Chapter/ Section	Page	Date	Chapter/ Section	Page	Date	Chapter/ Section	Page	Date
TAB - 747			06-00-47	9	Oct 01/00	25-00-47	1	Oct 01/00
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	7	Oct 01/00						
	8	Oct 01/00						

Chapter/ Section	Page	Date	Chapter/ Section	Page	Date	Chapter/ Section	Page	Date
27-20-47	1	Oct 01/00	28-20-47	4	Oct 01/00	32-10-47	1	Oct 01/00
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Chapter/ Section	Page	Date	Chapter/ Section	Page	Date	Chapter/ Section	Page	Date
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Chapter/ Section	Page	Date	Chapter/ Section	Page	Date	Chapter/ Section	Page	Date
53-00-47	14	Oct 01/00	53-10-47	21	Oct 01/00	53-10-47	49	Oct 01/00
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Chapter/ Section	Page	Date	Chapter/ Section	Page	Date	Chapter/ Section	Page	Date
53-10-47	77	Oct 01/00	53-30-47	15	Oct 01/00	54-00-00	1	Oct 01/00
	78	Oct 01/00		16/Blank	Oct 01/00		2/Blank	Oct 01/00
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							5	Oct 01/00

Chapter/ Section	Page	Date	Chapter/ Section	Page	Date	Chapter/ Section	Page	Date
55-10-47	6	Oct 01/00	57-00-00	1	Oct 01/00	57-20-47	11	Oct 01/00
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	9	Oct 01/00	57-00-47	1	Oct 01/00		14	Oct 01/00
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55-20-47	1	Oct 01/00		4/Blank	Oct 01/00			
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55-30-47	1	Oct 01/00		2	Oct 01/00		3	Oct 01/00
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56-40-47	1	Oct 01/00		8	Oct 01/00			
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				10	Oct 01/00			

Chapter/ Section	Page	Date	Chapter/ Section	Page	Date	Chapter/ Section	Page	Date
57-50-47	1	Oct 01/00	57-90-47	1	Oct 01/00	76-00-00	1	Oct 01/00
	2	Oct 01/00		2	Oct 01/00		2/Blank	Oct 01/00
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	6	Oct 01/00		6	Oct 01/00			
	7	Oct 01/00				76-10-47	1	Oct 01/00
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	22	Oct 01/00						
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57-70-47	1	Oct 01/00		2	Oct 01/00			
	2	Oct 01/00						
	3	Oct 01/00						
	4/Blank	Oct 01/00						

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CHAPTER

06

DIMENSIONS AND AREAS

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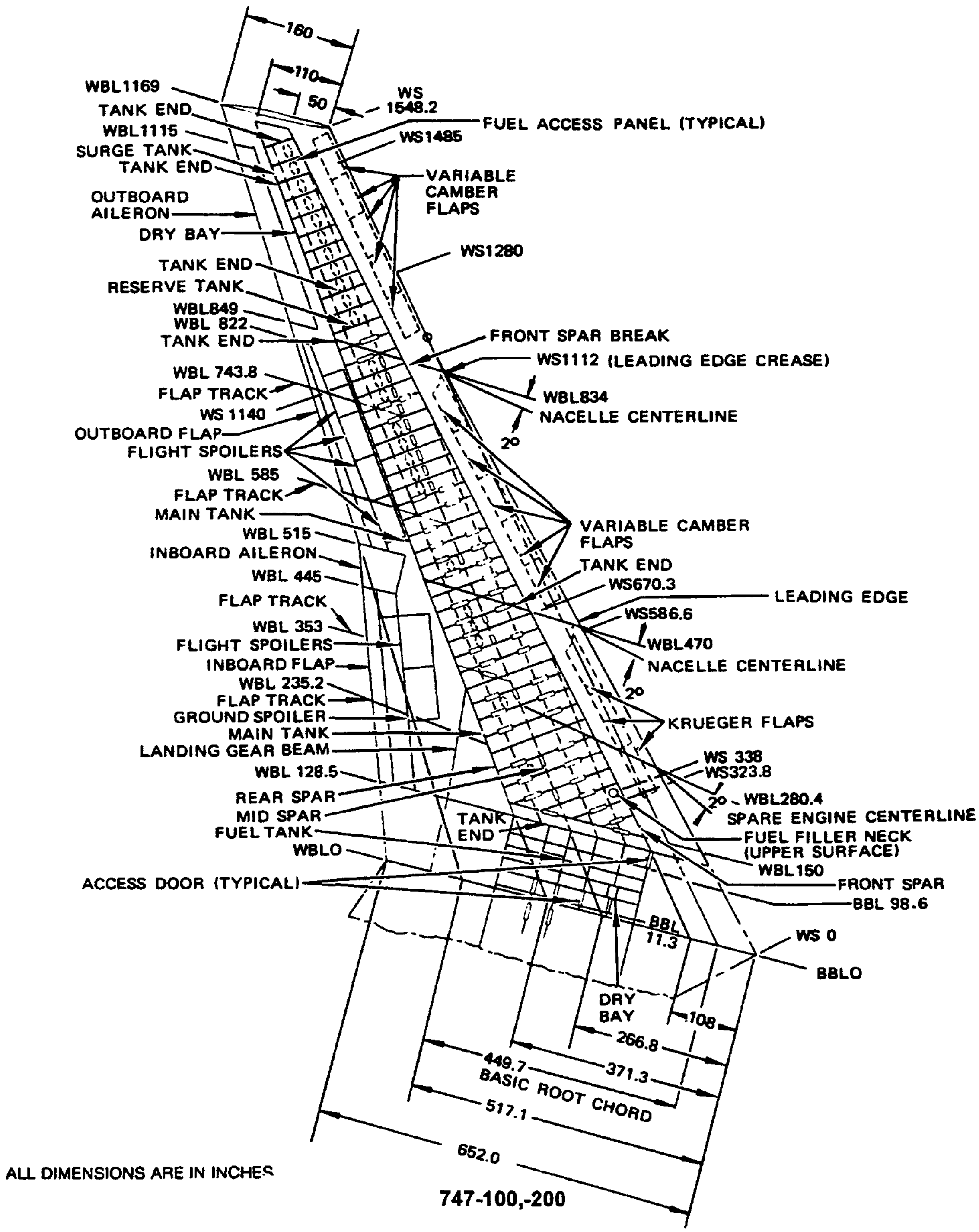
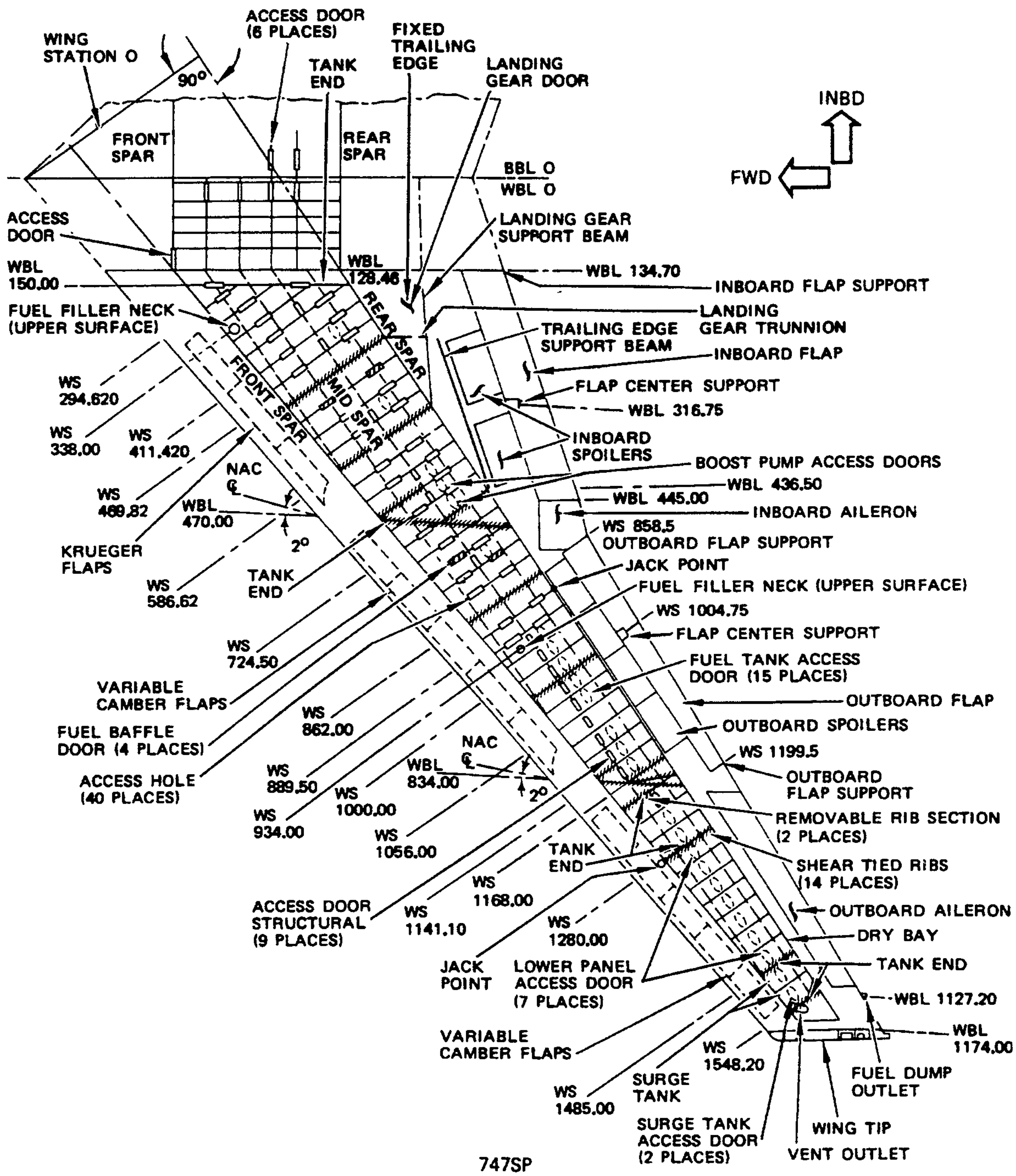
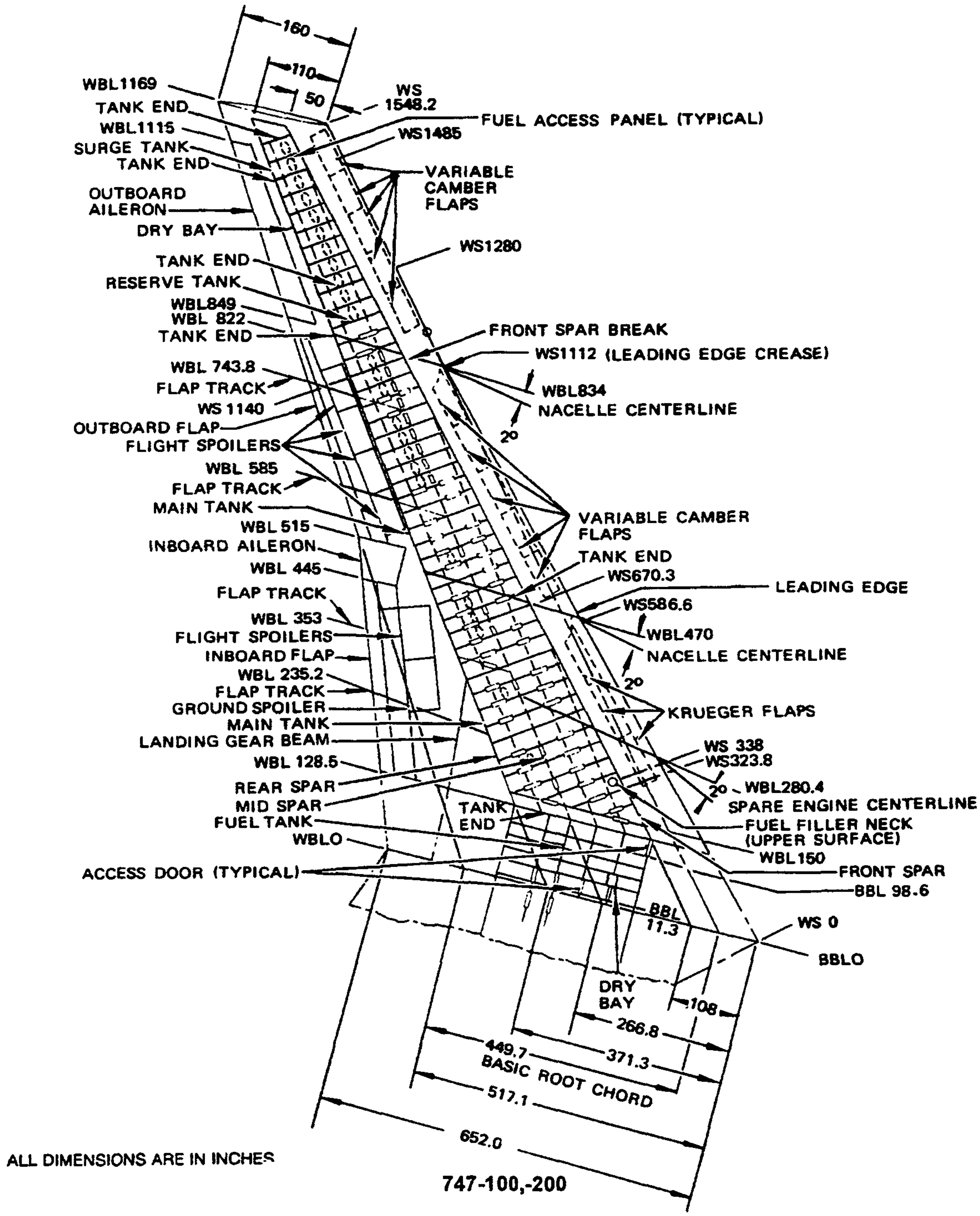
AWG	American Wire Gage	MPD	Maintenance Planning Data (or Document)
BBL	Body Buttock Line	MRB	Maintenance Review Board
BLG	Body Landing Gear	NAC BL	Nacelle Buttock Line
BRP	Body Reference Plane	NAC STA	Nacelle Station
BS or B STA	Body Station	NAC WL	Nacelle Water Line
CMM	Component Maintenance Manual	NDI	Nondestructive Inspection
CRES	Corrosion-Resistant Steel	NDT	Nondestructive Test
CRT	Cathode Ray Tube	NLG	Nose Landing Gear
DIA	Diameter	NOM	Nominal
DME	Distance Measuring Equipment	OD	Outside Diameter
		OHM	Overhaul Manual
EDM	Electric Discharge Machine	PRR	Production Revision Record
ELEV STA	Elevator Station	R or RAD	Radius
ENG STA	Engine Station	RH	Right-hand
FIN STA	Fin Station	RSS or RS STA	Rear Spar Station
FIN WL	Fin Water Line	RUD STA	Rudder Station
FSS or FSS STA	Front Spar Station	SB	Service Bulletin
H & D	Herter and Driffield	SFD	Source-to-Film Distance
ID	Inside Diameter	SL	Service Letter
kHz	Kilohertz	SLAT STA	Slat Station
KV	Kilovolt	SRM	Structural Repair Manual
LE	Leading Edge	STA	Station
LE STA	Leading Edge Station	STAB STA	Stabilizer Station
LH	Left Hand	TR STA	Thrust Reverser Station
MA	Milliamperes	WBL	Wing Buttock Line
MAS	Milliamp Seconds	WL	Water Line
MC	Master Change	WL G	Wing Landing Gear
MHz	Megahertz	WS or W STA	Wing Station
MM	Maintenance Manual	CL	Centerline
			Generator Position



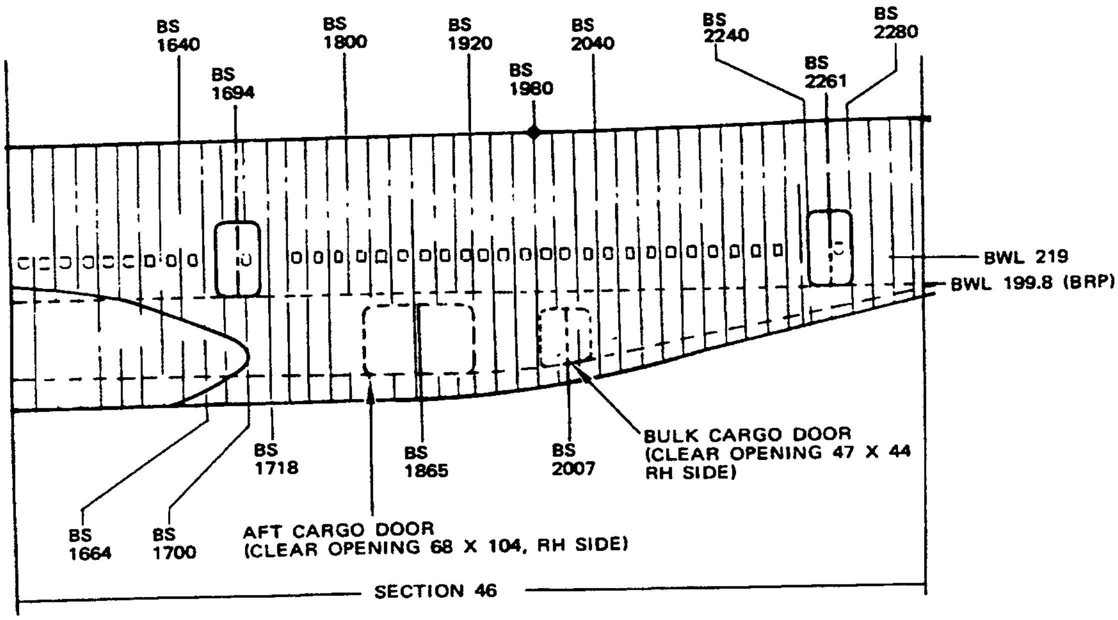
Wing Station Diagram
Figure 2 (Sheet 1)

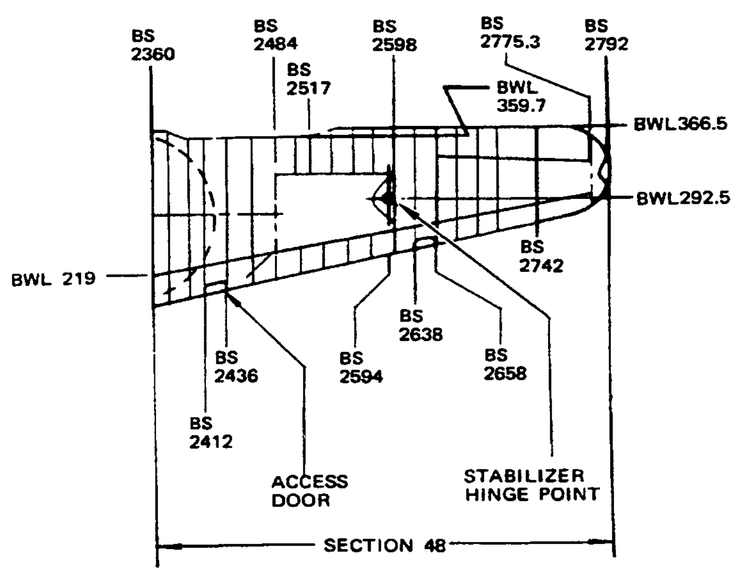


Wing Station Diagram
Figure 2 (Sheet 2)



Wing Station Diagram
Figure 3 (Sheet 1)

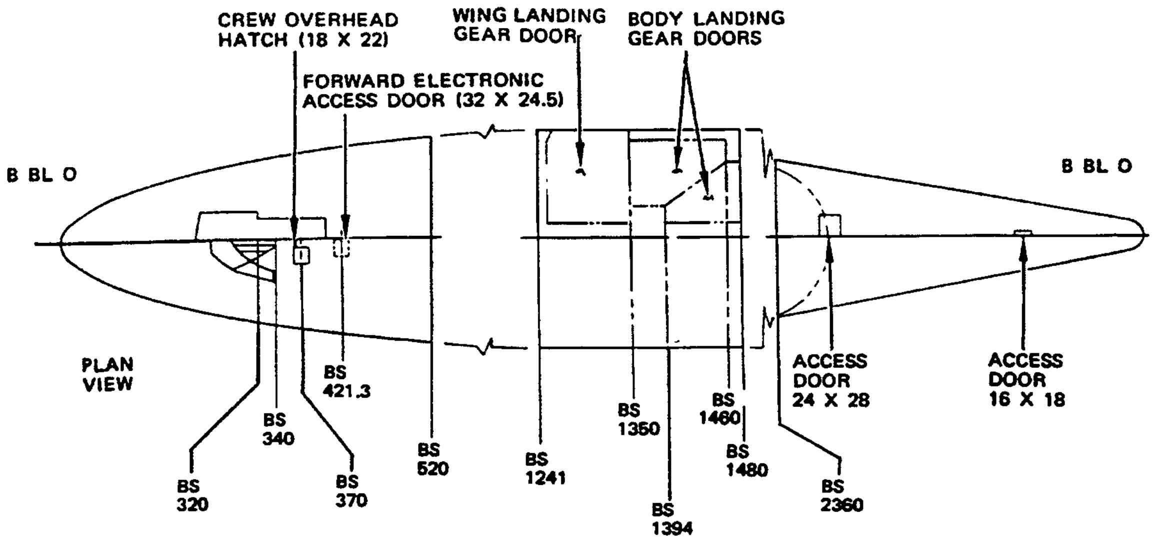


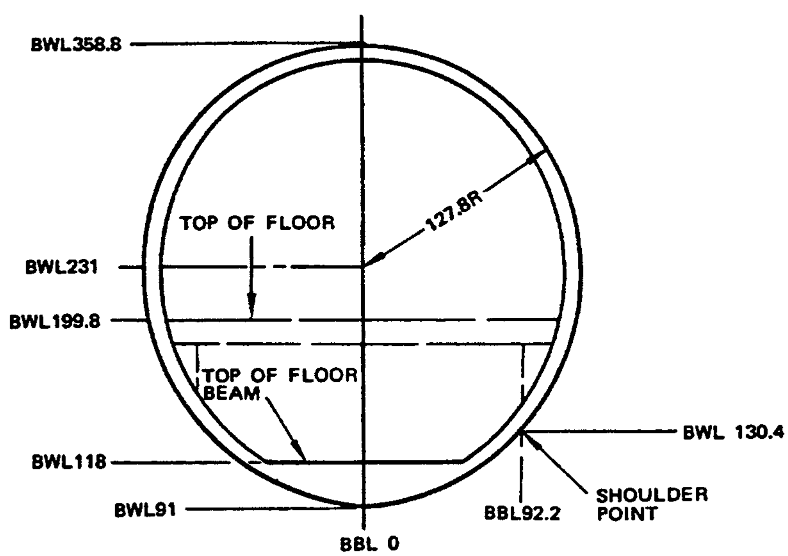


ALL DIMENSIONS ARE IN INCHES

747–100, –200

Wing Station Diagram
Figure 3 (Sheet 2)



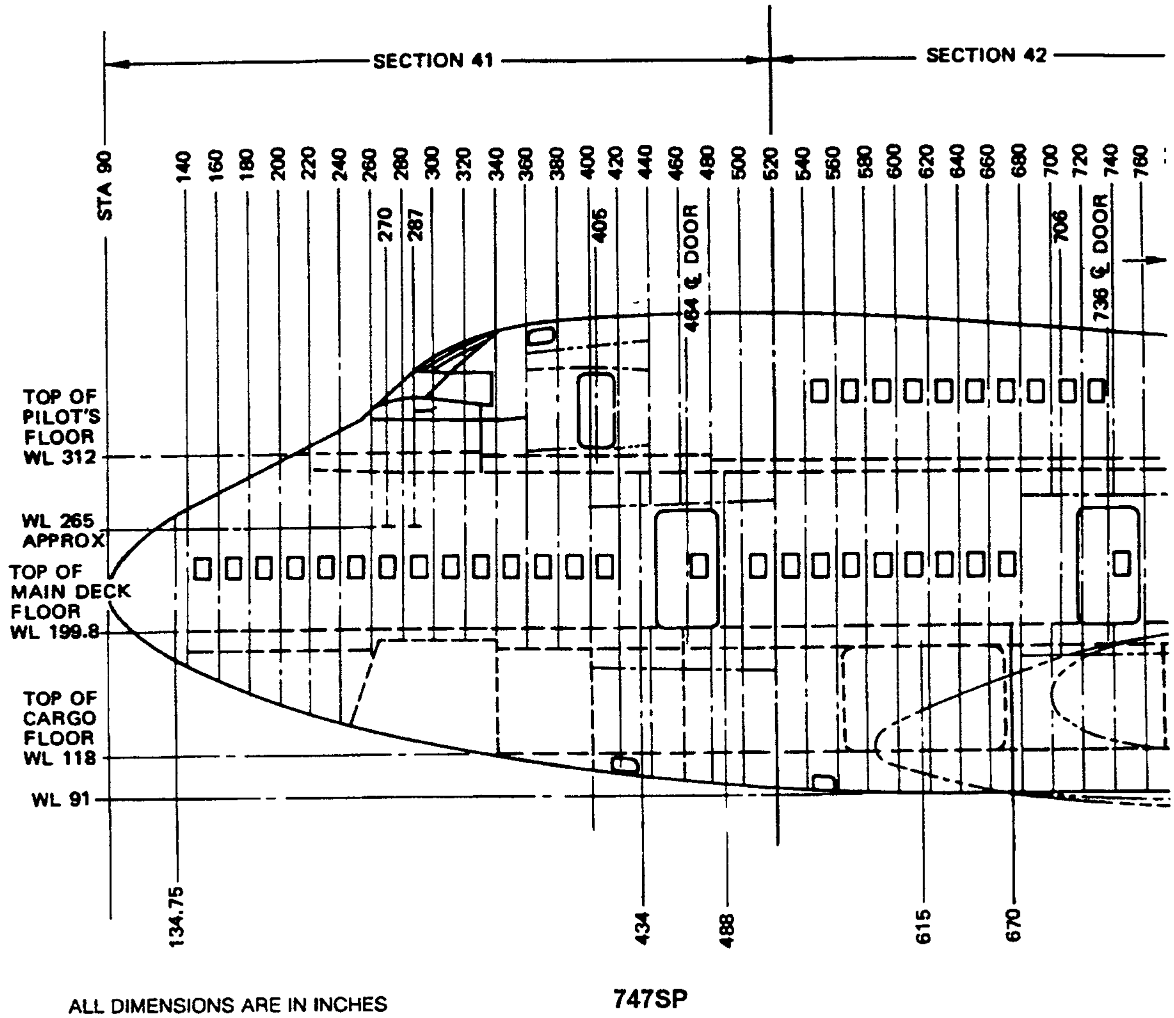


TYPICAL CONSTANT CROSS SECTION – SECTION 46

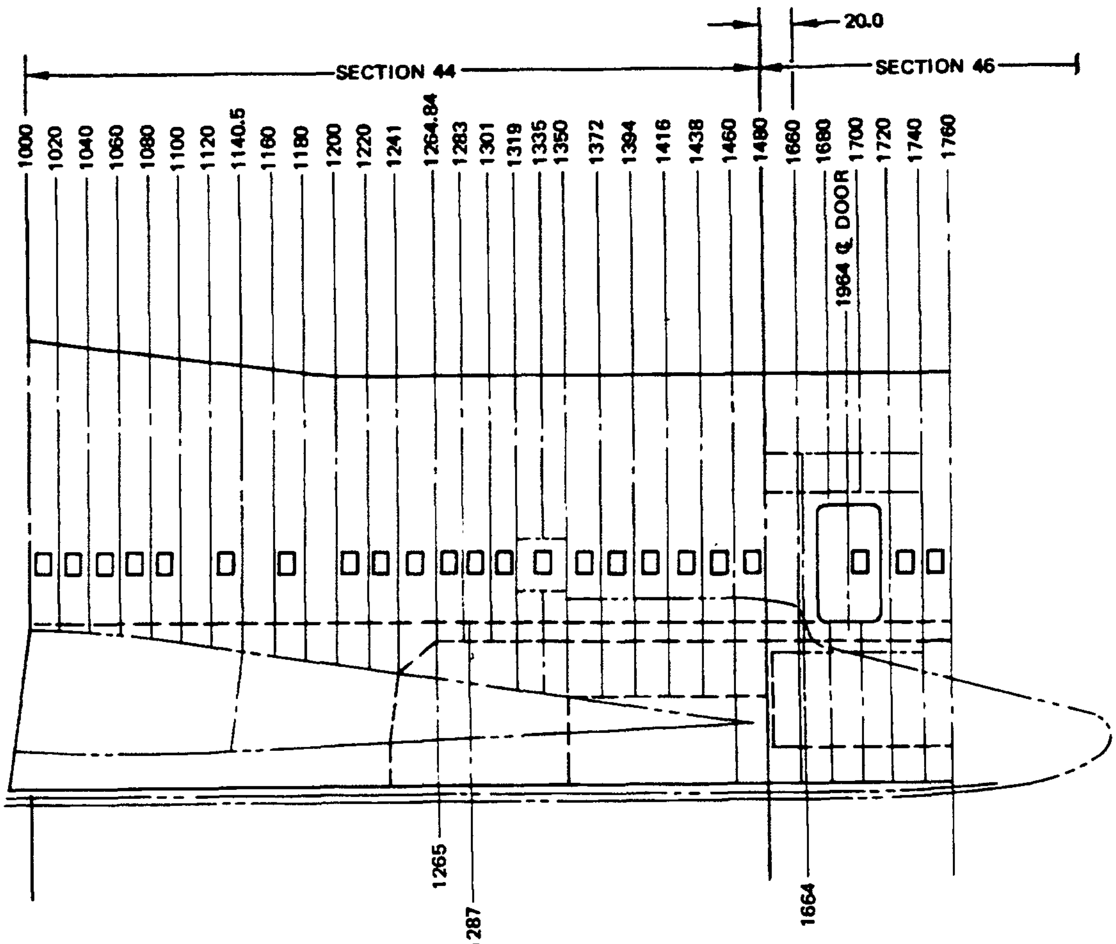
ALL DIMENSIONS ARE IN INCHES

747-100,-200

Wing Station Diagram
Figure 3 (Sheet 3)

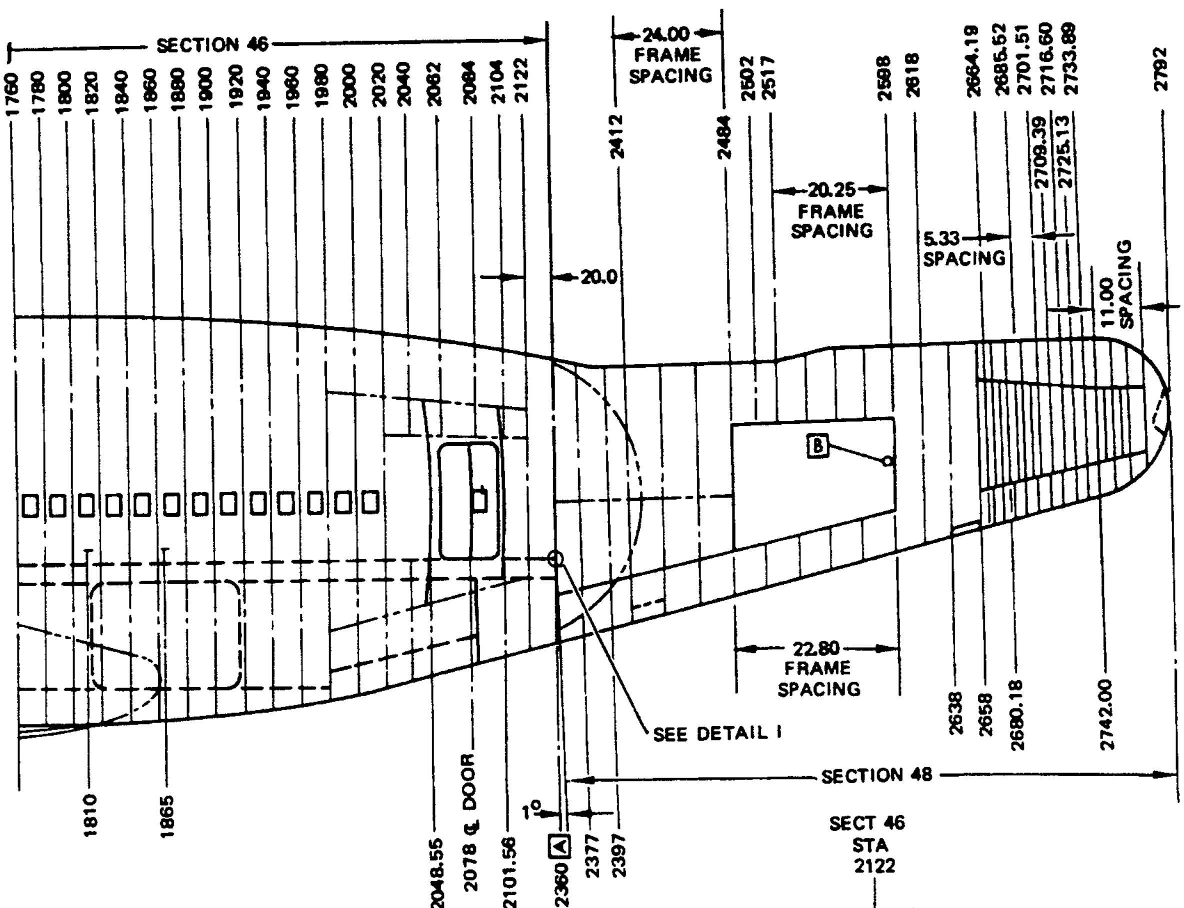


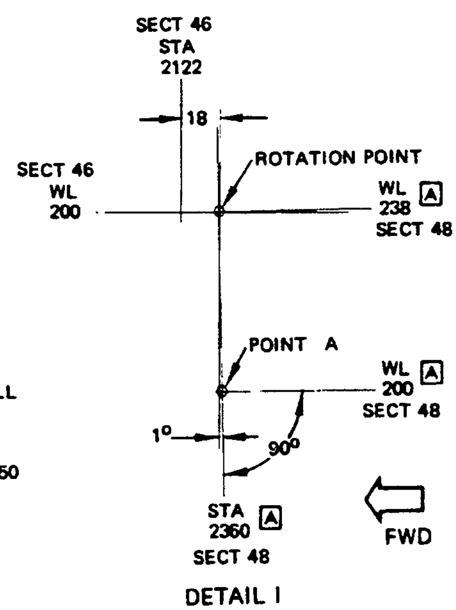
Wing Station Diagram
Figure 3 (Sheet 4)



747SP

Fuselage Station Diagram
Figure 3 (Sheet 5)





NOTES

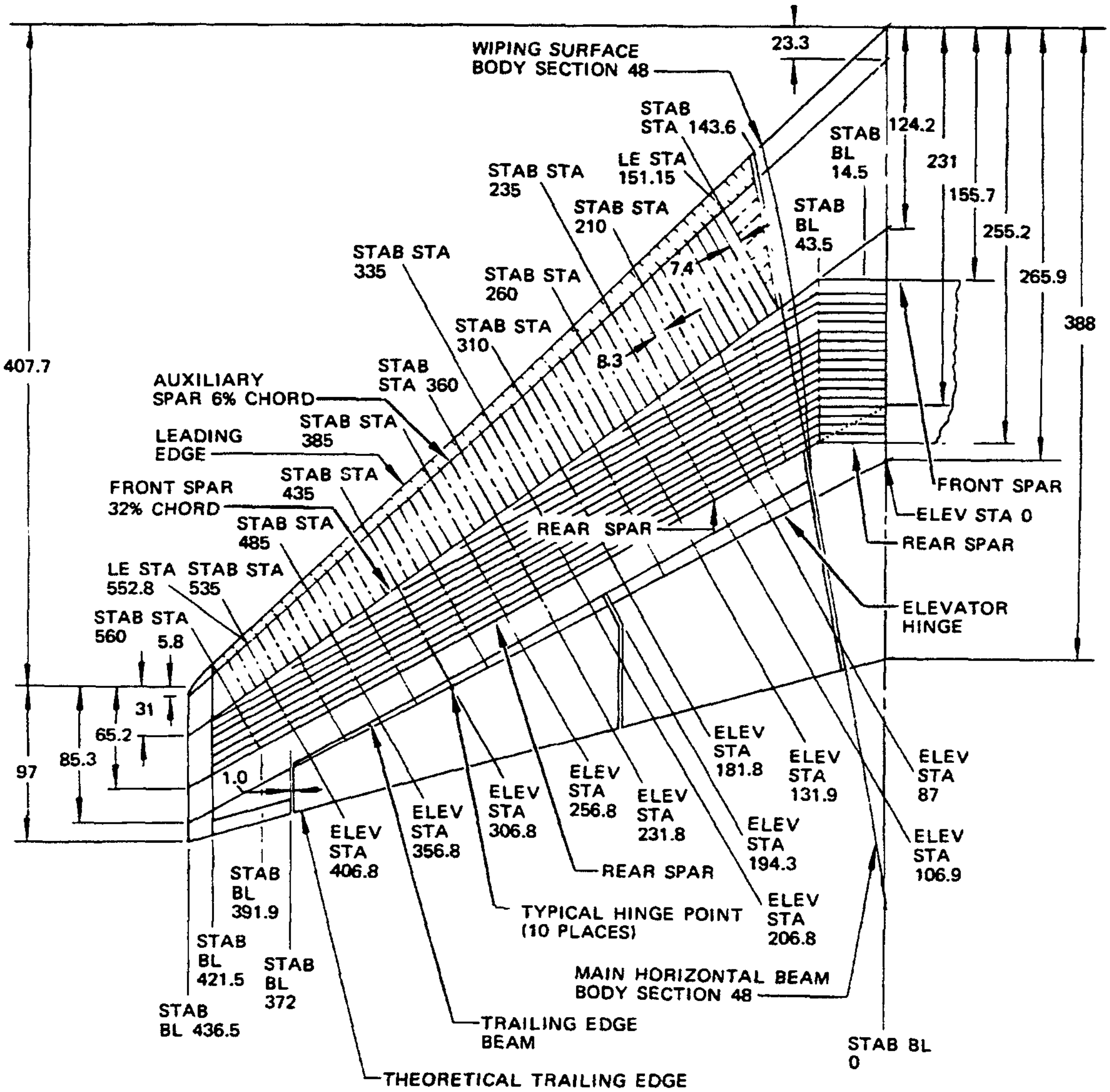
ALL DIMENSIONS ARE IN INCHES

A SECTION 48 HAS BEEN LOWERED 38 INCHES AND ROTATED 1°. ALL STATIONS AND WATER LINES WILL RETAIN EXISTING RELATIONSHIP AND WILL BE RELATIVE TO POINT A .

