TO: ALL HOLDERS OF LANDING GEAR ACCESSORY UNIT ASSEMBLY M338 OVERHAUL MANUAL, 32-66-45

REVISION NO. 23, DATED JUL 1/08

HIGHLIGHTS

DESCRIPTION OF CHANGE	TOPICS AFFECTED												
	D&O	D/Assy	Cleaning	Insp/Chk	Repair	Assy	F/C	Test	T/Shooting	S/Tools	Storage	IPL	L/Overhaul
Remove BAE Systems P/N's from manual	X				X			X	X			X	

LANDING GEAR ACCESSORY UNIT ASSEMBLY M338

32-66-45

BOEING P/N 65-52811-50, -70, -71, -90, -98, -99, -103, -134, -142, -143, -156, -164, -165, -169, -179

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
27-1049 R1		MC 3871-1K	Jul 5/83
21-1042 R2		PRR 32526	Jul 5/83
32-1093 R2		PRR 32675	Jul 5/83
		MC 3010-25K	Jul 5/80
21-1030			Jul 5/83
27-1114 R2		PRR 33143	Dec 5/83
27-1114 R3		MRR 3325-047	Dec 5/87

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
32-66-45		* F 807	Jul 1/08		
* T-1	Jul 1/08	808	BLANK		
T-2	BLANK	809	BLANK		
* LEP-1	Jul 1/08	* F 810	Jul 1/08		
LEP-2	BLANK	* F 811	Jul 1/08		
* T/C-1	Jul 1/08	812	BLANK		
T/C-2	BLANK	* 1101	Jul 1/08		
* 1	Jul 1/08	* 1102	Jul 1/08		
* 2	Jul 1/08	* 1103	Jul 1/08		
* 3	Jul 1/08	* 1104	Jul 1/08		
* 4	Jul 1/08	* 1105	Jul 1/08		
* 5	Jul 1/08	* 1106	Jul 1/08		
* 6	Jul 1/08	* 1107	Jul 1/08		
* 401	Jul 1/08	* 1108	Jul 1/08		
402	BLANK	* 1109	Jul 1/08		
* 701	Jul 1/08	1110	BLANK		
* 702	Jul 1/08				
* 702A	Jul 1/08				
702B	BLANK				
* 703	Jul 1/08				
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* 717	Jul 1/08				
* 718	Jul 1/08				
* 719	Jul 1/08				
* 720	Jul 1/08				
* 720A	Jul 1/08				
720B	BLANK				
* 801	Jul 1/08				
* 802	Jul 1/08				
* 803	Jul 1/08				
* 804	Jul 1/08				
805	BLANK				
* F 806	Jul 1/08				

TABLE OF CONTENTS

*[1] Use applicable procedures in SOPM 20-11-04, OHM 31-10-01 and standard industry practices.

*[2] Special instructions not required.

LANDING GEAR ACCESSORY UNIT ASSEMBLY (M338)

DESCRIPTION AND OPERATION

1. Description

NOTE: For coverage of 65-80922-2, refer to BAE Systems (V89954 BAE Systems Controls Inc., 600 Main St., Johnson City, NY 13790-1806) CMM 32-66-45.

A. The landing gear accessory unit assembly consists of control and safety relays, printed circuit assemblies, and related wiring and connectors mounted in a chassis assembly. Air and ground sensing test indicators with test switches are mounted on the front of the assembly.

2. Operation (Schematic Diagram, Fig. 705 and 706)

A. Proximity Switches (A1 thru A8)

(1) The proximity switches react to sensor inputs from the wheel positions. When the sensor detects a metal slug adjacent to its face, the output to the proximity switch causes a transistor to complete the circuit from pin 8 to pin 9 of the proximity switch. In each case, the proximity switch provides a ground output to the accessory unit circuit logic when the gear is in position. Proximity switches A1 and A2 react to the squat sensors in the shock struts to provide ground sensing and air sensing indications.

B. Air Sensing

(1) Proximity switch A1 provides a ground output when the shock struts are extended. Pin A-17 is circuit ground. Pin A-33 receives 28-volt dc circuit power. When the proximity switch is actuated, relays K3 and K5 are energized.

(2) When the airplane is on the ground, air sensing circuitry may be tested by depressing module switch S1. This places R1 in series to ground from pin 6 of A1, and causes A1 to be actuated. Illumination of the AIR SENSING lamp shows that the proximity switch is actuated, and relay K3 energized.

C. Ground Sensing

(1) Proximity switch A2 provides a ground output when the shock struts are compressed. Pin A-29 is circuit ground. Pin A-33 receives 28-volt dc circuit power. When the proximity switch is actuated, relays K1, K2, K4, and K8 are energized.

(2) When the airplane is on the ground, ground sensing circuitry may be tested by depressing module switch S2. This grounds pin 3 of A2 and deactuates the proximity switch. Illumination of GROUND SENSING lamp shows that the switch is deactuated, and that relay K2 has been de-energized.

D. Takeoff Warning (A12)

(1) Transistors Q1 and Q2 on A12 card receive base drive from circuit power at J12-24 (P1A-33). If Q2 base circuit and emitter is grounded at P1A-23 (flaps extended past 25 degrees), Q2 will provide a ground output at P1A-22 to energize a warning horn. If Q1 is turned on, Q2 base drive is grounded and the horn cannot sound. Q1 will be on until the throttle is advanced and a ground input at J12-8 (P1B-4) shunts Q1 base drive to ground.

E. Wheel Seal (A10)

(1) Circuit power at P1B-48 provides 28 volts dc for card A10 and for relay K6. When K6 is energized, power is passed through K6 contacts to P1B-2 and the wheel seal valve. Circuit ground at J10-7 will energize K6 if Q1 and Q2 (in series) are both on.

(2) Q2 has base drive through A10CR6 and through A10CR7 and will be on unless both sources of base drive are grounded. Both sources will be grounded by proximity switch outputs (A7, A3) if both main gear are down. Right main gear ground signal is received at J10-14, and left main gear ground signal is received at J10-19.

(3) Q1 has base drive through A10CR3, A10CR4, and A10CR14 and will be on unless all three sources of base drive are grounded. Proximity switch ground outputs (A8, A4) will ground two sources if both main gears are up. Right main gear up ground signal is received at J10-16 and left main gear up ground signal is received at J10-18. The third source of base drive will be grounded through J10-3 (P1B-6) if the gear lever is in the up position.

F. Main Landing Gear Indication (A11)

(1) Either transistor A11Q1 or A11Q2 will provide a ground output at P1A-42 for the right main gear red lamp indication when turned on. Q1 emitter has circuit ground from J11-2 (P1A-30) and base drive from circuit power at J11-12 (P1A-33). Q1 will be on unless the base drive is grounded through A11CR5 or A11CR6. Ground through A11CR5 is present when the right main gear uplock proximity switch is actuated (A8). Ground through A11CR6 is present when the gear lever is in the down position (P1A-35 grounded).

(2) A11Q2 ha s base drive from the same source (J11-12) and emitter ground through A11CR7 when the gear lever is in the up position, or emitter ground through A11CR8, TB1CR8 or TB1CR9, and P1A-51 or P1A-52, when engine 1 or engine 2 throttles are retarded. Q2 base drive will be grounded by proximity switch A7 if the right main gear is up and locked.

(3) The circuit is such that setting the gear lever to down or retarding a throttle will turn Q2 on unless the gear is down to shunt Q2 base drive to ground. Placing the gear lever in the up position permits Q1 to turn on unless the gear is in the up position.

(4) Transistors A11Q3 and A11Q4 work in the same fashion as Q1/Q2 to provide the left main gear red lamp output at P1A-38.

(5) Ground outputs for the landing gear green indication lamps are provided direct from the proximity switches; from A3 to P1A-37 (left main down), and from A7 to P1A-41 (right main down).

G. Nose Gear Indication (A12)

(1) Either A12Q3 or A12 Q4 will provide a ground output for the nose gear red lamp indication (at P1A-40) when turned on. Q3 emitter and base circuit is grounded through P1A-30. Q3/Q4 base drive is received at J12 -23 (P1A-33). Q3 will be on unless the base drive is grounded through either A12CR10 (nose gear uplock switch A5), or A12CR11 (gear lever down ground input at P1A-35).

(2) Q3 will be on if the emitter and base circuit ground is present through A12CR12 (gear lever down ground input at P1A-35) or through A12CR13 (throttle retard ground input at P1A-51 or A-52).

(3) The circuit is such that setting the gear lever to down or retarding a throttle will turn on Q4 unless the nose gear is down to shunt Q4 base drive to ground. Placing the gear lever in the up position permits Q3 to turn on unless the nose gear is in the up position to shunt Q3 base drive to ground.

(4) Ground output for the nose gear green indication lamp is provided direct from the nose gear downlock proximity switch (A6) to P1A-39.

H. Aural Warning (A9)

(1) Transistor A9Q1 provides a ground output to activate the aural warning horn at P1A-54 when turned on. Circuit power at J9-18 (P1A-33) provides Q1 base drive through A9CR6, A9CR7 or A9CR8. This base drive will be shunted to ground through A9CR12, A9CR13, or A9CR14 by the downlock proximity switches (A3, A6, A7 respectively) if all three gears are down.

(2) If any gear is not down, Q1 will have base drive, but will need emitter and base circuit ground to be conducting. This ground will come through either A9Q2 or A9Q3 if a throttle is retarded. Number 1 engine throttle retard ground will be at J9-29 (P1A-51) and number 2 engine throttle retard ground will be at J9-28 (P1A-52).

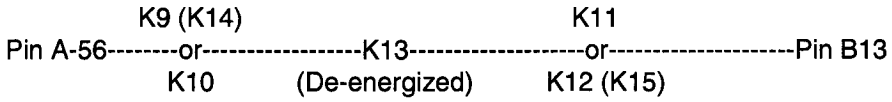
(3) When the horn has been activated by Q1Q2 or Q1/Q3, it can be silenced by shunting Q2 or Q3 base drive to ground through SCR's A9Q4 and A9Q5. When a 28-volt dc reset pulse from the reset switch connected at P1A-50 is received through A13L1 at J9-2, the SCR's are triggered into conduction and Q2/Q3 are turned off.

I. Automatic Ground Spoiler (K9 thru K17, A14)

(1) The automatic ground spoiler handle actuator raise coils receive power through the accessory unit relays. The input from the speed brake handle switch (28 volts dc) is at P1A-56 and the output to the raise coils is from P1B-13. The relays serve other purposes, and for ground spoiler circuitry only the A1/A2 contacts of K9, K10, K11, K12, K14, or K15, and the B1/B2/B3 contacts of K13 need be considered. K13 must be de-energized (throttle retarded) for the power to be passed. A ground input at P1B-4 energizes K13.

(2) Wheel speed inputs to relay coils of K9 thru K12, or the proper sequence of air sensing and ground sensing relay action (K5/K1), cause the power path to be complete to the raise coils if the speed brake lever is actuated.

(3) Wheel speed ac power inputs at P1B pins 50, 54, 52, and 55 energize respectively relays K9 (left inboard), K12 (right inboard), K11 (left outboard), and K10 (right outboard). Two wheels on the same side, or both inboard wheels, or both outboard wheels up to speed will energize a pair of relays to complete the power path. K9 and K12 contacts pass power to K14 and K15 coils respectively. K14 and K15 contacts pass power through to the actuator handle if both are energized. Figure 1 illustrates the sequence of relays energized required to pass power.



Automatic Ground Spoiler Relays
Figure 1

(4) When the airplane senses transition from the air to ground condition through the squat switches, relays K14 and K15 will be individually energized through contacts in latching relays K17 and K16 respectively. This will pass the actuator handle power through even if wheels are not up to speed. However, time delay card A0 will cause the power to be interrupted after approximately 4 seconds if the wheels are not up to speed. The latching feature of K16 and K17 prevents a second application of power through this source until the squat switches have returned to the air mode.

