TO: ALL HOLDERS OF APU FIRE WARNING HORN ASSEMBLY M277 OVERHAUL MANUAL, 26-10-34

REVISION NO. 4, DATED JUL 1/05

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
Added assembly 65-68945-11 and all associated components		X										X	

APU FIRE WARNING HORN ASSEMBLY M277

26-10-34

BOEING P/N 65-68945-1, -6, -8, -9, -11

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
26-1007 26-1015		PRR 31350	Mar 10/70

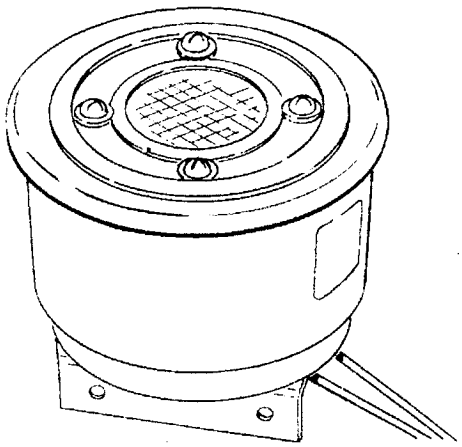
LIST OF EFFECTIVE PAGES

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

	PAGE	DATE	PAGE	DATE	PAGE	DATE
26-10-34						
*	T-1	Jul 1/05				
	T-2	BLANK				
*	LEP-1	Jul 1/05				
	LEP-2	BLANK				
	T/C-1	Jul 1/98				
	T/C-2	BLANK				
	1	Jul 1/98				
*	2	Jul 1/05				
	3	Jul 1/98				
	4	Jul 1/98				
	5	Jul 1/00				
	6	Jul 1/98				
	7	Jul 1/98				
	8	Jul 1/98				
	9	Jul 1/98				
*	10	Jul 1/05				
*	11	Jul 1/05				
	12	BLANK				

TABLE OF CONTENTS

APU FIRE WARNING HORN ASSEMBLY (M277)



APU Fire Warning Horn Assembly (M277)
Figure 1

1. DESCRIPTION AND OPERATION

A. Description

(1) The auxiliary power unit (APU) fire warning horn assembly consists of a vendor supplied horn assembly modified to operate in the fire warning system.

B. Operation

(1) The horn assembly is part of the APU fire warning system and sounds to indicate a fire condition in the APU.

C. Leading Particulars

Height -- 3.0 inches (approximately)
Diameter -- 5.0 inches (approximately)
Weight -- 2.0 pounds (approximately)

2. DISASSEMBLY

A. General

(1) Disassemble only as necessary for cleaning, inspection, repair, and replacement of components.

(2) Unsolder wiring connections and remove connector pins only when replacement of wire or component is required. Tag disconnected wires to facilitate reassembly. Refer to "Repair of Electrical Connectors," Subject 20-11-02, and to "Soldering Electrical Connections," Subject 20-12-01.

B. Disassembly Unit (See figure 3.)

(1) Remove capscrews (9), washers (8) and bracket assembly (4).

(2) Remove screws (2) and washers (3).

(3) Refer to manufacturer's instructions for disassembly of horn assembly (1).

(4) Remove nuts (16), lockwashers (15), washers (13 and 14) screws (12). On Assemblies -9 and -11, also remove doubler (18).

(5) Do not remove items 6, 7, 10, 11, or 17 unless repair or replacement is required.

3. CLEANING

CAUTION: USE ONLY CLEANING MATERIAL SPECIFIED HEREIN. USE OF UNAPPROVED MATERIALS MAY DAMAGE THE ASSEMBLY OR CAUSE CIRCUIT FAILURE.

A. Remove dust or foreign matter from assembly using low pressure air suction.

B. Clean interior surfaces and electrical contacts with aliphatic naphtha or isopropyl alcohol. Dry thoroughly with low pressure air.

WARNING: WHEN USING ISOPROPYL ALCOHOL OR ALIPHATIC NAPHTHA, AVOID PROLONGED OR REPEATED BREATHING OF VAPORS. USE ONLY WITH ADEQUATE VENTILATION. AVOID CONTACT WITH SKIN, EYES AND CLOTHING. KEEP AWAY FROM HEAT, SPARKS, OR OPEN FLAME.

C. For cleaning information related to soldering, refer to "Preparation for Soldering," in "Soldering Electrical Connections," Subject 20-12-01.