B STABILIZER HINGE POINT AT STA 2594 AND WL 292.50 PER A

747SP

Fuselage Station Diagram
Figure 3 (Sheet 6)



ALL DIMENSIONS ARE IN INCHES

STABILIZER STATIONS ARE PERPENDICULAR TO REAR SPAR CENTERLINE

LEADING EDGE STATIONS ARE PERPENDICULAR TO LEADING EDGE

ELEVATOR STATIONS ARE PERPENDICULAR TO ELEVATOR HINGE

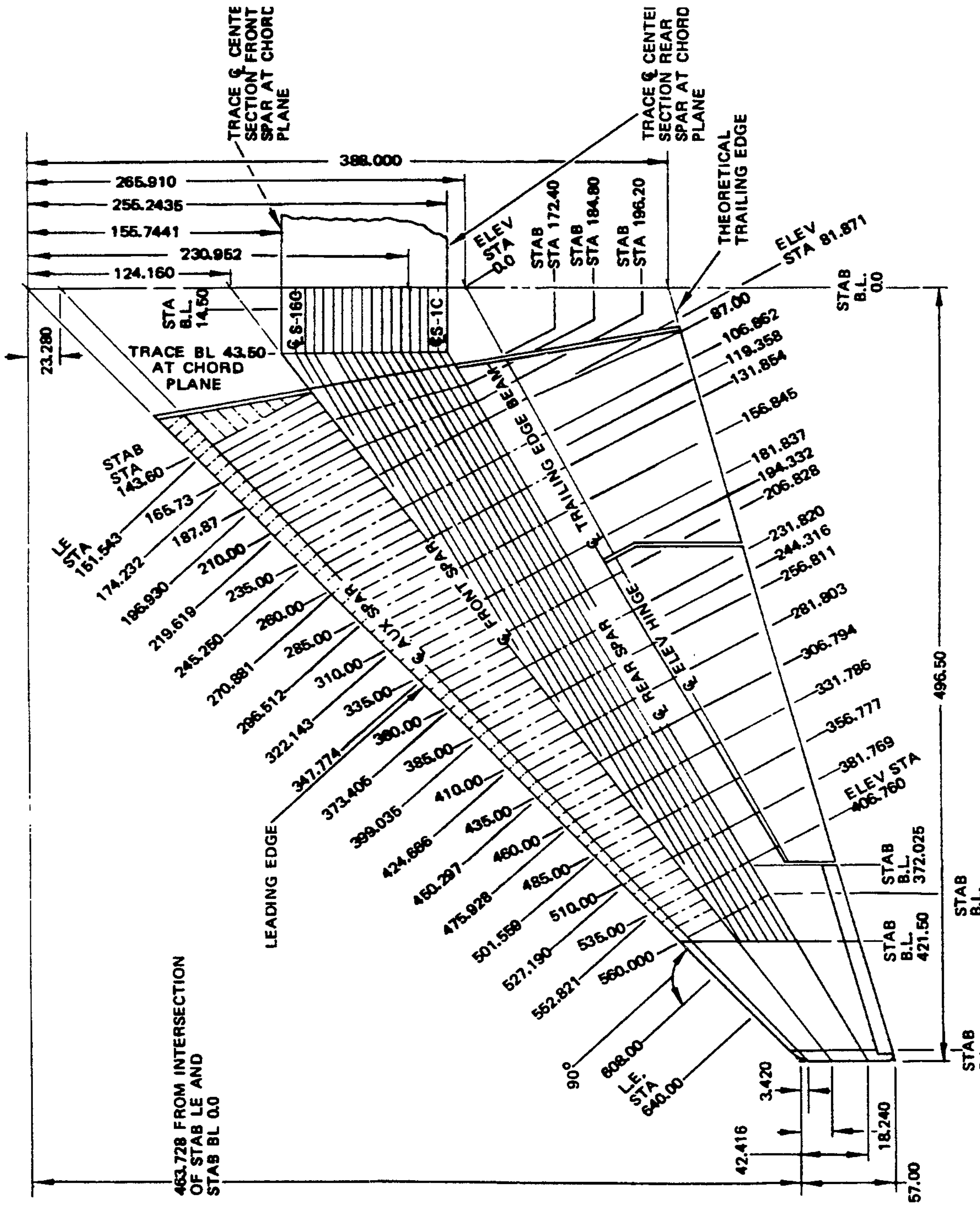
TO CONVERT STABILIZER STATION TO LEADING EDGE STATION AT LEADING EDGE:
LE STA = (1.03) STAB STA

TO CONVERT STABILIZER STATION TO ELEVATOR STATION AT ELEVATOR HINGE: ELEV STA = STAB STA −128.2

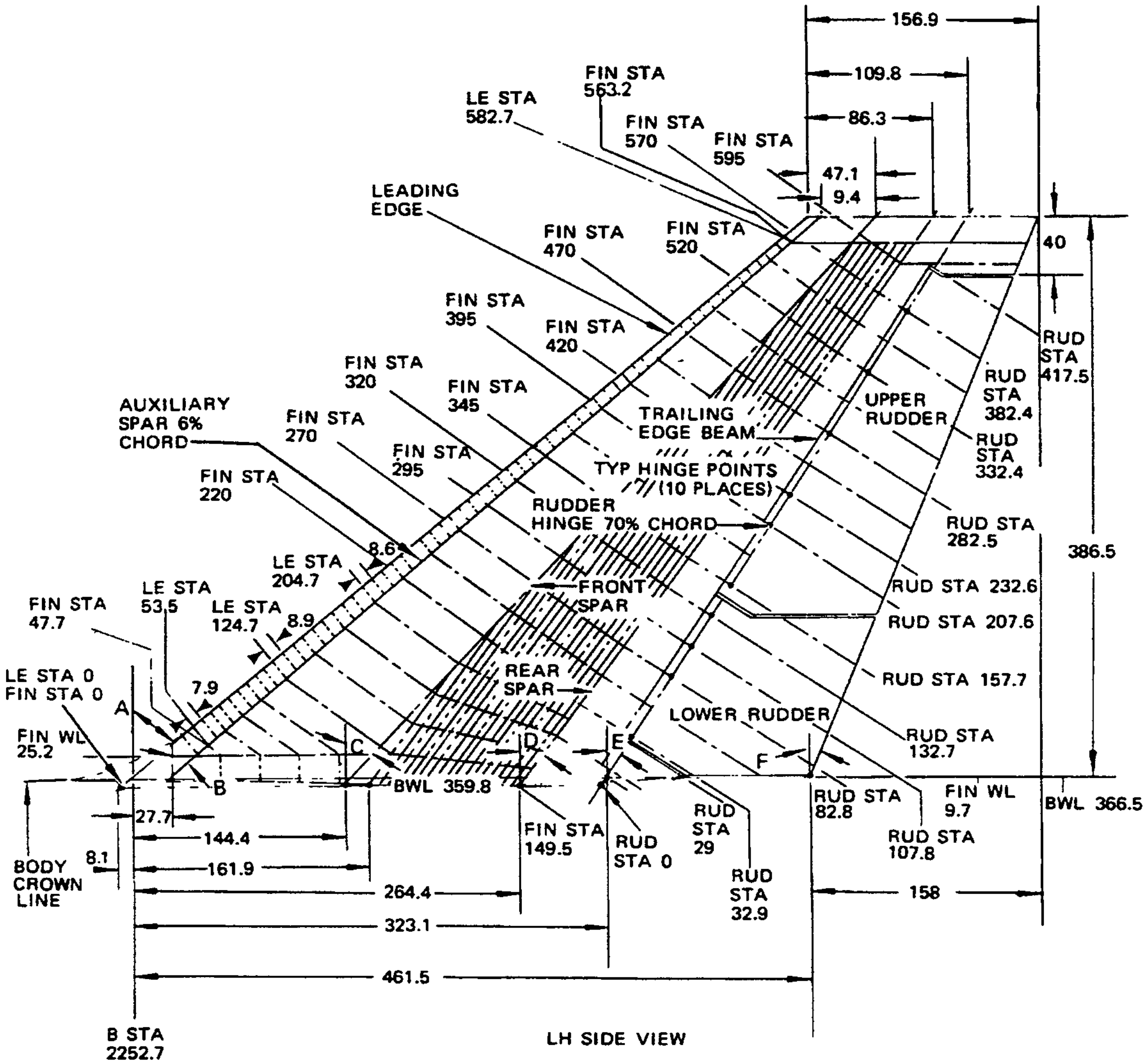
STABILIZER BUTTOCK LINES ARE PARALLEL TO BODY BUTTOCK LINE 0.0

747−100, −200

Horizontal Stabilizer and Elevator Station Diagram
Figure 4 (Sheet 1)



Horizontal Stabilizer and Elevator Station Diagram
Figure 4 (Sheet 2)



ALL DIMENSIONS ARE IN INCHES

FIN STATIONS ARE PERPENDICULAR TO REAR SPAR CENTERLINE

LEADING EDGE STATIONS ARE PERPENDICULAR TO LEADING EDGE

RUDDER STATIONS ARE PERPENDICULAR TO 70% CHORD RUDDER HINGE

ANGLES ARE AS FOLLOWS:

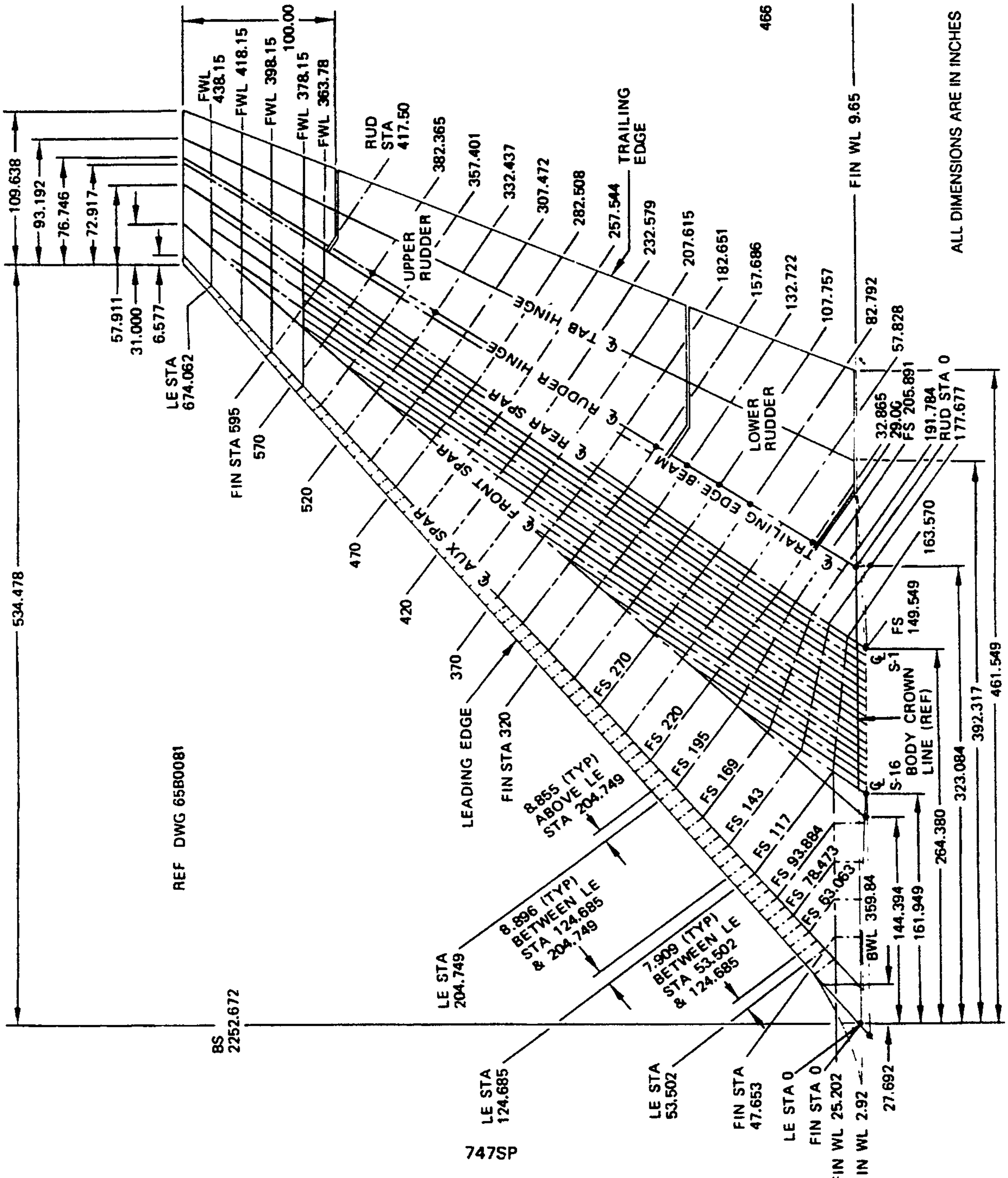
A = 50° 7'	D = 35° 53'
B = 48° 59'	E = 32° 50'
C = 42° 53'	F = 22° 14'

TO CONVERT FIN STATION TO RUDDER STATION AT REAR SPAR RUDDER STATION = FIN STA MINUS 187.1

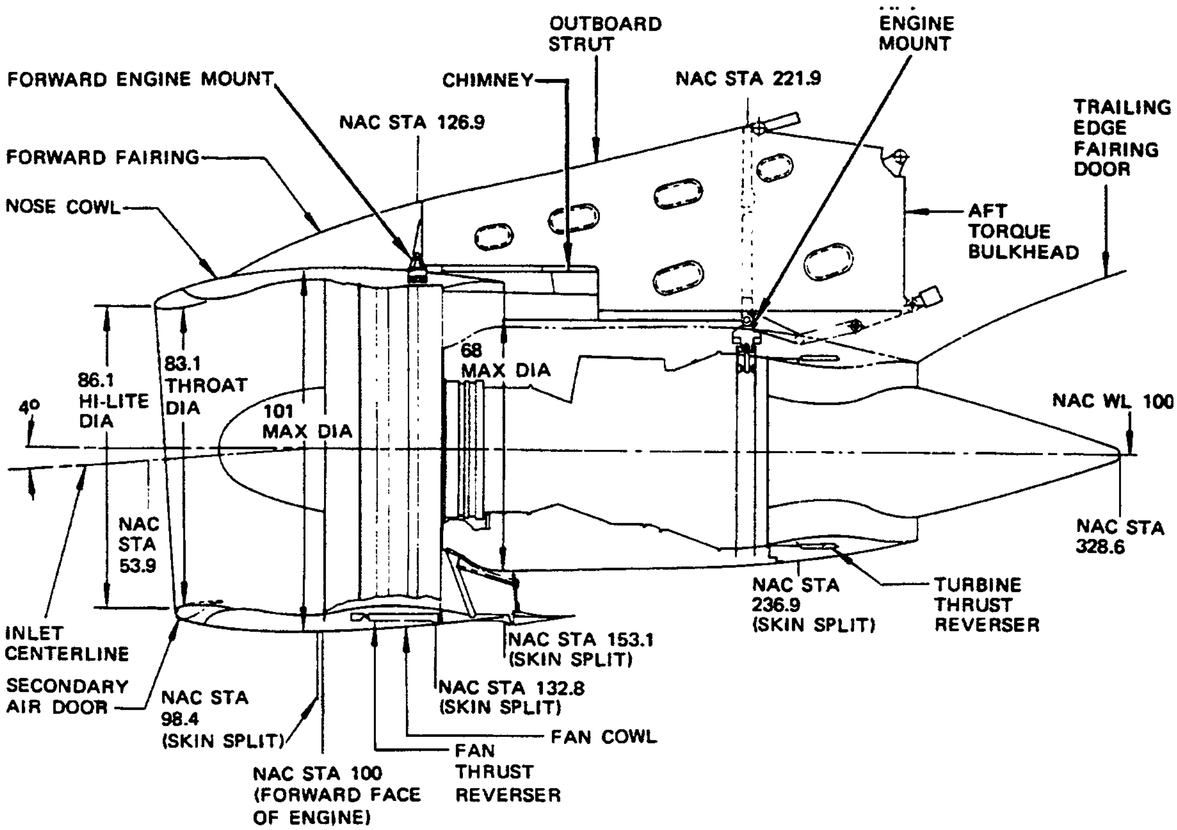
TO CONVERT FIN STATION TO LEADING EDGE STATION AT AUXILIARY SPAR (6%) LEADING EDGE STATION = 4.6 PLUS FIN STA

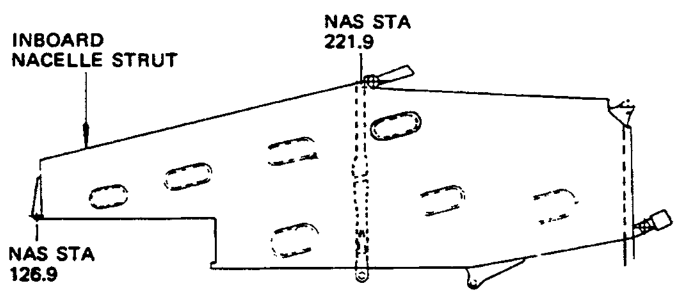
747–100, –200

Vertical Stabilizer and Rudder Station Diagram
Figure 5 (Sheet 1)



Vertical Stabilizer and Rudder Station Diagram
Figure 5 (Sheet 2)

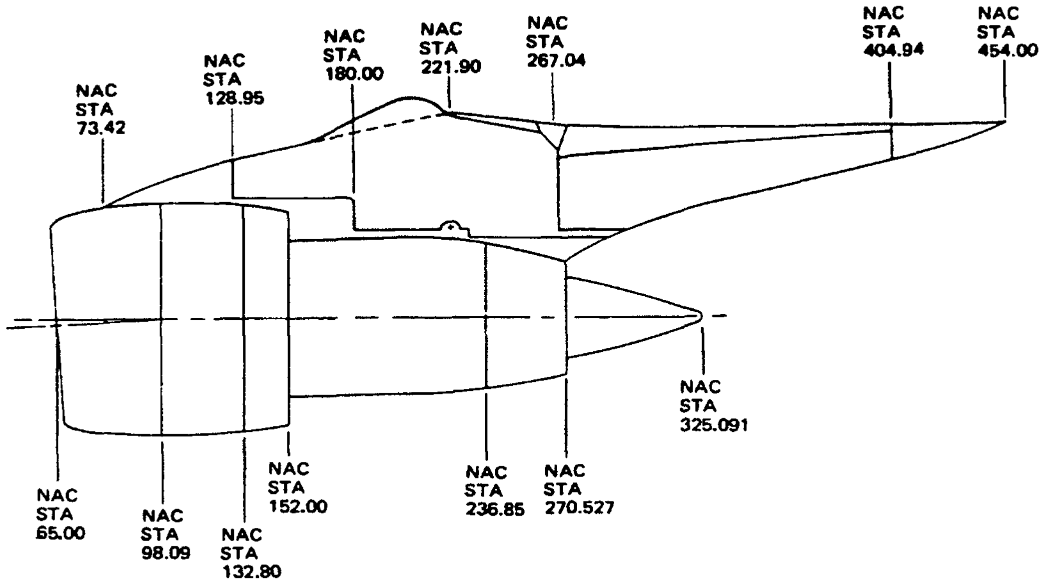


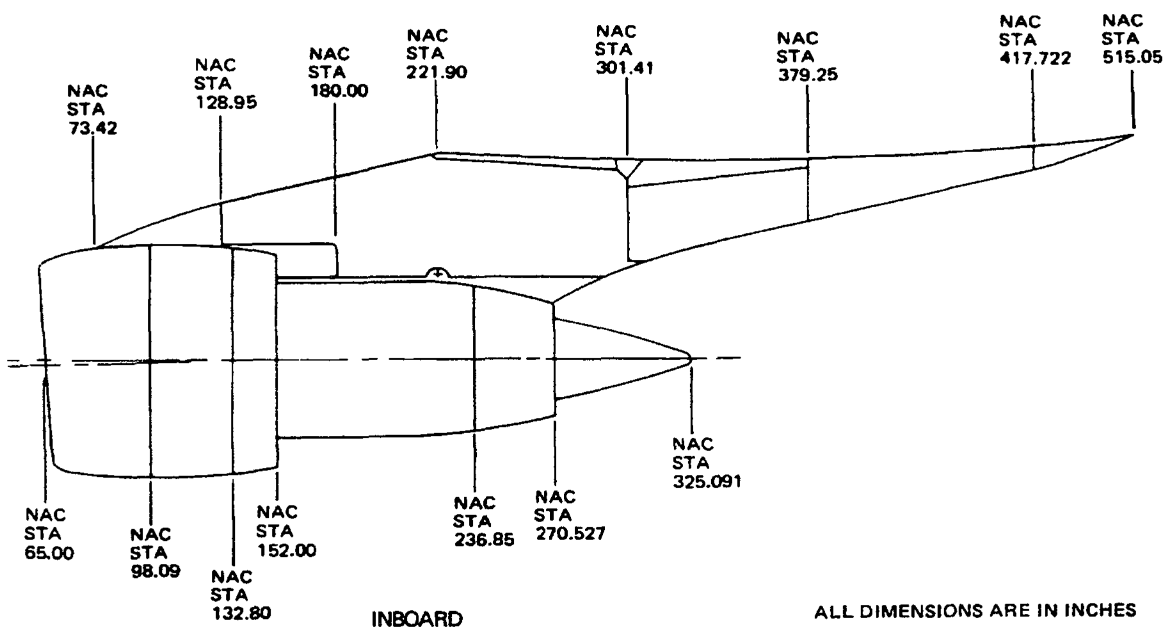


ALL DIMENSIONS ARE IN INCHES

747–100, –200

Engine and Nacelle Station Diagram
Figure 6





ALL DIMENSIONS ARE IN INCHES

747SP

Inboard Nacelle and Pylon Station Diagram
Figure 7

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CHAPTER

23

COMMUNICATIONS

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AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
HF Antennas	Clamp nut on antenna connector	23-10-47 Fig. 1	
VHF Antennas	Corrosion between antennas and fuselage skin	23-10-47 Fig. 2	
SATCOM Antenna	Corrosion between antennas and fuselage skin	23-20-47 Fig. 1	SB 23-2254

Specific Corrosion Problems - Communications
Figure 1

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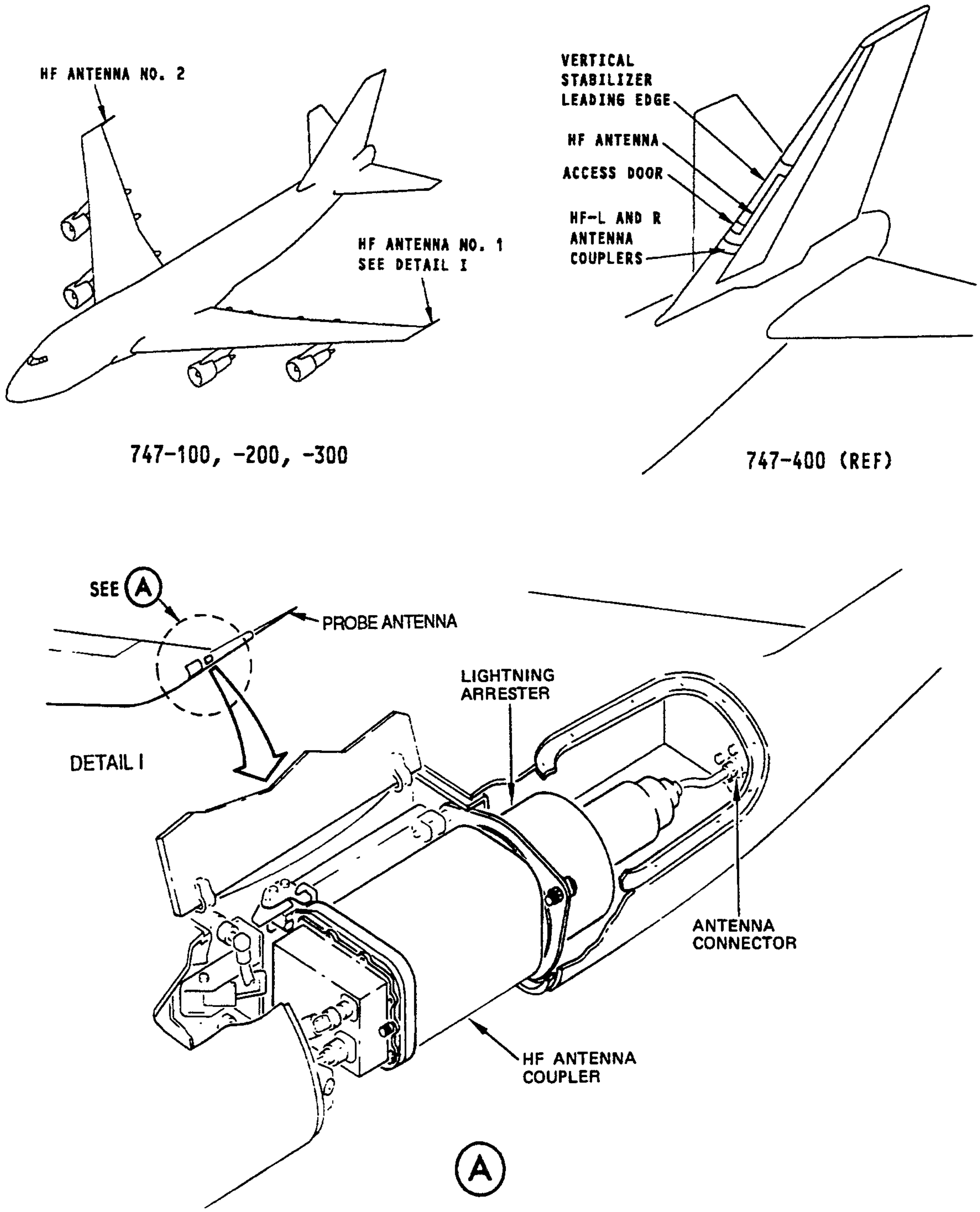
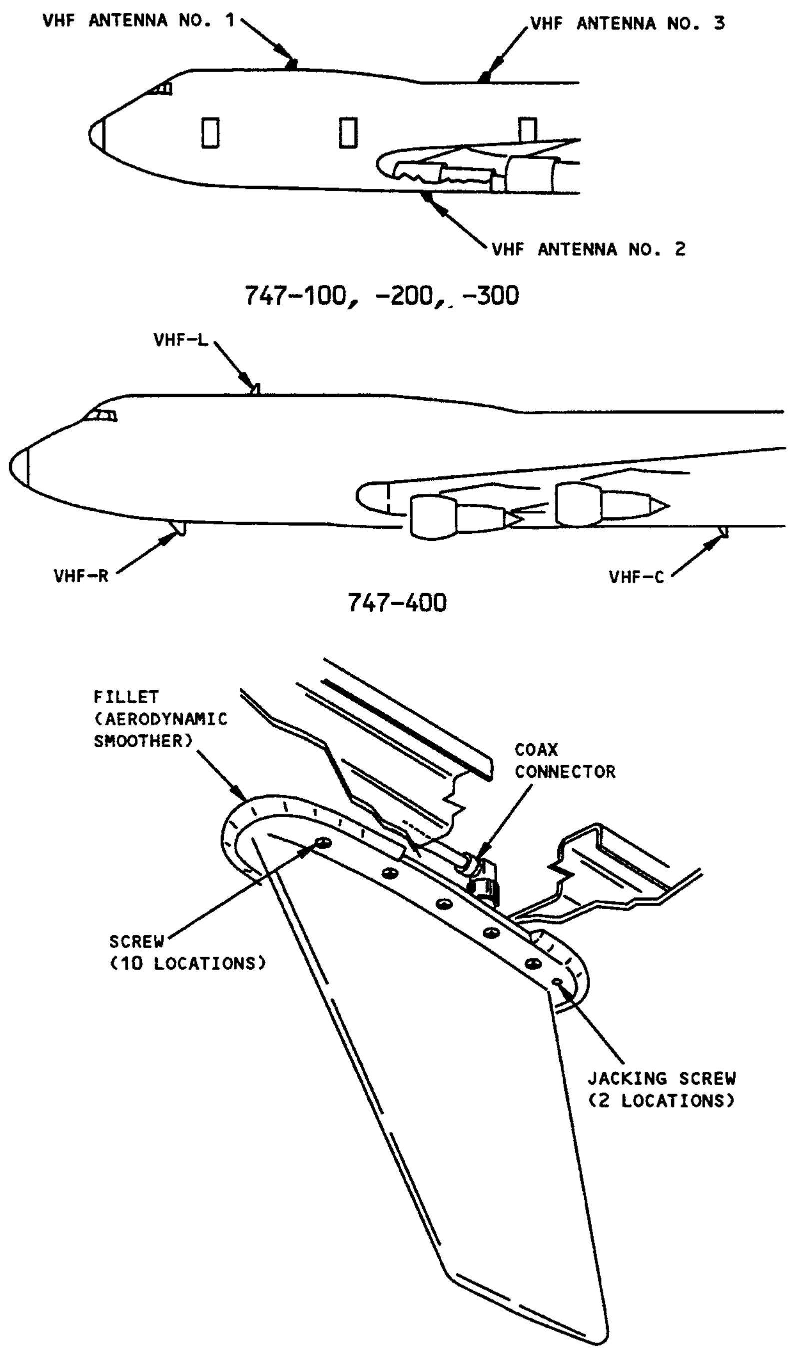


HF Antennas
Figure 1

1. General

A. For improved corrosion protection, Lactate is applied in production to the threads of the clamp nut on the antenna connector.



VHF Antenna Installation
Figure 2

1. General

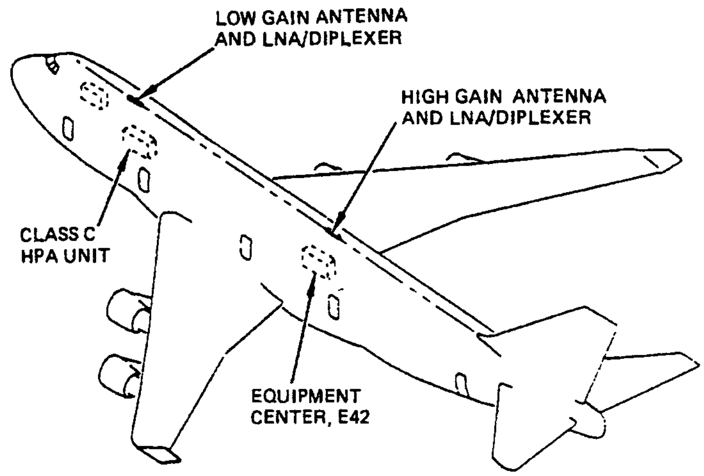
A. Corrosion can occur between the exterior-mounted VHF antennas and the fuselage skin.

2. Corrosion Prevention

A. Regularly remove the antennas and examine the mating surfaces for corrosion.

B. Improved Corrosion Protection

(1) At line number 937, PRR 82473 changed the procedure that installs these antennas on the exterior of the airplane. BMS 10-79, Type III primer and BMS 3-27 corrosion preventive compound are applied to the skin under the antennas, and the fasteners are cadmium-plated stainless steel.



Aviation Satellite Communication System
Figure 1

1. General

A. The aviation satellite communication (SATCOM) system gives data and voice links between the airplane and the ground. The signals go through geostationary satellites. Not all 747 airplanes have this system.

B. Corrosion can occur between the SATCOM antennas and the fuselage skin.

2. Corrosion Prevention

A. Regularly remove the SATCOM antennas and examine the mating surfaces for corrosion.

B. Improved Corrosion Protection

(1) At line No. 937, PRR 82473 changed the procedure that installs this antenna on the exterior of the airplane. BMS 10-79, Type III primer and BMS 3-27 corrosion preventive compound are applied to the skin under the low-gain antenna, and the fasteners are cadmium-plated stainless steel. (The SATCOM high-gain antenna installation is not changed by this production change.)

(2) Some installations of the SATCOM high-gain antenna did not include protective finish or sealant. These and other changes can be made with SB 23-2254.

CHAPTER

25

EQUIPMENT AND FURNISHINGS

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AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Cargo Compartments	Main deck cargo system power drive unit wheels	25-50-47 Fig. 1	
Fairing-Mounted Escape Slide Compartment Door	Latch mechanisms, manifolds, couplings, fittings and lines	25-60-47 Fig. 1	
Escape Slide	Cool gas generator, tank and aspirator system	25-60-47 Fig. 2	
	Escape slide inflation system door-mounted coupling half		
	Door-mounted slide raft packboard and firing lanyards		
	Off-wing slide-gas generator trigger cable		SB 25-2501
	Escape slide packboard parachute cone fittings and other aluminum components		SB 25-2586
	Spring pins in manual actuation cable rod assembly		SL 25-133

Specific Corrosion Problems - Equipment/Furnishings
Figure 1

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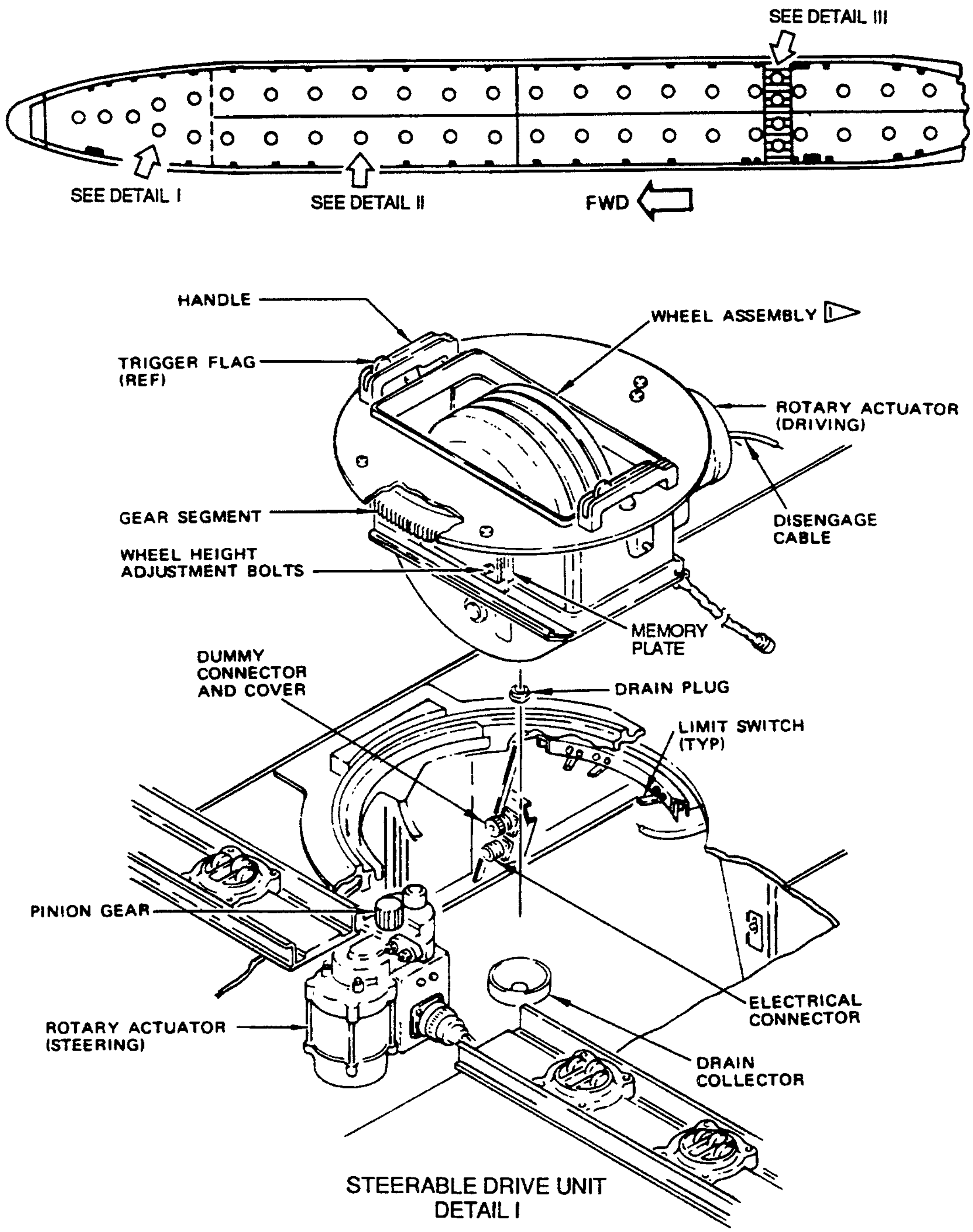
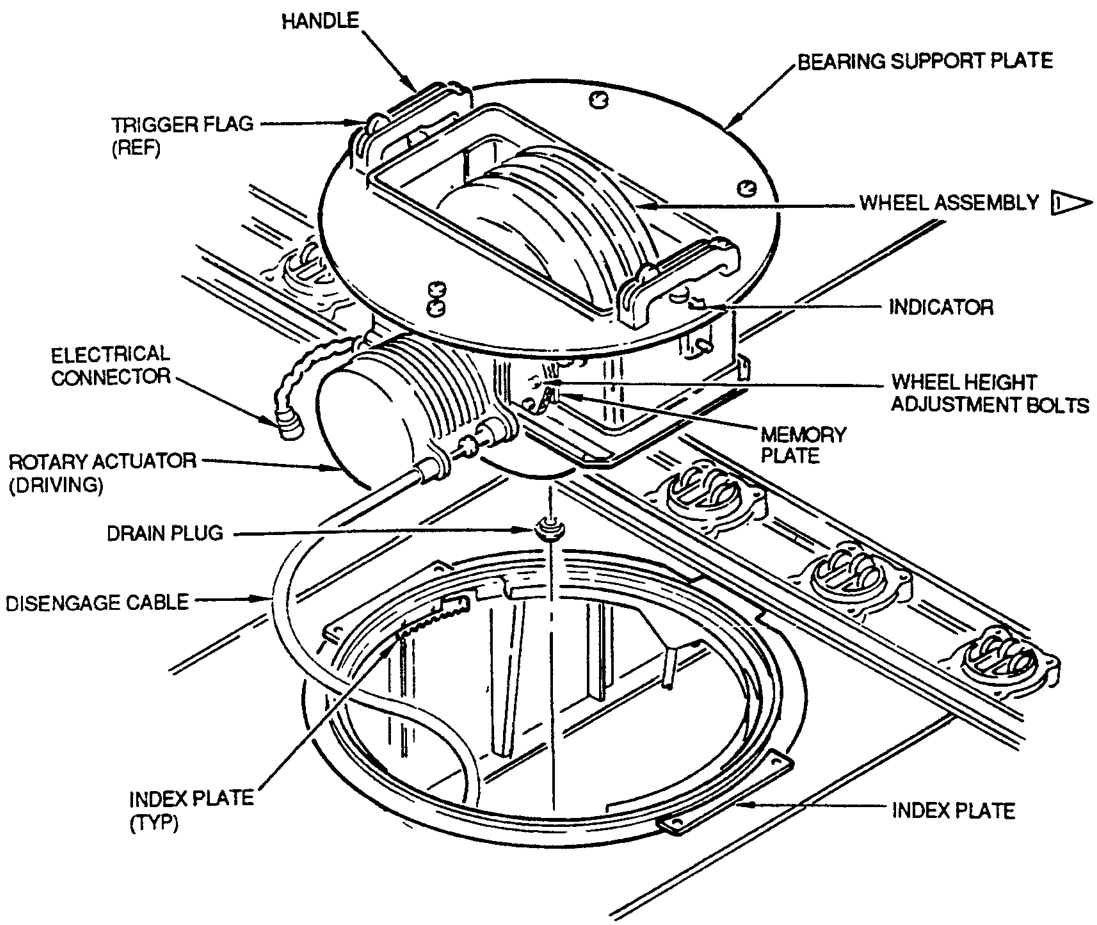
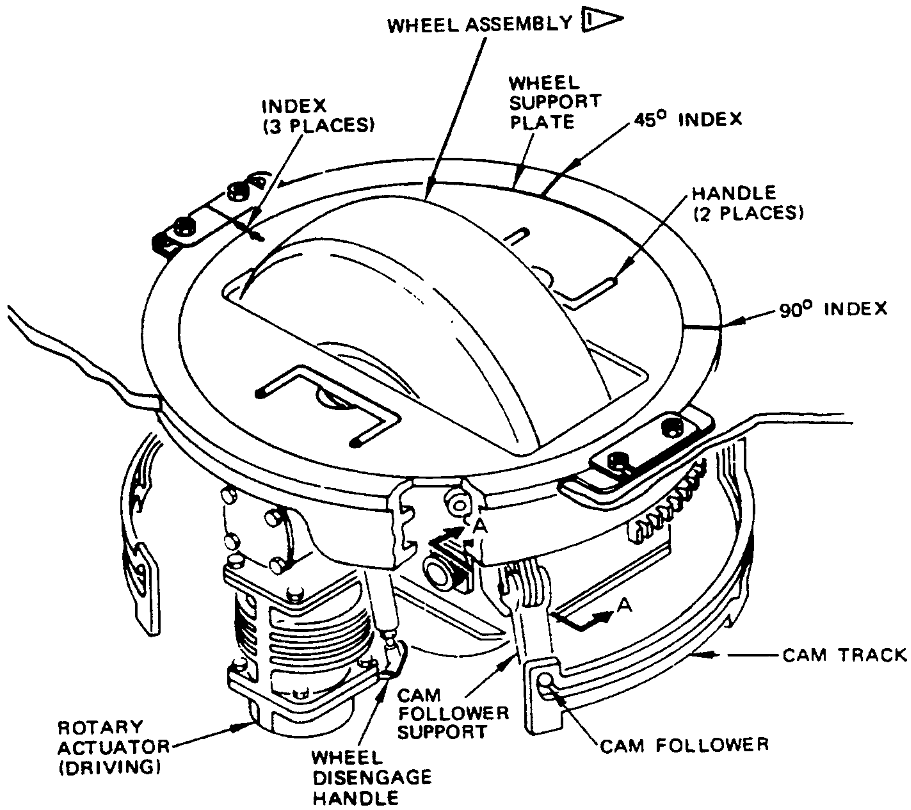


Main Deck Cargo System Power Drive Unit Installation
Figure 1 Sheet 1



NONSTEERABLE DRIVE UNIT
DETAIL II

Main Deck Cargo System Power Drive Unit Installation
Figure 1 Sheet 2



RETRACTABLE DRIVE UNIT
(AIRPLANES WITH SIDE CARGO DOOR)
DETAIL III

1 CORROSION CAN OCCUR ON THE AXLE OF THIS WHEEL ASSEMBLY

Main Deck Cargo System Power Drive Unit Installation
Figure 1 (Sheet 3)

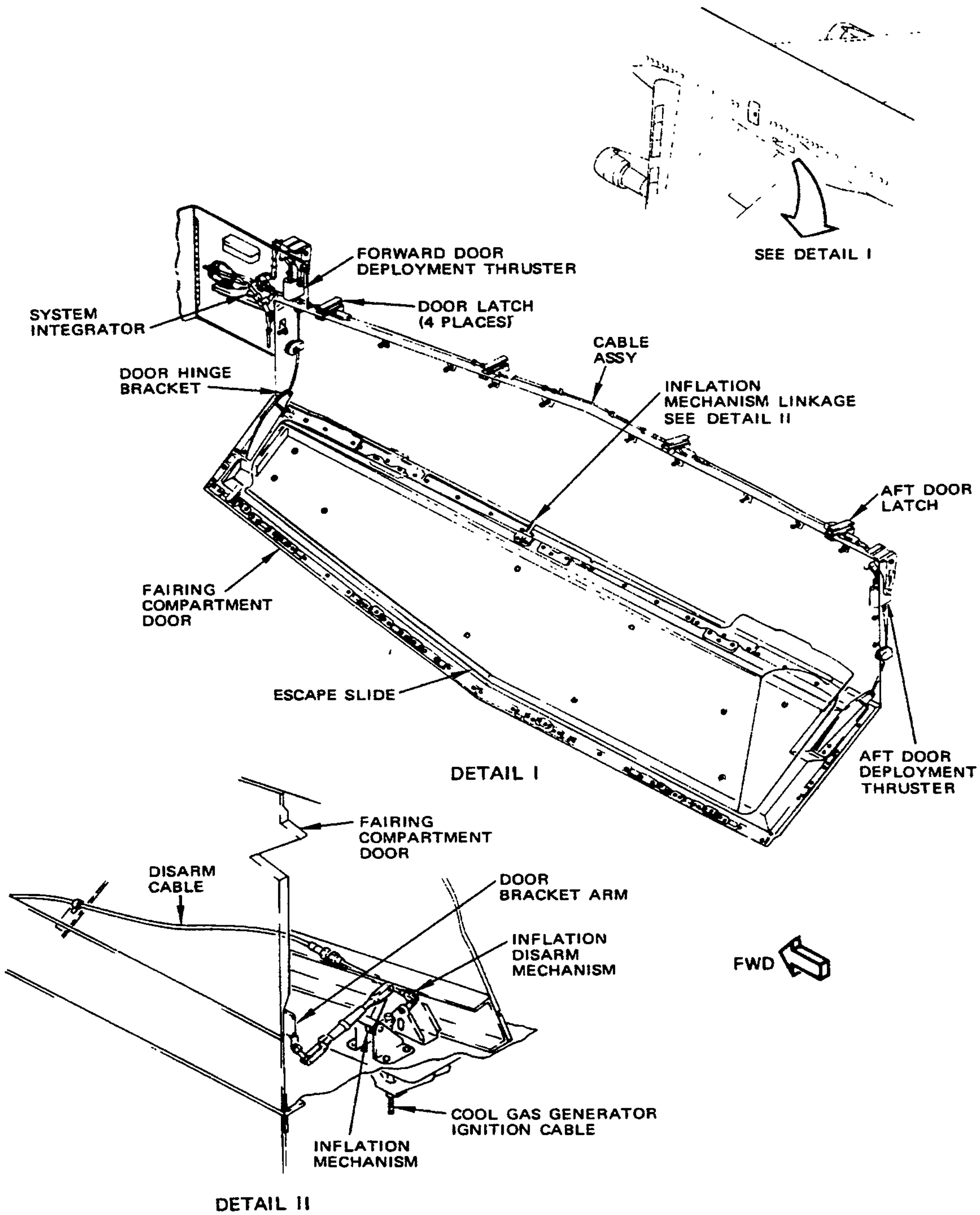
1. General

A. On freighters, the main deck cargo compartment has a power-driven conveyor system that moves cargo containers into and out of the airplane, or into locations on the deck for shipment. Power drive units in the floor move the cargo containers. Each power drive unit has a wheel assembly driven by a rotary actuator.

