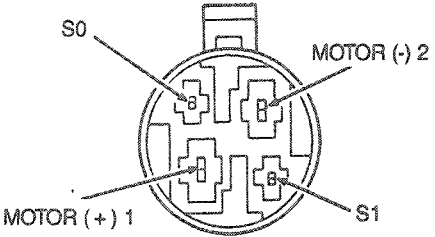
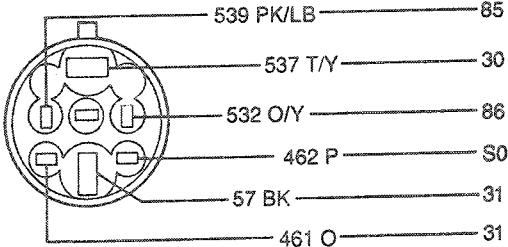
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST EE:
FLUID LEVEL INDICATOR/PEDAL TRAVEL SWITCH/PRESSURE SWITCH DIAGNOSIS (Continued)

TEST STEP	RESULT	ACTION TO TAKE
EE 11 CHECK CIRCUIT 462 <ul style="list-style-type: none"> Check continuity between breakout box Pin 31 and Pin S0 on pump motor connector 7-pin plug (harness side). Is continuity present?  <p align="center">7 PIN PUMP MOTOR RELAY CONNECTOR HARNESS SIDE H7781-B</p>	Yes No	GO to EE 12. SERVICE or REPLACE cable harness Circuit 462.
EE 12 CHECK CIRCUIT 461 <ul style="list-style-type: none"> Check continuity between breakout box Pin 49 and Pin S1 on pump motor connector 7-pin plug (harness side). Is continuity present? 	Yes No	REVERIFY reading in STEP EE7. SERVICE or REPLACE cable harness Circuit 461.
EE 13 CHECK MOTOR SPEED SENSOR SHORT TO BATTERY + <ul style="list-style-type: none"> Turn ignition switch to ON. Measure voltage between breakout box Pins 31 and 60. 	No voltage 12 volts	GO to EE20. GO to EE20.
EE 14 CHECK PUMP MOTOR <ul style="list-style-type: none"> Disconnect pump motor to relay 4-pin plug connector. Turn ignition switch to ON. Measure voltage between breakout box Pins 31 and 60. 	No voltage 12 volts	REPLACE pump and motor. GO to EE 14.
EE 15 CHECK CIRCUIT 462 <ul style="list-style-type: none"> Disconnect wire harness to relay 7-pin plug. Turn ignition switch to ON. Measure voltage between breakout box Pins 31 and 60. 	No voltage 12 volts	GO to EE 16. SERVICE or REPLACE cable harness Circuit 462.
EE 16 CHECK CIRCUIT 461 <ul style="list-style-type: none"> Turn ignition switch to ON. Measure voltage between breakout box Pins 49 and 60. 	No voltage 12 volts	REPLACE pump motor relay. SERVICE or REPLACE cable harness Circuit 461.
EE 17 CHECK MOTOR SPEED SENSOR SHORT TO GROUND <ul style="list-style-type: none"> Turn ignition switch OFF. Check for continuity between breakout box Pins 31 and 60. Is continuity present? 	No Yes	GO to EE20. GO to EE 18.
EE 18 CHECK CIRCUIT 462 <ul style="list-style-type: none"> Disconnect wire harness to relay 7-pin plug. Check for continuity between breakout box Pins 31 and 60. Is continuity present? 	Yes No	SERVICE or REPLACE cable harness Circuit 462. GO to EE 19.