(5) If the airplane is in the air mode, and the speed brake handle provides a power input at pin A-56, K5 pass power to K16 to latch in the direction of the 2/7 pins. The same K5 contact opens the power circuit through A0CR7 and K16 contacts to K15 coil. At the same time, the ground sensing relay K1 is de-energized and its contacts cause K17 to latch in the direction of the 2/7 pins. Also, the same K1 contact opens the power circuit through A0CR1 and K17 to K14 coil.

(6) When the airplane shifts to ground mode, K5 is de-energized and K1 is energized. K5 and K1 contacts then pass power through K16 and K17 to K15 and K14 coils respectively. At the same time, pins 10 of K16/K17 receive power and the delay function is activated for each relay. After approximately a 4 -second delay, pins 9 of K16/K17 are grounded, the 9/10 coils are energized, and relays K15/K14 de-energized. The airplane must shift again to the air mode before K15/K16 can be latched in the opposite direction to repeat the sequence of actions.

(7) Speed Brake ARMED and DO NOT ARM Indications (A14)

(a) Q1 provides a ground path for the DO NOT ARM indication, and Q2 provides a ground path for the SPEED BRAKE ARMED indication. When Q2 is on, Q1 base drive is shunted to ground. Circuit power comes from the speed brake handle at J14-12. Circuit ground is at J14-9. Q2 may also receive base drive from pin B-13 unless J14-5 is grounded. Q2 base drive through CR7 and CR9 will be shunted to ground if J14-6 or -3 receive power to turn Q3 on. The combination of power and ground inputs to card A0, as determined by the status of air/ground sensing, speed brake handle, and wheel speed combinations result in providing the ground path for either the ARMED or DO NOT ARM indicator. Ground inputs (antiskid inoperative) at pins A-53 or B-53 wil1 shunt Q2 base drive to ground through A14CR10 or A14CR8.

REPAIR

1. If keying plugs in printed circuit assembly connectors require replacement, bond in place per SOPM 20-50-12, Application of Adhesives, Type 58. Insert keying plugs in positions listed in Fig. 401.

Connector	Keying Plug Position
J1,J2,J4,J5,J8	10-L
J6	2-B
J9	23-24 and 25-26
J10	5-6 and 11-12
J11	8-J and 9-K
J12	15-16 and 17-18
J13	3-C and 12-N
J14	8-J and 13-P
J3,J7 *[1]	10-L
J3,J7 *[2]	2-B

*[1] 65-52811-50, -70, -71, -103, -134, -142, -143, -169
*[2] 65-52811-90, -98, -99, -156, -164, -165

Keying Plug Locations
Figure 401

2. When installing relays K16 and K17 (130, Fig. 1101), orient contrasting bead at socket pin 2.

TESTING

1. Test Equipment

   A. Power Supplies:

      (1) 28 ±1 vdc, 1 amp

      (2) 28 ±1 vac, 400 ±5 Hz

   B. Multimeter:

      (1) Simpson 260P or equivalent

   C. Oscilloscope:

      (1) Tektronix 475 or equivalent

   D. Test Lamps

      (1) 28 vdc, 100 ma (1820 or equivalent) (11 required) (L1-L7, L10, L11, L13, L14)

      (2) 28 vdc, 40 ma (327, 387, 1819 or equivalent) (2 required) (L8, L9)

      (3) 28 vdc, 500 ma (three 313 or 1821 lamps in parallel or equivalent) (L12)

   E. Switches:

      (1) SPST (27 required) (S1-S16, S18, S23, S26-S34)

      (2) SPDT 3-position (2 required) (S17, S22)

      (3) SPDT (S24)

      (4) DPDT (S25)

      (5) Pushbutton, normally open (S21)

   F. Banana Jacks and Plugs

      (1) Jacks

         (a) Dual (8 required) (J15-J22)

         (b) Single (J23)

      (2) Plugs (Used with centerpoint sensor)

         (a) Dual

         (b) Single

G. Resistor

(1) 1K, 10 PCT, 1 W (R1)

(2) 8.2K, 10 PCT, 1 W (8 required) (R2-R9)

(3) 50 ohms, 10 PCT, 10W (R10)

H. Diode

(1) 1N4385 or equivalent (CR1)

I. Calibration Test (Dial) Stand (including 1.2" x 0.5" x 0.05" target and dial indicator)

(1) ELDEC P/N 3-455-35 (ELDEC Corp., 16700 13th Ave. West, Lynnwood, Washington 98036-9727)

J. Centerpoint Sensor Kit (including 1-899-15CP02 centerpoint sensor)

(1) ELDEC P/N 1-899-15CP01 (ELDEC Corp., 16700 13th Ave. West, Lynnwood, Washington 98036-9227)

K. Test Connector (with pigtail lead)

(1) DPX2MB67S67S33B0000 (ITT Corp., DBA ITT Cannon, 666 E. Dyer Rd., Santa Ana, California 92705-5612)

2. Functional Test

A. Verify continuity between pin-pairs listed in Fig. 701. Use positive lead of multimeter on pin listed in From Pin column.

Component Tested	From Pin (+)	To Pin (-)
Wiring	A-7	Chassis
A11CR15	Chassis	B2 *[1]
K9-K12	A-7	A-55
K3	A-11	A-12
K2	A-16	A-21
K4	A-19	B-30
K1	A-26	A-25
K2	A-29	A-9
K1	A-29	A-14
K2	A-29	B-1
K1	A-29	B-45
K4	A-31	A-15
K5	A-62	A-63
A10CR11	B-47	B-48 *[1]

Component Tested	From Pin (+)	To Pin (-)
K4	B-8	B-14
K4	B-11	B-10
K7/R2	B-16	B-15 *[1]
K5	B-19	A-17
K3/CR4	A-17	B-17 *[1]
K5	B-21	B-49
K2 *[2]	B-23	B-32
K2 *[3]	B-23	B-29
K3	B-33	B-28
K3	B-43	A-17
K8	B-58	B-56
K8	B-61	B-60
K8	B-64	B-63
K8	B-67	B-66

*[1] 25 ohms max
*[2] 65-52811-70, -71, -98, -99, -142, -143, -164, -165
*[3] 65-52811-50, -90, -103, -134, -156, -169, -179

Continuity Tests
Figure 701

B. Verify no continuity (50K minimum) between pin-pairs listed in Fig. 702. Use positive lead of multimeter on pin listed in From Pin column.

Component Tested	From Pin (+)	To Pin (-)
K2	A-6	A-29
K3	A-10	A-12
K2	A-13	A-29
K2	A-20	A-21
Wiring	A-20	B-48
K9-K12	A-24	B-46
K1	A-27	A-25
K4	A-28	A-31
Wiring	A-33	B-48
A11, A12	A-35	A-51
A9	A-51	A-50
A9	A-52	A-50
A14	A-53	A-56
K1	A-57	A-29
K4	B-31	A-19
K4	B-34	B-8
K3,S1	B-44	A-17
A14	B-53	A-56
Wiring	A-60	A-56
K5	A-61	A-63
A11CR15	B-2	A-7

Component Tested	From Pin (+)	To Pin (-)
K6	B-2	B-48
Wiring	B-2	B-27
K13	B-3	B-5
K13/CR7*[3]	B-4	A-56
K13/CR7*[4]	B-4	B-3
K9	B-7	A-7
K1	B-9	A-29
Wiring	B-10	B-6
K4	B-12	B-10
Wiring	B-12	A-29
A13	B-16	A-67
K7	B-18	A-32
K5	B-20	A-17
K2*[1]	B-26	B-32
K5	B-22	B-49
K2*[2]	B-24	B-29
K3	B-27	B-28
K8	B-57	B-56
K8	B-59	B-61
K8	B-62	B-64
K8	B-65	B-67
Wiring	B-65	A-29

*[1] 65-52811-70, -71, -98, -99, -142, -143, -164, -165
*[2] 65-52811-50, -90, -103, -134, -156, -169, -179
*[3] 65-52811-50, -70, -71, -90, -98, -99, -103
*[4] 65-52811-134, -142, -143, -156, -164, -165, -169, -179

No-Continuity Tests
Figure 702

C. Verify continuity between pin A-7 and the case of relays K10, K11, K14, and K15.

D. Verify 1150 ohms ± 10% between pins A-58 and A-60.

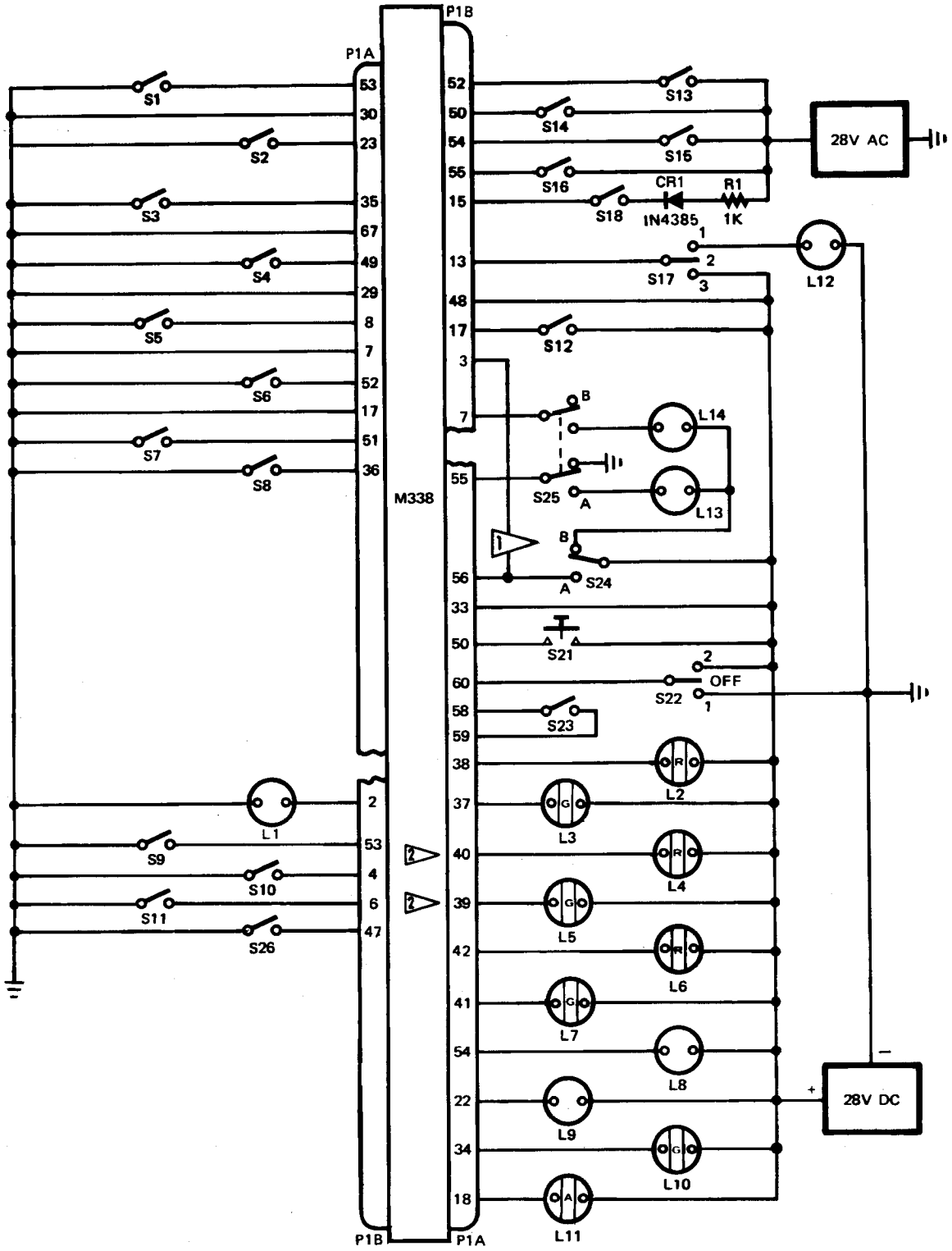
E. Verify 1000 ohms ± 25% between pins A-59 and A-56.