B. Corrosion can occur on the axle of the wheel assembly. The axle material is cadmium-plated carbon steel.

2. Corrosion Prevention

A. Regularly examine the wheel assemblies of the power drive units for corrosion. For wheel assemblies 4000162-series (60B60008-series), refer to Aircraft Braking Systems (V25500) Overhaul Manual 25-53-06 for details.



Fairing Mounted Escape Slide Compartment Door
Figure 1

1. General

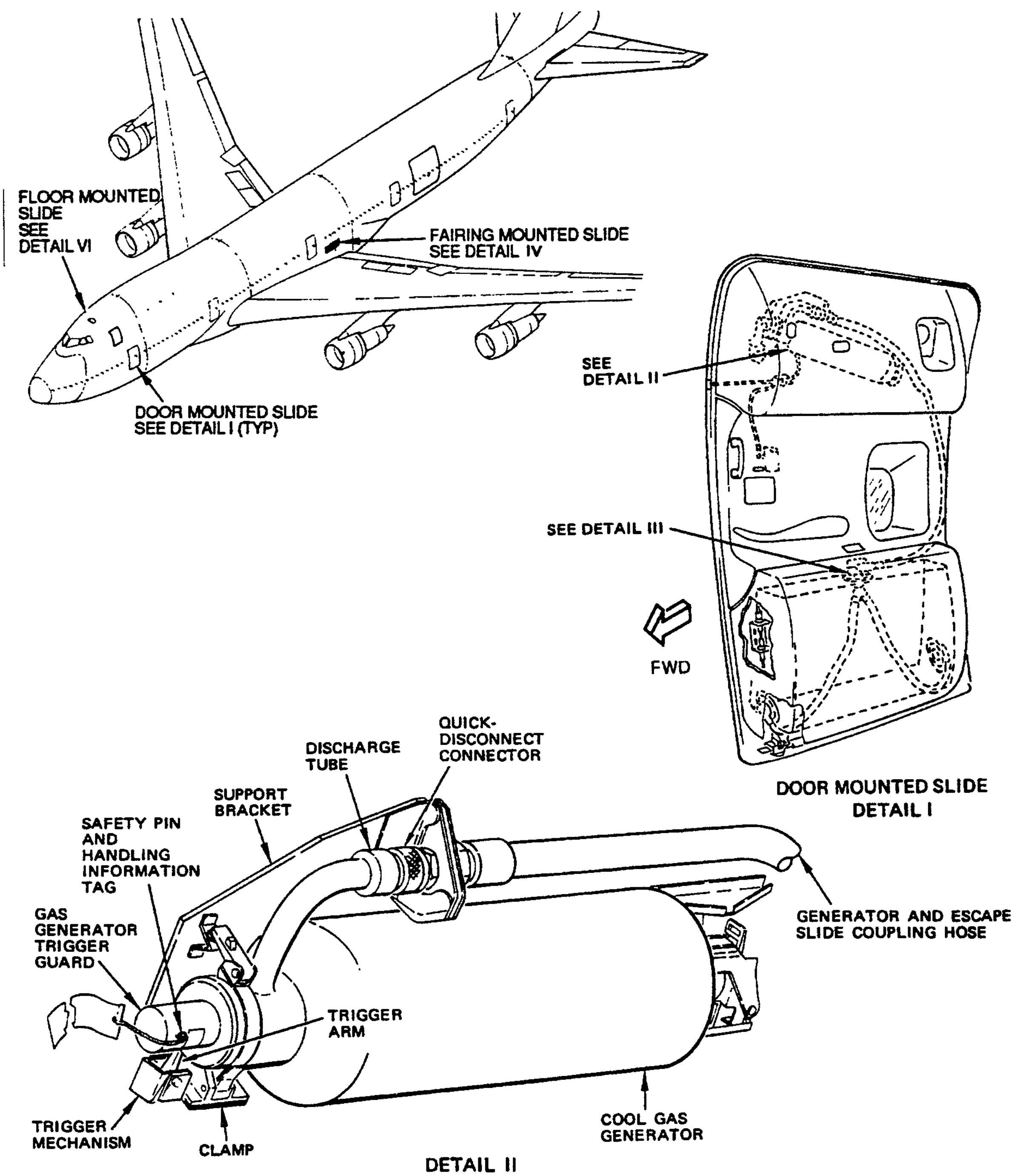
A. Emergency escape slide system components have been involved with corrosion problems. Various degrees of corrosion on the latch mechanism, manifolds, couplings, fittings and associated lines has been reported. It is possible that prolonged exposure to condensation may be a factor in the deterioration of these components since the installations are not readily accessible for inspection and maintenance.

2. Corrosion Prevention

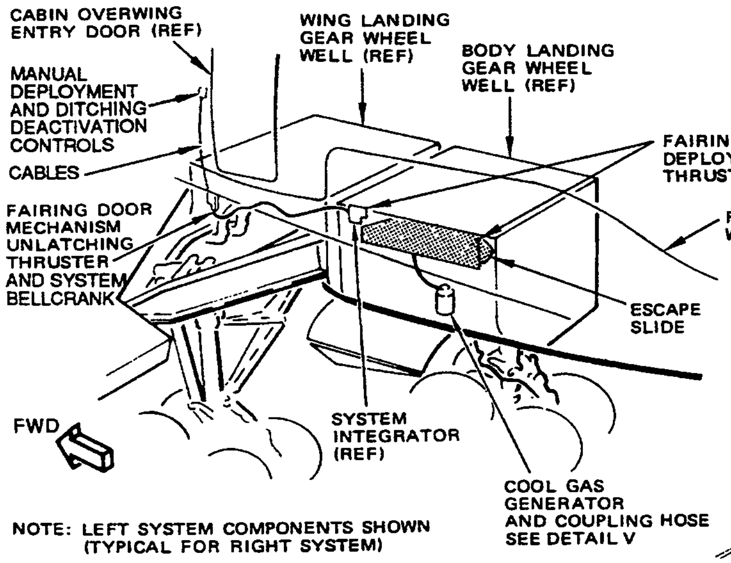
A. Off-wing escape slide compartment door components such as the latch integrator, latch mechanism and slide pack release mechanism are protected in production by the application of butter lube with Dow Corning 33 light consistency grease. However, prolonged exposure to condensation during operation has caused moderate corrosion to these components.

B. In normal operations, the escape slide compartment mechanisms are lubricated during maintenance checks on the escape systems. Where an airline has a history of corrosion in this area, more frequent lubrications should be performed in accordance with 12-21-14 of the Maintenance Manual.

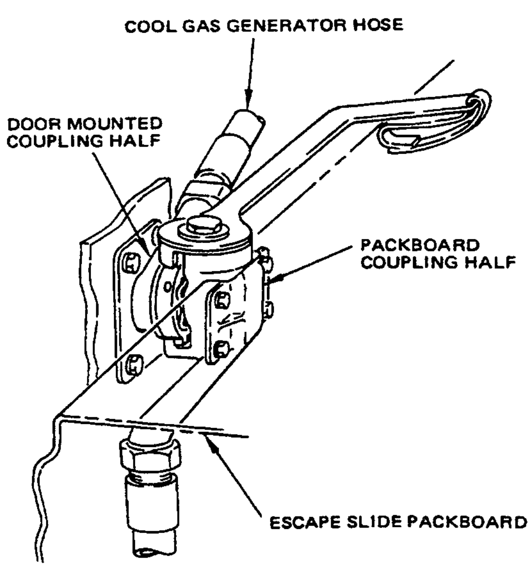
C. Refer to Structural Repair Manual for corrosion removal procedures.



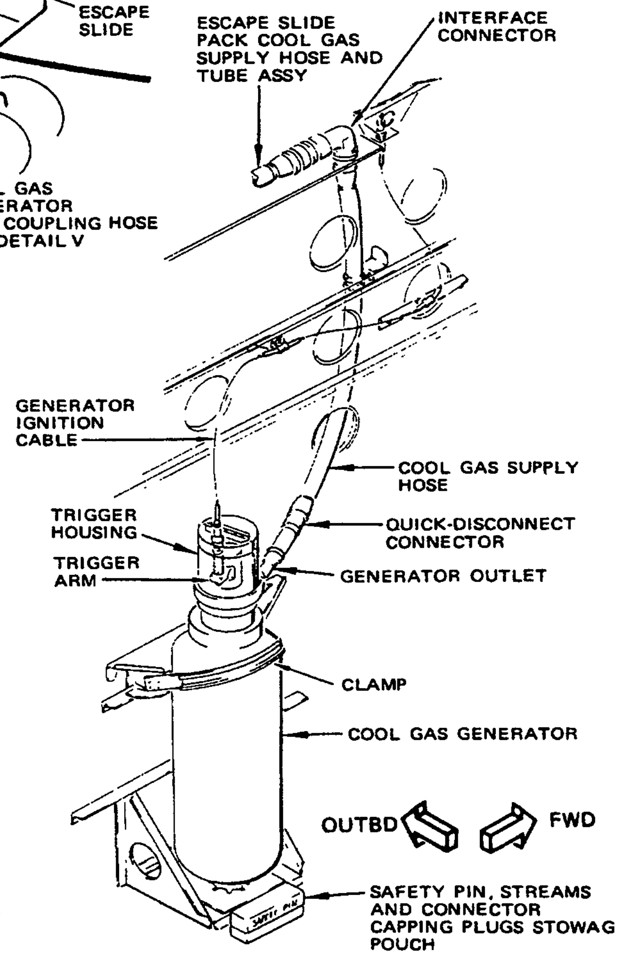
Escape Slides
Figure 2 (Sheet 1)



FAIRING MOUNTED SLIDE
DETAIL IV

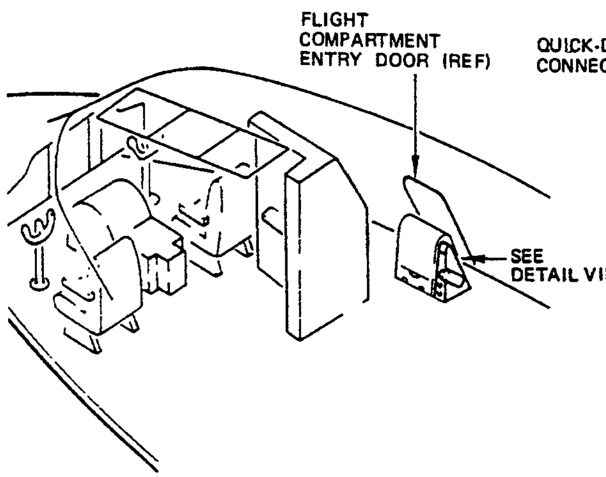


SLIDE INFLATION COUPLING
DETAIL III

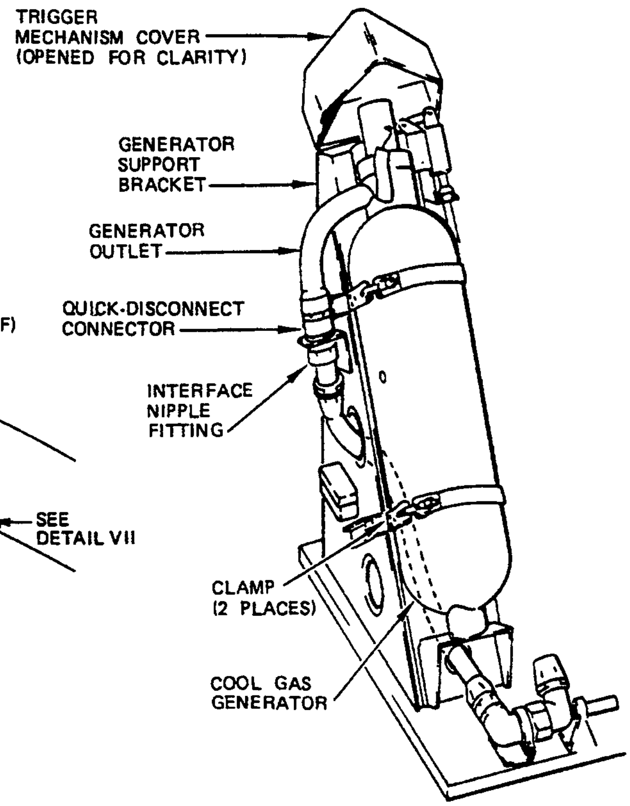


LEFT SIDE INSTALLATION SHOWN –
TYPICAL FOR RIGHT SIDE
DETAIL V

Escape Slides
Figure 2 (Sheet 2)



FLOOR MOUNTED SLIDE
DETAIL VI



DETAIL VII

Escape Slides
Figure 2 Sheet 1

1. General

A. Discharge of the cool gas generator during activation of the escape slide makes a black carbon-type residue which could be wet or dry. If this is not cleaned off, corrosion can occur on such surfaces as the cool gas generator bottle and outer wall under the steel hold-down strap, and aspirator system components.

B. Corrosion can occur within the cool gas generator tank on the inner parts exposed to freon residue.

C. Corrosion can occur on the door mounted coupling half on the escape slide inflation system.

D. On airplanes equipped with door mounted slide raft assemblies, corrosion and cable separation can occur on the packboard and firing lanyards. These lanyards if broken will prevent deployment and inflation of the slide raft in both automatic and manual modes. B.F. Goodrich SB 25-051 gives inspection and replacement procedures for these lanyards.

E. Corrosion can occur on the off-wing slide gas generator trigger cable. SB 25-2501 gives cable inspection and replacement procedures.

F. Much corrosion can occur on the escape slide packboard parachute cone fittings and other aluminum components of the slide packs. SB 25-2586 gives inspection procedures or the slide packs. SB 25-2586 gives inspection procedures for the slide packs. Corrosion could interfere with slide deployment.

G. Stress corrosion can occur in 420 CRES spring pins MS16562-221 which are in the rod assembly of the lower end of the manual actuation cable.

2. Corrosion Prevention

A. Exterior parts of the escape slide system should be cleaned in accordance with MM 25-65-10 as soon as practical after cool gas generator discharge. Locations of various components are shown in Fig. 2.

B. Examine packboard and firing lanyards of the door mounted slide raft per instructions in B.F. Goodrich SB 25-051.

C. Refer to Structural Repair Manual for corrosion removal procedures.

D. If you find corrosion on the 420 CRES spring pins MS16562-221 in the manual actuation cable rod assembly, replace the pins with 302 CRES pins MS51923-288, as announced in SL 25-133.

E. Improved Corrosion Protection

(1) Cool gas generator tanks supplied by the vendor after January 1971 have the protection of BMS 14-4 Type 1 (Sermetel W) coating on interior surfaces. These tanks are green, and indicate that the tanks can be cleaned up to 30 days after the system was fired.

(2) At line number 281, a production change replaced 65B50066-2 aluminum coupling halves with 65B50066-4 CRES coupling halves. The CRES coupling halves can be installed on other airplanes.

(3) At line number 500, PRR 79614K replaced the trigger cable on the off-wing escape slide gas generator. This change can be made on other airplanes with SB 25-2501.

(4) At line number 527, PRR 79567 made changes to cone fittings and other aluminum components of the slide jacks.

(5) Because of the stress corrosion problem with the 402 CRES spring pins MS16562-221 in the manual actuation cable rods, 302 CRES pins MS51923-288 are now preferred. SL 25-133 gives details.

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CHAPTER

27

FLIGHT CONTROLS

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AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Flight Controls	Control cables	27-00-47 Fig. 2	
Aileron Controls	Pin and bolt assemblies with inner and outer components	27-10-47 Fig. 1	SB 27-2091
	Outboard aileron lockout actuator rodends	27-10-47 Fig. 1	
Rudder Controls	Rudder actuator piston rods	27-20-47 Fig. 1	
Elevator Controls	Power control package	27-30-47 Fig. 1	
	Elevator control rods, PCP input rods, aft quadrant tube assembly		SB 27A2253
Flap Controls	Trailing edge flap fairing drive link pivot fittings	27-50-47 Fig. 1	
	Aft flap drive geneva cam systembolt	27-50-47 Fig. 1	
	Main flap carriage aft bogie support pins	27-50-47 Fig. 1	
Spoiler Controls	Three-position ground spoiler actuator rod ends	27-60-47 Fig. 1	SB 27-2187
	Flight and two-position ground spoiler actuator rod ends		SB 27-2190
	Differential mechanism bearings H11 steel mounting bolts		
Variable Camber Flaps	Spline and torque tube faying surfaces	27-80-47 Fig. 1	
	Variable camber flap folding nose links		

Specific Corrosion Problems - Flight Controls
Figure 1

1. General

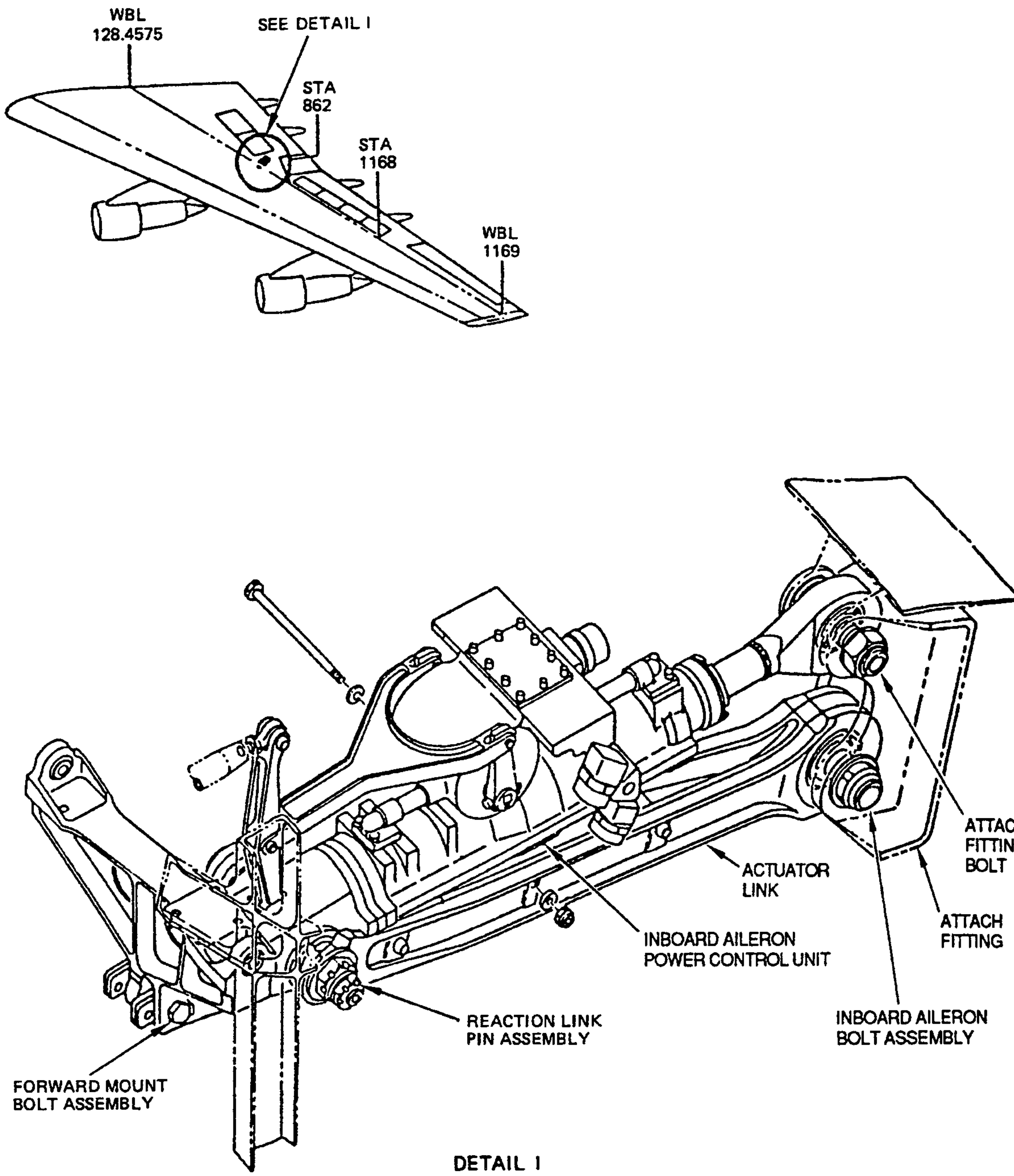
A. Flight control cables are made from thin strands of tinned carbon steel. Cables are protected by a thin film of grease. Corrosion has been reported where the grease film has deteriorated and the cables have been subjected to moisture.

2. Corrosion Prevention

A. Grease should be wiped off with a dry, lint-free cloth and periodically examined to preclude or detect early stages of corrosion.

B. Apply a thin film of grease over the length of the cable as described in 12-21-05 of the Maintenance Manual after the cable has been checked.

C. Where corrosion has already started, refer to Structural Repair Manual.



Aileron Linkage and Controls
Figure 1

1. General

A. The flight control system controls the position and movement of the ailerons and tabs and includes the control wheels, cables, boosters, linkages, and control surfaces.

B. Stress corrosion can break the inboard aileron reaction link pin. This pin is an assembly of an inner pin and an outer pin, bonded together. Preload in the inner pin can cause stress corrosion which can cause cracks to start in the threads.

C. Corrosion could also be the cause of a broken inboard aileron attach bolt. This bolt is an assembly of inner and outer bolts, almost the same as the reaction link pin. Thus, the same cause could be applicable.

D. Corrosion can occur on the rod end of the outboard aileron lockout actuator.

2. Corrosion Prevention

A. Make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. Missing fasteners white powdery or any discolored deposits, are evidences of the existence of corrosion which should alert operators that some corrective action is required. A corrosion prevention program should be initiated to prevent the accumulation of corrosive products in order to minimize the occurrence of corrosion.

B. Following cleaning of suspected areas, a thorough inspection as described in Volume 1, 20-20-00 is effective to ensure that protective finishes provided during manufacture remain intact.

C. For minor corrosion, to minimize the downtime of the airplane, the corrosion products should be cleaned off, followed by the application of a corrosion inhibiting compound into the affected area to retard the corrosion process (Ref Volume 1, 20-60-00). The finish system should be restored at the first opportunity consistent with the maintenance schedule.

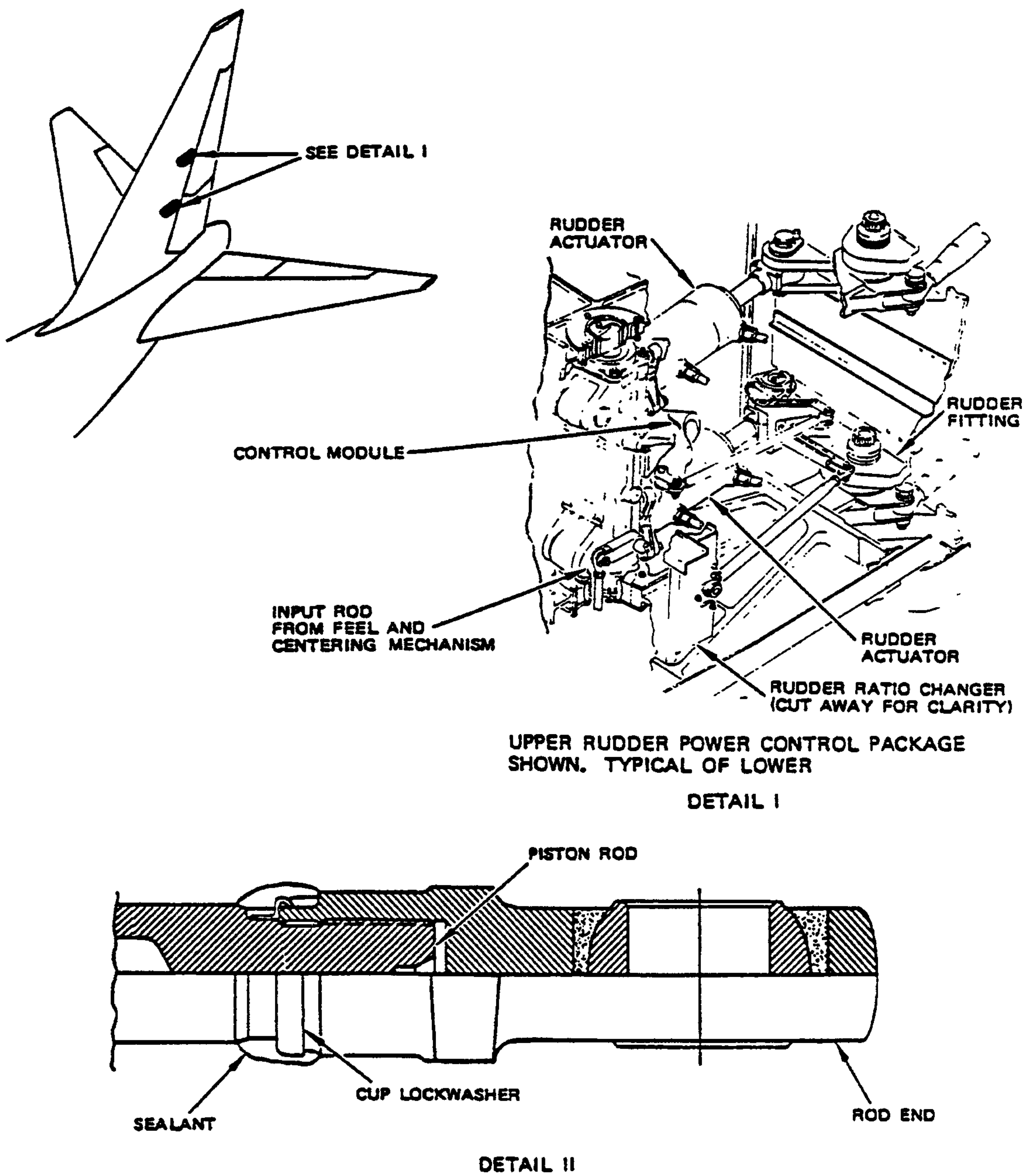
D. Frequency of Application

(1) Periodic inspection is required to areas identified as susceptible to corrosion and should be consistent to the schedules specified in the Maintenance Planning Document. Operators must be aware of reported problems and areas of occurrences.

(2) Periodic application of BMS 3-23 compounds is necessary to areas identified and should be consistent to the schedule specified in the Maintenance Planning Document.

E. Improved Corrosion Protection

(1) SB 27-2091 gives inspection procedures and decreased torques for the aileron power control package mount bolt and the reaction link pin. The new torques will decrease the preload that could cause stress corrosion.



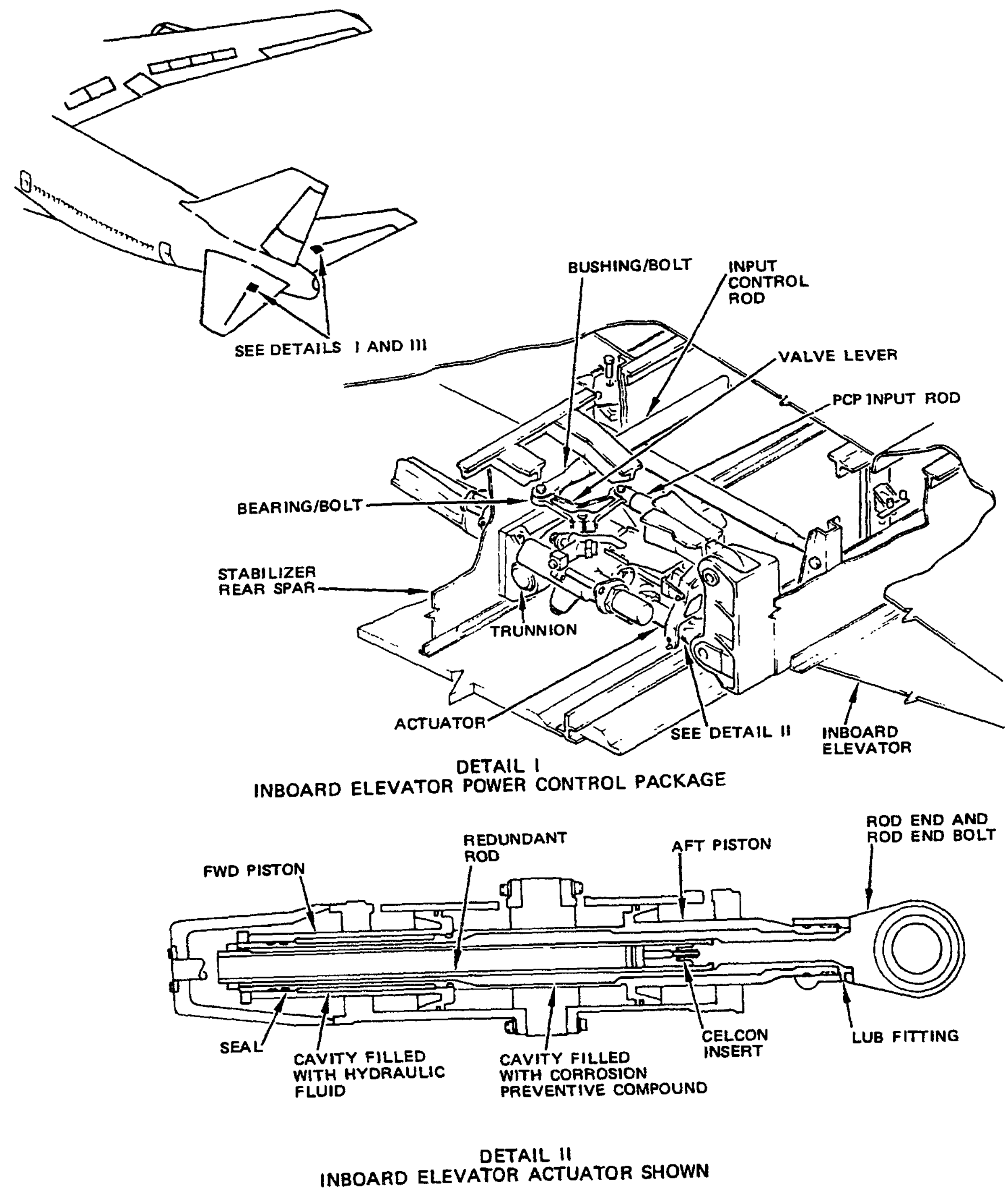
Rudder Controls
Figure 1

1. General

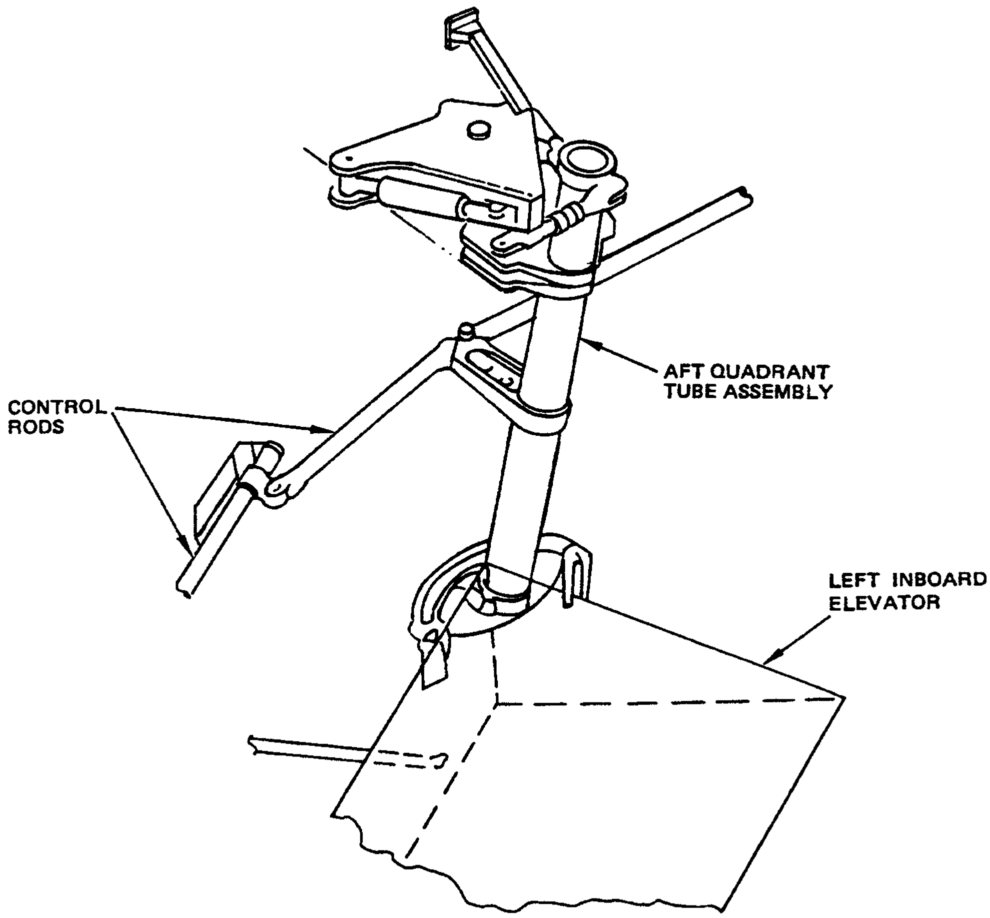
A. Stress corrosion cracking has been reported on the rudder actuator piston rods on 747 SP airplanes. This is attributed to hydrogen embrittlement, localized surface irregularities and stress corrosion. Production changes were incorporated on cum line number 329 and initiated at cum line number 367. Parker Hannifin Corporation Service Bulletin 27-11 (PSD-290) provides rework procedures for actuators not modified in production.

2. Corrosion Prevention

A. Incorporation of Parker Hannifin Corporation SB 27-11 (PSD-290) on 747SP airplanes cum line numbers 1 through 331 except 329 will reduce the probability of corrosion occurring on the rudder actuator piston rod.



Elevator Controls
Figure 1



DETAIL III

Elevator Controls
Figure 2

1. General

A. Corrosion has been reported on the elevator power control package actuator. This is attributed to moisture entrapment in the actuator aft piston cavity and is associated with internal surfaces not operating in hydraulic fluid. Production changes have been initiated in two phases to provide improved corrosion protection. Phase I applies to airplanes line number 339 thru 406, and includes the application of primer, grease and Skydrol lube. Phase II applies to airplanes line numbers 407 and on, and includes material changes of components to CRES in addition to the application of dry lube and grease. A vendor service bulletin, Bertea Corporation 93600-27-56, provides retrofit and rework instructions.

B. Extensive corrosion has been reported at the mating surface of the inner and outer tubes of the elevator control rods. See Detail III. In some cases the rods have developed cracks. A production improvement to the control rods involving a change in sealant was introduced at line number 636. Corrosion inspection and replacement procedures for the control rods as well as the elevator Power Control Package (PCP) input rods and the elevator aft quadrant tube assembly were the subject of SB 27A2253.

2. Corrosion Prevention

A. Inspect the inboard elevator power control package actuator for evidence of corrosion and incorporate Bertea Corporation Service Bulletin 93600-27-56 on those airplanes not modified in production.

B. Where corrosion has already started, refer to Bertea Corporation Service Bulletin 93600-27-56.

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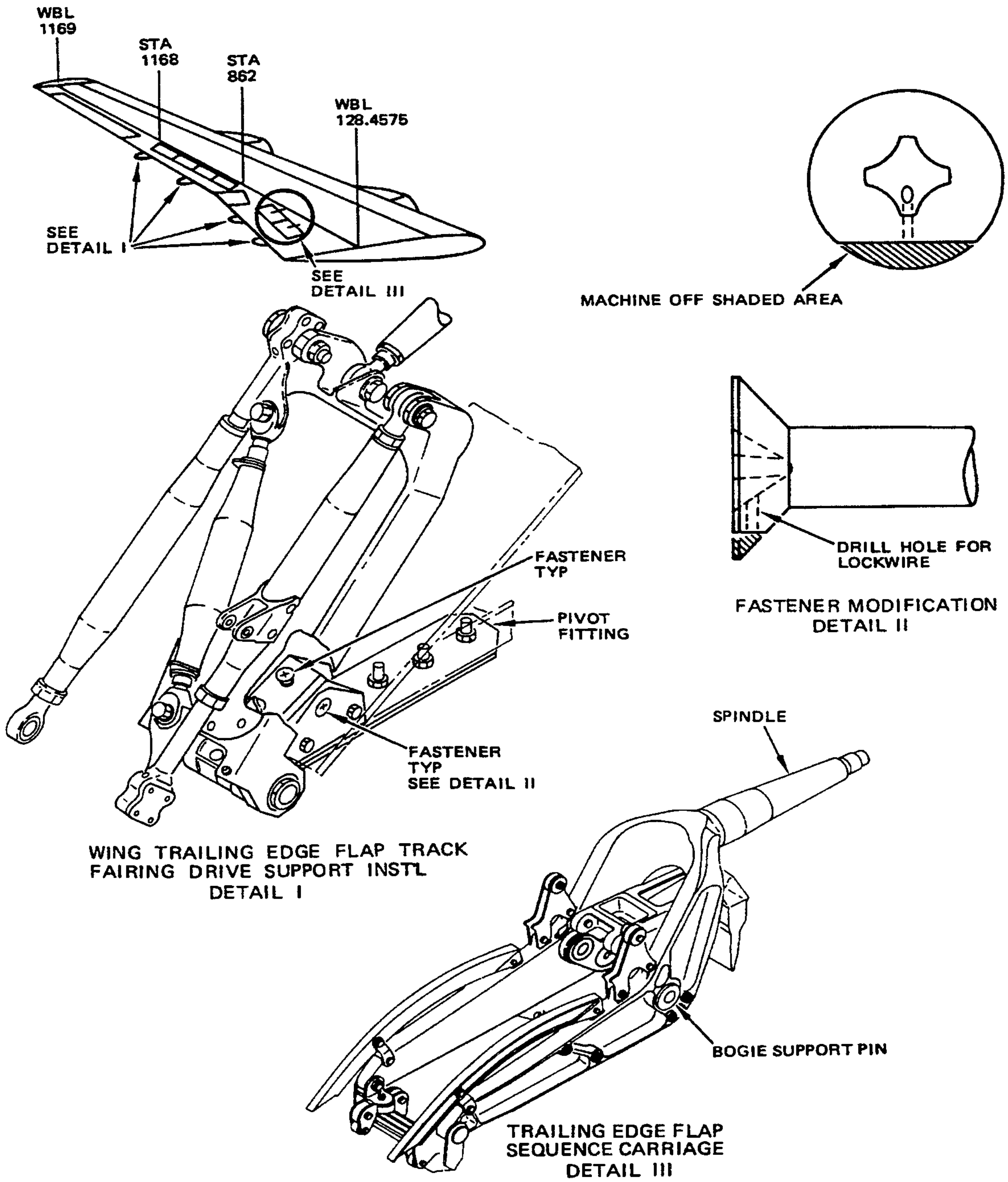

Flap Controls
Figure 1

1. General

   A. Corrosion can occur on the trailing edge flap fairing drive link pivot fittings on 747-200 airplanes. This includes airplanes that have SB 27-2060 incorporated. Loosening of the fitting attach fasteners causes relative motion between track and fitting that destroys the corrosion protection provided by primer and protective finishes and results in galvanic corrosion and cracking. Airplanes line numbers 344, 345, 347 and on (inboard flap tracks) and line numbers 335 and on (outboard flap tracks) have tighter fit fasteners to prevent fastener loosening and corrosion.