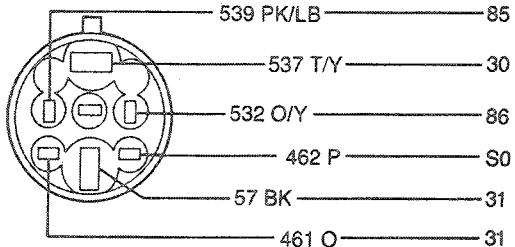
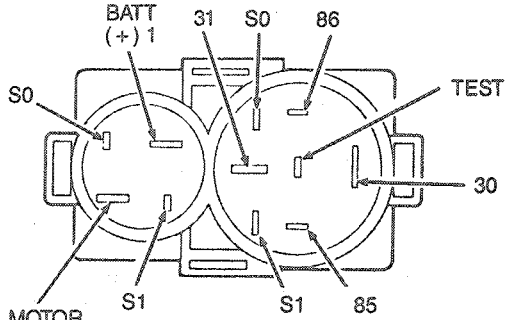
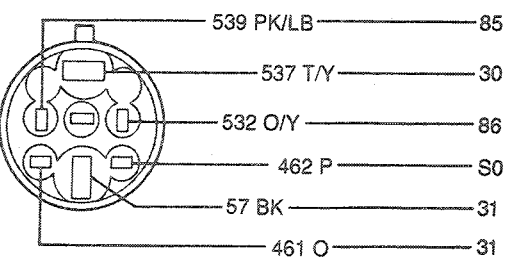
DIAGNOSIS AND TESTING (Continued)

**PINPOINT TEST EE:
FLUID LEVEL INDICATOR/PEDAL TRAVEL SWITCH/PRESSURE SWITCH DIAGNOSIS (Continued)**

TEST STEP		RESULT	ACTION TO TAKE
EE19	CHECK CIRCUIT 461 <ul style="list-style-type: none"> ● Check for continuity between breakout box Pins 49 and 60. ● Is continuity present? 	Yes No	<ul style="list-style-type: none"> ▶ SERVICE or REPLACE cable harness Circuit 461. ▶ REPLACE pump motor relay.
EE20	CHECK PUMP MOTOR OPERATION <ul style="list-style-type: none"> ● Reconnect pump motor relay to pump and wire harness. ● Jumper Pins 15, 34 and 60 at breakout box. ● Turn ignition to ON position. ● Does pump motor run? 	Yes No	<ul style="list-style-type: none"> ▶ REVERIFY code 63. ▶ GO to EE21.
EE21	CHECK PUMP MOTOR OPERATION <ul style="list-style-type: none"> ● Disconnect pump motor relay from pump motor. ● Ground Pin 2 and apply 12 volts to Pin 1 of pump motor connector. ● Does pump motor run? 	Yes No	<ul style="list-style-type: none"> ▶ GO to EE22. ▶ REPLACE pump motor.
 <p align="center">4 PIN PUMP MOTOR CONNECTOR H7784-B</p>			
EE22	CHECK POWER TO RELAY <ul style="list-style-type: none"> ● Disconnect wire harness from pump motor relay. ● Check voltage between Pin 30 on wire harness to pump motor relay connector and ground. 	Over 10 volts Less than 10 volts	<ul style="list-style-type: none"> ▶ GO to EE23. ▶ SERVICE or REPLACE battery, Circuit 537 or Anti-Lock Motor 40A fuse.
 <p align="center">7 PIN PUMP MOTOR RELAY CONNECTOR HARNESS SIDE H7781-B</p>			

DIAGNOSIS AND TESTING (Continued)

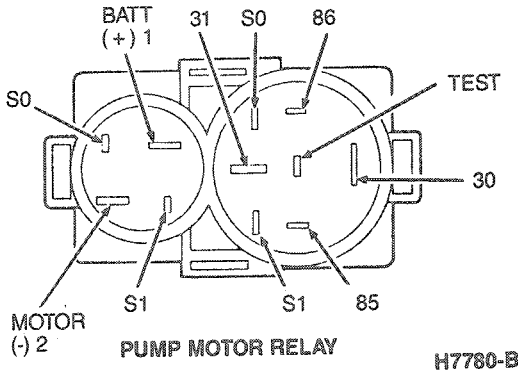
**PINPOINT TEST EE:
FLUID LEVEL INDICATOR/PEDAL TRAVEL SWITCH/PRESSURE SWITCH DIAGNOSIS (Continued)**

