

TO: ALL HOLDERS OF FLIGHT RECORDER AND MACH AIRSPEED TEST MODULE ASSEMBLY
P5-19 OVERHAUL MANUAL, 31-36-90

REVISION NO. 21, DATED MAR 1/08

HIGHLIGHTS

DESCRIPTION OF CHANGE	TOPICS AFFECTED												
	D & O	D / A s s y	C l e a n i n g	I n s p / C h k	R e p a i r	A s s y	F / C	T e s t	T / S h o o t i n g	S / T o o l s	S t o r a g e	I P L	L / O v e r h a u l
Changed the schematic pin numbers									X				

Mar 1/08

31-36-90
HIGHLIGHTS
Page 1 of 1

FLIGHT RECORDER AND MACH AIRSPEED WARNING TEST MODULE ASSEMBLY P5-19

31-36-90

BOEING P/N 69-37325-43, -65, -72, -74, -79, -95, -97, -99, -105, -108, -109
69-78547-1

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
		PRR 32972	Jul 5/80
69-37325-31-01			Dec 5/88
69-37325-31-03	31-14		Mar 5/91

LIST OF EFFECTIVE PAGES

- * Indicates pages revised, added or deleted in latest revision
F Indicates foldout pages - print one side only

PAGE	DATE	PAGE	DATE	PAGE	DATE
31-36-90		27	Jul 1/06		
T-1	Mar 5/91	28	Mar 5/91		
T-2	BLANK	29	Jun 5/90		
* LEP-1	Mar 1/08	30	Jul 1/06		
LEP-2	BLANK	31	Mar 5/91		
T/C-1	Jul 5/80	32	Jul 1/06		
T/C-2	BLANK				
1	Mar 5/91				
2	Mar 5/91				
3	Mar 5/91				
4	Jul 1/06				
4A	Jul 1/06				
4B	Mar 5/91				
5	Jun 5/91				
6	Jun 5/91				
7	Sep 5/92				
8	Jul 1/01				
9	Jul 5/80				
10	BLANK				
F 11	Dec 1/96				
12	BLANK				
F 13	Dec 1/96				
14	BLANK				
F 15	Dec 1/96				
16	BLANK				
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18	BLANK				
F 19	Dec 1/96				
20	BLANK				
F 20A	Jun 5/90				
20B	BLANK				
F 20C	Jun 5/90				
20D	BLANK				
F 20E	Jun 5/90				
20F	BLANK				
F 20G	Dec 1/96				
20H	BLANK				
21	Jul 1/06				
22	BLANK				
23	Mar 5/91				
24	Mar 5/91				
25	Jul 1/06				
26	Jul 1/06				

Mar 1/08

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BOEING **COMMERCIAL JET** **OVERHAUL MANUAL**

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*[1] Use applicable procedures in 31-10-01 and standard industry practices.

*[2] Special instructions not required.

OVERHAUL MANUAL

FLIGHT RECORDER AND MACH AIRSPEED WARNING TEST MODULE ASSEMBLY (P5-19)

1. DESCRIPTION AND OPERATION

A. The flight recorder and mach airspeed warning test module assembly has quick-release fasteners on the baseplate and a rear-mounted receptacle. The module contains switches, indicator lamp (some models) and electronic components in the flight recorder, mach airspeed warning, and master caution indicator systems.

B. Functional Description

- (1) Card A1 contains two circuits; transistor Q8 which is a simple transistor switch, and SCR Q2 in series with transistor Q4 which provide a ground path for the master caution indicator. The master caution triggering inputs are positive on some pins and ground on others. After triggering, SCR Q2 may be reset to extinguish the master caution indication, and retriggered to recall the indication if the original triggering input remains.
- (2) Circuit ground is connected to pin 23 (XA1-7). Circuit power for the master caution triggering circuitry is connected to pin 29 (XA1-22). A1Q8 provides a path to ground at XA1-13 when turned on by a positive input at XA1-21, unless that input is shunted to ground at XA1-12, -19, or -20. A1Q3 is a voltage regulator for the master caution triggering circuitry controlled by zener diode A1CR1.
- (3) Any momentary turn on of A1Q1 provides a pulse through A1L1/A1CR4 to trigger A1Q2 into conduction. If A1Q4 is turned on, the master caution indicator ground path is completed. Ground inputs at any one of pins 2 (pin 31 for 69-37325-108), 20, 22, 24, 26, 27 or 9 (69-78547-1); positive inputs at either pin 8 or 28; or a combined ground input at pins 1 and 21, will activate the master caution indicator.
- (4) A ground input at pin 2 (pin 31 for 69-37325-108, pin 9 for 69-78547-1) performs two functions. A1Q7 base circuit is completed to turn A1Q7 on, and A1C13 couples the ground input to the base circuit of A1Q1 to turn A1Q1 on during the charging period of A1C13. A1Q7 provides base drive for A1Q4 thru R1. A1Q1 turn-on triggers SCR A1Q2 thru A1L1 and A1CR4. A1Q2 conduction and A1Q4 turn-on complete the master caution indicator ground circuit.

- (5) If SCR AlQ2 is reset by external interruption of the master caution indicator circuit, the indicator is extinguished. As long as AlQ4 is held on by the pin 2 ground input, the indication may be recalled by momentary turn-on of AlQ1. A momentary ground input at pin 26 will be coupled to the base circuit of AlQ1 by AlC8 to perform the recall function. Any of the other ground input pins will activate the master caution circuitry in the same manner.
- (6) If AlQ5 or AlQ6 is turned on by a positive input at pin 8 or 28, AlQ4 will also be turned on through AlR28 or AlR27. AlQ1 will be turned on momentarily by coupling of the ground input through AlC9 or AlC10. SCR AlQ2 will be triggered and the master caution ground path completed. The circuit may be reset and the indication recalled (if the positive input remains) by momentary grounding of pin 26.
- (7) A ground input at pin 21 (AlQ1 on) must be combined with a ground input at pin 1 (AlQ7/AlQ4 on) to activate the master caution circuit.
- (8) Deleted.
- (9) Pin 22 receives a ground input from master test. Pin 26 receives the recall input (ground) to retrigger the SCR.
- (10) (69-37325-65) Card A2 provides two additional inputs - at pins 3 and 6 - like the one at pin 2, which is described in par. (4). Pin 31 is an input which works like the one at pins 8 and 28, which are described in par. (6).
- (11) (69-37325-72) Card A2 provides inputs at pins 9 and 10 which are like the one at pin 2. They function as described in par. (4).
- (12) (69-37325-74)
 - (a) Card A2 has its input at pin 31. Ground at this input causes A2 to turn AlQ7 on. A2 also activates AlQ1 after power has been present at pin 31 for 1 $\pm$ 0.5 seconds.
 - (b) When power is present at pin 31, A2Q1 is turned on. A2Q1 grounds the negative power supply input of A2U1 thru A2CR1. A2Q1 also grounds the base of AlQ7 thru A2CR3, turning on the transistor. The resistor circuit A2R1 and A2R4 provides 12 volts at the non-inverting input of A2U1. A2C3 is charged through A2R2. When the voltage on A2C3 reaches 12 volts (after about 1 second), A2U1 is driven low grounding the base circuit of AlQ1.
- (13) (69-37325-97, -105, -109) Card A2 provides an input at pin 31 which is like the one at pin 2. It functions as described in par. (4).

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2. REPAIR

- A. Repair can be accomplished using applicable procedures in 31-10-01 and standard industry practices, except as noted in par. B and C.
- B. If keying plug (23, Fig. 6 or 80, Fig. 7) is replaced, insert at contact position 9.
- C. Install connector (22, Fig. 6 or 70, 71, Fig. 7) with contact position 1 adjacent to resistor R1.

3. TESTING

A. Test Equipment

- (1) Multimeter: WV38A (RCA), or equivalent
- (2) Power Supply: 28 $\pm$ 2 volts dc, 1 ampere
- (3) Connector (with pigtail leads): BACC45FT18-31S (J1)
- (4) Switch: SPDT
- (5) Switch: SPST (approximately 13 required)
- (6) Capacitor: 1 uf, 35 volts (C1)
- (7) Resistor: 330 ohms $\pm$ 5%, 1/2 w (R1)
- (8) Diode: 1N4385 (CR1)
- (9) Lamp Load (L3): 420 to 460 ma, 28 vdc (GE1819 and two 1873 lamps in parallel, or equivalent)
- (10) Lamp Load (L1): 100 ma max, 28 vdc (two GE387 lamps in parallel, or equivalent) (Required only for 69-37325-43, -65, -72, -79 and 69-78547-1)

B. Prepare for test.

- (1) Connect assembly to test connector.
- (2) Identify and tag pigtail leads.

C. Functional Test

- (1) (Do not apply to module assembly with card A1 P/N 69-51810-22 or -33 install). Verify forward and reverse diode resistance as indicated in Fig. 1.

Component Tested	Measure Between Pins	15 Ohms Max with + at Pin	50k Min with + at Pin
A1CR3	26 to 22	26	22
A1CR6	23 to 24	23	24
A1CR7	23 to 26	23	26
A1CR20	23 to 27	23	27
<u>69-37325-65</u>			
A2CR2	23 to 3	23	3
A2CR7	23 to 6	23	6
<u>69-37325-43, -65, -72, 69-78547-1</u>			
A1CR24	14 to 5	14	5
A1CR25	14 to 18	14	18
<u>69-37325-72</u>			
A2CR2	23 to 9	23	9
A2CR5	23 to 10	23	10
<u>69-37325-97, -105</u>			
A2CR2	23 to 31	23	31
<u>69-37325-43, -65, -72, -74, -79, -95, -97, -99, -105, -109</u>			
A1CR21	23 to 20	23	20
A1CR22	23 to 2	23	2
<u>69-37325-108</u>			
A1CR21, CR2	23 to 20	23*[2]	20
A1CR21, CR3	23 to 2	23*[2]	2
<u>69-37325-74, -95, -97, -99, -105, -108, -109 *[1]</u>			
A1CR25	23 to 18	23	18
A1CR24	23 to 5	23	5
<u>69-78547-1</u>			
A1CR21, A2CR2	23 to 20	23*[2]	20
A1CR21, A2CR1	23 to 2	23*[2]	2

- *[1] Set S2 to TEST
*[2] 220 ohm max
*[3] 30 ohm max

Diode Resistance Tests
Figure 1

(1a) (For module assembly with card A1 P/N 69-51810-22 or -33 install). Verify forward and reverse diode resistance as indicated in Fig. 1A.

