



COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST

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

PART NUMBER

**69-37325-132, -133, -134, -135, -136, -137, -138,
-164, -165, -166, -167, -168**

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COMPONENT MAINTENANCE MANUAL

Revision No. 20
Jul 01/2009

To: All holders of FLIGHT RECORDER AND MACH AIRSPEED TEST MODULE ASSEMBLY, P5-19 31-24-01.

Attached is the current revision to this COMPONENT MAINTENANCE MANUAL

The COMPONENT MAINTENANCE MANUAL is furnished either as a printed manual, on microfilm, or digital products, or any combination of the three. This revision replaces all previous microfilm cartridges or digital products. All microfilm and digital products are reissued with all obsolete data deleted and all updated pages added.

For printed manuals, changes are indicated on the List of Effective Pages (LEP). The pages which are revised will be identified on the LEP by an R (Revised), A (Added), O (Overflow, i.e. changes to the document structure and/or page layout), or D (Deleted). Each page in the LEP is identified by Chapter-Section-Subject number, page number and page date.

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Location of Change

Description of Change

NO HIGHLIGHTS

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COMPONENT MAINTENANCE MANUAL

INTRODUCTION

1. General

- A. The instructions in this manual supply the data necessary to do the maintenance functions together with the test, fault isolation, repair, and replacement of the defective parts.
- B. This manual is divided into different parts:
 - (1) Title Page
 - (2) Transmittal Letter
 - (3) Highlights
 - (4) List of Effective Pages
 - (5) Table of Contents
 - (6) Temporary Revision & Service Bulletin Record
 - (7) Record of Revisions
 - (8) Record of Temporary Revisions
 - (9) Introduction
 - (10) Procedures & IPL Sections
- C. Refer to the Table of Contents for the page location of the applicable procedures.
- D. All dimensions, measures, quantities and weights included are in English units. When metric equivalents are given they will be in the parentheses that follow the English units.
- E. The introduction to the Illustrated Parts List (IPL) shows how the IPL data is used.
- F. Design changes, optional parts, configuration differences and Service Bulletin modifications may cause different part numbers. These part numbers are identified in the IPL with an alphabetical letter which is added to the end of the basic item number. This new item number is referred to as an alpha-variant. Throughout the manual, IPL basic item number references also apply to alpha-variants unless shown differently.
- G. Verification:

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COMPONENT MAINTENANCE MANUAL

FLIGHT RECORDER AND MACH AIRSPEED TEST MODULE ASSEMBLY P5-19 - DESCRIPTION AND OPERATION

1. Description

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

2. Operation

CAUTION: OBEY THE PROCEDURE IN SUBJECT 20-12-02, HANDLING OF ELECTROSTATIC SENSITIVE DEVICES. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THIS COMPONENT.

A. Functional Description

- (1) The primary part of the flight recorder and mach airspeed warning test module assembly is a power and ground sensing printed circuit assembly, A1, P/N 69-78287-1 (Ref 33-15-13) or P/N 69-78809 (Ref 28-09-33) for 69-37325-167 and -168 . The PCA supplies a ground path for the master caution circuit when it finds a power or ground signal at its input. The PCA P/N 69-78287-1, A1, can stop unwanted master caution warnings caused by electromagnetic interference or incorrect signals from faulty sensor switches.
 - (a) Printed circuit assembly A1 operates as a power and ground seeking sensor, and provides a ground path for the master caution indicator at pin 30 (XA1-17 or P2-17). Ground inputs at any one of pins 2 (pin 31 for assemblies 69-37325-135, -137, 167 and -168), 20, 22, 24, 26 or 27; positive inputs at either pin 8 or 28; or a combined ground input at pins 1 and 21, will actuate the master caution indicator. After triggering, the circuit may be reset to extinguish the master caution indication and retriggered to recall the indication if the original triggering input remains.
 - (b) Circuit ground is connected to pin 23 (XA1-7 or P2-7). Circuit power for the master caution triggering circuitry is connected to pin 29 (XA1-22 or P2-22).
 - (c) Refer to 33-15-13 for printed circuit assembly A1 theory of operation , for all part numbers except for 69-37325-167 and 168. Refer to 28-09-33 for printed circuit assembly A1 theory of operation, for 69-37325-167 and -168.
 - (d) Pin 22 receives a ground input from Master Test. Pin 25 receives the RECALL input (ground to retrigger to master caution indication).
 - (e) (69-37325-138) Printed circuit assembly A2 (69-71571-3 Ref 33-10-06) is a 2-second time delay and power seeking circuit. PCA A2 supplies inputs at pins 9 and 10 which are like the one at pin 2. They operate as written in par. (1).
 - (f) (69-37325-132, -134) Card A2 supplies an input at pin 31 which is like the one at pin 2. It operates as written in par. (1).

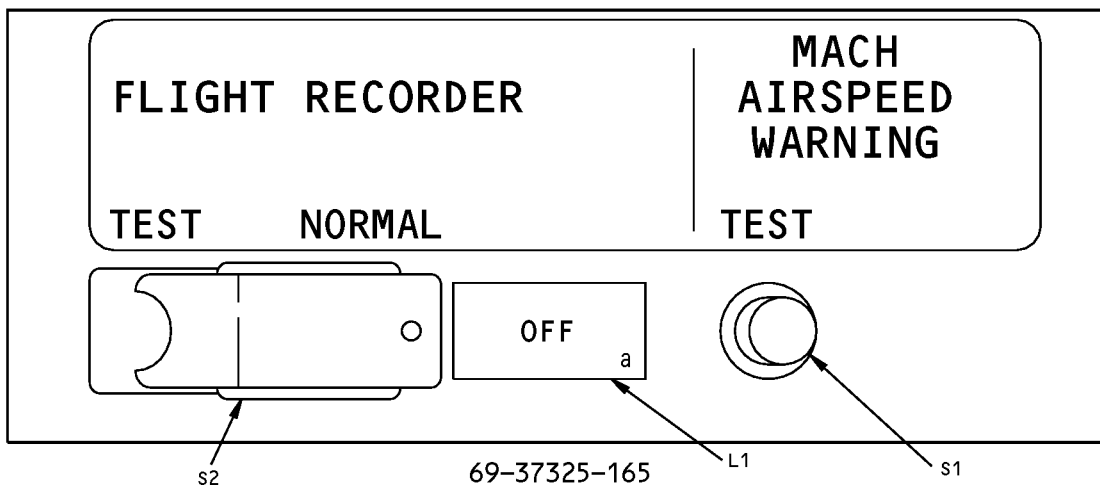
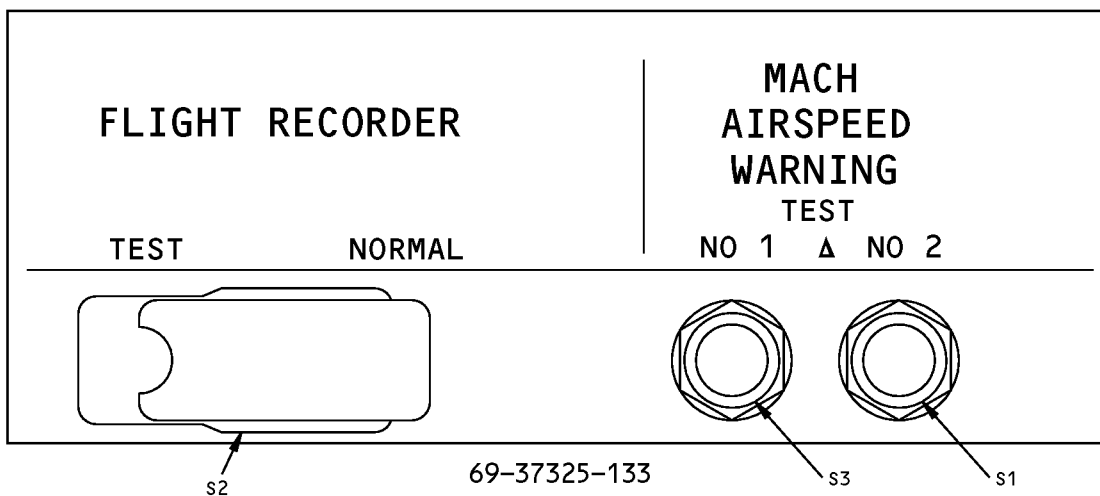
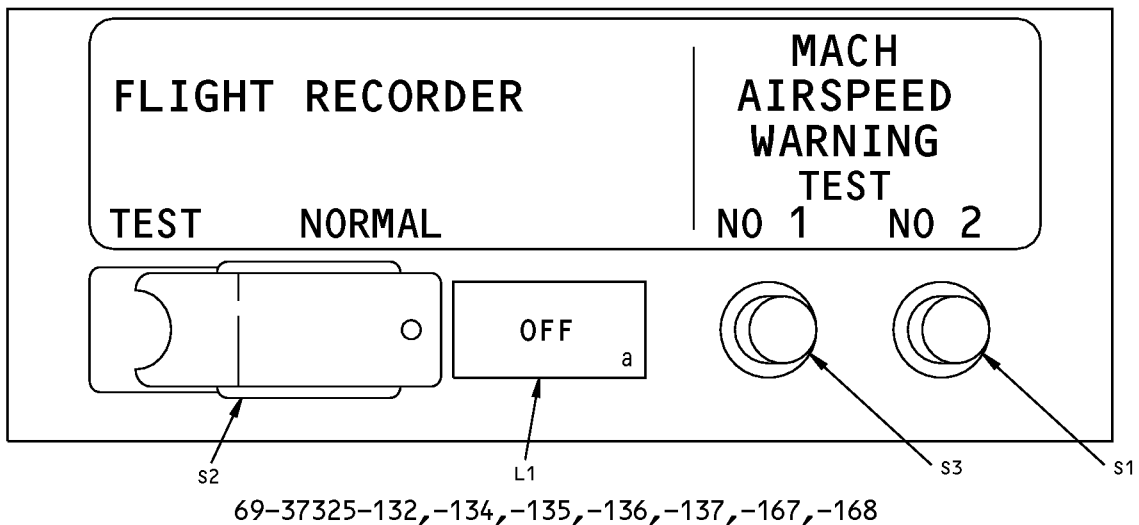
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Component Identification
Figure 1 (Sheet 1 of 2)

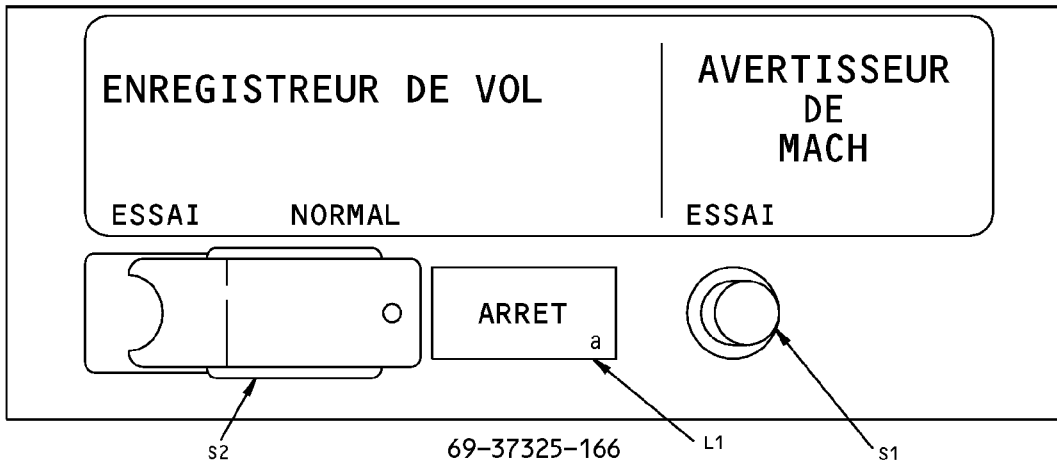
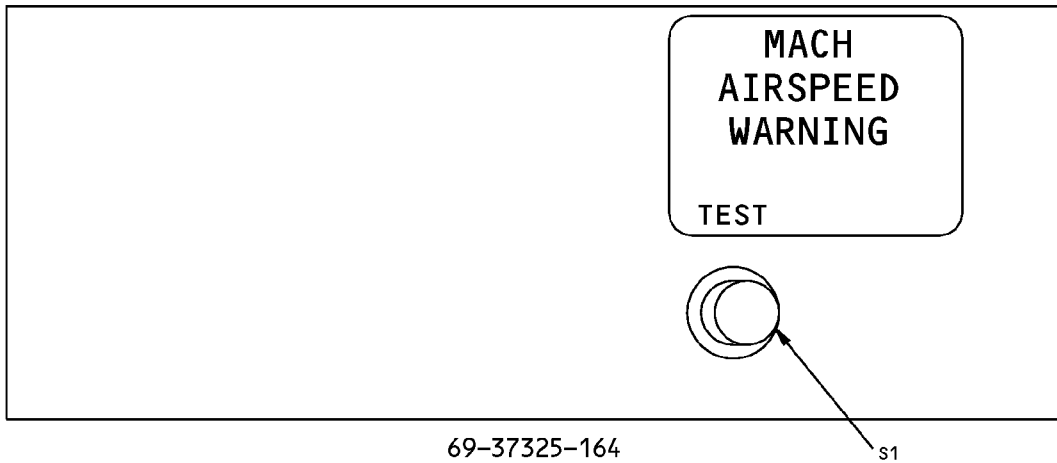
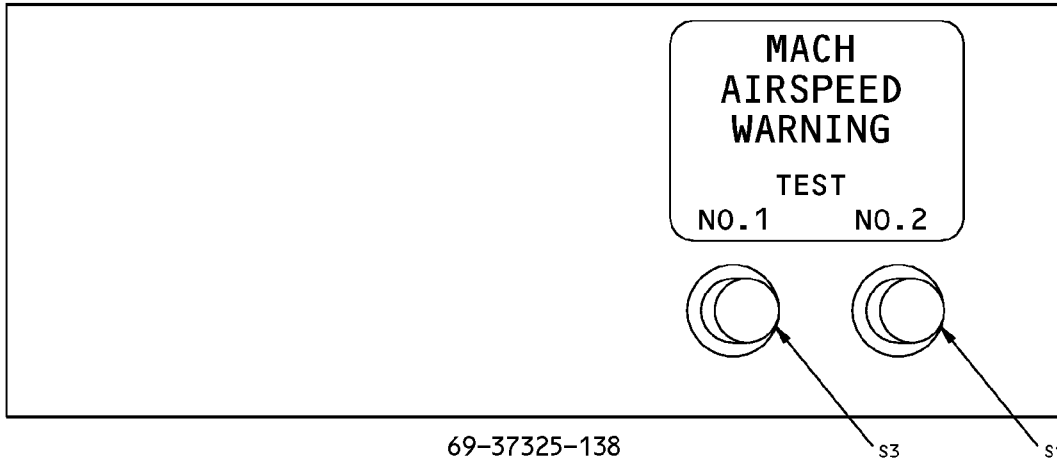
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Component Identification
Figure 1 (Sheet 2 of 2)

