TO: ALL HOLDERS OF INSTRUMENT PANEL ELECTRICAL MODULE GENERAL INFORMATION OVERHAUL MANUAL, 31-10-01

REVISION NO. 8, DATED JUL 1/00

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
Changed Korry Indicator mounting screw torque valves					X								

INSTRUMENT PANEL ELECTRICAL MODULE GENERAL INFORMATION

31-10-01

BOEING P/N NO ASSIGNED PART NUMBER

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT

LIST OF EFFECTIVE PAGES

* Indicates pages revised, added or deleted in latest revision

F Indicates foldout pages - print one side only

	PAGE	DATE	PAGE	DATE	PAGE	DATE
	31-10-01					
	T-1	Jan 10/70				
	T-2	BLANK				
*	LEP-1	Jul 1/00				
	LEP-2	BLANK				
	T/C-1	Nov 10/73				
	T/C-2	BLANK				
	1	Nov 10/70				
	2	Jan 10/70				
	3	Jan 10/70				
	4	Jan 10/70				
	5	Jan 10/70				
	6	Jan 10/70				
	7	Nov 10/73				
	8	Jul 5/81				
	9	Nov 10/73				
	10	Jun 5/84				
	11	Aug 10/84				
*	12	Jul 1/00				
	13	Jun 5/84				
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*[1] Contained in individual Overhaul Manual

INSTRUMENT PANEL ELECTRICAL MODULE GENERAL INFORMATION

1. DESCRIPTION AND OPERATION

A. Description

(1) The electrical modules, located in the control cabin instrument panels, consist of a baseplate assembly, indicating lights, control switches, power connectors (light bases), and a wire bundle assembly. Some modules also include printed circuit card assemblies. The baseplate assembly has quick-release fasteners which allow complete module removal from the panel in the aircraft. The baseplate and clamps provide support to a variety of indicating instruments.

NOTE: The "Electrical and Electronics Wiring Diagram" Manual provides schematic electrical diagrams which show how the modules are connected in a system or part of a system.

B. Operation

(1) The switches, indicating lights, and instruments on the modules enable the crew to control and monitor performance of the power plant and aircraft systems.

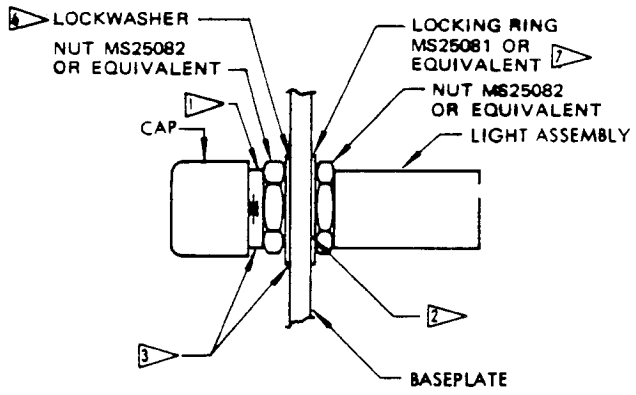
NOTE: The Maintenance Manual provides detail information on use of modules for system operation, indication and control.

2. DISASSEMBLY

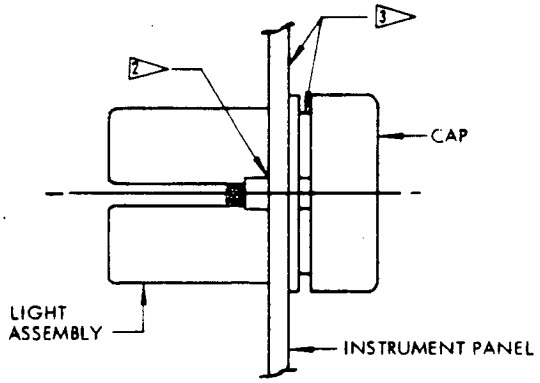
A. Modules should be disassembled only as necessary for cleaning, inspection repair or replacement of components.

NOTE: Screws that secure standoffs, spacers, and index pins are installed using Loctite compounds and may be difficult to remove.