F. Connect test setup per Fig. 703. Turn on both power supplies.

NOTE: The centerpoint sensor leads are terminated in banana plugs. The red and blue leads are terminated in a dual banana plug such that they are inserted and removed as a pair. The yellow lead is terminated in a single banana plug which is inserted into the Y jack (J23) of the test setup, Fig. 703. It is important that the red lead connects to the red banana jack and that the blue lead connects to the blue banana jack through the entire test.

Figure 704 lists the functions simulated by the test setup. The reference designators are the same as the airplane reference designators for that function. The M reference designators are for the module within which a function occurs.

The test setup and module both have indicators L1 and L2, and switches S1 and S2. Consider all indicators and switches as part of test setup unless module indicators and switches are specifically listed.



1 65-52811-134,-142,-143,-156,-164,-165,-169,-179

2 INTERCHANGE PINS 39 AND 40 WHEN TESTING 65-52811-90,-98,-99,-103,-156,-164,-165,-179

Test Setup
Figure 703 (Sheet 1)

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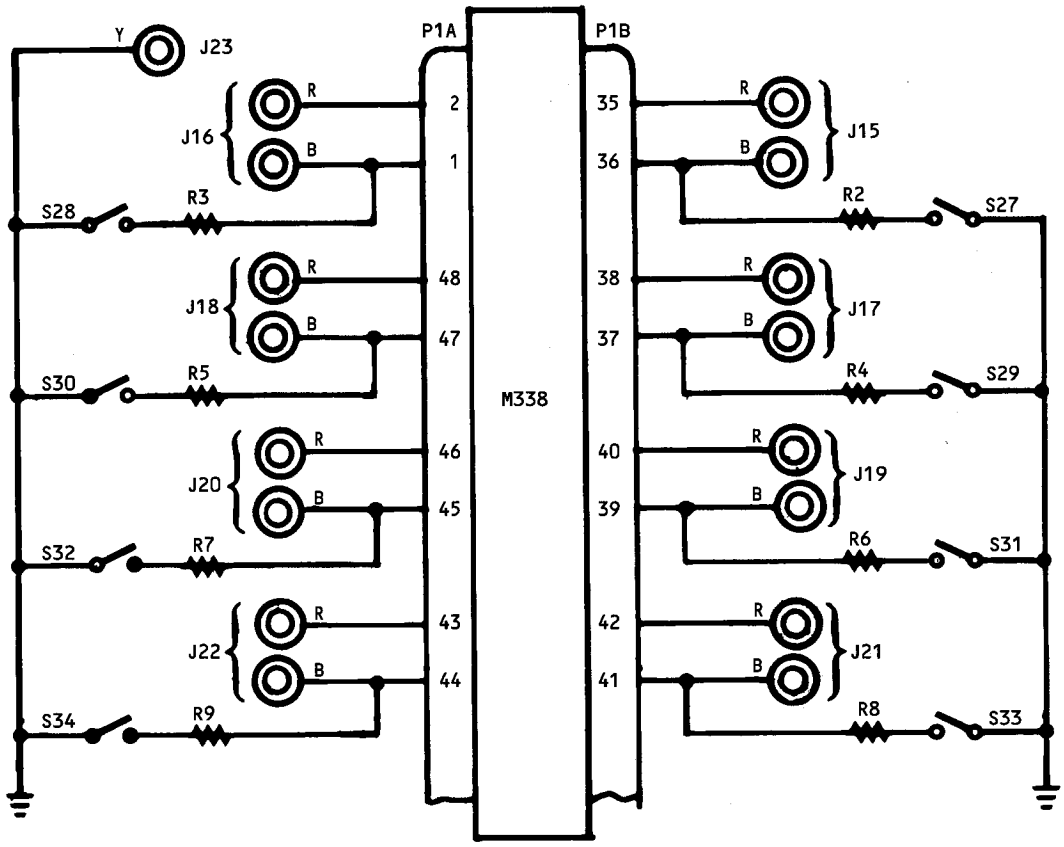
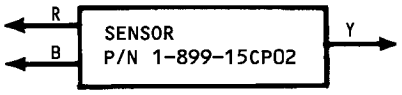




THE RED AND BLUE BANANA JACKS SHALL BE PAIRED AND SPACED TO RECEIVE DOUBLE BANANA PLUGS

R2 THRU R9 = 8.2K ± 10 PCT, 1W

NOTE:

Test Setup
Figure 703 (Sheet 2)

1541988

Test Item	Initial Condition	Aircraft Circuit Function	Aircraft Ref Desig.
S1	On	Simulates Inboard Antiskid Inoperative	M162F
S2	On (30°)	Flap Position Warning Switch	S130
S3	Off (Not Down)	Landing Gear Lever Switch	S78
S4	On (Down)	Landing Warning Switch	S138
S5	On (Up)	Flap Up Limit Switch	S245
S6	Off (Advanced)	Engine No. 1 Throttle	S139
S7	Off (Advanced)	Engine No. 2 Throttle	S140
S8	On	Simulates Speed Brake Handle Actuator	M359B
S9	On	Simulates Outboard Antiskid Inoperative	M162E
S10	Off (Retard)	Engine Throttle Switch	S133
S11	Off (Down)	Landing Gear Lever Switch	S265
S12	Off (Not Park)	Park Brake Switch	S100
S13	Off	Simulates Left Outboard Wheelspeed	M162C
S14	Off	Simulates Left Inboard Wheelspeed	M162A
S15	Off	Simulates Right Inboard Wheelspeed	M162D
S16	Off	Simulates Right Outboard Wheelspeed	M162B
S17	Position 2	Simulates Speed Brake Handle Actuator	M359A
S18	Off	Simulates Antiskid AC Power	V11
S21	Off	Throttle Horn Reset	S77
S22	Off	Ground Spoiler Test Switch No. 2	S315
S23	Off	Ground Spoiler Test Switch No. 1	S289
S24	B	Speed Brake Handle	S276
S25	B	Simulates Auto Brake Module	M577
S26	On (Door Open)	Manual Extension Access Door Switch	S264
S27,J15	Deactuated, Off	Air Sensing Sensor	S106,J106
S28,J16	Deactuated, Off	Ground Sensing Sensor	S105,J105
S29,J17	Deactuated, Off	Left Main Gear Downlock Sensor	S71,J71
S30,J18	Deactuated, Off	Left Main Gear Uplock Sensor	S72,J72
S31,J19	Deactuated, Off	Nose Gear Uplock Sensor	S76,J76
S32,J20	Deactuated, Off	Nose Gear Downlock Sensor	S75,J75
S33,J21	Deactuated, Off	Right Main Gear Downlock Sensor	S73,J73
S34,J22	Deactuated, Off	Right Main Gear Uplock Sensor	S74,J74
L1	Illuminated	Simulates Wheel Seal Valve	V55
L2	Illuminated	Left Main Gear (Red)	L367
L3	Not Illuminated	Left Main Gear Downlock (Green)	L368
L4	Illuminated	Nose Gear (Red)	L365
L5	Not Illuminated	Nose Gear Downlock (Green)	L366
L6	Illuminated	Right Main Gear (Red)	L369
L7	Not Illuminated	Right Main Gear Downlock (Green)	L370
L8	Not Illuminated	Simulates Continuous Horn	M315B
L9	Not Illuminated	Simulates Interrupted Horn	M315A
L10	Not Illuminated	Speed Brake Armed (Green)	L441
L11	Not Illuminated	Speed Brake Do Not Arm (Amber)	L442
L12	Not Illuminated	Simulates Speed Brake Handle Actuator	M359
L13	Not Illuminated	Simulates Auto Brake Module	M577A
L14	Not Illuminated	Simulates Auto Brake Module	M577B

Items Simulated by Test Setup
Figure 704

G. Set switches per initial conditions listed in Fig.704. Verify initial condition lamp indications for L1 thru L14.

H. Verify module lamp L1 is extinguished and module lamp L2 is illuminated.

I. Perform functional test per Fig. 705.

NOTE: Module indicators L1 and L2 respond to the test centerpoint sensor as actuation is accomplished. Actuation shall occur as the target bar is brought within 0.275 to 0.325 inch from the sensor. The proximity switch card shall remain actuated as the gap is decreased to zero. Deactuation shall occur as the bar is moved away from the sensor 0.005 to 0.030 inch from the actuation point.

Step	Procedure	Required Results
	Air Sensing Squat Switch	
1	Measure resistance between:	
	(K1,K2) A-9 to B-45	Con
	(K7,R2) B-15 to B-16	4 to 6 ohms
	(K3,K5) B-19 to B-43	Con
	(K4) A-19 to B-30	Con
	(K8) B-66 to B-67	Con
2	Connect deactuated sensor to test jack J15	
3	Set S12 to ON	
4	Measure resistance between:	
	(K7) B-18 to A-32	Con
	(K4) B-30 to A-19	Con
	(K7) B-16 to B-15	No Con
5	Press module switch S1, hold	Module lamp L1 on
6	Measure resistance between:	
	(K3,S1) B-44 to A-17	No Con
7	Release module switch S1	Module lamp L1 off
8	Actuate sensor	Module lamp L1 on
9	Measure resistance between:	
	(K1,K2) A-9 to A-14	Con
	(K3) A-10 to A-12	Con
	(K5) A-61 to A-63	Con
	(K5) B-20 to A-17	Con
	(K7,R2) B-15 to B-16	4 to 6 ohms
	(K5) B-22 to B-49	Con
	(K3) B-27 to B-28	Con
	(K4) B-30 to A-19	Con

Functional Test
Figure 705 (Sheet 1)

Step	Procedure	Required Results
	(K3,S1) B-44 to A-17	Con
	(K3) A-11 to A-12	No Con
	(K5) A-17 to B-19	No Con
	(K3) A-17 to B-43	No Con
	(K5) A-62 to A-63	No Con
	(K5) B-21 to B-49	No Con
	(K3) B-28 to B-33	No Con
10	Verify both module lamps L1 and L2 illuminated	
11	Deactuate sensor	Module lamp L1 off
12	Disconnect sensor from test jack J15	
	Takeoff Warning	
13	Set S10 to ON	L9 on
14	Measure voltage between:	
	(A12) A-22 to GND	1 vdc max
15	Set S27 to ON	L9 off Module lamp L1 on
16	Set S27 to OFF	L9 on Module lamp L1 off
17	Set S2 to OFF	L9 off
	Ground Sensing Squat Switch	
18	Connect deactuated sensor to test jack J16	
19	Actuate sensor	Module lamp L2 off
20	Measure resistance between:	
	(K2) A-6 to A-29	Con
	(K2) A-13 to A-29	Con
	(K2) A-20 to A-21	Con
	(K1) A-25 to A-27	Con
	(K4) A-28 to A-31	Con
	(K1) A-57 to A-29	Con
	(K1) B-9 to A-29	Con
	(K4) B-10 to B-12	Con
	(K7) B-18 to A-32	Con
	(K2) B-26 to B-32 *[1]	Con
	(K2) B-24 to B-29 *[2]	Con
	(K4) B-31 to A-19	Con
	(K4) B-34 to B-8	Con
	(K8) B-56 to B-57	Con
	(K8) B-59 to B-61	Con
	(K8) B-62 to B-64	Con
	(K8) B-65 to B-67	Con

Functional Test
Figure 705 (Sheet 2)

Step	Procedure	Required Results
21	Measure voltage between:	
	(K2) B-1(+) to A-29	26 to 28 vdc
22	Measure resistance between:	
	(K2) A-9 to A-29	No Con
	(K1) A-14 to A-29	No Con
	(K4) A-15 to A-31	No Con
	(K2) A-16 to A-21	No Con
	(K1) A-25 to A-26	No Con
	(K4) B-10 to B-11	No Con
	(Wiring) B-11 to A-29	No Con
	(K4) B-8 to B-14	No Con
	(K2) B-23 to B-32 *[1]	No Con
	(K2) B-23 to B-29 *[2]	No Con
	(K4) B-30 to A-19	No Con
	(K1) B-45 to A-29	No Con
	(K8) B-56 to B-58	No Con
	(K8) B-60 to B-61	No Con
	(K8) B-63 to B-64	No Con
	(K8) B-66 to B-67	No Con
	(Wiring) B-66 to A-29	No Con
	(Wiring) B-27 to B-47	No Con
	(Wiring) B-28 to B-48	No Con
	(Wiring) B-6 to A-16	No Con
23	Set S12 to OFF	
24	Measure resistance between:	
	(K7,R2) B-15 to B-16	4 to 6 ohms
	(K4) B-30 to A-19	Con
	(K1,K2) A-57 to A-13	Con
25	Press module switch S2, release	Module lamp L2 on while pressed
26	Press-to-test module lamps L1 and L2	Lamps on while pressed
27	Deactuate sensor	Module lamp L2 on
28	Disconnect sensor from test jack J16	

*[1] 65-52811-70, -71, -98 -99, -142, -143, -164, -165
*[2] 65-52811-50, -90, -103, -134, -156, -169, -179

Functional Test
Figure 705 (Sheet 3)

J. Nose and Main Landing Gear Proximity Switch Card Tests

(1) Verify all test switches and lamps are in the initial conditions listed in Fig. 704.