TEST STEP	RESULT	ACTION TO TAKE
<p>EE23 CHECK POWER TO RELAY COIL</p> <ul style="list-style-type: none"> ● Jumper Pins 34 and 60 at breakout box. ● Turn ignition to ON position. ● Measure voltage between Pin 86 and ground.  <p>7 PIN PUMP MOTOR RELAY CONNECTOR HARNESS SIDE H7781-B</p>	<p>Over 10 volts Less than 10 volts</p>	<p>▶ GO to EE24. ▶ SERVICE or REPLACE cable harness Circuit 532.</p>
<p>EE24 CHECK PUMP MOTOR RELAY COIL</p> <ul style="list-style-type: none"> ● Measure resistance between Pins 85 and 86 on pump motor relay. ● Is resistance between 45 and 105 ohms?  <p>PUMP MOTOR RELAY H7780-B</p>	<p>Yes No</p>	<p>▶ GO to EE25. ▶ REPLACE pump motor relay.</p>
<p>EE25 CHECK CIRCUIT 539</p> <ul style="list-style-type: none"> ● Check for continuity between breakout box Pin 15 and Pin 85 on wire harness to pump motor relay connector. ● Is continuity present?  <p>7 PIN PUMP MOTOR RELAY CONNECTOR HARNESS SIDE H7781-B</p>	<p>Yes No</p>	<p>▶ GO to EE26. ▶ SERVICE or REPLACE cable harness Circuit 539.</p>

DIAGNOSIS AND TESTING (Continued)

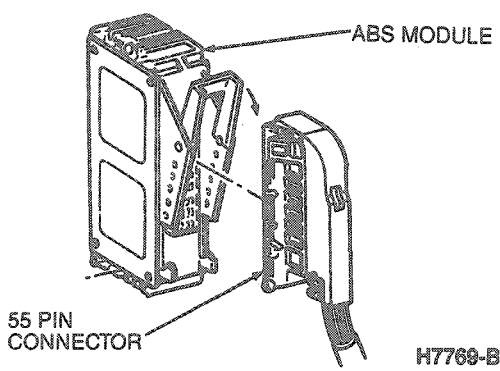
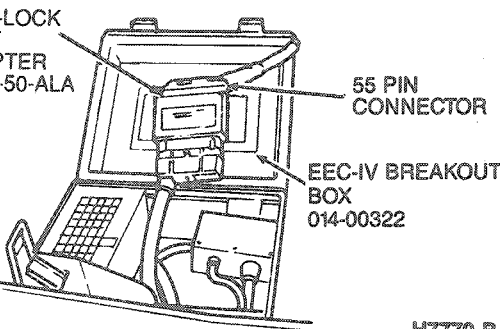
**PINPOINT TEST EE:
FLUID LEVEL INDICATOR/PEDAL TRAVEL SWITCH/PRESSURE SWITCH DIAGNOSIS (Continued)**

TEST STEP		RESULT	ACTION TO TAKE
EE26	CHECK CIRCUIT 57		
	<ul style="list-style-type: none"> ● Check for continuity between wire harness to pump motor relay connector Pin 31 and ground. ● Is continuity present? 	Yes No	GO to EE27. SERVICE or REPLACE cable harness Circuit 57.
EE27	CHECK PUMP MOTOR RELAY		
	<ul style="list-style-type: none"> ● Connect battery + to Pin 86 and battery - to Pin 85 of pump motor relay. ● Check for continuity between Pin 30 and Pin 1 on relay. ● Is continuity present? 	Yes No	GO to EE28. REPLACE pump motor relay.
EE28	CHECK PUMP MOTOR RELAY		
	<ul style="list-style-type: none"> ● Check continuity between Pins 2 and 31 on pump motor relay. ● Is continuity present? 	Yes No	REPLACE ABS module. REPLACE pump motor relay.



DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST EE:
FLUID LEVEL INDICATOR / PEDAL TRAVEL SWITCH / PRESSURE SWITCH DIAGNOSIS (Continued)

	TEST STEP	RESULT	ACTION TO TAKE
EE29	DTC 64: CHECK PUMP MOTOR PRESSURE CAPABILITY		
	<ul style="list-style-type: none"> ● Turn ignition switch OFF. ● Disconnect 55-pin plug from ABS module.  <ul style="list-style-type: none"> ● Connect EEC-IV breakout box 014-00322 with Anti-Lock Test Adapter T90P-50-ALA or equivalent to the anti-lock 55-pin plug harness.  <ul style="list-style-type: none"> ● Jumper Pins 15, 34 and 60. ● Apply and hold brake pedal. ● Turn ignition switch to ON. ● Does brake pedal rise? 	<p>Yes</p> <p>No</p>	<ul style="list-style-type: none"> ▶ REVERIFY code 64. ▶ REPLACE pump and motor.