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TESTING AND FAULT ISOLATION

1. Testing

CAUTION: OBEY THE PROCEDURES IN SOPM 20-12-02, HANDLING OF ELECTROSTATIC SENSITIVE DEVICES. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THIS COMPONENT.

A. Test Equipment

NOTE: Equivalent substitute can be used.

- (1) Power Supply: 28 Vdc power supply, STD-4543
- (2) Multimeter: model 260 simpson voltmeter, STD-3946
- (3) Connector: BACC45FT18-31S, with pigtail leads
- (4) Switch: SPDT
- (5) Switch: SPST switch, STD-4657
 - (a) 12 required, 69-37325-133;
 - (b) 13 required, 69-37325-136, 165, 166;
 - (c) 14 required 69-37325-132, -134, -135, -137, -167 and -168;
 - (d) 15 required, 69-37325-138.
- (6) Capacitor: 1 μ f, 35 volts
- (7) Resistor: 330 ohm \pm 5%, 1/2 w
- (8) Diode: 1N4385
- (9) Lamp Load (L3): 420 to 460 mA, 28v dc (GE 1819 and two 1873 lamps in parallel)
- (10) Lamp load (L1): 100 mA max, 28v dc (two GE 387 lamps in parallel)(69-37325-138, -164)
- (11) Oscilloscope: 50m Sec/div min, 0-50v dc 69-37325-1

B. Test Preparation

- (1) Connect test connector with module connector.
- (2) Identify and tag pigtail leads.

C. Functional Test

- (1) (69-37325-132 thru -137, -165, -166, -167, -168). Measure forward resistance of CR1 diode across terminal E2 (+) and E1 (-). Make sure that this resistance is less than 50 ohms.
- (2) (69-37325-135, -137) Measure forward resistance of CR2 diode across terminal E3 (+) and E4 (-). Measure forward resistance of CR3 diode across terminal E5 (+) and E6 (-). Make sure that these resistances are less than 50 ohms.
- (3) Do diode resistance test as specified in TESTING AND FAULT ISOLATION, Table 101.

Table 101: Diode Resistance Test

Measure Between Pins	50 ohms max with + at Pin	50K min with + at Pin	Component Examined
23 to 9 ^{*[1]}	23	9	A2CR2
23 to 10 ^{*[1]}	23	10	A2CR5
23 to 31 ^{*[2]}	23	31	A2CR2
14 to 5 ^{*[3]}	14	5	A1CR8

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Table 101: Diode Resistance Test (Continued)

Measure Between Pins	50 ohms max with + at Pin	50K min with + at Pin	Component Examined
14 to 18 ^{*[3]}	14	18	A1CR9
23 to 5 ^{*[4]}	^{*[5]} 23	5	A1CR8
23 to 18 ^{*[4]}	^{*[5]} 23	18	A1CR9

*[1] 69-37325-138

*[2] 69-37325-132, -134

*[3] 69-37325-138, -164

*[4] 69-37325-132 thru -137, 165, 166

*[5] Put module switch S2 to TEST position, and then return module switch S2 to the NORMAL Position at the conclusion of TESTING AND FAULT ISOLATION, Table 101 testing.

(4) Do switch test as given in TESTING AND FAULT ISOLATION, Table 102.

NOTE: "Con" means that resistance must be less than 3 ohms. "No Con" means that circuit is open (infinite resistance).

Table 102: Switch Test

Procedure	Necessary Results		Component Examined
69-37325-138, -164, -165, -166			
	Pushed	Released	
16 to 15	Con	No Con	S1
16 to 17	No Con	Con	S1
69-37325-132 thru -137, -167, -168			
3 to 6	No Con	Con	S1 (No. 2)
4 to 6	Con	No Con	S1 (No. 2)
16 to 15	Con	No Con	S3 (No. 1)
16 to 17	No Con	Con	S3 (No. 1)
69-37325-138			
4 to 6	Con	No Con	S3
3 to 6	No Con	Con	S3

- (5) Connect test setup per TESTING AND FAULT ISOLATION, Figure 101. Set all switches to OFF. Turn ON power supply.
- (6) Set switches and monitor indications as specified in TESTING AND FAULT ISOLATION, Table 103. Test lamps shall come on only when specified. Leave all switches in last specified positions. Normally, only active components are given; however, you should also examine the related passive components and wiring to find defective components.

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Table 103: Functional Test

Procedure			Necessary Results				Component Examined
Step No.	Switch No.	Pos	Test Lamp Indications		V1	V2	
			ON	OFF			
1	1 and 2	ON					
2	3	ON	L3				A1
3	3	OFF		L3			A1
4	4	ON	L3 ^{*[1]}			^{*[2]}	A1
5	4	OFF		L3		^{*[3]}	A1
6	5	ON	L3			^{*[2]}	A1
7	5	OFF		L3		^{*[3]}	A1
8	6	ON	L3			^{*[2]}	A1
9	6	OFF		L3		^{*[3]}	A1
10	7	ON	L3			^{*[2]}	A1
11	7	OFF		L3		^{*[3]}	A1
12	8	ON	L3			^{*[2]}	A1
13	8	OFF		L3		^{*[3]}	A1
14	12	ON	L3			^{*[2]}	A1
15	12	OFF		L3		^{*[3]}	A1
16	13	ON	L3			^{*[2]}	A1
17	13	OFF		L3		^{*[3]}	A1
18	4 thru 7, 12, 13	ON	L3				A1
19	2	OFF		L3			
20	2	ON		L3			
21	8 ^{*[4]}	ON	L3				A1
22	2 ^{*[4]}	OFF		L3			A1
23	2 ^{*[4]}	ON		L3			
24	7	OFF		L3			
25	7	ON	L3				A1
26	2	OFF		L3			A1
27	2	ON		L3			
28	6	OFF		L3			A1
29	6	ON	L3				
30	2	OFF		L3			A1
31	2	ON		L3			
32	5	OFF		L3			A1

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Table 103: Functional Test (Continued)

Procedure			Necessary Results				Component Examined
Step No.	Switch No.	Pos	Test Lamp Indications		V1	V2	
			ON	OFF			
33	5	ON	L3				A1
34	2	OFF		L3			
35	2	ON		L3			
36	4	OFF		L3			
37	4	ON	L3				
38	2	OFF		L3			
39	2	ON		L3			
40	12	OFF		L3			
41	12	ON	L3				
42	2	OFF		L3			
43	2	ON		L3			
44	13	OFF		L3			
45	13	ON	L3				
46	4 thru 8, 13	OFF	L3				
47	12	OFF		L3			
48	15	ON		L3 ^{*[5]}	18 ± 3V		
49	14	ON	L3		18 ± 3V	^{*[2]}	
50A	15	OFF		L3	18 ± 3V ^{*[6]}	^{*[3]}	
50B	14	OFF		L3	18 ± 3V ^{*[6]}		
50C	2	OFF					
69-37325-138, -164							
51	16	ON	L1				A1
52	17	ON		L1			A1
53	16 and 17	OFF		L1			A1
69-37325-138							
54	2	ON			18 ± 3V		A2(CR6,CR5), A1
55	18	ON	L3				
56	18	OFF		L3			
57	19	ON	L3				
58	19	OFF		L3			
59	18	ON	L3				

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Table 103: Functional Test (Continued)

Procedure			Necessary Results				Component Examined
Step No.	Switch No.	Pos	Test Lamp Indications		V1	V2	
			ON	OFF			
60	2	OFF		L3			A2
61	2	ON		L3			
62	19	ON	L3				
63	2	OFF		L3			
64	2	ON		L3			
69-37325-132, -134 thru -137, -165, -166, -167, -168							
65	8,17	ON	L1 ^{*[7]}				L1 ^{*[8]*[7]}
66	8	OFF		L1 ^{*[7]}			L1 ^{*[8]*[7]}
67	3	ON	L1 ^{*[7]}				L1 ^{*[8]*[7]}
68	3	OFF		L1 ^{*[7]}			L1 ^{*[8]*[7]}
69	L1 ^{*[7]}	DEPRESS	L1 ^{*[7]}				L1 ^{*[8]*[7]}
70	17	OFF		L1 ^{*[7]}			L1 ^{*[8]*[7]}
69-37325-132 thru -137, -165, -166, -167, -168							
71	Measure the resistance between pins:						
	10 and 11		Con				K1
	10 and 9		No Con				K1
	13 and 14		Con				K1
	13 and 12		No Con				K1
72	Set S16 to ON.						
	Measure the resistance between pins:						
	10 and 11		No Con				K1,A1Q3
	10 and 9		Con				K1,A1Q3
	13 and 14		No Con				K1,A1Q3
	13 and 12		Con				K1,A1Q3
73	Set S2 (FLIGHT RECORDER TEST) to TEST position.						
	Measure the resistance between pins:						
	10 and 11		Con				S2,K1,A1
	13 and 14		Con				S2,K1,A1

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Table 103: Functional Test (Continued)

Procedure			Necessary Results				Component Examined
Step No.	Switch No.	Pos	Test Lamp Indications		V1	V2	
			ON	OFF			
	10 and 9		No Con				S2,K1,A1
	13 and 12		No Con				S2,K1,A1
69-37325-132, -134							
74	16	OFF					
	2	ON					
75	18	ON	L3				A1,A2(CR1,CR3)
76	18	OFF		L3			A1,A2(CR1,CR3)
77	18	ON	L3				A1,A2(CR1,CR3)
78	2	OFF		L3			A1
79	2	ON		L3			A1
69-37325-135, -137, -167, -168							
80	2	ON		L3			
81	18	ON	L3				A1
82	18	OFF		L3			A1
83	8	ON	L3				A1, CR2
84	6	ON	L3				A1, CR3
85	8	OFF	L3				A1, CR2
86	6	OFF		L3			A1, CR3
87	2	OFF		L3			
88	1	OFF		L3			
89	Remove all connections.						

*[1] L3 shall come "ON" within 200 ± 50 msec of closing switch 4, for 69-37325 -133, -135, -136, -137 L3 shall come "ON" within 35 ± 10 msec of closing switch 4, for 69-37325 -167 and -168 NOTE: It is only necessary to verify time delay for L3 once, and can be ignored on subsequent steps.