Component Tested	Measure Between Pins	15 Ohms Max with + at Pin	50k Min with + at Pin
A1CR21	23 to 5*[1]	23	5
A1CR20	23 to 18*[1]	23	18

*[1] Set S2 to TEST

Diode Resistance Tests
Figure 1A

(2) Verify continuity or no continuity with switch set as indicated in Fig. 2.

NOTE: "Con" means that continuity exists and that resistance must be less than 1 ohm.
"No Con" means that circuit is open (infinite resistance).

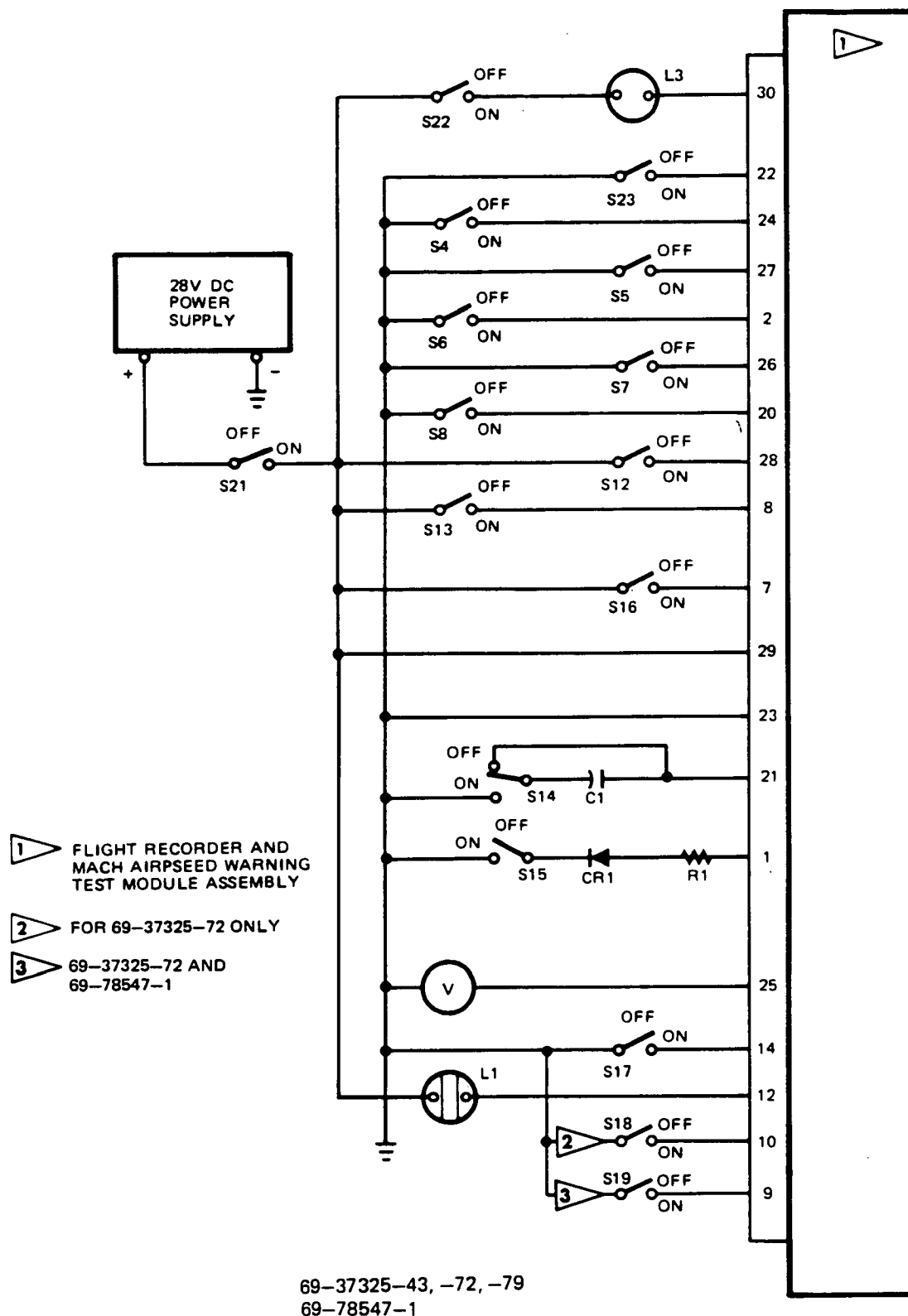
Module Switch	Measure Between Pins	Required Results	
		<u>Depressed</u>	<u>Released</u>
<u>69-37325-43, -65, -72, 69-78547-1</u>			
S1	15 to 16	Con	No Con
S1	17 to 16	No Con	Con
<u>69-37325-72, 69-78547-1</u>			
S3	6 to 3	No Con	Con
S3	6 to 4	Con	No Con
<u>69-37325-74, -79, -95, -97, -99, -105, -108, -109</u>			
S1	6 to 3	No Con	Con
S1	6 to 4	Con	No Con
S3	15 to 16	Con	No Con
S3	17 to 16	No Con	Con

Switch Continuity Tests
Figure 2

(3) Verify 1.5k $\pm$ 10% across A1 R15 by measuring between pins 7 and 14 (all except for 69-37325-74, -79, -95, -97, -99, -105, -108, -109)

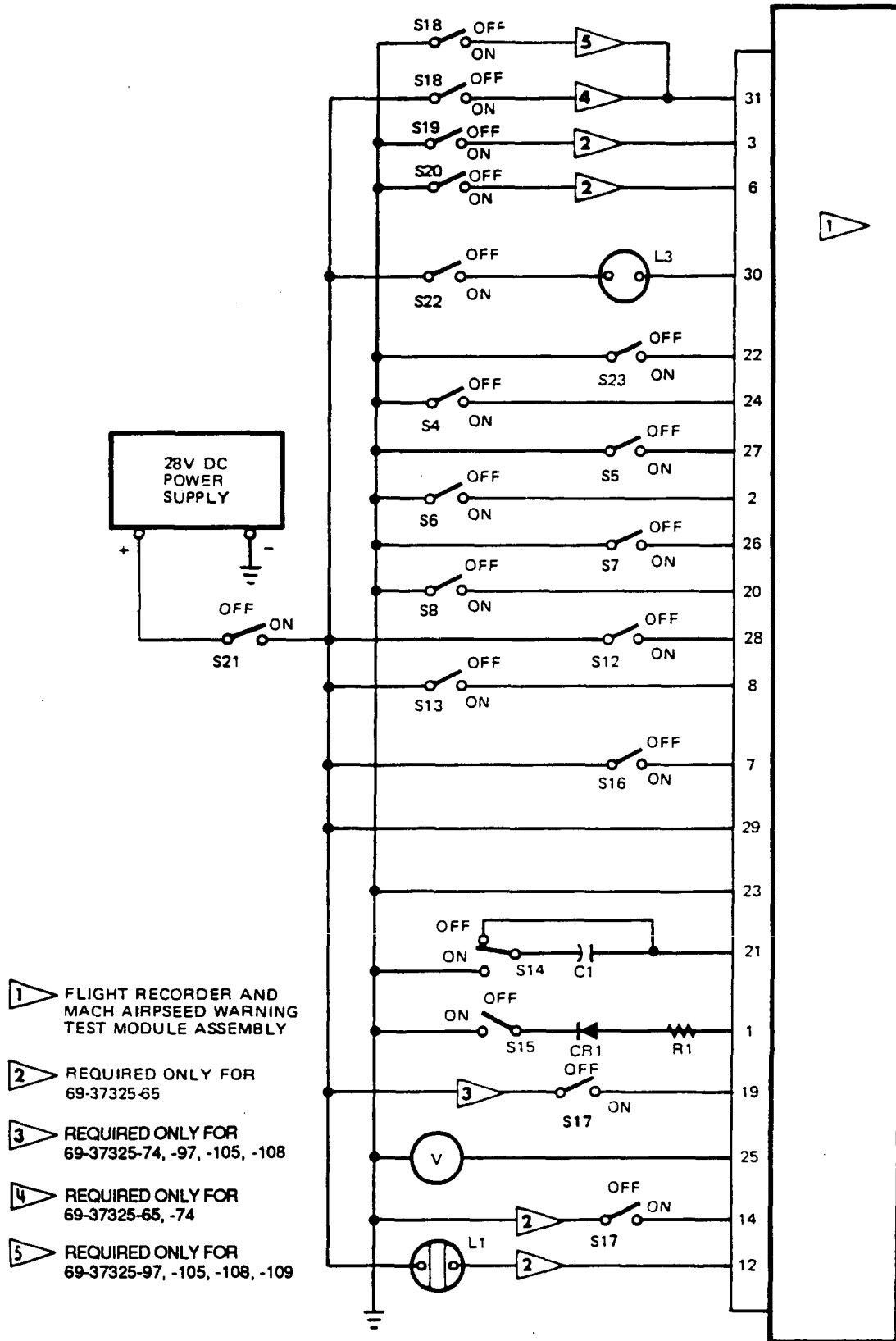
(4) Connect test setup per Fig. 3 or Fig. 3A. Set all switches to OFF. Turn on power supply.

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Test Setup
Figure 3

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69-37325-65, -74, -95, -97, -99, -105, -108, -109

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- (5) Set switches and verify indications as specified in Fig. 4. Test lamps shall be illuminated only when indicated. Use test setup in Fig. 3 for 69-37325-43, -72, -79, -111, -115 69-78547-1; in Fig. 3A for 69-37325-65, -74, -95, -97, -99, -105, -108, -109.