TH7929B

DIAGNOSIS AND TESTING (Continued)

ANTI-LOCK QUICK CHECK SHEET USING 60-PIN
EEC-IV BREAKOUT BOX, TOOL T83L-50-EEC-IV^①

NOTE: Before performing tests below, the Pre-Test Checks must be performed as outlined.

NOTE: If fault is intermittent the tests listed below will NOT find the fault. Use controller service code or call Hot-Line if this situation occurs.

Item to be Tested	Ignition Mode	Measure Between Pin Numbers	Tester Scale/Range	Specification	Test Step
Battery Check	ON	60 + 53	VOLTS	10 Minimum	A1
Main Relay Coil	OFF	53 + 34	OHMS	45 to 90 ohms	A6
Jumper pins 60 and 34					
Power from Main Relay	ON	19 + 33	VOLTS	10 minimum	A5
Remove jumper from pins 60 and 34					
Main Relay Circuit	OFF	60 + 33	CONTINUITY	continuity	A9
Sensor Resistance (RR)	OFF	27 + 45	K OHMS	0.8-1.4K ohms	C5
Sensor Resistance (LF)	OFF	30 + 48	K OHMS	0.8-1.4K ohms	C1
Sensor Resistance (LR)	OFF	28 + 46	K OHMS	0.8-1.4K ohms	C7
Sensor Resistance (RF)	OFF	29 + 47	K OHMS	0.8-1.4K ohms	C3
Valve Resistance (IFL)	OFF	3 + 20	OHMS	5-8 ohms	BB2
Valve Resistance (IFR)	OFF	3 + 38	OHMS	5-8 ohms	BB6
Valve Resistance (IRL)	OFF	3 + 54	OHMS	5-8 ohms	BB14
Valve Resistance (IRR)	OFF	3 + 55	OHMS	5-8 ohms	BB10
Valve Resistance (OFL)	OFF	3 + 2	OHMS	3-6 ohms	BB4
Valve Resistance (OFFR)	OFF	3 + 21	OHMS	3-6 ohms	BB8
Valve Resistance (ORR)	OFF	3 + 18	OHMS	3-6 ohms	BB12
Valve Resistance (ORL)	OFF	3 + 36	OHMS	3-6 ohms	BB16
Pump Motor Speed Sensor Resistance	OFF	31 + 49	OHMS	5-100 ohms	EE8
Reservoir Warning (FLS #2)	OFF	8 + 26	OHMS	LESS THAN 5 OHMS	A14
Pedal Travel Switch: Pedal NOT Applied	OFF	5 + 26	CONTINUITY	continuity	D2
With Minimum 3 Inch Apply	OFF	5 + 26	CONTINUITY	no continuity	D4
Sensor Cable Continuity Wiring to Ground					
(RR)	OFF	27 + 60	CONTINUITY	no continuity	B3
(LF)	OFF	30 + 60	CONTINUITY	no continuity	B7
(LR)	OFF	28 + 60	CONTINUITY	no continuity	B1
(RF)	OFF	29 + 60	CONTINUITY	no continuity	B5
Sensor Voltage: Rotate wheels @ 1 revolution per second.					
(RR)	OFF	27 + 45	AC MVOLTS	100-1400 mvolts	C19
(LF)	OFF	30 + 48	AC MVOLTS	100-1400 mvolts	C17
(LR)	OFF	28 + 46	AC MVOLTS	100-1400 mvolts	C20
(RF)	OFF	29 + 47	AC MVOLTS	100-1400 mvolts	C18

① If Quick Test does not isolate symptom, refer to Diagnostic Indicator Symptom Chart.

CH7908-B

DIAGNOSIS AND TESTING (Continued)