(2) Perform proximity switch card tests per Fig. 706.

Step	Procedure	Required Results
	NOTE: Indicators L2, L4 and L6 respond to the test centerpoint sensor as actuation is accomplished. Actuation shall occur as the target bar is brought within 0.275 to 0.325 inch from the sensor. The proximity switch card shall remain actuated as the gap is decreased to zero. Deactuation shall occur as the bar is moved away from the sensor 0.005 to 0.030 inch from the actuation point.	
1	Connect deactuated sensor to test jack J18	
2	Actuate sensor	L2 off
3	Deactuate sensor	L2 on
4	Disconnect sensor from test jack J18	
5	Connect deactuated sensor to test jack J19	
6	Actuate sensor	L4 off
7	Deactuate sensor	L4 on
8	Disconnect sensor from test jack J19	
9	Connect deactuated sensor to test jack J22	
10	Actuate sensor	L6 off
11	Deactuate sensor	L6 on
12	Disconnect sensor from test jack J22	
	NOTE: Indicators L3 and L7 respond to the test centerpoint sensor as actuation is accomplished. Actuation shall occur as the target bar is brought within 0.275 to 0.325 *[1] inch from the sensor. The proximity switch card shall remain actuated as the gap is decreased to zero. Deactuation shall occur as the bar is moved away from the sensor 0.005 to 0.030 *[2] inch from the actuation point.	
13	Connect deactuated sensor to test jack J17	
14	Actuate sensor	L3 on
15	Deactuate sensor	L3 off
16	Disconnect sensor from test jack J17	
17	Connect deactuated sensor to test jack J21	
18	Actuate sensor	L7 on
19	Deactuate sensor	L7 off
20	Disconnect sensor from test jack J21	

Proximity Switch Card Tests
Figure 706 (Sheet 1)

Step	Procedure	Required Results
	NOTE: Indicator L5 responds to the test centerpoint sensor as actuation is accomplished. Actuation shall occur as the target bar is brought within 0.130 to 0.160 inch from the sensor. The proximity switch card shall remain actuated as the gap is decreased to zero. Deactuation shall occur as the bar is moved away from the sensor 0.005 to 0.020 inch from the actuation point.	
21	Connect deactuated sensor to test jack J20	
22	Actuate sensor	L5 on
23	Deactuate sensor	L5 off
24	Disconnect sensor from test jack J20	

*[1] 0.275 to 0.325 inch for 65-52811-50, -70, -71, -134, -142, -143, -169
0.130 to 0.160 inch for 65-52811-90, -98, -99, -103, -156, -164, -165, -179

*[2] 0.005 to 0.030 inch for 65-52811-50, -70, -71, -134, -142, -143, -169
0.005 to 0.020 inch for 65-52811-90, -98, -99, -103, -156, -164, -165, -179

Proximity Switch Card Tests
Figure 706 (Sheet 2)

K. Wheel Seal Circuitry Test

(1) Verify all test switches and lamps are in the initial condition listed in Fig. 704.

(2) Perform wheel seal circuitry tests per Fig. 707.

NOTE: L4 must remain illuminated. L5 and L8 thru L14 must remain extinguished.

Step	Condition	Procedure	Required Results				
			L1	LM Red L2	LM Grn L3	RM Red L6	RM Grn L7
1	LM Gear Down	Set S29 to ON	On	On	On	On	Off
2	RM Gear Down	Set S33 to ON	On	On	On	On	On
3	RM Gear Up	Set S34 to ON	On	On	On	Off	On
4	LM Gear Up	Set S30 to ON	On	Off	On	Off	On
5	Door Closed	Set S26 to OFF	Off	Off	On	Off	On
6	RM Gear Not Down	Set S33 to OFF	On	Off	On	Off	Off
7	Gear Handle Up	Set SII to ON	Off	Off	On	Off	Off
8	LM Gear Not Up	Set S30 to OFF	On	On	On	Off	Off
9	RM Gear Down	Set S33 to ON	Off	On	On	Off	On
10	LM Gear Not Down	Set S29 to OFF	On	On	Off	Off	On
11	LM Gear Up	Set S30 to ON	Off	Off	Off	Off	On
12	RM Gear Not Up	Set S34 to OFF	On	Off	Off	On	On

Wheel Seal Circuitry Tests
Figure 707

L. Left Main Gear Indication Circuitry Test

(1) Verify all test switches and lamps are in the initial condition listed in Fig. 704.

(2) Perform left main gear indication circuitry tests per Fig. 708.

NOTE: L1, L4 and L6 must remain illuminated. L5 and L7 thru L14 must remain extinguished.

Step	Condition	Procedure	Required Results	
			LM Red L2	LM Grn L3
1	LM Gear Down	Set S29 to ON	On	On
2		Verify voltage at A-38	1 vdc max	On
3	Gear Handle Down	Set S3 to ON	Off	On
4	LM Not Down	Set S29 to OFF	On	Off
5	Gear Handle Not Down	Set S3 to OFF	On	Off
6	LM Gear Up	Set S30 to ON	Off	Off
7	Throttle 1 Retard	Set S6 to ON	On	Off
8	Throttle 1 Advance	Set S6 to OFF	Off	Off
9	Throttle 2 Retard	Set S7 to ON	On	Off
10		Verify voltage at A-38	2.5 vdc max	

Left Main Gear Indication Circuitry Test
Figure 708

M. Right Main Gear Indication Circuitry Test

(1) Verify all test switches and lamps are in the initial condition listed in Fig. 704.

(2) Perform right main gear indication circuitry test per Fig. 709.

NOTE: L1, L2 and L4 must remain illuminated. L3, L5 and L8 thru L14 must remain extinguished.

Step	Condition	Procedure	Required Results	
			RM Red L6	RM Grn L7
1	RM Gear Down	Set S33 to ON	On	On
2		Verify voltage at A-42	1 vdc max	
3	Gear Handle Down	Set S3 to ON	Off	On
4	RM Gear Not Down	Set S33 to OFF	On	Off
5	Gear Handle Not Down	Set S3 to OFF	On	Off
6	RM Gear Up	Set S34 to ON	Off	Off
7	Throttle 1 Advance	Set S6 to ON	On	Off
8	Throttle 1 Retard	Set S6 to OFF	Off	Off
9	Throttle 2 Advance	Set S7 to ON	On	Off
10		Verify voltage at A-42	2.5 vdc max	

Right Main Gear Indication Circuitry Tests
Figure 709

N. Nose Gear Indication Circuitry Test

(1) Verify all test switches and lamps are in the initial condition listed in Fig. 704.

(2) Perform nose gear indication circuitry test per Fig. 710.

NOTE: L1, L2 and L6 must remain illuminated. L3 and L7 thru L14 must remain extinguished.

Step	Condition	Procedure	Required Results	
			Nose Red L4 *[2]	Nose Grn L5 *[2]
1	Nose Gear Downlock	Set S32 to ON	On	On
2		Verify voltage at A-40 *[1]	1.0 vdc max	
3	Gear Handle Down	Set S3 to ON	Off	On
4	Nose Gear Not Down	Set S32 to OFF	On	Off
5	Gear Handle Not Down	Set S3 to OFF	On	Off
6	Nose Gear Uplock	Set S31 to ON	Off	Off
7	Throttle 1 Retard	Set S6 to ON	On	Off
8	Throttle 1 Advance	Set S6 to OFF	Off	Off
9	Throttle 2 Retard	Set S7 to ON	On	Off
10		Verify voltage at A-40 *[1]	2.5 vdc max	

*[1] Use A-39 on 65-52811-90,-98,-99,-103,-156,-164,-165,-179

*[2] On 65-52811-90,-98,-99,-103,-156,-164,-165,-179. Connect L4 to pin A-39 and L5 to pin A-40

Nose Gear Indication Circuitry Tests
Figure 710

O. Aural Warning Circuitry Test

(1) Verify all test switches and lamps are in the initial condition listed in Fig. 704.

(2) Perform aural warning circuitry tests per Fig. 711.

NOTE: L1, L2, L4 and L6 must remain illuminated. L9 thru L14 must remain extinguished.

Step	Condition	Procedure	Required Results			
			RM Grn L3	Nose Grn L5	LM Grn L7	Horn L8
1	Flap Not Up	Set S5 to OFF	Off	Off	Off	On
2	Landing Warn Sw. Up	Set S4 to OFF	Off	Off	Off	Off
3	Throttle 1 Retard	Set S6 to ON	Off	Off	Off	On
4	Horn Reset	Depress and release S21	Off	Off	Off	Off
5	Throttle 2 Retard	Set S7 to ON	Off	Off	Off	On
6	Horn Reset	Depress and release S21	Off	Off	Off	Off
7	Throttle 1 Advance	Set S6 to OFF	Off	Off	Off	Off
8	Throttle 1 Retard	Set S6 to ON	Off	Off	Off	On
9	Horn Reset	Depress and release S21	Off	Off	Off	Off
10	Throttle 2 Advance	Set S7 to OFF	Off	Off	Off	Off
11	Throttle 2 Retard	Set S7 to ON	Off	Off	Off	On
12	Horn Reset	Depress and release S21	Off	Off	Off	Off
13	Landing Warn Sw. Down	Set S4 to ON	Off	Off	Off	On
14	LM Gear Down	Set S29 to ON	On	Off	Off	On
15	RM Gear Down	Set S33 to ON	On	Off	On	On
16	Nose Downlock	Set S32 to ON	On	On	On	Off
17	RM Gear Not Down	Set S33 to OFF	On	On	Off	On
18	RM Gear Down	Set S33 to ON	On	On	On	Off
19	LM Gear Not Down	Set S29 to OFF	Off	On	On	On
20	LM Gear Down	Set S29 to ON	On	On	On	Off
21		Verify voltage at A-39 *[1]	1.0 vdc max			
22		Verify voltage at A-41	1.0 vdc max			
23		Verify voltage at A-37	1.0 vdc max			

*[1] Use A-40 on 65-52811-90,-98,-99,-103,-156,-164,-165,-179

Aural Warning Circuitry Tests
Figure 711

P. Automatic Ground Spoiler Circuitry Test

(1) Verify all test switches and lamps are in the initial condition listed in Fig. 704.

(2) Perform automatic ground spoiler circuitry tests per Fig. 712.

NOTE: L1, L2, L4 and L6 must remain illuminated. L3, L5, L7, L8 and L12 thru L14 must remain extinguished.