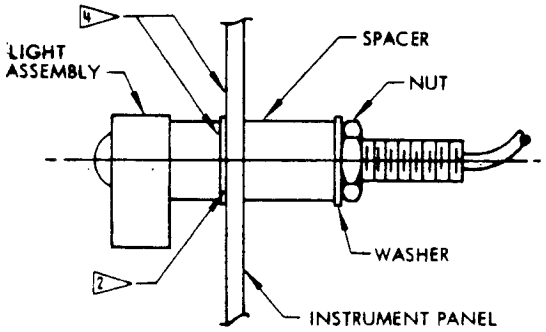
B. If disassembly is necessary, refer to Fig. 1 and 1A for typical mounting of module components.



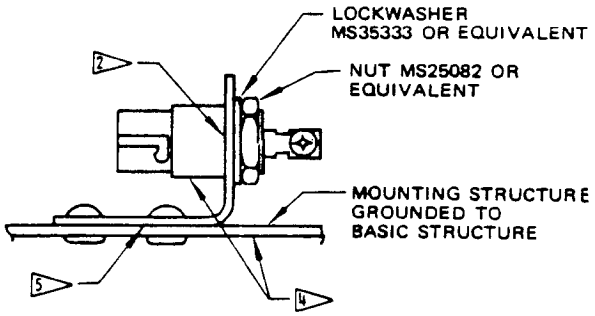
SINGLE INDICATOR LIGHT ASSEMBLY



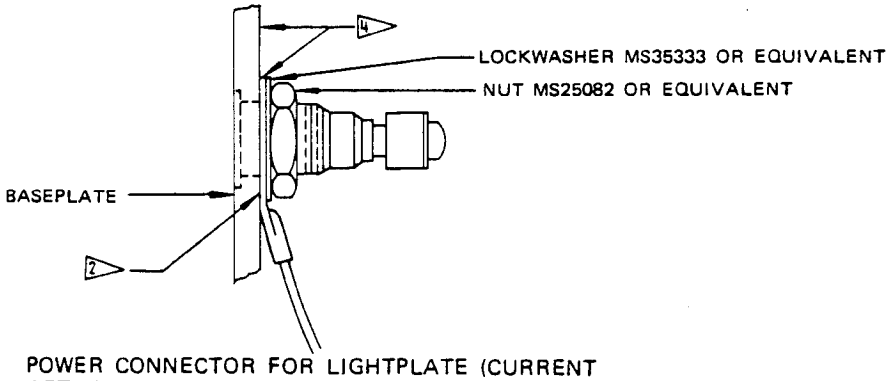
MULTIPLE INDICATOR LIGHT



BOLTLIGHT
(CURRENT RETURN THROUGH
INSTRUMENT PANEL)

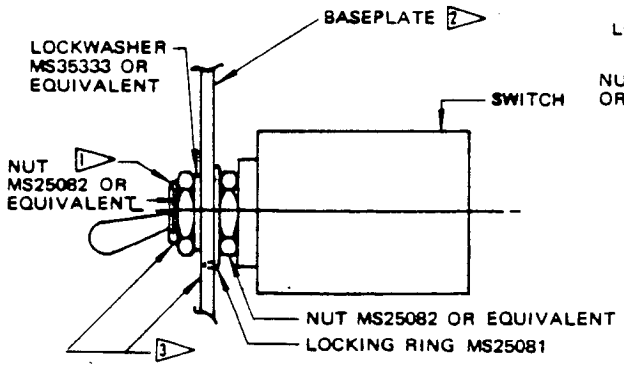


LIGHT FIXTURE
(CURRENT RETURN THROUGH BASEPLATE)

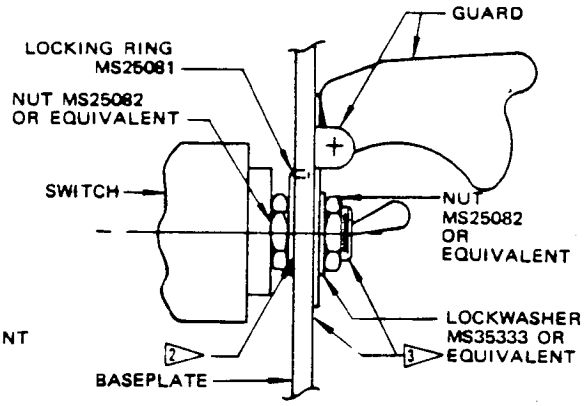


POWER CONNECTOR FOR LIGHTPLATE (CURRENT
RETURN THRU WIRE. WIRE BONDS TO THE
BASEPLATE)