Test Switch			Test Lamp Indications		V
Step	Number	Position	On	Off	
1	21 and 22	ON			18 $\pm$ 3V *[1]
2	23	ON	L3		
3	23	OFF		L3	
4	4	ON	L3		
5	4	OFF		L3	
6	5	ON	L3		
7	5	OFF		L3	
8	6	ON	L3		
9	6	OFF		L3	
10	7	ON	L3		
11	7	OFF		L3	
12	8	ON	L3		
13	8	OFF		L3	
14	12	ON	L3		
15	12	OFF		L3	
16	13	ON	L3		
17	13	OFF		L3	
18	4	ON	L3		
19	22	OFF		L3	
20	22	ON		L3	
21	5	ON	L3		
22	22	OFF		L3	
23	22	ON		L3	
24	6 *[3]	ON	L3		
25	22	OFF		L3	
26	22	ON		L3	
27	7	ON	L3		
28	22	OFF		L3	
29	22	ON		L3	
30	8	ON	L3		
31	22	OFF		L3	
32	22	ON		L3	
33	12	ON	L3		
34	22	OFF		L3	
35	22	ON		L3	
36	13	ON	L3		
37	22	OFF		L3	
38	22	ON		L3	

Test Switch			Test Lamp Indications		V
Step	Number	Position	On	Off	
39	14	ON	L3		
40	14	OFF	L3		
41 *[4]	4 thru 8, 12,13,22	OFF		L3	
42	22,15,14	ON	L3		18 $\pm 3V$ *[1]
43	14,15,22	OFF		L3	18 $\pm 3V$ *[1]
<u>65-37325-43, -65, -72, 69-78547-1</u>					
44	16	ON	L1		
45	17	ON		L1	
46	16,17	OFF		L1,L3	
<u>69-37325-65</u>					
48	22	ON			
49	18	ON	L3		
50	18	OFF		L3	
51	19	ON	L3		
52	19	OFF		L3	
53	20	ON	L3		
54	20	OFF		L3	
55	18	ON	L3		
56	22	OFF		L3	
57	22	ON		L3	
58	19	ON	L3		
59	22	OFF		L3	
60	22	ON		L3	
61	20	ON	L3		
62	22	OFF		L3	
63	22	ON		L3	
64	18,19,20, 21,22	OFF		L3	
<u>69-37325-72, 69-78547-1</u>					
65	22	ON			18 $\pm 3V$
66	18*[2]	ON	L3		
67	18*[2]	OFF		L3	
68	19	ON	L3		
69	19	OFF		L3	
70	18*[2]	ON	L3		
71	22	OFF		L3	
72	22	ON		L3	
73	19	ON	L3		
74	22	OFF		L3	
75	22	ON		L3	

*[1] 8.6 to 18-1/2 volts for 69-37325-99, -108 only

*[2] Assembly P/N 69-37325-72 only

*[3] For assemblies P/N 69-37325-108, 69-78547-1, put S6 to OFF position after this step

*[4] S6 is already OFF for assemblies P/N 69-37325-108, 69-78547-1

(6) (69-37325-74, -95, -97, -99, -105, -108, -109 only) perform the tests listed in Fig. 4A. Set all switches to OFF.

Step No.	Component Tested	Procedure	Required Results
<u>69-37325-74, -97, -105, -108</u>			
1	L1	Set S21, to ON	
2		Set S8, S17 to ON	L1 on
3		Set S8 to OFF, Set S23 to ON	L1 on
4		Set S23 to OFF	L1 off
5		Depress L1	L1 on while depressed
6		Set S17 to OFF	
<u>69-37325-74, -95, -97, -99, -105, -108</u>			
7	K1	Measure ohms: pins 10 to 11	Con
8		10 to 9	No Con
9		13 to 14	Con
10		13 to 12	No Con
11	CR1/K1/A1Q8/ A1R15/A1R16/ A1CR11	Set S16 to ON 13 to 12	Con
12		13 to 14	No Con
13		10 to 9	Con
14		10 to 11	No Con
15	S2/A1Q8	Set S2 to TEST(left) 10 to 11	Con
<u>69-37325-74, -109</u>			
16	A2	Set S16 to OFF. Set S22 to ON	
17		Set S18 to ON	L3 on in 0.5 to 1.5 sec
18		Set S18 to OFF	L3 off
19		After waiting at least	
20		3 seconds, set S18 to ON	L3 on in 0.5 to 1.5 sec
21		Set S22 to OFF	L3 off
22		Set S22 to ON	L3 off
<u>69-37325-97, -105, -108</u>			
22A	A2	Set S16 to OFF. Set S22 to ON	
22B		Set S18 to ON	L3 on
22C		Set S18 to OFF	L3 off
22D		Set S18 to ON	L3 on
22E		Set S22 to OFF	L3 off
22F		Set S22 to ON	L3 off
22G		Set S18 to OFF	
<u>69-37325-108</u>			
23		Set S18 to ON	L3 on
24		Set S18 to OFF	L3 off
25		Set S8 to ON	L3 on
26		Set S6 to ON	L3 on
27		Set S8 to OFF	L3 on
28		Set S6 to OFF	L3 off
29		Remove all connections	

Functional Test, 69-37325-74,-95,-97,-99,-105,-108,-109

Figure 4A

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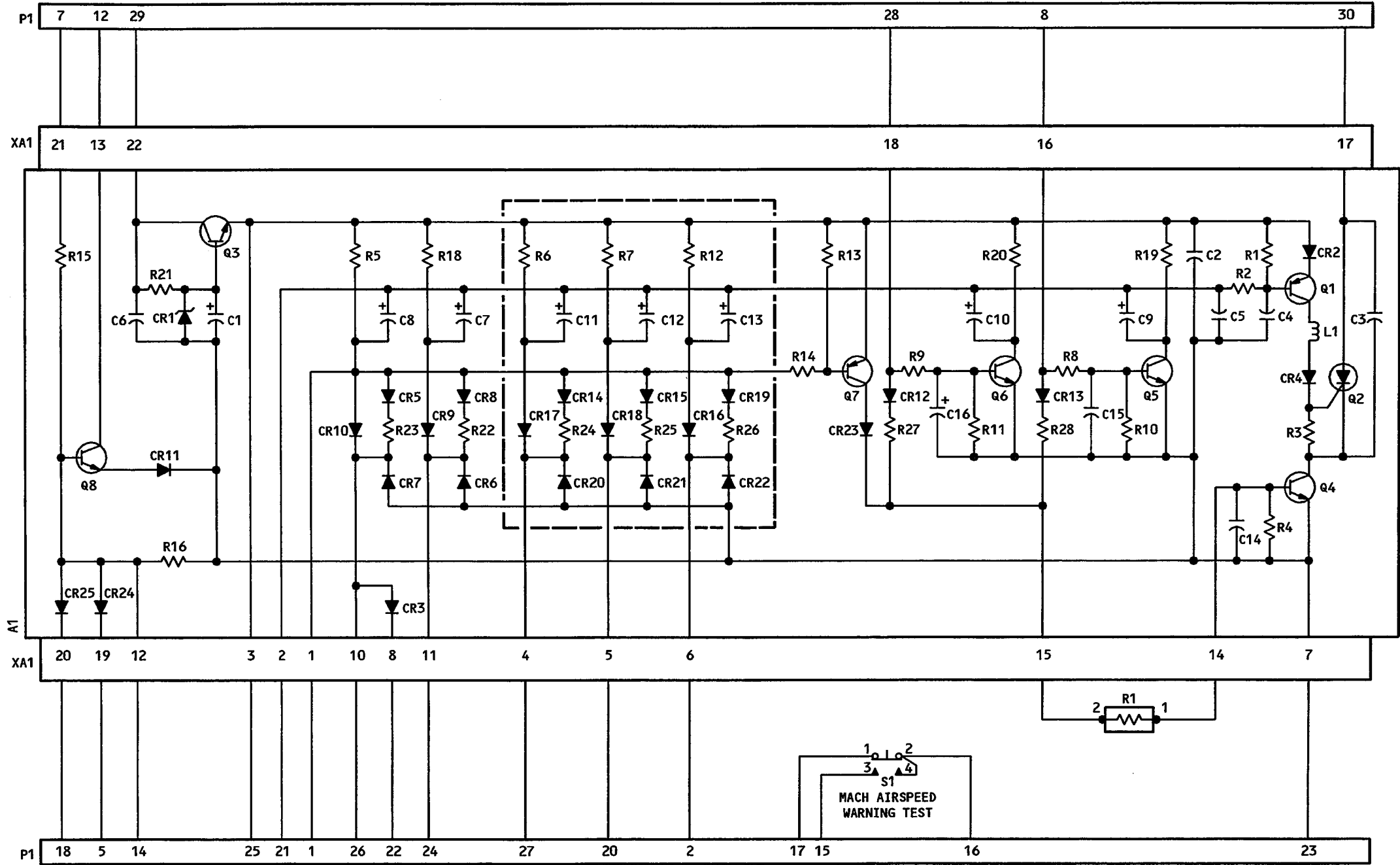
(7) Turn off power supply and disconnect assembly from test setup.

4. TROUBLE SHOOTING

- A. If failure of a test occurs, check for defective connections and incorrect wiring connections, prior to replacement of components.

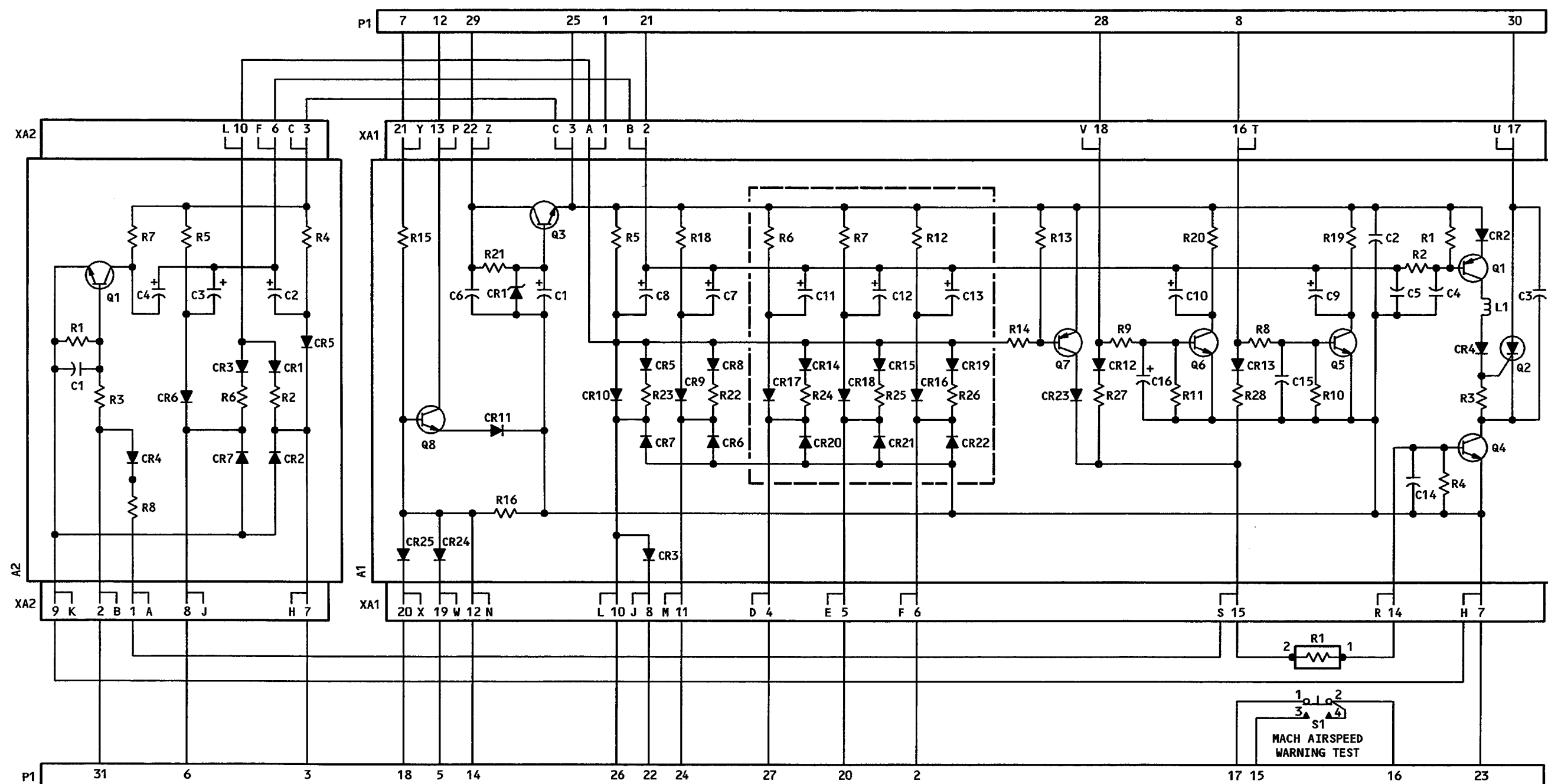
NOTE: Trouble shooting is keyed to functional test procedures.