Step	Condition	Procedure	L9	L10	L11
1	Speed Brake Armed	Set S24 to A	Off	Off	On
2	Park Switch	Set S17 to position 3	Off	On	Off
3	Park Switch	Set S17 to position 2	Off	Off	On
4	Inbd Antiskid Off	Set S1 to OFF	Off	On	Off
5	Inbd Antiskid On	Set S1 to ON	Off	Off	On
6	Outbd Antiskid Off	Set S9 to OFF	Off	On	Off
7	Inbd Antiskid Off	Set S1 to OFF	Off	On	Off
8	Speed Brake Handle Off	Set S8 to OFF	Off	Off	On
9	Speed Brake Handle On	Set S8 to ON	Off	On	Off
10	Auto Spoiler Test 1	Set S22 to position 1	Off	Off	On
11	Auto Spoiler Test Off	Set S22 to OFF	Off	On	Off
12	Auto Spoiler Test	Set S23 to ON	Off	Off	On
13	Auto Spoiler Test Off	Set S23 to OFF	Off	On	Off
14	Auto Spoiler Test 2	Set S22 to position 2	Off	Off	On
15	Eng. Throttle Advance	Set S10 to ON	On	Off	On
16		*[1] Measure pin B-3 to B-5	2 ohms max		
		*[2] Measure pin B-5(+) to B-4	26 to 28 vdc		
17		Verify voltage at A-18	1 vdc max		

*[1] 65-52811-50, -70, -71, -90, -98, -99, -103
*[2] 65-52811-134, -142, -143, -156, -164, -165, -169, -179

Automatic Ground Spoiler Circuitry Tests
Figure 712

(3) Return all test switches and lamps to the initial condition listed in Fig. 704.

(4) Perform automatic ground spoiler circuitry tests per Fig. 713.

NOTE: L1,L2, L4 and L6 must remain illuminated. L3, L5, L7, L8, L13 and L14 must remain extinguished.

Step	Condition	Procedure	L9	L10	L11	L12
1	Speed Brake Handle Armed	Set S24 to A	Off	Off	On	Off
2	Right Inbd Power On	Set S15 to ON	Off	Off	On	Off
3	Right Outbd Power On	Set S16 to ON	Off	On	Off	Off
4	Spd Brake Actuator	Set S17 to position 1	Off	On	Off	On
5	Eng. Throttle Advance	Set S10 to ON	On	Off	On	Off
6	Eng. Throttle Retard	Set S10 to OFF	Off	On	Off	On
7	Right Outbd Power Off	Set S16 to OFF	Off	Off	On	Off
8	Left Inbd Power On	Set S14 to ON	Off	On	Off	On
9	Eng. Throttle Advance	Set S10 to ON	On	Off	On	Off
10	Eng. Throttle Retard	Set S10 to OFF	Off	On	Off	On
11	Right Inbd. Power Off	Set S15 to OFF	Off	Off	On	Off
12	Left Outbd. Power On	Set S13 to ON	Off	On	Off	On
13	Eng. Throttle Advance	Set S10 to ON	On	Off	On	Off
14	Eng. Throttle Retard	Set S10 to OFF	Off	On	Off	On
15	Left Inbd. Power Off	Set S14 to OFF	Off	Off	On	Off
16	Right Outbd. Power On	Set S16 to ON	Off	On	Off	On
17	Eng. Throttle Advance	Set S10 to ON	On	Off	On	Off
18	Eng. Throttle Retard	Set S10 to OFF	Off	On	Off	On
19	Right Outbd. Power Off	Set S16 to OFF	Off	Off	On	Off
20	Right Inbd. Power On	Set S15 to ON	Off	Off	On	Off
21	L Inbd., Rt. Outbd. On	Set S14, S16 to ON				
22	L Outbd., Rt. Inbd. Off	Set S13, S15 to OFF	Off	Off	On	Off
23	L Outbd., Rt. Inbd. On	Set S13, S15 to ON				
24	Eng. Throttle Advance	Set S10 to ON	On	Off	On	Off
25	Eng. Throttle Retard	Set S10 to OFF	Off	On	Off	On
26		Verify voltage at A-34	1.0 vdc max			

Automatic Ground Spoiler Circuitry Tests
Figure 713

Q. Antiskid Test

(1) Set S18 to ON. Connect oscilloscope between pin B-15 and ground. Verify that voltage is between 28 and 50 volts dc with a ripple content of less than 5 volts peak to peak.

(2) Set S18 to OFF.

(3) Connect pin B-15 through 50-ohm resistor (R10) to ground for minimum of 5 seconds.

(4) Disconnect pin B-15 from R10 and ground.

R. Automatic Brake Circuitry Test

(1) Verify all test switches and lamps are in the initial condition listed in Fig. 704.

(2) Connect an ohmmeter between Pins A-24 and B-46.

(3) Perform automatic brake circuitry tests per Fig. 714.

NOTE: L1, L2, L4 and L6 must remain illuminated. L3, L5, and L7 thru L12 must remain extinguished.

Step	Condition (Power Input from M162)	Procedure	L13	L14	Ohmmeter Reading
1		Set S25 to A	On	Off	No Con
2	Left Outbd On	Set S13 to ON	On	On	No Con
3	Right Outbd On	Set S16 to ON	On	On	Con
4	Left Outbd Off	Set S13 to OFF	On	On	No Con
5	Left Inbd On	Set S14 to ON	On	On	Con
6	Right Outbd Off	Set S16 to OFF	On	On	No Con
7	Right Inbd On	Set S15 to ON	On	On	Con
8	Left Inbd Off	Set S14 to OFF	On	On	No Con
9	Right Outbd On	Set S16 to ON	On	On	No Con
10	Left Outbd On	Set S13 to ON	On	On	Con
11	Left Inbd On	Set S14 to ON	Off	On	Con
12	Right Inbd Off	Set S15 to OFF	On	On	Con
13	Right Inbd On	Set S15 to ON	Off	On	Con
14	Left Outbd Off	Set S13 to OFF	On	On	Con
15	Left Outbd On	Set S13 to ON	Off	On	Con
16	Right Outbd Off	Set S16 to OFF	On	On	Con
17	Right Outbd On	Set S16 to ON	Off	On	Con
18	Left Inbd Off	Set S14 to OFF	On	On	Con
19	Left Inbd On	Set S14 to ON	Off	On	Con

Automatic Brake Circuitry Tests
Figure 714

S. Squat Switch Time Delay Circuitry Test

(1) Verify all test switches and lamps are in the initial condition listed in Fig. 704.

(2) Perform squat switch time delay circuitry tests per Fig. 715.

NOTE: L1, L2, L4 and L6 must remain illuminated. L3, L5, L7, L8, L9, L13 and L14 must remain extinguished.

Step	Procedure	
1	Deleted	
2	Set S27 to ON	Module light L1 on
3	Set S24 to position A	L11 on
4	Set S17 to position 1	No lamp change
5	Set S9 to OFF	L10 on, L11 off
6	Set S27 to OFF (observe time period that L10 is turned off beginning with switch actuation)	L10 off for a period of 2.5 sec min and 6.5 sec max L11 on during period Module light L1 off
7	Set S9 to ON	L10 off, L11 on
8	Set S1 to OFF	L10 on, L11 off
9	Set S28 to ON (observe time period that L10 is turned off beginning with switch actuation)	L10 off for a period of 2.5 sec min and 6.5 sec max L11 on during period Module light L2 off
10	Set S1 to ON	L10 off, L11 on
11	Set S28 to OFF	Module light L2 on
12	Set S27 to ON	Module light L1 on
13	Simultaneously set S27 to OFF and S28 to ON	L10 and L12 illuminated momentarily and L11 extinguished momentarily (6.5 sec max) Module lights L1 and L2 off
14	Set S24 to position B	L11 off
15	Set S27 to ON	Module light L1 on
16	Measure resistance between: A-7(+) and A-56	 25 ohms max
17	Set S27 to OFF	Module light L1 off
18	Set S28 to OFF	Module light L2 on
19	Measure resistance between: A-7(+) and A-56	 25 ohms max
20	Deleted	

Squat Switch Time Delay Circuitry Tests
Figure 715

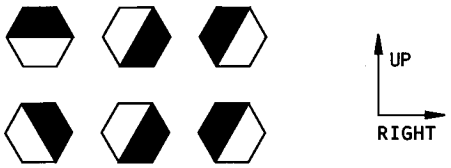
T. Deleted Fig. 716 and 717.

U. Turn off both power supplies. Disconnect test setup, Fig. 703.

V. Verify P1 connector indexing:

65-52811-50, -70, -71, -134, -142, -143, -169

65-52811-90, -98, -99, -103, -156, -164, -165, -179



NOTE: Darkened area indicates extended portion of keying post.

G33390

TROUBLE SHOOTING

1. Trouble shooting is keyed to the steps of the functional test procedures. Check for defective connections or wiring prior to replacing components.

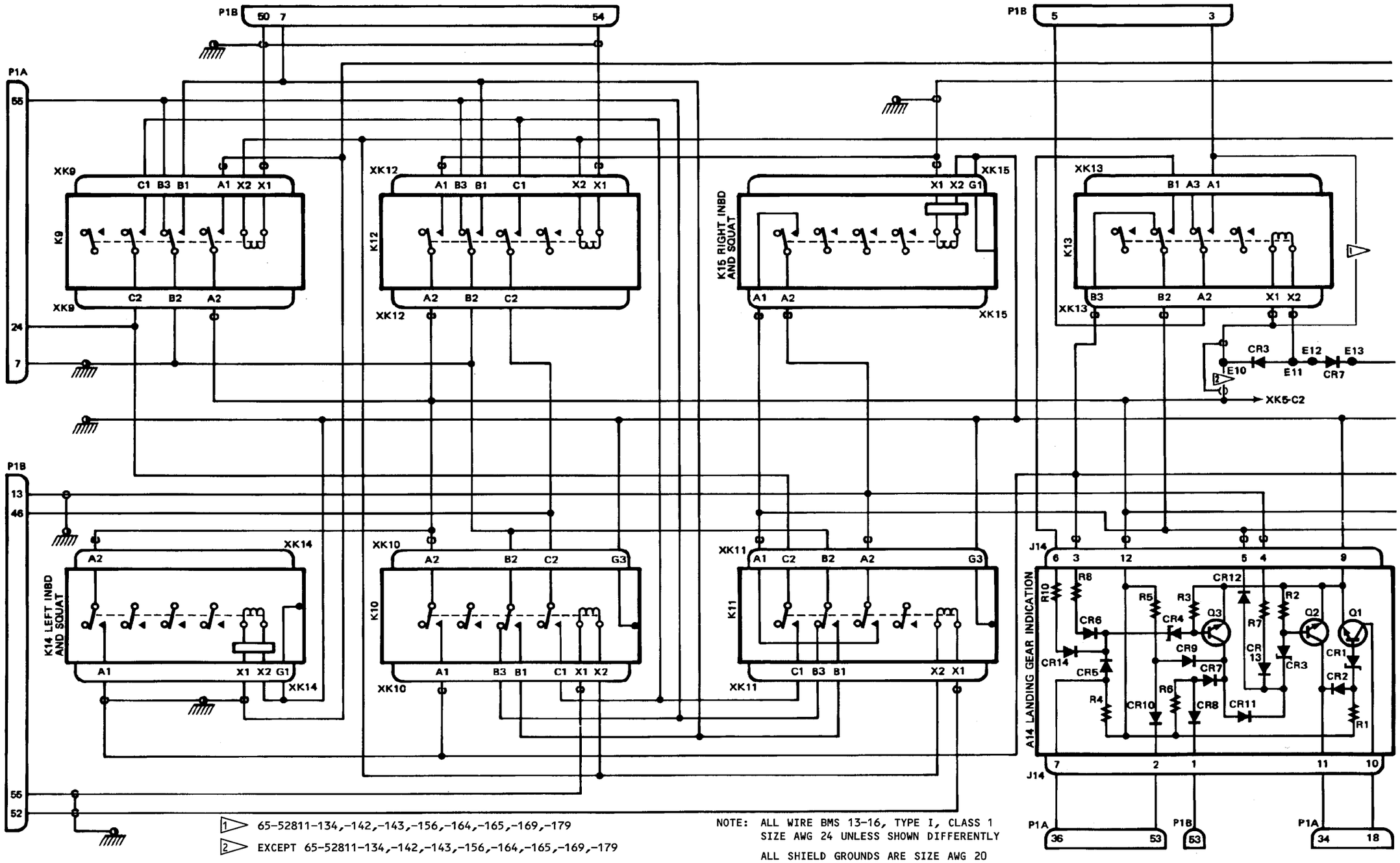
   NOTE: L1 and L2 refer to test lamps unless module lamp specifically stated.

