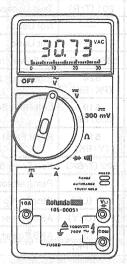
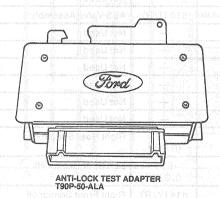
#### DIAGNOSTIC TESTS (A-J)

#### **Equipment Required**

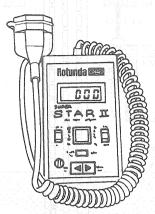
- Anti-Lock Test Adapter T90P- 50-ALA.
- EEC-IV Breakout Box T83L-50-EEC-IV, Rotunda Breakout Box 014-00322 or equivalent.



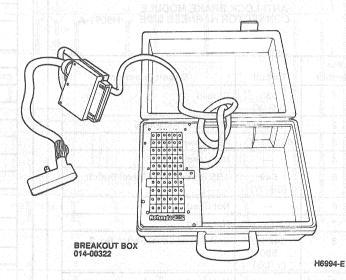
ROTUNDA DIGITAL/ANALOG VOLT-OHMMETER 105-00051



- Rotunda Digital / Analog Volt-Ohmmeter 007-00001 or equivalent.
- Rotunda SUPER STAR II Tester 007-0041B or equivalent.



ROTUNDA SUPER STAR II TESTER 007-0041B



Refer to the wiring diagram when performing the Diagnostic Tests to locate wire circuits indicated in the tests. Each test is completely independent of the other tests and within each test are sequences that can identify a concern without requiring completion of the entire test procedure.

# PINPOINT TEST A: ANTI-LOCK WARNING INDICATOR ON (WITH BRAKE WARNING INDICATOR OFF)

3.8	AT OT MOTTOR TEST STEP THUSING	RESULT SEEDING	ACTION TO TAKE
41	CHECK POWER TO ABS MODULE	MAIN RELAY COIL	TREWORKSHOLDER
<b></b> 1	<ul> <li>Disconnect 55-pin plug from ABS Module.</li> <li>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.</li> <li>Set multi-meter to read volts DC.</li> <li>Turn ignition switch ON.</li> <li>Measure voltage between breakout box Pins 53 and 60.</li> </ul>	Over 10 volts Under 10 volts	GO to A4. GO to A2.
A2	CHECK ABS MODULE TO GROUND WIRE		
	Check continuity between breakout box Pin 60 and body ground.	Continuity No continuity	2 C C C C C C C C C C C C C C C C C C C
АЗ	CHECK IGNITION TO ABS MODULE WIRE		
asar esui/	<ul> <li>Check for continuity between breakout box Pin 53 and ignition switch wire 687.</li> </ul>	Continuity  No Continuity	REVERIFY reading at Test Step A1. SERVICE or REPLACE
			cable harness Circuit 687, or fuse.
Α4	CHECK GROUND	Continuity	GO to A5.
	Check for continuity between breakout box Pins 19 and 60.	No Continuity	SERVICE or REPLACE cable harness Circuit 53
A5	CHECK MAIN RELAY OPERATION		87 and gioking.
Yes Boa	<ul> <li>Jumper Pins 34 and 60 at breakout box.</li> <li>Turn ignition to ON.</li> <li>Measure voltage between breakout box Pins 33 and 19.</li> </ul>	Over 10 volts DC Under 10 volts DC	GO to A6.
A6	CHECK MAIN RELAY COIL		
	<ul> <li>Turn ignition to OFF.</li> <li>Remove jumper from breakout box Pins 34 and 60.</li> <li>Measure resistance between breakout box Pins 53 and 34.</li> </ul>	45 to 90 ohms Any other reading	
A7	CHECK MAIN RELAY COIL (Continued)		wall of Vor
		45 to 90 ohms #44/00 YALL	SERVICE or REPLACE cable harness Circuit 5 or 687.
	87A 87	Any other reading	REPLACE main relay.
	prips r (Y mask)	RADON ratay removed from connector	
	on 85 as Set A5.  No Continuity	to Pin 86 and pettery is Pm 85 between relay Pics 80 and 81.	# App <b>iy ba</b> ttery :: relay.
	MAIN POWER RELAY	And the second s	
	<ul> <li>Measure resistance between main relay Pins 85 and 86.</li> </ul>	Section of a standard the standard to the stan	

# PINPOINT TEST A: ANTI-LOCK WARNING INDICATOR ON (WITH BRAKE WARNING INDICATOR OFF) (Continued)

Television vication of TEST STEP 11.00 arc	RESULT TO THE STATE OF THE STAT	ACTION TO TAKE
OHECK POWER TO MAIN RELAY COIL  Turn ignition ON.  87A  85  30  86	Over 10 volts DC Under 10 volts DC	GO to A9.  SERVICE cable harness Circuit 687.
MAIN POWER RELAY CONNECTOR (HARNESS SIDE) H7783-A  Measure voltage between main relay connector Pin 86 and ground.	The latest the second by the s	### ##################################
Turn ignition ON.  87A  85  30  86	Over 10 volts DC Under 10 volts DC	GO to A10.  SERVICE cable harness Circuit 533 or 30 A fuse.
MAIN POWER RELAY CONNECTOR (HARNESS SIDE)  Measure voltage between main relay connector Pin 87 and ground.  10 CHECK CIRCUIT 532		Y SEE SEMENTS AS
• Turn ignition OFF.  87A 87	Continuity No Continuity	GO to A11.  SERVICE or REPLACE cable harness Circuit 532.
85 30 86 MAIN POWER RELAY CONNECTOR (HARNESS SIDE) H7783-A	ora debekiri box Pisa 64 am 64 op beursymbroskou box Paur Littl (Contropol) er o-lsy.	TO SECUL BUSINESS SAMES
Check for continuity between main relay connector     Pin 30 and breakout box Pin 33.  11 CHECK RELAY OPERATION		
With main power relay removed from connector. Apply battery + to Pin 86 and battery - to Pin 85 on relay. Check continuity between relay Pins 30 and 87.		
86 85 MAIN POWER RELAY		

#### PINPOINT TEST A: ANTI-LOCK WARNING INDICATOR ON (WITH BRAKE WARNING INDICATOR OFF) (Continued)

(3)	ANONAONOA TEST STEP THURSE	RESULT 93787	ACTION TO TAKE
A12	CHECK CIRCUIT 57	PRESENTATE STEPHEND YOU	Ruvinnos xosto (18)
	Check for continuity between relay connector Pin 87A and ground.  87A  87A  885  886  MAIN POWER RELAY CONNECTOR (HARNESS SIDE)  H7783-A	Continuity No Continuity A more grad	
A13	CHECK CIRCUIT 606		
25.	<ul> <li>Jumper Pins 34-19.</li> <li>Turn ignition ON.</li> <li>Check voltage between breakout box Pins 52 and 60.</li> </ul>	Over 10 volts DC Under 10 volts DC	<ul> <li>GO to A14.</li> <li>SERVICE or REPLACE cable harness Circuit 606.</li> </ul>
A14	CHECK FLS NO. 2 AND CIRCUITRY	His SCEOO & COxod Beakeast	
. 23.	<ul> <li>Measure resistance between breakout box Pins 8 and 26.</li> </ul>	Less than 5 ohms Any other reading	GO to A16. GO to A15.
A15	CHECK FLS NO. 2		
	<ul> <li>Disconnect 2-pin plug from FLS No. 2, located on HCU reservoir.</li> <li>Measure resistance between Pins 1 and 2 on HCU reservoir.</li> </ul>	Less than 5 ohms	<ul> <li>SERVICE or REPLACE cable harness Circuit 542 or 535 (Taurus / Sable).</li> <li>Circuit 550 or 535 (Taurus SHO).</li> <li>REPLACE HCU reservoir.</li> </ul>
A16	ABS MODULE CHECK	, any other reading	
A 10	If Self-Diagnostics, ABS Quick Test and Test A did     not find problem, replace ABS Module with a known	Yes SSCOD-APO	REVERIFY that all tests have been performed.
	good module.  Is ABS indicator still on?	No	REPLACE ABS Module.



# PINPOINT TEST B: ANTI-LOCK INDICATOR ON AFTER ENGINE STARTS (BRAKE WARNING INDICATOR OFF)

	NATION PRISTATE TEST STEP THE TRANSPORT OF TAKE	RESULT 981812	ACTION TO TAKE
B1	CHECK CONTINUITY OF CIRCUITS 518 AND 519		A12   CHECK ORCUIT S
	Turn ignition switch OFF.	Yes into o which he had a digil	GO to B2.
	Disconnect 55-pin plug from ABS Module.	No.	GO to B3.
	<ul> <li>Check continuity between breakout box Pins 28 and 60.</li> </ul>	(4400-4400-400-400-400-400-400-400-400-4	Okasi 680
		. Significant specification of the second specification of	) / ANS
	ABS MODULE	hannen de la	A
		HELAY CORRECTOR RAKES SIDE) Hyygo.	
	a los Grando		
	4.199.55 PIN 1999.8	Over reveser up.	
	CONNECTOR H7769-B	ng ike en brackytet ook Yes 52 a	
	Connect EEC-IV breakout box 014-00322 with		
	Anti-Lock Test Adapter T90P-50-ALA or equivalent to the Anti-Lock 55-pin plug on the wiring harness.	ance between breakout box Pfu	
	to the top of the programme with the parties the		
	ANTI-LOCK COMPANY AND	in plug irom FLS No. 2, idealad <mark>k</mark>	
	non	ende between Sins 1 and 2 on th	
Т	90P-50-ALA 55 PIN CONNECTOR		
	COMMEDION		
	EEC-IV BREAKOUT		
	BOX	Cortenuty 1 29	
	014-00322	ide. ABS Guick Tashand, Jack	
	We later the second sec	n, septace ASS skodste with a kn	
	The Thirty of the same of the	Sno lide v	
	H7770-B	nden - and Azarekhiten and an arazaria aria - e an zark arazarianak an arazariana agar -	
	Is continuity present?		
32	CHECK LH REAR SENSOR TO GROUND	-	
	<ul> <li>Disconnect LH rear wheel sensor plug.</li> <li>Check for continuity between each sensor pin</li> </ul>	Yes	REPLACE LH rear senso
	(sensor side) and vehicle ground.	No	REPLACE or SERVICE cable harness Circuit 51
	• Is continuity present?		or 519.
		Casemany 🦠	
		Ma Commune Contraction (Care	
	LH REAR SENSOR H7776-A		
	CHECK CONTINUITY OF CIRCUITS 523 AND 524		
20	OFFICE OF CHAPTER SECTION OF SECT		
33	Check for continuity hotuson breakout hav Ding 27	l Vac	GO to RA
33	<ul> <li>Check for continuity between breakout box Pins 27 and 60.</li> </ul>	Yes No	GO to <b>B4.</b> GO to <b>B5.</b>