   B. Corrosion and pitting also can occur on the spindle under the sleeve of trailing edge sequence carriage assembly (Detail III).

   C. Stress corrosion can occur on the main flap carriage aft bogie support pin if the mating nut is not correctly tightened.

   D. Stress corrosion can break 65B15652-5 bolts in the geneva cam system of the aft flap drive.

   E. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

   A. Remove and examine the trailing edge flap fairing drive link pivot fittings at the next suitable scheduled maintenance period for airplanes not modified in production.

   B. Where corrosion has already started, refer to Structural Repair Manual.

   C. For reinstallation, the fittings, shims, nutplates and fasteners must be installed with wet primer or wet sealant (BMS 5-79 or BMS 5-95) as follows:

      (1) Check the self-locking feature for compliance with the locking torque limits per Maintenance Manual 20-51-01. Replace the nutplates if not in compliance.

      (2) (Check the length of the bolts to make sure they protrude through the nuts.

      (3) Make sure bolt and nut threads are free of grease and install the bolts with wet epoxy primer.

      (4) Torque the 5/16 bolts within 125 to 155 inch-pounds, the 3/8 bolts within 170 to 210 inch-pounds and the 7/16 bolts within 475 to 525 inch-pounds.

D. To prevent loosening of fasteners and resulting corrosion, it is recommended that the fasteners be replaced with equivalent fasteners that have drilled heads to permit lockwiring of the heads for secondary retention. Fasteners with 100 degree heads and Phillips recesses may be modified as shown in Detail II to provide for attachment of the lockwire. BACB30DL fasteners which do not have a Phillips recess may be replaced with BACB30LU fasteners.

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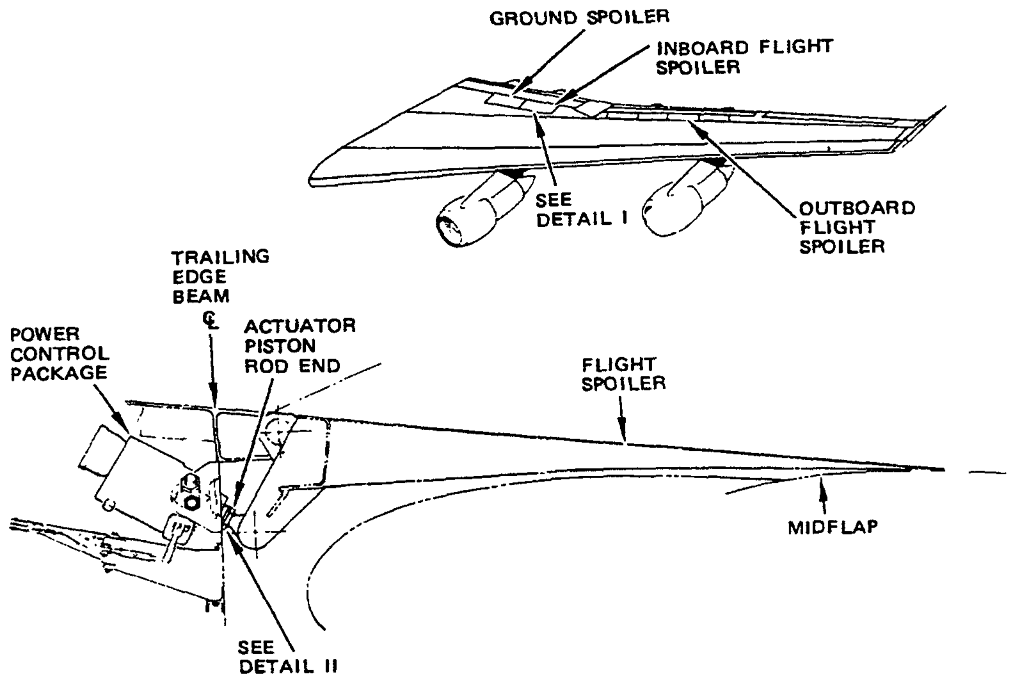
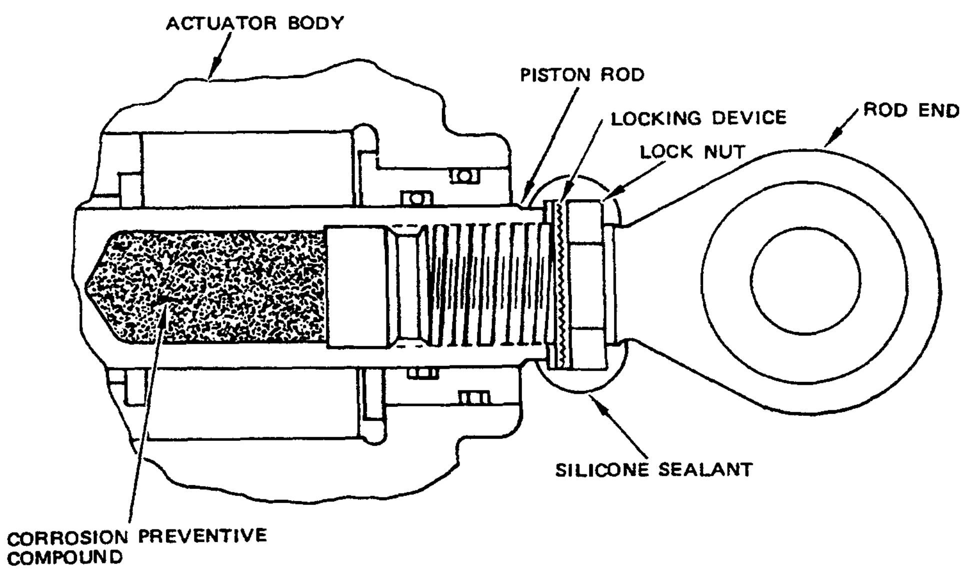


DETAIL I
TYP-FLIGHT AND GROUND SPOILER



DETAIL II
ACTUATOR ROD END INSTL

Spoiler Controls
Figure 1 (Sheet 1)

1. General

A. Corrosion can occur on the three-position ground spoiler actuator rod ends. Moisture gets into the rod end cavity and loosens the rod end checknuts.

B. Corrosion can occur on the flight and two-position ground spoiler actuator rod ends. Moisture gets into the rod end cavity and loosens the rod end checknuts.

C. Corrosion can occur on bearings in the spoiler differential mechanism.

D. Stress corrosion cracks can occur on spoiler actuator mounting bolts made of H11 steel. This can break the bolts.

2. Corrosion Prevention

A. Examine the rod end and actuator piston rod bores for corrosion and for loose rod end checknuts.

B. If you find corrosion on the three-position ground spoiler actuator rod end, refer to SB 27-2187.

C. If you find corrosion on the flight and two-position spoiler actuator rod ends, refer to SB 27-2190.

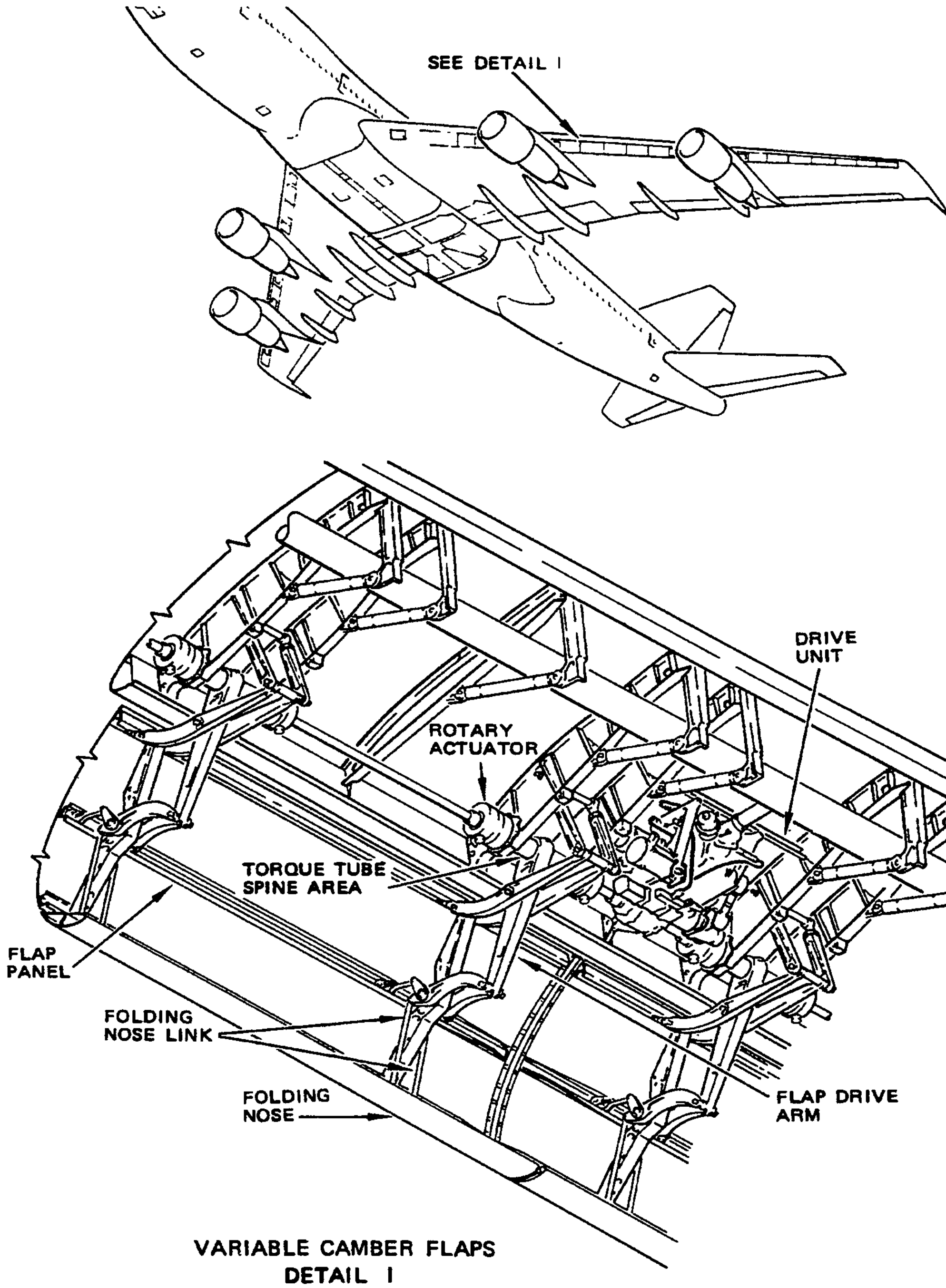
D. Replace the spoiler mounting bolts if they are BACB30MT-series (H11 steel). Use BACB30US-series bolts, which are made of a nickel alloy.

E. Improved Corrosion Protection

(1) At line number 339, PRR 79226 applied primer and corrosion preventive compound or grease, and sealant to parts of the piston and rod end on the three-position ground spoiler actuator. These changes can be incorporated on earlier airplanes with SB 32-2187.

(2) At line numbers 341, 353 and on, PRR 79226-1 applied primer and corrosion preventive compound or grease, and sealant to parts of the piston and rod end on the flight and two-position ground spoiler actuators. These changes can be incorporated on other airplanes with SB 27-2190.

(3) At line number 798, PRR 81327 changed 56 bearings to 440C CRES in the spoiler differential mechanism.



Variable Camber Flaps
Figure 1 (Sheet 1)

1. General

A. Volume of the secondary control of airplane flight attitude is provided by the lift devices located on each wing.

B. The lift devices consists of 2 triple slotted trailing edge flaps and 13 leading edge flaps. The ten outboard leading edge flaps are variable camber flaps with camber being changed by mechanical linkage as the flap is lowered. The remaining leading edge flaps are Krueger flaps with constant camber but with a folding nose which will extend as the flaps are extended.

C. On 747-100 thru line number 93 the wing leading edge variable camber flap drive arms are attached to a torque tube by means of splines and a single bolt. On later airplanes, the arm and torque tube are fabricated as one integral part. Corrosion is suspected on the faying spline surfaces of the arms and torque tubes of the early configuration.

D. Stress corrosion cracking of the variable camber flap folding nose links has been reported. Cracks occurred at the end of the link which attached to the folding nose. The configuration affected is installed on 747-200 airplanes line numbers 88 thru 243. A production change was initiated at line number 244 which changed the link material from 7075-T6 to 7075-T73 which is less susceptible to stress corrosion.

2. Corrosion Prevention

A. For corrosion prevention in the variable camber flap drive arm and torque tube spline areas on affected airplanes periodic applications of water displacing corrosion inhibiting compound should be made in the spline area. Loosening the attachment bolt during application will improve penetration of the inhibitor.

NOTE: If the arm and torque are disassembled they should be reassembled with a liberal amount of MIL-C-11796, class 3, corrosion preventive compound on the splines after they have been thoroughly cleaned. After application of the MIL-C-11796 inhibitor has been made, periodic application of the penetrating corrosion inhibitor may be discontinued.

B. For 747-200 airplanes line numbers 88 thru 243 details of inspection intervals for the variable camber flap folding nose links are given in SB 27-2120. Criteria for the replacement of cracked links are also given in the service bulletin.

NOTE: If link ends are not found cracked corrosion protection may be provided by the application of water displacing corrosion inhibiting compound. Protect bearings during inhibitor application.

C. For details of application of water displacing corrosion inhibiting compound, refer to Volume 1, 20-60-00.

CHAPTER

28

FUEL

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AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Distribution	Corrosion of switches in the pressure fueling valve control unit.	28-20-47 Fig. 1	
	Corrosion of disc closure spring in the fuel boost pump suction bypass check valve	28-20-47 Fig. 2	

Specific Corrosion Problems - Fuel
Figure 1

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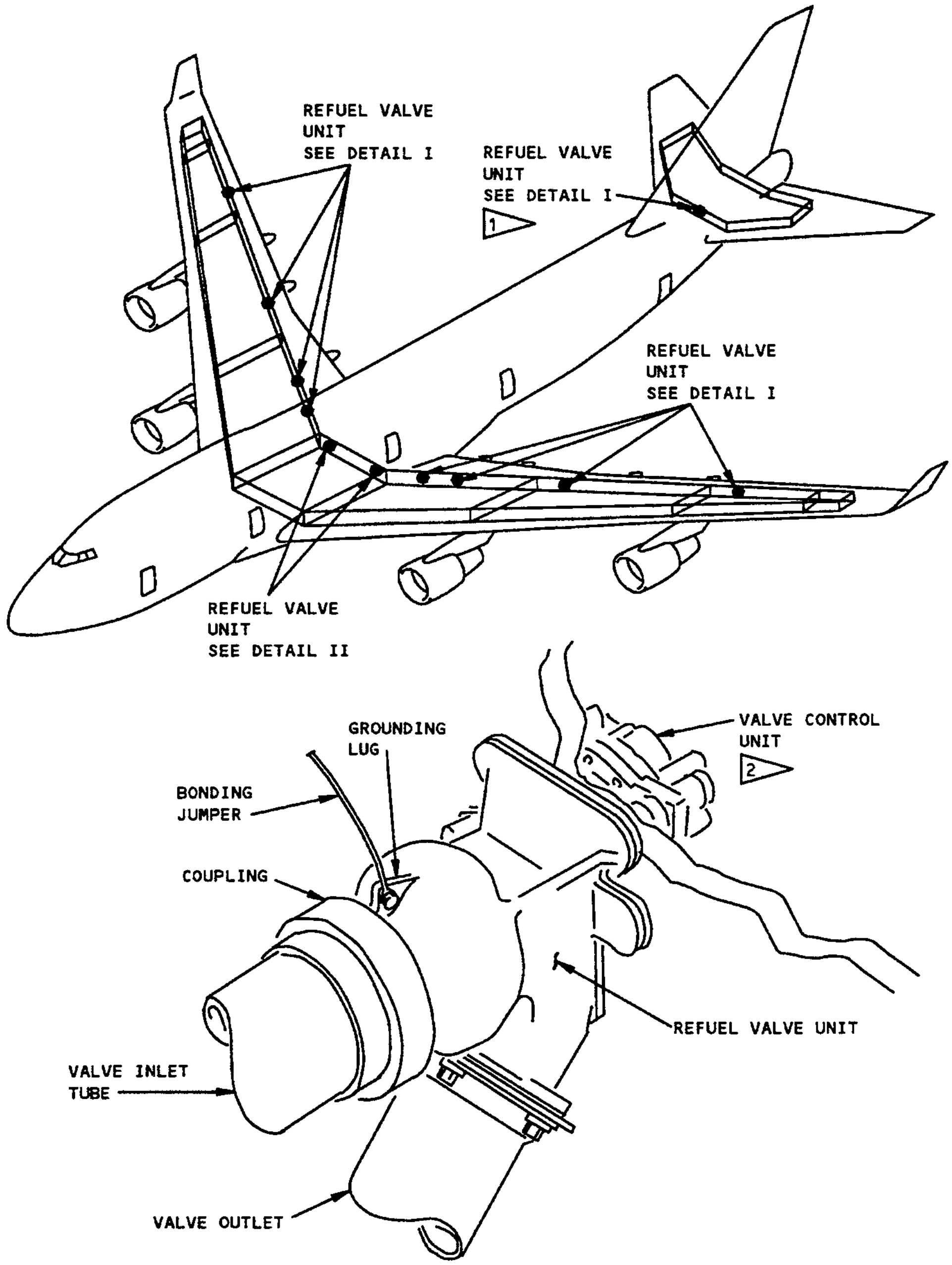
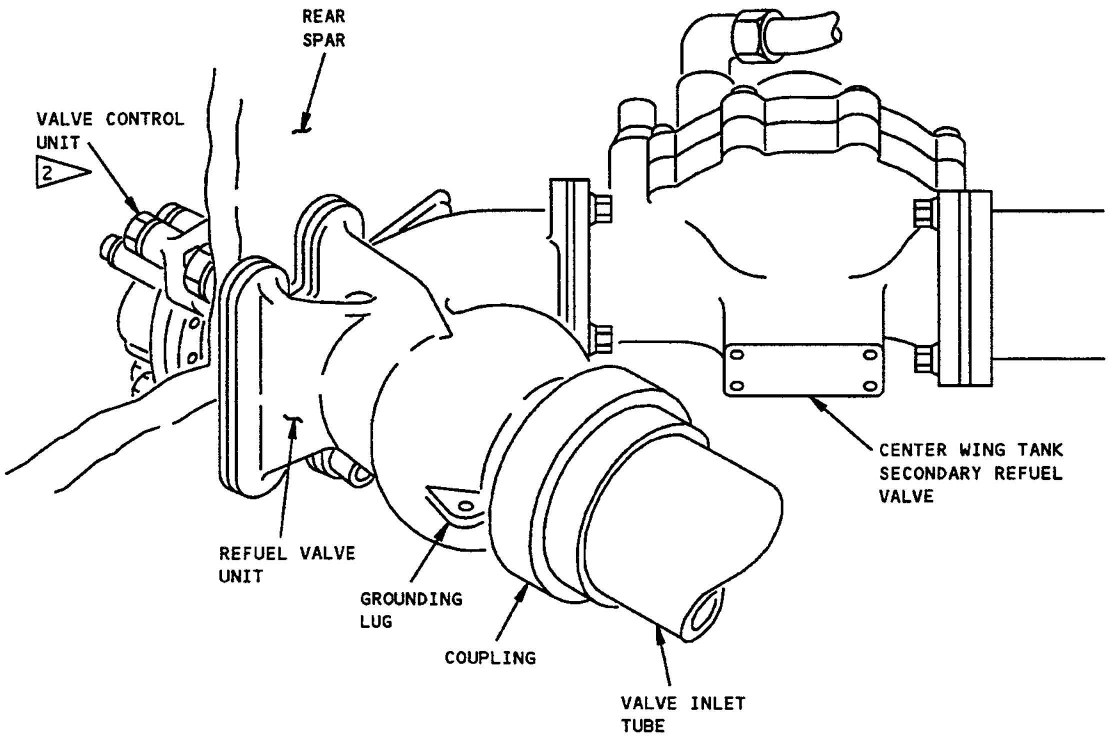


WING AND TAIL TANK REFUEL VALVE UNIT
DETAIL I

Refuel Valve Unit
Figure 1



CENTER TANK REFUEL VALVE UNIT
DETAIL II

1 INSTALLED ON AIRPLANES WITH A HORIZONTAL STABILIZER FUEL TANK

2 CORROSION CAN OCCUR ON THE SWITCH BECAUSE OF FUEL IN THE SWITCH CHAMBER

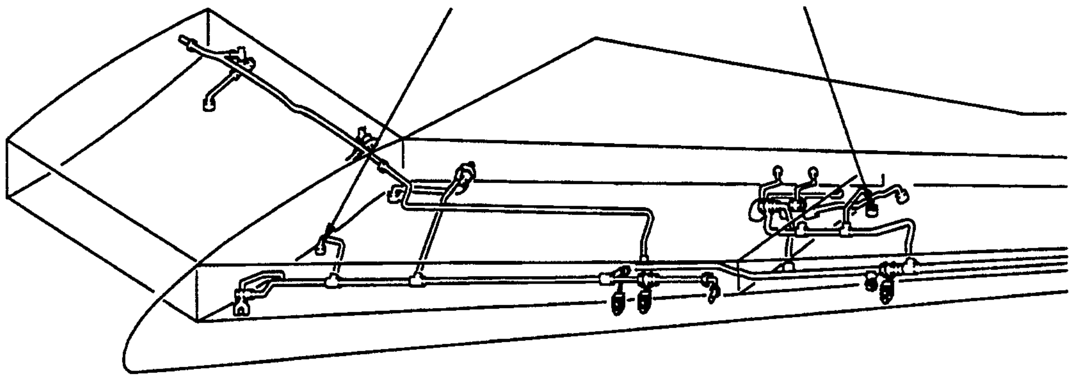
Refuel Valve Unit
Figure 2

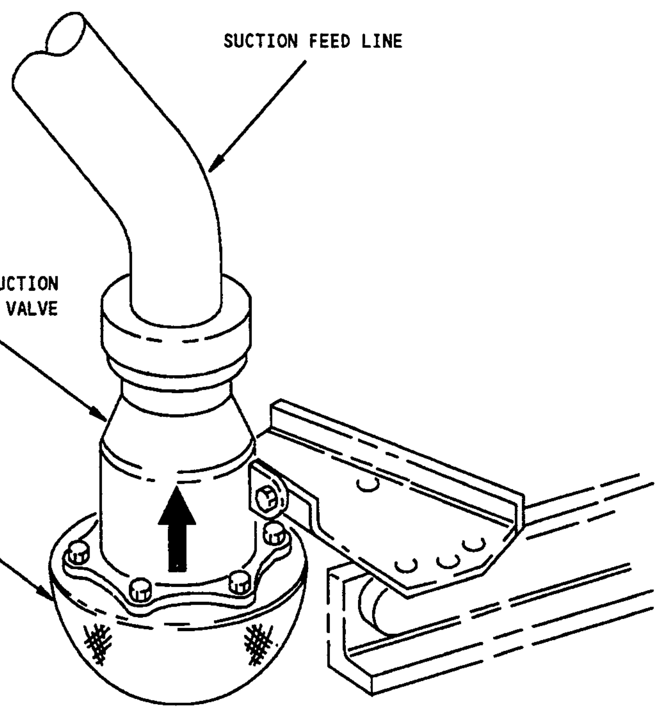
1. General

   A. The pressure fueling system refuel valves include a solenoid-operated control unit mounted on the exterior of the tank. The solenoid is connected to the valve mechanism inside the tank with an O-ring seal. If the O-ring seal is defective or not correctly installed, fuel can come through it and get into the housing to cause corrosion of an electrical switch.

2. Corrosion Prevention

   A. Regularly examine the interior of the control unit for signs of fuel in the switch chamber, and for corrosion of the switch contacts. Make sure the O-ring is correctly compressed and the cover is correctly shimmed. For J.C. Carter (V86090) units, refer to J. C. Carter CMM 28-20-05.





DETAIL I

Boost Pump Suction Bypass Check Valve
Figure 2

1. General

A. Corrosion can occur on the disc closure spring in the fuel boost pump suction bypass check valve. This could cause spring failure and unwanted fuel transfer, or damage to the bypass check valve assembly.

2. Corrosion Prevention

A. Regularly examine the disc closure spring for signs of corrosion. For Allen Aircraft Products (V82829) units, refer to Allen Aircraft Products CMM 28-22-01.

B. The vendor plans to make a decision about a corrosion resistant material for this spring.

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CHAPTER

29

HYDRAULIC POWER

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AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Main	Exterior surfaces of hydraulic tubing	29-10-47 Fig. 1	
	Under clamp supports of the return filter module canister	29-10-47 Fig. 2	SL 29-TBD
Indicating	Pressure transmitter threads	27-30-47 Fig. 1	

Specific Corrosion Problems - Hydraulic Power
Figure 1

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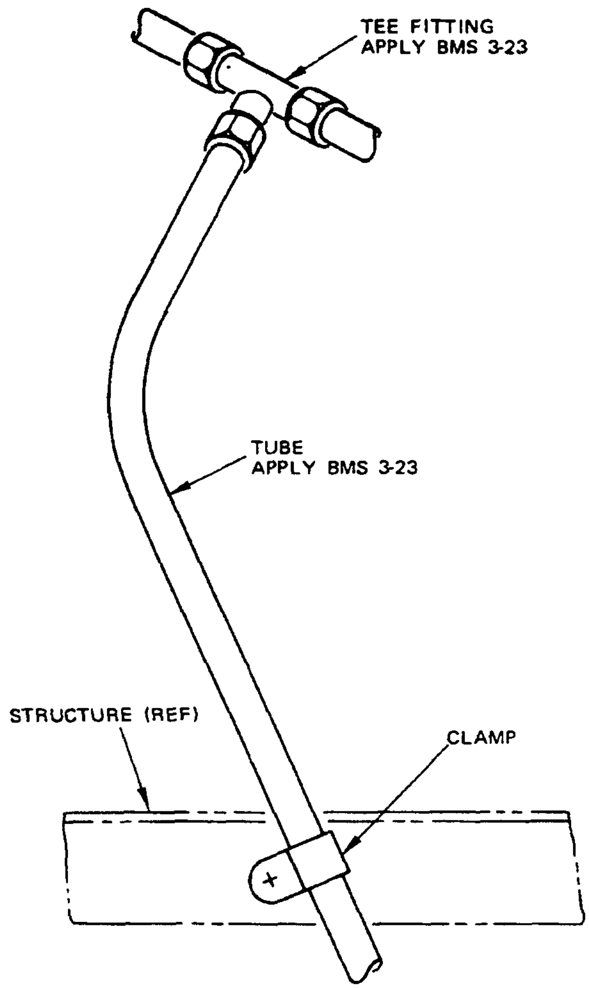


Hydraulic Plumbing
Figure 1

1. General

A. The high pressure hydraulic lines are unpainted corrosion resistant steel. The low pressure hydraulic lines are unpainted 5000 or 6000 series aluminum alloys. Valves and fittings are anodized aluminum or corrosion resistant steel. Sometimes these items get signs of superficial pitting which must be removed to prevent leaks.

B. Clamps are usually solid nylon or silicone rubber cushioned steel.

C. For better corrosion protection, some customers apply BMS 3-23 (LPS-3) water-displacing corrosion inhibiting compound or Ardrox 3961 to all steel hydraulic lines located in the unpressurized areas.

D. Corrosion pitting has been found on 14 aluminum hydraulic tubes. This is the first reported instance of corrosion pitting of primer-coated aluminum tubing. The protective finish was also damaged by scratches and abrasion in some areas.

2. Corrosion Prevention

A. Make the regular inspections of Volume 1, 20-20-00 to prevent or find the start of corrosion. Fasteners that are gone, white powdery or other deposits are signs of corrosion.

B. After you clean the areas, do the inspections of Volume 1, 20-20-00 to make sure that protective finishes stay serviceable.

C. If you find corrosion (bulges of the skin or white deposits of corrosion products at fastener heads or joint edges), refer to Structural Repair Manual for details of corrosion removal.

D. For small amounts of corrosion, to decrease the downtime of the airplane, clean off the corrosion products. Apply a corrosion inhibiting compound into the affected area to stop the corrosion process. Refer to Volume 1, 20-60-00 for how to apply corrosion inhibiting compound. Repair the finish system when the maintenance schedule permits.

E. Prevention Treatment

(1) Apply water displacing corrosion inhibiting compound on tubings and fittings with a cloth wet with this compound. This will clean them and put a thin protective layer on the tubings and fittings.

F. Frequency of Application

(1) Regular inspection is required on areas that can get corrosion and should agree with the schedule in the Maintenance Planning Document. Operators must know of reported problems and areas.

(2) Regular application of BMS 3-23 compounds is necessary in areas identified and should agree with the schedule in the Maintenance Planning Document.

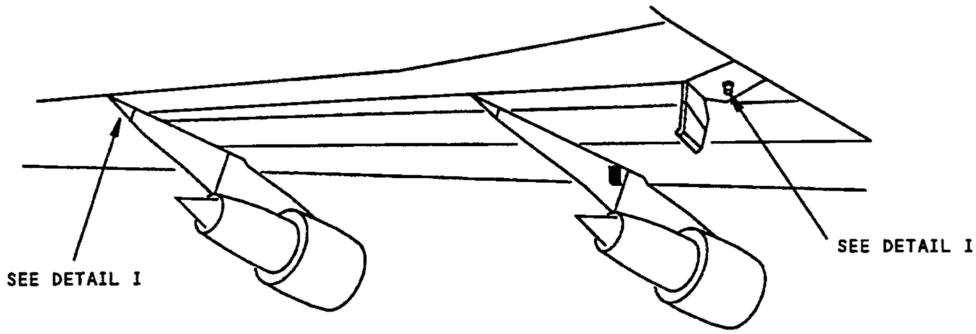
G. Improved Corrosion Protection

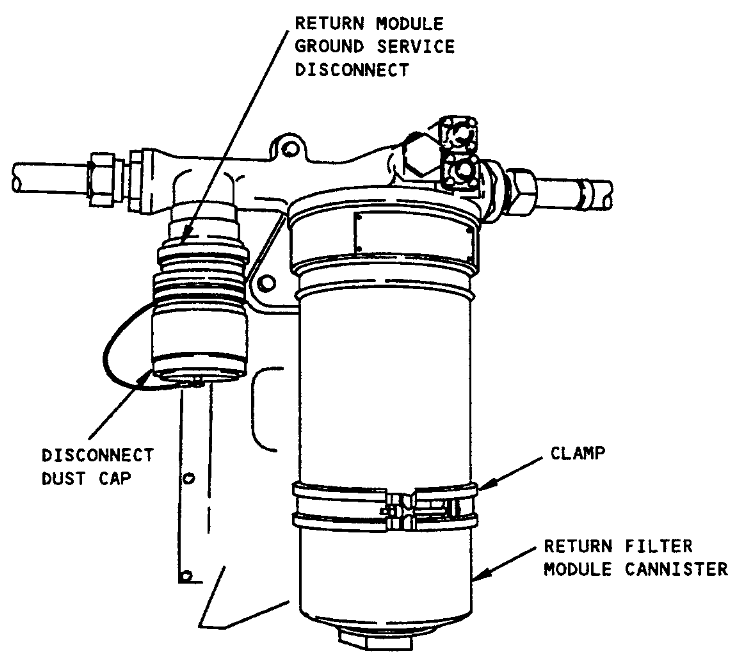
(1) On airplanes built after 1980, PRR 79267 installs 6061-T6 aluminum hydraulic tubing chemically treated with Alodine 1200 and then painted with one coat of BMS 10-11 primer. Some earlier airplanes have this change made with MC 2910MK4008.

(2) On some airplanes, SB 29-2076 (MC 2910MK4012) installs new hydraulic tubes which are chromic acid anodized and then painted with BMS 10-11, type 1 primer.

(3) On some airplanes, MC 2900MP4021 applies BMS 10-11, type 1 primer and polyurethane enamel, on all steel tubing except in the engine nacelle area.

(4) On some airplanes, MC 2900MP4024 applies BMS 3-23 corrosion inhibiting compound to all hydraulic tubing in the wing trailing edge area.





DETAIL I

Return Hydraulic Filter Installation
Figure 2

1. General

A. The return hydraulic filter installation has filter cannisters which are held in clamps that have rubber cushions. Corrosion can occur because of sulfur compounds from the rubber cushions, if the rubber was not cured correctly.

2. Corrosion Prevention

A. Regularly examine the return filter module cannisters for corrosion. If you find signs of corrosion, replace the clamps with new clamps that have ethylene propylene rubber.

B. Improved Corrosion Protection - In November 1988, the material of the clamp cushion was changed from BMS 1-33 synthetic rubber to BMS 1-50 ethylene propylene rubber. This change can be made on earlier airplanes with a service letter scheduled for release in 1991.

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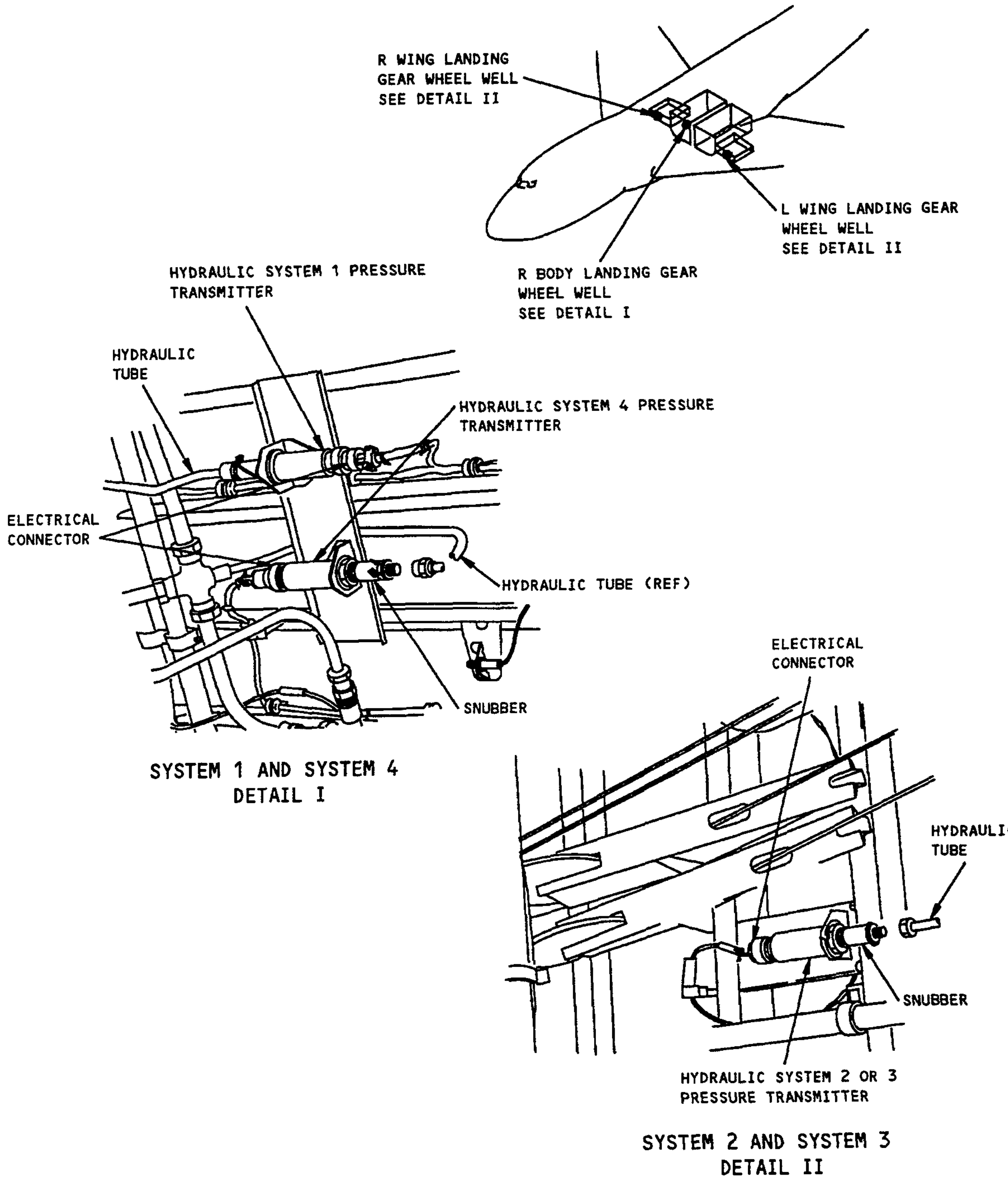

Hydraulic System - Pressure Transmitters
Figure 1

1. General

A. Stress corrosion can cause cracks in the threads of hydraulic pressure transmitter snubbers 8195-33. This can cause leakage of hydraulic fluid from the system.

2. Corrosion Prevention

A. Regularly examine the hydraulic pressure transmitters for leakage, which could be caused by cracks in the snubber threads. Replace defective snubbers.

CHAPTER

32

LANDING GEAR

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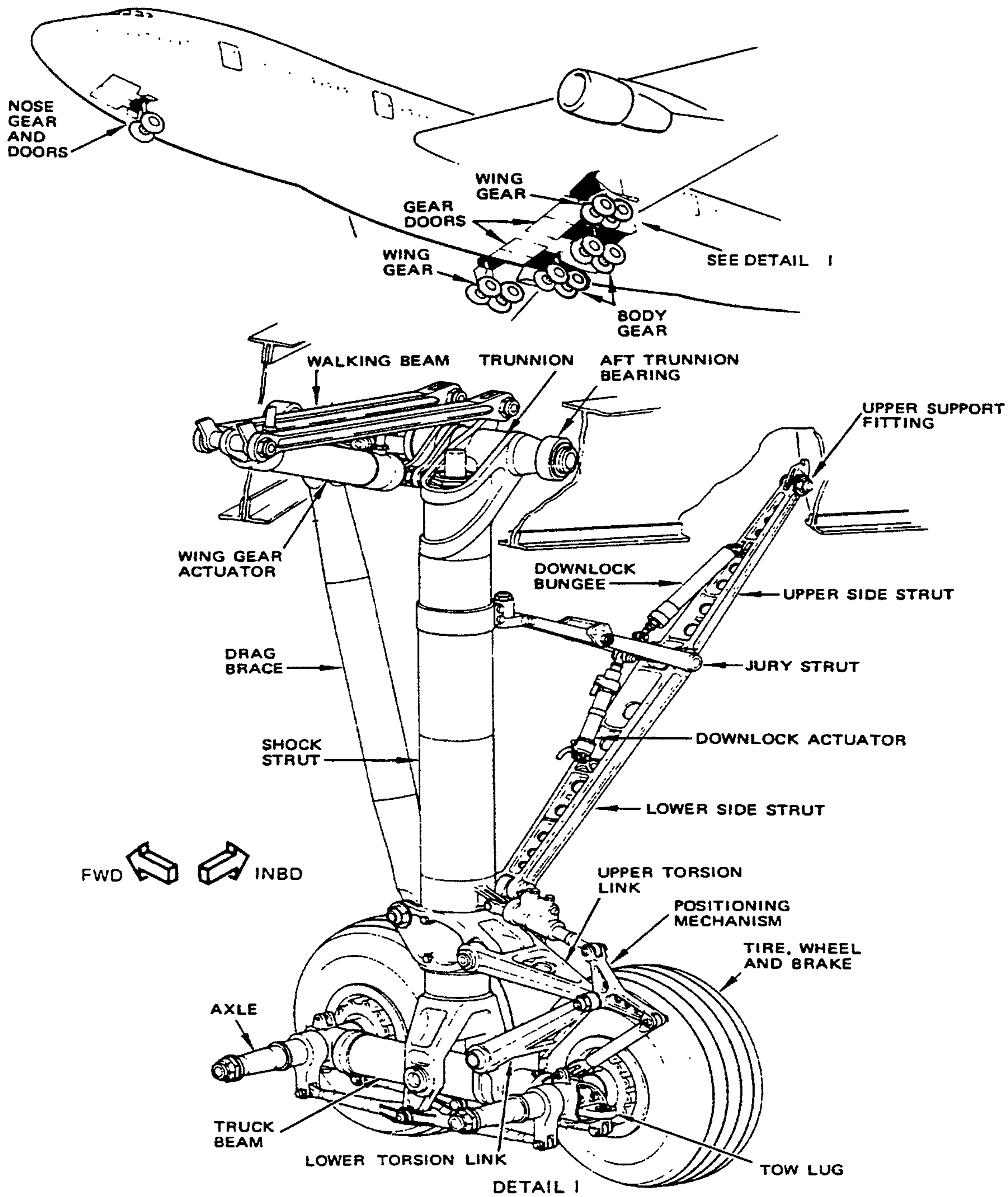
AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Wing Landing Gear	Forward trunnion - between housing bore and spherical bearing outside diameter	32-10-47 Fig. 1	SB 32-2151
	Aft trunnion - between sleeve inside diameter and journal outer diameter		SB 32-2190
	Various lugs - between inside diameters and on lug faces		
	Various bolts and pins on grinding reiefs and threads		
	Upper side strut attach bolts		SB 53-2182
	Axle		
	Truck beam		
	Cracks on the brake disconnect- module bolt		
	Alternate extension drive mechanism - bearings		SB 32-2351
	Alternate extension uplock actuator Brake control aft quadrant -bearings		
Body Landing Gear	Trunnion bore	32-10-47 Fig. 2	SB 32-2184
	Various lugs - between inside diameters andbushings		
	Various bolts and pins on grinding reliefareas and threads		
	Body steering gear actuator	32-10-47 Fig. 2	
	Retract actuator		
	Axle		
	Truck beam		
	Cracks on the brake-disconnect-module bolt		
	Alternate extension drive mechanism - bearings		SB32-2351
	Brake control aft quadrant-bearings		
Nose Landing Gear	Outer cylinder - steering collar area	32-20-47 Fig. 1	

AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
	Steering cylinder - support plate attach holes, outer cylinder attach holes, steering cylinder attach holes		
	Trunnion and outer cylinder - inside diameters		SB 32-2184
	Drag strut downlock bungees		SB 32-2142
	Axle		
	Steering summing mechanism		
Wheels and Brakes	Antiskid modular assembly fuses	32-40-47 Fig. 1	SL 32-19, SL 32-TBD (1991)
	Wing gear antiskid modular assembly controlvalve coil		

Specific Corrosion Problems - Landing Gear
Figure 1



Wing Landing Gear
Figure 1

1. General

A. The wing landing gear, because of its exposure to dirt and water from the runway, is susceptible to corrosion.

B. Corrosion can occur on the forward trunnion, in particular between the housing bore and the spherical bearing outside diameter. Improved lubrication was introduced at line number 247 and by SB 32-2151 and chrome plating added to the bore. From line number 292, primer was added to the threads of the retaining nut and housing and other bare cadmium plated areas.