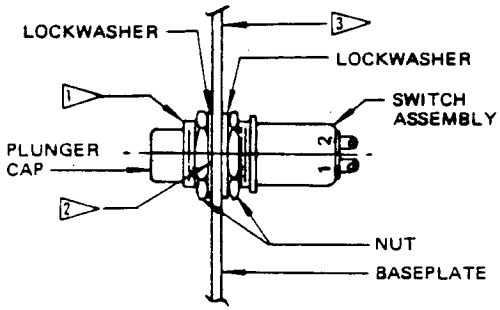
Typical Mounting of Module Elements
Figure 1 (Sheet 1)



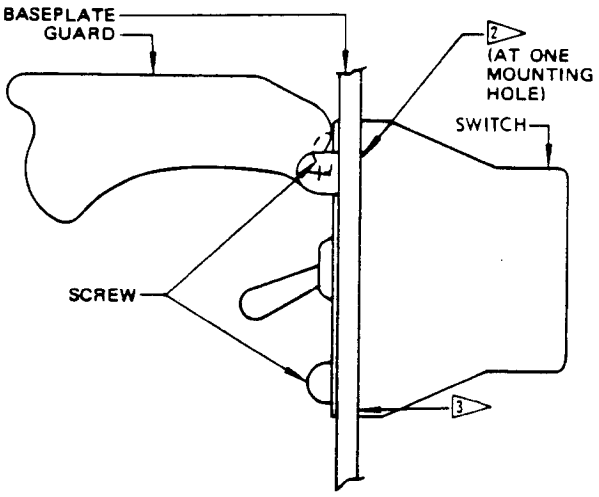
SINGLE HOLE MOUNTED SWITCH



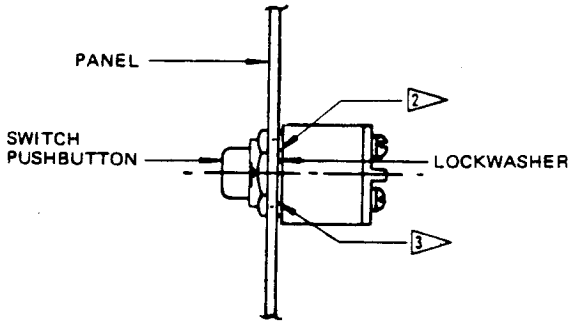
SINGLE HOLE MOUNTED SWITCH WITH GUARD



DOUBLE NUT MOUNTED PUSHBUTTON SWITCH

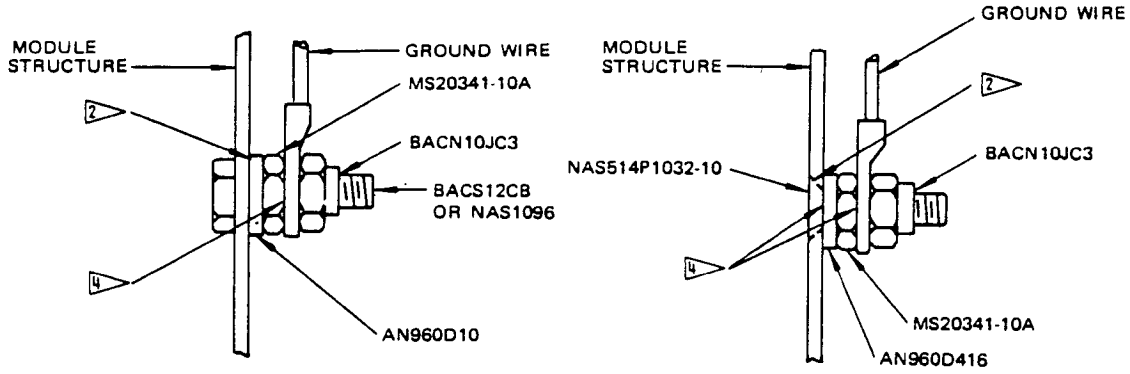


3-HOLE MOUNTED SWITCH WITH GUARD



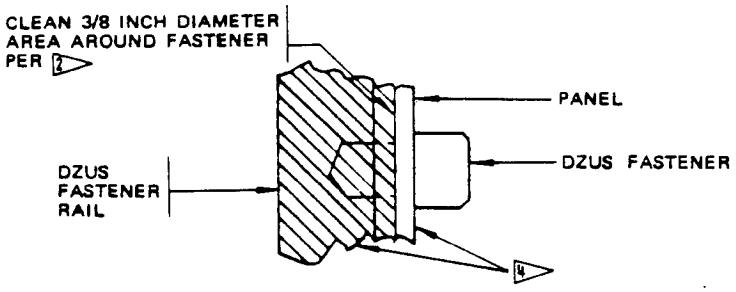
SINGLE NUT MOUNTED PUSHBUTTON SWITCH

Typical Mounting of Module Elements
Figure 1 (Sheet 2)