<u>Trouble</u>	<u>Possible Cause and Correction</u>
Fig. 1, and 2	Component noted in figure
Fig. 4	
Step 1	A1
Steps 2 and 3	A1 or R1
Steps 4 thru 46	A1
Steps 48 thru 75	A2
Fig. 4A	Component noted in figure



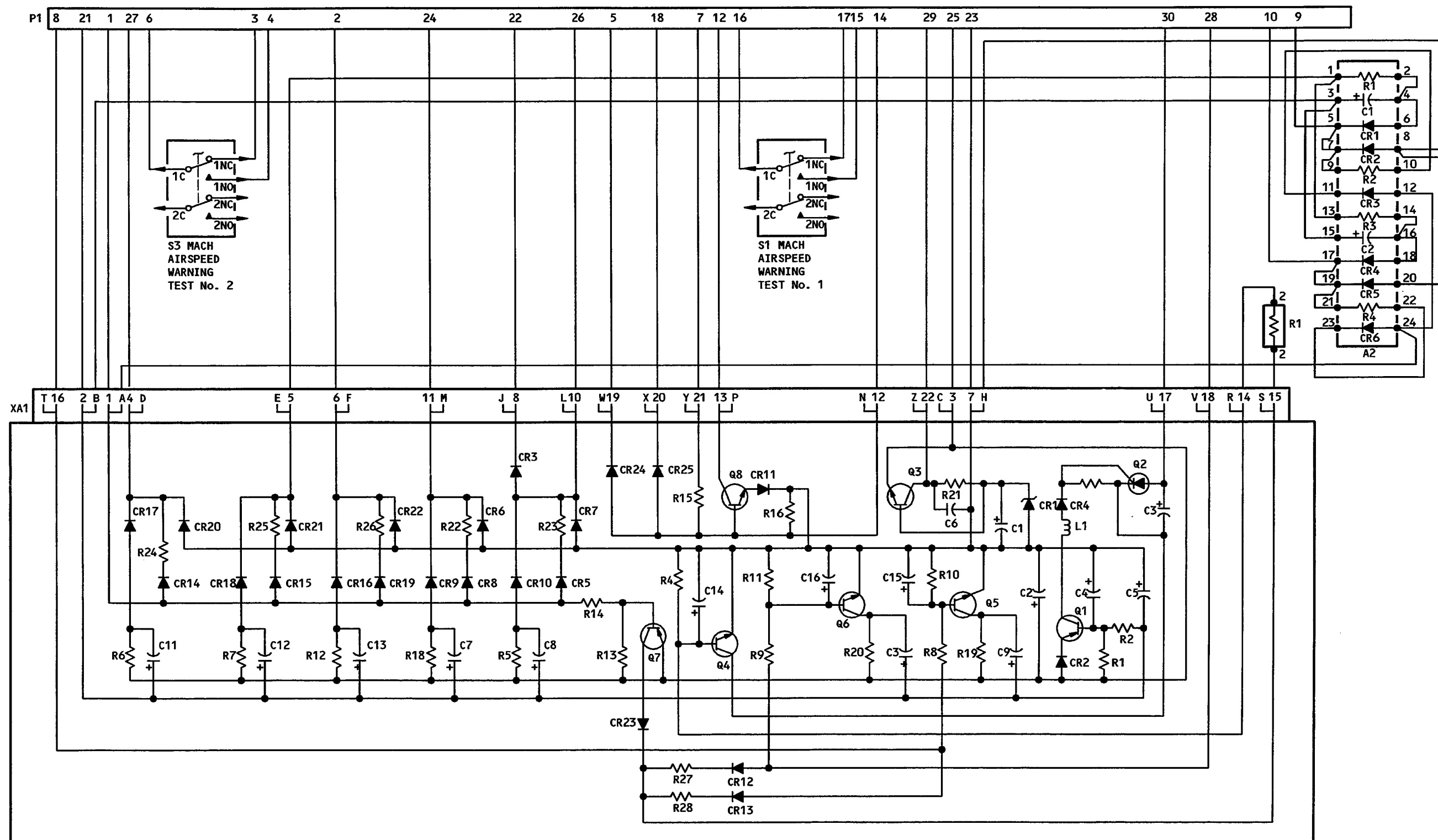
NOTE: ALL WIRE BMS 13-16, TYPE I,
CLASS 1, SIZE AWG 20.

65-37325-43
Schematic Diagram
Figure 5



NOTE: ALL WIRES BMS 13-16, TYPE I,
CLASS 1, SIZE AWG 20.

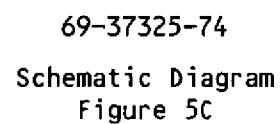
65-37325-65
Schematic Diagram
Figure 5A



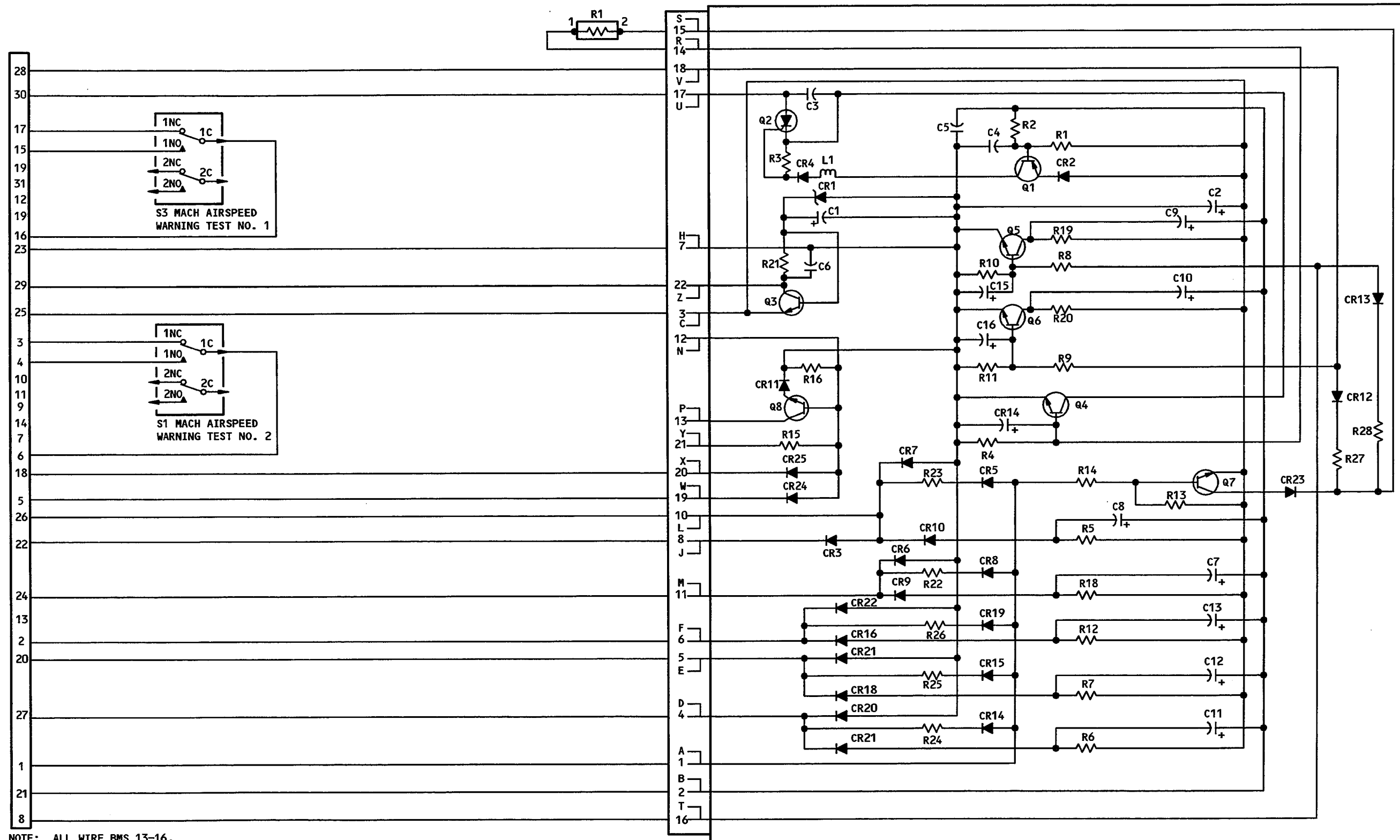
NOTE: ALL WIRE BMS 13-16, TYPE I,
CLASS 1, SIZE AWG 20.