D. Clean terminal lugs and other bonding areas per "Repair of Electrical Terminations and Electrical Bonding Areas," Subject 20-11-03.

4. INSPECTION/CHECK

A. Check wiring, electrical components, and solder connections with a minimum of 5-power magnification.

(1) Check components for security of mounting.

(2) Check components and wire for damage.

(3) Check wire terminals and connections for proper installation.

(4) Check wire insulation for charring, cracking, and brittleness.

(5) Check connectors for bent, corroded, or cracked pins.

B. Check nameplates, metal labels, and Metal-Cals for proper installation and legibility.

C. Check components for legibility of reference designations and terminal identification.

D. Check finished surfaces for damage.

E. Check chassis assembly for damage.

F. Check insulating sleeving for proper installation and evidence of damage.

5. REPAIR

A. Repair

(1) Repair electrical connectors per "Repair of Electrical Connectors," Subject 20-11-02.

(2) Repair soldered connectors per "Soldering Electrical Connections," Subject 20-12-01.

(3) Repair wire terminations and bonding areas per "Repair of Electrical Terminations and Electrical Bonding Areas," Subject 20-11-03.

(4) Where required straighten box assembly components and connector pins and tighten component mounting hardware.

(5) Restore reference designations, terminal numbers, or component identification markings to a legible condition. Refer to "Application of Stencils, Insignia, Silk Screen, Part Numbering and Identification Markings," Subject 20-50-10.

B. Refinish

NOTE: Refer to Subject 20-30-02 for stripping of protective finishes and Subject 20-41-01 for decoding of F and SRF finish symbols and their BAC equivalents.

(1) If protective finishes are worn or damaged, refinish as indicated.

(a) All Structural Parts -- Apply F-2.21, F-2.30, or SRF-2.30 all over.

(b) Front Plate or Baseplate -- Apply F-12.75 or SRF-14.9031 to front surface and edges.

(c) Screws (with heads exposed on front of front plate or baseplate) -- Apply F-14.91 to heads.

C. Replacement of horn assembly (1). (See figure 3.)

(1) Remove four existing screws from front and six existing screws from back of new horn assembly (1).

(2) Disconnect horn wires.

(3) Remove existing terminals from horn housing and enlarge terminal holes to 0.218 (-0/+0.011) inches.

(4) Remove terminal lugs from horn wires and splice on 6 (± 0.1) inches of BMS 13-31, type 1 class 1, AWG 22 wire with splice (11). Attach terminals (10) to new wire.

(5) Attach terminals (10) to two 24 (+ 0.1) inch lengths of BMS 13-31, type 1 class 1, AWG 18 wire.

(6) Install screws (12), washers (13 and 14), lockwashers (15) terminals (10), nuts (16). On Assy-9, also remove doubler (18).

(7) Assemble horn assembly (1) per manufacturer's instructions.

(8) Install washers (3) and screws (2).

(9) Install bracket assembly (4) with washers (8) and capscrews (9).

(10) Lockwire capscrews (9).

(11) Apply brush coat of BMS 5-37 to assembly.

(12) Apply Metal-Cal (17) per "Application of Metal-Cals," Subject SOPM 20-50-05.

(13) If rivets (7) or nutplates (6) require replacement, apply a coat of primer, Specification BMS 10-11, Type 1, to faying surfaces and install while primer is wet.

6. ASSEMBLY

A. General

(1) Complete required REPAIR procedures.

(2) Connect electrical wires per schematic diagram.

B. Reassemble Unit (See Fig. 3.)

(1) Install screws (12), washers (13, 14), lockwashers (15), terminals (10), nuts (16). On Assy -9 also install doubler.

(2) Assemble horn assembly (1) per manufacturer's instructions.

(3) Install washers (3) and screws (2).

(4) Install bracket assembly (4) with washers (8) and capscrews (9).

(5) Lockwire capscrews (9).

7. TESTING

A. Test Equipment

(1) Power Supply, 28 volts dc

(2) Sound Level Meter, type 1551-C (General Radio Co., 22 Baker Ave., West Concord, Massachusetts, 01781)

(3) Fuse, 0.75 amp, 250 volts

(4) Switches, SPST (four required)

(5) Switch, normally open pushbutton

(6) Connector AMP 582553-1, AMP Incorporated, P.O. Box 3608, Harrisburg, Pennyslvania

(7) APU Horn Driver Printed Circuit Assembly, 69-60035-1

(8) HP E2377A multimeter or equivalent

B. Stand-alone Test

(1) Using volt-ohm meter, measure greater than 5 ohms and less than 16 ohms across the speaker terminals.