Trouble	Possible Cause and Correction
Figures 701, 702	Listed component
Par. 2.C.	Wiring
Par. 2.D.	A13, K13
Par. 2.E.	A13
Par. 2.F.	
L1 fault	K6, A10
L2 fault	A11, A4
L3 fault	A3, or A9CR12 shorted
L4 fault	A5
L5 fault	A6, or A9CR13 shorted
L6 fault	A11, A8
L7 fault	A7 or A9CR14 shorted
L8 fault	A9
L9 fault	A12
L10, L11 fault	A14
Par. 2.H.	
Module lamp L1 (Air Sensing)	L1, K3, A1
Module lamp L2 (Ground Sensing)	L2, K2, A2
Figure 705	
Step 1	Relay involved has coil ground through A1, A2, or wiring short
Step 4	Listed component
Steps 5-7, Continuity fault	S1, R1
Steps 5-7, Module lamp L1 extinguished	S1, R1, A1, K3
Steps 8, 11	AI
Step 9	Listed component
Steps 13, 14	A12
Steps 15, 16	CR1, A12

Trouble	Possible Cause and Correction
Figure 705 (Cont)	
Step 17	A12
Steps 19, 27	A2
Steps 20, 21, 22, 24	Listed component
Step 25	S2, A2
Step 26	Module lamp L1, or L2
Figure 706	
Steps 1-4	A4
Steps 5-8	A5
Steps 9-12	A8
Steps 13-16	A3
Steps 17-20	A7
Steps 21-24	A6
Figure 707	
L3, L7 fault	A3, A7
L2, L6 fault	A11, A4, A8
L1 fault, step 1 or 5	K6
L1 fault, all other steps	A10
Figures 708, 709	All or, if fault at throttle retard, CR8 or CR9
Figure 710	A12
Figure 711	
L8 fault	A9, or if reset failure, A13 involved
L3, L5, L7 fault	A3, A6, A7 respectively
Voltage fault	A6 (pin A-39), A7 (pin A-41), A3 (pin A-37)
Figure 712	
Step 1, L9 fault	A12
L10, L11 fault	A14
Steps 2, 4, 6, 8; L10, L11 fault	A14
Step 10; L10, L11 fault	A13R1, A14
Step 12; L10, L11 fault	A13R3, A14
Step 14; L10, L11 fault	A14
Step 15; L9 fault	A12
Step 16	K13
Step 17	A14

Trouble	Possible Cause and Correction
Figure 713	
L9 fault	A12
L10, L11 fault	If combined with L12 failure to illuminate, suspect one of relays K9 thru K15. If L12 illuminated, replace A14. Replace relays by trial and error except: At step 5 - Replace K13 first At S13 actuation - Replace K11 first At S14 actuation - Replace K9 first, then K14 At S15 actuation - Replace K12 first, then K15 At S16 actuation - Replace K10 first
Step 26 fault	Replace A14
Par. 2.Q.	A13
Figure 714	
L14 fault	At step 1 - K9, K10, K11, or K12 At S13 ON - K11 At S14 ON - K9 At S15 ON - K12 At S16 ON - K10
L13 fault	At step 11 - K9, K10, K11, or K12 At step 12 - K12 At step 14 - K11 At step 16 - K10 At step 18 - K9
Continuity fault	At step 1 - One of K9, K11, plus one of K10 K12 shorted, or wiring At step 2 - K10 or K12 At step 3 - K10 or K11 At step 4 - K11 At step 5 - K9 At step 6 - K10 At step 7 - K12 At step 8 - K9 At step 9 - K9 or K11 At step 10 - K11 At step 12 - K10 At step 14 - K9 At step 16 - K12 At step 18 - K11

Trouble	Possible Cause and Correction
Figure 715	
Timing Fault	Card A0
Fault at S27 on or off	K16, K15, K5, or card A0
Fault at S28 on or off	K17, K14, K1, or card A0
Steps 16, 19	Card A0



1 65-52811-134,-142,-143,-156,-164,-165,-169,-179

2 EXCEPT 65-52811-134,-142,-143,-156,-164,-165,-169,-179

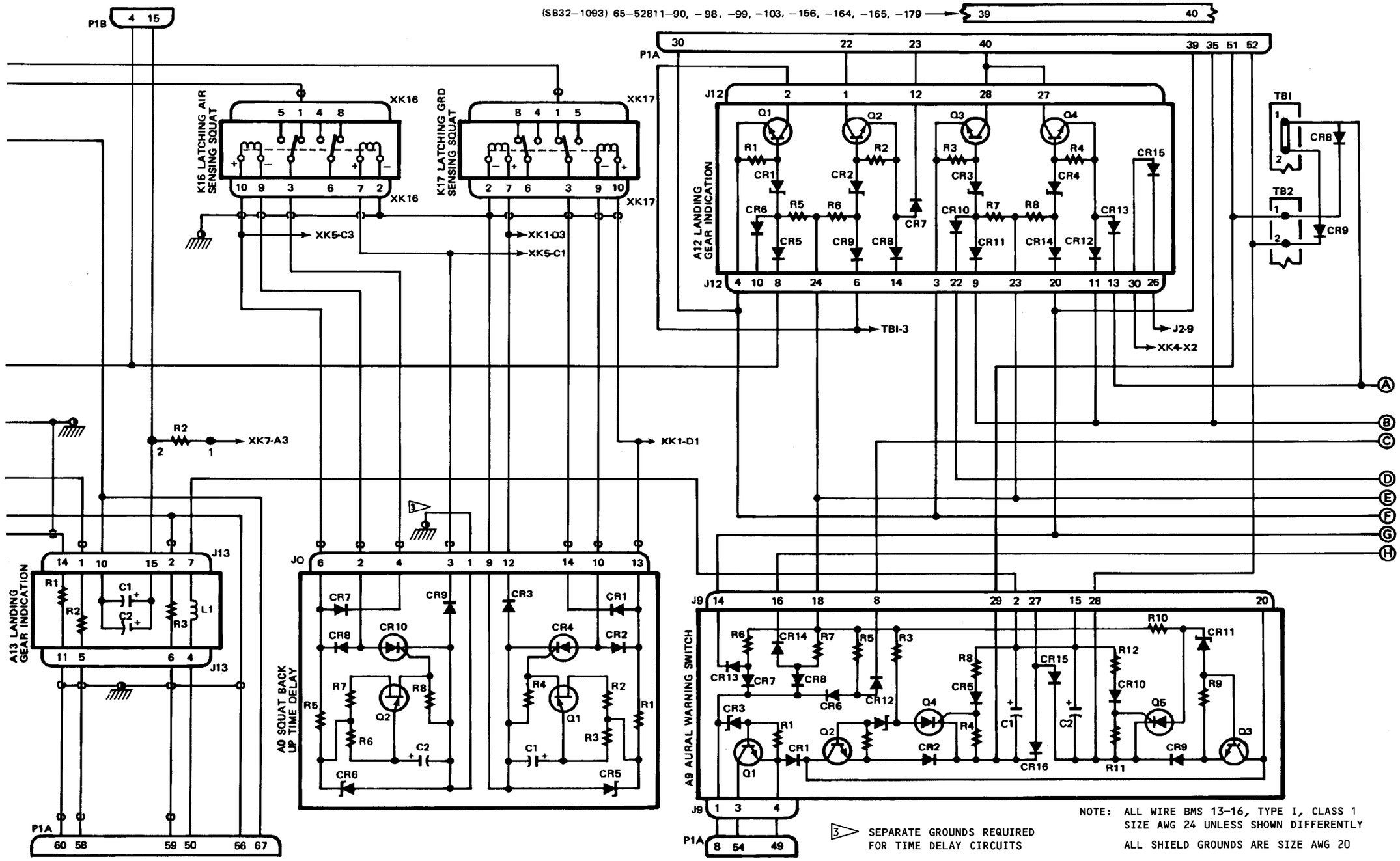
NOTE: ALL WIRE BMS 13-16, TYPE I, CLASS 1 SIZE AWG 24 UNLESS SHOWN DIFFERENTLY

ALL SHIELD GROUNDS ARE SIZE AWG 20

65-52811-50,-70,-71,-90,-98,-99,-103,-134,-142,-143,-156,-164,-165,-169,-179

Schematic Diagram
Figure 801 (Sheet 1)

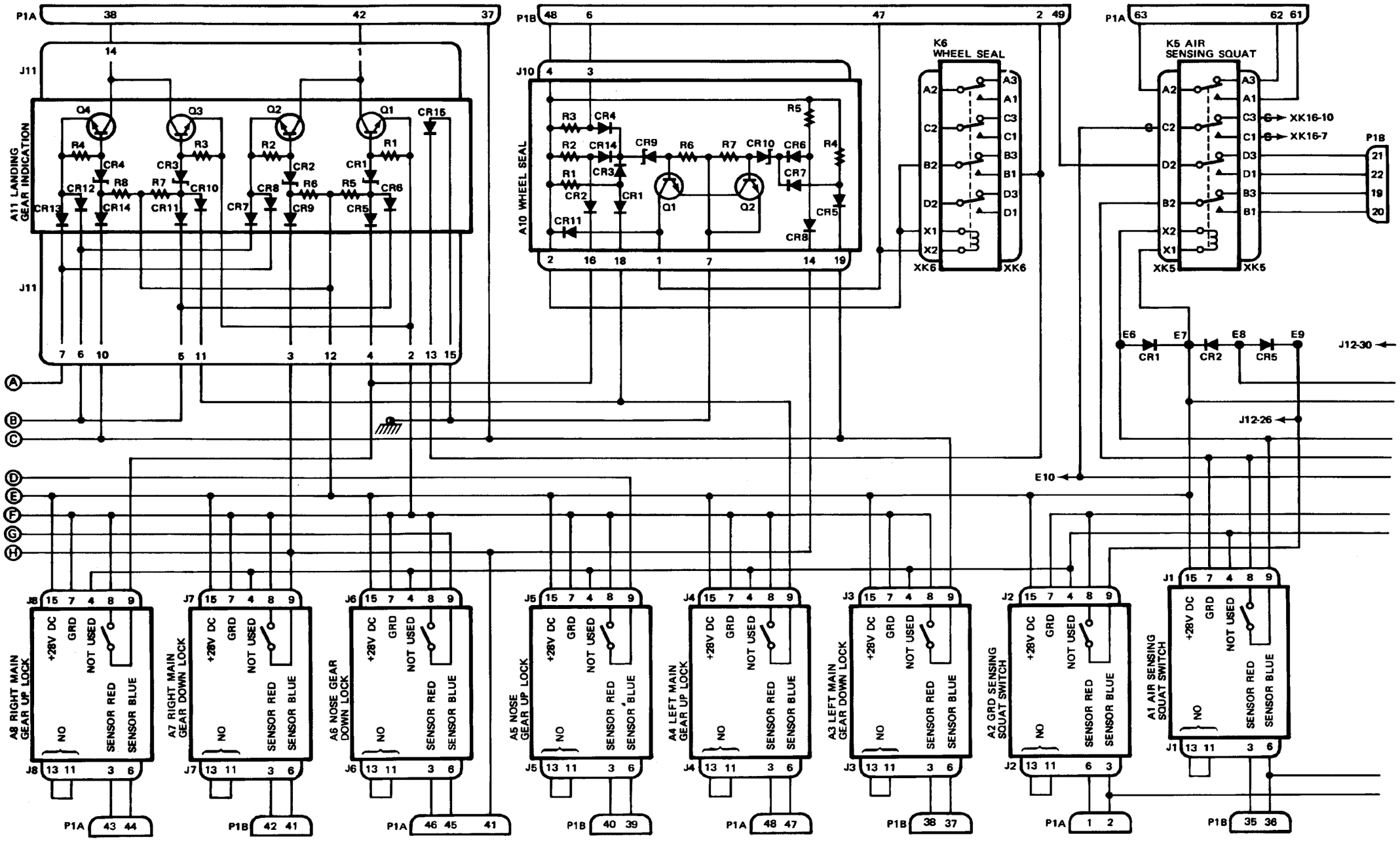
M60969



65-52811-50,-70,-71,-90,-98,-99,-103,-134,-142,-143,-156,-164,-165,-169,-179

Schematic Diagram
Figure 801 (Sheet 2)