69-37325-72

Schematic Diagram
Figure 5B

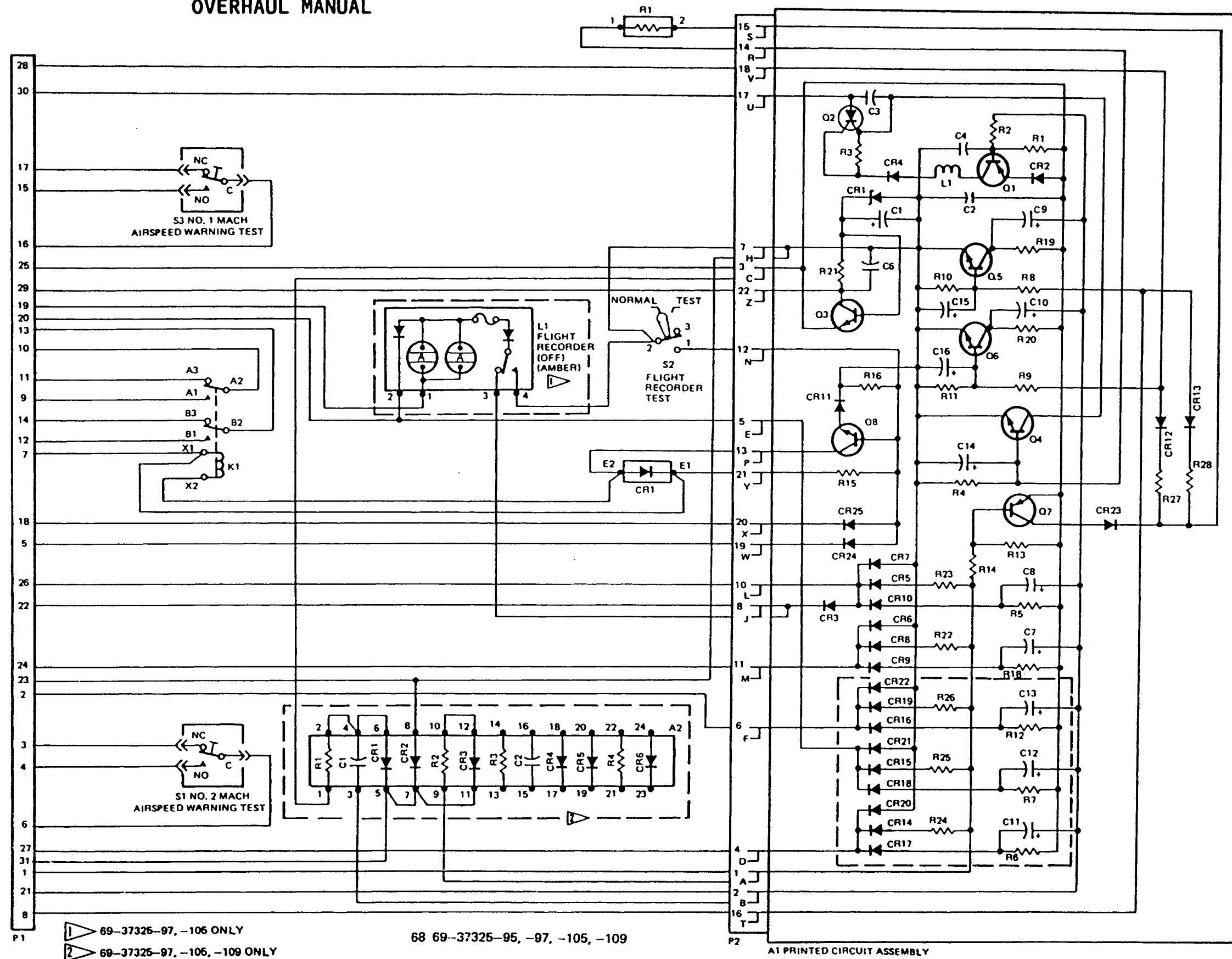


NOTE: ALL WIRE BMS 13-16, TYPE I,
CLASS 1, SIZE AWG 20.

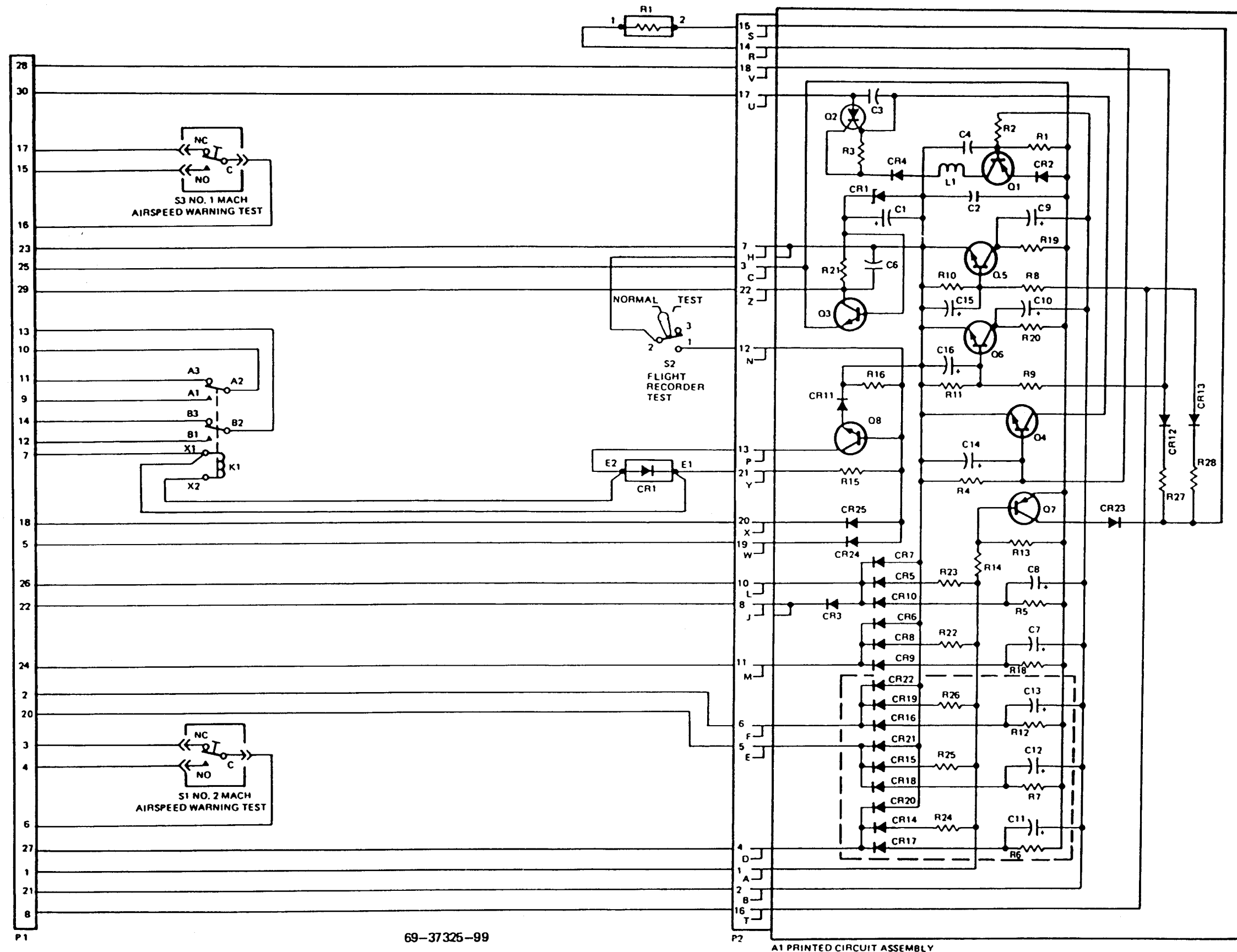


NOTE: ALL WIRE BMS 13-16,
SIZE AWG 20.