*[2] V2 shall be less than 3v

*[3] V2 shall be less than 30v and greater than 26v

*[4] ALL EXCEPT 69-37325-135, -137, -167, -168

*[5] L3 "ON" for 69-37325-165 only

*[6] 17.3 ± 1.5v for 69-37325-133, -135 thru -138, -164 thru -168

*[7] MODULE LAMP

*[8] DS1 for 69-37325-166

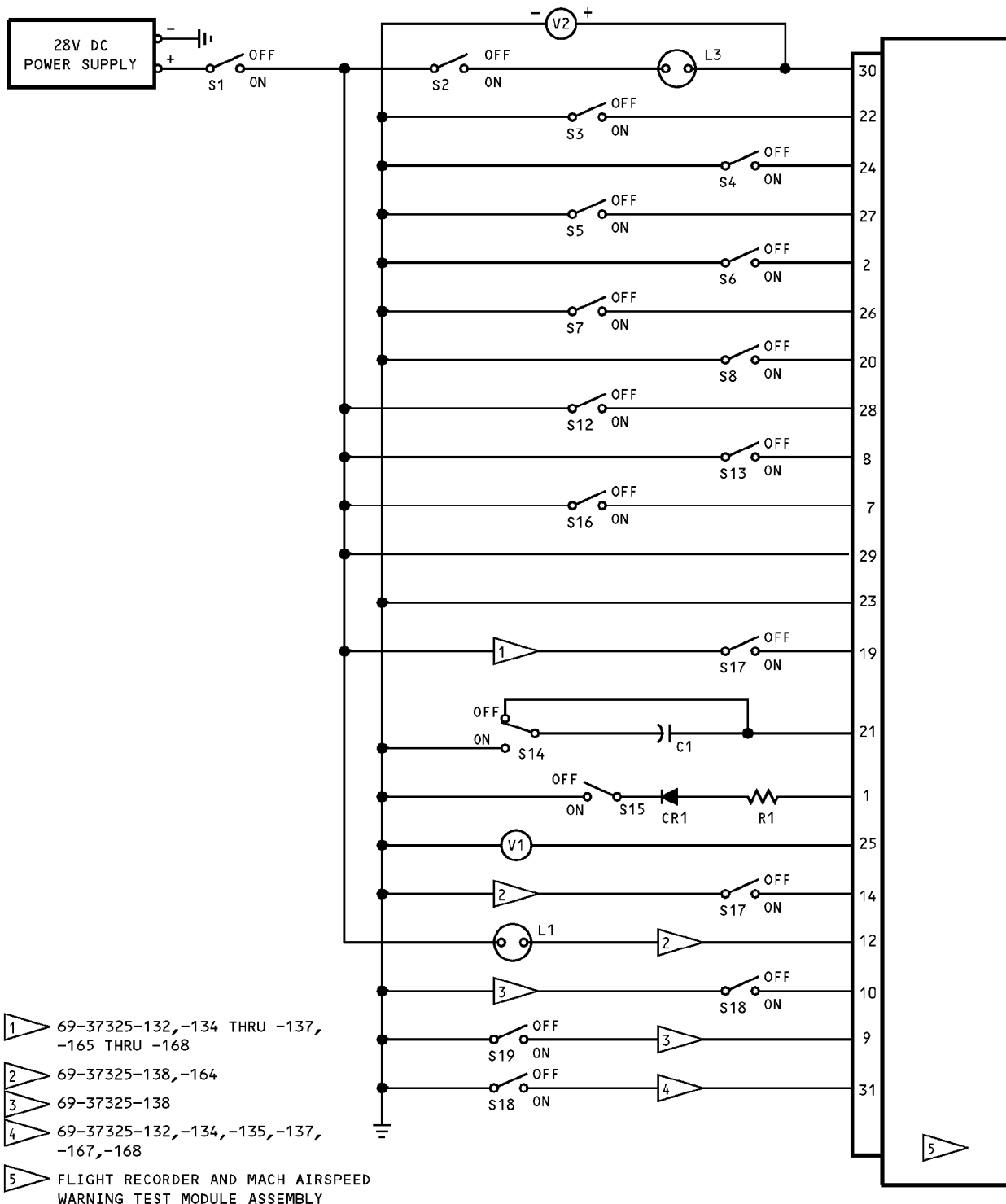
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Test Setup
Figure 101

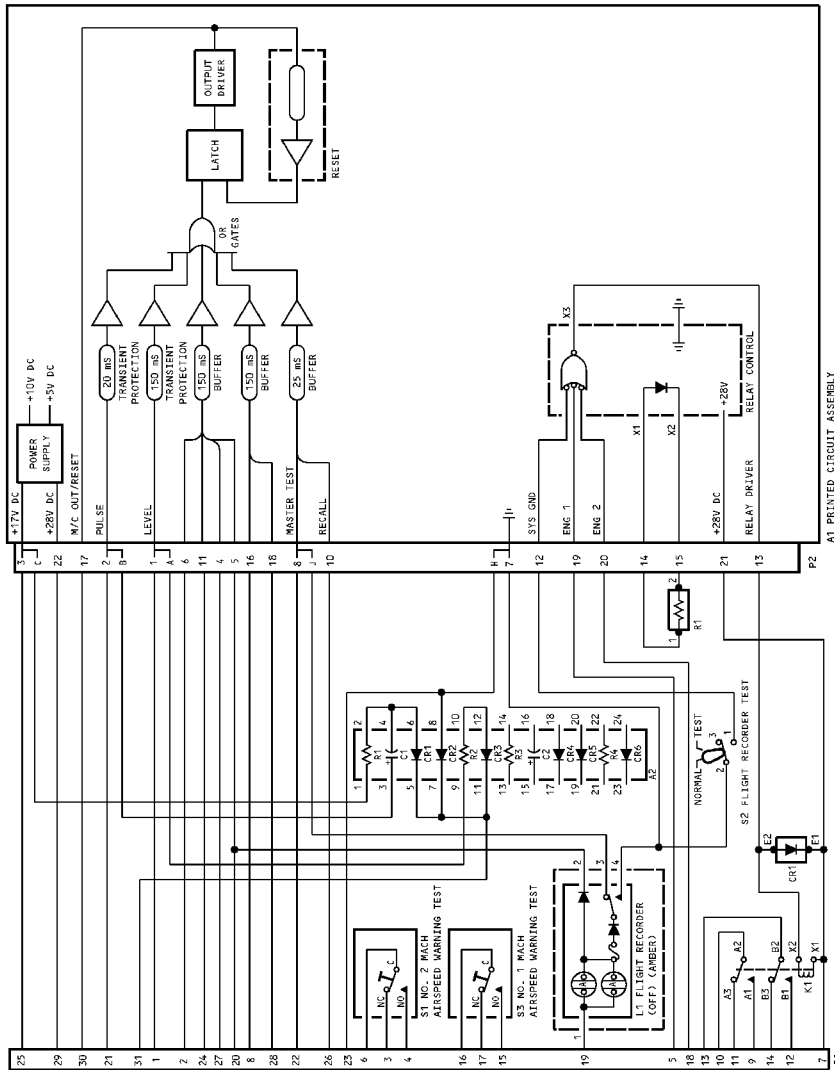
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69-37325-132,-134 Schematic Diagram
Figure 102

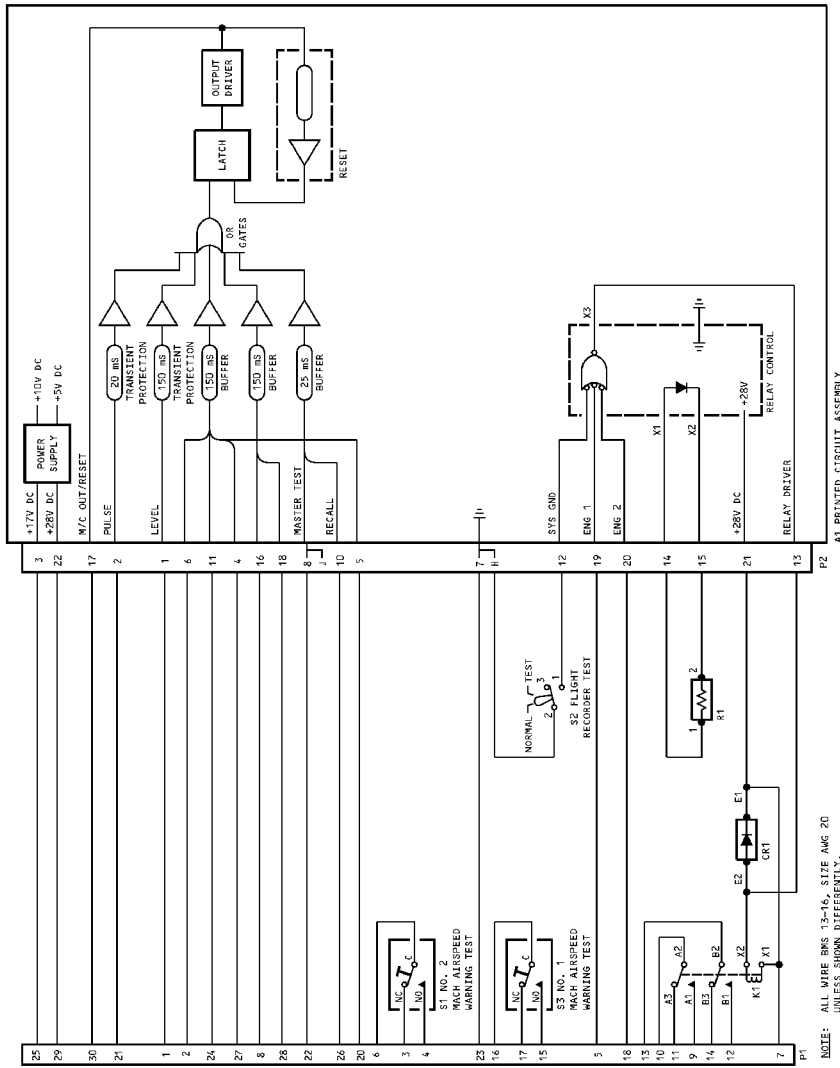
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Schematic Diagram
Figure 103

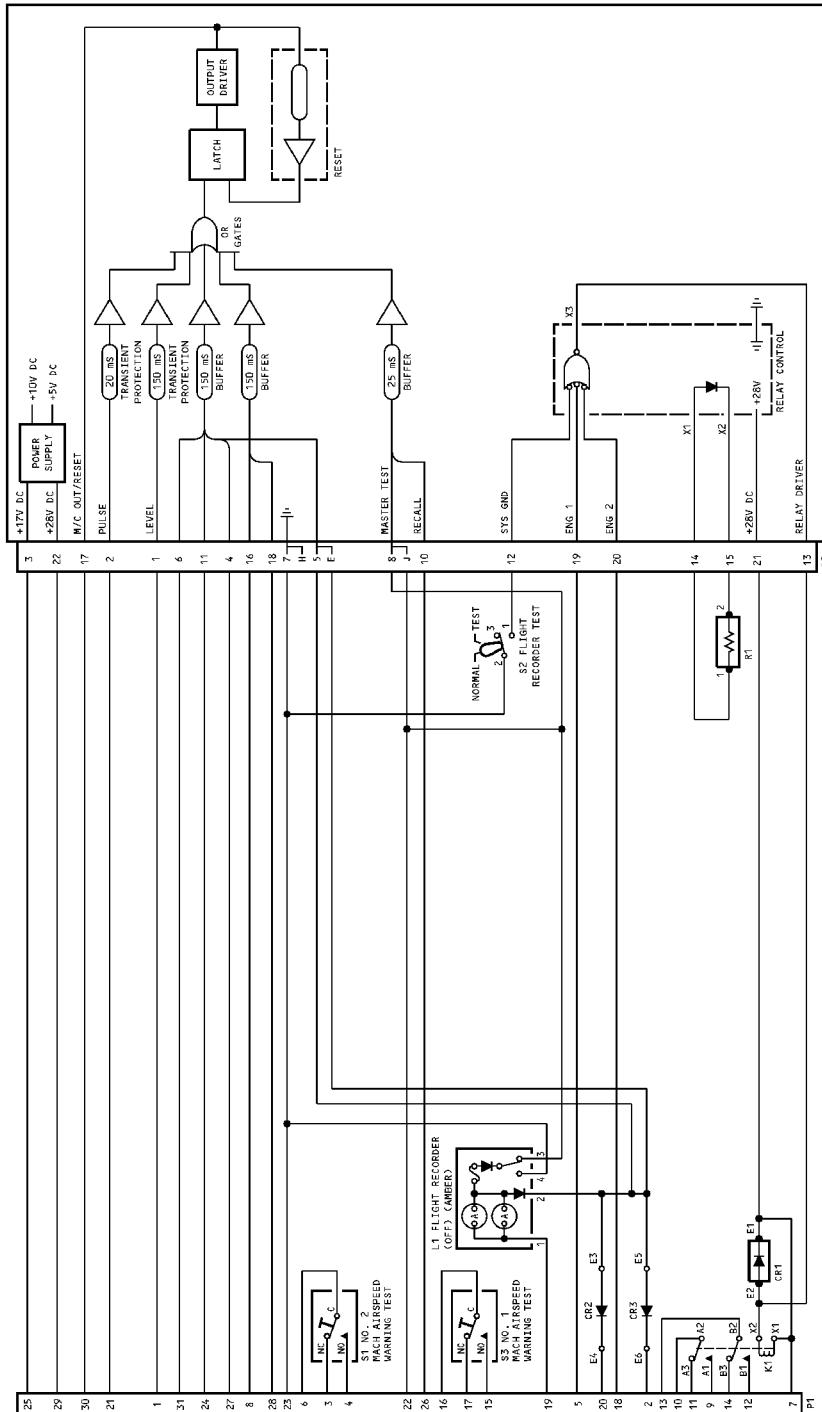
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TESTING AND FAULT ISOLATION