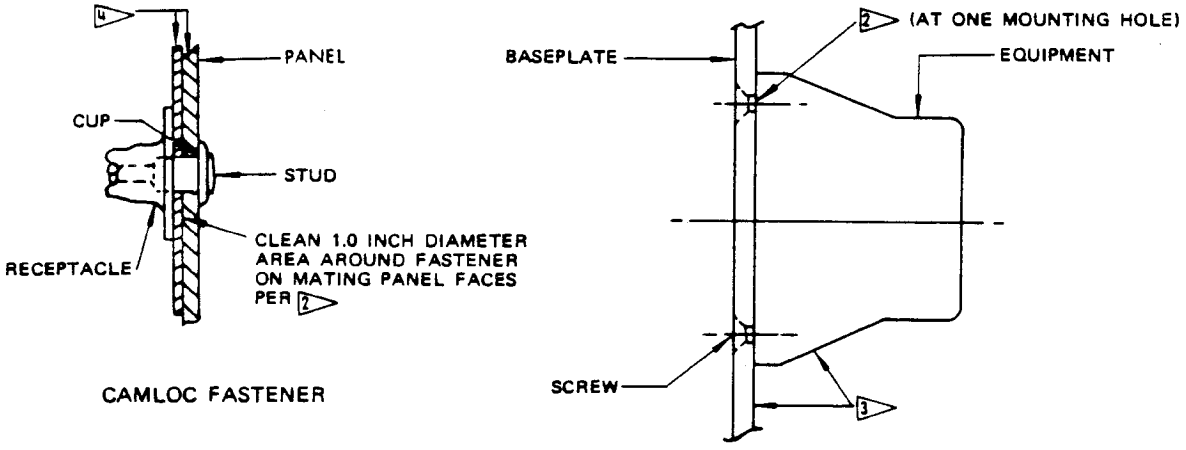


MODULE GROUND (A)

MODULE GROUND (B)



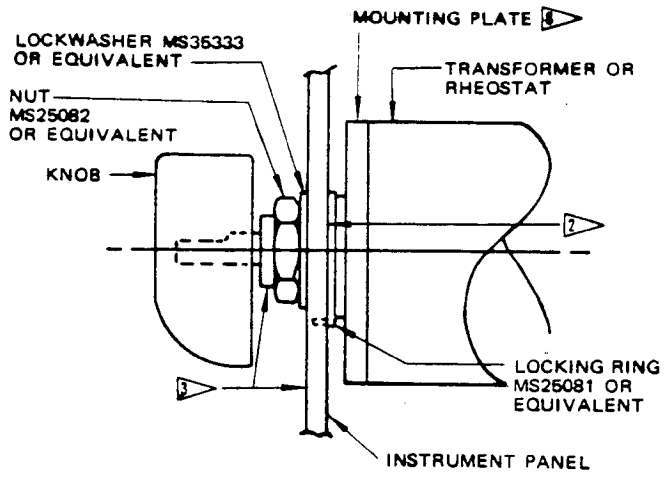
DZUS FASTENER



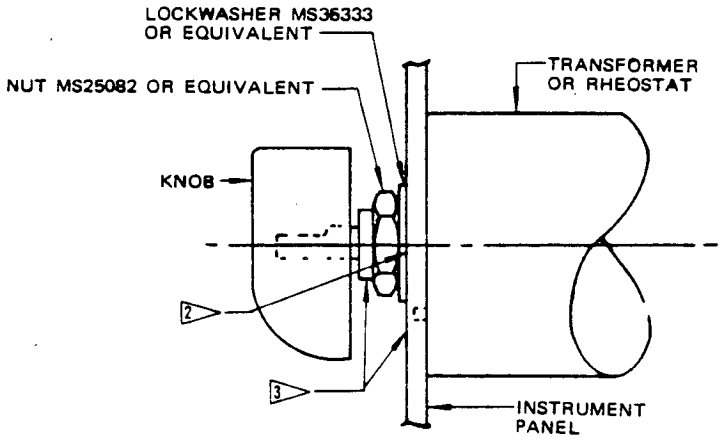
CAMLOC FASTENER

EQUIPMENT (MULTIPLE HOLE MOUNTED)