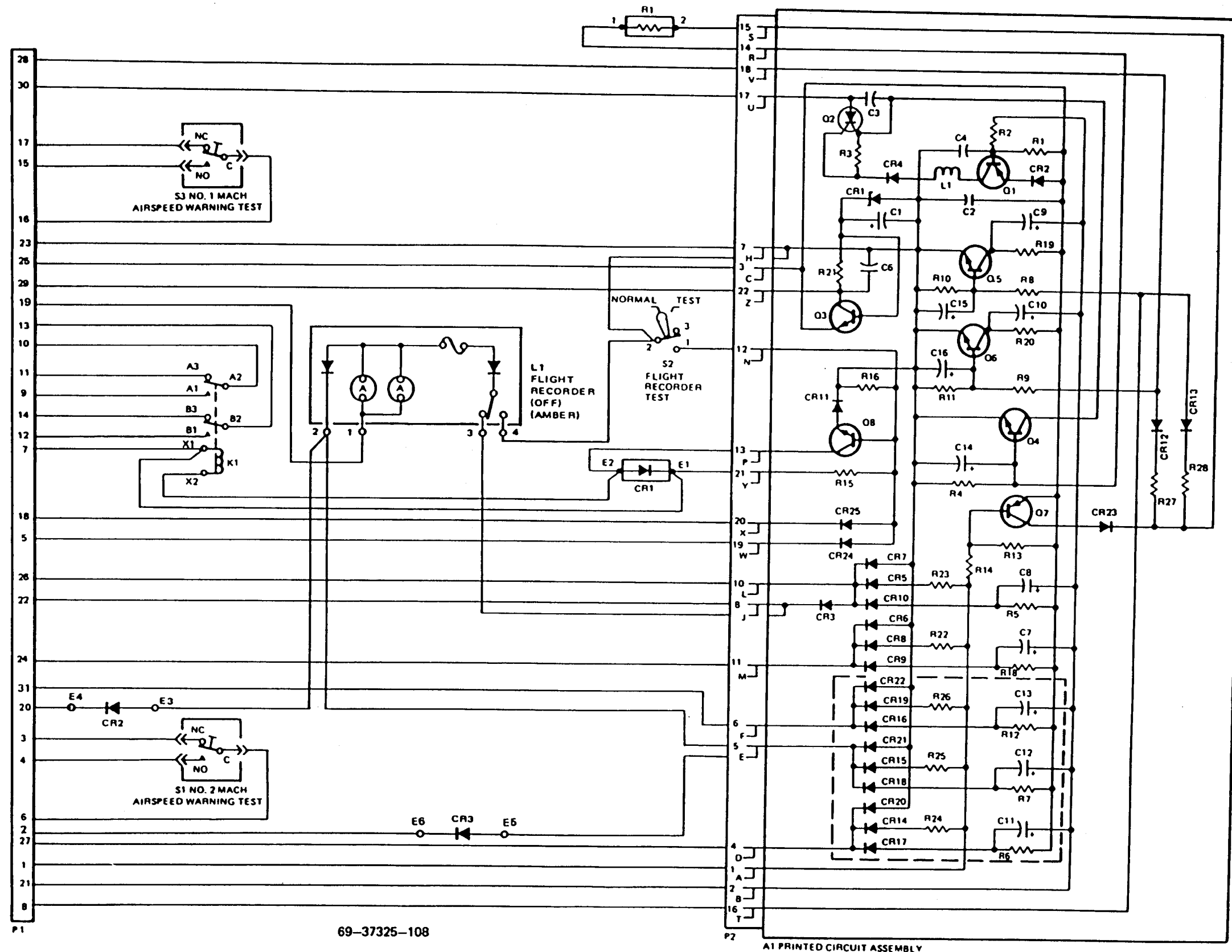
69-37325-79
Schematic Diagram
Figure 5D



Schematic Diagram
Figure 5E



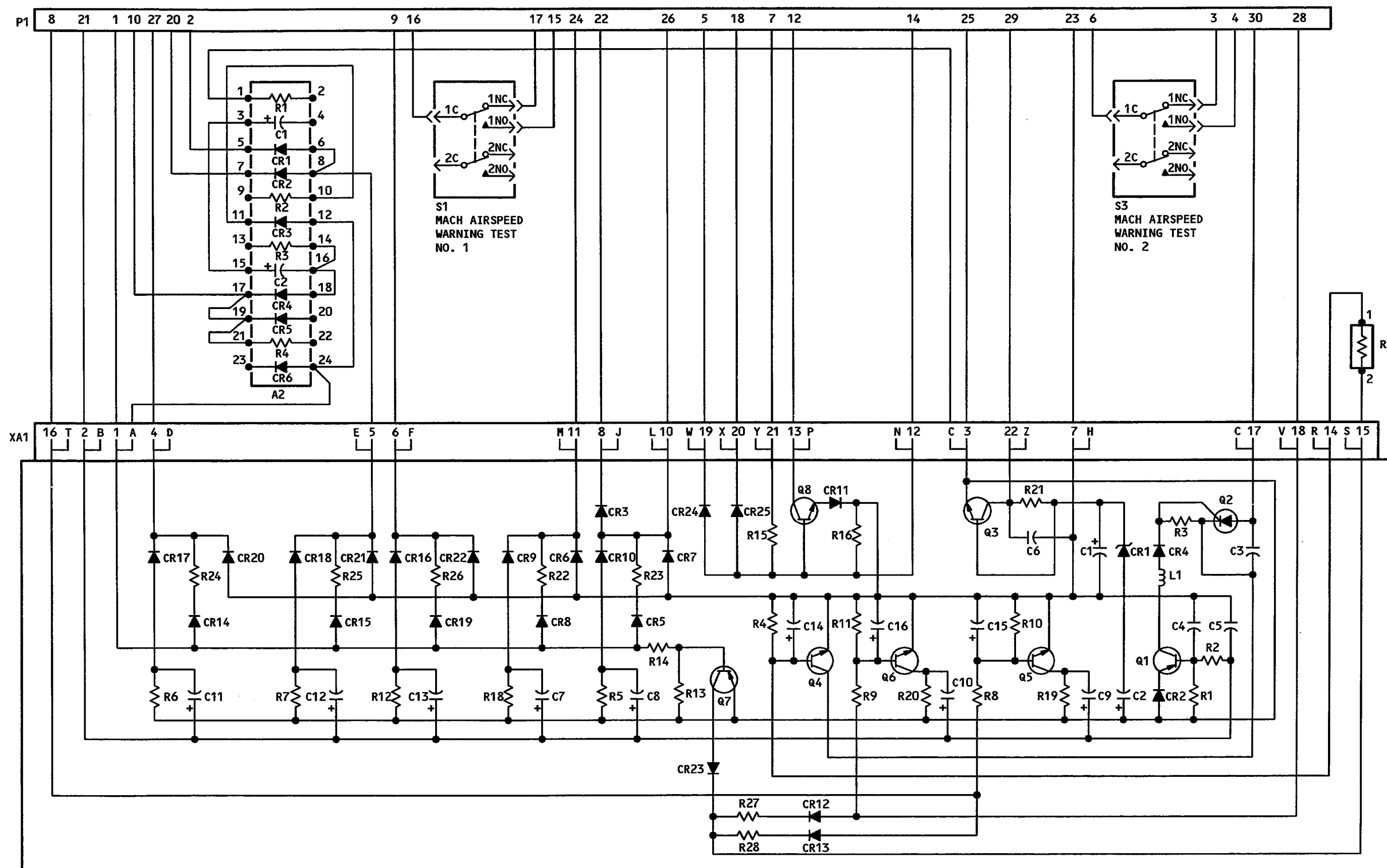
Schematic Diagram
Figure 5F



69-37325-108

A1 PRINTED CIRCUIT ASSEMBLY

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A1 PRINTED CIRCUIT ASSEMBLY

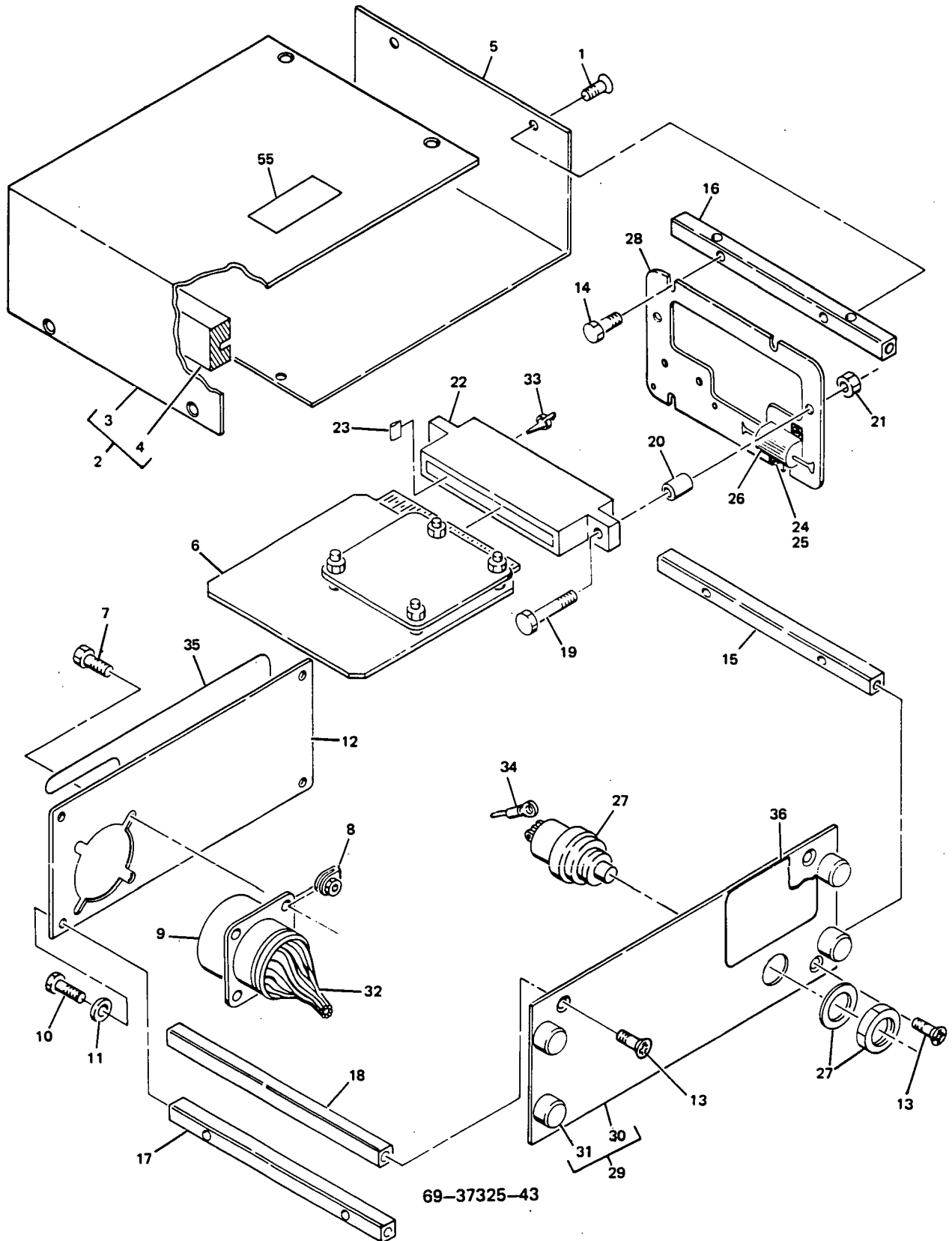
NOTE: ALL WIRE BMS 13-16, TYPE I,
CLASS 1, SIZE AWG 20.

69-78547-1
Schematic Diagram
Figure 5H

5. ILLUSTRATED PARTS LIST

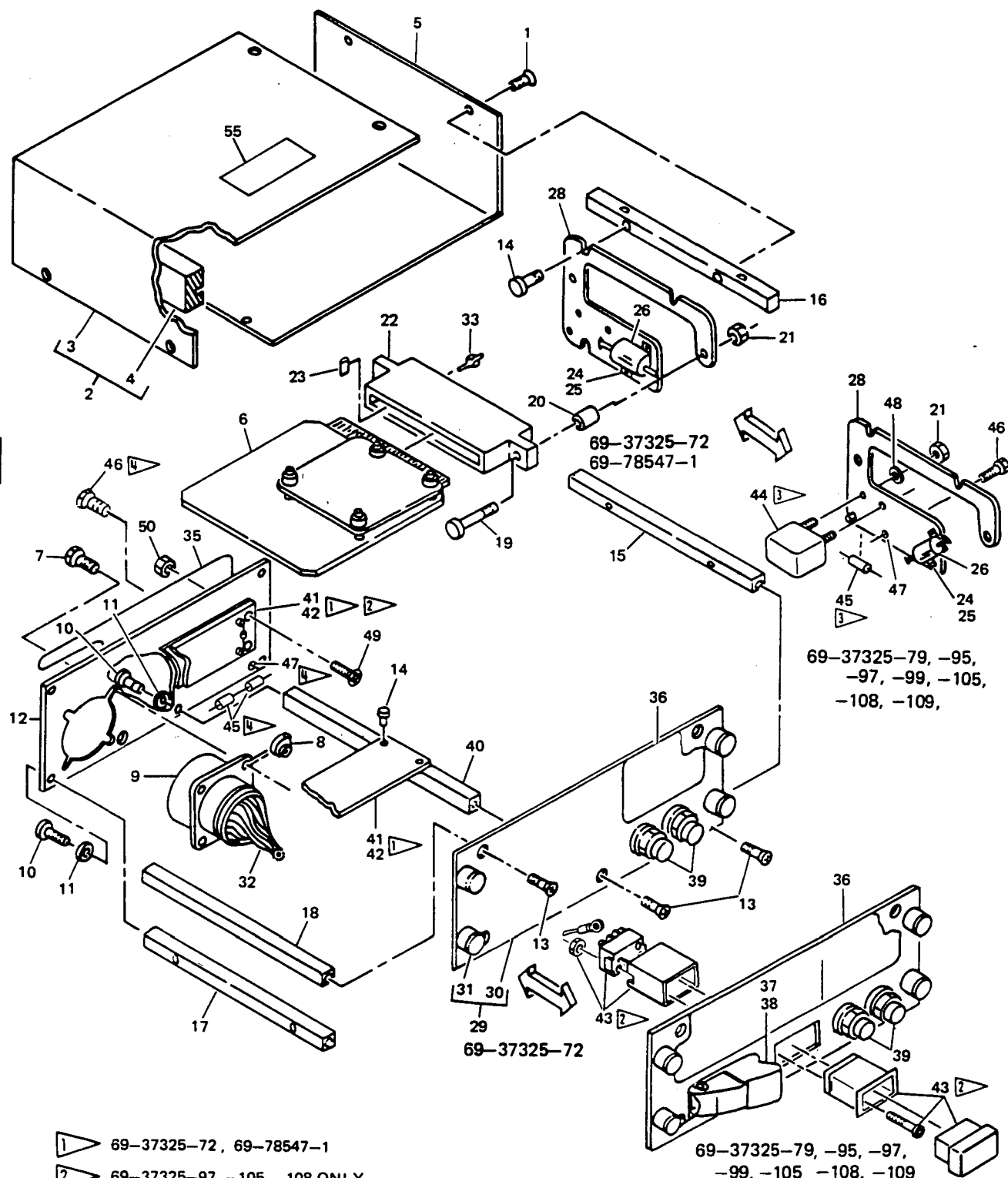
FIG. 6 REFERENCE DESIGNATION INDEX (SEE SCHEMATIC DIAGRAM)		
REFERENCE DESIGNATION	PART NUMBER	ITEM NO.
A1	69-51810-8	6
A1	69-51810-12	6
A1	69-51810-22	6
A1	69-51810-33	6
A2	69-63592-9	41
CR1	1N4384	45
E1, E2	1491A	47
K1	BACR13CF4	44
P1	BACC45FN18-31P	9
P2	582557-1	22
R1	*RH5-510-3PCT	26
R1	RER60F2210R	26
R1	3105M-510-3PCT	26
S1	W20161-03	27
S1, S3	2PB11H58	39
S2	MS24523-23	37
XA1	582557-1	22