M60974



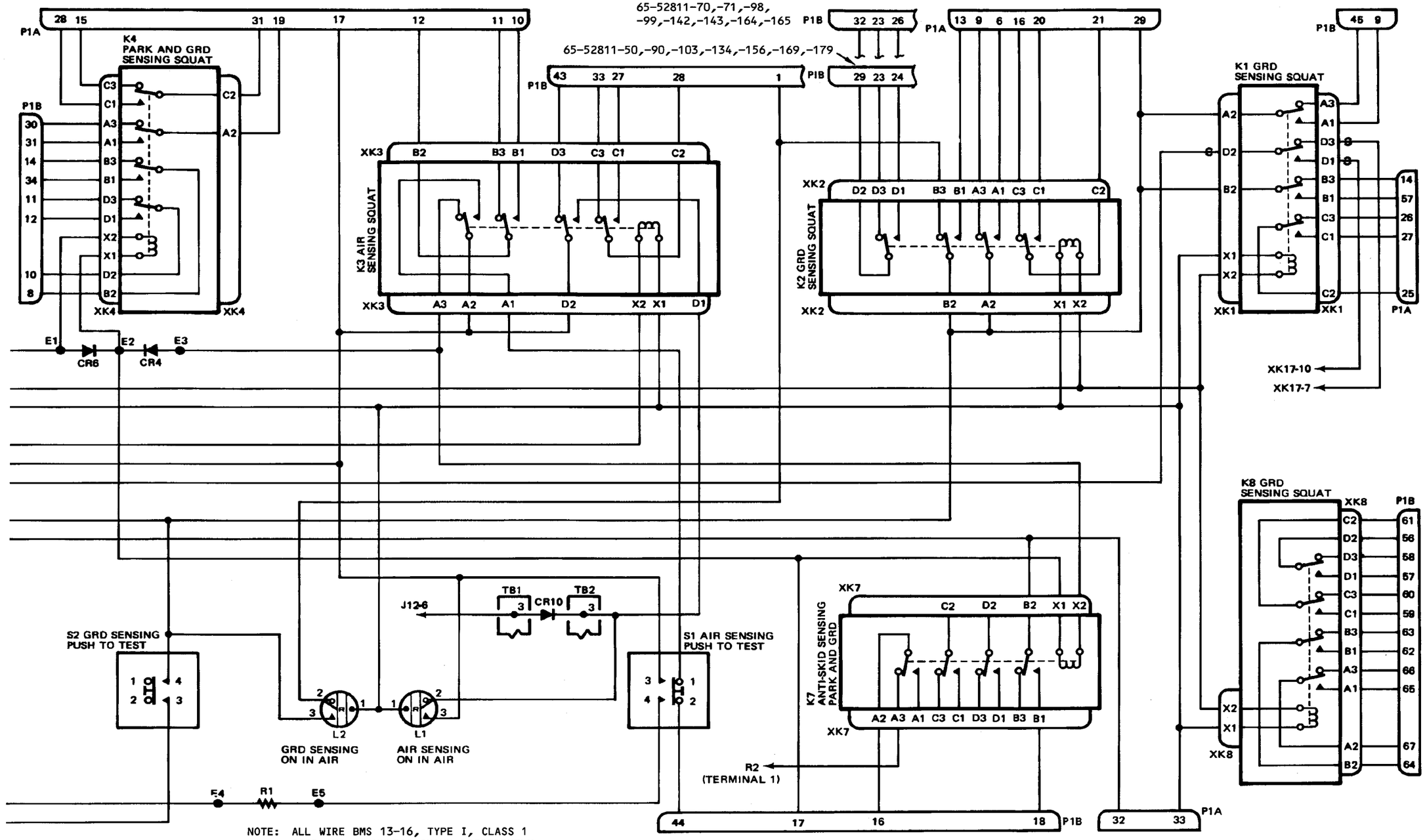
NOTE: ALL WIRE BMS 13-16, TYPE I, CLASS 1
SIZE AWG 24 UNLESS SHOWN DIFFERENTLY

ALL SHIELD GROUNDS ARE SIZE AWG 20

65-52811-50,-70,-71,-90,-98,-99,-103,-134,-142,-143,-156,-164,-165,-169,-179

Schematic Diagram
Figure 801 (Sheet 3)

M61051



NOTE: ALL WIRE BMS 13-16, TYPE I, CLASS 1
SIZE AWG 24 UNLESS SHOWN DIFFERENTLY

ALL SHIELD GROUNDS ARE SIZE AWG 20

65-52811-50,-70,-71,-90,-98,-99,-103,-134,-142,-143,-156,-164,-165,-169,-179

Schematic Diagram
Figure 801 (Sheet 4)

M61056

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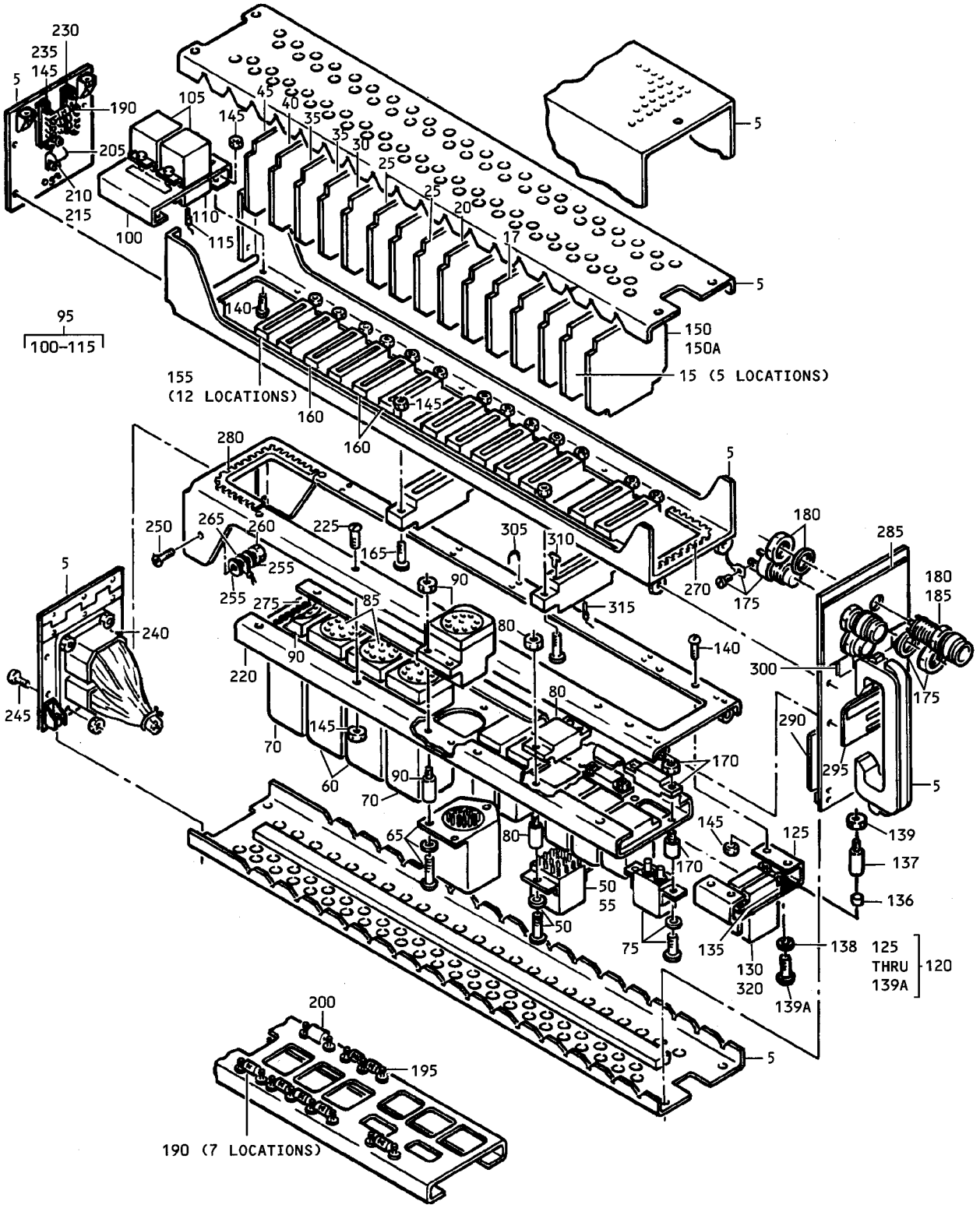