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AT PRINTED CIRCUIT ASSEMBLY

69-37325-135-137

Schematic Diagram
Figure 104

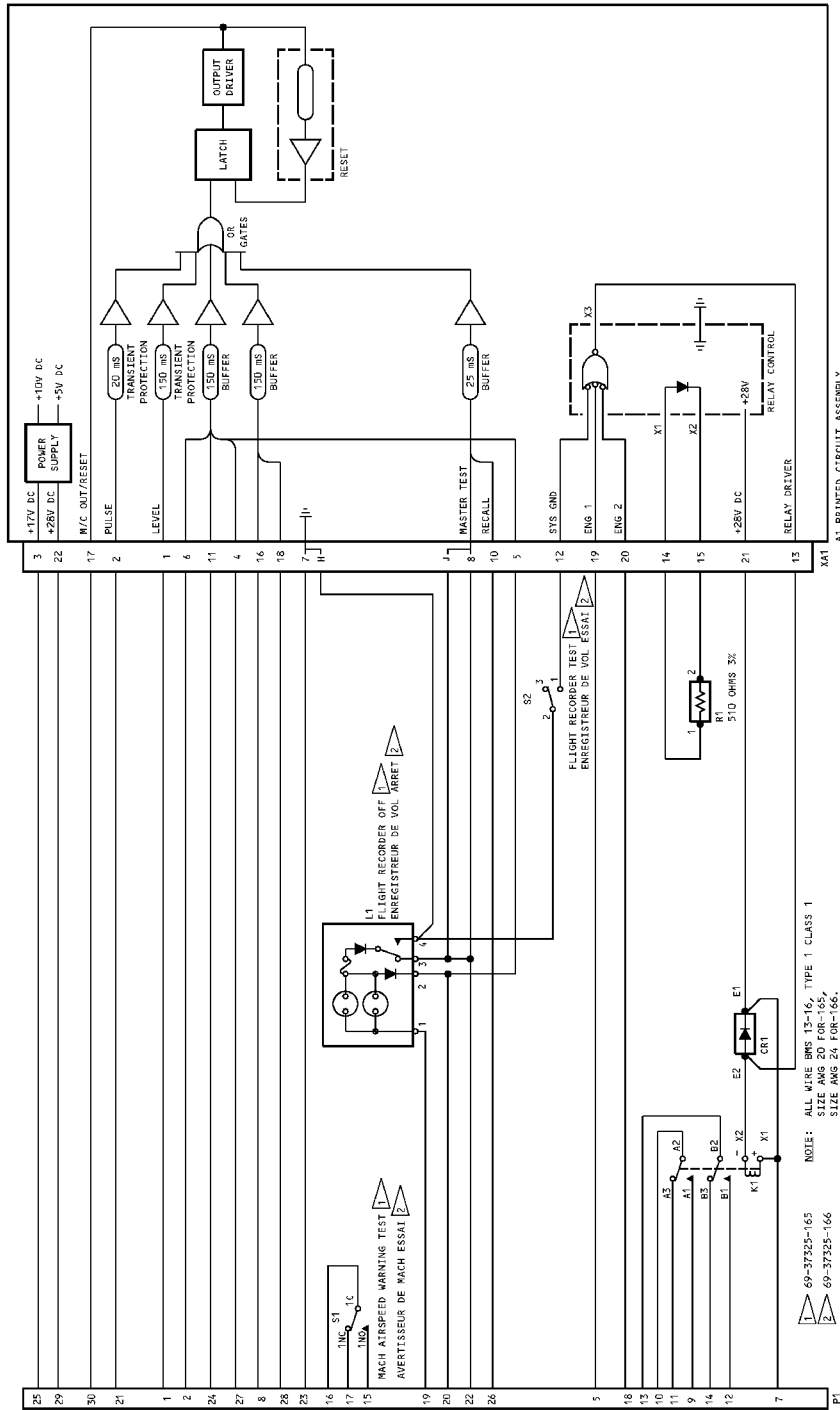
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69-37325-165,-166 Schematic Diagram
 Figure 105

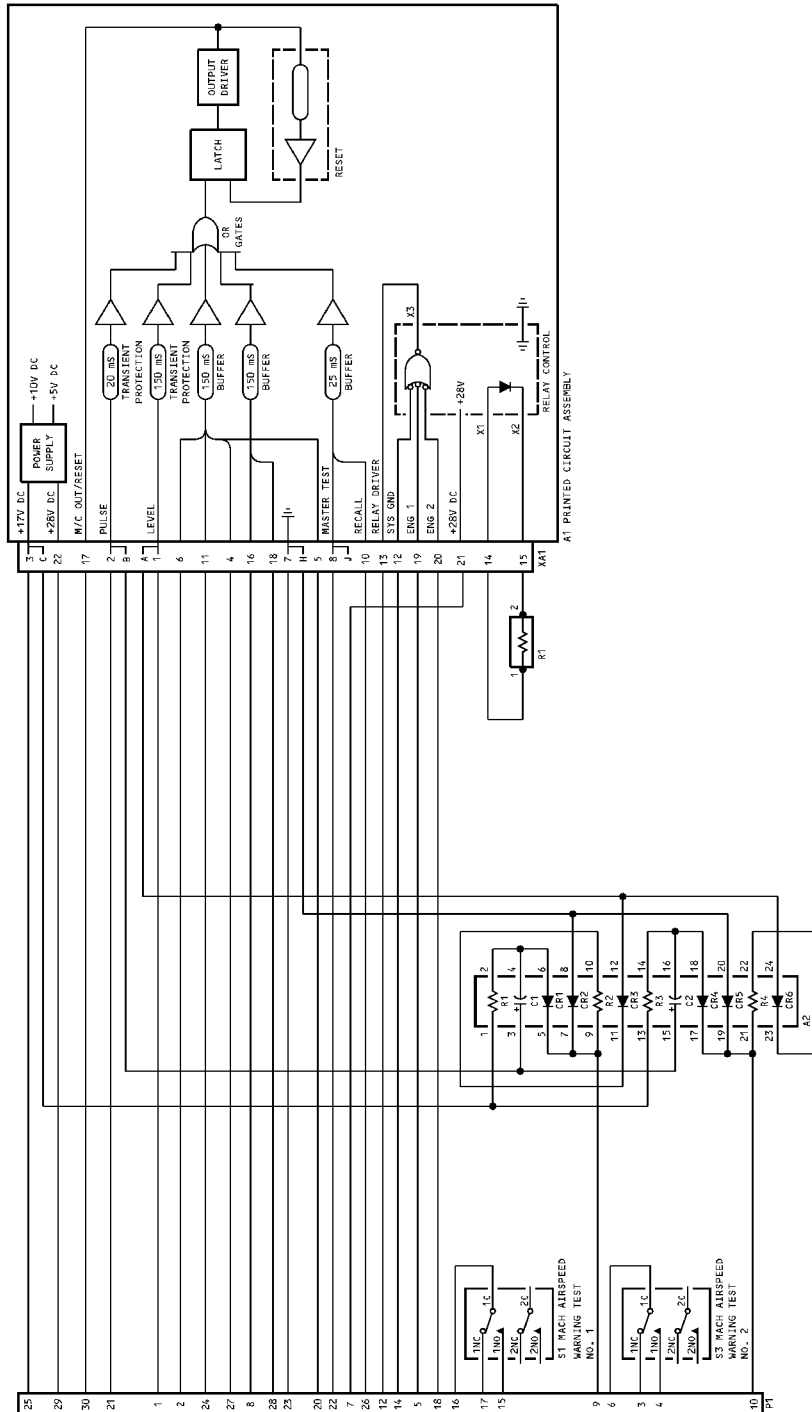
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69-37325-138

Schematic Diagram
Figure 106

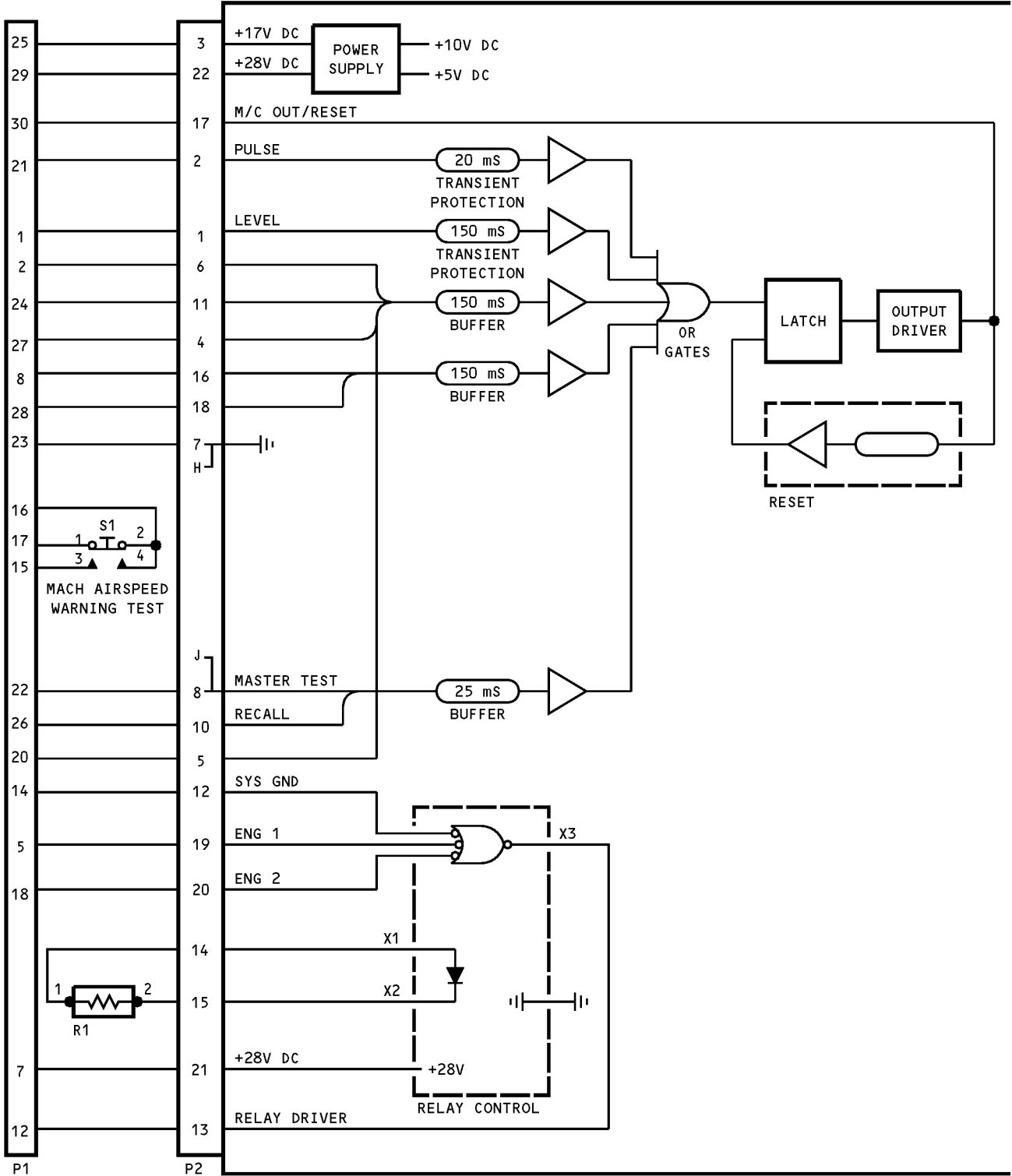
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A1 PRINTED CIRCUIT ASSEMBLY

69-37325-164 Schematic Diagram
Figure 107

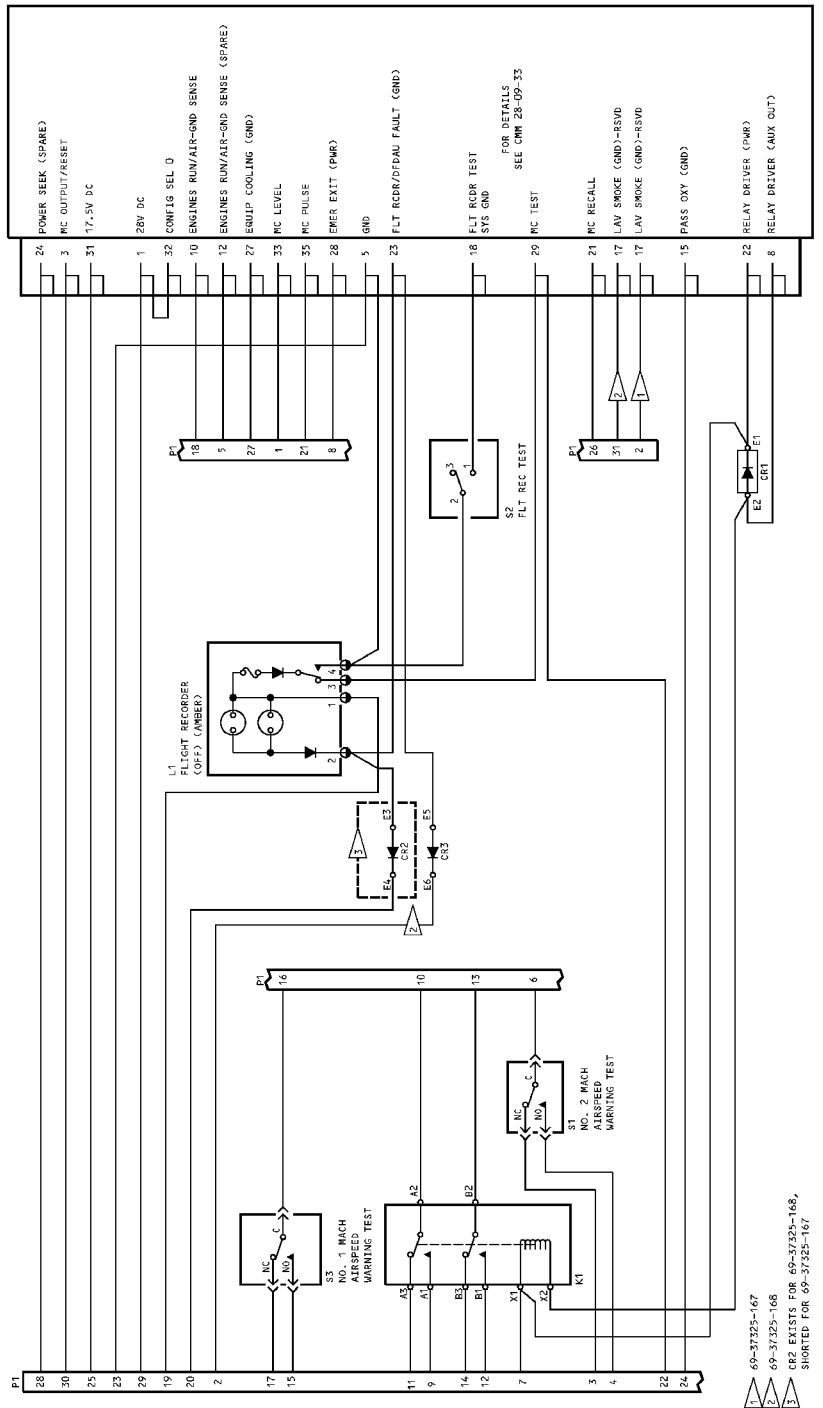
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69-37325-167,-168 Schematic Diagram
Figure 108