* PREFERRED PART



Flight Recorder and Mach Airspeed Warning Test
Module Assembly (P5-19)
Figure 6 (Sheet 1)

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- 1 69-37325-72, 69-78547-1
- 2 69-37325-97, -105, -108 ONLY
- 3 69-37325-95, -97, -99, -105, -108, -109 ONLY
- 4 69-37325-108, -109 ONLY

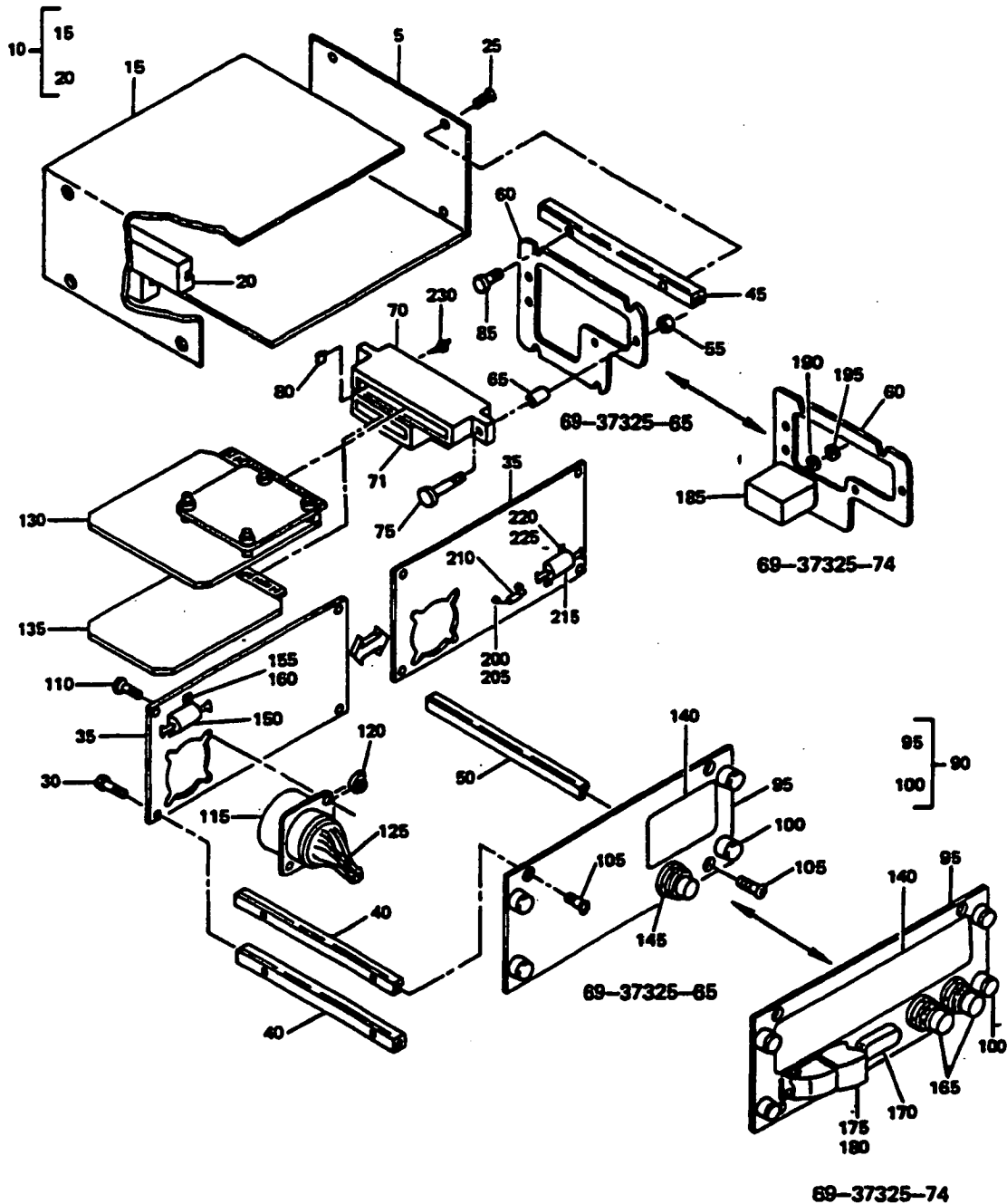
69-37325-72, -79, -95, -97, -99, -105, -108, -109
69-78547-1

Flight Recorder and Mach Airspeed Warning Test
Module Assembly (P5-19)
Figure 6 (Sheet 2)

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
6-	69-37325-43		MODULE ASSY P5-19, FLIGHT RECORDER AND MACH AIRSPEED WARNING TEST	A	
	69-37325-72		MODULE ASSY P5-19, FLIGHT RECORDER AND MACH AIRSPEED WARNING TEST (PRE CSB 69-37325-31-03)	B	
	69-37325-79		MODULE ASSY P5-19, FLIGHT RECORDER AND MACH AIRSPEED WARNING TEST	C	
	69-37325-95		MODULE ASSY P5-19, FLIGHT RECORDER AND MACH AIRSPEED WARNING TEST (PRE CSB 69-37325-31-01)	D	
	69-37325-97		MODULE ASSY P5-19, FLIGHT RECORDER AND MACH AIRSPEED WARNING TEST	E	
	69-37325-99		MODULE ASSY P5-19, FLIGHT RECORDER AND MACH AIRSPEED WARNING TEST (POST CSB 69-37325-31-01)	F	
	69-37325-105		MODULE ASSY P5-19, FLIGHT RECORDER AND MACH AIRSPEED WARNING TEST	G	
	69-37325-108		MODULE ASSY P5-19, FLIGHT RECORDER AND MACH AIRSPEED WARNING TEST	H	
	69-37325-109		MODULE ASSY P5-19, FLIGHT RECORDER AND MACH AIRSPEED WARNING TEST	J	
	69-78547-1		MODULE ASSY P5-19, FLIGHT RECORDER AND MACH AIRSPEED WARNING TEST (POST CSB 69-37325-31-03)	K	
	69-37325-111		DELETED		
	69-37325-115		DELETED		
	69-37325-117		DELETED		
	69-37325-118		DELETED		
	69-37325-119		DELETED		
	69-37325-120		DELETED		
	69-37325-122		DELETED		
	69-37325-126		DELETED		
	69-37325-129		DELETED		
	69-37325-131		DELETED		
1	NAS514P440-4		. SCREW		8
2	69-43948-20		. COVER ASSY	AEG	1
2	69-43948-23		. COVER ASSY	BCDFJ	1
3	69-43948-19		. . COVER	AEG	1
3	69-43948-22		. . COVER	BCDF	1
4	69-43948-21		. . FOAM		1
5	69-43948-19		. COVER	AEGH	1
5	69-43948-22		. COVER	BCDFJ	1
6	69-51810-8		. PRINTED CIRCUIT ASSY (V89954)(OPT)	A-EGK	1
6	69-51810-12		. PRINTED CIRCUIT ASSY (V89954)(OPT)	FHJ	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
6-			DELETED		
6	69-51810-20		. PRINTED CIRCUIT ASSY (V89954)(OPT)		1
6	69-51810-22		. PRINTED CIRCUIT ASSY (V89954)(PREF)		1
6	69-51810-33		. SCREW	A-FK	2
7	BACS12CB04-5		. SCREW	G	2
7	NAS1801-04-5		. CLIP NUT		2
8	BACN10NW1		. CONNECTOR		1
9	BACC45FN18-31P		. SCREW	AC-F	4
10	BACS12CB06-5		. SCREW	BLK	5
10	BACS12CB06-5		. SCREW	G	4
10	NAS1801-06-5		. WASHER	ADEFG	4
11	MS35338-41		. WASHER	BLK	5
11	MS35338-41		. BACKPLATE		1
12	69-43948-12		. SCREW	AC-G	4
13	NAS514P632-5		. SCREW	BK	5
13	NAS514P632-5		. SCREW	A	4
14	BACS12CB04-4		. SCREW	BK	7
14	BACS12CB04-4		. SCREW	C-FJ	3
14	BACS12CB04-4		. SCREW	G	3
14	NAS1801-04-4		. STANDOFF		1
15	69-37325-5		. STANDOFF		1
16	69-37325-8		. STANDOFF	AC-J	1
17	69-37268-13		. STANDOFF	BK	
17	69-37325-70		. STANDOFF		1
18	69-37268-14		. SCREW	A-FJK	2
19	BACS12CB06-14		. SCREW	GH	2
19	NAS1801-06-14		. SPACER		2
20	NAS43DD1-17		. UT	ABCHJK	2
21	BACN10JC06		. NUT	D-G	4
21	BACN10JC06		. CONNECTOR, V00779		1
22	582557-1		. KEYING PLUG, V00779		1
23	582507-1		. SCREW		2
24	BACS12BF02-5		. NUT		2
25	BACN10DN26		. RESISTOR, 510 OHMS $\pm 3\%$, 5 W, V91637	A-EGHK	1
26	RH5-510-3PCT		(PREF)		
26	3105M510-3PCT		. RESISTOR, 510 OHMS $\pm 3\%$, 5 W, V00213	A-EGHK	1
26	RER60F2210R		(OPT)		
26	RER60F2210R		. ESISTOR, 221 OHMS $\pm 1\%$, 5 W	FHJ	1
27	W20161-03		. SWITCH, V81640	A	1
28	69-43948-14		. SUPPORT PLATE	A	1
28	69-43948-17		. SUPPORT PLATE	B-JK	1
29	69-37325-45		. BASEPLATE ASSY	A	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
6-29	69-37325-73		. BASEPLATE ASSY	BK	1
29	69-37325-80		. BASEPLATE ASSY	CDFJ	1
29	69-37325-18		. BASEPLATE ASSY	EH	1
29	69-37325-106		. BASEPLATE ASSY	G	1
30	BACP10UO225G		. . BASEPLATE	A-FK	1
30	BACP10UO262G		. . BASEPLATE	G	1
31	BACS21DD1G		. . STUD ASSY		4
32	69-37325-44		. WIRE BUNDLE	A	1
32	69-37325-64		. WIRE BUNDLE	B	1
32	69-37325-81		. WIRE BUNDLE	C	1
32	69-37325-96		. WIRE BUNDLE	DF	1
32	69-37325-98		. WIRE BUNDLE	EG	1
32	69-37325-64		. WIRE BUNDLE (MODIFIED BY CSB 69-37325-31-03)	K	1
33	66143-2		. TAB TERMINAL, V00779		AR
34	640024-1		. TERMINAL, V00779	A	3
35	BAC27DCC239		. ALUMINUM FOIL MARKER	ABD-GJK	1
36	BAC27DEX1347		. ALUMINUM FOIL MARKER	A	1
36	BAC27DCC933		. ALUMINUM FOIL MARKER	BK	1
36	BAC27DCC957		. ALUMINUM FOIL MARKER	C	1
36	BAC27DCC1061		. ALUMINUM FOIL MARKER	DFJ	1
36	BAC27DCC572		. ALUMINUM FOIL MARKER	EGH	1
37	MS24523-23		. SWITCH, TOGGLE	C-J	1
38	11170-1		. SWITCH GUARD, V72914	C-K	1
39	2PBH11H58		. SWITCH, PUSHBUTTON, V91929	B-JK	2
40	69-37325-71		. STANDOFF	BK	1
41	69-63592-9		. COMPONENT ASSY (V89954)	BEGJK	1
42	MOD15512SP-2		. INSULATOR, V91833	BEGJK	1
43	318-630-1001-008		. LIGHT, IND, V81590 (BOEING 10-61803-12)	EGH	1
44	BACR13CF4		. RELAY	D-J	1
44	BACR13CF4		. RELAY	GH	1
45	IN4384		. DIODE	D-GJ	1
45	IN4384		. DIODE	H	3
46	BACS12BE02-3		. SCREW	H	6
46	BACS12BE02-3		. SCREW	D-GJ	2
47	1491A		. TERMINAL (OPTIONAL)	D-GJ	2
47	1625-4-12		. TERMINAL, V88245 (PREF)	D-GJ	2
47	1491A		. TERMINAL (OPTIONAL)	H	6
47	1625-4-12		. TERMINAL, V88245 (PREF)	H	6
48	AN960PD6		. WASHER	D-G	6
49	NAS514P440-5		. SCREW	D-G	4
49	NAS514P440-5		. SCREW	J	8
50	BACN10JC04		DELETED		
50	BACN10DN40		. NUT	D-G	4
55	BAC27EEX510		. DECAL	HJK	1