#### PINPOINT TEST B: ANTI-LOCK INDICATOR ON AFTER ENGINE STARTS (BRAKE WARNING INDICATOR OFF) (Continued) ACTION TO TAKE TEST STEP CHECK RH REAR SENSOR TO GROUND REPLACE RH rear Disconnect RH rear wheel sensor plug. Yes sensor. Check for continuity between each sensor pin REPLACE or SERVICE (sensor side) and vehicle ground. No cable harness Circuit 523 Is continuity present? or 524. H7775-A RH REAR SENSOR CHECK CONTINUITY OF CIRCUITS 514 AND 516 **B**5 GO to B6. Check for continuity between breakout box Pins 29 Yes GO to B7. and 60. No Is continuity present? CHECK RH FRONT SENSOR TO GROUND **B6** REPLACE RH front Disconnect RH front wheel sensor plug. Yes sensor. Check for continuity between each sensor pin (sensor side) and vehicle ground. REPLACE or SERVICE No cable harness Circuit 514 Is continuity present? RH FRONT SENSOR H7774-A CHECK CONTINUITY OF CIRCUITS 521 AND 522 87 GO to B8. Check for continuity between breakout box Pins 30 Yes Test Complete. If and 60. No Anti-Lock indicator Is continuity present? pattern remains, REPEAT Test B. CHECK LH FRONT SENSOR TO GROUND REPLACE LH front Yes Disconnect LH front wheel sensor plug. sensor. Check for continuity between each sensor pin REPLACE or SERVICE (sensor side) and vehicle ground. No cable harness Circuit 521 is continuity present? or 522. H7773-A LH FRONT SENSOR

TH6999D

TEST STEP	RESULT	ACTION TO TAKE
C1 MEASURE LH FRONT SENSOR CIRCUIT RESISTANCE		
<ul> <li>Turn ignition switch to OFF position.</li> <li>Disconnect 55-pin connector from ABS module.</li> </ul>	Yes GMUCFO OT ACEL No guid tosass section to	
ABS MODULE	Sveniele ground.	ns (objercense) speyfinnlinos af so
	AN SERVICE STATES	
55 PIN CONNECTOR H7769-B	OF CIRCUITS 614 AND 518	SV CHECK CONTINUES
<ul> <li>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.</li> </ul>	udy benwasa breakoui box Pus 7 19eat?	- <b></b>
For continuous the second of wring hardes.  For continuous the second payment the second payment.	REPOSE OF SOCIETY	
ANTI-LOCK TEST ADAPTER	ront wheel seudor plug- uity between each sensor plat d ventche ground.	(interpretation of the control of th
T90P-50-ALA 55 PIN CONNECTOR	- Samuel	in the state of th
BOX 014-00322	CAT SENSOR HY77AL	
● Set multi-meter to read resistance.	CHI SENDOR Y OF CIRCUITS 521 AND 522	
<ul> <li>Measure resistance between Pins 30 and 48.</li> <li>Is resistance between 800 and 1400 ohms?</li> </ul>		
2 CHECK LH FRONT SENSOR RESISTANCE	**************************************	(Q yiinniin) e e
<ul> <li>Disconnect LH front sensor plug.</li> <li>Measure resistance of sensor at sensor plug.</li> <li>Is resistance between 800 and 1400 ohms?</li> </ul>	Yes and delugate of societies	SERVICE or REPLACE cable harness Circuit 52 or 522.
Ves Services of the boat	ont wheel sensor plug.	REPLACE LH front sensor.
No. O O O O O O O O O O O O O O O O O O O	id vehicle ground.	
LH FRONT SENSOR H7773-A		
3 MEASURE RH FRONT SENSOR CIRCUIT RESISTANCE		<u> </u>
<ul> <li>Measure resistance between breakout box Pins 29</li> <li>and 47.</li> <li>Is resistance between 800 and 1400 ohms?</li> </ul>	Yes No FIDENSE THE	GO to C5. GO to C4.

PRATOT MORDA TEST STEP TAREAR	RESULT PARTY >	ACTION TO TAKE
C4 CHECK RH FRONT SENSOR RESISTANCE	GRUORS OF ROSMES	TVOSTHUDDERO LIRED
Disconnect RH front sensor plug.     Measure resistance of sensor at sensor plug.     Is resistance between 800 and 1400 ohms?	Yes in the the transfer of the	SERVICE or REPLACE cable harness Circuit 51 or 516.  REPLACE RH front
	DENSOS AND CROUTRY TO THE WAY TO THE WAY TO THE WAY TO THE THE WAY TO THE THE WAS THE	Sensor. VIANI EMOSTA HE HOTHO (TETC. GMUCHO)  LIMBO (CLASSIC) P
RH FRONT SENSOR H7774-A	SENSOR TO GRADULES SEASOR TO GRADULES SEASOR TO GRADULES SEASOR S	Taranti area de la composição de la comp
39808F 1	a kied oo koo aa doo aa doo ay iyo da kiiki	
C5 MEASURE RH REAR SENSOR CIRCUIT RESISTANCE	- Circle	GO to C7.
<ul> <li>Measure resistance between breakout box Pins 27 and 45.</li> </ul>	Yes	GO to C6.
Is resistance between 800 and 1400 ohms?	No chaudaigeana agus	GU to Co.
C6 CHECK RH REAR SENSOR RESISTANCE		
Disconnect RH rear sensor plug.     Measure resistance of sensor at sensor plug.     Is resistance between 800 and 1400 ohms?	Yes at tradized fine-value of the first tradized from	SERVICE or REPLACE cable harness Circuit 52 or 524.
The state of the s	No 0/440/04/00/1808	REPLACE RH rear
7891 SPLACE SOALITS (**	ear nears or plug.	sensor.good G - *
	Street	body ground.
	MESOS AND CINCULTRY TO	1 G/8C/80 }
RH REAR SENSOR H7775-A	dy between brieskom box Pink (	P Obsektor contact and 80.
C7 MEASURE LH REAR SENSOR CIRCUIT RESISTANCE		
Measure resistance between breakout box Pins 28	Yes GMSOND OF YOUR	GO to C9.
and 46.  ■ Is resistance between 800 and 1400 ohms?	No No Rensor nach sensor jam a	GO to C8.
C8 CHECK LH REAR SENSOR RESISTANCE  • Disconnect LH rear sensor plug. • Measure resistance of sensor at sensor plug. • Is resistance between 800 and 1400 ohms?	Yes TUPTUO 35AT ICV ROSHA	SERVICE or REPLACE cable harness Circuit 5 or 519.
	a of gaiff had tealk and received at Nothengaz is to a fer front H	# 10g : 6 대학 기업 전 1 대학 기업 1 대학 전 1 대학 기업
	cond.  EXECT VOLTAGE OUTFUT	e tet notteaver
nd Shirong Coo and	detweer preskoutbox Pas 22 e	ppsitove seediti a
LH REAR SENSOR H7776-A	Philippi wheeler approximately	47 white sphan revolution per s.c.
C9 CHECK LH FRONT SENSOR AND CIRCUITRY TO GROUND		
Check for continuity between breakout box Pins 30	Yes	GO to C10.
and 60.  Is continuity present?	No	GO to C11.