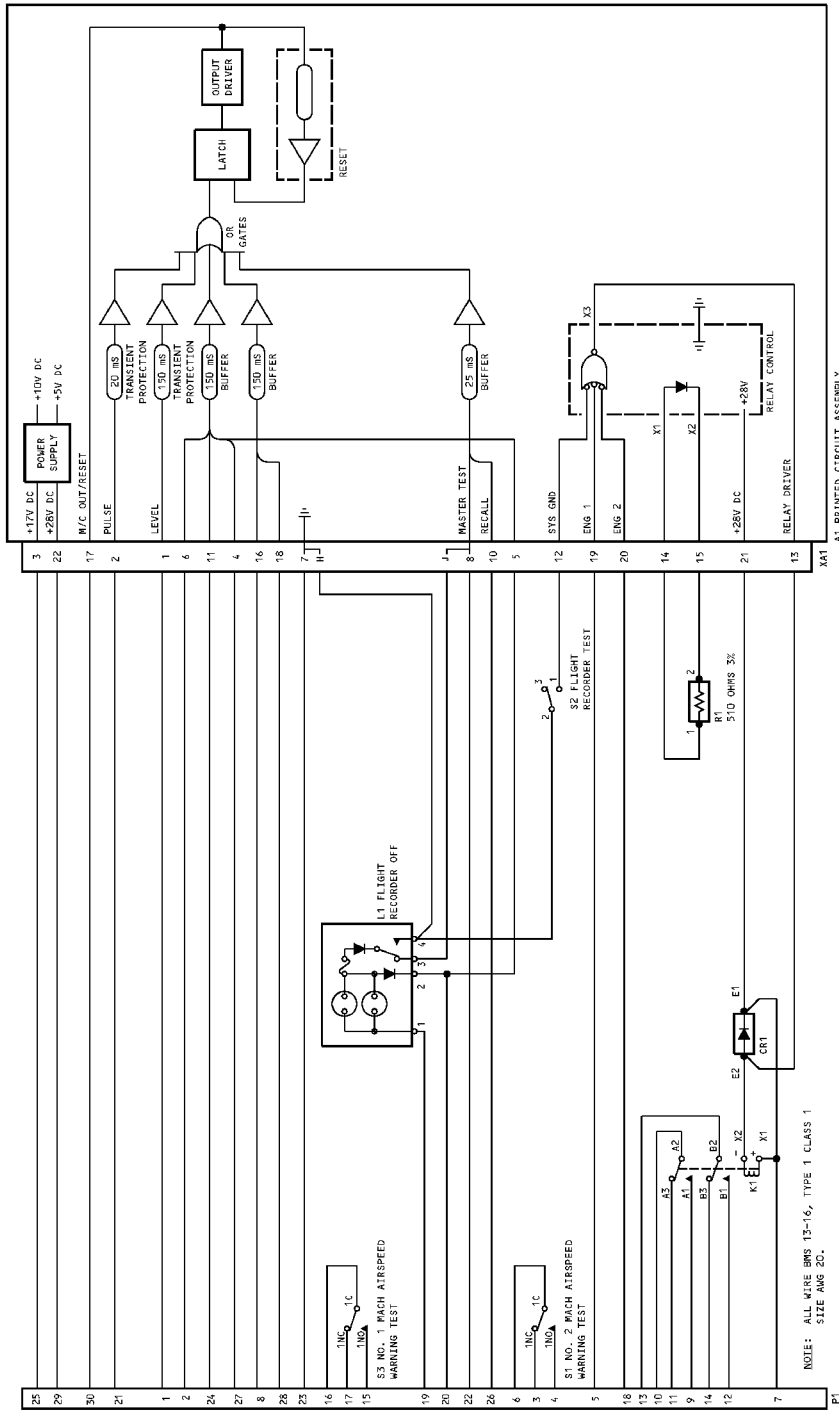
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69-37325-136 Schematic Diagram
Figure 109

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DISASSEMBLY

(NOT APPLICABLE)

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DISASSEMBLY

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COMPONENT MAINTENANCE MANUAL

CLEANING

(NOT APPLICABLE)

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CLEANING

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COMPONENT MAINTENANCE MANUAL

CHECK

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CHECK

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REPAIR

1. Procedures

CAUTION: OBEY THE PROCEDURES IN SOPM 20-12-02, HANDLING OF ELECTROSTATIC SENSITIVE DEVICES. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THIS COMPONENT.

- A. All repair may be accomplished with industry practices and procedures contained in 31-10-01 except as listed in the following:
- B. If keying plug (IPL Figure 1, Item 80 or IPL Figure 2, Item 65) is replaced, insert at contact position 9 (for 69-37325-132 thru -138, -164 thru -166) or position 25 (for 69-37325-167, -168).
- C. Install connector (IPL Figure 1, Item 75 or IPL Figure 2, Item 60) with contact position 1 adjacent to resistor R1.

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REPAIR - GENERAL

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ASSEMBLY

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ASSEMBLY

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COMPONENT MAINTENANCE MANUAL

FITS AND CLEARANCES

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FITS AND CLEARANCES

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SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

(NOT APPLICABLE)

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SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

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COMPONENT MAINTENANCE MANUAL

ILLUSTRATED PARTS LIST

1. Introduction

- A. The Illustrated Parts List (IPL) contains an illustration and a list of component parts you can repair or replace. The Illustrated Parts Catalog (IPC) shows how to use the Boeing part number system.
- B. This shows how parts are related: The relation of each item to its next higher assembly (NHA) is shown in the NOMENCLATURE column. Use the indenture system that follows:

1	2	3	4	5	6	7
.	Assembly					
.	Attaching parts for assembly					
.	.	Detail parts for assembly				
.	.	Subassembly				
.	.	Attaching parts for subassembly				
.	.	.	Detail parts for subassembly			
.	.	.	Sub-subassembly			
.	.	.	Attaching parts for subassembly			
.	.	.	.	Details parts for sub-subassembly		
						Detail Installation Parts (Included only if installation parts may be sent to the shop as part of assembly)

- C. Each top assembly is given one use code letter (A, B, C, etc.) in the USAGE CODE column. All subsequent component parts in the list can have one or more of the use code letters to show effectivity to top assemblies. A component part without a use code applies to all top assemblies.
- D. An alphabetical letter is added after the item number for optional parts, parts changed by a Service Bulletin, configuration differences (except left-handed and right-handed parts), last engineering releases, and parts added between item numbers in a sequence. The alphabetical letter will not be shown on the illustration for equivalent parts of the same part number.
- E. Color-coded parts are identified with a single digit alpha following the dash number or with "SP" suffix. If the "SP" suffix is used, it represents consolidation of all color codes applicable for a given usage which are not separately listed. Orders for color-coded parts should include the registry number of the airplane for which the parts are ordered.
- F. If a part number is 15 characters long but will not fit in the part number column, the part number will be displayed with a "~" at the end of the line and will be continued on the next line. The "~" denotes that the part number continues on the next line.
- G. Parts changed by a Service Bulletin are shown by PRE SB XXXX and POST SB XXXX added to the NOMENCLATURE column.
- (1) When a new top assembly is added by a Service Bulletin, PRE SB XXXX and POST SB XXXX will be added at the top assembly level only. The configuration differences at the detail part level are shown by use code letters.
- (2) When the top assembly part number is not changed by the Service Bulletin, PRE SB XXXX and POST SB XXXX will be added at the detail level.
- H. Interchangeable Parts

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ILLUSTRATED PARTS LIST

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Optional (OPT)	The part is optional to and interchangeable with other parts that have the same item number.
Replaces, Replaced by and not interchangeable with (REPLACES, REPLACED BY AND NOT INTCHG/W)	The part replaces and is not interchangeable with the initial part.
Replaces, Replaced by (REPLACES, REPLACED BY)	The part replaces and is interchangeable with, or is an alternative to, the initial part.

VENDOR CODES

Code	Name
00213	MSD INC 700 ORANGE ST DARLINGTON, SOUTH CAROLINA 29532 FORMERLY V01350; FORMERLY 78290; FORMERLY NYTRONICS COMPONENTS GROUP
00779	TYCO ELECTRONICS CORP 2800 FULLING MILL ROAD PO BOX 3608 MIDDLETOWN, PENNSYLVANIA 17057 FORMERLY AMP INC; FORMERLY V04618 FORMERLY GENICOM COMP V01526
11815	CHERRY AEROSPACE FASTENERS DIV OF TEXTRON 1224 EAST WARNER AVENUE PO BOX 2157 SANTA ANA, CALIFORNIA 92707-0157 FORMERLY IN LOS ANGELES, CALIF , FORMERLY CHERRY FASTENERS TOWNSEND DIV OF TEXTRON INC V71087
15653	ALCOA GLOBAL FASTENERS INC DIV KAYNAR PRODUCTS 800 S STATE COLLEGE BLVD FULLERTON, CALIFORNIA 92831-3001 FORMERLY VK6405 MICRODOT AEROSP LTD; FORMERLY KAYNAR TECH FORMERLY FAIRCHILD FASTENERS KAYNAR DIV
52828	REPUBLIC FASTENER MFG CORP 1300 RANCHO CONEJO BLVD NEWBURY PARK, CALIFORNIA 91320-1405 FORMERLY IN SYLMAR, CALIFORNIA

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Code	Name
60119	<p>MONADNOCK CO THE 18301 ARENTH AVENUE ROWLAND HEIGHTS, CALIFORNIA 91748-1288 FORMERLY UNITED CARR FASTENER CORP VB0051 VB0056 VB0076 FORMERLY TRW ELECTRONIC COMPONENTS CINCH-MONADNOCK DIV FORMERLY CINCH-MONADNOCK DIV OF TRW INC V76530 FORMERLY IN CITY OF INDUSTRY, CALIFORNIA</p>
72914	<p>HONEYWELL/GRIMES AEROSPACE 550 STATE RT 55 URBANA, OHIO 43078 FORMERLY AERO-FLOW V70128; MIDLAND-ROSS JANITROL AERO DIV; FORMERLY FL AEROSP CORP V89513; ALLIEDSIGNAL/GRIMES AEROSP FORMERLY GRIMES AEROSPACE V00672 AND HONEYWELL V60187</p>
72962	<p>HARVARD INDUSTRIES INC 3 WERNER WAY SUITE 210 LEBANON, NEW JERSEY 08833 FORMERLY ESNA V7A079 FORMERLY ELASTIC STOP NUT IN UNION, NJ</p>
80539	<p>SPS TECHNOLOGIES INC DIV AERPSOACE - SANTA ANA 2701 SOUTH HARBOR BOULEVARD SANTA ANA, CALIFORNIA 92704-5803 FORMERLY NUTT-SHEL DIV OF SPC WESTERN CO V80539 AND STANDARD PRESSED STEEL WESTERN DIV V17279</p>
81590	<p>KORRY ELECTRONIC INC SUB OF CRITON CORP 901 DEXTER AVENUE NORTH SEATTLE, WASHINGTON 98109-3515 FORMERLY KORRY, BORIS VB0021 AND KORRY MFG CO</p>
88245	<p>WINCHESTER ELECTRONICS LITTON SYSTEMS INC USECO DIV 13536 SATICOY STREET VAN NUYS, CALIFORNIA 91409 FORMERLY U.S. ENGINEERING CO V88245 AND LITTON PRECISION PRODUCTS INC USECO DIV LITTON IND AND LITTON SYSTEMS INC USECO DIV</p>

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COMPONENT MAINTENANCE MANUAL