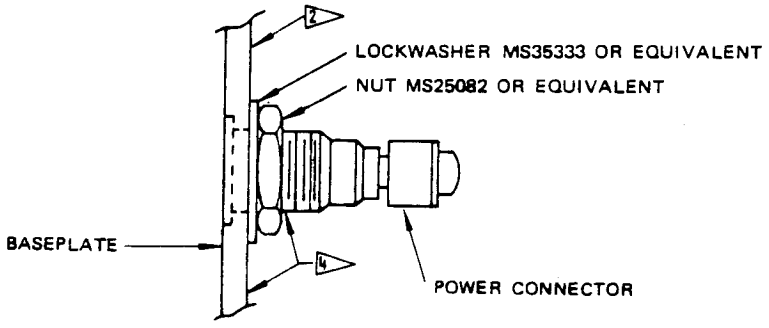
Typical Mounting of Module Elements
Figure 1 (Sheet 3)



(WITH LOCKING RING)

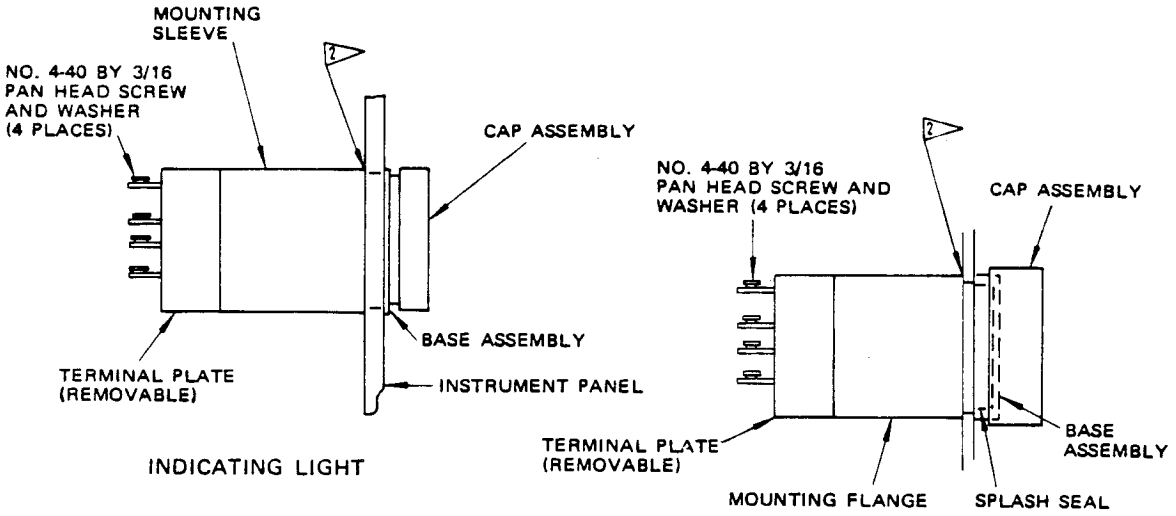


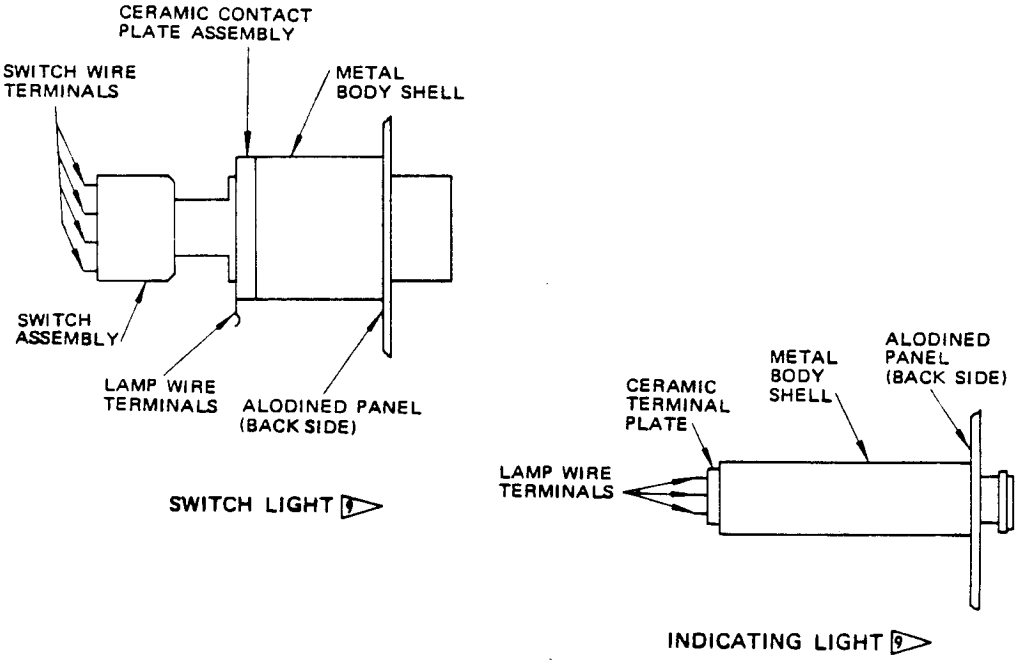
(WITHOUT LOCKING RING)
TRANSFORMER, RHEOSTAT OR ROTARY SWITCH



POWER CONNECTOR FOR LIGHTPLATE
(CURRENT RETURN THROUGH BASEPLATE)

Typical Mounting of Module Elements
Figure 1 (Sheet 4)





Typical Mounting of Module Elements