(2) Measure greater than 100K ohms from either terminal to the speaker case.

C. Functional Test

(1) Set all switches to OFF position.

(2) Connected printed circuit card to test setup as shown in figure 2. Insert printed circuit assembly into connector so that component side matches numbered side of connector.

NOTE: Sound level measurements shall be made at approximately 5 feet from horn assembly. Meter shall be held directly in front of face of horn assembly and directed directly toward horn assembly. Set meter on slow; weight C. After completion of measurement, position meter to off. When sound level measurements are not being made horn assembly may be placed face down on a flat surface to attenuate noise.

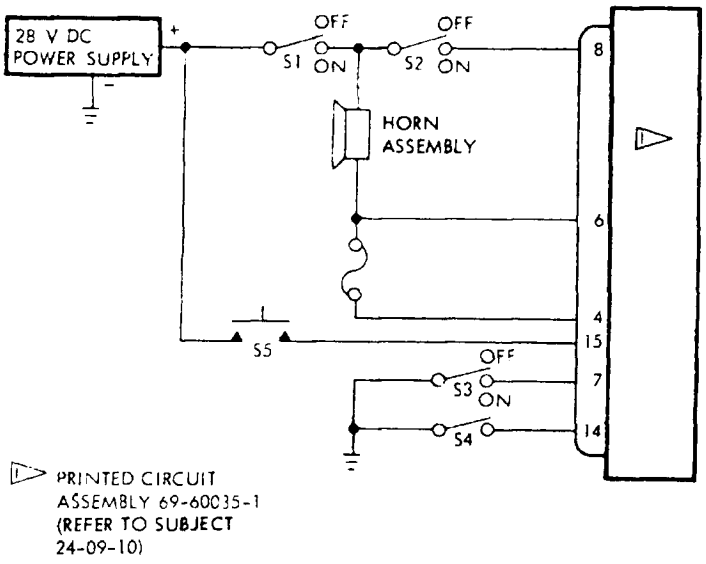
(3) Set S1, S2, S3 and S4 to ON. Horn assembly shall sound.

(4) Set S4 to OFF. Sound from horn assembly shall discontinue.

(5) Press S5 for 0.5 seconds, release it for 0.5 seconds, press it for 0.5 seconds, and so on. Horn assembly shall sound continuously. With sound level meter, verify a sound level of not less than 104 db.

(6) Leave S5 in released position. Sound from horn assembly shall discontinue.

(7) Set S1 to OFF and disconnect test setup.



Test Setup
Figure 2

8. TROUBLE SHOOTING

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

NOTE: Trouble shooting is keyed to functional test procedures.

Trouble	Possible Cause and Corrective Action
Horn stand-alone test 7.B fails	Disconnect all wiring from Horn. Repeat test 7.B. If failure still persists, replace Horn. If no failure, check WIRING.
Horn assembly is silent paragraph 7.C.(3) and 7.C.(5)	Refer to manufacturer's instuctions.

9. STORAGE INSTRUCTIONS

A. Protect assembly from dust, moisture, and rough handling. Place assembly in plastic bag and insert in protective carton, padded sufficiently to ensure against damage during storage and handling. Close, tape, and mark carton with assembly identity and date of overhaul.