Symptom (With Parking Brake Released)	Warning Lamp Sequence										Diagnostic Test To Be Performed	
	Warning Lamps	Ignition On	Cranking Engine	Engine Running	Vehicle Moving	Braking without Anti-Lock	Vehicle Stopped	Engine Idle	Ignition Off			
Normal Light Sequence												
Normal Warning Lamps Sequences. (System OK)	Check Anti-lock (Amber) Brake (Red)	4 Seconds										
Abnormal Warning Lamps Sequences.												
• "Check Anti-Lock Brakes" Warning Lamp On. Normal "Brake" Warning Lamp Sequence.	Check Anti-lock (Amber) Brake (Red)											A
• "Check Anti-Lock Brakes" Warning Lamp On After Starting Engine. Normal "Brake" Warning Lamp Sequence.	Check Anti-lock (Amber) Brake (Red)											B
• "Check Anti-Lock Brakes" Warning Lamp Comes On Again After Vehicle Starts Moving. Normal "Brake" Warning Lamp Sequence.	Check Anti-lock (Amber) Brake (Red)											C
• False Cycling of Anti-Lock System. Normal Warning Lamp Sequence.	Check Anti-lock (Amber) Brake (Red)											C
• Normal Warning Lamp Sequence. Brake Pedal Rises or Drops Excessively During ABS Cycling.	Check Anti-lock (Amber) Brake (Red)											D
• Normal Warning Lamp Sequence. ABS Pump Motor Runs Continuously.	Check Anti-lock (Amber) Brake (Red)											E
• Normal "Check Anti-Lock Brakes" Warning Lamp Sequence. "Brake" Warning Lamp On.	Check Anti-lock (Amber) Brake (Red)											F
• No "Check Anti-Lock Brakes" Warning Lamp During Test Cycle. Normal "Brake" Warning Lamp Sequence.	Check Anti-lock (Amber) Brake (Red)											G
• Spongy Brake Pedal. Normal Warning Lamp Sequence.	Check Anti-lock (Amber) Brake (Red)											H
• Rear Vehicle Tracking During Anti-Lock Braking. Normal Warning Lamp Sequence.	Check Anti-lock (Amber) Brake (Red)											J
• Anti-Lock Light Out for Approximately 4 Seconds Then On All The Time	Check Anti-lock (Amber) Brake (Red)											Check Diode

CH6993-A

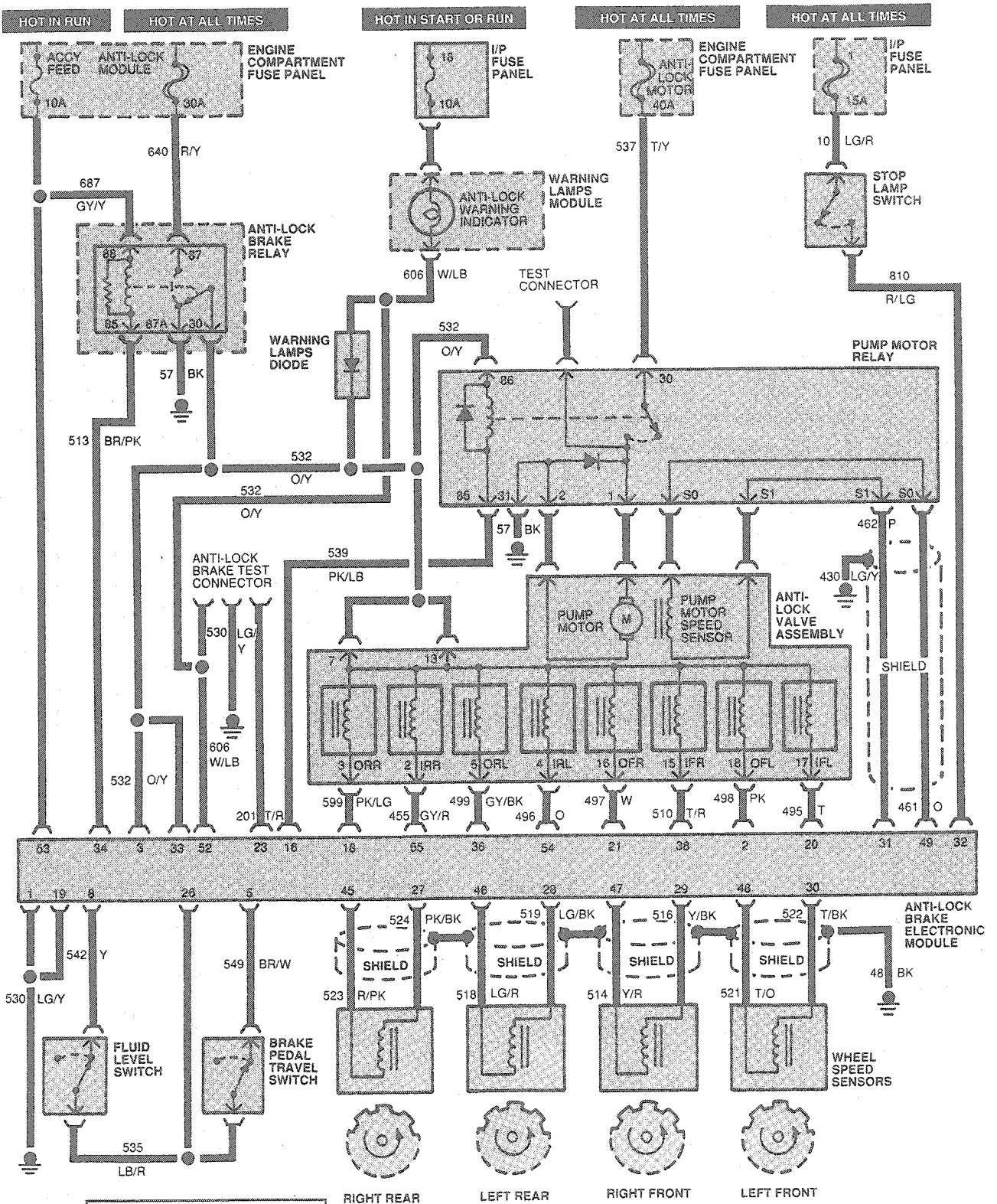
▨ "Brake" Warning Lamp On.