Code	Name
89954	BAE SYSTEMS CONTROL 600 MAIN STREET JOHNSON CITY, NEW YORK 13790 FORMERLY MARTIN MARIETTA AIRCRAFT CONTROL SYSTEMS; FORMERLY LOCKHEED MARTIN CONTROL SYSTEMS
91637	VISHAY DALE ELECTRONICS VISHAY AMERICAS INC DBA VISHAY 1122 23RD STREET PO BOX 609 COLUMUS, NEBRASKA 68602-0609
91833	KEYSTONE ELECTRONICS CORPORATION 31-07 20TH ROAD ASTORIA, NEW YORK 11105-2017 FORMERLY IN NEW YORK, NEW YORK
91929	HONEYWELL INC MICRO SWITCH DIV 11 WEST SPRING STREET FREEPORT, ILLINOIS 61032 FORMERLY MICRO SWITCH A DIV OF HONEYWELL FORMERLY V74059 AND V40228
92215	FAIRCHILD IND INC FAIRCHILD AEROSPACE FASTENER DIV 3010 W LOMITA BLVD TORRANCE, CALIFORNIA 90505-5102 FORMERLY VOI-SHAN IN CULVER CITY, CALIF

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COMPONENT MAINTENANCE MANUAL

REFERENCE DESIGNATOR INDEX

REFERENCE DESIGNATOR	PART NUMBER	FIG-ITEM
A1	69-78287-1	1-265
A1	69-78287-1	1-55
A1	69-78809-4	1-55C
A1	69-78809-5	1-55D
A1	69-78287-1	2-40
CR1	1N4384	1-100
CR2	1N4384	1-190
CR3	1N4384	1-190
E1	1491A	1-110A
E1	1625-4-12	1-110B
E1	1625-4-12	1-110C
E2	1491A	1-110A
E2	1625-4-12	1-110B
E2	1625-4-12	1-110C
E3-E6	1491A	1-195
E3-E6	1625-4-12	1-195A
E3-E6	1625-4-12	1-195B
K1	BACR13CF4	1-95
K1	BACR13CF4A	1-95A
L1	BCREF2579	1-40A
R1	RER60F2210R	1-125
R1	RH5-510-3PCT	1-125A
R1	3105M510-3PCT	1-125B
R1	RH5-510-3PCT	2-80
R1	3105M510-3PCT	2-80A
S1	2PB11H58	1-45
S1	2PB11H58	2-30
S2	MS24523-23	1-35
S3	2PB11H58	1-45
S3	2PB11H58	2-30

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COMPONENT MAINTENANCE MANUAL

NUMERICAL INDEX

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
10-61803-12		1	40A	1
11170-1		1	30	1
1491A		1	110A	2
		1	195	4
1625-4-12		1	110B	2
		1	110C	2
		1	195A	4
		1	195B	4
1N4384		1	100	1
		1	190	2
293162		1	220	2
		2	150	2
2PB11H58		1	45	2
		2	30	2
3105M510-3PCT		1	125B	1
		2	80A	1
318-630-1001-008		1	40A	1
582507-1		1	80	1
		2	65	1
582557-1		1	75	1
		1	240	1
		2	60	1
66143-2		1	232	AR
		2	157	AR
69-37268-13		1	150	1
69-37268-14		1	145	1
		2	120	1
69-37325-106		1	50A	1
69-37325-107		1	230A	1
69-37325-111		1	3	1
69-37325-112		1	3A	1
69-37325-114		1	3B	1
69-37325-132		1	1	RF
69-37325-133		1	1A	RF

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PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
69-37325-134		1	1B	RF
69-37325-135		1	1C	RF
69-37325-136		1	1D	RF
69-37325-137		1	1E	RF
69-37325-138		1	1F	RF
		2	1	RF
69-37325-164		1	1G	RF
69-37325-165		1	1H	RF
69-37325-166		1	1J	RF
69-37325-167		1	1K	RF
69-37325-168		1	1L	RF
69-37325-169		1	205C	1
69-37325-170		1	230C	1
69-37325-171		1	230D	1
69-37325-172		1	205D	1
69-37325-18		1	50	1
69-37325-5		1	160	1
		2	140	1
69-37325-64		2	155	1
69-37325-70		2	125	1
69-37325-71		2	130	1
69-37325-73		2	35	1
69-37325-8		1	155	1
		2	135	1
69-37325-80		1	50B	1
69-37325-96		1	230B	1
69-37325-98		1	230	1
69-37329-4		1	135A	1
69-43948-12		1	205	1
		1	205E	1
		2	165	1
69-43948-17		1	135	1
		2	90	1
69-43948-19		1	10	1
		1	20	1

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PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
69-43948-20		1	15	1
69-43948-22		1	10A	1
		1	20A	1
		2	10	1
		2	20	1
69-43948-23		1	15A	1
		2	15	1
69-63592-9		1	180	1
		2	100	1
69-78287-1		1	55	1
		1	265	1
		2	40	1
69-78601-3		1	260	1
69-78809-4		1	55C	1
69-78809-5		1	55D	1
92-1660-256		1	120	2
		2	75	2
92-1660-26		1	120	2
		2	75	2
92-1660-40		1	170	4
92-1660-440		1	170	4
96-62		1	70	2
		1	90	2
		2	55	2
AN960JD6		1	85A	6
AN960PD6		1	85	6
BAC27DCC1061		1	245A	1
BAC27DCC239		1	250	1
		2	170	1
BAC27DCC572		1	245	1
BAC27DCC933		2	175	1
BAC27EEX510		1	255	1
		1	270	1
		2	180	1
BACC45FN18-31P		1	225	1

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PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
		1	235	1
		2	160	1
BACN10DN26		1	120	2
		2	75	2
BACN10DN40		1	170	4
BACN10JC06		1	70	2
		1	90	2
		2	55	2
BACN10NW1		1	220	2
		2	150	2
BACR13CF4		1	95	1
BACR13CF4A		1	95A	1
BACS126B06-5		2	110	5
BACS12BE02-3		1	105	2
		1	200	4
BACS12BF02-5		1	115	2
		2	70	2
BACS12CB04-4		1	130A	3
		2	85	3
		2	95	4
BACS12CB04-5		1	215A	2
		2	145	2
BACS12CB06-14		1	60	2
		2	45	2
BACS12CB06-5		1	140A	4
BACT63A56-2		1	227	AR
BACT63A56-9		1	227A	AR
		1	227B	AR
BCREF2579		1	40A	1
BRH10A06		1	70	2
		1	90	2
		2	55	2
H10-06BAC		1	70	2
		1	90	2
		2	55	2

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PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
K19798-04		1	220	2
		2	150	2
MOD15512SP2		1	185	1
		2	105	1
MS24523-23		1	35	1
MS24693C25		1	25A	4
MS35338-41		1	142	4
		2	115	5
MS51957-13		1	130B	3
MS51957-14		1	215B	2
MS51957-20		1	60B	2
MS51957-27		1	140B	4
NAS1149DN632K		1	85B	6
NAS1291C04M		1	70A	2
NAS1291C06M		1	90A	2
NAS1801-04-4		1	130	3
NAS1801-04-5		1	215	2
NAS1801-06-14		1	60A	2
NAS1801-06-5		1	140	4
NAS43DD0-17		1	65A	2
NAS43DD1-17		1	65	2
		2	50	2
NAS514P440-4		1	5	8
		2	5	8
NAS514P440-5		1	165	4
NAS514P632-5		1	25	4
		2	25	5
NAS620-2		1	202	4
NS202101-62		1	70	2
		1	90	2
		2	55	2
RER60F2210R		1	125	1
RH5-510-3PCT		1	125A	1
		2	80	1
RMA4812-160-40		1	220	2

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PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
RMLH9075-62W		2	150	2
		1	70	2
		1	90	2
		2	55	2
T6S632J		1	70	2
		1	90	2
		2	55	2
VN303A62		1	70	2
		1	90	2
		2	55	2

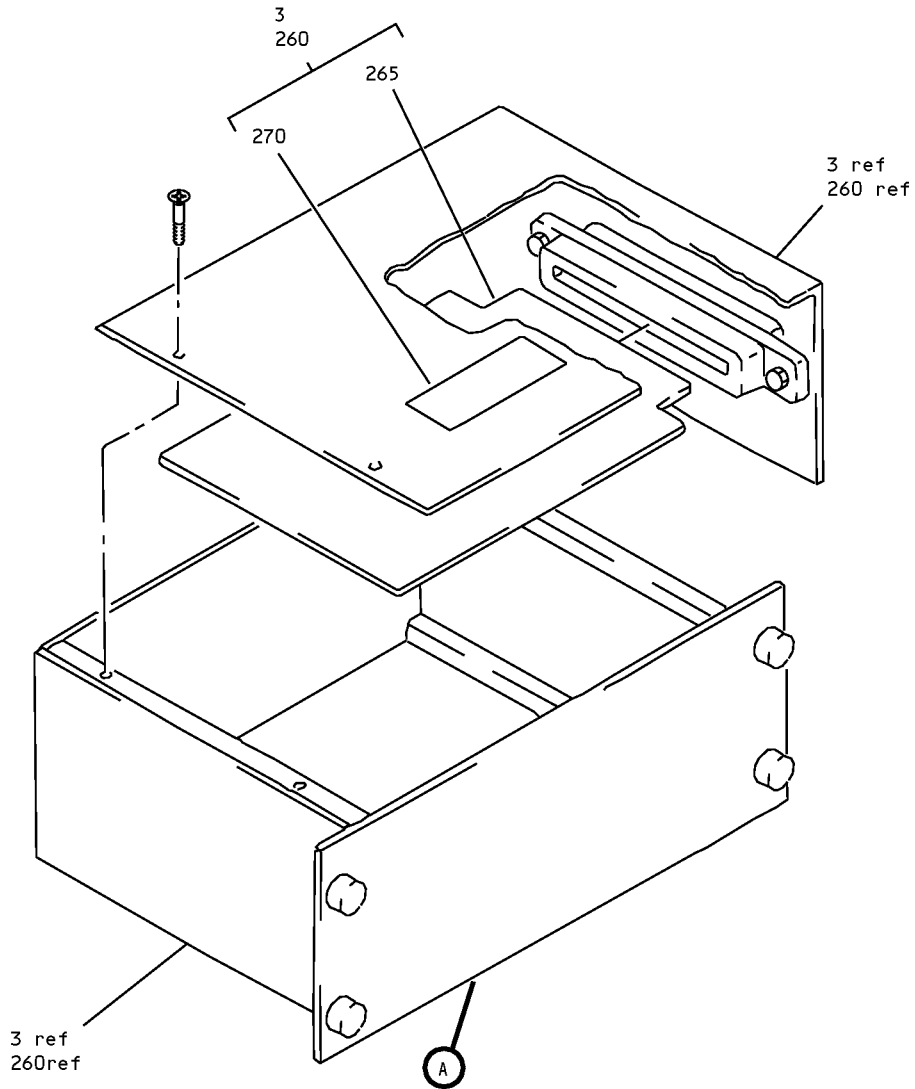
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Flight Recorder and Mach Airspeed Warning Test Module Assembly
IPL Figure 1 (Sheet 1 of 4)

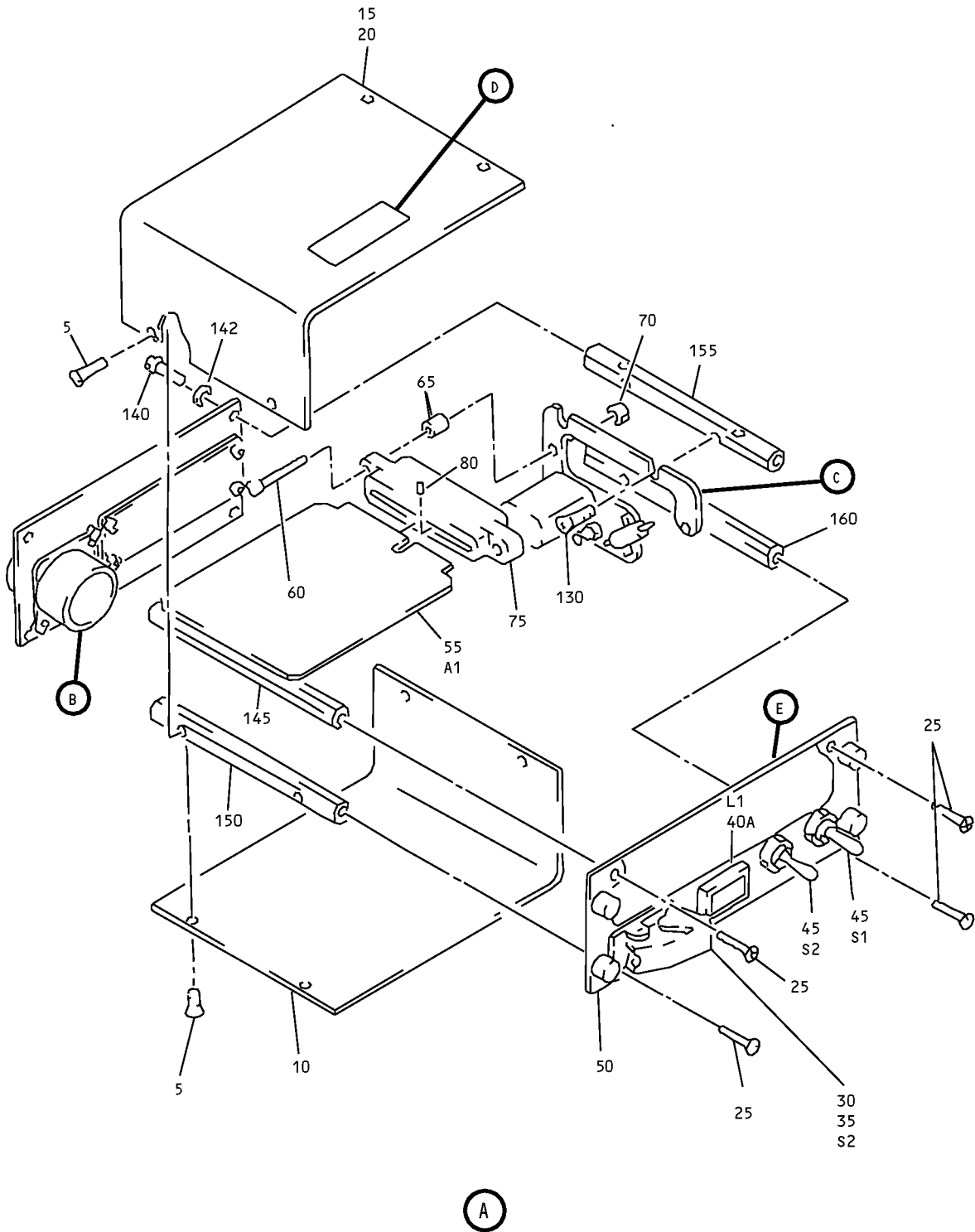
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Flight Recorder and Mach Airspeed Warning Test Module Assembly
IPL Figure 1 (Sheet 2 of 4)