	HAY OT MOITOA TEST STEP TARRET	RESULT	ACTION TO TAKE
C10	CHECK LH FRONT SENSOR TO GROUND	BOMATCE BB SOCKE	NA CHECKREFERONE
80. Ara 31	<ul> <li>Disconnect LH front sensor plug.</li> <li>Check for continuity between each sensor pin and body ground.</li> <li>Is continuity present?</li> </ul>	Yes pulg recense to each pulg recense to each Normal State and the Oder to the	
C11	CHECK RH FRONT SENSOR AND CIRCUITRY TO GROUND	yet er in a trajeculus	
	<ul> <li>Check for continuity between breakout box Pins 29 and 60.</li> <li>Is continuity present?</li> </ul>	Yes No	GO to C12. GO to C13.
C12	CHECK RH FRONT SENSOR TO GROUND	- East Amagainman	
	<ul> <li>Disconnect RH front sensor plug.</li> <li>Check for continuity between each sensor pin and body ground.</li> <li>Is continuity present?</li> </ul>	Yes THE BOOKER TIME  No CLESS THOUSE RESIDENCE  IN THE SECRET OF THE SEC	sensor. SERVICE or REPLACE
C13	CHECK RH REAR SENSOR AND CIRCUITRY TO GROUND	Printo 2014 See 008 passo	and constitues and a second and a second a secon
.08 eit 523	Check for continuity between breakout box Pins 27 and 60.     Is continuity present?	Yes DEFACE TO THE TENDER TO TH	GO to C14. GO to C15.
C14	CHECK RH REAR SENSOR TO GROUND	N PROTESTA SANCTOS DEGLOS RESERVADOS ESTOS DE AC	•
	<ul> <li>Disconnect RH rear sensor plug.</li> <li>Check for continuity between each sensor pin and body ground.</li> <li>Is continuity present?</li> </ul>	Yes No	REPLACE RH rear sensor.  SERVICE or REPLACE cable harness Circuit 52 or 524.
C15	CHECK LH REAR SENSOR AND CIRCUITRY TO GROUND	The state of the s	
	<ul> <li>Check for continuity between breakout box Pins 28 and 60.</li> <li>Is continuity present?</li> </ul>	Yes H ROGMAN	GO to <b>C16</b> . GO to <b>C17</b> .
C16	CHECK LH REAR SENSOR TO GROUND	<u>a partita de la monta de la comunicación.</u> Mais xod indes pró apawind con	<u> </u>
	<ul> <li>Disconnect LH rear sensor plug.</li> <li>Check for continuity between each sensor pin and body ground.</li> <li>Is continuity present?</li> </ul>	Yes No rate (4021 time 002 as a page 12024)	REPLACE LH rear sensor SERVICE or REPLACE cable harness Circuit 5 18 or 5 19.
C17	CHECK LH FRONT SENSOR VOLTAGE OUTPUT	Carlo and Callo Carlo and Carlo and Carlo	adi <b>5.19.</b> aannoid (*)
ncierio:	Measure voltage between breakout box Pins 30 and	Between 0.10 and 1.40 volts AC	GO to <b>C18</b> .
		Less than 0.10 or more than 1.40 volts AC	CHECK wheel sensor mounting, air gap or toothed wheel. CORRECT as required.
C18	CHECK RH FRONT SENSOR VOLTAGE OUTPUT		//
	<ul> <li>Measure voltage between breakout box Pins 29 and 47 while spinning RH front wheel at approximately 1 revolution per second.</li> </ul>	Between 0.10 and 1.40 volts AC Less than 0.10 or	GO to C19.  CHECK wheel sensor
	DESCRIPTION OF SECURE SECURITIES OF SECURITI	more than 1.40 volts AC	mounting, air gap or toothed wheel. CORRECT as required.

	CHAT OT HOTTOW TEST STEP TUBES	RESULT PERSON	ACTION TO TAKE
C19	CHECK RH REAR SENSOR VOLTAGE OUTPUT	YAJBA AQ	OM GROK BUMP MO
100	Measure voltage between breakout box Pins 27 and 45 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	CHECK wheel sensor mounting, air gap or toothed wheel.
	AUTOKAL DEAD SENSOR VOLTAGE OUTDUT	y between breakcut bok Pin 3 t a Potor consector yen pragging t	CORRECT as required.
C20	Measure voltage between breakout box Pins 28 and 46 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 C21.  CHECK wheel sensor mounting, air gap or toothed wheel. CORRECT as required.
C21	CHECK MOTOR SPEED SENSOR AND CIRCUITRY		
	<ul> <li>Measure resistance between breakout box Pins 31 and 49.</li> <li>Is resistance between 5 and 100 ohms?</li> </ul>	Yes	GO to <b>C27</b> . GO to <b>C22</b> .
C22	CHECK PUMP MOTOR SPEED SENSOR		
	<ul> <li>Disconnect 4-pin plug on pump motor.</li> <li>Measure resistance between Pins S0 and S1 on pump motor.</li> <li>Is resistance between 5 and 100 ohms?</li> </ul>	Yes O 185 No VALER ROTOM TA 1871 BORE SEENMAN RO	
	24.19.38 to 30.00 to 10.00 to	Yinase	(4) (# 3) (# 3) (# 3)
		EED SENSOR SHORT TO	# 18 centrality posts and the second
	MOTOR (+) 1 S1 acadov ou	EED SENSOR SHORT TO	ST LEGENTANTOR SE STERRE TERRY & STERRE STERRE STERRE STERRE STERRE STERRE STERRE MOTOR SE STERRE STERRE STERRE MOTOR SE STERRE
6.0 3111 	MOTOR (+) 1 S1 equation of the state of the	EED SENSOR BHORT TO tch to ON, a between breakout box Pies 21 a OR b motor relay sepimping connection on.	8 de commonty par de la commonty par 27 Centre Novembron en 28 de la commonta de
C23	A PIN PUMP MOTOR CONNECTOR  H7784-B  CHECK PUMP MOTOR RELAY  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?	Ich to OM,  b between breakout box Pies 21 a  p grotor relay 4 pin plog connector to ON.  Spelween or eakout lyby Ping 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3	REPLACE pump motor relay.
C23	A PIN PUMP MOTOR CONNECTOR  4 PIN PUMP MOTOR RELAY  Disconnect 7-pin plug on pump motor relay and remove relay, Check continuity from Pin SO on 7-pin side to Pin SO on 4-pin side of relay.  BATT 31 SO 86  (+) 1  BATT 31 SO 86	EED SENSOR BHORT TO  Ich to ON,  Shelween breakout box Pins 31 a  Con to ON,  Between breakout box Pins 2  Con to ON,  Between breakout box Pins 2  And to ON,  Between breakout box Pins 2  School box Pins 2  School box Pins 2  School box Pins 2  School box Pins 2	REPLACE pump motor relay.
C23	A PIN PUMP MOTOR CONNECTOR  4 PIN PUMP MOTOR RELAY  Disconnect 7-pin plug on pump motor relay and remove relay, Check continuity from Pin SO on 7-pin side to Pin SO on 4-pin side of relay.  BATT 31 SO 86  (+) 1  BATT 31 SO 86	EED SENSOR SHORT TO  a between breakous box Pies 3   b revior triky & pirtphes connection to OR  b review on the should box Pies 5   con to OR  herness to relay 7 pin pieg.  No  con to OR  between breakous box Pins 3   con to OR  it  it  it  it  it  it  it  it  it  i	REPLACE pump motor relay.  TENTORISE TO SERVICE TO SERV

	RAT CLEOTOA TEST STEP TARREN	RESULT 9800 D	ACTION TO TAKE
C24	CHECK PUMP MOTOR RELAY	TETTUO BOATLOY ROBYE	AR CONBOSCIPHING BE
	<ul> <li>Check continuity from Pin S1 on 7-pin side to Pin S1</li> </ul>	Yes 3 wood fuctioned his owned 🕨	GO to C25.
	on 4-pin side of relay.	No Kongra at another act has	REPLACE pump motor
10	• Is continuity present?		relay.
225	CHECK CIRCUIT 462		
T.Osti	Check continuity between breakout box Pin 31 and	Yes	GO to C26.
	Pin S0 on pump motor connector 7-pin plug (harness	Notustio sakulov sok	SERVICE or REPLACE
	side).  • Is continuity present?		cable harness Circuit
	And the second s	pa sa a xoa rouzener energoza :	462.
		i i i i i i i i i i i i i i i i i i i	a rad not blover
	539 PK/LB 85		
	OCCUPATION OF THE PROPERTY OF	Y 54.	
	537 T/Y — 30		
	532 O/Y ———————————————————————————————————	anis and spossess newsels such	
	462 P —— S0		
	57 BK ————31		
	461.0-31	Ass supplied during to Shigh	
	461 O 314 A 1975 M	oj čina čisanja parapatoja 1960 pajada propadavi	
	7 PIN PUMP MOTOR RELAY		
	CONNECTOR HARNESS SIDE H7781-B	Tangga (10 ) Dog to day ya t	
	OUTON OUTON TARA		
26	CHECK CIRCUIT 461		
	Check continuity between breakout box Pin 49 and Pin S1 on pump motor connector 7-pin plug (harness)	Yes	REVERIFY reading at C21.
	side).	No S (4) FIGURE AND S	
	• Is continuity present?		SERVICE or REPLACE cable harness Circuit
:	SP COND.		461.
27	CHECK MOTOR SPEED SENSOR SHORT TO	kara kalendarika	
	BATTERY +		
	<ul> <li>Turn ignition switch to ON.</li> <li>Measure voltage between breakout box Pins 31 and</li> </ul>	No voltage	GO to C31.
	<ul> <li>Measure voltage between breakout box Pins 31 and 60.</li> </ul>	12 volts	GO to C28.
28	CHECK PUMP MOTOR		
	Disconnect pump motor relay 4-pin plug connector.	No voltage	DEDI ACE
	<ul> <li>Turn ignition switch to ON.</li> </ul>	130 VUILAGE	REPLACE pump and motor.
	Measure voltage between breakout box Pins 31 and	12 volts	GO to <b>C29.</b>
	60.	क्षांत्र (क्षांत्रां कार्यकार वाया व्याकृत	~~ ! V <b>y</b> £3.
29	CHECK CIRCUIT 462		esperantes de la
	Disconnect wire harness to relay 7-pin plug.	No voltage	GO to <b>C30</b> .
	<ul> <li>Turn ignition switch to ON.</li> <li>Measure voltage between breakout box Pins 31 and</li> </ul>	12 volts	SERVICE or REPLACE
	60.	1984 1970 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 -	cable harness Circuit
30	CHECK CIRCUIT 461		462.
	Turn ignition switch to ON.	Novoltogo	DEDI AGE -
	Measure voltage between breakout box Pins 49 and	No voltage	REPLACE pump motor relay.
	60. Place of a selected	12 volts	SERVICE or REPLACE
			cable harness Circuit
		The state of the s	461.
31	CHECK MOTOR SPEED SENSOR SHORT TO GROUND		
	Check for continuity between breakout box Pins 31	No ////////////////////////////////////	GO to <b>C34</b> .
	and 60.	Yes	GO to C32.
	Is continuity present?	177 820 150	~~ · · · · · · · · · · · · · · · · · ·