▨ "Check Anti-Lock Brakes" Warning Lamp On.

DIAGNOSIS AND TESTING (Continued)

System Schematic

Taurus/Sable

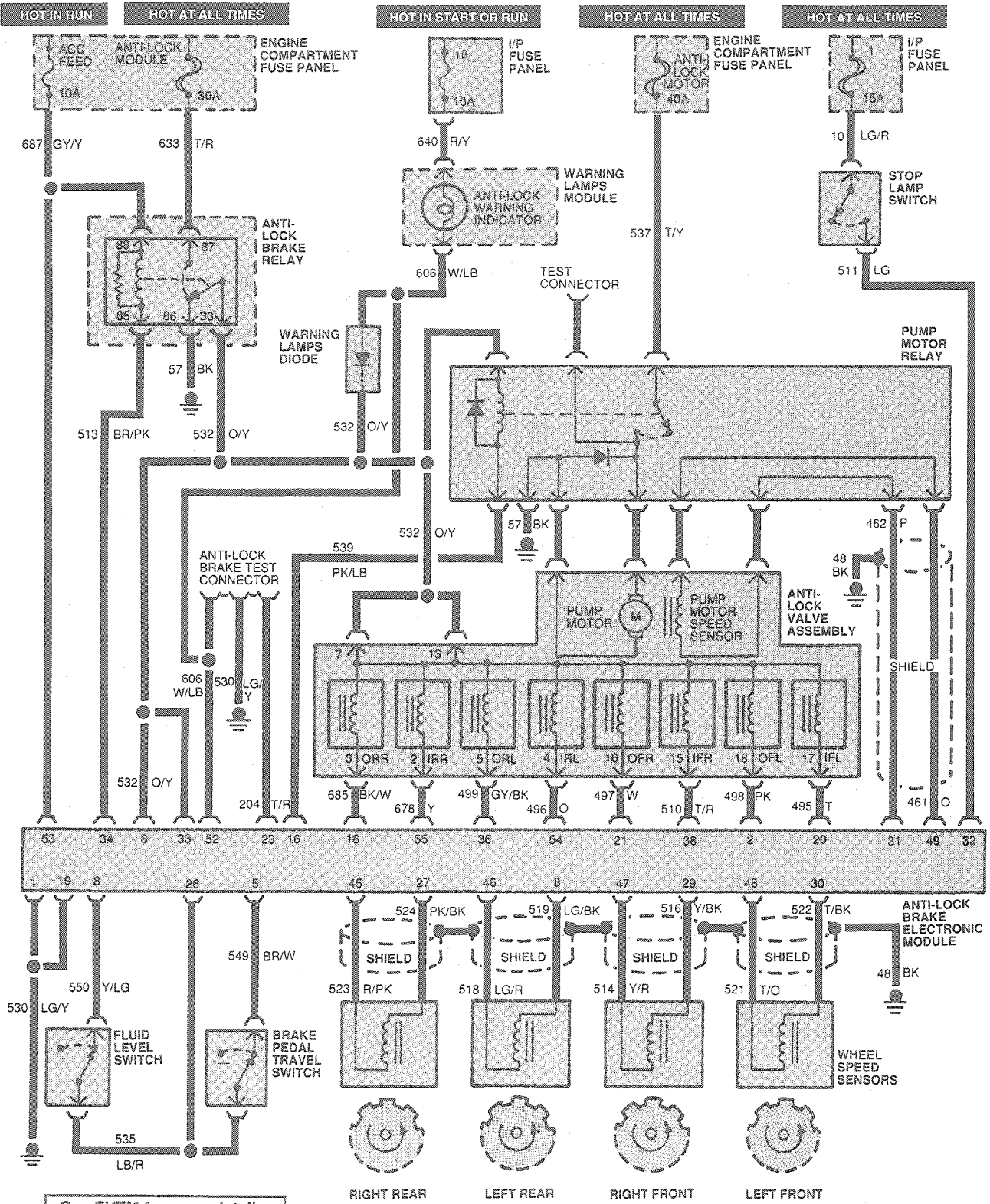


See EVTm for more details of this circuit

H8032-A

DIAGNOSIS AND TESTING (Continued)

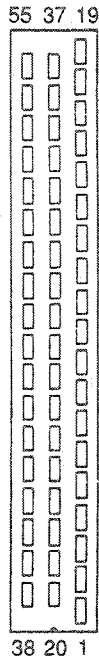
Taurus SHO



See EVTM for more details of this circuit

H8031-A

DIAGNOSIS AND TESTING (Continued)



**ANTI-LOCK BRAKE MODULE
CONNECTOR HARNESS SIDE H8091-A**

Pin Number	Circuit	Circuit Function
1	530 (LG/Y)	Ground
2	498 (PK)	ABS Valve Assembly
3	532 (O/Y)	ABS Power Relay
4	—	Not Used
5	549 (BR/W)	ABS Brake Pedal Travel Switch
6	—	Not Used
7	—	Not Used
8	542 (Y) 550 (Y/LG)	Brake Fluid Level Switch No. 2
9	—	Not Used
10	—	Not Used
11	—	Not Used
12	—	Not Used
13	—	Not Used
14	—	Not Used
15	539 (PK/LB)	Anti-Lock Motor Relay
16	—	Not Used
17	—	Not Used
18	599 (PK/LG) 685 (BK/W)	ABS Valve Assembly
19	530 (LG/Y)	Ground

(Continued)

Pin Number	Circuit	Circuit Function