Figure 1 (Sheet 5)

1> APPROXIMATELY TWO THREADS TO SHOW

2> SPOT CLEAN INDICATED SURFACE PER BAC5117, TYPE II

3> MAXIMUM RESISTANCE 0.0025 OHM

4> MAXIMUM RESISTANCE 0.001 OHM

5> SPOT CLEAN INDICATED SURFACE PER BAC5117, TYPE I

6> LOCKING RING IS OPTIONAL TO LOCKWASHER

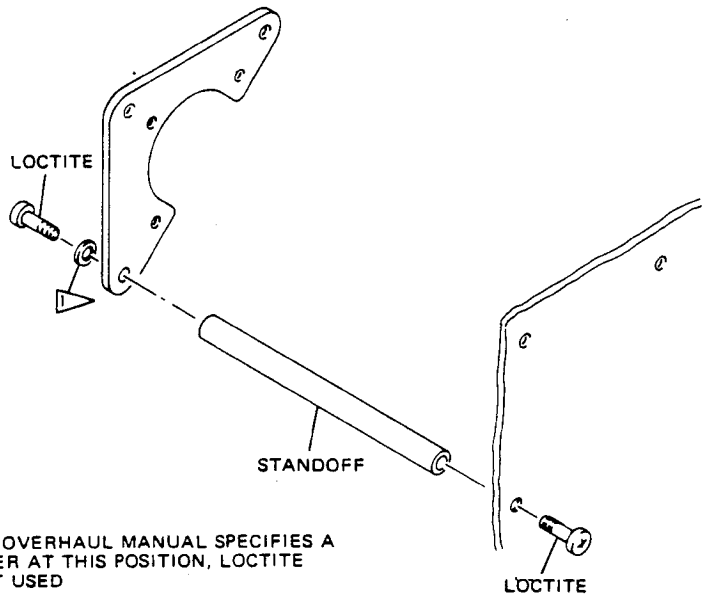
7> LOCKING RING IS OPTIONAL

8> IF MOUNTING PLATE IS NOT REQUIRED, DISCARD

9> NOTES:

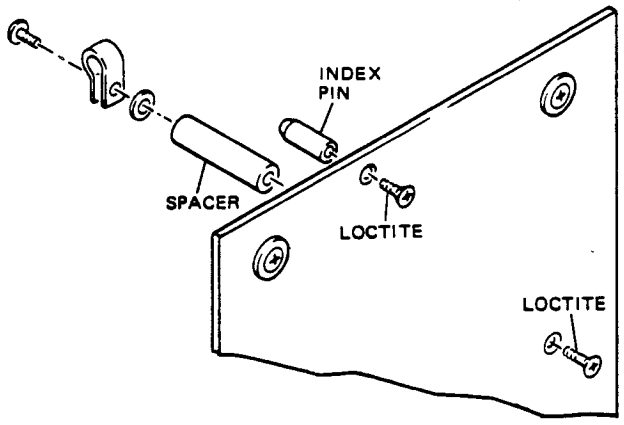
1. THESE INSTALLATIONS APPLY ONLY TO ALODINE FINISHED PANELS WHICH ARE UNPAINTED ON THE BACK SIDE.
2. IF METAL BODY SHELL IS MADE OF STAINLESS STEEL, IT IS MOUNTED DIRECTLY ON ALODINED PANEL.
3. IF METAL BODY SHELL IS MADE OF ANODIZED ALUMINUM, THE EDGE OF THE SHELL CONTACTING THE ALODINED PANEL MUST BE CLEANED PER 5>.

Typical Mounting of Module Elements
Figure 1 (Sheet 6)



1> WHEN OVERHAUL MANUAL SPECIFIES A WASHER AT THIS POSITION, LOCTITE IS NOT USED

Use of Loctite (LOCTITE)
Figure 1A (Sheet 1)



Use of Loctite (LOCTITE)
Figure 1A (Sheet 2)

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 module 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 20-12-01, Preparation for Soldering.

D. Clean terminal lugs and other bonding areas per 20-11-03.

E. Remove soft or cured soils, such as spilled beverages or food, from module exterior painted or plastic surfaces using a detergent cleaner per 20-30-03.

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 connections per "Soldering Electrical Connections," Subject 20-12-01.

(3) Repair wire terminations at terminal lugs 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.

(6) Cap Repair for BACS30E Leverlock Microswitches (with 15PA90-7W caps).

(a) Parts: 1 each 15PA90-7W cap per switch (Honeywell Incorporated, Micro Switch Division, Chicago and Spring Streets, Freeport, Illinois 61032).

(b) Materials: Dilating Solution, 90 parts Toluol and 10 parts Acetone; or vapor degreasers of the Trichlorethylene or Perchlorethylene type.

CAUTION: DILATOR SOLUTIONS ARE FLAMMABLE AND BREATHING OF VAPORS CAN BE HAZARDOUS TO HEALTH. DO NOT USE NEAR FLAME OR SPARK, AND PROVIDE ADEQUATE VENTILATION IN WORK AREA.

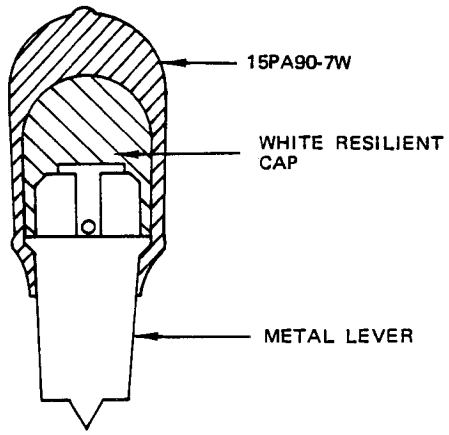
(c) Procedure (See figure 2.)

1) Seat white resilient cap on shoulder of metal lever.

2) Immerse 15PA90-7W cap in dilating solution. Hot vapor degreaser will provide rapid dilation (usually within 5 minutes). If the 90 part Toluol and 10 parts Acetone is used, dilation will occur in 60 to 70 seconds. If cold vapor degreaser is used, 30 minutes of immersion may be required. Excess immersion time (or excess Acetone) can cause overswelling and material degradation.

3) Remove excess solution and press 15PA90-7W over lever. Air dry for shrink fit.

(d) Refer to Honeywell Incorporated repair instructions for Leverlock Microswitches for additional information on shrink fit repair procedure for white resilient leverlock caps.



Leverlock Microswitch Cap Repair
Figure 2

(7) Cap Replacement for BACS30E Leverlock Microswitches (with Microswitch 15PA90-6W or Eaton 220134 caps).

(a) Parts: 1 each 15PA90-6W (Honeywell Incorporated, Micro Switch Division, Chicago and Spring Streets, Freeport, Illinois 61032) or 220134 (Eaton Corp., 2074 Whitfield Ave. E., P.O. Box 1978, Sarasota, Florida 33578) cap per switch.