C. Corrosion can occur on the aft trunnion, on the sleeve inside diameter and cross bolt interfaces. Cross bolt bushings and fillet sealing were added on line number 233 and on line number 292, the steel sleeve was replaced with al-ni-bronze and improved lubrication introduced. SB 32-2190 makes similar improvements to prior airplanes and provides rework instructions for corrosion found on the wing gear outer cylinder aft trunnion/trunnion sleeve interface (which can result in cracking and ultimate fracture of the trunnion).

Stress corrosion cracks can occur on the aft trunnion. The stress corrosion cracks start from corrosion pits on the outer surface of the trunnion journal near the edge of outboard hole.

D. On lugs with bushings, corrosion can occur on the surfaces of the lug holes and lug faces that touch the bushings.

E. Corrosion has been reported in the thread and grinding reliefs and on the threads of various bolts and pins. Newly designed bolts and pins have primer in these areas.

F. Stress corrosion has been reported on the outboard steel attach bolts on the upper support and fitting for the wing gear upper side strut. The stress corrosion was initiated by galvanic action between the nickel-cadmium plated steel bolts and the mating bare 17-4 PH CRES bushings at the joint. Production changes on line number 333 replaced existing steel and H-11 type bolts with 15-5 PH CRES bolts that have flash chrome plate finish. BMS 3-23 is applied to exposed surfaces after installation. SB 53-2182 provides inspection, rework, and repair for airplanes through line number 332.

G. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

H. Stress corrosion caused several axle failures. Shot peening for the axles was changed at line number 691.

I. Corrosion can occur on bearings of the alternate extension drive mechanism, and in the alternate extension uplock actuator. In the actuator, corrosion occurred on the brake magnet and in the switch.

J. Corrosion can occur on bearings in the brake control aft quadrant.

2. Corrosion Prevention

A. Make the regular inspections of Volume 1, 20-20-00 to prevent or find the start of corrosion. Fasteners that are gone, white powdery or other deposits are signs of corrosion.

B. After you clean the areas, do the inspections of Volume 1, 20-20-00 to make sure that protective finishes stay serviceable.

C. If you find corrosion (bulges of the skin or white deposits of corrosion products at fastener heads or joint edges), refer to Structural Repair Manual for details of corrosion removal.

D. For small amounts of corrosion, to decrease the downtime of the airplane, clean off the corrosion. Apply corrosion inhibiting compound on the affected area to stop the corrosion process (Ref Volume 1, 20-60-00). Repair the finish system when the maintenance schedule permits.

E. Prevention Treatment

(1) At earliest opportunity consistent with the maintenance activity, corrosion prevention treatment should be accomplished in the body landing gear.

CAUTION: DO NOT APPLY CORROSION INHIBITING COMPOUNDS ON GREASE JOINTS OR SEALED BEARINGS. THESE COMPOUNDS DISSOLVE GREASE AND OTHER LUBRICANTS. THEY ARE PENETRATING COMPOUNDS AND CAN GET AROUND THE SEALS AND INTO THE BEARINGS.

(2) Apply BMS 3-23 water displacing corrosion inhibiting compound to the following components:

(a) Shock Struts (Oleo). Apply corrosion inhibitor to exterior areas of the inner and outer cylinder with broken finish systems. All lugs, lug faces, connecting pins and fasteners should be sprayed with corrosion inhibitor.

(b) Axles. Apply corrosion inhibitor to outside surfaces of the axles except journal and bearing surfaces. Make suitable nozzle extension and spray the inside surfaces of the axles with corrosion inhibitor after protecting electrical wiring.

(c) Side Struts. Apply corrosion inhibitor to surface areas with broken finish systems on both the upper and lower side struts. All lugs, lug faces, connecting pins and fasteners should be sprayed with corrosion inhibitor.

(d) Drag Strut. Apply corrosion inhibitor to exterior surface areas with broken finish system. All lugs, lug faces, connecting pins and fasteners should be sprayed with corrosion inhibitor. Spray corrosion inhibitor on the strut door attachments.

(e) Torsion Links. Apply corrosion inhibitor to surface areas with broken finish systems. All lugs, lug faces and connecting pins should be sprayed with corrosion inhibitor.

(f) Door Operating Beam. Apply corrosion inhibitor to surface areas with broken finish systems. All lugs, lug faces and connecting pins should be sprayed with corrosion inhibitor.

(g) Walking Beam. The walking beam should be treated at the same time as the rear trunnion support beam.

(h) Trunnion Link. The trunnion link should be treated at the same time as the rear trunnion support beam.

(i) Trunnion. The trunnion should be treated at the same time as the rear trunnion support beam. Visual inspect the chrome plated surface of the trunnion journal for cracks each time the main gear is removed from the airplane. Inspect the surface by viewing the surface from 45 degrees with the aid of a bright light and without magnification.

(j) Trunnion Swivel Assemblies - Examine assemblies for evidence of corrosion, particularly on airplanes thru cum line No. 882. Apply corrosion inhibitor to assemblies with broken finish systems.

(3) After application of corrosion inhibiting compound all grease fittings in the treated areas must be regreased.

(4) In cases where cleaning is accomplished with steam or high pressure water and detergent, reapply corrosion inhibitor to the components.

F. Frequency of Application

(1) Periodic inspection is required to areas identified as susceptible to corrosion and should be consistent to the schedules specified in the Maintenance Planning Document. Operators must be aware of reported problems and areas of occurrences.

(2) Periodic application of BMS 3-23 compounds is necessary to areas identified and should be consistent to the schedule specified in the Maintenance Planning Document.

G. Improved Corrosion Protection

(1) At line number 285 (for the 747-200) and line number 327 (for the 747SP), a production change put cadmium-titanium plating in lug holes for bushings, and installed the bushings with wet primer. For installations that use two bushings back-to-back in a lug hole, the gap between the bushing was filled with grease or sealant. The latest procedures install bushings with sealant, not primer, and seal around the edges of the installed bushings. Refer to 20-50-03 of the Boeing Standard Overhaul Practices Manual for details.

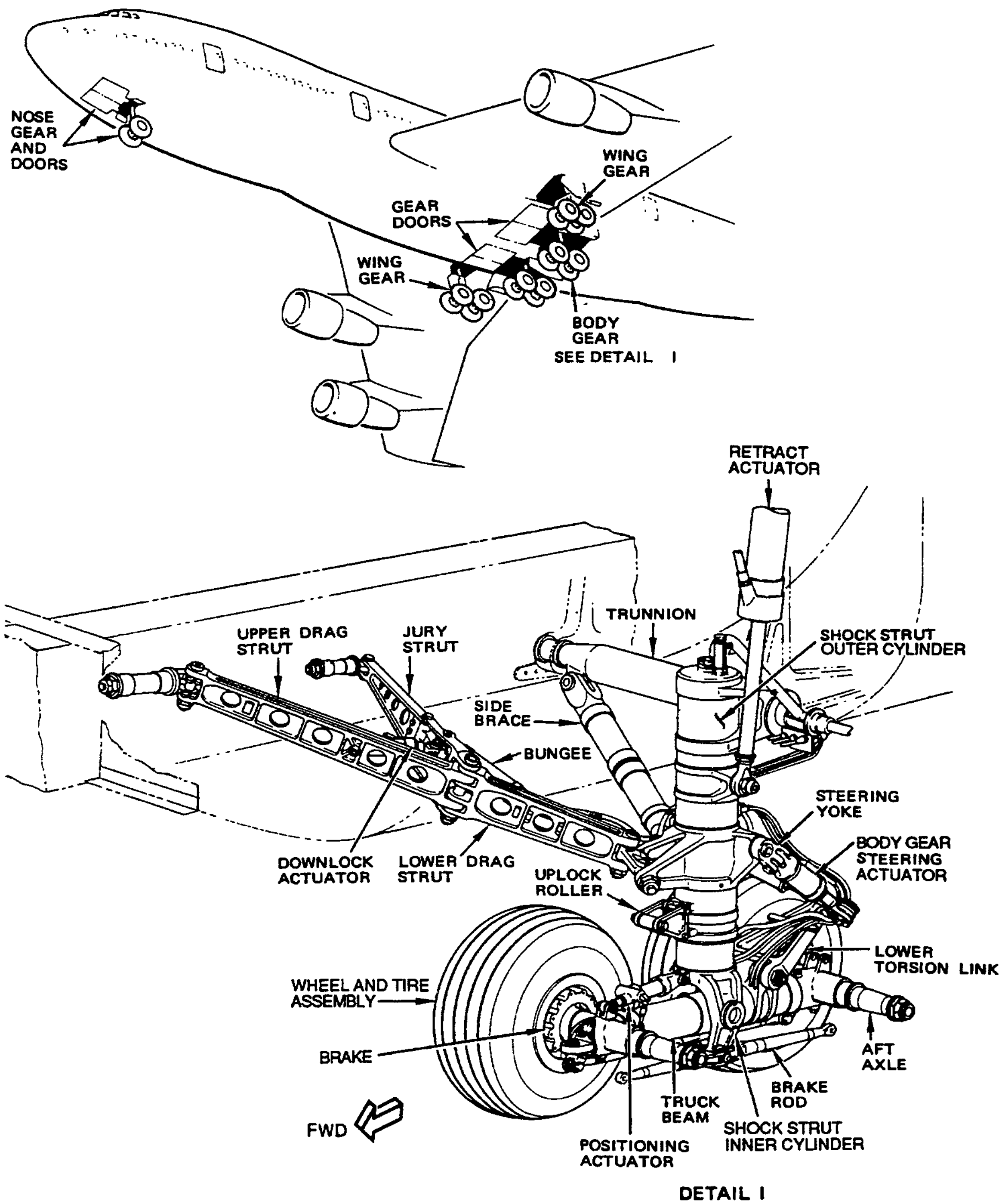
(2) On airplanes line numbers 706 and on, PRR 80381-2 replaced the H-11 steel bolts used in the brake-disconnect module with Inconel 718 bolts. The Inconel 718 bolt is less susceptible to cracks caused by stress corrosion.

(3) On airplanes line numbers 780 and on, PRR 81804 added BMS 3-27 corrosion preventive compound between the aft trunnion of the outer cylinder and the mating sleeve. This change can be incorporated on other airplanes with SB 32-2190.

(4) On airplanes line numbers 878 and on, PRR 82328 incorporated CRES bearings in the alternate-extension-drive mechanism to prevent bearing corrosion. This change can be incorporated on other airplanes with SB 32-2351.

(5) On airplanes line numbers 798 and on, PRR 81327 changed 16 bearings to 440C CRES in the brake control aft quadrant.

(6) Some airplanes have BMS 3-27 corrosion preventive compound on the trunnion bearing housing and retaining nut threads per MC 5124MP4033.



Body Landing Gear
Figure 2

1. General

A. The body landing gear gets corrosion because it is open to dirt and water from the runway.

B. Water caught in the trunnion caused deterioration of the finish and then corrosion.

C. On lugs with bushings, corrosion can occur on the surfaces of the lug holes and lug faces that touch the bushings.

D. Corrosion has been reported in the thread and grinding reliefs and on the threads of various bolts and pins. Primer is now used in these areas.

E. Corrosion has been encountered on the body gear steering actuator, Hydraulic Units Inc. (V60029) 1U1171-2 and -3.

F. Stress corrosion caused several body landing gear axle failures. Shot peening for the axles was changed at line number 691.

G. Stress corrosion caused a truck beam to completely break near the pivot point with the inner cylinder. The crack started in corrosion on the lower part of the inside diameter of the truck beam.

H. Corrosion can cause seized bearings in the alternate extend uplock release actuator. In most cases of bearing seizure, the actuator had failed. Corrosion can also occur on bearings in the alternate extension drive mechanism, and on bearings in the brake control aft quadrant.

I. Corrosion problems in the retract actuator include the inside diameter of the rod end bearings 60B00178-5, and the threads and adjacent areas of the piston rod near the rod end. Corrosion on two of the bearings locked the bearing to the actuator attach bolt on the shock strut. Then the rod end had to be cut to remove the bearing. Corrosion can also cause bearing and rod end damage. Corrosion of the threads of the piston rod threads can cause separation of the rod end from the piston rod.

J. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. Missing fasteners, white powdery or any discolored deposits are evidences of the existence of corrosion which should alert operators that some corrective action is required. A corrosion prevention program should be initiated to prevent the accumulation of corrosive products in order to minimize the occurrence of corrosion.

B. Following cleaning of suspected areas, a thorough inspection as described in Volume 1, 20-20-00 is effective to ensure that protective finishes provided during manufacture remain intact.

C. Where corrosion exists (noticeable bulges of the skin or white deposits of corrosion products at fastener heads or joint edges), refer to Structural Repair Manual for details of corrosion removal.

D. For minor corrosion, to minimize the downtime of the airplane, the corrosion products should be cleaned off, followed by the application of a corrosion inhibiting compound into the affected area to retard the corrosion process (Ref Volume 1, 20-60-00). The finish system should be restored at the first opportunity consistent with the maintenance schedule.

E. Prevention Treatment:

(1) At earliest opportunity consistent with the maintenance activity, corrosion prevention treatment should be accomplished in the body landing gear.

CAUTION: DO NOT APPLY CORROSION INHIBITING COMPOUNDS ON GREASE JOINTS OR SEALED BEARINGS. THESE COMPOUNDS DISSOLVE GREASE AND OTHER LUBRICANTS. THEY ARE PENETRATING COMPOUNDS AND CAN GET AROUND THE SEALS AND INTO THE BEARINGS.

(2) Apply BMS 3-23 water-displacing corrosion-inhibiting compound to the following components:

(a) Shock Struts (Oleo). Apply corrosion inhibitor to exterior areas of the inner and outer cylinder with broken finish systems. All lugs, lug faces, connecting pins and fasteners should be sprayed with corrosion inhibitor.

(b) Axles. Apply corrosion inhibitor to outside surfaces of the axles except journal and bearing surfaces. Make suitable nozzle extension and spry the inside surfaces of the axles with corrosion inhibitor after protecting electrical wiring.

(c) Side Struts. Apply corrosion inhibitor to surface areas with broken finish systems on both the upper and lower side struts. All lugs, lug faces, connecting pins and fasteners should be sprayed with corrosion inhibitor.

(d) Drag Strut. Apply corrosion inhibitor to exterior surface areas with broken finish system. All lugs, lug faces, connecting pins and fasteners should be sprayed with corrosion inhibitor. Spray corrosion inhibitor on the strut door attachments.

(e) Torsion Links. Apply corrosion inhibitor to surface areas with broken finish systems. All lugs, lug faces and connecting pins should be sprayed with corrosion inhibitor.

(f) Door Operating Beam. Apply corrosion inhibitor to surface areas with broken finish systems. All lugs, lug faces and connecting pins should be sprayed with corrosion inhibitor.

(g) Trunnion Link. The trunnion link should be treated at the same time as the rear trunnion support beam.

(h) Trunnion. The trunnion should be treated at the same time as the rear trunnion support beam. Visual inspect the chrome plated surface of the trunnion journal for cracks each time the main gear is removed from the airplane. Inspect the surface by viewing the surface from 45 degrees with the aid of a bright light and without magnification.

(i) Trunnion Swivel Assemblies - Examine assemblies for evidence of corrosion, particularly on airplanes thru cum line No. 882. Apply corrosion inhibitor to assemblies with broken finish systems.

(3) After application of corrosion inhibiting compound, all grease fittings in the treated areas must be regreased.

(4) In cases where cleaning is accomplished with steam or high pressure water and detergent, reapply corrosion inhibitor to the components.

F. Frequency of Application

(1) Periodic inspection is required to areas identified as susceptible to corrosion and should be consistent to the schedules specified in the Maintenance Planning Document. Operators must be aware of reported problems and areas of occurrences.

(2) Periodic application of BMS 3-23 compounds is necessary to areas identified and should be consistent to the schedule specified in the Maintenance Planning Document.

G. Improved Corrosion Protection

(1) At line number 283, Aeroshell 16 grease is used in the trunnion bore as a leveling compound to prevent corrosion because of collected moisture. This change can be made on other airplanes with SB 32-2184.

(2) At line number 285 (for the 747-200) and line number 327 (for the 747SP), a production change put cadmium-titanium plating in lug holes for bushings, and installed the bushings with wet primer. For installations that use two bushings back-to-back in a lug hole, the gap between the bushings was filled with grease or sealant. The latest procedures install bushings with sealant, not primer, and seal around the edges of the installed bushings. refer to 20-50-03 of the Boeing Standard Overhaul Practices Manual for details.

(3) At line number 691, shot peening on the axle was changed to prevent stress corrosion.

(4) At line number 706, PRR 80381-2 replaced the H-11 steel bolts used in the brake-disconnect module with Inconel 718 bolts. The Inconel 718 bolt is less susceptible to cracks caused by stress corrosion.

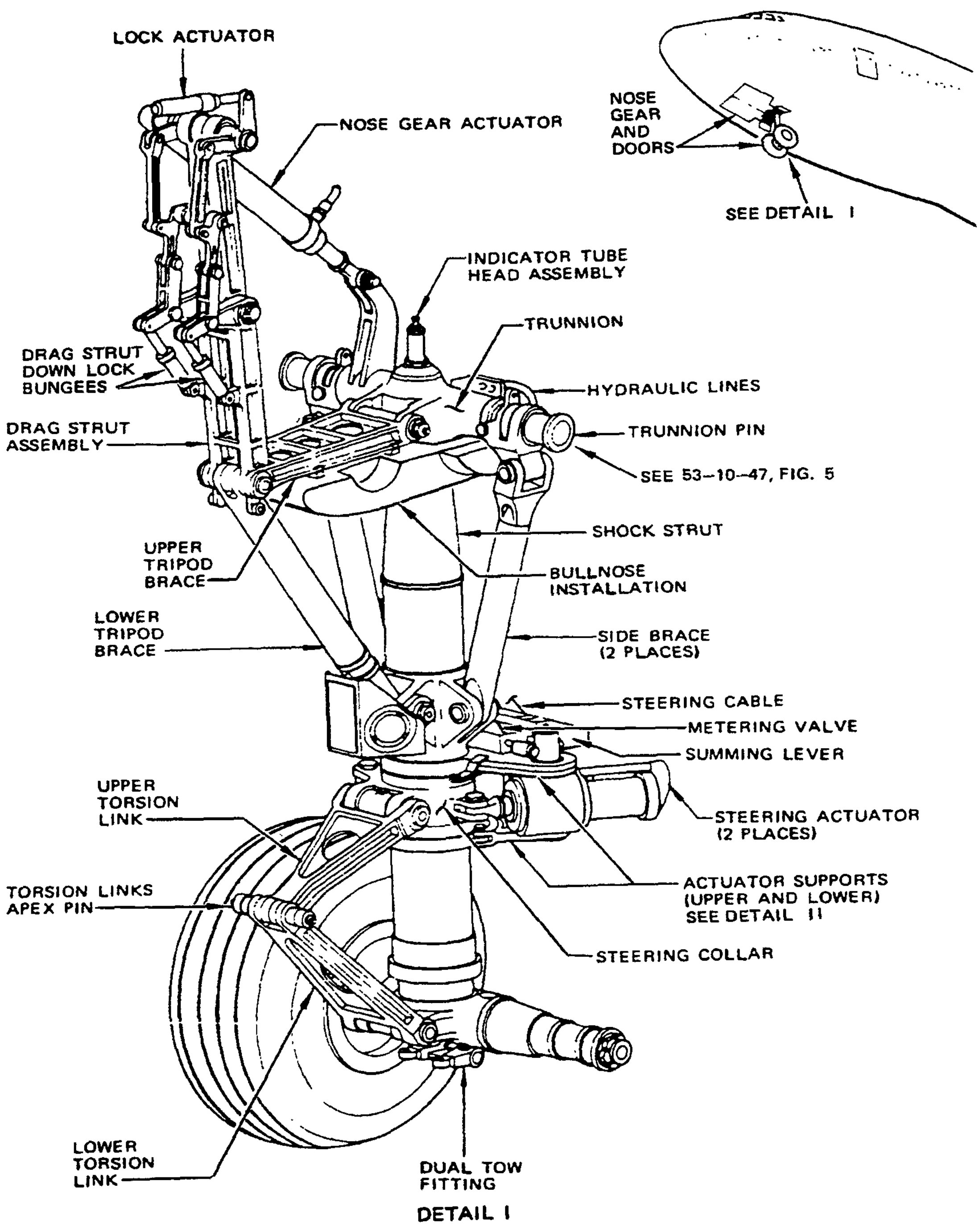
(5) Production changes on body gear steering actuators 1U1171-3 are identified with an H suffix to the serial number. These changes can be made on other body gear steering actuators with Hydraulic Units Inc. (V60029) SB 1171-32-04.

(6) At line number 798, PRR 81327 changed 16 bearings to 440C CRES in the brake control aft quadrant.

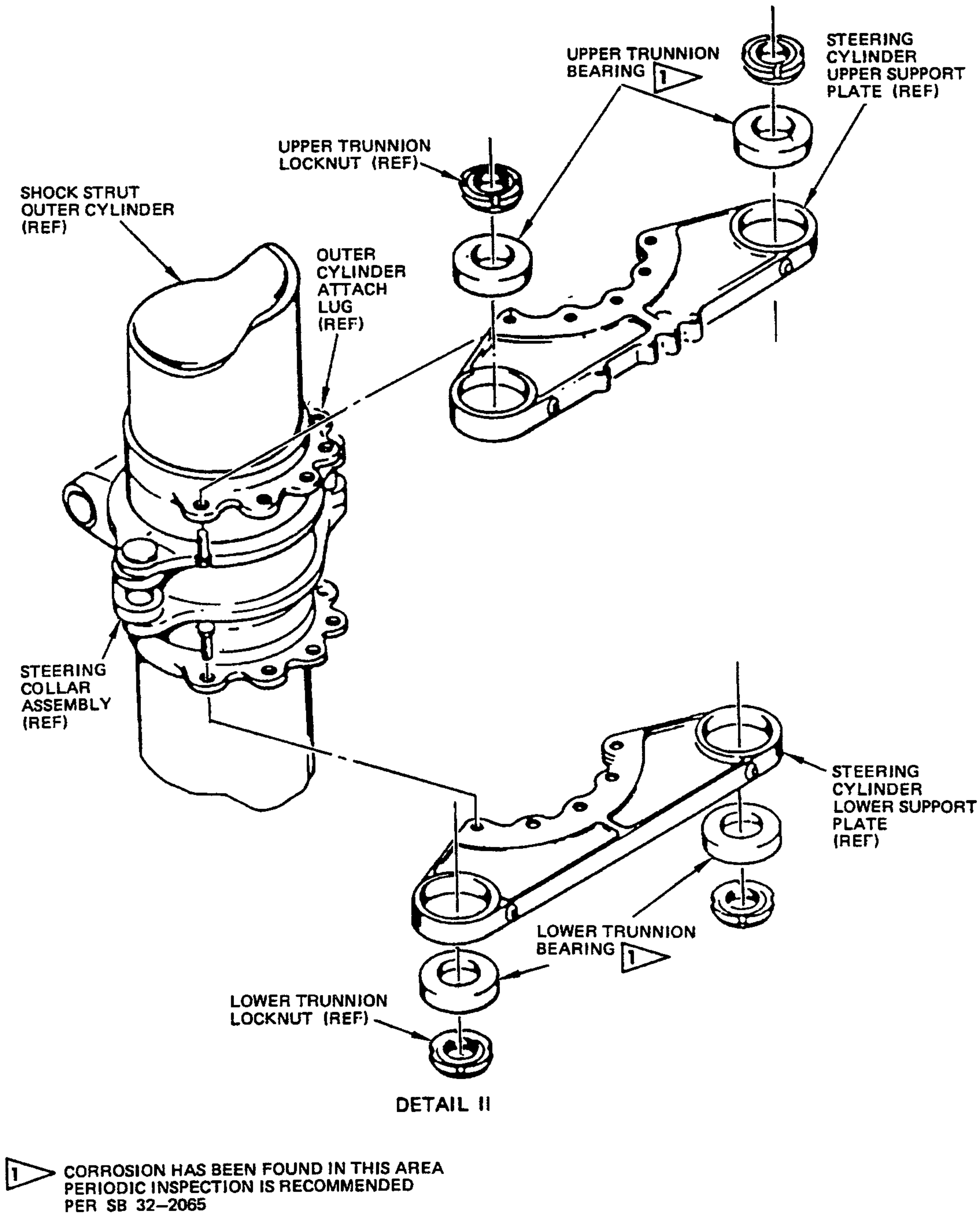
(7) At line number 878, PRR 82328 incorporated CRES bearings in the alternate-extension-drive mechanism to prevent bearing corrosion. This change can be incorporated on other airplanes with SB 32-2351.

(8) Some airplanes have BMS 3-27 corrosion preventive compound on the trunnion bearing housing and retaining nut threads per MC 5124MP4033.

(9) At line number 962, PRR 82623 changed the material of the rod end bearing inner race on the body gear retract actuator. This change can be made on other airplanes with SL 32-TBD.



Nose Landing Gear
Figure 1 Sheet 1



Nose Landing Gear
Figure 1 (Sheet 2)

1. General

A. The nose landing gear, because of its exposure to dirt and water from the runway, is susceptible to corrosion.

B. Corrosion of the outer cylinder in the steering collar area has been reported. From line numbers 301 (747-100) and 241 (747-200) bronze bushings have been installed in the plate holes and chrome plate has been added to the lug faces and bearing bore.

C. Corrosion has been reported in the steering cylinder support plate attach holes, steering cylinder attach holes and the outer cylinder attach holes. Chrome plate thickness on lugs of the outer cylinder and in the collar area was increased from line number 210.

D. Water caught in the gear caused damage to the finish and corrosion on some areas of the nose landing gear.

E. Corrosion has been reported in the nose landing gear drag strut downlock bungees of airplanes line number 001 thru 199. SB 32-2142 describes modifications for added corrosion protection of the bungees.

F. Revised shot peening was implemented at line 691 for nose landing gear.

G. Corrosion has been found between the nose landing gear actuator bearing surface and the aluminum trunnion shaft (Detail III).

H. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the regular inspections of Volume 1, 20-20-00 to stop or find the start of corrosion. Fasteners that are gone, or white powdery or other deposits are signs of corrosion.

B. Following cleaning of suspected areas, a thorough inspection as described in Volume 1, 20-20-00 is effective to ensure that protective finishes provided during manufacture remain intact. Refer to Volume 1, 20-60-00 for details on the application of corrosion inhibiting compound.

C. Where corrosion exists (noticeable bulges of the skin or white deposits of corrosion products at fastener heads or joint edges), refer to Structural Repair Manual for details of corrosion removal.

D. For minor corrosion, to minimize the downtime of the airplane, the corrosion products should be cleaned off, followed by the application of a corrosion inhibiting compound into the affected area to retard the corrosion process (Ref Volume 1, 20-60-00). The finish system should be restored at the first opportunity consistent with the maintenance schedule.

E. Prevention Treatment

(1) At first opportunity consistent with the maintenance activity, corrosion prevention treatment should be accomplished in the nose landing gear.

CAUTION: DO NOT APPLY CORROSION INHIBITING COMPOUNDS ON GREASE JOINTS OR SEALED BEARINGS. THESE COMPOUNDS DISSOLVE GREASE AND OTHER LUBRICANTS. THEY ARE PENETRATING COMPOUNDS AND CAN GET AROUND THE SEALS AND INTO THE BEARINGS.

(2) Shock Struts (Oleo). Apply BMS 3-23 corrosion inhibiting compound to exterior area of the inner and outer cylinder with broken finish systems. Include all lugs, lug faces, connecting pins and fasteners. Remove nameplates, covers and easily accessible noncritical (does not affect adjustments) fasteners to reveal tapped holes. Spray steering cable pulley brackets, miscellaneous equipment attached to the outer and inner cylinders, and the inside of tapped holes with corrosion inhibiting compound. Reinstall parts removed after application.

(3) Drag Brace. Apply BMS 3-23 corrosion inhibiting compound to exterior surface areas with broken finish systems. Include all lugs, lug faces, connecting pins and fasteners.

(4) Axle. Apply BMS 3-23 corrosion inhibiting compound to outside surface areas of the axle. Make suitable nozzle extension and spray the inside surfaces of the axle. At wheel removal spray the exterior surfaces of axle covered by wheel except at bearing or journal surfaces.

(5) Torsion links. Apply BMS 3-23 corrosion inhibiting compound to surface areas with broken finish systems. Include lugs, lug faces and connecting pins.

(6) Nose Gear Actuator. Apply BMS 3-23 corrosion inhibiting compound to surface area with broken finish systems. Include lugs, lug faces and connecting pins.

(7) Steering Assembly. Apply BMS 3-23 corrosion inhibiting compound to surface areas with broken finish systems and around the outer cylinder of the shock strut. Include lugs, lug faces and connecting pins.

(8) Cables. For treatment, refer to Volume 2, 27-00-47, Fig. 2.

(9) Steeple. Apply BMS 3-23 corrosion inhibiting compound to surface areas with broken finish systems. Include lugs and lug faces.

(10) Trunnion. Apply BMS 3-23 corrosion inhibiting compound to exterior surface areas with broken finish systems. Include lugs, lug faces, connecting pins, fasteners and trunnion bearing caps.

(11) After application of corrosion inhibiting compound, apply grease at all grease fittings in the heated areas.

(12) If you cleaned with steam or high pressure water and detergent, apply the corrosion inhibiting compound again.

F. Frequency of Application

(1) Regular inspection is required on areas that can get corrosion and should agree with the schedule in the Maintenance Planning Document. Operators must know of reported problems and areas.

(2) Regular application of BMS 3-23 compounds is necessary on areas identified and should agree with the schedule in the Maintenance Planning Document.

G. Improved Corrosion Protection

(1) SB 32-2065 gives an inspection procedure on the nose gear actuator bearing. This will reduce the possibility of nose gear steering actuator bearing damage failure.

(2) At line number 290, PRR 78398 made the drainage better and added the use of grease as a leveling compound. These changes can be incorporated on earlier airplanes with SB 32-2184.

(3) At line number 798, PRR 81327 changed two bearings to 440C CRES in the steering summing mechanism.

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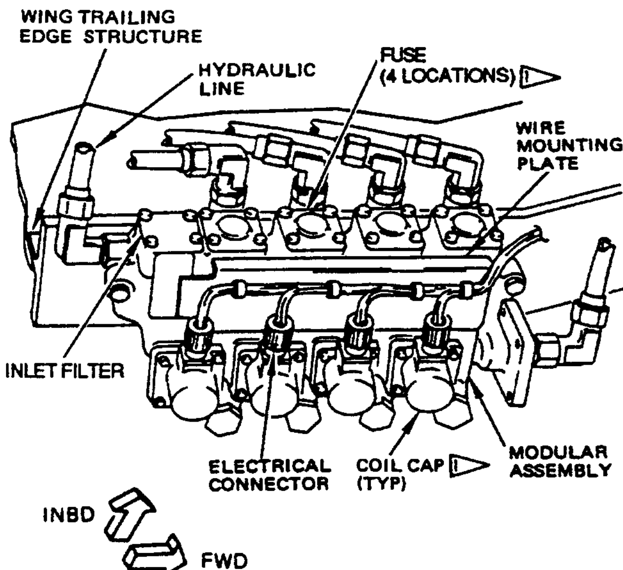
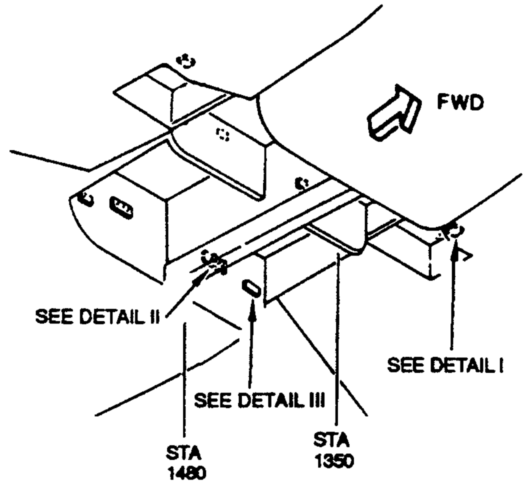
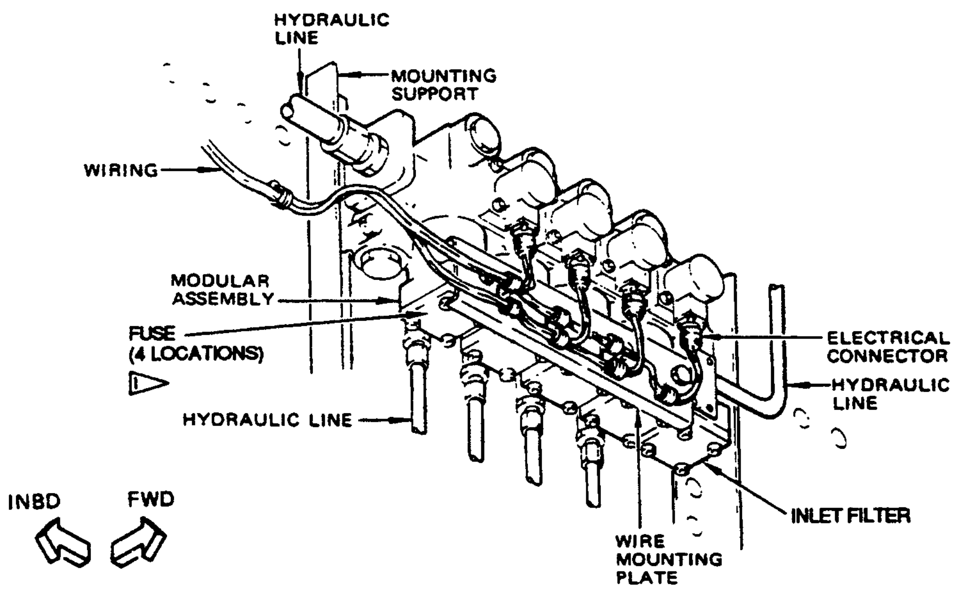




DETAIL I

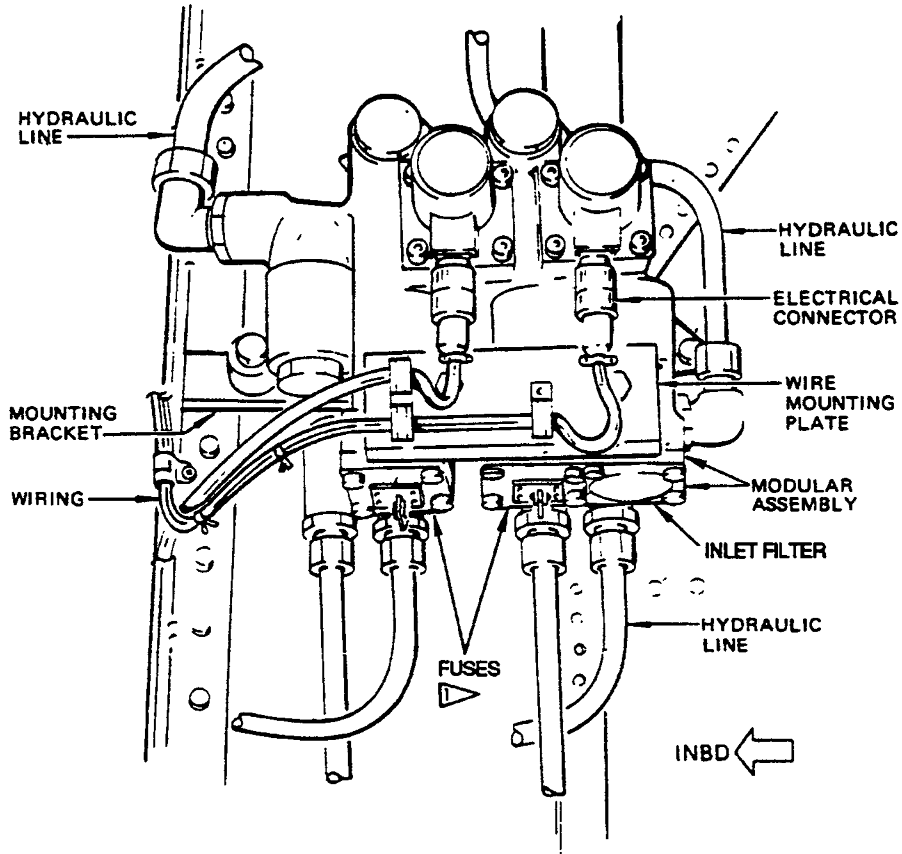
NORMAL BRAKE SYSTEM ANTISKID MODULAR ASSEMBLY INSTALLATION FOR LEFT WING GEAR SHOWN. RIGHT WING GEAR INSTALLATION SIMILAR



DETAIL II

NORMAL BRAKE SYSTEM ANTISKID MODULAR ASSEMBLY INSTALLATION FOR LEFT BODY GEAR SHOWN. RIGHT BODY GEAR INSTALLATION SIMILAR

Antiskid Modular Assembly Installation
Figure 1 Sheet 1



RESERVE BRAKE SYSTEM ANTISKID MODULAR ASSEMBLY INSTALLATION FOR LEFT BODY GEAR SHOWN. INSTALLATION FOR RIGHT BODY GEAR AND LEFT AND RIGHT WING GEAR SIMILAR

DETAIL III

1 POSSIBLE CORROSION LOCATION

ANTISKID MODULAR ASSEMBLY INSTALLATION
Figure 1 Sheet 2

1. General

A. Corrosion can occur on the piston and the housing flange of antiskid module fuses 60B00238-1, which are reset by reverse hydraulic flow. The outside surface of the flange can get stress corrosion cracks. Moisture caught between the aluminum nameplate and the flange can make corrosion occur faster.

B. Corrosion can cause coil failure in the control valves in the wing gear normal antiskid control module assembly. Moisture can collect in the coil cap because the drain hole is at the top of the cap.

2. Corrosion Prevention

A. Regularly examine these antiskid module fuses for corrosion. SL 32-19 and SB 32-2005 give more details about inspection and replacement of fuses because of corrosion on the pistons. Anew service letter will include inspection and replacement of fuses because of corrosion on the housing flanges.