	MAT OT MOTTOA TEST STEP TUBBER	RESULT 93787	ACTION TO TAKE
C32	CHECK CIRCUIT 462	- RELIAY COLL	T 10 P 10
HO/	<ul> <li>Disconnect wire harness to relay 7-pin plug.</li> <li>Check for continuity between breakout box Pins 31 and 60.</li> <li>Is continuity present?</li> </ul>	d 80 at breakput box. 28 position 28 position between Pin 86 and ground No	SERVICE or REPLACE cable harness Circuit 462. GO to C33.
^^^	CHECK CIRCUIT 461		
C33	Check for continuity between breakout box Pins 49 and 60.     Is continuity present?	Yes 8.1.47.01 No. 1.1.188	SERVICE or REPLACE cable harness Circuit 461. REPLACE pump motor relay.
C34	CHECK PUMP MOTOR OPERATION		
	<ul> <li>Reconnect pump motor relay to pump and wire harness.</li> <li>Jumper Pins 15, 34 and 60 at breakout box.</li> <li>Turn ignition to ON position.</li> <li>Does pump motor run?</li> </ul>	Yes X8 TO NO O 188 TO THE YEST OF THE YEST.	REPLACE ABS module. GO to C35.
C35	CHECK PUMP MOTOR OPERATION		
. Isl	<ul> <li>Disconnect pump motor relay from pump motor.</li> <li>Ground Pin 2 and apply 12 volts to Pin 1 of pump motor connector.</li> <li>Does pump motor run?</li> </ul>	Yes SELAY COL SYNAM (ON 1974)  NO between Pies 85 and (ON 1974)  NO shween 45 and 105 chms?	GO to C36. SHO SAN REPLACE pump motor.
	MOTOR (+) 1  4 PIN PUMP MOTOR CONNECTOR  H7784-B	THE THE STATE OF T	
C36	CHECK POWER TO RELAY		
30	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	GO to C37.  SERVICE or REPLACE battery, circuit 537 or Anti-Lock Motor 40 A fuse.
	539 PK/LB85		
	537 T/Y 30	SS PART B. Commence of the com	
	532 O/Y ———————————————————————————————————	Of management of 1 September 1	
	462 P \$0	- 18 Y\Q\\$\$8\*	
	57 BK ————31		
	461 0 31	E to a residence and consequence and a section of the first property of the first proper	
	7 PIN PUMP MOTOR RELAY CONNECTOR HARNESS SIDE H7781-B	TP MOTOR RELAY	and the state of t

# PINPOINT TEST C: ANTI-LOCK WARNING INDICATOR ON AFTER VEHICLE STARTS TO MOVE OR FALSE CYCLING OF

	MARGINACITOA TEST STEP TUURBR	RESULT PERSON >	ACTION TO TAKE
237	CHECK POWER TO RELAY COIL	\$	SE   CHECKCHECUIT 4
30		Over 10 volts also as each >	GO to C38.
		Less than 10 volts	SERVICE or REPLACE
	Measure voltage between Pin 86 and ground.		cable harness Circuit
			532.
	8 Oberit one ingili politikan besakuat bax Picili Lauk		as calox, garcutta
	539 PK/LB 85	யூர்y between breakour box நிர்க	higospolalogica, e
	537 T/Y 30		
		7398#C	
	(( U O U ) 532 O/Y — 86		
	462 P ——— S0		**************************************
		(AS ASSERTING NO. 1	isa   Oheokauna Mol
	57 BK31	Pikk has gass of yelen tolem s	
	461 O 31	- Lagaditec As and As Da bag Ag	
	7 PIN PUMP MOTOR RELAY	i kanalang M	
	CONNECTOR HARNESS SIDE H7781-B	Yneseo	em gravej se o C 🔸 💮 💮
		OR OPERATION	
:38	CHECK PUMP MOTOR RELAY COIL	ांच्या प्राथाय कर्न रक्षका स्टाका व	TOPERADEIC #
aoid	Measure resistance between Pins 85 and 86 on	Yes to the Poly Stove Strylogy Yes	GO to <b>C39</b> .
	pump motor relay.	No Saura	REPLACE pump motor
	Is resistance between 45 and 105 ohms?		relay.
	BATT 31 S0 86		· · · · · · ·
	BAII 31 S0 86 (+)1 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	· graniaming	
	SO TEST	A POROR DESCRIPTION	
			$Z_{-1}(s)$ form
	MOTOR S1 S1 85	TE COMPANY SERVICES	
	(-) 2 PUMP MOTOR RELAY	RUTURAKOO KOTO BARTH	
	H7780-B		
39	CHECK CIRCUIT 539	2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2	
	Check for continuity between breakout box Pin 15	sion solom gased most species	n <u>iastorgaro</u> aiC *
	and Pin 85 on wire harness to pump motor relay	Yes and salw no the nin nagy.	GO to C40.
	connector.	No samong bus not made:	SERVICE or REPLACE
	• Is continuity present?	Burkelinger i 🐉	cable harness Circuit 539.
	539 PK/LB ——85	The contraction of the contracti	
	537 T/Y 30	7.7.1	
	//\/\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		
	(( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( (		
j	462 P SO		
		30.	
	57 BK31		
	461 O31	The state of the s	
		TO TALBETATUM TO TALE TO THE TOTAL TO THE TALE TALE TO THE TALE TALE TALE TO THE TALE TALE TALE TALE TALE TALE TALE TAL	
	7 PIN PUMP MOTOR RELAY		
	CONNECTOR HARNESS SIDE H7781-B		

# PINPOINT TEST C: ANTI-LOCK WARNING INDICATOR ON AFTER VEHICLE STARTS TO MOVE OR FALSE CYCLING OF ANTI-LOCK SYSTEM (Continued)

	TEST STEP	RESULT ▶	ACTION TO TAKE
C40	CHECK CIRCUIT 57		20 - A.O. Barra Barra Dalah A. Markatan Barraman, Samang A. Tabah
	<ul> <li>Check for continuity between wire harness to pump motor relay connector Pin 31 and ground.</li> <li>Is continuity present?</li> </ul>	No state of the st	GO to C41.  SERVICE or REPLACE cable harness Circuit 57.
C41	CHECK PUMP MOTOR RELAY		
	<ul> <li>Connect battery + to Pin 86 and battery - to Pin 85 of pump motor relay.</li> <li>Check for continuity between Pin 30 and Pin 1 on relay.</li> <li>Is continuity present?</li> </ul>	Yes No	GO to C42. REPLACE pump motor relay.
C42	CHECK PUMP MOTOR RELAY		
	<ul> <li>Check continuity between Pins 2 and 31 on pump motor relay.</li> <li>Is continuity present?</li> </ul>	Yes No	REVERIFY results at Tes Step C34. REPLACE pump motor relay.
	BATT 31 S0 86 (+) 1 TEST	uswascoo at a soft accessad	55 Yell CONNECTOR 5 COMBOLECOV And Lock Sect 4
	30	A STANDARD OF A	
	MOTOR (-) 2 PUMP MOTOR RELAY H7780-B		

TH7930B

# PINPOINT TEST D: ANTI-LOCK WARNING INDICATOR SEQUENCE NORMAL— BRAKE PEDAL RISES OR DROPS EXCESSIVELY DURING ABS CYCLING

	TEST STEP		RESULT		ACTION TO TAKE
D1	CHECK PEDAL SWITCH ADJUSTMENT	1 13:37	á sniP kod lac častní sa		
	NOTE: Before running Test Step D, adjust pedal position switch as outlined in this section.		Yes		Condition corrected. GO to D2.
	<ul> <li>Is pedal feel normal during ABS cycling?</li> </ul>			ie 187	

# PINPOINT TEST D: ANTI-LOCK WARNING INDICATOR SEQUENCE NORMAL — BRAKE PEDAL RISES OR DROPS EXCESSIVELY DURING ABS CYCLING (Continued)

	TEST STEP	RESULT	ACTION TO TAKE
D2	CHECK PEDAL TRAVEL SWITCH AND CIRCUITRY	PER CINTÀ MARONEMANTONE SUN MANAGEMENT	
3.0	Turn ignition switch to OFF position.	Yes brancing bond to not be	
	<ul> <li>Disconnect 55-pin plug from ABS Module.</li> </ul>	No	GO to D3.
	ABS MODULE		
		, yg	In totom misualta
		ty between Min 30 and Pin 1 on	addeop soft ApeldO - p
			e da continuity pro
		YA BAR	***************************************
		o see no disclose Supply gave stod	where we were a second and the second
			La sión soites:
	om arhug 50 Solo 19 To 10 C I and and	Tina da	aq yösəsinə ə
			3.003.00
	55 PIN CONNECTOR		
	Н7769-В		Family Comment
	<ul> <li>Connect EEC-IV Breakout Box 014-00322 with</li> </ul>		Varias III er III.
	Anti-Lock Test Adapter T90P-50-ALA or equivalent		
	to the anti-lock 55-pin plug on the wiring harness.		
	NTI-LOCK S		
	EST DAPTER		
	90P-50-ALA 55 PIN	de la companie de la	
	CONNECTOR	YURR SCTOL	SADAGAS Sanagasa
		a Josephia	
	EEC-IV BREAKOUT	VICE CONTROL OF THE C	**************************************
	BOX 014-00322		
	DATES SECURIOR NORMANDE STATES	ANTHUODS WASHING BEE	
	TO THE PROPERTY OF THE PROPERT	i (1066 ao eurig laost bea	
	PROGRESONOS SE TUDBER H7770-B	. His contraction	
	<ul> <li>Check continuity between breakout box Pins 5 and</li> </ul>	E PREMIERS E	
	26. Second of the second of th	g Yest Step D. adjust pedal	
3	CHECK PEDAL TRAVEL SWITCH	Lacritova side el bombi	a sa dodiva pošlete
	Disconnect pedal travel switch 2-pin plug.	_ jaring 284 galab bah	
	<ul> <li>Check for continuity between Pins 1 and 2.</li> </ul>	Yes	SERVICE or REPLACE cable harness Circuit 535
	Is continuity present?		or 549.
		No ▶	REPLACE pedal travel
			switch.
	2 PIN BRAKE PEDAL		
	POSITION SWITCH		
	H7785-A		
4 (	CHECK PEDAL TRAVEL SWITCH FUNCTION	*	:
	Push brake pedal down at least 3 inches and hold	-	
	down.	Yes	GO to <b>D5</b> .
•	Check for continuity between breakout box Pins 5	No D	GO to D6.
	and 26. Is continuity present?		