20	495 (T)	ABS Valve Assembly
21	497 (W)	ABS Valve Assembly
22	—	Not Used
23	201 (T/R)	Test Connector
24	—	Not Used
25	—	Not Used
26	535 (LB/R)	ABS Switch to Level Switch No. 2
27	524 (PK/BK)	Right Rear Sensor-LO
28	519 (LG/BK)	Left Rear Sensor-LO
29	516 (Y/BK)	Right Front Sensor-LO
30	522 (T/BK)	Left Front Sensor-LO
31	462 (P)	Pump Motor Speed Sensor
32	511 (LG)	Stop Lamp Switch
33	532 (O/Y)	ABS Power Relay
34	513 (BR/PK)	ABS Power Relay
35	—	Not Used
36	499 (GY/BK)	ABS Valve Assembly
37	—	Not Used
38	510 (T/R)	ABS Valve Assembly
39	—	Not Used
40	—	Not Used
41	—	Not Used
42	—	Not Used
43	—	Not Used
44	—	Not Used
45	523 (R/PK)	Right Rear Sensor-HI
46	518 (LG/R)	Left Rear Sensor-HI
47	514 (Y/R)	Right Front Sensor-HI
48	521 (T/O)	Left Front Sensor-HI
49	461 (O)	ABS Motor Relay
50	—	Not Used
51	—	Not Used
52	606 (W/LB)	Test Connector
53	687 (GY/Y)	Hot in RUN
54	496 (O)	ABS Valve Assembly
55	455 (GY/R) 678 (Y)	ABS Valve Assembly

* SHO Only.