(b) Material: Loctite 290 or equivalent.

(c) Procedure

1) Remove and discard old threaded cap.

2) Remove thread lock compound residue from switch lever.

3) Apply one or two drops of thread lock compound (Loctite 290 or equivalent) to lever threads.

4) Thread new P/N 15PA90-6W or 220134 cap onto lever and tighten as firmly as finger pressure will allow.

(d) Refer to Honeywell Incorporated repair instructions for Leverlock Microswitches for additional information.

B. Refinish

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

C. Replacement

(1) Replace damaged wire with wire type as noted on the schematic diagram in applicable overhaul manual.

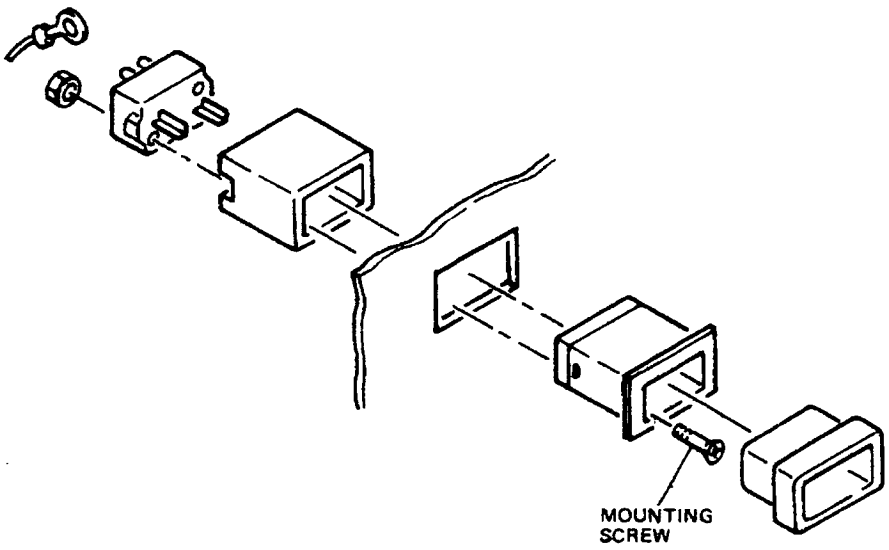
(2) Apply markers per 20-50-05.

(3) Replace damaged heat shrinkable sleeving per 20-11-03.

(4) Apply Loctite Primer Grade T, and Loctite Nutlock Compound 74 (Loctite Corporation, 705 North Mountain Road, Newington, Connecticut 06111) to threads of screws that secure standoffs, spacers, or index pins. See Fig. 1A for typical usage.

(5) Indicator light assembly 60B00149 (Clare Pendar type 670822) contain replaceable diodes 1N4385 and fuse 275.250 (Littelfuse Inc., 800 E. Northwest Highway, Des Plaines, Illinois 60016).

(6) Tighten mounting screw of Korry series 319 or 318 indicator lamps to torque value specified in Fig. 3.



KORRY P/N	BOEING SPECIFICATION	TORQUE VALUE
319-619-1001-( )	10-61305-( )	15 ±3 OUNCE-INCHES
319-619-1002-( )	10-61305-( )	15 ±3 OUNCE-INCHES
318-630-1001-( )	10-61803-( )	40 OUNCE-INCHES
318-630-1001-( )	10-61803-( )	40 OUNCE-INCHES

Korry Indicator Lamp Mounting
Figure 3

6. ASSEMBLY (Fig. 1)

A. Install switches, light assemblies, connectors, ground studs or any other elements of the module assembly per applicable overhaul instructions or per standard aircraft electrical procedures.

NOTE: See Fig. 1 and 1A for illustrations on typical mounting of module elements.

7. TROUBLE SHOOTING

A. If any of the elements of the module assembly fail to perform as indicated by the wiring diagram, check circuit, isolate defective part and repair or replace as required per applicable overhaul manual.

8. 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 20-70-01.

9. SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

A. Tools used for repair of electrical connectors are listed in 20-11-02.

B. Tools used for repair of electrical terminations and for replacement of insulating sleeving are listed in 20-11-03.

C. Tools used for soldering electrical connections are listed in 20-12-01.

NOTE: For additional equipment required for testing, refer to TESTING in applicable overhaul manual.