# PINPOINT TEST D: ANTI-LOCK WARNING INDICATOR SEQUENCE NORMAL — BRAKE PEDAL RISES OR DROPS EXCESSIVELY DURING ABS CYCLING (Continued)

	CAT OF HOUSE TEST STEP TURNER	RESULT 9316 P	ACTION TO TAKE
D5	CHECK PEDAL TRAVEL SWITCH  Disconnect pedal travel switch 2-pin plug from wire	Yes PMC	
	harness.  Check continuity between Pins 1 and 2 (switch side) with brake pedal down at least 3 inches.  Is continuity present?	no No ABE module.  No Section ABE module.	switch.  SERVICE or REPLACE cable harness Circuit 535 or 549.
D6	CHECK PUMP PRESSURE  Jumper Pins 15, 34 and 60 at breakout box. Apply moderate pressure on brake pedal and hold. Turn ignition switch to ON position. Does brake pedal rise?	Yes No	REVERIFY symptom.  REPLACE pump and motor.

TH8101A

# PINPOINT TEST E: ANTI-LOCK WARNING INDICATOR SEQUENCE NORMAL — ABS PUMP MOTOR RUNS CONTINUOUSLY (IGNITION ON/IGNITION OFF)

<u>.</u>	TEST STEP	RESULT	ACTION TO TAKE
E1	VERIFY PUMP MOTOR CONDITION		ricula serevez " LiseT dodd-18A
	With vehicle standing still:     Check if pump motor runs with ignition switch in ON or OFF position.	Pump runs with the space of ignition in OFF position	GO to E2
		Pump runs with ignition in ON position	GO to E3.
E2	CHECK PUMP MOTOR RELAY		
	<ul> <li>Remove pump motor relay.</li> <li>Check for continuity between Pin 30 and test pin on the relay.</li> <li>Is continuity present?</li> </ul>	Yes No XOS SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS	REPLACE pump motor relay.  REVERIFY that pump motor runs with ignition in OFF position.

# PINPOINT TEST E: ANTI-LOCK WARNING INDICATOR SEQUENCE NORMAL — ABS PUMP MOTOR RUNS CONTINUOUSLY (IGNITION ON/IGNITION OFF) (Continued)

	MAY OF MOTTOA TEST STEP YUURBA		RESULT	ACTION TO TAKE
E3	CHECK CIRCUIT 539 TO GROUND		HOTOVE IS	NEE JA 0349 X03240 j. 3.
	<ul><li>Turn ignition switch OFF.</li><li>Disconnect 55-pin plug from ABS module.</li></ul>		Yes salq tiq-2 dollwe lava • No	GO to E4.
	No.1 PEPLA  No.1 Permanantal Permanantah P	(ebia)		essesso xcenu = = Sign exad dily
	ABS MODULE			Agyfissimos si s
	norganiya Yeni Israi Mari			BRS 18409 ROBER 1888
				Pisteboni vigoA +
	55 PIN CONNECTOR H7769-B		irie Porcator scoregorica Pro	OMBERN NOOLINA
	Connect EEC-IV Breakout Box 014-00322 with			
	Anti-Lock Test Adapter T90P-50-ALA or equivaler to the anti-lock 55-pin plug wiring harness.	nt		TOWNERS PUMP MOT
T	NTI-LOCK EST DAPTER 90P-50-ALA 55 PIN			us DPF soarden
	CONNECTOR  EEC-IV BREAKOUT BOX 014-00322			2   CERCYCHUMP MODE  * Hamove pilled  * Oreact for contil  * Wheat for contil  * Its continuity of
	Н7770-В			
	<ul> <li>Check for continuity between breakout box Pins 16 and 60.</li> <li>Is continuity present?</li> </ul>	5	1	
4	CHECK CIRCUIT 539		· · · · · · · · · · · · · · · · · · ·	
	<ul> <li>Disconnect pump motor relay from wire harness.</li> <li>Check for continuity between breakout box Pins 15 and 60.</li> <li>Is continuity present?</li> </ul>	5 Y	/es	SERVICE or REPLACE cable harness Circuit 539.
	community proportion	N	o <b>&gt;</b>	REPLACE pump motor relay.
5	CHECK ABS MODULE			
	<ul> <li>Reconnect pump motor relay and ABS module.</li> <li>Turn ignition to ON.</li> <li>Does pump motor run?</li> </ul>	Y	es D	REPLACE ABS module. REVERIFY symptom.

TH6411D

# PINPOINT TEST F: BRAKE WARNING INDICATOR ON (WITH ANTI-LOCK INDICATOR OFF. PARKING BRAKE RELEASED AND BRAKE LINING WEAR CHECKED)

	TEST STEP	RESULT		ACTION TO TAKE
F1	CHECK BRAKE FLUID LEVEL	sator belb.		W. Check warning
	<ul> <li>Check that brake fluid is no more than 4mm (0.16 inch) below MAX line located on side of master cylinder reservoir.</li> </ul>	Low		CHECK system for external leaks. SERVIC as required.
	Cylinder reservoir.	Normal(aplaca gine) negy)	<b>&gt;</b>	GO to F2.
F2	CHECK FLUID LEVEL SWITCH			
-	Disconnect 3-pin plug on master cylinder fluid reservoir cap.	Yes	▶	REPLACE reservoir flui cap.
	<ul><li>Check for continuity between Pins 1 and 3 on</li></ul>	No		GO to F3.
	reservoir cap.  Is continuity present?	mage or loose of bad tuiled backwards.		
	2 bellutani ethawangd		C 133	
	WITHOUT AN IILOOK TUNDTANI	NINGTAR ON) /PLIA TYGGA BY VAS AOND NIDARIA		
		· · · · · · · · · · · · · · · · · · ·		
		OSVING	VI T	SACAMOD MORAD   - 1
	Set	ike pedal and booster/modie	end i	egorg tot KoelfO - P
	belt service and the common of	สอ ตบก็ติกอส์เ		EBERGER FRYSKE FF - @ 840 ANESE NOVEE - @ 110 ANESE NOVEE - @
			Vari	sas erves cultica i è
	3 PIN FLUID RESERVOIR CAP H7786-A	.ক্	siay S	# Rebred brake g # Repaderspangy
F3	CHECK FOR GROUND CONCERN			
194 S.Y	<ul> <li>Check for grounded wire harness, Circuit 977.</li> <li>Is wire harness grounded?</li> </ul>	Yes		SERVICE or REPLACE cable harness Circuit 977A.
	977B - 977B 2	G Noverw:		REVERIFY "BRAKE" indicator on.
	PERUT PERUT PERUTOR PERUTOR TO TAKE			romoroo yaray
1	977A——57B——3			noribres virei 💌
		aw bullingo, in the control of		syn es and beeld e mietoistev beed e

TH7916A

# PINPOINT TEST G: NO ANTI-LOCK WARNING INDICATOR ON WHEN IGNITION SWITCH TURNED ON

TEST STEP	RESULT	ACTION TO TAKE
G1 CHECK IGNITION FEED AND FUSE   ● Check for 12 volts to lamp socket with ignition ON.	12 volts No voltage	GO to <b>G2.</b> SERVICE ignition feed or fuse as required.

# PINPOINT TEST G: NO ANTI-LOCK WARNING INDICATOR ON WHEN IGNITION SWITCH TURNED ON (Continued)

	TEST STEP	RESULT	ACTION TO TAKE
G2	CHECK WARNING INDICATOR BULB		
	Check warning indicator bulb.	Yes	GO to G3.
	• is bulb good?		REPLACE bulb.
G3	CHECK CIRCUIT 603	Table 1	oviezer tealigo
	<ul> <li>Check continuity between lamp socket and breakout box Pin 52.</li> <li>Is continuity present?</li> </ul>	No HOTIWS	SERVICE or REPLACE cable harness Circuit 606.
OIUH	### ##################################	Yes Table 10 10 18 10 10 10 10 10 10 10 10 10 10 10 10 10	GO to G4.
G4	CHECK DIODE	ity between Pias i and Bon	Checkforcontinu
	<ul> <li>Inspect diode for damage or loose or bad connection.</li> <li>Check if diode is installed backwards.</li> </ul>	Diode good Diode damaged or installed backwards	REVERIFY symptom.  REPLACE diode.