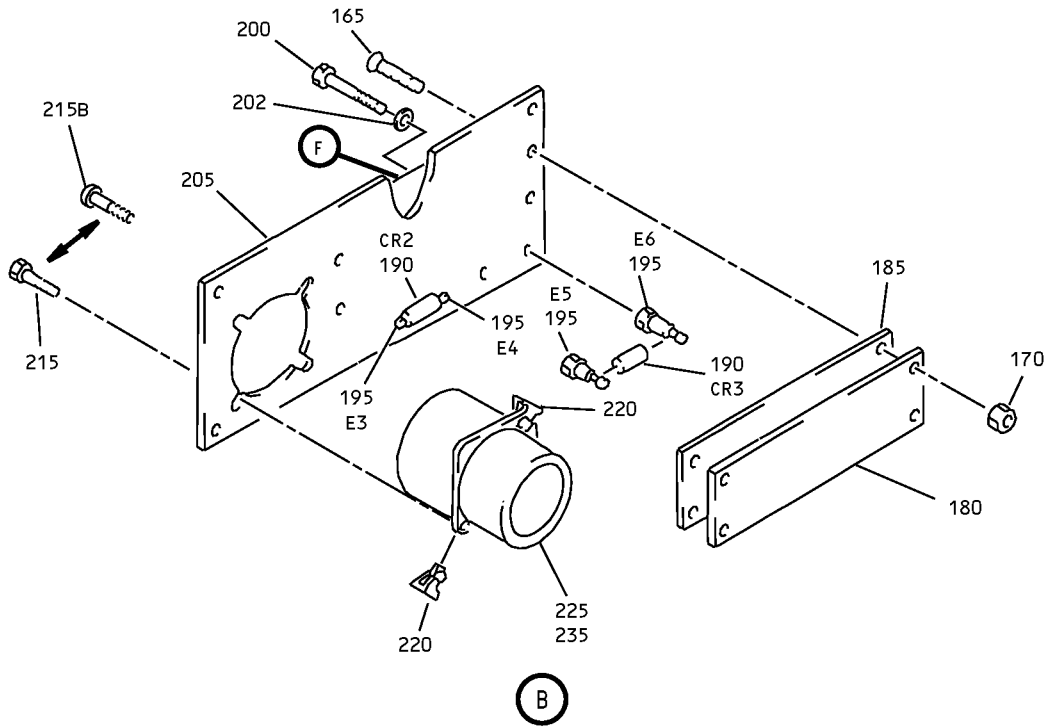
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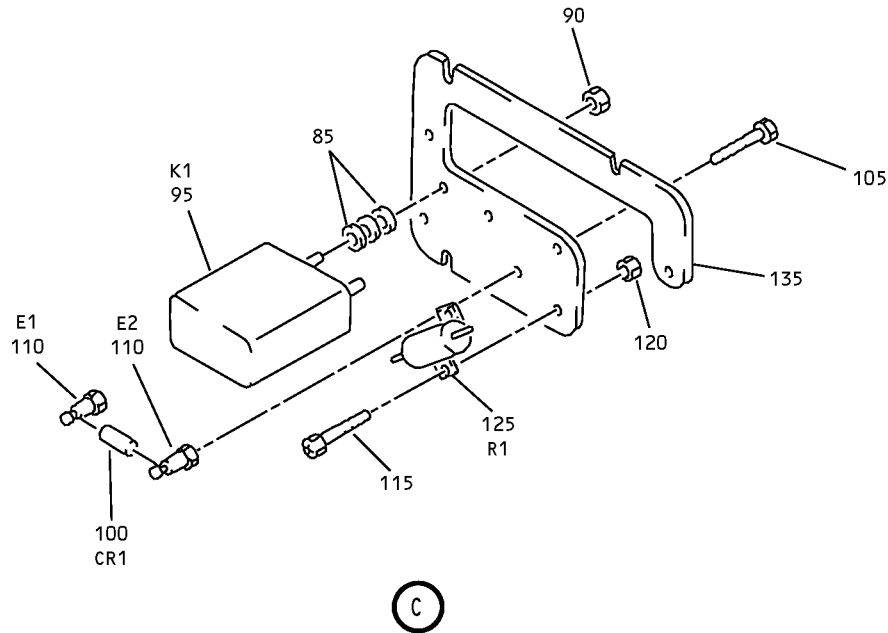
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(B)



(C)

Flight Recorder and Mach Airspeed Warning Test Module Assembly
IPL Figure 1 (Sheet 3 of 4)

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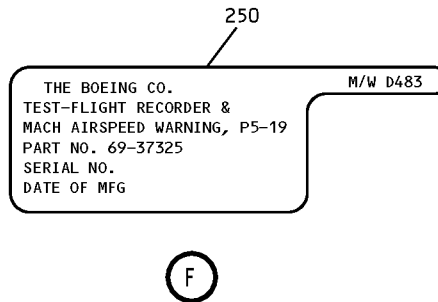
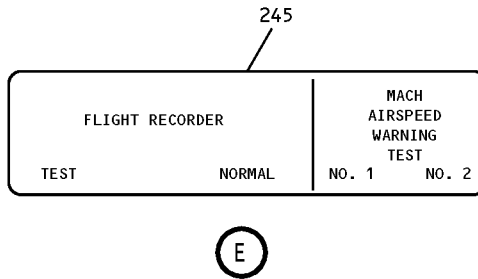
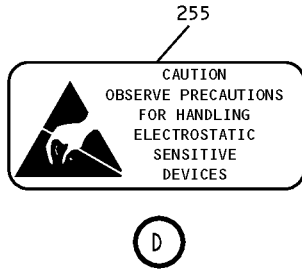
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Flight Recorder and Mach Airspeed Warning Test Module Assembly
IPL Figure 1 (Sheet 4 of 4)



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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY
			1	2	3	4	5	6	7		
1-											
-1	69-37325-132									A	RF
-1A	69-37325-133									B	RF
-1B	69-37325-134									C	RF
-1C	69-37325-135									D	RF
-1D	69-37325-136									E	RF
-1E	69-37325-137									F	RF
-1F	69-37325-138									G	RF
-1G	69-37325-164									H	RF
-1H	69-37325-165									J	RF
-1J	69-37325-166									K	RF

-Item not Illustrated

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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY
			1	2	3	4	5	6	7		
1-											
-1K	69-37325-167									L	RF
-1L	69-37325-168									M	RF
3	69-37325-111									H	1
-3A	69-37325-112									J	1
-3B	69-37325-114									K	1
5	NAS514P440-4									A-F, L, M	8
10	69-43948-19									A, C-F, L, M	1
-10A	69-43948-22									B	1
15	69-43948-20									A, C-F	1
-15A	69-43948-23									B	1
20	69-43948-19									A, C-F	1
20A	69-43948-22									B	1
25	NAS514P632-5									A-F	4
-25A	MS24693C25									L, M	4
30	11170-1									A-F, L, M	1
35	MS24523-23									A-F, L, M	1
40	10-61803-12										
40A	BCREF2579									A, C-F, L, M	1

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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY
			1	2	3	4	5	6	7		
1- 45	2PB11H58		.	SWITCH (V91929) (S1, S3)						A-F, L, M	2
50	69-37325-18		.	BASEPLATE						A, D-F, M	1
-50A	69-37325-106		.	BASEPLATE						C, L	1
-50B	69-37325-80		.	BASEPLATE ASSY						B	1
55	69-78287-1		.	PRINTED CIRCUIT ASSY-PWR AND GND SENSING (STATIC SENSITIVE PART) (A1) (V89954)						A-F	1
-55A	69-78809-2			DELETED							
-55B	69-78809-3			DELETED							
-55C	69-78809-4		.	PRINTED WIRING ASSY-UNIVERSAL MASTER CAUTION (STATIC SENSITIVE PART) (A1) (OPT ITEM 55D) (V89954)						L, M	1
-55D	69-78809-5		.	PRINTED WIRING ASSY-UNIVERSAL MASTER CAUTION (STATIC SENSITIVE PART) (A1) (OPT ITEM 55C) (V89954)						L, M	1
60	BACS12CB06-14		.	SCREW						A, B, E	2
-60A	NAS1801-06-14		.	SCREW						C, D, F	2
-60B	MS51957-20		.	SCREW						L, M	2
65	NAS43DD1-17		.	SPACER						A-F	2
-65A	NAS43DD0-17		.	SPACER						L, M	2
70	H10-06BAC		.	NUT (V15653) (SPEC BACN10JC06) (OPT RMLH9075-62W (V72962)) (OPT T6S632J (V11815)) (OPT VN303A62 (V92215)) (OPT 96-62 (V80539)) (OPT BRH10A06 (V52828)) (OPT NS202101-62 (V80539))						A-F	2
-70A	NAS1291C04M		.	NUT						L, M	2

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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY
			1	2	3	4	5	6	7		
1-											
75	582557-1		.	CONNECTOR						A-C, E, L, M	1
				(V00779)							
80	582507-1		.	PLUG-KEYING						A-F, L, M	1
				(V00779)							
85	AN960PD6		.	WASHER						A, D-F	6
-85A	AN960JD6		.	WASHER						B, C	6
-85B	NAS1149DN632K		.	WASHER						L, M	6
90	H10-06BAC		.	NUT						A-F	2
				(V15653)							
				(SPEC BACN10JC06)							
				(OPT RMLH9075-62W (V72962))							
				(OPT T6S632J (V11815))							
				(OPT VN303A62 (V92215))							
				(OPT 96-62 (V80539))							
				(OPT BRH10A06 (V52828))							
				(OPT NS202101-62 (V80539))							
-90A	NAS1291C06M		.	NUT						L, M	2
95	BACR13CF4		.	RELAY						A, B, D-F	1
				(K1)							
-95A	BACR13CF4A		.	RELAY						C, L, M	1
				(K1)							
100	1N4384		.	DIODE						A-F, L, M	1
				(CR1)							
105	BACS12BE02-3		.	SCREW						A-F, L, M	2
110	1491A			DELETED							
110A	1491A		.	TERMINAL-INSULATED						A-F	2
				(V88245)							
				(E1, E2)							
				(OPT ITEM 110B)							
-110B	1625-4-12		.	TERMINAL-INSULATED						A-F	2
				(V88245)							
				(E1, E2)							
				(OPT ITEM 110A)							
-110C	1625-4-12		.	TERMINAL-INSULATED						L, M	2
				(V88245)							
				(E1, E2)							
115	BACS12BF02-5		.	SCREW						A-F	2

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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY
			1	2	3	4	5	6	7		
1-											
120	92-1660-256		.	NUT						A-F	2
				(V15653)							
				(SPEC BACN10DN26)							
				(OPT 92-1660-26 (V72962))							
125	RER60F2210R		.	RESISTOR-221 OHM, 1 PCT, 5W						B, D, F	1
				(R1)							
-125A	RH5-510-3PCT		.	RESISTOR-510 OHM, 3 PCT, 5W						A, C, E	1
				(V91637)							
				(R1)							
				(OPT ITEM 125B)							
-125B	3105M510-3PCT		.	RESISTOR-510 OHM, 3 PCT, 5W						A, C, E	1
				(V00213)							
				(R1)							
				(OPT ITEM 125A)							
130	NAS1801-04-4		.	SCREW						C, D, F	3
-130A	BACS12CB04-4		.	SCREW						A, B, E	3
-130B	MS51957-13		.	SCREW						L, M	3
135	69-43948-17		.	PLATE-SPRT						A-F	1
-135A	69-37329-4		.	PLATE-SUPT						L, M	1
140	NAS1801-06-5		.	SCREW						C, D, F	4
-140A	BACS12CB06-5		.	SCREW						A, B, E	4
-140B	MS51957-27		.	SCREW						L, M	4
142	MS35338-41		.	WASHER						A, C-F, L, M	4
145	69-37268-14		.	STANDOFF						A-F, L, M	1
150	69-37268-13		.	STANDOFF						A-F, L, M	1
155	69-37325-8		.	STANDOFF						A-F, L, M	1
160	69-37325-5		.	STANDOFF						A-F, L, M	1
165	NAS514P440-5		.	SCREW						A, C, E	4
-165A	MS24693C3			DELETED							
170	92-1660-40		.	NUT						A, C, E	4
				(V72962)							
				(SPEC BACN10DN40)							
				(OPT 92-1660-440 (V15653))							
180	69-63592-9		.	COMPONENT ASSY-TERM. BOARD						A, C, E	1
				(V89954)							