B. Regularly examine the wing gear module assembly for moisture in the coil caps. Remove this moisture as necessary.

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CHAPTER

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NAVIGATION

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AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Antennas	Electrical connector support on DME and ATC antennas Corrosion between antennas and fuselage skin	34-50-47 Fig. 1	

Specific Corrosion Problems - Navigation
Figure 1

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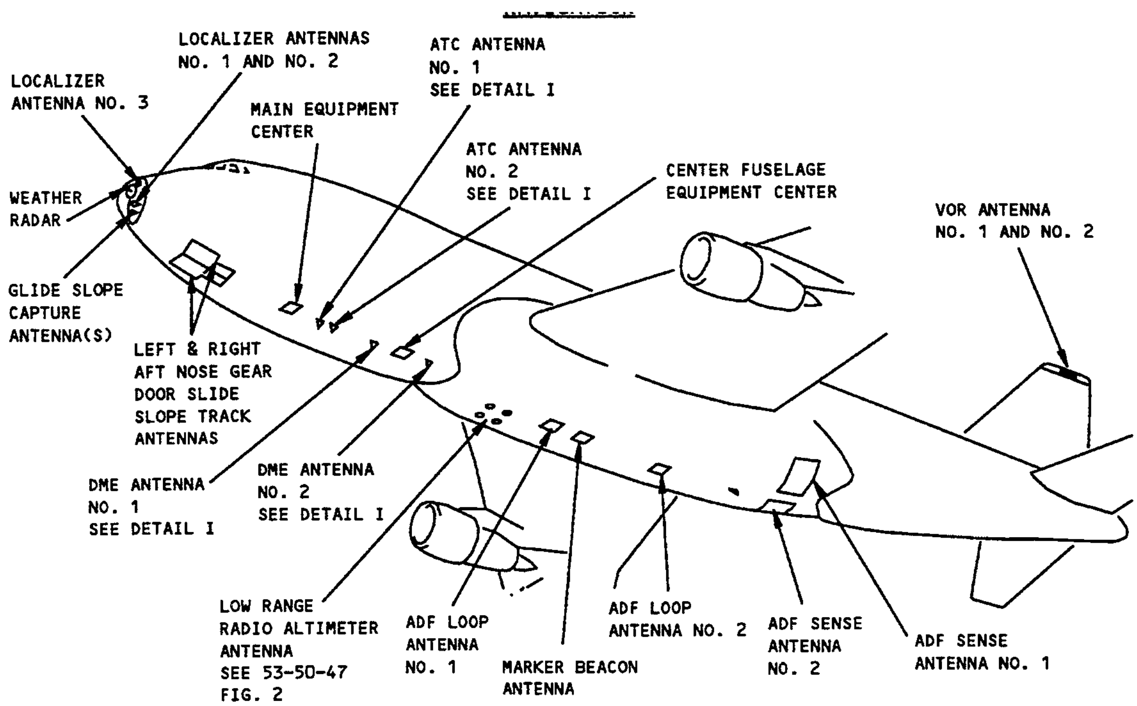
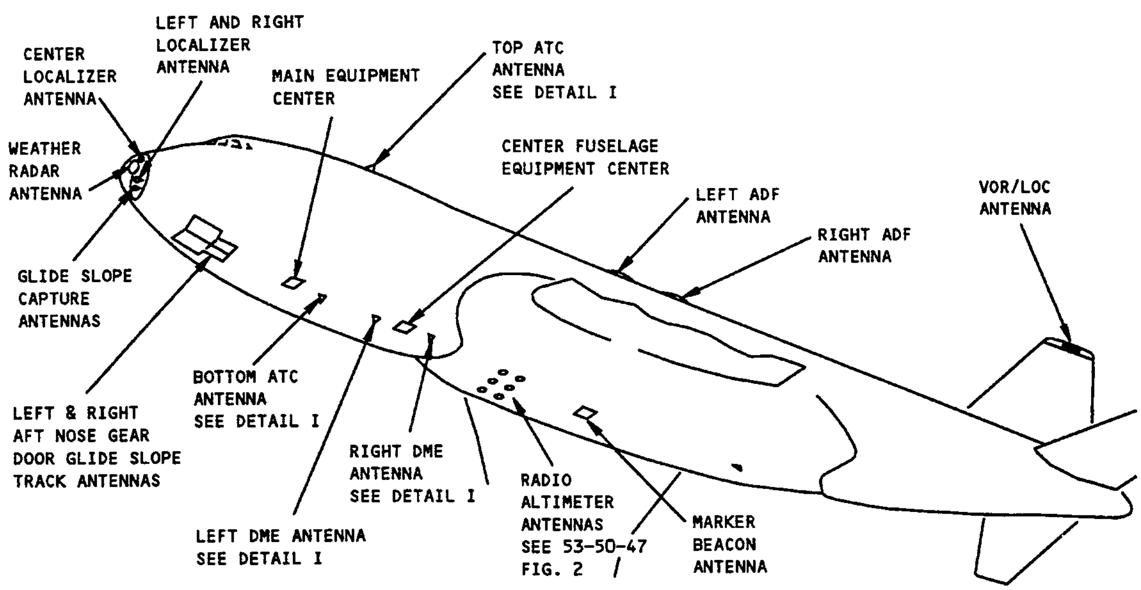
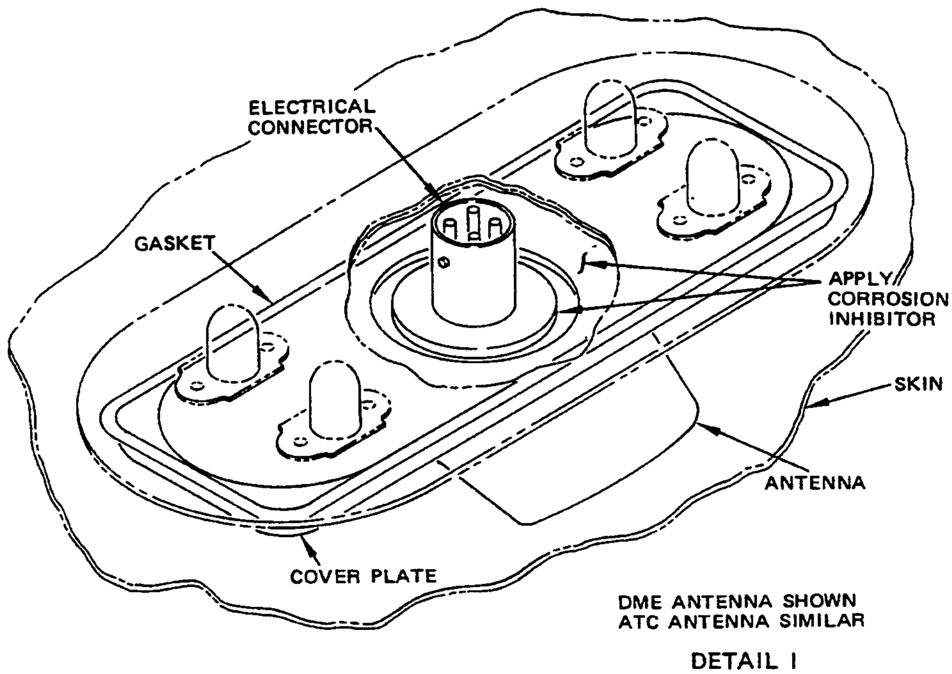


747-100, -200, -300



747-400

Navigation Antennas
Figure 1 Sheet 1



Navigation Antennas
Figure 1 (Sheet 2)

1. General

   A. Several reports of corrosion damage to the DME (distance measuring equipment) and the ATC (air traffic control) antenna systems have been received. Several of the antenna components required replacement. Damage was attributed to the failure of the electrical connector support.

   B. Corrosion can occur between the exterior-mounted antennas and the fuselage skin.

2. Corrosion Prevention

   A. Regularly remove the antennas and examine the mating surfaces and the electrical connector support for corrosion.

   B. Remove minor corrosion with the procedures of Volume 1, 20-40-00.

   C. Apply water displacing corrosion inhibiting compound to the electrical connector support.

   D. Because the electrical connector support is of thin tubular material, large amounts of corrosion damage will usually make necessary the replacement of the component.

   E. Improved Corrosion Protection

      (1) At line number 937, PRR 82473 changed the procedures that install many of these antennas on the exterior of the airplane. BMS 10-79, Type III primer and BMS 3-27 corrosion preventive compound are applied to the skin under the antennas, and the fasteners are cadmium-plated stainless steel.

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CHAPTER

36

PNEUMATIC

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		INDEX	TERMINATING
AREA	PROBLEM	PREVENTION VOLUME 2	ACTION (IF ANY)
Distribu-tion	Firewall shutoff valve on RB211 engines	36-10-47	

Specific Corrosion Problems - Pneumatic
Figure 2

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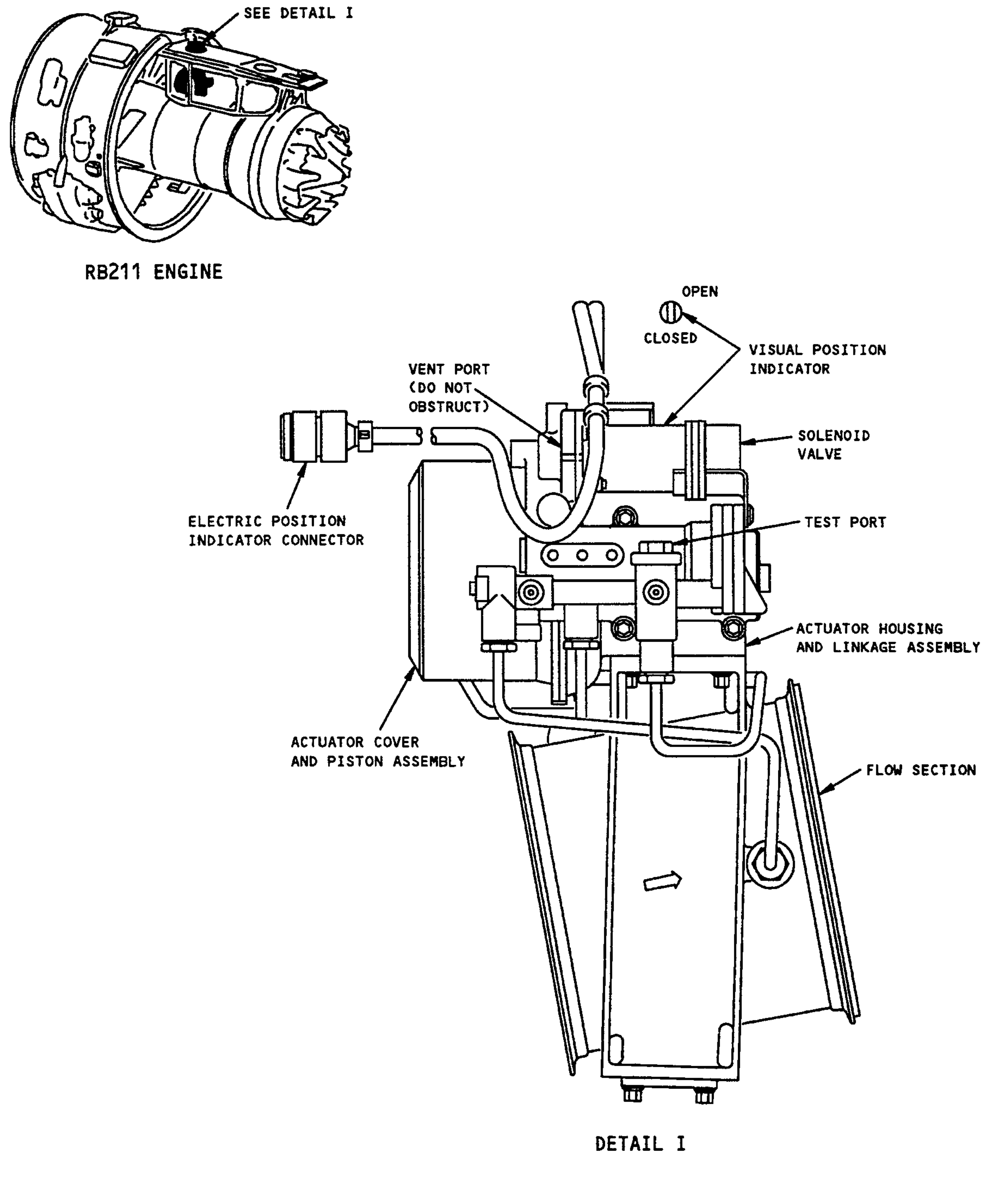

Firewall Shutoff Valve
Figure 1

1. General

A. On RB211 engines, in the firewall shutoff valve, corrosion can occur on the bearings of the butterfly shaft. Also, cadmium oxide can collect in the solenoid latch-end cavity and prevent solenoid operation.

2. Corrosion Prevention

A. Regularly examine the interior of the solenoid valve and the bearings on the butterfly shaft. For Garrett (V59364) units refer to Garrett CMM 36-13-25.

B. Improved Corrosion Protection

(1) At line number 817, a production change installed firewall shutoff valves with better protection against cadmium oxide in the solenoid latch-end cavity. This change can be made to other airplanes with Garrett SB 32090304-36-1521.

CHAPTER

38

WATER/WASTE

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WASTE/WATER

AREA	CORROSION PROBLEMREA	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Potable Water System	Aluminum pressure relief valves	38-10-47 Fig. 1	
	Corrosion resistant steel pressure relief valve replacement		SB 38-2009
	Vertical support attach fitting		
	Aluminum unions		SB 38-2018
Waste Disposal	Rinse valves on Envirovac toilets	38-30-47 Fig. 1	
	Precharge control valve actuators		

Specific Corrosion Problems - Water/Waste
Figure 1

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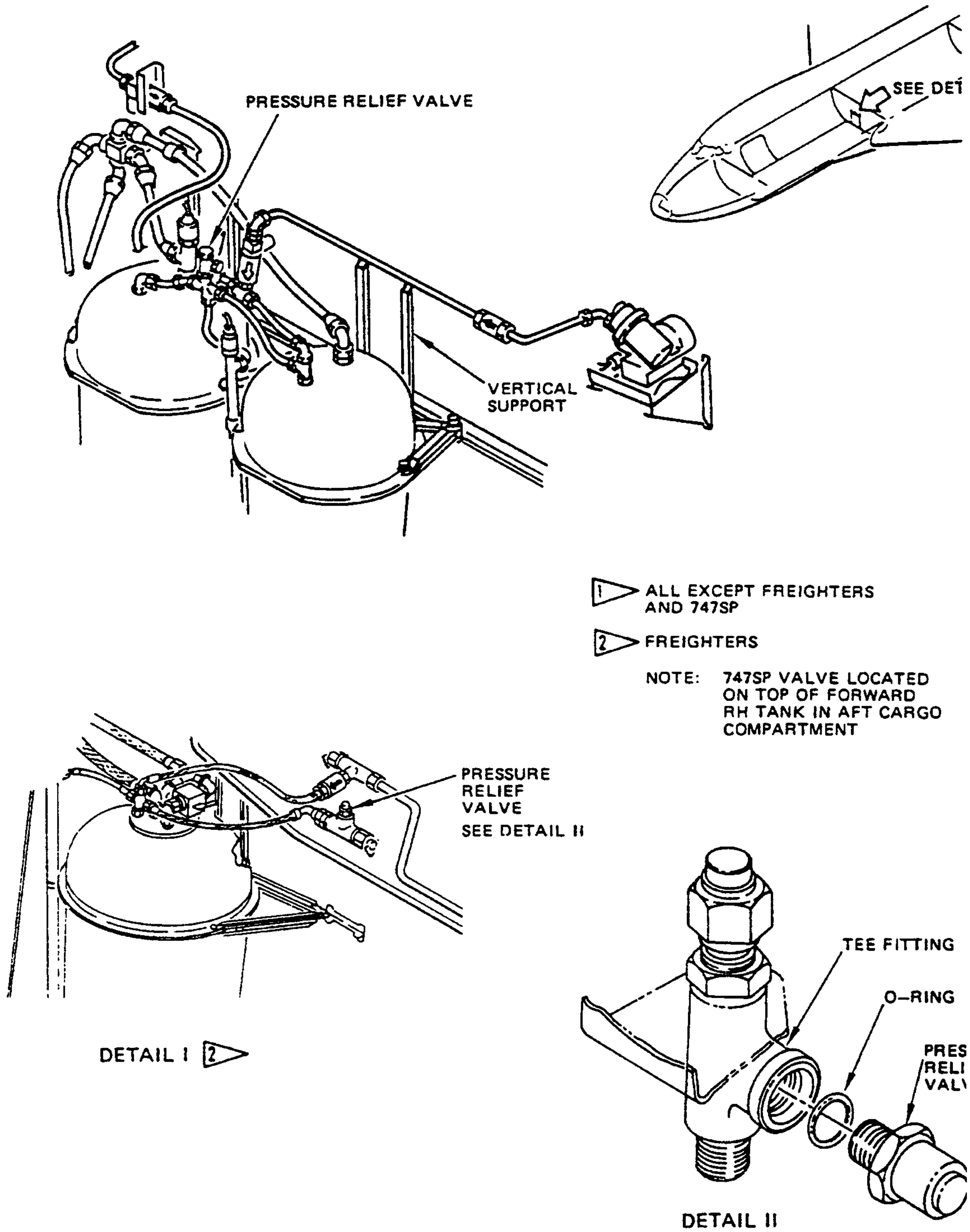
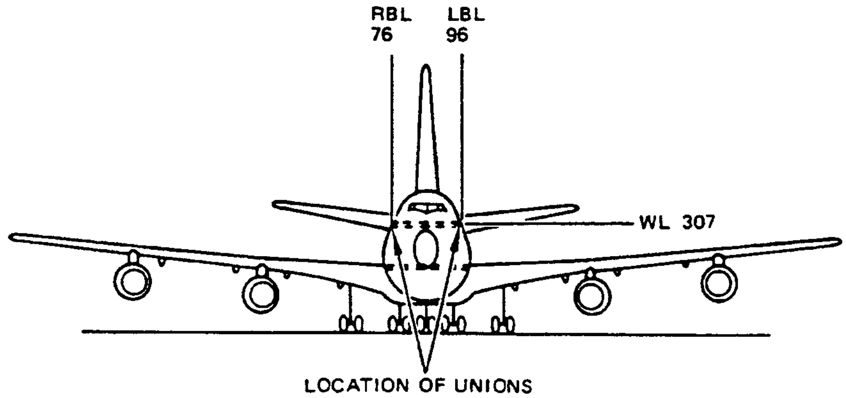
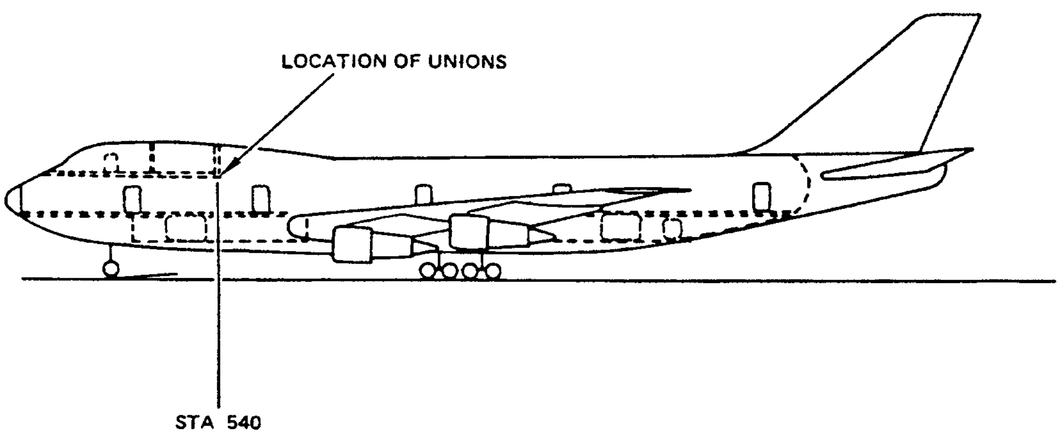
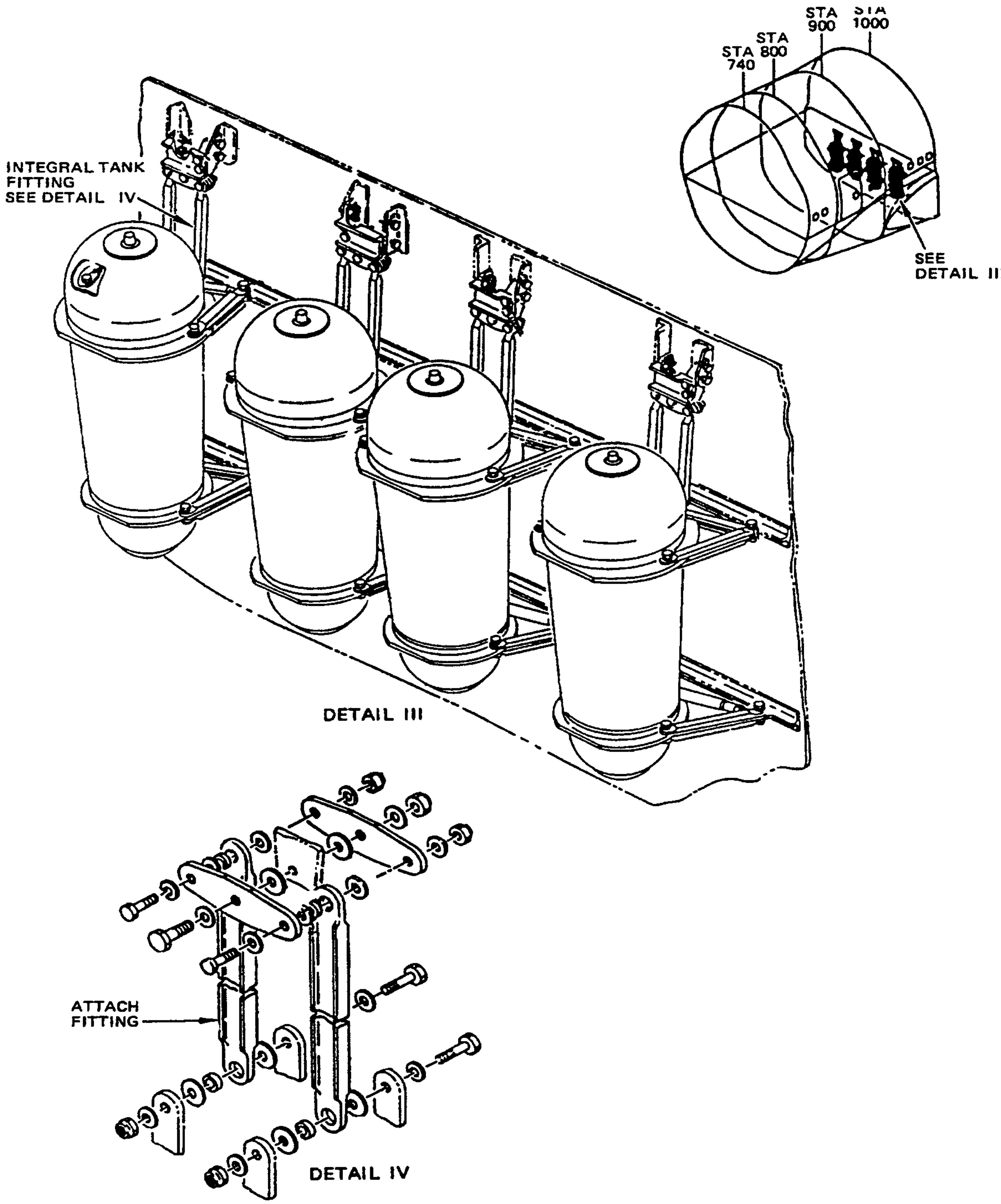


Potable Water System
Figure 1 (Sheet 1)





Potable Water System
Figure 1 (Sheet 2)



Potable Water System
Figure 1 (Sheet 3)

1. General

A. Aluminum potable water pressure relief valves can corrode due to chemical reaction of the valve components with chlorinated water vapor. Corrosion can cause the relief valve to stick in the open or closed position.

B. One operator reported potable water tank upper attach fitting separation. This fitting attaches to the vertical support fitting. The separation was due to corrosion.

C. Corrosion can cause water leaks in potable water system unions at stations 1304 and 1730. These unions were of an aluminum alloy material. If you find aluminum fittings, replace them with the equivalent CRES fitting.

D. Corrosion can cause integral tank fittings (Fig. 1, Detail IV) to come apart from the affected tank.

2. Corrosion Prevention

A. Make the regular inspections of Volume 1, 20-20-00 to stop or find the start of corrosion. Fasteners that are gone, or white powdery or other deposits are signs of corrosion.

B. After you clean the areas, do the inspections of Volume 1, 20-20-00 to make sure that protective finishes stay serviceable.

C. For small amounts of corrosion, to decrease the downtime of the airplane, clean off the corrosion products. Apply a corrosion inhibiting compound into the affected area to stop the corrosion process. Refer to Volume 1, 20-60-00 for how to apply corrosion preventive compound. Repair the finish system when the maintenance schedule permits.

D. Frequency of Application

(1) Regular inspection is required to areas that can get corrosion and should agree with the schedule in the Maintenance Planning Document. Operators must know of reported problems and areas.

E. Improved Corrosion Protection

(1) Aluminum valves were replaced by corrosion resistant steel valveson line number 144 and on, plus airplanes incorporating SB 38-2009. But SL 38-22 recommends replacement of the 80-psipressure relief valves with those set at 45 Psi.

(2) SB 38-2018 replaced potable water system aluminum unions with stainless steel unions at STA 540, LBL 96 and RLB 96. This change was made to comply with United States health service specifications and to prevent leaks due to corrosion. Aluminum unions may have been used in other locations in the potable water system (Fig. 1, Sheet 2).

1. General

A. Corrosion can occur on the rinse valve armature and inner valve of Envirovac toilets.

B. Corrosion can occur in the electric actuators for the precharge control valves on the waste tanks.

2. Corrosion Prevention

A. Regularly examine the Envirovac toilet rinse valves and the waste tank pre-charge control valve actuators for corrosion.

B. Envirovac plans to make available a better toilet rinse valve with different plating details.

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CHAPTER

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DOORS

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AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Passenger and Crew Doors	Door gates	52-10-47 Fig. 1	
	Torque tube bearings		
	Torque tube Door stop fittings		
	Door No. 3 lower chord frame angles Power assist actuators		
	Bolt in emergency linkage mechanism		
Emergency Exit Hatch	Latch mechanism	52-20-47 Fig. 1	SB 52-2046
Cargo Doors	Latches and bellcranks - forward and aft lower cargo doors	52-30-47 Fig. 1	SB 52A2233 (super-sedes SB 52-2084, SB 52-2107)
	Interframe ribs		
	Lower latch rod assemblies		
	Door latches and sill truss fittings		
	Passivated A286 CRES nutplates mating structure		SB 52-2218
	Pull-in-hook actuator support fittings 65B04733-1, -3		Replace by fittings 65B04733-5
Lavatory Service Panels	Area adjacent to and aft of lavatory service panel	52-40-47 Fig. 1	
Electronics Bay External Access Door		52-40-47 Fig. 2	
Landing Gear Doors	Aft radius rods	52-80-47 Fig. 1	
	Wing gear door operating strut rod ends	52-80-47 Fig. 1	

Specific Corrosion Problems - Doors
Figure 1

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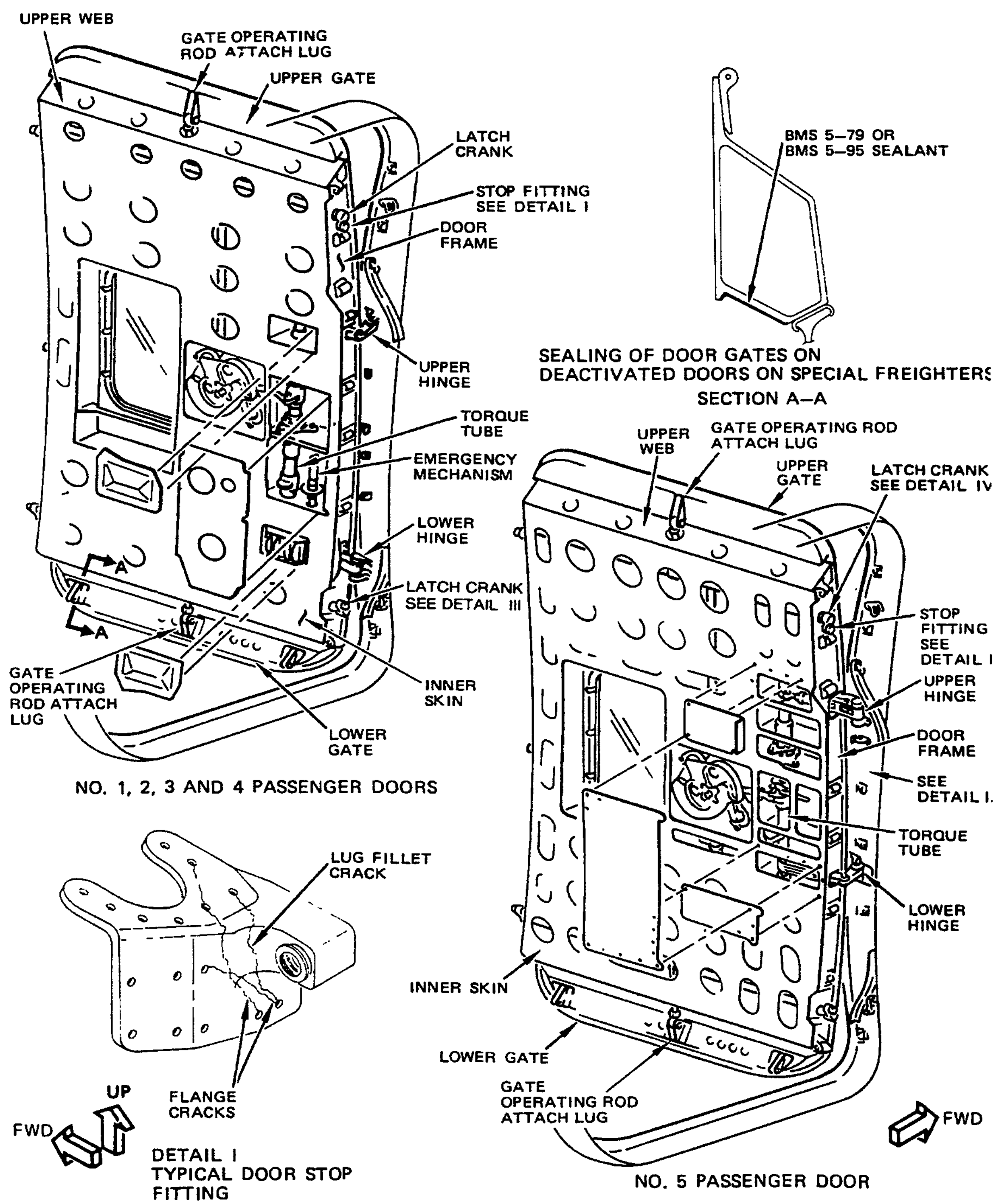
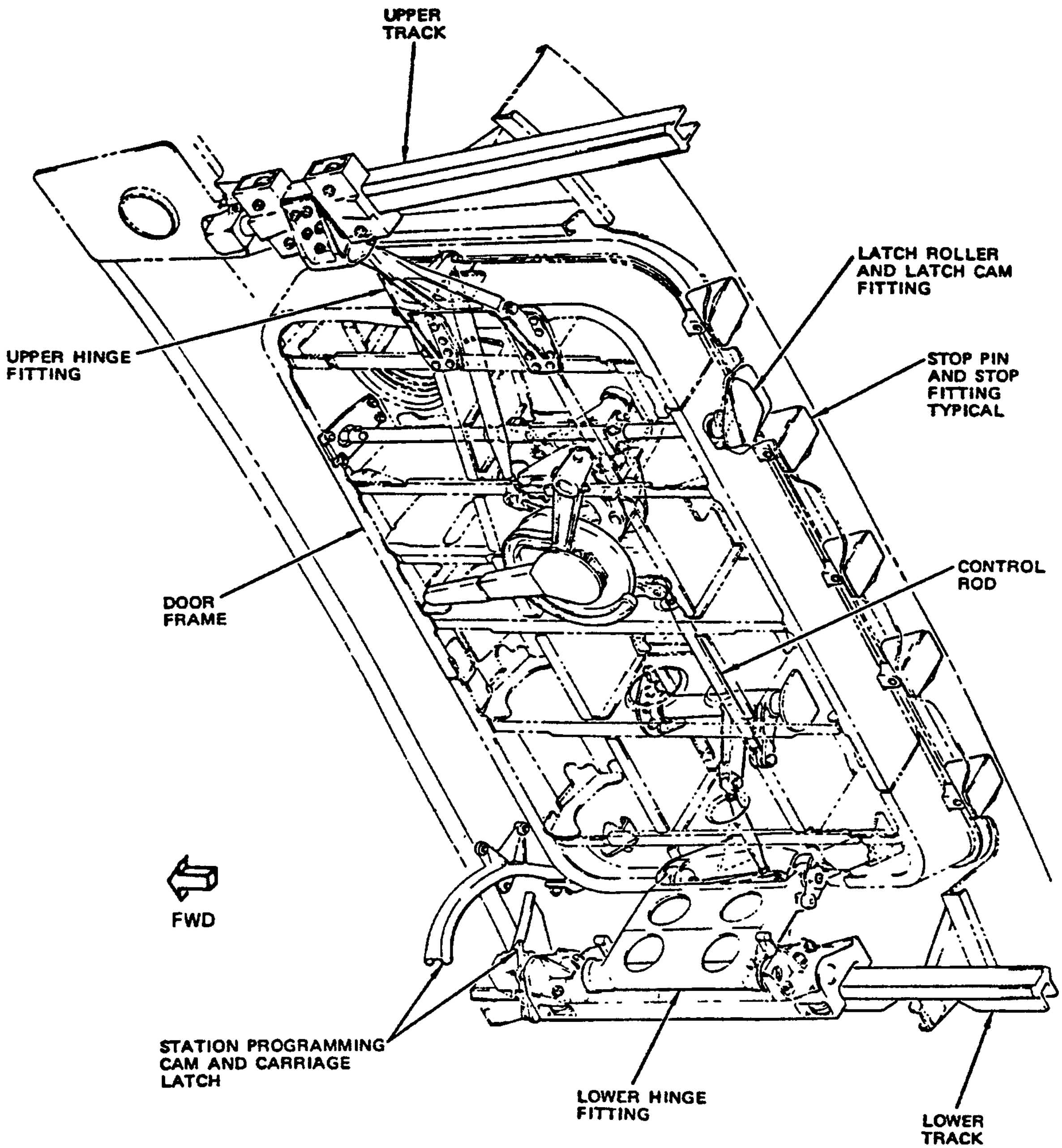
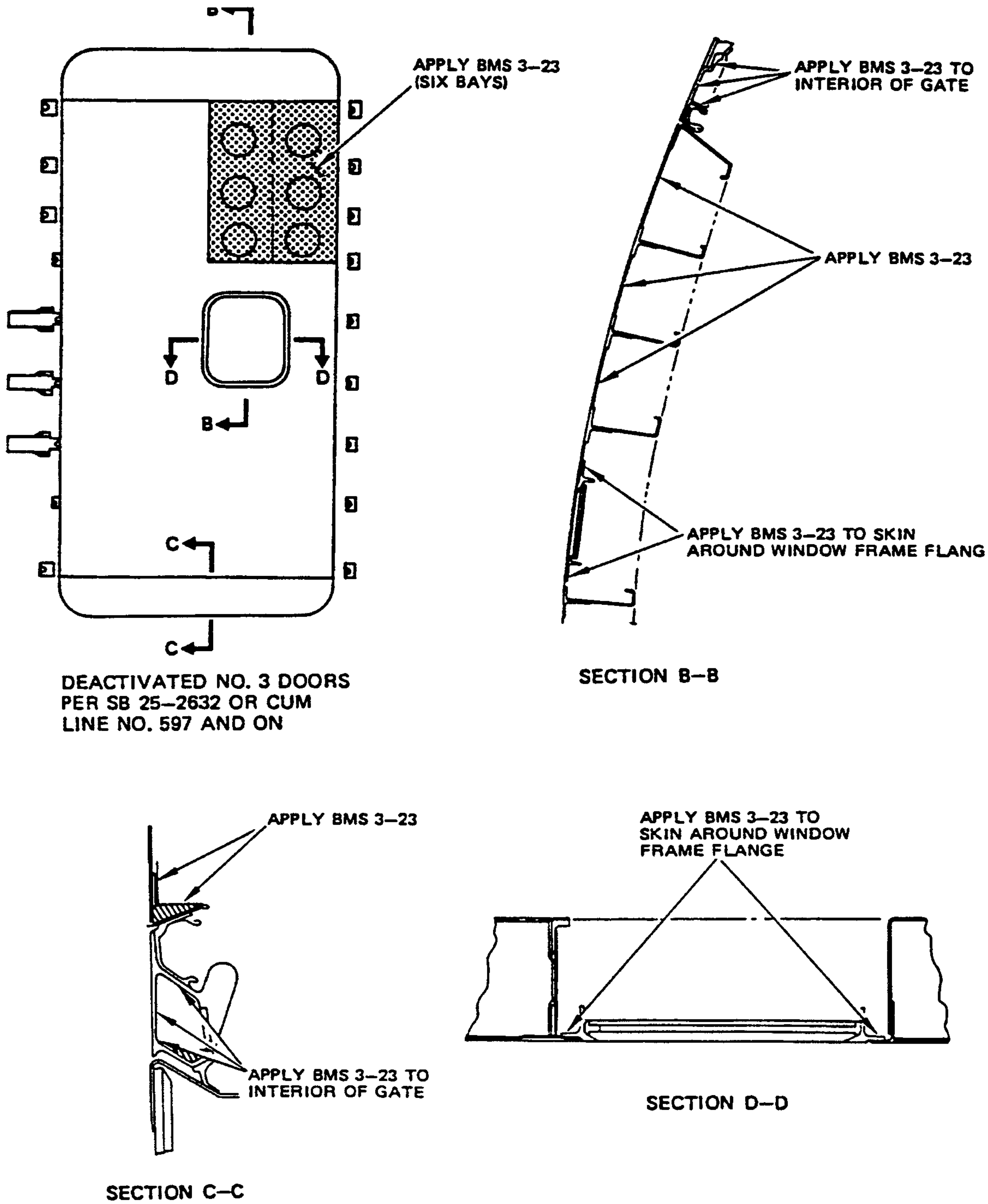


Passenger and Crew Doors
Figure 1 Sheet 1

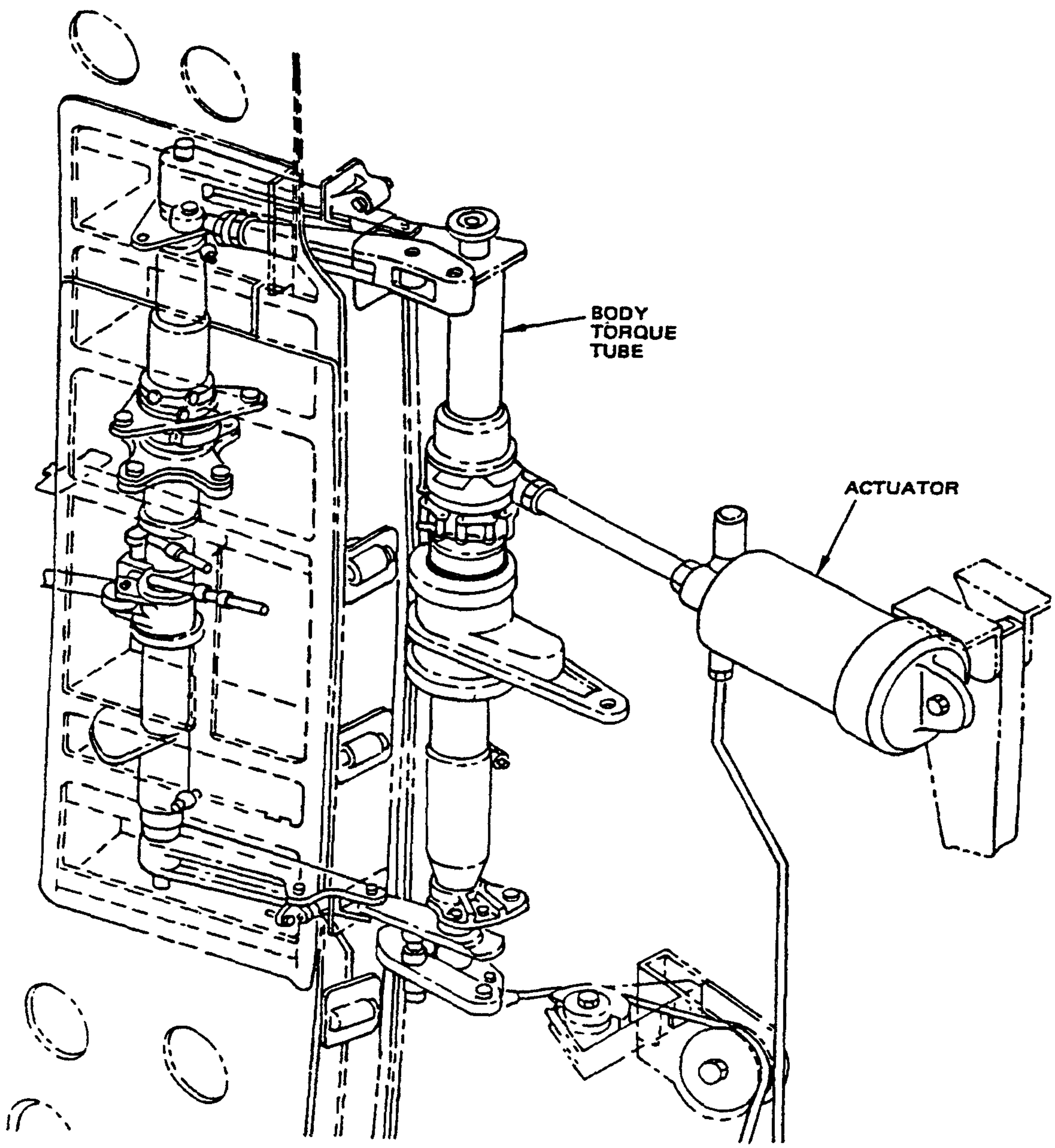


CREW DOOR

Passenger and Crew Doors
Figure 1 Sheet 2



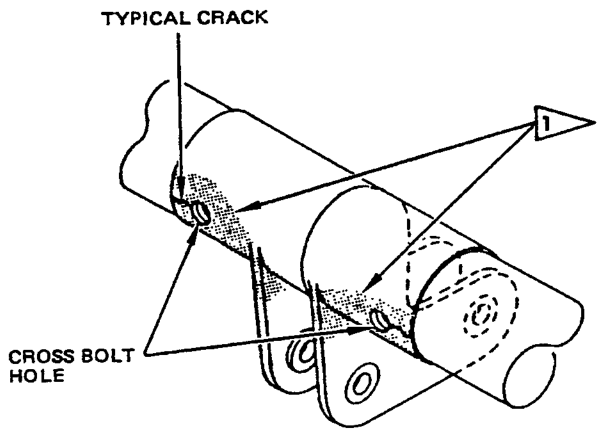
Passenger and Crew Doors
Figure 1 Sheet 3



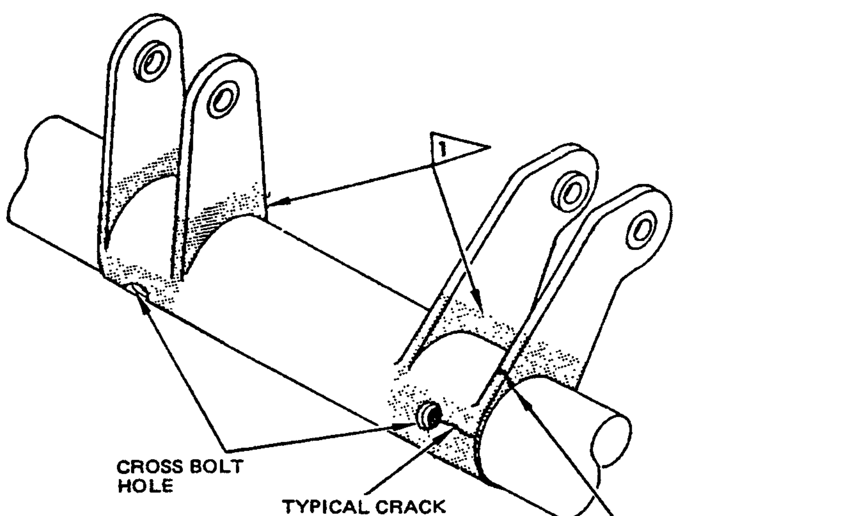
POWER ASSIST SYSTEM

DETAIL II

Passenger and Crew Doors
Figure 1 Sheet 4



LOWER CRANK ASSEMBLY
DOORS NO. 2 & NO. 4
DETAIL III



DOOR NO. 5 UPPER
CRANK SHOWN.
DOOR NO. 5 LOWER
CRANK SIMILAR
DETAIL IV

[1] RECOMMENDED INSPECTION AREA (SHADED) USING PENETRANT INSPECTION PER SB 52-2090

Passenger and Crew Doors
Figure 2 Sheet 5

1. General

A. Areas for possible corrosion are the internal and external structure of the door and connection points. Surfaces which are concealed when door is closed are also possible corrosion areas.