Landing Gear Accessory Unit Assembly (M338)
Figure 1101

1542188

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
1	65-52811-50		LANDING GEAR ACCESSORY UNIT ASSY (M338)(SB 27-1049R1)	B	
1	65-52811-70		LANDING GEAR ACCESSORY UNIT ASSY (M338)(SB 21-1042R2)	C	
1	65-52811-71		LANDING GEAR ACCESSORY UNIT ASSY (M338)(SB 21-1042R2)	D	
1	65-52811-90		LANDING GEAR ACCESSORY UNIT ASSY (M338)(SB 32-1093R2)	E	
1	65-52811-98		LANDING GEAR ACCESSORY UNIT ASSY (M338)(SB 32-1093R2)	F	
1	65-52811-99		LANDING GEAR ACCESSORY UNIT ASSY (M338)(SB 32-1093R2)	G	
1	65-52811-103		LANDING GEAR ACCESSORY UNIT ASSY (M338)(SB 32-1093R2)	H	
1	65-52811-134		LANDING GEAR ACCESSORY UNIT ASSY (M338) (SB 27-1114R2)	I	
1	65-52811-142		LANDING GEAR ACCESSORY UNIT ASSY (M338) (SB 27-1114R2)	J	
1	65-52811-143		LANDING GEAR ACCESSORY UNIT ASSY (M338) (SB 27-1114R2)	K	
1	65-52811-156		LANDING GEAR ACCESSORY UNIT ASSY (M338) (SB 27-1114R2)	L	
1	65-52811-164		LANDING GEAR ACCESSORY UNIT ASSY (M338) (SB 27-1114R2)	M	
1	65-52811-165		LANDING GEAR ACCESSORY UNIT ASSY (M338) (SB 27-1114R2)	N	
1	65-52811-169		LANDING GEAR ACCESSORY UNIT ASSY (M338) (SB 27-1114R2)	O	
1	65-52811-179		LANDING GEAR ACCESSORY UNIT ASSY (M338) (SB 27-1114R3)	P	
5	65-51805-78		. CHASSIS ASSY	CFH JMOP	1
5	65-51805-78		. CHASSIS ASSY (MODIFIED BY SB 21-1030)	BDEG IKLN	1
5	65-51805-75		. CHASSIS ASSY (OPT)	CFH JMOP	1
5	65-51805-75		. CHASSIS ASSY (OPT) (MODIFIED BY SB 21-1030)	BDEG IKLN	1
5	65-51805-76		. CHASSIS ASSY (OPT)	CFH JMOP	1
5	65-51805-76		. CHASSIS ASSY (OPT) (MODIFIED BY SB 21-1030)	BDEG IKLN	1
5	65-51805-58		. CHASSIS ASSY (OPT)	CFH JMOP	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
5	65-51805-58		. CHASSIS ASSY (OPT) (MODIFIED BY SB 21-1030)	BDEG IKLN	1
10	65-52811-24		. WIRE BUNDLE (SB 27-1049R1)	B	1
10	65-80922-3		. WIRE BUNDLE (SB 21-1042R2)	C	1
10	65-52811-24		. WIRE BUNDLE (SB 21-1042R2)	D	1
10	65-52811-24		. WIRE BUNDLE (SB 27-1049R1) (SB 32-1093R2)	E	1
10	65-80922-3		. WIRE BUNDLE (SB 21-1042R2) (SB 32-1093R2)	F	1
10	65-52811-24		. WIRE BUNDLE (SB 21-1042R2) (SB 32-1093R2)	GH	1
10	65-52811-24		. WIRE BUNDLE (SB 27-1049R1) (SB 27-1114R2)	I	1
10	65-80922-3		. WIRE BUNDLE (SB 21-1042R2) (SB 27-1114R2)	J	1
10	65-52811-24		. WIRE BUNDLE (SB 21-1042R2) (SB 27-1114R2)	K	1
10	65-52811-24		. WIRE BUNDLE (SB 27-1049R1) (SB 32-1093R2) (SB 27-1114R2)	L	1
10	65-80922-3		. WIRE BUNDLE (SB 21-1042R2) (SB 32-1093R2) (SB 27-1114R2)	M	1
10	65-52811-24		. WIRE BUNDLE (SB 21-1042R2) (SB 32-1093R2) (SB 27-1114R2)	NO	1
10	65-52811-24		. WIRE BUNDLE (SB 27-1114R3)	P	1
15	8-060-02		. PRINTED CIRCUIT ASSY, PROXIMITY SWITCH, V08748 (BOEING 10-61226-211) (PREF)		5
15	2-899-111		. PRINTED CIRCUIT ASSY, V08748 (BOEING 10-61226-111)		5
17	8-060-02		. PRINTED CIRCUIT ASSY, PROXIMITY SWITCH, V08748 (BOEING 10-61226-211) (PREF)	B-DIJK	2
17	2-899-111		. PRINTED CIRCUIT ASSY, V08748 (BOEING 10-61226-111)	B-DIJK	2
17	8-060-07		. PRINTED CIRCUIT ASSY, V08748 (BOEING 10-61226-213)	E-HL-P	2
20	8-060-07		. PRINTED CIRCUIT ASSY, PROXIMITY SWITCH, V08748 (BOEING 10-61226213) (PREF)		1
20	2-899-113		. PRINTED CIRCUIT ASSY, V08748 (BOEING 10-61226-113)		1
25	69-60177-1		. PRINTED CIRCUIT ASSY		1
25	65-58250-25		. PRINTED CIRCUIT ASSY (OPT)		1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
30	65-58250-11		. PRINTED CIRCUIT ASSY		1
35	65-58250-29		. PRINTED CIRCUIT ASSY		2
40	65-58250-31		. PRINTED CIRCUIT ASSY		1
40	65-58250-27		. PRINTED CIRCUIT ASSY (OPT)		1
45	65-58250-23		. PRINTED CIRCUIT ASSY		1
50	BACR13CG2		. RELAY		6
50	BACR13CG1		. RELAY (OPT)		6
50	KD4A		. RELAY, V35344 (OPT)		6
55	69-61700-1		. STRAP (USED WITH BACR13CGI ONLY)		6
60	A410-159673-03		. RELAY, V73949 (BOEING 10-60450-3)		2
60	9524-6508		. RELAY, V35344 (BOEING 10-60450-3) (OPT)		2
60	FCC400-7		. RELAY, V78290 (BOEING 10-60450-3) (OPT)		2
60	G59673-3		. RELAY, V73949 (BOEING 10-60450-3) (OPT)		2
60	G59673-3A		. RELAY, V73949 (BOEING 10-60450-3) (OPT)		2
65	9524-6506		. RELAY, V35344		1
70	A410-159673-06		. RELAY, V73949 (BOEING 10-60450-6)		2
70	9524-8208		. RELAY, V73949 (BOEING 10-60450-6) (OPT)		2
70	FCC400-8		. RELAY, V78290 (BOEING 10-60450-6) (OPT)		2
70	9524-10214		. RELAY, V35344 (BOEING 10-60450-6) (OPT)		2
75	JD4A		. RELAY, V35344		2
80	18-0006-0000		. RELAY SOCKET, V05574		6
80	BACS16W1		. SOCKET (OPT)		6
85	000300-0598		. RELAY SOCKET, V05574		2
90	000300-0596		. RELAY SOCKET, V05574		3
95	65-80922-6		. RELAY BRACKET ASSY		1
100	65-80922-4		. . RELAY BRACKET		1
105	KAX9E004		. . RELAY, V35344		2
110	BACS16W2		. . RELAY SOCKET		2
115	BACC47DJ1		. . CONTACT		28
120	65-80922-7		. RELAY BRACKET ASSY		1
125	65-80922-5		. . RELAY BRACKET		1
130	BR9AXH5V3		. . RELAY, V82050		2
130	BR20AXH5V3		. . RELAY, V82050 (OPT)		2
135	VB10-1PWC11-43		. . RELAY SOCKET, V05574		2
136	108-0022-000		. . SPACER, V05574		4
137	118-0090-000		. . STUD, V05574		4
138	990-0001-063		. . WASHER, V05574		4

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
139	990-0002-033		. . NUT, V05574		4
139A	990-0004-021		. . SCREW, V05574		4
140	NAS600-5P		. SCREW		8
145	BACN10DN40		. NUT		54
150	69-60177-11		. PRINTED CIRCUIT ASSY		1
155	582553-1		. CONNECTOR, V00779		12
160	582585-1		. CONNECTOR, V00779		3
165	NAS600-9P		. SCREW		30
170	18-0007-0000		. RELAY SOCKET, V05574		2
170	BACS16X1		. SOCKET (OPT)		2
175	C2006		. SWITCH, PUSHBUTTON, V81640		2
180	MS25041-6-327		. INDICATOR		2
185	MS18209-387		. LAMP		2
190	1N4385		. DIODE		10
195	4444B4		. TERMINAL, V88245		13
200	RC32GF332J		. RESISTOR, 3.3K (± 5%), 1 W		1
205	RH5-5		. RESISTOR, 5 OHMS (± 3%), 5 W, V91637		1
210	MS35190-213		. SCREW	B-O	2
210	MS35206-204		. SCREW	P	2
215	BACN10DN26		. NUT		2
220	69-48983-6		. BRACKET		1
225	NAS600-4P		. SCREW		8
230	411GMF1903-4		. TERMINAL BLOCK, V75382		2
235	NAS514P440-8P		. SCREW		4
240	DPX2MA67P67P-34B0059		. CONNECTOR, V71468 (REPLD BY DPX2MB67P67P34B0059)	B-D IJKO	1
240	DPX2MB67P67P 34B0059		. CONNECTOR, V71468 (REPLS DPX2MA67P67P34B0059)	B-D IJKO	1
240	DPX2MA67P67P 34B0065		. CONNECTOR, V71468 (REPLD BY DPX2MB67P67P34B0065)	EFGH LMNP	1
240	DPX2MB67P67P 34B0065		. CONNECTOR, V71468 (REPLS DPX2MA67P67P34B0065)	EFGH LMNP	1
245	NAS514P440-6		. SCREW		4
250	NAS514P632-8		. SCREW		2
255	AN960PD6L		. WASHER		4
260	22NM107-62		. NUT, V72962		2
265	BACT12AC45		. TERMINAL		7
270	BACG20ZA600		. GROMMET		1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
275	BACG20ZA250		. GROMMET		1
280	BACG20ZA375		. GROMMET		1
285	69-34180-30		. METAL LABEL		1
290	69-34180-13		. METAL LABEL		1
295	69-31184-53		. NAMEPLATE	B-O	1
295	69-31184-39		. NAMEPLATE	P	1
300	BAC27DEX861		. MARKER		1
305	BACS38C100C3		. STRAP		14
310	582507-1		. KEYING PLUG, V00779		21
315	66143-2LP		. TERMINAL, V00779		AR
320	BAC27DEX4751		. MARKER		1

FIGURE 1101 REFERENCE DESIGNATION INDEX (SEE SCHEMATIC DIAGRAM)		
REFERENCE DESIGNATION	PART NUMBER	ITEM NO.
A0	69-60177-11	150
A1, A2, A4, A5, A8	*8-060-02	15
A1, A2, A4, A5, A8	2-899-111	15
A3, A7	*8-060-02	17
A3, A7	2-899-111	17
A3, A7	8-060-07	17
A6	*8-060-07	20
A6	2-899-113	20
A9	*69-60177-1	25
A9	65-58250-25	25
A10	65-58250-11	30
A11, A12	65-58250-29	35
A13	*65-58250-31	40
A13	65-58250-27	40
A14	65-58250-23	45
CR1 thru CR10	1N4385	190
J0 thru J8, J11, J13, J14	582553-1	155
J9, J10, J12	582585-1	160
K1 thru K5, K8	*BACR13CG2	50
K1 thru K5, K8	BACR13CG1	50

* PREFERRED PART

FIGURE 1101 REFERENCE DESIGNATION INDEX (SEE SCHEMATIC DIAGRAM)		
REFERENCE DESIGNATION	PART NUMBER	ITEM NO.
K1 thru K5, K8	KD4A	50
K6, K7	JD4A	75
K9, K12	KAX9E004	105
K10, K11	A410-159673-03	60
K10, K11	9524-6508	60
K13	9524-6506	65
K14, K15	A410-159673-06	70
K14, K15	9524-8208	70
K16, K17	BR9AXH5V3	130
K16, K17	BR20AXH5V3	130
L1, L2	MS25041-6-327	180
P1A, P1B	DPX2MA67P67P34B0059	240
P1A, P1B	DPX2MB67P67P34B0059	240
P1A, P1B	DPX2MA67P67P34B0065	240
P1A, P1B	DPX2MB67P67P34B0065	240
R1	RC32GF332J	200
R2	RH5-5	205
S1, S2	C2006	175
TB1, TB2	411GMF1903-4	230
XK1 THRU XK5, XK8	18-0006-0000	80
XK1 THRU XK5, XK8	BACS16W1	80
XK6, XK7	18-0007-0000	170
XK6, XK7	BACS16X1	170
XK9, XK12	BASC16W2	110
XK10, XK11	000300-0598	85
XK13 THRU XK15	000300-0596	90
XK16, XK17	VB10-1PWC11-43	135

VENDORS

V00779	TYCO ELECTRONICS CORP., 2800 FULLING MILL RD., BLDG-38, MIDDLETOWN, PENNSYLVANIA 17057-3142
V019L2	MACLEAN-FOGG COMPANY, 611 COUNTRY CLUB RD., POCAHONTAS, ARKANSAS 72455-8803
V05574	VIKING ELECTRONICS, INC., 5455 ENDEAVOUR CT., MOORPARK, CALIFORNIA 93021-1712
V08748	ELDEC CORP, 16700 13TH AVE., LYNNWOOD, WASHINGTON 98037-8503
V35344	LEACH CORP. RELAY DIV., CANCELLED/REPLACED BY V58657
V58657	LEACH INTERNATIONAL CORP., 6900 ORANGETHORPE AVE., BUENA PARK, CALIFORNIA 90620-1351
V59207	ESTERLINE TECHNOLOGIES CORP., 500 108TH AVE. N.E., STE. 1500, BELLEVUE, WASHINGTON 98004-5500
V71468	ITT CANNON DIV. OF ITT CORP., 666 EAST DYER ROAD, SANTA ANA, CALIFORNIA 92702-5612
V72962	HARVARD INDUSTRIES, CANCELLED/REPLACED BY V019L2
V73949	GUARDIAN ELECTRIC MFG. COMPANY, 1425 LAKE AVE., WOODSTOCK, ILLINOIS 60098-7419
V75382	DIALIGHT CORP., CANCELLED/REPLACED BY V83330
V78290	STRUTHERS-DUNN, INC., SOUTH WINDSOR, CONNECTICUT 06074
V81640	EATON CORP., DBA FLUID POWER DIV. POWER & LOAN MANAGEMENT SYSTEMS, 2250 WHITFIELD AVENUE E., SARASOTA, FLORIDA 34243-3926
V81312	WINCHESTER ELECTRONICS CORP., 62 BARNES INDUSTRIAL RD. N., WALLINGFORD, CONNECTICUT 06492-1846
V82050	ESTERLINE ELECTRONICS CORP. (OBSOLETE RECORD) SEE V59207
V83330	DIALIGHT CORP., 1501 STATE RTE. 34 S., FARMINGDALE, NEW JERSEY 07727-3932
V88245	WINCHESTER ELECTRONICS LITTON SYSTEMS, INC., CANCELLED/REPLACED BY V81312
V91637	VISHAY DALE ELECTRONICS INCORPORATED, 1122 23RD ST., COLUMBUS, NEBRASKA 68601-3647