TH7914B

# PINPOINT TEST H: SPONGY BRAKE PEDAL WITH/WITHOUT ANTI-LOCK FUNCTION (NO WARNING INDICATOR)

	TEST STEP		RESULT 🕨	ACTION TO TAKE
H1	CHECK COMPONENT MOUNTING			
	<ul> <li>Check for proper brake pedal and booster/master cylinder attachment.</li> <li>Bleed brake system as outlined.</li> <li>Is pedal spongy?</li> </ul>	Yes No		GO to <b>H2.</b> Condition corrected.
H2	BLEED BRAKE SYSTEM		V	
	<ul><li>Rebleed brake system.</li><li>Is pedal spongy?</li></ul>	Yes	940 MC/RB85	REPLACE master cylinder.
		No		Condition corrected.

TH7789B

# PINPOINT TEST J: POOR VEHICLE TRACKING DURING ANTI-LOCK FUNCTION (WARNING INDICATOR OFF)

	TEST STEP	RESULT	<b>&gt;</b>	ACTION TO TAKE
J1	VERIFY CONDITION			
	Verify condition exists as reported.     Bleed brake system as outlined.	No		Condition corrected.
	Does vehicle track poorly?	Yes		GO to J2.

# PINPOINT TEST J: POOR VEHICLE TRACKING DURING ANTI-LOCK FUNCTION (WARNING INDICATOR OFF) (Continued)

STALL VOLUME TEST STEP TURNED	RESULT		ACTION TO TAKE
J2 CHECK ANTI-LOCK VALVE OPERATION			
Turn ignition switch OFF.  Disconnect 55-pin plug from ABS module.	Wheel turns freely		TURN ignition switch OFF. DISCONNECT wire leads. GO to <b>J3</b> .
ABS MODULE	Wheel does not turn freely or pedal drops		VERIFY correct wiring between 55-pin connector and 19-pin connector on valve block per wiring diagram.
	C. C. Hilles Train (Cit valve and absorb valve and absorb valve use use and trainers of that is will draw of t		If wiring is correct, REPLACE solenoid valve block.
55 PIN CONNECTOR H7769-B	oodsi effert. Oneck mei L alih igalion Oit		
<ul> <li>Connect EEC-IV breakout box 014-00322 with Anti-Lock Test Adapter T90P-50-ALA or equivalent to the Anti-Lock 55-pin connector on wire harness.</li> </ul>	e igrilles on for more h aus may result.	1 1	
ANTI-LOCK TEST ADAPTER T90P-50-ALA 55 PIN CONNECTOR			
EEC-IV BREAKOUT BOX 014-00322			OVAL ARD RETALL seter Cytholog Resent
Lift vehicle and rotate wheels to ensure they turn freely.     Jump Pins 19 and 34 at breakout box.	no om Kakfad w bull ekan it enkal liberales I des sug sara dean voir Filta	oledin Manib Wolate Optional	between strick (0. fe'nd a side of the reservoir un low? fre rad SEAKE inclu ska fillid in dan tod reme ave fillid in a four op or if enticasion manhouse foll
<ul> <li>Short Pins 20, 2 and 60 to each other at breakout box.</li> <li>Apply moderate brake pedal effort and check that LH front wheel will not turn.</li> <li>Check to see that LH front wheel turns freely when ignition switch is ON.</li> </ul>	A-MSC25-A) or s to be added often, seeks s to s to s to the start		arefilid CGAZ, 19542- DT 3 equivalent. If brake sok ali frydraulip sonae nootousse
CAUTION: Do not leave ignition on for more than 1 minute, or valve damage may result.	100 NE 48 NE 18 NE		regem Sursiter dages gåredes ett ette d
J3 CHECK ANTI-LOCK OPERATION RH FRONT WHEEL			
<ul> <li>Jump Pins 19 and 34 at breakout box.</li> <li>Short Pins 38, 21 and 60 to each other at breakout box.</li> </ul>	Wheel turns freely	ang 🕨 danga lasand	TURN ignition switch OFF. DISCONNECT wire leads. GO to <b>J4</b> .
Apply moderate brake pedal effort. Check that RH front wheel will not turn with ignition OFF.     Check that RH front wheel turns freely with ignition ON.  CAUTION: Do not leave ignition on for more than	Wheel does not turn freely or pedal drops		between 55-pin connector and 19-pin connector on valve block per wiring diagram.
1 minute or valve damage may result.	(Totspipaliev	<b>&gt;</b>	If wiring is correct, REPLACE solenoid valve block.

# PINPOINT TEST J: POOR VEHICLE TRACKING DURING ANTI-LOCK FUNCTION (WARNING INDICATOR OFF) (Continued)

	ENATION MANDAS TEST STEP STARTED	RESULT P	ACTION TO TAKE
J4	CHECK ANTI-LOCK OPERATION RH REAR WHEEL	V <sub>as</sub> i momarego evjaj	AZ CHECK ANGULOGY
	<ul> <li>Jump Pins 19 and 34 at breakout box.</li> <li>Short Pins 55, 18 and 60 to each other at breakout box.</li> <li>Apply moderate brake pedal effort. Check that RH rear wheel will not turn with ignition OFF.</li> </ul>	Wheel turns freely  Wheel does not	OFF. DISCONNECT wire leads. GO to <b>J5.</b> VERIFY correct wiring
	Check that RH rear wheel turns freely with ignition ON.  CAUTION: Do not leave ignition on for more than	turn freely or pedal drops	between 55-pin connector and 19-pin connector on valve block per wiring diagram.
evisy	1 minute or valve damage may result.	Licae grad - / / / / / / / / / / / / / / / / / /	If wiring is correct, REPLACE solenoid valve block.
J5	CHECK ANTI-LOCK OPERATION LH REAR WHEEL		
	<ul> <li>Jump Pins 19 and 34 at breakout box.</li> <li>Short Pins 36, 54 and 60 to each other at breakout box.</li> <li>Apply moderate brake pedal effort. Check that LH rear wheel turns freely with ignition ON.</li> </ul>	Wheel turns freely	TURN ignition switch OFF. DISCONNECT wire leads and breakout box. LOWER vehicle. REVERIFY symptom.
	CAUTION: Do not leave ignition on for more than 1 minute or valve damage may result.	Wheel does not turn freely or pedal drops	VERIFY correct wiring between 55-pin connector and 19-pin connector on valve block per wiring diagram.
			If wiring is correct, REPLACE solenoid valve block.

#### TH7915B

#### REMOVAL AND INSTALLATION

#### Master Cylinder Reservoir Checking and Filling

Brake fluid level in the master cylinder reservoir should be between 4mm (0.16 inch) below the MAX line on the side of the reservoir and the MAX line. If brake fluid is low, the red BRAKE indicator will illuminate. To add brake fluid, clean and remove cap and pour clean brake fluid into the top of the reservoir. Fill to specification mentioned above. Use Heavy-Duty Brake Fluid C6AZ-19542-AA (ESA-M6C25-A) or DOT-3 equivalent. If brake fluid has to be added often, check all hydraulic connections for leaks.

#### **Brake Booster Assembly**

#### Removal

- 1. With engine turned OFF, pump brake pedal until all vacuum is removed from booster. This will prevent master cylinder seal from being sucked into booster during disassembly.
- 2. Disconnect manifold vacuum hose from booster check valve.
- Disconnect electrical connector from master cylinder reservoir cap (fluid level indicator).

- Remove brake tubes from primary and secondary outlet ports of the master cylinder, and remove HCU supply hose. Plug ports and reservoir feed to prevent brake fluid from leaking onto paint and wiring.
- 5. Inside the passenger compartment, remove stoplamp switch wiring connector from switch (under instrument panel). Disengage pedal position switch from stud.
- 6. Remove hairpin retainer and outer nylon washer from pedal pin. Slide stoplamp switch off brake pedal just far enough for outer arm to clear pin.
- 7. Remove switch. Be careful not to damage switch during removal.
- 8. Remove booster-to-dash panel retaining nuts. Slide bushing and booster push rod off brake pedal pin.
- From inside engine compartment, move booster forward until booster studs clear dash panel. Remove booster and master cylinder assembly.
- Place booster and master cylinder assembly on a clean bench. Remove two nuts retaining master cylinder to booster. Slide master cylinder away from booster.

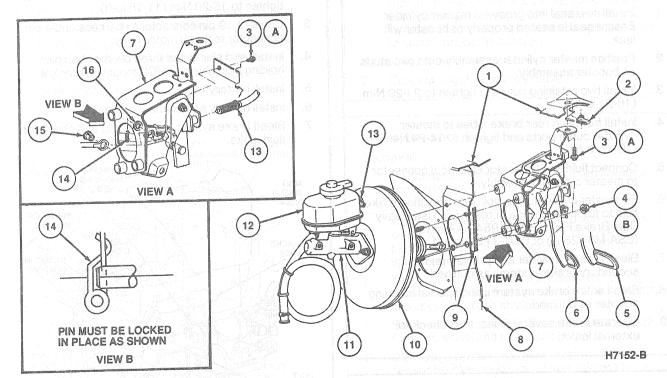
#### Installation

- Slide master cylinder onto booster studs. Ensure seal is in place in groove on master cylinder and install two retaining nuts. Tighten nuts to 21-29 N·m (16-21 lb-ft).
- 2. Place booster and master cylinder assembly in position on dash.
- 3. Inside passenger compartment, install booster push rod and bushing on brake pedal pin with head of bushing away from pedal. Secure booster to dash panel with self-locking nuts.

  Tighten nuts to 21-29 N·m (16-21 lb-ft).

CAUTION: Use care not to bend or deform switch.