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Flight Recorder and Mach Airspeed Warning Test
Module Assembly (P5-19)
Figure 7

BOEING
COMMERCIAL JET
OVERHAUL MANUAL

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	N O M E N C L A T U R E 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
7-					
1	69-37325-65		MODULE ASSY, TEST, FLIGHT RECORDER AND MACH AIRSPEED WARNING	A	
1	69-37325-74		MODULE ASSY, TEST, FLIGHT RECORDER AND MACH AIRSPEED WARNING	B	
1	69-37325-116		DELETED		
5	69-37325-82		. COVER	A	1
5	69-37325-83		. COVER	B	1
10	69-43948-24		. COVER ASSY		1
15	69-43948-25		. . COVER		1
20	69-43948-26		. . FOAM		1
25	NAS514P440-4		. SCREW		8
30	NAS514P632-5		DELETED		
30	BACS12CB06-5		. SCREW		4
35	69-49218-4		. BACKPLATE	A	1
35	69-43948-29		. BACKPLATE	B	1
40	69-37268-13		. STANDOFF		2
45	69-37325-69		. STANDOFF	A	1
45	69-37325-78		. STANDOFF	B	1
50	69-37325-68		. STANDOFF	A	1
50	69-37325-77		. STANDOFF	B	1
55	BACN10JC06		. NUT		4
60	69-43948-27		. SUPPORT PLATE	A	1
60	69-43948-28		. SUPPORT PLATE	B	1
65	NAS43DD1-17		. SPACER		4
70	582557-1		. CONNECTOR, V00779		1
71	582551-1		. CONNECTOR, V00779		1
75	BACS12CB06-14		. SCREW		4
80	582507-1		. KEYING PLUG, V00779		2
85	BACS12CB04-4		. SCREW	A	4
85	BACS12CB04-4		. SCREW	B	3
90	69-37325-66		. BASEPLATE ASSY	A	1
90	69-37325-75		. BASEPLATE ASSY	B	1
95	BACP10U0262G		. . BASEPLATE		1
100	BACS21DD1G		. . STUD		4
105	NAS514P632-5		. SCREW		4
110	BACS12CB04-5		. SCREW		2
115	BACC45FN18-31P		. CONNECTOR		
120	BACN10NW1		. CLIP NUT		2
125	69-37325-67		. WIRE BUNDLE	A	1
125	69-37325-76		. WIRE BUNDLE	B	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	N O M E N C L A T U R E							USE CODE	QTY PER ASSY	
			1	2	3	4	5	6	7			
7-												
130	69-51810-8									• PRINTED CIRCUIT ASSY (V89954)(OPT)	AB	1
130	69-51810-22									• PRINTED CIRCUIT ASSY (V89954)(OPT)	AB	1
130	69-51810-33									• PRINTED CIRCUIT ASSY (V89954)(PREF)	AB	1
135	69-71571-1									• PRINTED CIRCUIT ASSY (V89954)	A	1
135	69-71571-3									• PRINTED CIRCUIT ASSY (V89954)	B	1
140	BAC27DEX1347									• ALUMINUM FOIL MARKER	A	1
140	BAC27DCC572									• ALUMINUM FOIL MARKER	B	1
145	W20161-03									• SWITCH, PUSHBUTTON, V81640	A	1
150	RH5-510-3PCT									• RESISTOR, 510 OHMS ±3%, 5 W, V91637A	1	
150	3105M510-3PCT									• RESISTOR, 510 OHMS ±3%, 5 W, V00213 (OPT)	A	1
155	BACS12BF02-5									• SCREW	A	2
160	BACN10DN26									• NUT	A	2
165	2PB11H58									• SWITCH, PUSHBUTTON, V91929	B	2
170	318-630-1001-008									• LIGHT, V81590 (BOEING PART 10-61803-12)	B	1
175	MS24523-23									• SWITCH, TOGGLE	B	1
180	11170-1									• SWITCH GUARD, V72914	B	1
185	BACR13F4A									• RELAY	B	1
190	AN960PD6									• WASHER	B	6
195	BACN10JC06									• NUT	B	2
200	1491A									• TERMINAL, INSULATED, V88245	B	2
205	BACS12BE02-3									• SCREW	B	2
210	1N4384									• DIODE	B	1
215	RH5-510-3PCT									• RESISTOR, 510 OHMS ±3%, 5 W, V91637	B	
215	3105M510-3PCT									• RESISTOR, 510 OHMS ±3%, 5 W, V00213, (OPT)	B	1
220	BACS12BF02-5									• SCREW	B	2
225	BACN10DN26									• NUT	B	2
230	BAC27EEX510									DELETED		

FIG. 7 REFERENCE DESIGNATION INDEX (SEE SCHEMATIC DIAGRAM)

REFERENCE DESIGNATION	PART NUMBER	ITEM NO.
A1	69-51810-8	130
A2	69-71571-1	135
A2	69-71571-3	135
CR1	1N4384	210
K1	BACR13CF4	185
L1	318-630-1001-008	170
P1	BACC45FN18-31P	115
P2	582557-1	70
P3	582551-1	71
R1	*RH5-510-3PCT	150
R1	310M510-3PCT	150
R1	*RH5-510-3PCT	215
R1	3105M510-3PCT	215
S1	W20161-03	145
S1,S3	2PB11H58	165
S2	MS24523-23	175
XA1	582557-1	70
XA2	582551-1	71

VENDORS

V00213	STRUTHERS-DUNN LLC, 2295 HOFFMEYER RD., FLORENCE, SOUTH CAROLINA 29501-7306
V00779	TYCO ELECTRONICS CORP., M/S 38-43, 2800 FULLING MILL, MIDDLETON, PENNSYLVANIA 17057-3142
V72914	GRIMES AEROSPACE CO., 550 ST. RT. 55, URBANA, OHIO 43078-1948
V81590	KORRY ELECTRONICS CO., 901 DEXTER AVE. N., SEATTLE, WASHINGTON 98109- 3515
V81640	EATON CORP., 2250 WHITFIELD AVE., SARASOTA, FLORIDA 34243-3926
V88245	WINCHESTER ELECTRONICS, 62 BARNES INDUSTRIAL RD. N., P.O. BOX 5008, WALLINGFORD, CONNECTICUT 06492-7508
V89954	BAE SYSTEMS CONTROLS, 600 MAIN ST., JOHNSON CITY, NEW YORK 13790
V91637	VISHAY DALE ELECTRONICS, 1122 23 RD ST., P.O. BOX 609, COLUMBUS, NEW ENGLAND 68602-0609
V91833	KEYSTONE ELECTRONICS CORP., 3107 20TH RD., ASTORIA, NEW YORK 11105-2017
V91929	HONEYWELL INTERNATIONAL, INC., 11 W. SPRING ST., FREEPORT, ILLINOIS 61032-4316