B. For further information, refer to "Protection, Storage, and Handling of Airplane Components," Subject 20-70-01.

10. SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

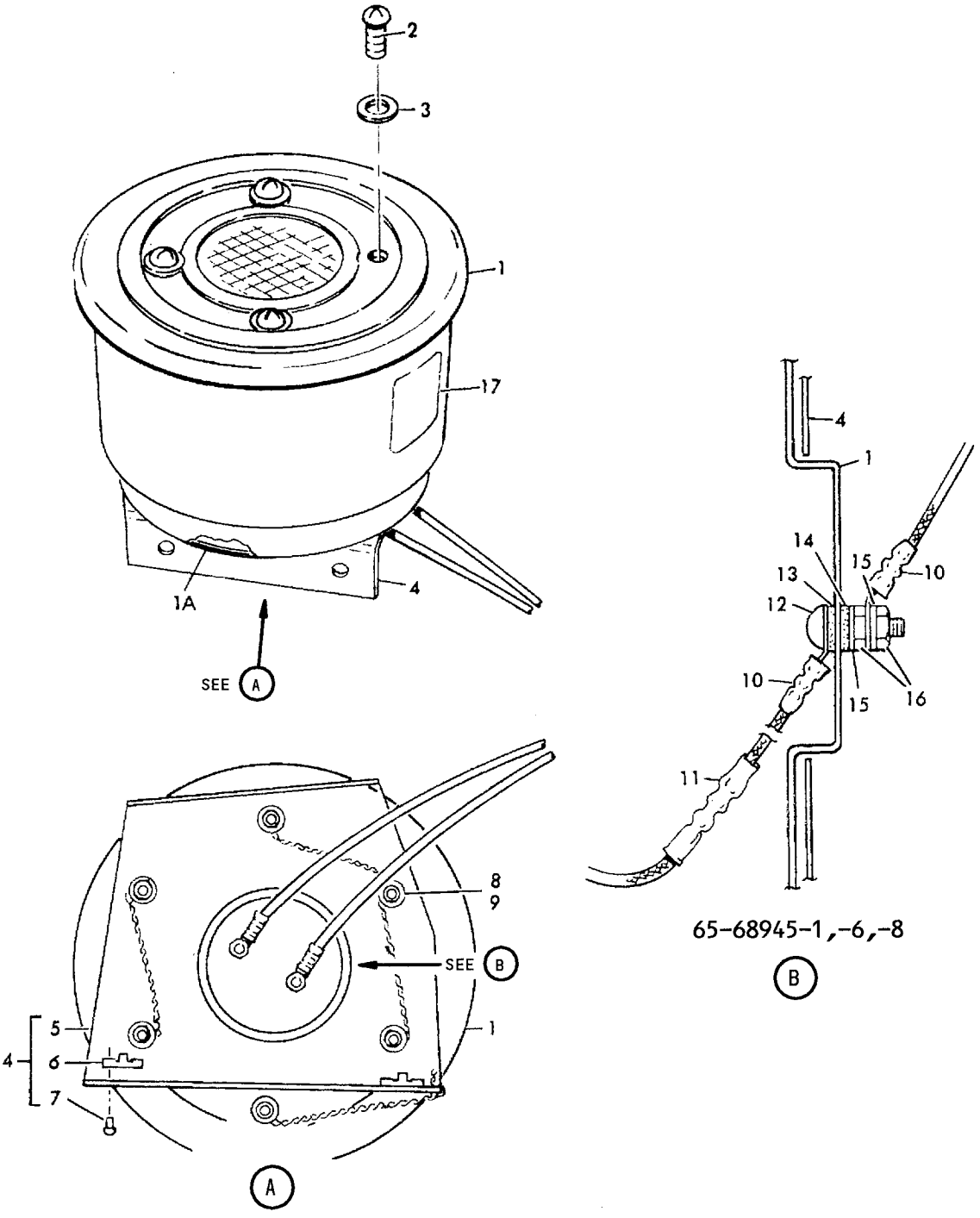
A. Tools used for repair of electrical connectors are listed in "Repair of Electrical Connectors," Subject 20-11-02.

B. Tools used for repair of electrical terminations and for replacement of insulating sleeving are listed in "Repair of Electrical Terminations and Electrical Bonding Areas," Subject 20-11-03.