B. Corrosion of the main entry door gates and gate operating rod attachment lugs in particular, has been reported. These door gates are made from magnesium except in instances where operators have procured optional aluminum gates.

C. The main entry doors have been deactivated on 747 special freighters. Severe corrosion has been reported on the magnesium gates, especially the lower gates. Corrosion has been attributed to the accumulation of moisture.

D. Corrosion of the main entry door torque tube bearings has been reported. Improved protection to prevent the ingress of water has been added to airplanes line number 320 and on.

E. Stress corrosion cracks have been reported on the passenger/crew door torque tubes. Corrective action is illustrated in SL-52-25.

F. Stress corrosion cracks have been reported on door stop fittings of left and right No. 1, 3, 4, and 5 main entry doors.

G. Corrosion has been found in the No. 5 door power assist actuators, both internally and externally, and at the pressure regulator/relief valves. This corrosion can be the result of water entering through the exhaust ports.

H. Stress corrosion has been the cause of fractures in the entry door latch torque tube crank assembly (Fig. 1, Detail III, IV).

I. Stress corrosion cracks occurred in lower chord frame angles of the No. 3 entry door.

J. Corrosion can occur on the bolt between the aft girt bar lock engaging crank and the girt bar lifter on the No. 5 main entry doors.

K. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. Missing fasteners, white powdery or any discolored deposits are evidences of the existence of corrosion which should alert operators that some corrective action is required. A corrosion prevention program should be initiated to prevent the accumulation of corrosive products in order to minimize the occurrence of corrosion.

B. Following cleaning of suspected areas, a thorough inspection as described in Volume 1, 20-20-00 is effective to ensure that protective finishes provided during manufacture remain intact.

C. Where corrosion exists (noticeable bulges of the skin or white deposits of corrosion products at fastener heads or joint edges), refer to Structural Repair Manual for details of corrosion removal.

D. For minor corrosion, to minimize the downtime of the airplane, the corrosion products should be cleaned off, followed by the application of a corrosion inhibiting compound into the affected area to retard the corrosion process (Ref Volume 1, 20-60-00). The finish system should be restored at the first opportunity consistent with the maintenance schedule.

E. Prevention Treatment

(1) At the earliest opportunity consistent with the schedule maintenance activity, corrosion prevention treatment should be accomplished in the doors.

(2) The external surface areas of doors should be treated same as the exterior surfaces of the fuselage (Ref 53-30-47, Fig. 1).

(3) Remove liner and gain access to interior structure of door.

(4) For airplanes incorporating SB 25-2632 or airplanes line number 597 and on with deactivated number 3 door, inspect as follows:

(a) Remove insulation around door window frame and from six bays above door window.

(b) Remove insulation around periphery of door between door and door cutout structure.

(c) Clean off BMS 3-23 corrosion inhibitor from interior surface of door outer skin in area outboard of removed insulation and from interior surfaces of door gates and from edge of stop fitting faying surfaces.

(d) Complete normal inspection.

(e) Reapply BMS 3-23 to areas cleaned in step (c).

(f) Reinstall quadracore, insulation and restore door to normal.

(5) Apply BMS 3-23 to the following areas:

(a) Interior surfaces of upper and lower door gates.

(b) Interior surfaces of door outer skin at the bottom adjacent to leveling compound.

(c) Interior surface of door out skin in six bays above door window and around periphery of door window.

(d) Door and fuselage stop fittings at faying surfaces.

(6) Apply 5 to 10 mils of BMS 5-95 sealant and two coats of BMS 10-11, Type I primer to upper and lower gates outboard of blade seal to door outer skin.

(7) Clean out drains and drain paths.

(8) Apply corrosion inhibitor to interior structure of door with special attention given to lower corners.

NOTE: Some doors may have short cable lengths installed in the mechanism. Observe precautions of Volume 1, 20-60-00 for spraying corrosion inhibitor on these cables.

Apply corrosion inhibitor with care to prevent spraying onto bearings and silicone seals. Do not overspray to allow dripping onto door sill.

(9) On doors with cable lengths, wipe off grease with dry,.lint-free cloth and apply a thin film of grease over the length of cable.

(10) Check magnesium door gates for finish coating. If gate has green primer only, add additional coat of BMS 10-11 primer and top coat with white or grey epoxy enamel. If gates are finished white or grey, replace damaged finish if required.

On special freighters with deactivated entry doors, replace the gate seal if necessary. Apply 5 to 10 mils of BMS 5-95 sealant and two coats of BMS 10-11, Type I primer to door gate. (See Section A-A.) Also apply two coats of BMS 10-11 primer to the titanium thresholds.

(11) Apply corrosion inhibitor to exterior surfaces of door frames, upper and lower web and door gates.

(12) After application of corrosion inhibitor, all grease fittings and lubricated parts in treated areas should be relubricated. Refer to 12-21-04 of the Maintenance Manual.

(13) Inspect the main entry door torque tube bearings for evidence of corrosion. Apply MIL-G-23827 grease to the top of the bearings, filling cavities in the bearing housing to prevent the ingress of moisture.

(14) Reinstall liner and restore door to normal.

(15) Examine the upper and lower entry door latch torque tube crank for corrosion. Refer to SB 52-2090 for details.

F. Frequency of Application

(1) Regular inspection is necessary in areas that can get corrosion and should agree with the schedules in the Maintenance Planning Document. Operators must know of reported problems and areas.

(2) Regular application of BMS 3-23 compounds is necessary to areas identified and should agree with the schedule in the Maintenance Planning Document.

G. Improved Corrosion Protection

(1) On airplane line numbers 681, 688 and on, PRR 80520 added corrosion protection to the emergency-power-door actuator. A vented aluminum cap is added over the actuator's regulator to prevent water entry. BMS 3-23, Type 1 corrosion inhibiting compound is applied to the actuator external surfaces. The insulation blanket is removed from the actuator bay to prevent blankey contact with the actuator. These changes can be added on earlier airplanes by SB 52-2203.

(2) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

(3) At line number 1011, PRR 82788-1 applied BMS 3-23 compound to the inside structure of the main deck passenger doors and the upper deck Type A door and crew service door.

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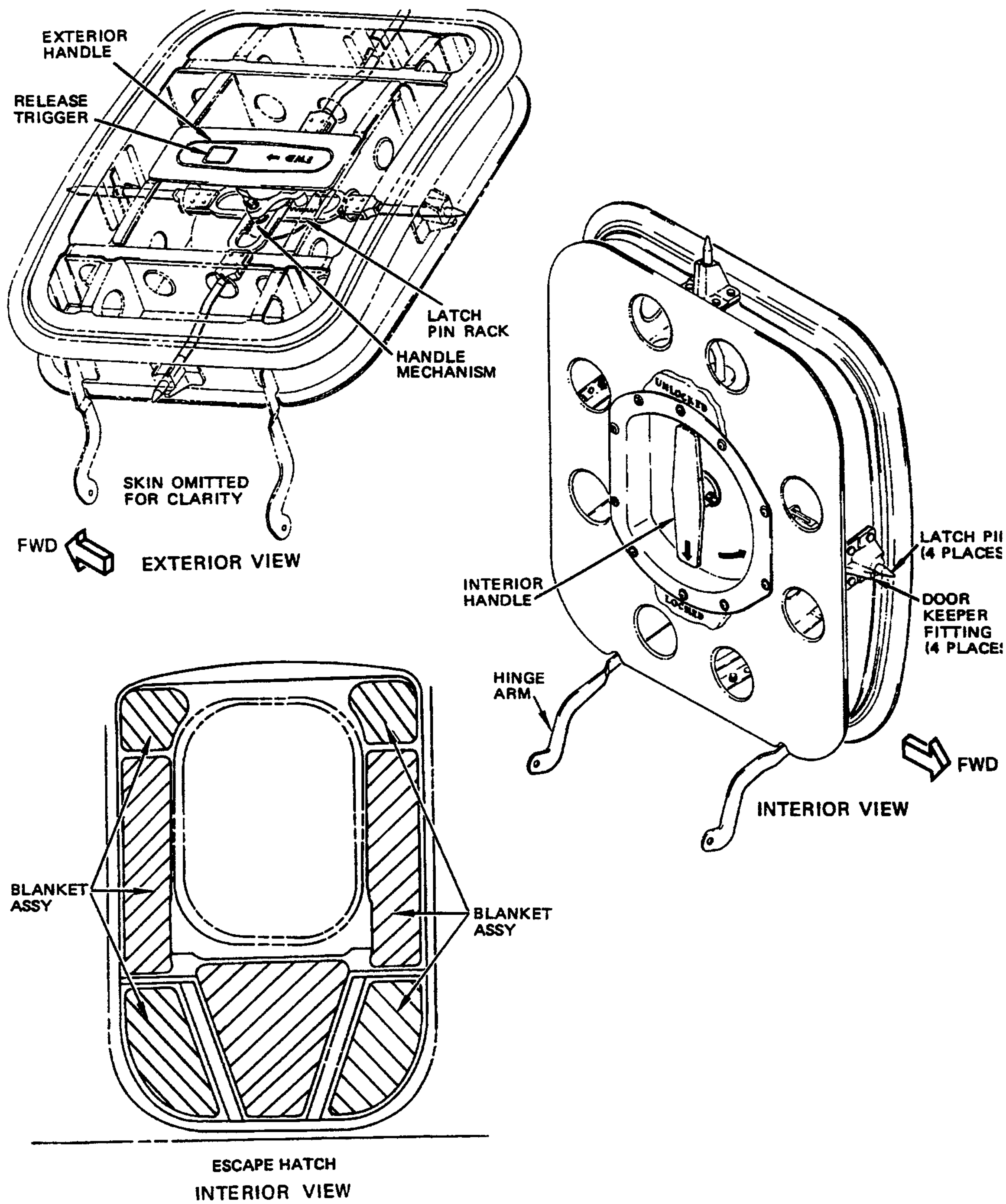

Emergency Exit Hatch
Figure 1

1. General

   A. The latch mechanism for the overhead escape hatch can get corrosion because of collected moisture.

   B. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

   A. Make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. Missing fasteners, white powdery or any discolored deposits, are evidence of the existence of corrosion which should alert operators that some corrective action is required. A corrosion prevention program should be initiated to prevent the accumulation of corrosive products in order to minimize the occurrence of corrosion.

   B. Following cleaning of suspected areas, a thorough inspection as described in Volume 1, 20-20-00 is effective to ensure that protective finishes provided during manufacture remain intact.

      (1) On airplanes thru line number 116, examine the latch mechanism for corrosion.

      (2) On airplanes line number 117 and on, and those changed per SB 52-2046, the latch mechanism is not as susceptible to corrosion but a periodic check is recommended to make sure that drain holes are not blocked.

      (3) On airplane line number 152, which has more insulation for overwing latches, make sure the insulation does not block moisture drainage.

   C. Where corrosion exists (noticeable bulges of the skin or white deposits of corrosion products at fastener heads or joint edges), refer to Structural Repair Manual for details of corrosion removal.

   D. For minor corrosion, to minimize the downtime of the airplane, the corrosion products should be cleaned off, followed by the application of a corrosion inhibiting compound into the affected area to retard the corrosion process (Ref Volume 1, 20-60-00). The finish system should be restored at the first opportunity consistent with the maintenance schedule.

   E. Prevention Treatment - Clean out blocked drain holes.

   F. Frequency of Application

      (1) Periodic inspection is required to areas identified as susceptible to corrosion and should be consistent to the schedules specified in the Maintenance Planning Document. Operators must be aware of reported problems and areas of occurrences.

      (2) Periodic application of BMS 3-23 compounds is necessary to areas identified and should be consistent to the schedule specified in the Maintenance Planning Document.

G. Improved Corrosion Protection

(1) At line number 117, PRR 73487 added drain holes and changed the latch mechanism material. These changes can be made on earlier airplanes with SB 52-2046.

(2) Airplane line number 152 has more insulation for overwing latches.

(3) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

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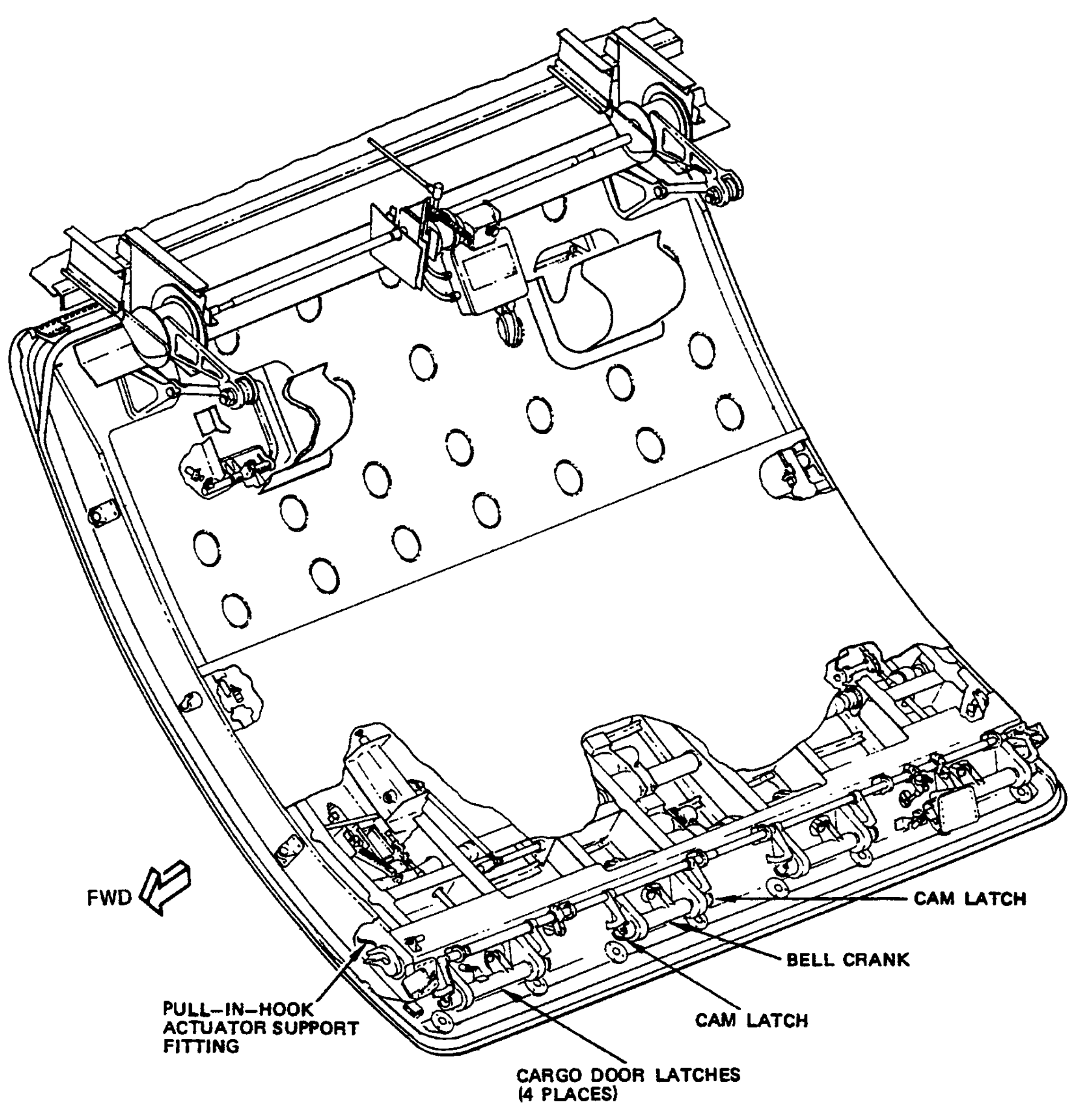
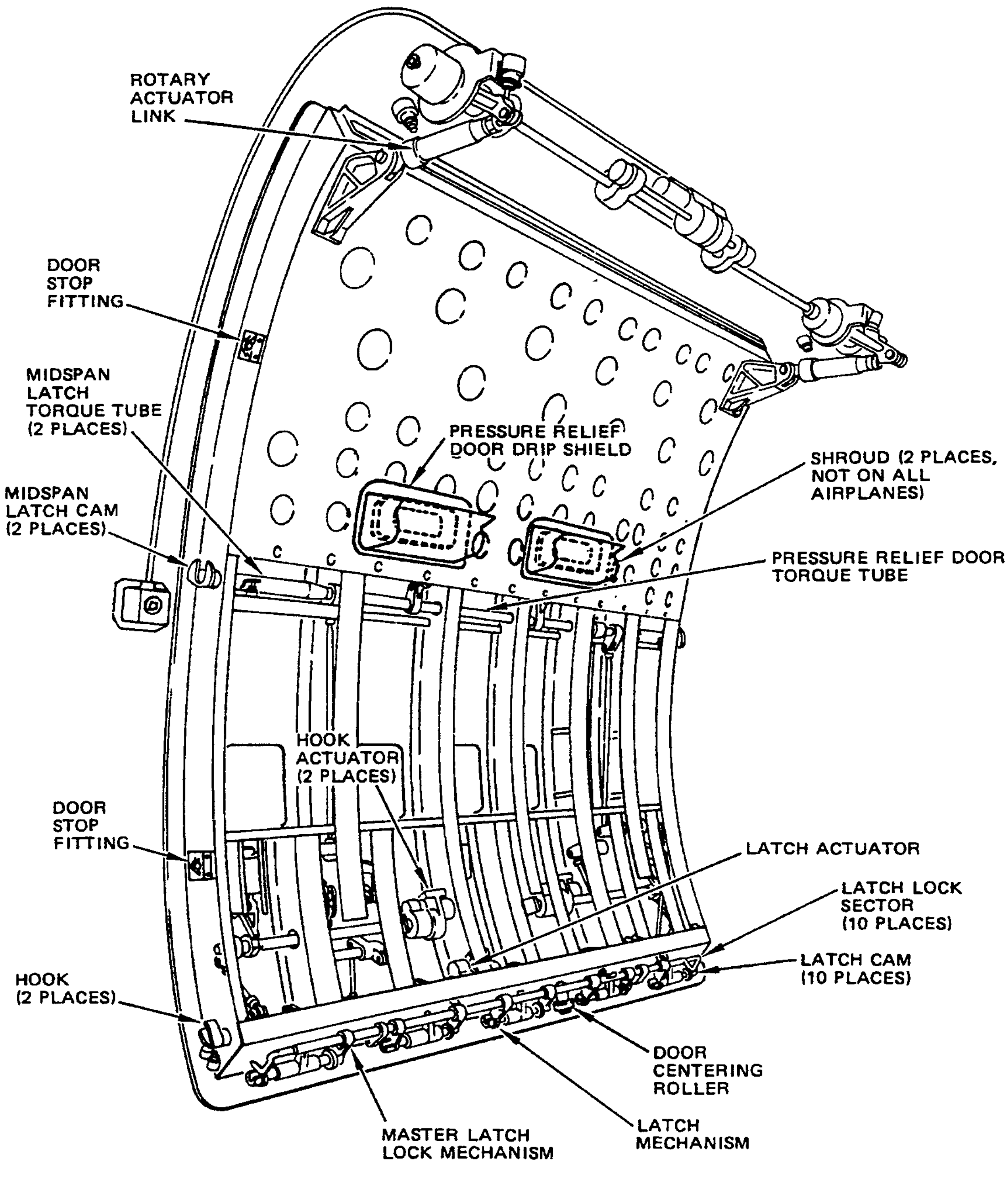
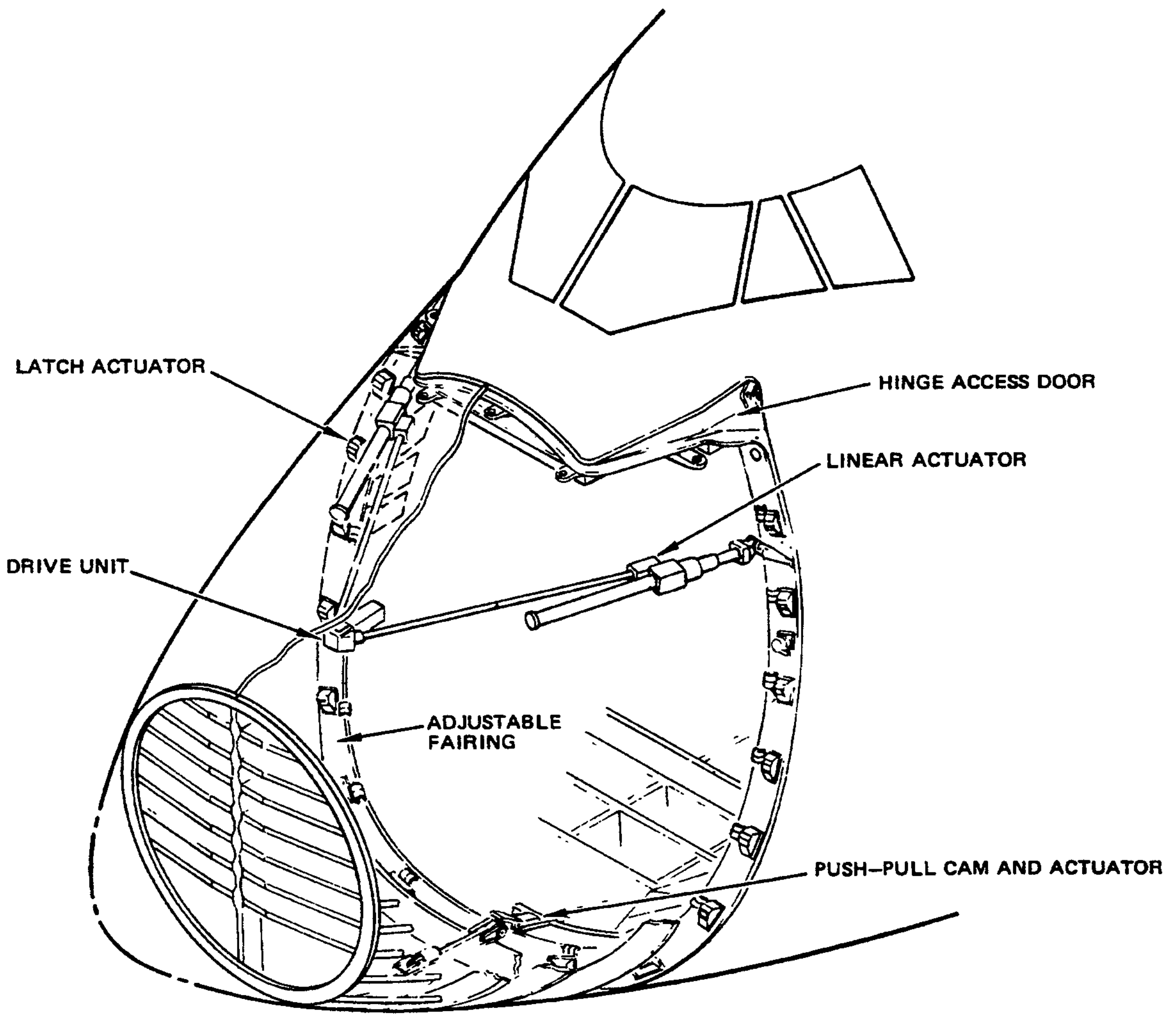


Cargo Doors
Figure 1 Sheet 1



SIDE CARGO DOOR

Cargo Doors
Figure 2 Sheet 2



NOSE CARGO DOOR

Cargo Doors
Figure 3 Sheet 3

1. General

A. Corrosion has been reported on the high strength steel latches of the forward and aft lower cargo doors. In some instances, this has resulted in fracture of the cam latch and an inoperable cargo door. From line number 250, a change in material was made and a lubrication fitting on the bellcrank was added. SB 52A2233, which supersedes SB 52-2084 and SB 52-2107, gives inspection and repair procedures for this area for airplanes thru line number 291.

B. Corrosion has been reported on the top surface of the two interframe ribs located on the fore and aft sides of the actuator motors inside the door.

C. Corrosion has been reported on the lower latch rod assemblies. The corrosion on the rod assemblies is apparently caused by the lockwire which secures the jamnuts on both ends of the rod.

D. Cracks have been reported in the 7079-T6 cargo door latches and sill truss fittings. It is required by Airworthiness Directive 79-17-02 as amended, that inspection intervals of the 7079-T6 truss and related 7079-T6 latch support fittings be reduced to 1200 hours until all 7079-T6 fittings have been replaced.

E. Corrosion has been found between cargo door hinge tangs. Surface corrosion was also found on all surfaces and around mounting holes of cargo door hinges.

F. Corrosion found on the forward and aft cargo doors was caused by passivated A286 CRES nutplates. In several incidents, the addition of a doubler was required to reinforce the corrosion damaged structure.

G. Stress corrosion can cause cracks on the 65B04733-3 pull-in-hook actuator fittings.

H. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Periodically examine cargo doors (Ref Volume 1, 20-20-00) to ensure that the protective finishes are intact. The preferred treatment for broken finishes is to replace the finish.

B. Prevention Treatment

(1) Refer to Volume 1, 20-60-00, for application of BMS 3-23.

(2) The external surfaces of doors should be treated the same as exterior surfaces of the fuselage (Ref 53-30-47, Fig. 1).

(3) Remove liner and gain access to interior door structure.

(4) Clean out drains and drain paths.

(5) Apply BMS 3-23 compound to the interior structure. Be sure you include the lower corners.

(6) Refer to SB 52--2218 on airplane line number 2 thru 772 for the corrosion protection improvement of fwd and aft cargo doors. This service bulletin replaces the passivated A286 nutplates with cadmium plated carbon steel nutplates.

(7) After you apply the BMS 3-23 compound, lubricate again all the grease fittings and other such parts in the treated areas (Ref 12-21-04 MM).

(8) Install the liner again and make the door serviceable.

C. Improved Corrosion Prevention

(1) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

(2) At line number 114, 7079-T651 pull-in-hook actuator support fittings 65B04733-1 were replaced by 7075-T6 fittings 65B04733-3. But other related fittings were changed to 7075-T351 aluminum. Because of stress-corrosion cracks in the 7075-T6 fitting 65B04733-3, these fittings are replaced by 7075-T351 fittings 65B04733-5.

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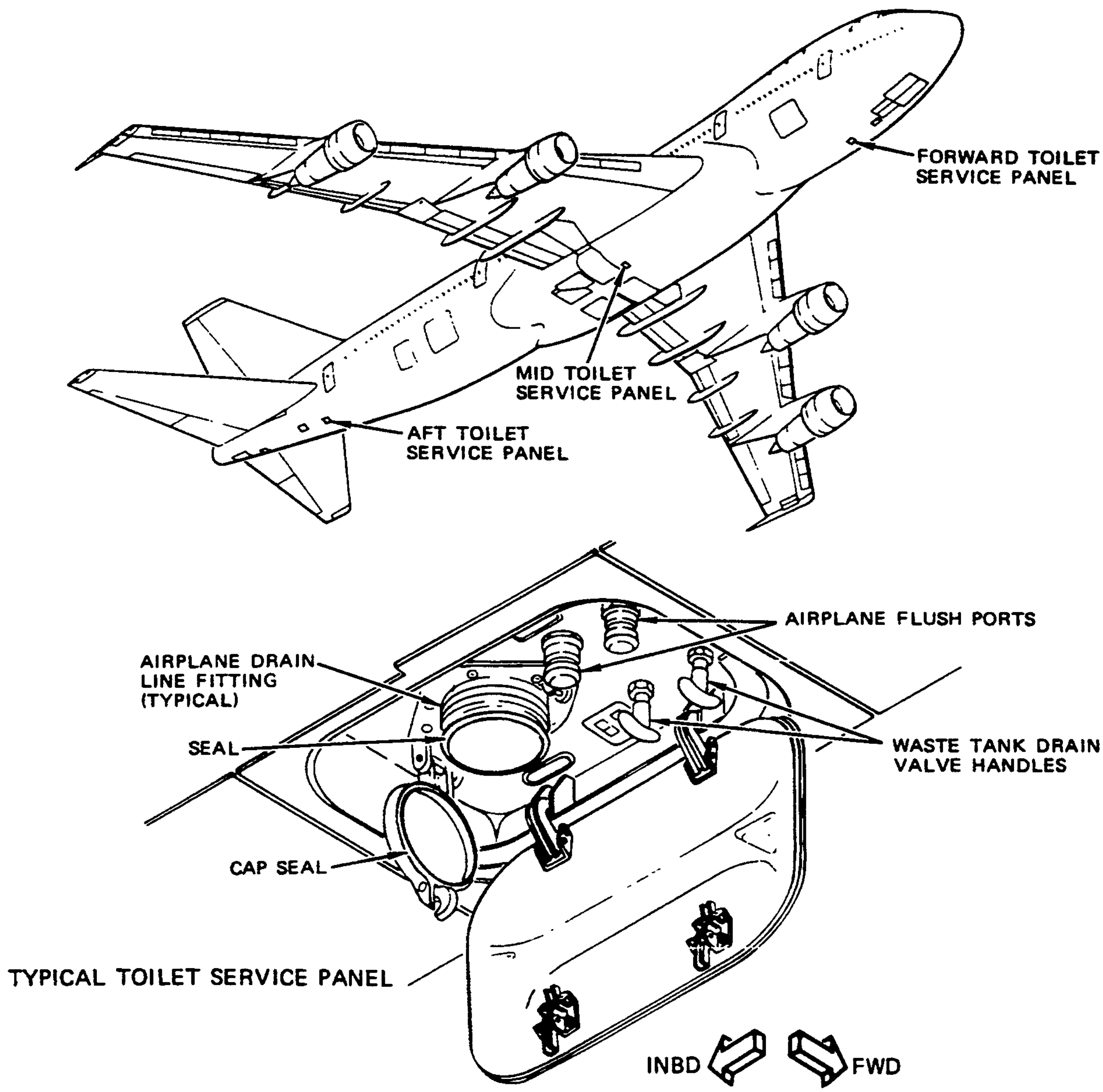


Lavatory Service Panels
Figure 1

1. General

A. The area adjacent to and aft of the lavatory service panel and the door can get stains and corrosion because of leaks from the toilet drain.

B. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. After you service the toilet tank, flush the lavatory service panel area with clean water.

B. Examine lavatory service panel and fuselage skin aft of panel for damaged finish and corrosion. Examine the service pan ring for corrosion, especially at the faying services of the pan and the ring, and around fasteners. Early stages of corrosion are not easily found. Corrosion usually starts from the inside on faying surfaces and is not seen until it gets through to the exterior surface.

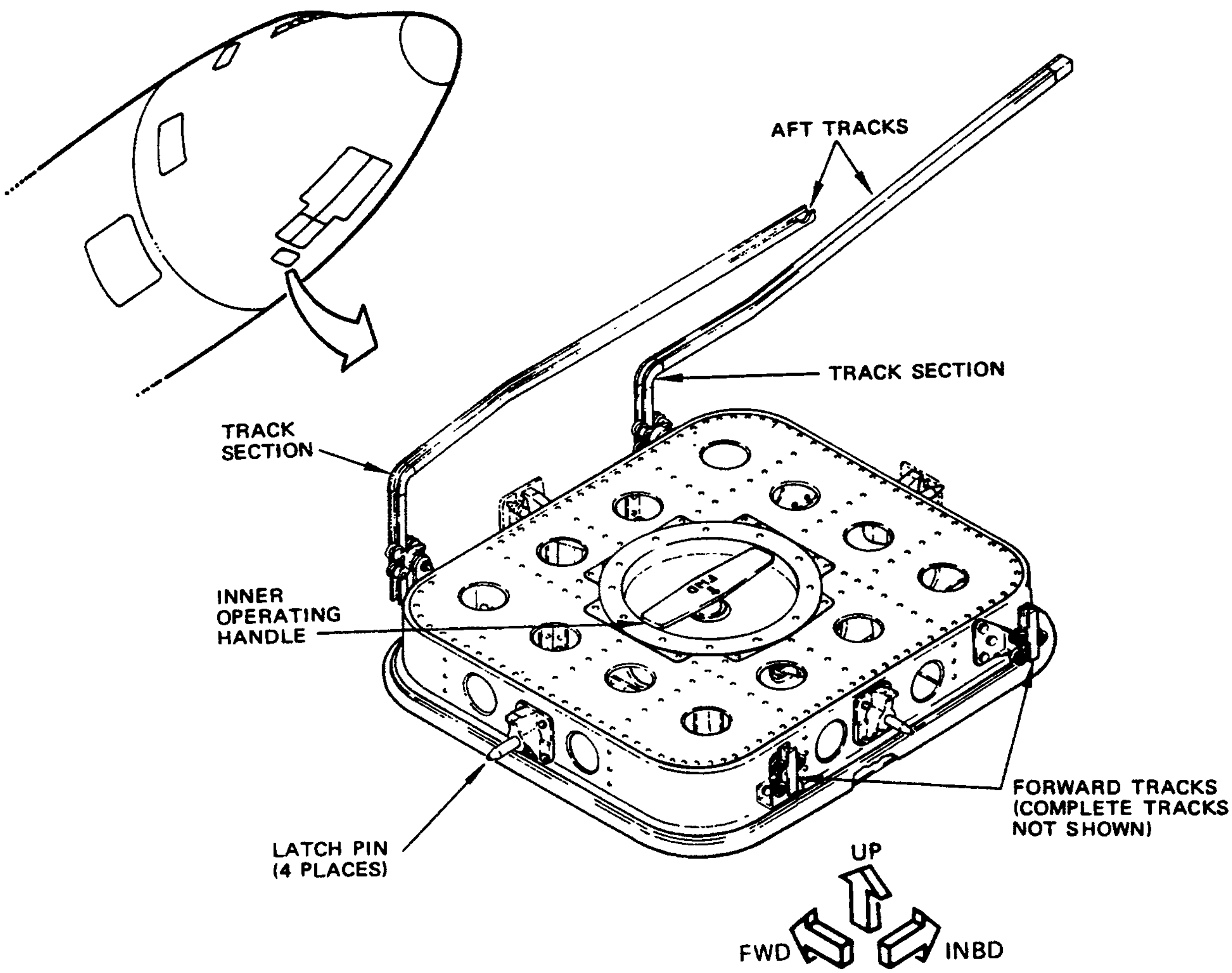
C. Apply BMS 3-23 along all panel edges and fastener heads. If there is deterioration of fillet seals, remove the sealant and apply BMS 3-23 compound into the joint. Refer to Volume 1, 20-60-00.

D. Replace the drain cap seal annually and replace the drain plug seal at least every 3 years.

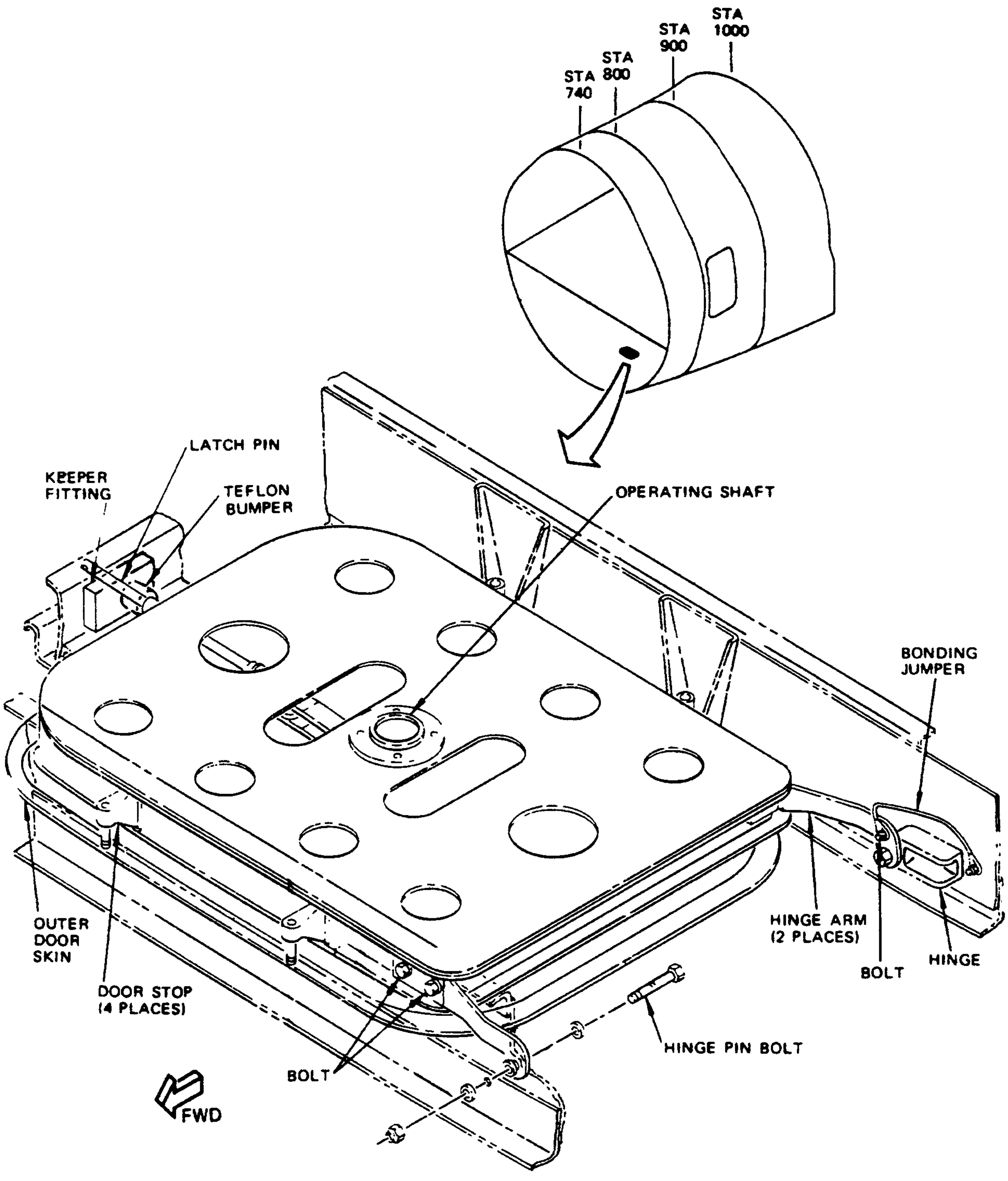
E. When corrosion exists, refer to Structural Repair Manual for lavatory service panel and Structural Repair Manual for fuselage skin.

F. Improved Corrosion Protection

(1) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.



Lavatory Service Panels
Figure 2 (Sheet 1)



Lavatory Service Panels
Figure 2 (Sheet 2)

1. General

A. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Periodically examine the doors (Ref Volume 1, 20-20-00) to ensure that protective finishes are intact.