- 4. Position stoplamp switch so that it straddles booster push rod with switch slot toward pedal blade and hole just clearing pin. Slide switch completely onto pin.
- Install outer nylon washer on pin and secure all parts to pin with hairpin retainer. Make sure retainer is fully installed and locked over pedal pin. Install stoplamp switch wiring connector.
- 6. Install pedal travel switch as outlined. Adjust switch as outlined under Adjustments.
- Connect brake tubes to master cylinder and tighten to 15-20 N·m (11-15 lb-ft). Connect HCU supply hose to reservoir.
- 8. Connect manifold vacuum hose to booster check valve and electrical connector to master cylinder reservoir cap.
- 9. Bleed brake system as outlined.



item	Part Number	Description
1		Cowl
2	N800538-S100	Nut
ЗА	N606689-S2	Bolt
4B	N620481-S2	Nut (4 Req'd) ON Common (4 Req'd)
5	. <del>- ,</del> isony rappa 1,100 s	Brake Pedal (Auto)
6		Brake Pedal (Manual)
7	2450	Pedal Bracket Assy
8		Dash Panel
9		Dash toxosad gailneon

(Continued)

Item	Part Number	Description
10	2B195	Vacuum Booster
11	2B195	Master Cylinder
12	2B195	Reservoir
13	9C727	Speed Control Valve
14	380699-S100	Pingaska gardi ayon 48.
15	2A309	Bushing
16	2B129	Spacer
Α		Tighten to 16-30 N·m (12-22 Lb-Ft)
В	)	Tighten to 21-29 N·m (16-21 Lb-Ft)

#### Master Cylinder

#### Removal

- With engine OFF, pump brake pedal until all vacuum is removed from booster. This will prevent master cylinder seal from being sucked into booster during disassembly.
- Disconnect electrical connector from master cylinder assembly (fluid level indicator).
- Remove brake tubes from primary and secondary outlet ports of master cylinder. Plug ports to prevent brake fluid from leaking onto paint and wiring.
- Remove two nuts retaining master cylinder to brake booster assembly.
- Slide master cylinder forward and upward from vehicle.

#### Installation

- Install new seal into groove in master cylinder. Ensure seal is seated properly or booster will leak.
- Position master cylinder assembly onto two studs on booster assembly.
- Install two retaining nuts and tighten to 21-29 N·m (16-21 lb-ft).
- Install front and rear brake tubes to master cylinder outlet ports and tighten to 14-24 N·m (10-18 lb-ft).
- 5. Connect fluid level indicator electrical connector to master cylinder assembly.
- Fill master cylinder reservoir with specified brake fluid to full mark on side of reservoir. Use Heavy Duty Brake Fluid C6AZ-19542-AA or BA (ESA-M6C25-A) or DOT-3 equivalent.
- Bleed master cylinder and primary and secondary brake systems as outlined.
- Bleed entire brake system using special bleeding adapter as outlined.
- Operate brake several times, then check for external leaks.

#### Hydraulic Control Unit (HCU)

#### Taurus/Sable

### Removal

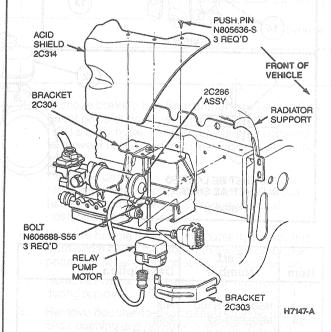
- 1. Disconnect and remove battery from vehicle.
- 2. Remove battery tray from vehicle.
- Remove three plastic push pins holding acid shield to HCU mounting bracket and remove acid shield.
- Disconnect 19-pin connector from HCU to wire harness, and disconnect 4-pin connector from HCU to pump motor relay.

- Remove two tubes from inlet ports and four tubes from outlet ports of HCU. Plug each port to prevent brake fluid from spilling onto paint and wiring.
  - NOTE: Nut on front of HCU also retains the relay mounting bracket.
- Remove three nuts retaining HCU assembly to mounting bracket and remove assembly from vehicle.

#### Installation

NOTE: Attach relay mounting bracket with nut on front of HCU.

- Position HCU assembly into mounting bracket. Install three retaining nuts and tighten to 16-24 N·m (12-18 lb-ft).
- Connect four tubes to outlet ports on side of HCU and two tubes to inlet ports on rear of HCU and tighten to 15-20 N-m (11-15 lb-ft).
- Connect 19-pin connector to harness and 4-pin connector to pump motor relay.
- 4. Install acid shield and three plastic push pins holding acid shield to HCU mounting bracket.
- 5. Install battery tray.
- 6. Install battery and connect cables.
- Bleed brake systems, as outlined and check for fluid leaks.



#### Taurus SHO

#### Removal

- Disconnect battery ground cable. Remove ABS module and mounting bracket from top of HCU mounting bracket.
- Disconnect 19-pin connector retaining HCU to wire harness and disconnect 4-pin connector HCU to pump motor relay.

- 3. Remove two tubes from inlet ports and four tubes from outlet ports of HCU, plug each port to prevent brake fluid from spilling on paint and wiring.
- Remove three nuts that attach the HCU assembly to mounting bracket and remove assembly from vehicle.

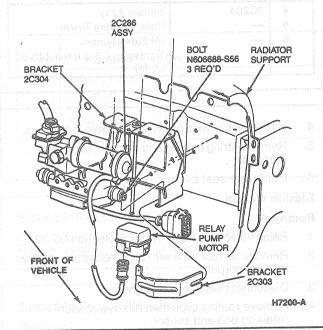
NOTE: Nut on front of HCU also retains the relay mounting bracket.

#### Installation

 Position HCU assembly into mounting bracket. Install three retaining nuts and tighten to 16-24 N·m (12-18 lb-ft).

NOTE: Install relay mounting bracket with nut on front of HCU.

- Connect four tubes to outlet ports on side of HCU and tighten to 15-20 N⋅m (11-15 lb-ft).
- 3. Connect 19-pin connector to harness and 4-pin connector to pump motor relay.
- Install ABS module mounting bracket and ABS module to top of HCU mounting bracket.
- Connect battery and bleed brake system as outlined and check for fluid leaks.



#### **ABS Module**

#### Removal

- 1. Disconnect negative battery cable.
- Remove trim panel in luggage compartment (behind rear seat) to expose electronic control unit. Refer to Section 01-05.

- 3. Disconnect 55-pin connector from ABS module.
  Unlock connector by pulling up lever completely.
  Move top of connector away from ABS module
  until all terminals are clear, then pull connector up
  out of slots in ABS module.
- Remove three screws attaching ABS module to mounting bracket and remove ABS module.

#### Installation

- 1. Align ABS module with bracket so that lever is facing up and side with two mounting holes is flat against bracket at top.
  - NOTE: If all three mounting holes in ABS module do not line up with holes in mounting bracket, ABS module is incorrectly aligned with bracket.
- 2. Install three retaining screws and tighten to 1.7-2.3 N·m (15-20 lb-in).
- Connect 55-pin connector by installing bottom part of connector into slots in ABS module and pushing top portion of connector into ABS module. Then, pull locking lever completely down to ensure proper installation.
- 4. Install trim panel cover.
- Connect negative battery cable.

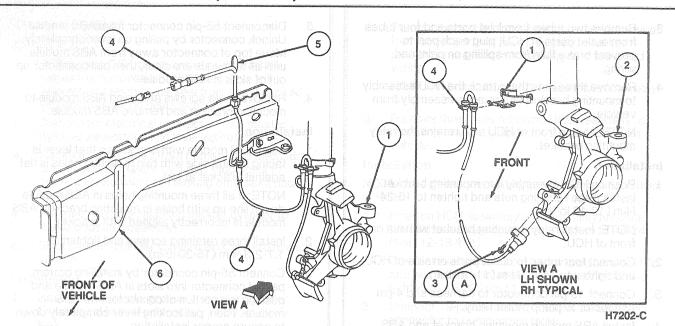
#### Wheel Sensors, Front

#### Removal

- Disconnect sensor connector located in engine compartment.
- 2. For RH front sensor, remove two plastic push studs to loosen front section of splash shield in wheel well. For LH front sensor, remove two plastic push studs to loosen rear section of splash shield.
- 3. Thread sensor wire through holes in fender apron. For RH front sensor, remove two retaining clips behind splash shield.
- 4. Raise vehicle on a hoist. Refer to Section 00-02. Remove wheel and tire assembly.
- Disengage sensor wire grommets at height sensor bracket and from retainer clip on shock strut just above spindle.
- Loosen sensor retaining screw and remove sensor assembly from front knuckle.

#### Installation

- 1. Align front wheel speed sensor with its mounting holes on front knuckle. Tighten retaining screw to 4.5-6.8 N·m (40-60 lb-in).
- 2. Install grommets at height sensor bracket and the retainer clip at shock strut.
- 3. Thread wire through holes in fender apron. Install retainer clips (for RH sensor only). Secure splash shield with plastic push studs.
- 4. Connect sensor connector to wiring harness from engine compartment.



Item	Part Number	Description Description
1	2C194	Retainer Clip
2	3K170 RH 3K171LH	Spindle Assy
ЗА	N805151-S100	Bolt

(Continued)

Item	Part Number	nd tink Visited Spanists (2 Descriptions bealing	
4	2C204	Sensor Assy	
5		Hole in Spring Tower	
6		LH Side Member	
Α	CAR 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Tighten to 4.5-6.8 N·m (40-60 Lb-In)	

#### Wheel Sensor, Rear

#### Sedan

#### Removal

- Remove rear seat and seat back insulation. Refer to Section 01-10
- Disconnect sensor from harness and tie one end of string or wire to sensor connector, and tie other end to rear seat sheet metal bracket.
- Push sensor wire grommet and connector through floorpan, drawing string or wire with sensor connector.
- Disconnect string or wire from the sensor from 1 underneath vehicle. If montyldingers to
- Raise vehicle on hoist. Refer to Section 00-02.
- Disconnect routing clips from suspension arms and remove sensor retaining bolts from rear brake adapters.