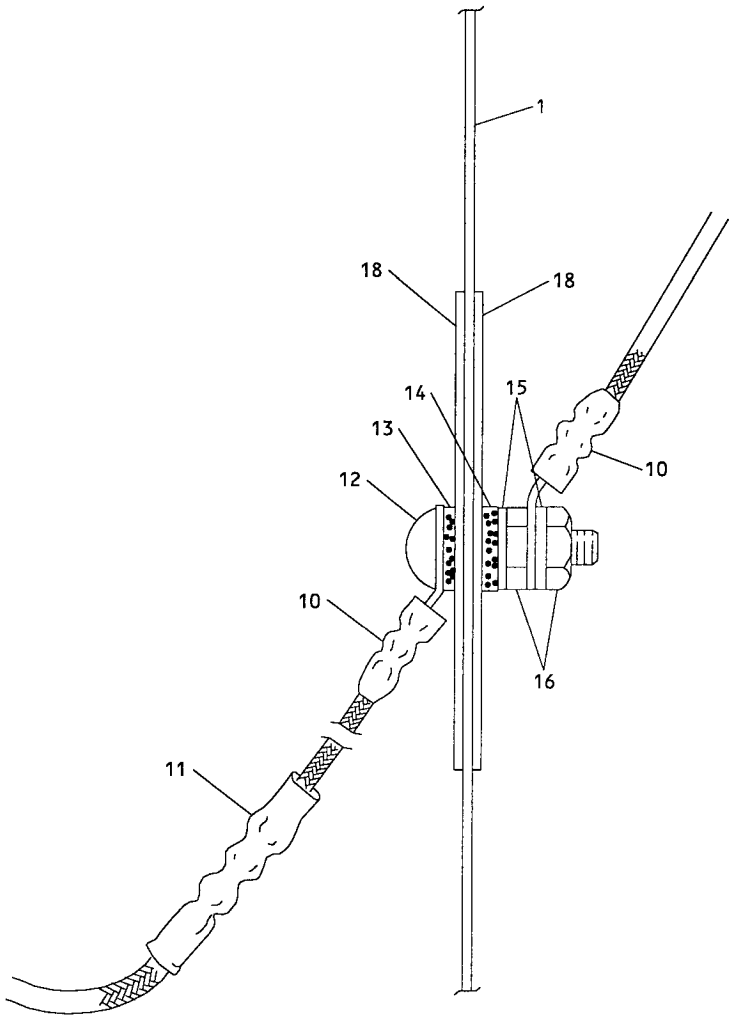
C. Tools used for soldering electrical connections are listed in Soldering Electrical Connections," Subject 20-12-01.

NOTE: For additional equipment required for testing, refer to TESTING.

11. ILLUSTRATED PARTS LIST



APU Fire Warning Horn Assembly (M277)
Figure 3 (Sheet 1)



65-68945-9,-11

(A)

APU Fire Warning Assembly (M277)
Figure 3 (Sheet 2)

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
3-					
	65-68945-1		APU FIRE WARNING HORN ASSY (M277) (SB 26-1007	A	
	65-68945-6		APU FIRE WARNING HORN ASSY (M277)	B	
	65-68945-8		APU FIRE WARNING HORN ASSY (M277) (SB 26-1015)	C	
	65-68945-9		APU FIRE WARNING HORN ASSY (M277)	D	
	65-68945-11		APU FIRE WARNING HORN ASSY (M277)	E	
1	MM2		. HORN ASSY, V87771	AB	1
1	MM2		. HORN ASSY, V87771 (MODIFIED BY SB 26-1015)	C	
1	MM2B		. HORN ASSY, V87771	E	1
1	65-68945-7		. . GASKET (MADE PER SB 26-1015)	C	1
2	MS35206-242		. SCREW		4
3	MS35338-42		. WASHER		4
4	69-56370-1		. BRACKET ASSY	A	1
4	69-56370-6		. BRACKET ASSY	B	1
4	69-56370-8		. BRACKET ASSY	DE	1
5	69-56370-2		. . BRACKET (USED ON 69-56370-1)		1
5	69-56370-7		. . BRACKET (USED ON 69-56370-6)		1
5	69-56370-9		. . BRACKET (USED ON 69-56370-8)	DE	1
6	BACN10JQ32		. . NUTPLATE		2
7	BACR15BA3A		. . RIVET (REPLS MS20426A3)		4
8	AN960D10		. WASHER		6
9	MS24677-24		. CAPSCREW		6
10	BACT12AC2		. . TERMINAL		4
11	NAS1388-1		. SPLICE		2
12	MS35214-29C		. SCREW	DE	2
13	NAS549P6		. WASHER	ABC	2
13	BACW10G6F		. WASHER	DE	2
14	BACW10G6F		. WASHER	ABC	2
14	BACW10G6F		. WASHER	DE	2
15	MS35338-136		. LOCKWASHER		4
16	MS25082S1		. NUT	DE	4
17	BACM10H1P		. METAL-CAL		1
18	65-68945-10		. DOUBLER	DE	2

VENDORS

V87771 UNIVERSITY SOUND ALTEC, DIV. OF ALTEC CORP., 10500 WEST RENO AVE, P.O. BOX 26105, OKLAHOMA CITY, OKLAHOMA 73126