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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY
			1	2	3	4	5	6	7		
1-											
185	MOD15512SP2		.							A, C, E	1
190	1N4384		.							D, F, M	2
195	1491A		.							D, F	4
-195A	1625-4-12		.							D, F	4
-195B	1625-4-12		.							M	4
200	BACS12BE02-3		.							D, F, M	4
202	NAS620-2		.							M	4
205	69-43948-12		.							A-F	1
-205A	69-43948-169										
-205B	69-43948-172										
-205C	69-37325-169		.							L	1
-205D	69-37325-172		.							M	1
-205E	69-43948-12		.							L	1
215	NAS1801-04-5		.							C, D, F	2
-215A	BACS12CB04-5		.							A, B, E	2
215B	MS51957-14		.							L, M	2
220	K19798-04		.							A-F, L, M	2
225	BACC45FN18-31P		.							A, C, E, L, M	1

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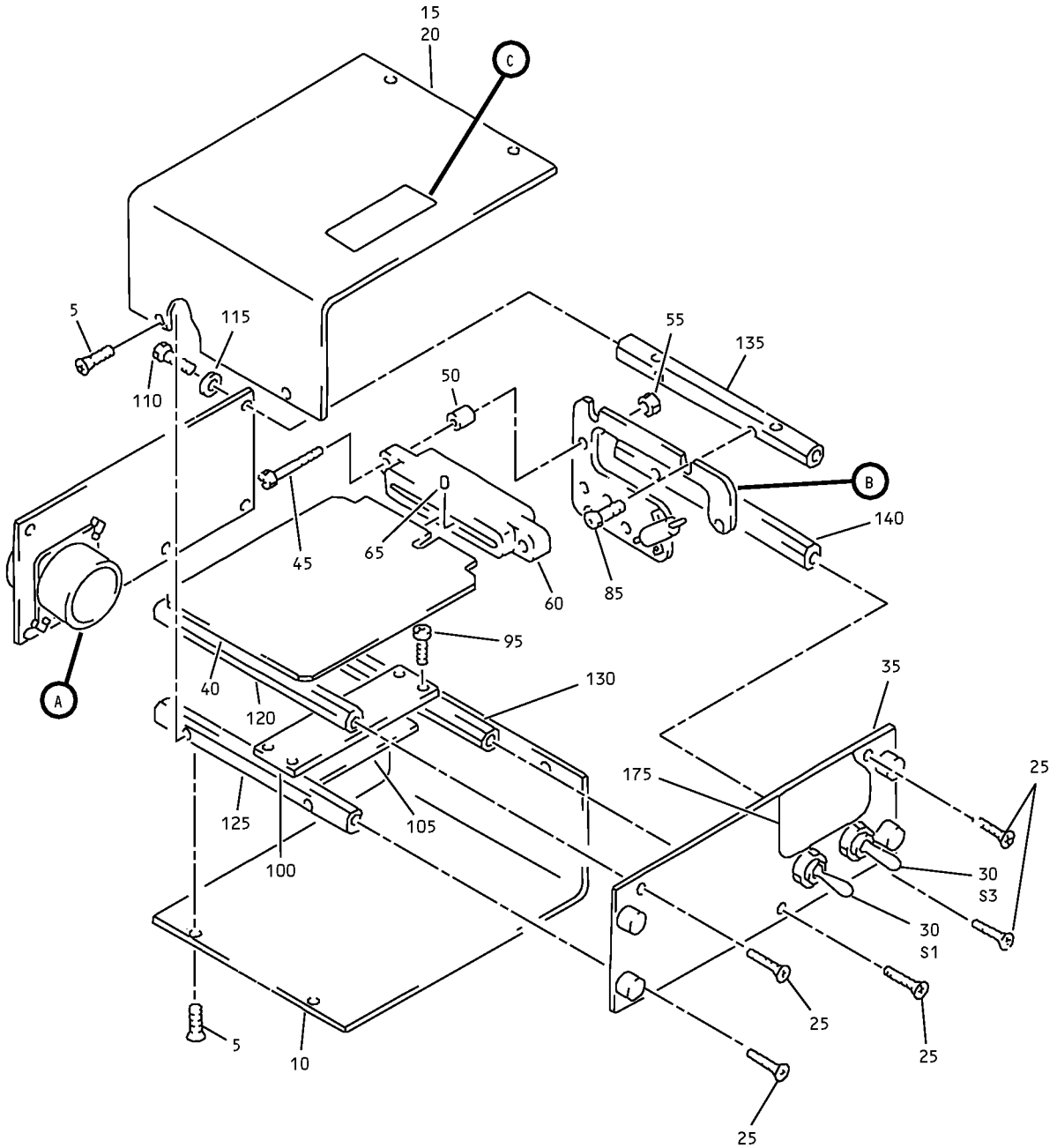
FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY
			1	2	3	4	5	6	7		
1-											
-227	BACT63A56-2		.	TUBING-SHRINKABLE						B, D, F	AR
				(OPT ITEM 227A)							
-227A	BACT63A56-9		.	TUBING-SHRINKABLE						B, D, F	AR
				(OPT ITEM 227)							
-227B	BACT63A56-9		.	TUBING-SHRINKABLE						M	AR
-230	69-37325-98		.	WIRE BUNDLE ASSY						A, C, E	1
-230A	69-37325-107		.	WIRE BUNDLE ASSY						D, F	1
-230B	69-37325-96		.	WIRE BUNDLE ASSY						B	1
-230C	69-37325-170		.	WIRE BUNDLE ASSY						L	1
-230D	69-37325-171		.	WIRE BUNDLE ASSY						M	1
-232	66143-2		. .	TAB TERMINAL						A-F, L, M	AR
				(V00779)							
235	BACC45FN18-31P		. .	CONNECTOR-(P1)						B, D, F	1
-240	582557-1		. .	CONNECTOR						D, F	1
				(V00779)							
245	BAC27DCC572		.	MARKER-ALUMINUM FOIL						A, C-F, L, M	1
-245A	BAC27DCC1061		.	MARKER-ALUMINUM FOIL						B	1
250	BAC27DCC239		.	MARKER-ALUMINUM FOIL						A-F, L, M	1
255	BAC27EEX510		.	DECAL						A-F, L, M	1
260	69-78601-3		.	MODULE ASSY-MASTER CAUTION PC, OVERHEAD, (REWORK) (STATIC SENSITIVE PART)						H-K	1
265	69-78287-1		. .	PRINTED CIRCUIT ASSY (STATIC SENSITIVE PART) (A1) (V89954)						H-K	1
270	BAC27EEX510		. .	DECAL						H-K	1

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Flight Recorder and Mach Airspeed Warning Test Module Assembly
IPL Figure 2 (Sheet 1 of 2)

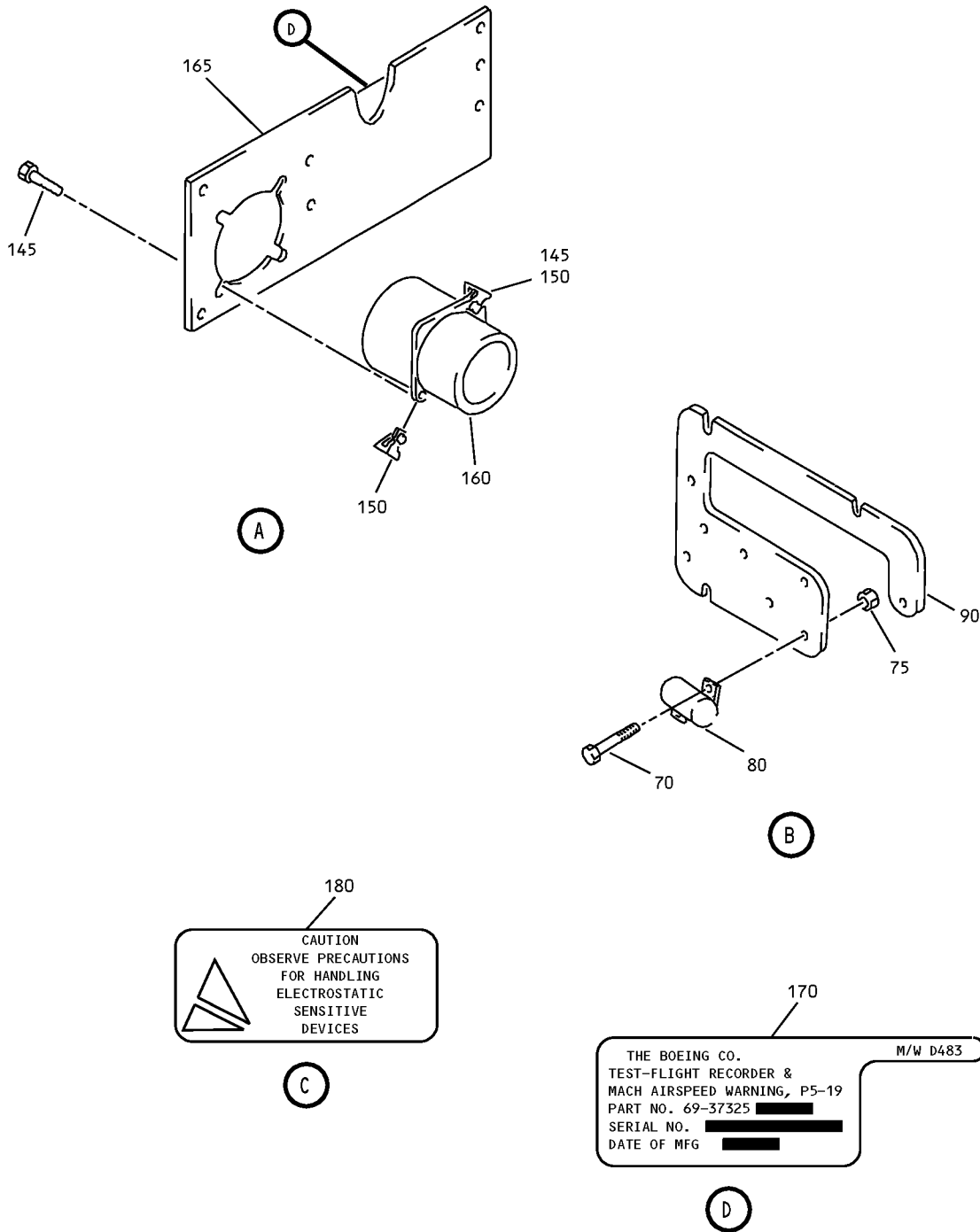
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Flight Recorder and Mach Airspeed Warning Test Module Assembly
IPL Figure 2 (Sheet 2 of 2)



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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY
			1	2	3	4	5	6	7		
2-											
-1	69-37325-138									G	RF
5	NAS514P440-4									G	8
10	69-43948-22									G	1
15	69-43948-23									G	1
20	69-43948-22									G	1
25	NAS514P632-5									G	5
30	2PB11H58									G	2
35	69-37325-73									G	1
40	69-78287-1									G	1
45	BACS12CB06-14									G	2
50	NAS43DD1-17									G	2
55	H10-06BAC									G	2
60	582557-1									G	1
65	582507-1									G	1
70	BACS12BF02-5									G	2
75	92-1660-256									G	2

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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY
			1	2	3	4	5	6	7		
2-											
80	RH5-510-3PCT		.							G	1
-80A	3105M510-3PCT		.							G	1
85	BACS12CB04-4		.							G	3
90	69-43948-17		.							G	1
95	BACS12CB04-4		.							G, T	4
100	69-63592-9		.							G	1
105	MOD15512SP2		.							G	1
110	BACS126B06-5		.							G	5
115	MS35338-41		.							G	5
120	69-37268-14		.							G	1
125	69-37325-70		.							G	1
130	69-37325-71		.							G	1
135	69-37325-8		.							G	1
140	69-37325-5		.							G	1
145	BACS12CB04-5		.							G	2
150	K19798-04		.							G	2
-155	69-37325-64		.							G	1
-157	66143-2		.	.						G	AR
160	BACC45FN18-31P		.	.						G	1
165	69-43948-12		.							G	1
170	BAC27DCC239		.							G	1
175	BAC27DCC933		.							G	1

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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY
			1	2	3	4	5	6	7		
2- 180	BAC27EEX510		.	DECAL						G	1

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