#### Installation

- Insert rear wheel speed sensor into hole in adapter and install retaining bolt. Tighten to 4.6-6.8 N·m (40-60 lb-in).
- 2. Install sensor routing clips to suspension arms.
- Attach string or wire to new sensor connector. then pull sensor connector through hole in floorpan using string or wire.

- Install sensor wire grommet into hole in floorpan.
- 5 Remove string or wire and connect sensor to harness.
- Install rear seat back.

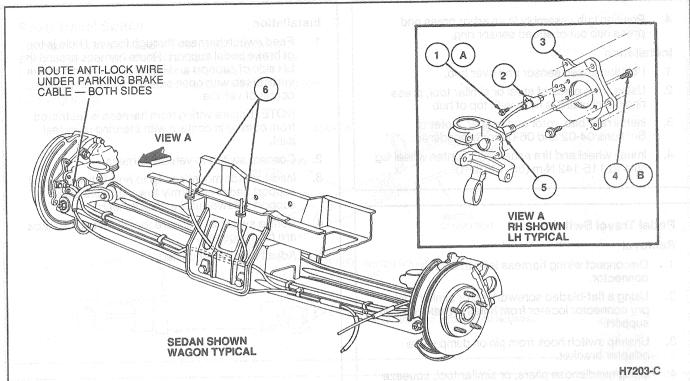
#### Station Wagon

#### Removal

- Raise vehicle on hoist. Refer to Section 00-02.
- 2. Remove sensor wire with attached grommet from hole in floorpan.
- Disconnect sensor from harness.
- Remove routing clips then remove sensor retaining bolt and sensor.

#### Installation

- Install rear wheel speed sensor and retaining bolt. Tighten to 4.6-6.8 N·m (40-60 lb-in).
- Route sensor harness and install clips.
- Connect sensor to harness. Push through hole in floorpan and install grommet. Cemind that Seath to texpose with Phylic 19 Section 0.7 08.
- Lower vehicle.



Item	Part Number	Description
1A	N805151-S100 2C216 LH	Bolt Sensor Assy
2	2C190 RH	
3	2C101 LH 2C100 RH	Hub Adapter

(Continued)

Item	Part Number	Description
4B	N805086-S100	Bolt (4 Req'd)
5		Rear Knuckle Assy
6	( <u>44</u> 107948	Floor Grommets
A		Tighten to 4.5-6.8 N·m (40-60 Lb-ln)
В		Tighten to 60-80 N·m (45-60 Lb-Ft)

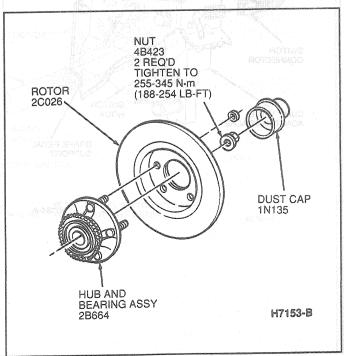
#### Speed Indicator Ring, Front

Refer to Section 05-04 for Front Speed Indicator Removal and Installation procedures.

#### Speed Indicator Ring, Rear

#### Removal

- 1. Raise vehicle on hoist. Refer to Section 00-02.
- 2. Remove wheel and tire assembly.
- 3. Remove caliper, rotor and rear hub assemblies. Refer to Sections 04-02 and 06-04.



4. Position hub assembly in an arbor press and press hub out of speed sensor ring.

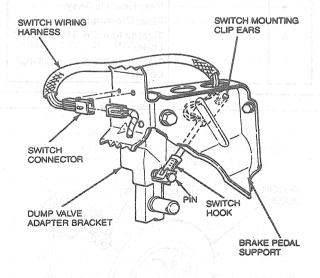
#### Installation

- 1. Position speed sensor ring over hub.
- 2. Using a flat piece of steel or similar tool, press ring down until it is flush with top of hub.
- Install rear hub, rotor and caliper. Refer to Sections 04-02 and 06-04 for procedures.
- Install wheel and tire assembly. Tighten wheel lug nuts to 115-142 N·m (85-105 lb-ft).

#### Pedal Travel Switch

#### Removal

- Disconnect wiring harness lead at switch connector.
- Using a flat-bladed screwdriver, or similar tool, pry connector locator from holes in brake pedal support.
- Unsnap switch hook from pin on dump valve adapter bracket.
- Using needlenose pliers, or similar tool, squeeze tabs on switch mounting clip and push clip through hole in brake pedal support.
- Remove switch by feeding switch harness through hole in top of brake pedal support bracket.



H7154-A

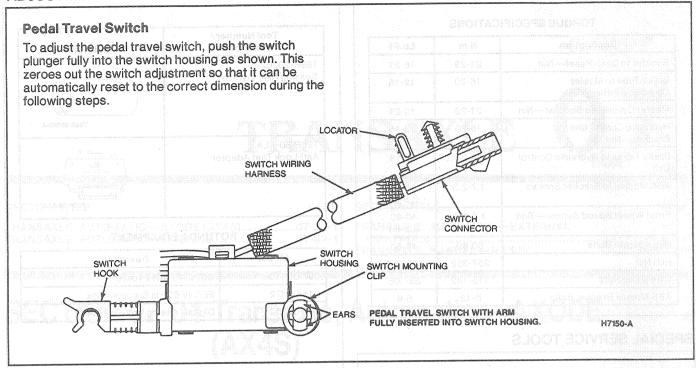
#### Installation

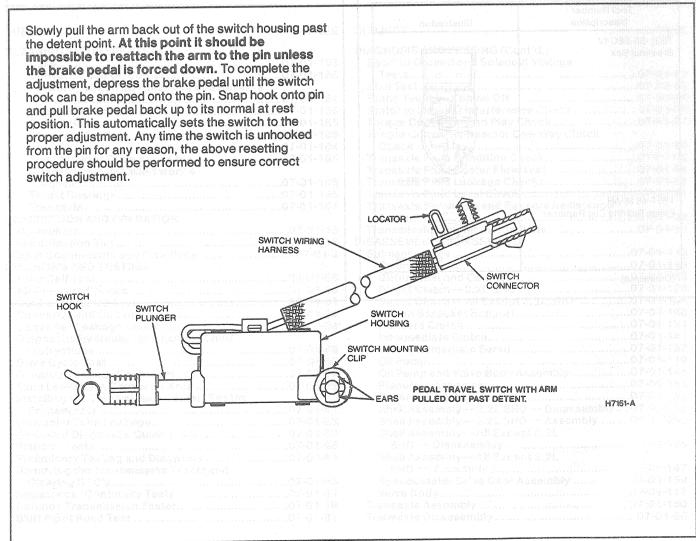
Feed switch harness through forward hole in top
of brake pedal support. Route harness around the
LH side of support and install locators to holes in
vertical tab with open side of connector facing
center of vehicle.

NOTE: Ensure wiring from harness is restricted from coming in contact with steering universal joint.

- 2. Connect switch to vehicle harness.
- Insert switch mounting clip to hole in brake pedal support and press firmly toward brake pedal support sidewall until a click is heard.
- Rotate switch and ensure that mounting clip tabs are fully engaged.
- 5. Adjust switch as outlined.

#### **ADJUSTMENTS**





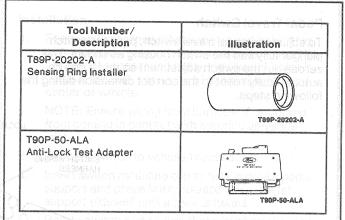
#### **SPECIFICATIONS**

#### TORQUE SPECIFICATIONS

Description	N·m	Lb-Ft
Booster to Dash Panel—Nut	21-29	16-21
Brake Tube to Master Cylinder—Fitting	16-20	12-15
Master Cylinder to Booster—Nut	21-29	16-21
Hydraulic Control Unit to  Bracket —Nut	16-20	12-15
Brake Tubes to Hydraulic Control Unit	14-24	10-18
ABS Module to Bracket Screws	1.7-2.3	15-20 (Lb-ln)
Front Wheel Speed Sensor—Bolt	4.5-6.8	40-60 (Lb-In)
Hub Adapter Bolts	60-80	45-60
Hub Nut	257-352	190-260
Wheel Lug Nuts	115-142	85-105
ABS Module Bracket Bolts	8-12	6-8

#### SPECIAL SERVICE TOOLS

Tool Number/ Description Illustration	
T83L-50-EEC-IV Breakout Box	T83L-50-EEC-IV
T85T-4616-AH Pinion Bearing Cup Replacer	T25T-4616-AH
(Continued)	



#### **ROTUNDA EQUIPMENT**

Model	Description
007-0041B	SUPER STAR II Tester
014-00322	EEC-IV 60 Pin Breakout Box
105-00051	Digital / Analog Volt-Ohmmeter

Stowly pull the arm back out of the switch housing past the determ point. At this point it should be impossible to reaffech the arm to fire pin unless impossible to reaffech the arm to fire pin unless the imposition, depress the brake pedal until the switch rook can be enapped onto the pin. Snap trook onto pin and pull brake pedal back up to its normal at rest proper adjustment. Any time the switch to the proper adjustment. Any time the switch is untrooked from the pin for any reason, the above reaching procedure should be performed to ensure correct switch adjustment.