B. Refer to Volume 1, 20-60-00, for application of BMS 3-23.

C. Gain access to interior structure of door.

D. Clean out drains and drain paths.

E. Apply BMS 3-23 to interior structure.

F. Restore door to normal.

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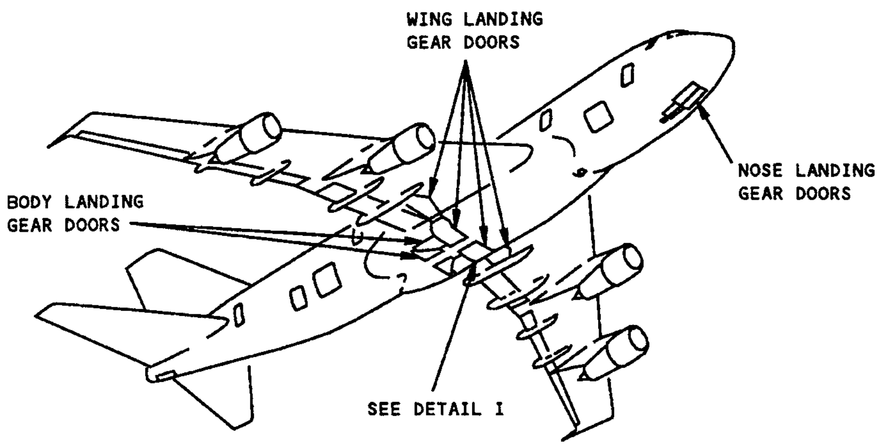

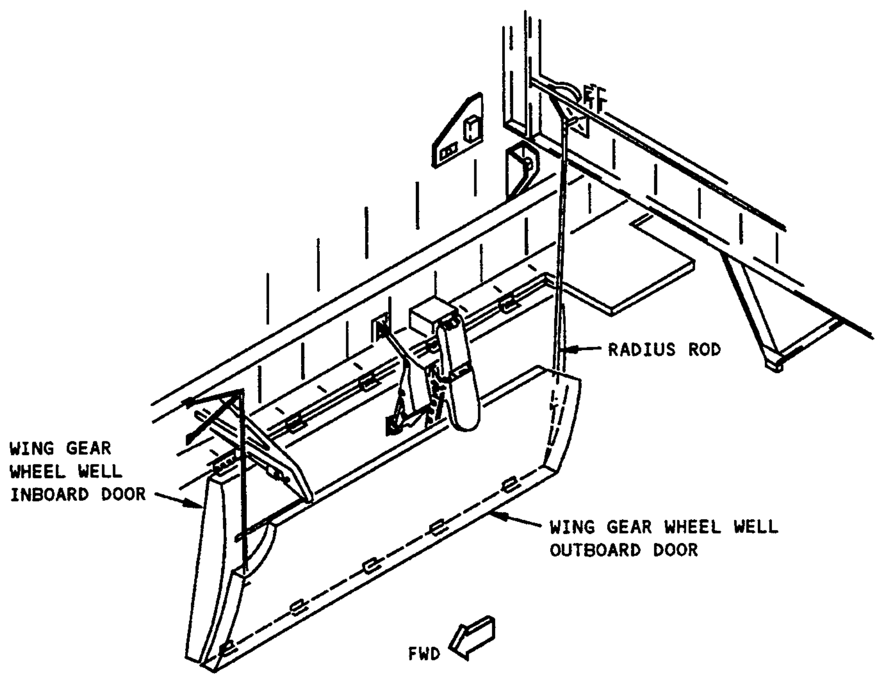

DETAIL I

Landing Gear Doors
Figure 1

1. General

A. The landing gear doors can get corrosion because they are open to dirt and water from the runway.

B. Stress corrosion caused cracked aft radius rods on the wing gear outboard doors. The cracks were on the body end of the swaged rod near the rod and fasteners.

C. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

D. Corrosion can occur on the rod end of the wing landing gear door operating strut.

2. Corrosion Prevention

A. Make the regular inspection of Volume 1, 20-20-00 to prevent or find the start of corrosion. Fasteners that are gone, or white powdery or other deposits are signs of corrosion.

B. After you clean the areas, do the inspection of Volume 1, 20-20-00 to make sure that protective finishes stay serviceable.

C. If you find corrosion, repair or replace defective parts or structure.

D. For small amounts of corrosion, to decrease the downtime of the airplane, clean off the corrosion products. Apply a corrosion inhibiting compound into the affected area to stop the corrosion process. Refer to Volume I, 20-60-00 for how to apply corrosion inhibiting compound. Repair the finish system when the maintenance schedule permits.

E. Prevention Treatment

(1) Remove dirt and collected debris from the doors and linkage, such as when you clean the landing gear or the wheel well.

(2) Look at the radius rods to see if they are cracked.

F. Frequency of Application

(1) Regular inspection is required in areas that can get corrosion and should agree with the schedule in the Maintenance Planning Document. Operators must know of reported problems and areas.

(2) Regular application of BMS 3-23 compounds is necessary in areas identified and should agree with the schedule in the Maintenance Planning Document.

G. Improved Corrosion Protection

(1) At line number 660, the main gear doors have fay surface sealed hinges and holes in the inner skin to make it easier to apply corrosion inhibiting compound.

(2) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

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CHAPTER

53

FUSELAGE

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AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Fuselage Drain Holes	Galley lower lobe	53-00-47 Fig. 2	SB 51-2020
	Nose gear wheel well		
	Structure in the area aft of the BS 2180 (1980 for 747SP)		
	Lower body interior structure in Secion 42, 44, and 46		
	Structure between BS 964.25 and front spar bulkhead at BS 1000		SB 51-2040
Crown Frames, Stringers and Skin	Stringers, frames and skins	53-10-47 Fig. 1.	
	Longitudinal lap splices		
	Section 48 H-11 fastener sealant		
	Upper crown frame and stringer splice fasten-ers		SB 53-2230, SB 53-2343
	Frame splices, stringers		
Lower Lobe Structure	Skin to stringer faying surface	53-10-47 Fig. 2	
	Skin and stringers BS 1740 thru BS 2180		SB 53-2156
	Skin panels BS 2360 thru BS 2484		SB53-2166
	Stringer 46 fay sealed skin lap joints		
	Stress corrosion cracks in stringers BS1000 to 1241		
	Bulkhead splice BS 2360		SB 53-2166
	Frame splice fitting BS 1800		SB 53-2233
	Structure in all of the forward lower fuselage at BS 460 to BS 1000		SB 53-2295
	Front-spar-bulkhead-lower chord angle between S-47L and S-47R		

AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Areas Under-Galleys and Lavatories	Seat tracks under galleys	53-10-47 Fig. 3	
	H and J lavatories and galley under spiral staircase		
	Overwing floor beams		
	Galley stairwell attachments		
	S and T lavatories		
	Floor panel setscrews		
	Main deck galley seat tracks		SB53-2187 SB 53-2188
	Main deck lavatory-to-seat track attachments		
	Structure below main and upperdeck floors		
	Floor panel holes		
	Cart lift cutout in upper deck floor		SB53A2400
Main Gear Wheel Well and Keel Beam	STA 1350 bulkhead lower chords	53-10-47 Fig. 4	SB 53-2115 SB 53-2196 SB 53-2310
	Adjacent to main landing gear trunnion backup fitting		
	Keel beam center structure		
	Crease beam upper surfaces		
	Pressure deck web STA 1265 and 1480		SB 53-2183
	Keel beam lower chord and splice plates		SB 53-2160
	Pressure deck web at STA 1265 and 1480		SB 53-2186
	Bulkhead, STA 1350		
	Bulkhead, STA 1480		
	Bulkhead fitting, STA 1350		
	Keel beam box, between wing center section and rear spar		

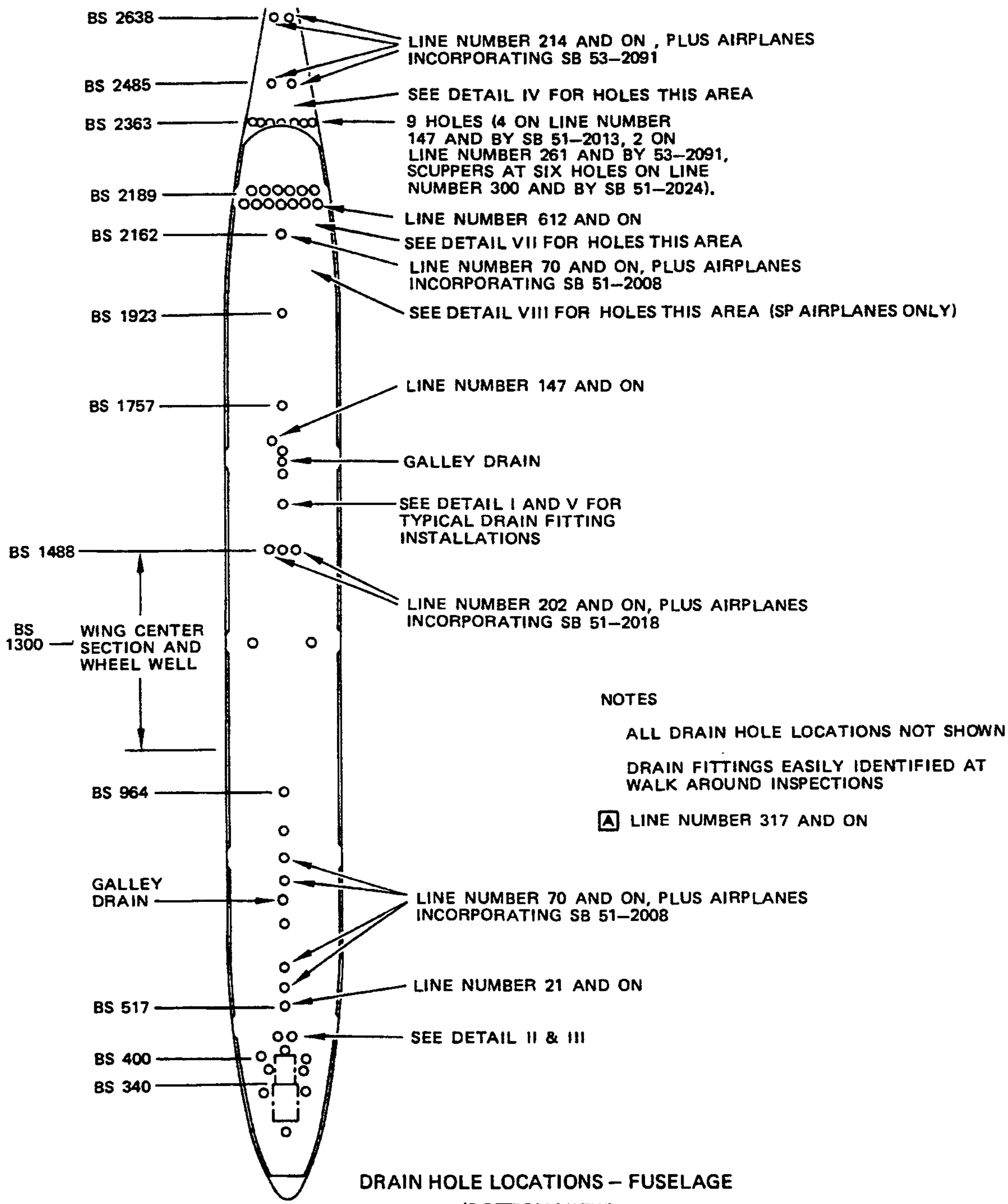
AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
	Right horizontal beam upper splice fitting		
	Trunnion bushings		
	Attachment bolts at longeron splice fittings, STA 1480 between stringers 32 and 33, left and right side		SB 53-2015
	Upper tee chord STA 1480		
	Bulkhead cap fitting, STA 1480		
	Landing gear door support structure		
	Frame attachment and interior keel beam structure		SB 53-2257
Nose Gear Wheel Well	Trunnion support fittings, transverse support fitting, drag strut fittings and actuator fittings	53-10-47 Fig. 5	
	Trunnion bushings, cap attach bolts and nut		
	Nose wheel well structure		
Seat and Cargo Tracks	Unused portions of seat	53-10-47 Fig. 6	
	Seat tracks between BS 1208 and 1245		
	Seat tracks between BS 520 and 900 and LBL 33.99 and RBL 98.58		SB 53-2187
	Upper deck aft galley seat tracks from BS 720		SB 53-2188
	Seat track crowns on the main deck between stations 2270 and 2330		SB 58-2351
Door Openings	Scuff plate	53-10-47 Fig. 7	

AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
	Main entry door torque tube lower support fitting		
	Girt bar attach fittings at thresholds of main entry doors		SB 25A2831
	Forward truss fittings at forward and aft lower cargo doorsills and latch support fittings	53-10-47 Fig, 7	SB 53-2200
	Left and right No, 3 entry doorstop fittings Inner surface of skin at edge of entry door cutouts		
	Deactivated No. 3 door		SB 25-2632
	Cargo door latch fittings		SB 52-2186 (supersedes SB 52-2176)
	Cargo door latch fitting attachment bolts BACB30MT		NPRM 92 NW-93-AD
	Doubler at upper forward corner of cutout for main entry door No. 2	53-00-47	SB 53-2422
Floor Structure Under Entrances	Scuff plate	53-10-47 Fig. 8	
	Floor panel holes		
Canted Pressure Deck	Collected water and corrosion on major structure at the guppy pond area	53-10-47 Fig. 9	SB 51-2044
Aft Pressure Bulkhead	Bonded joints	53-10-47 Fig. 10	
	Edge and aft side of the bulkhead chord		
	Drain holes		SB 51-2013 SB 51-2024 SB 53-2091

AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
	Forward and aft surfaces of bulkhead		SB 53-2220
	Break ring and bulkhead faceplate below water line 220		
	APU duct pressure pan		
	H-11 fasteners		
Longitudinal Floor Beams-BS 1265 to 1480	Lower chords	53-10-47 Fig. 11	SB 53-2224
	Between chord faying surface and pressure deck web		SB 53-2186
Section 48	Bulkhead splice fittings STA 2484	53-10-47 Fig. 12	SB 53-2162
	Longeron skin splice fittings, H-11 bolts		SB 53A2280
Upper Lobe Frames, Stringers and Skins	Forward and aft bolt holes at the longeron fitting, BS 1241	53-10-47 Fig. 13	SB 53-2283
	Bulkhead forging and bulkhead splice straps, BS 1241		
	H-11 fasteners in BS 1241 bulkhead		
External Surfaces of Fuselage Skins	Butt and spliced lap joints	53-30-47 Fig. 1	
	Under Corogard coating		
	Lower fuselage skins		

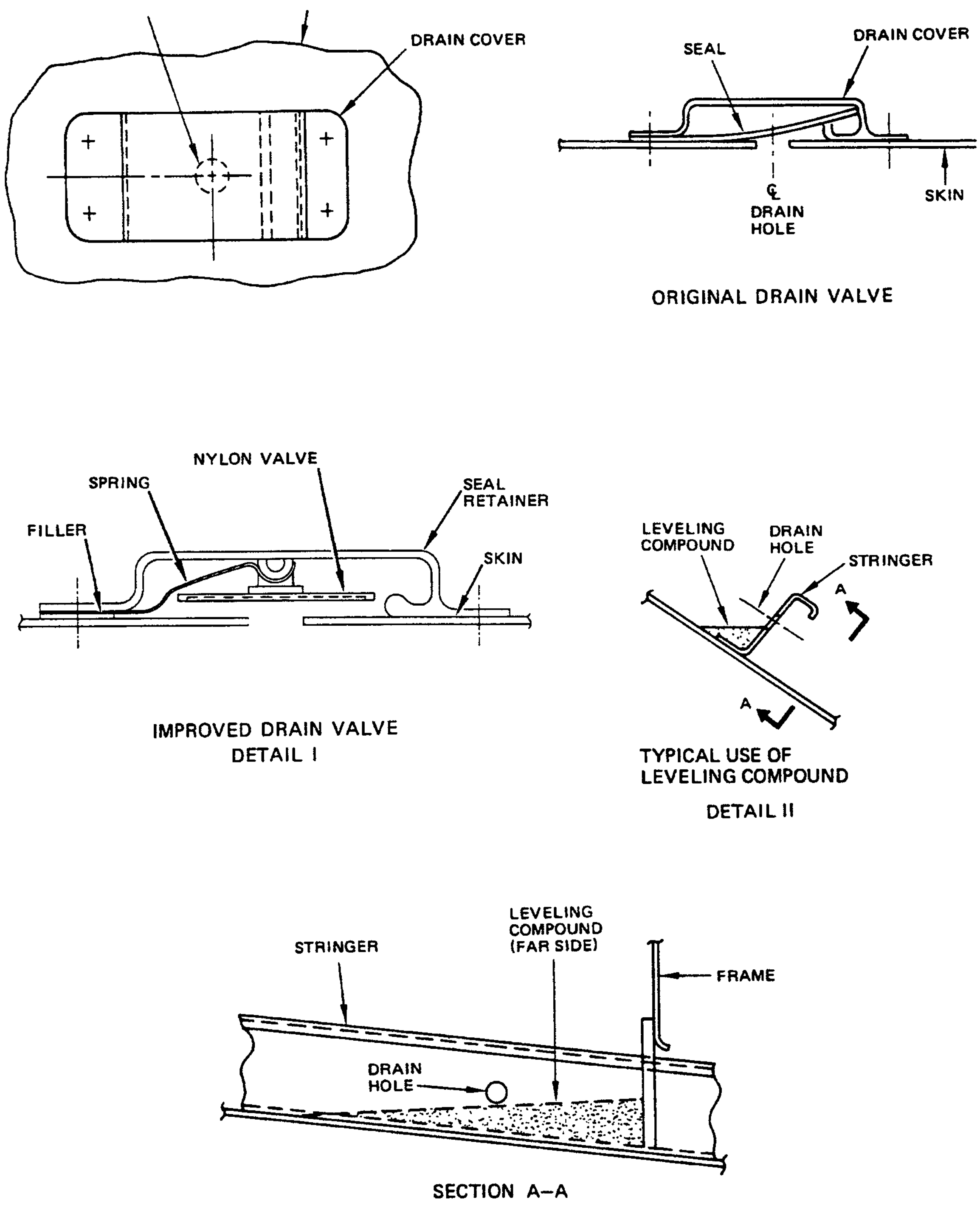
AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Fuselage Skin Lap Joints - External Treatment	Cold bonded lap joints	53-30-47 Fig. 2	
	Skin laps - wing to body fairings		
Fuselage Skin Lap Joints - Internal Treatment	Cold bond lap splice	53-30-47 Fig. 3	
Fuselage Skin at Pressure Relief Valves		53-30-47 Fig. 4	
Wing to Body Fairing	Drainage	53-50-47 Fig. 1	SB 51-2025
	Section 42 and 46 exterior skin		
Antenna Mount - Wing to Body Fairing	Low range radio altimeter	53-50-47 Fig. 2	
Nose Radome Lightning Diverters	Conductor strap and connecting spring	53-50-47 Fig. 3	
Section 46	Fuselage stringers and skin panels	53-60-47 Fig. 1	SB 53-2156
	Fuselage bulkhead		
	Fuselage wing-to-body fairing		
	Door structural opening		

AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
	Lower drainage (Ref 53-00-47, Fig. 2) Fay sealed skin lap joints		

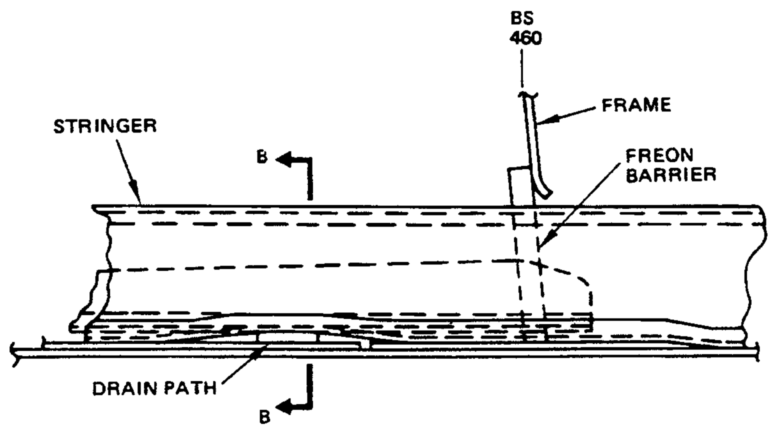


DRAIN HOLE LOCATIONS – FUSELAGE
(BOTTOM VIEW)

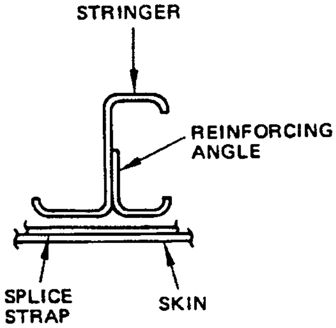
Fuselage Drain Holes
Figure 2 (Sheet 1)



Fuselage Drain Holes
Figure 2 (Sheet 2)

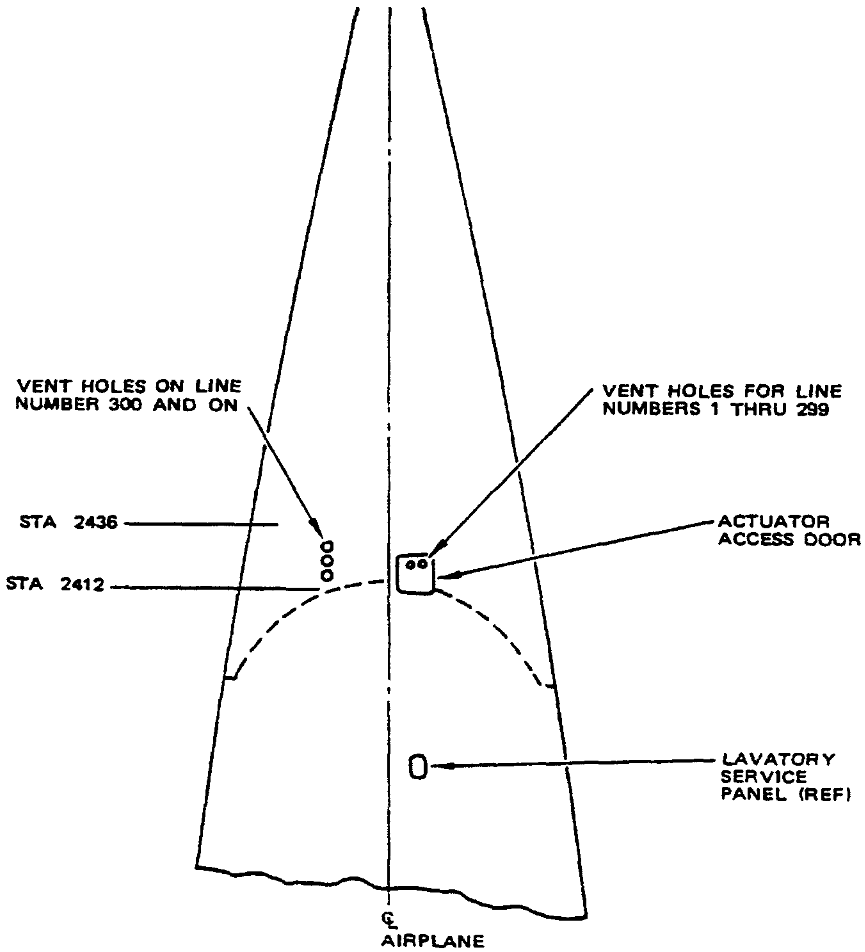


TYPICAL FOR S-40 THRU S-47
DETAIL III [A]

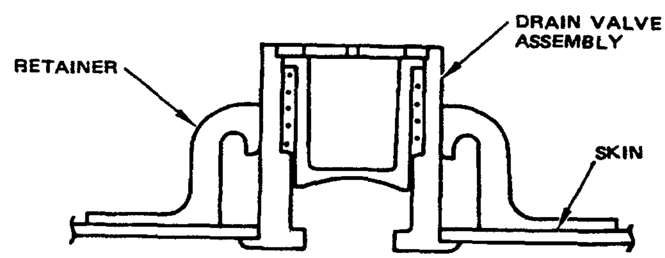


SECTION B—B

Fuselage Drain Holes
Figure 2 (Sheet 2A)



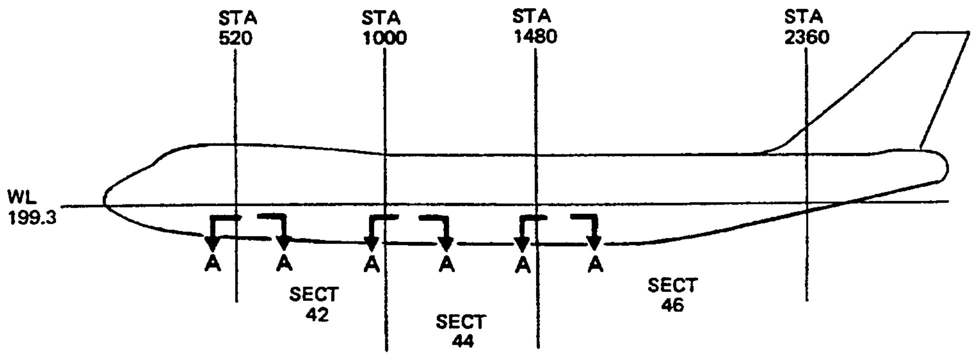
DETAIL IV



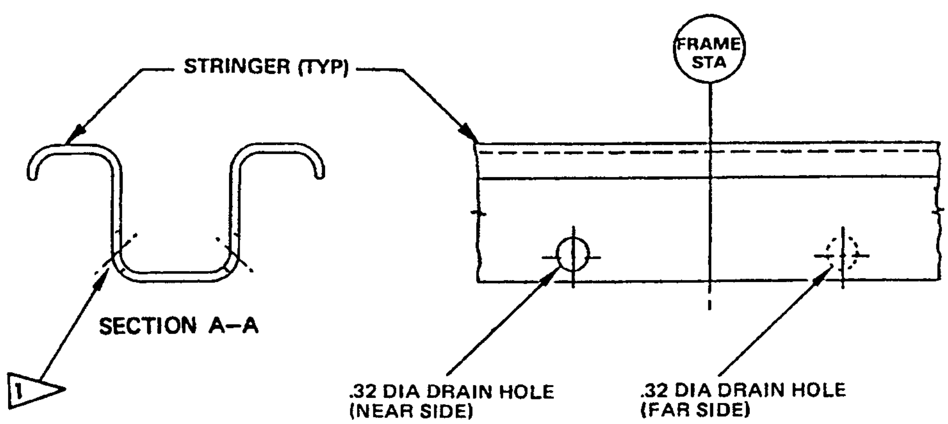
EXTERNALLY SERVICEABLE DRAIN VALVE

DETAIL V

Fuselage Drain Holes
Figure 2 (Sheet 3)

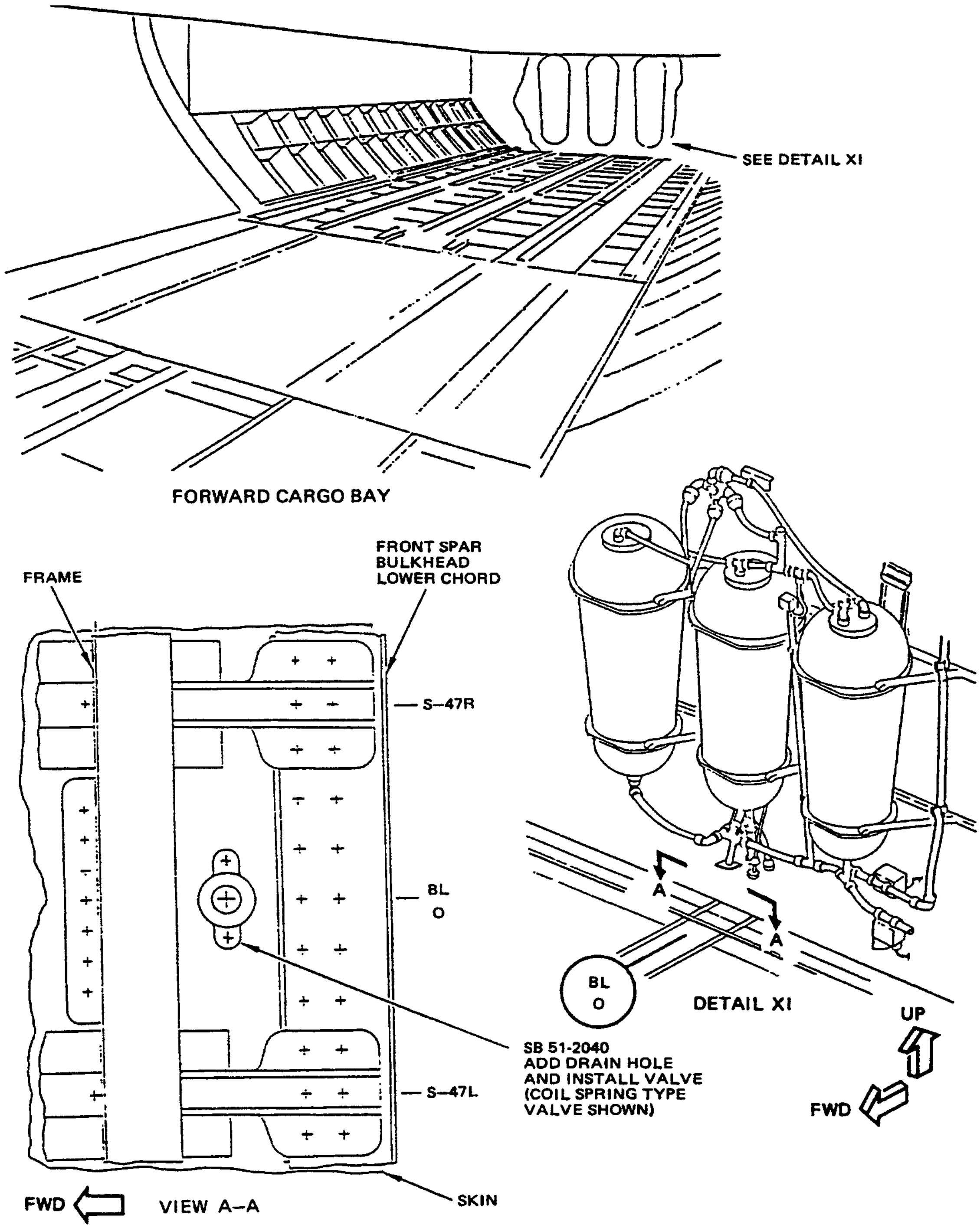


DETAIL VI

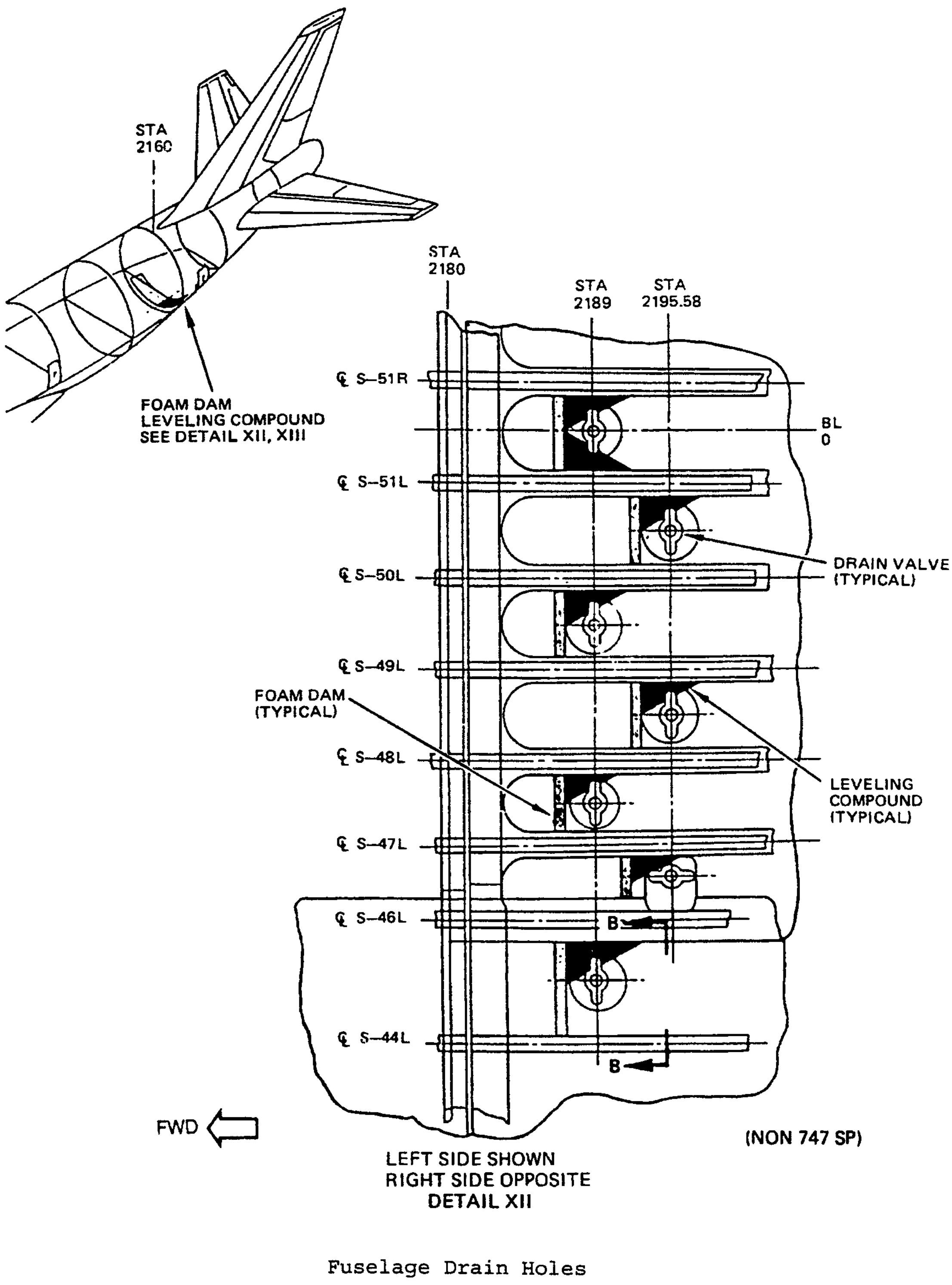


1 ON AIRPLANE LINE NO. 697 AND ON, A 0.32 INCH DIA DRAIN HOLE HAS BEEN ADDED THRU THE HAT SECTION OF STRINGERS BELOW THE MAIN CABIN FLOOR (S–26L TO S–26R). THE HOLES ARE LOCATED IN STRINGERS ADJACENT TO SKIN SPLICES AND ARE LOCATED AT APPROXIMATELY 60 INCH INTERVALS.

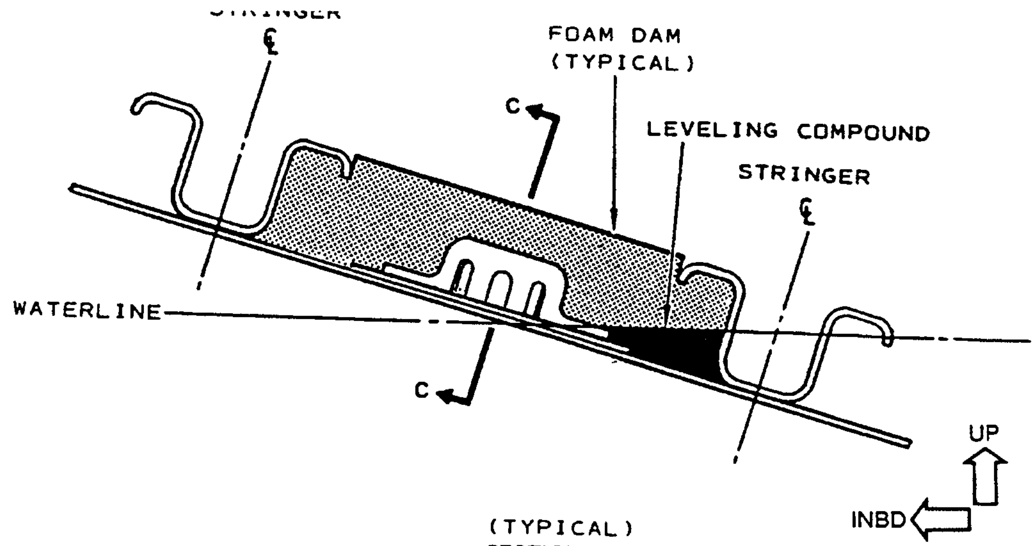
Fuselage Drain Holes
Figure 2 (Sheet 4)



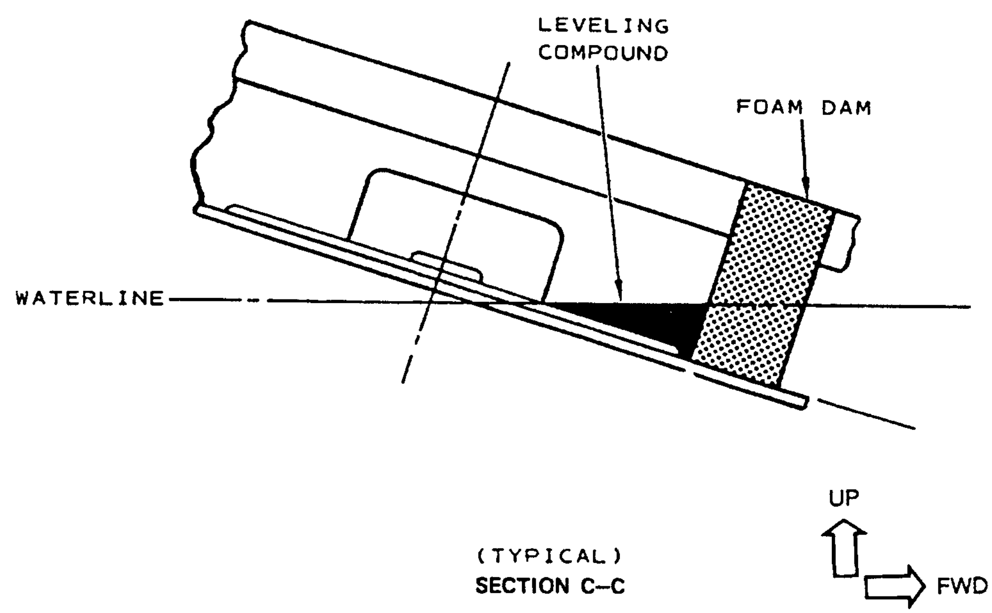
Fuselage Drain Holes
Figure 2 (Sheet 5)



Fuselage Drain Holes
Figure 2 (Sheet 6)

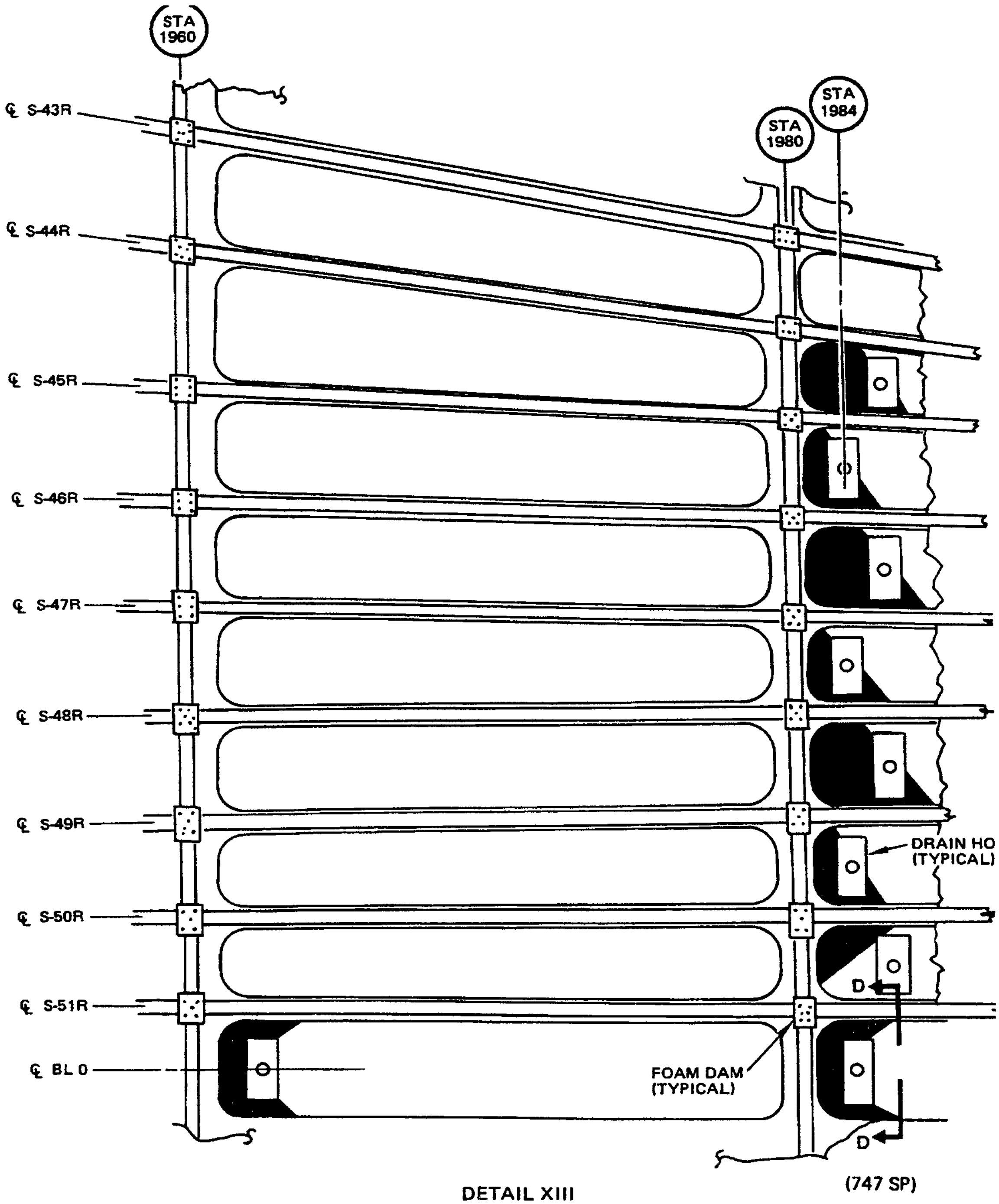


(TYPICAL)
SECTION B–B

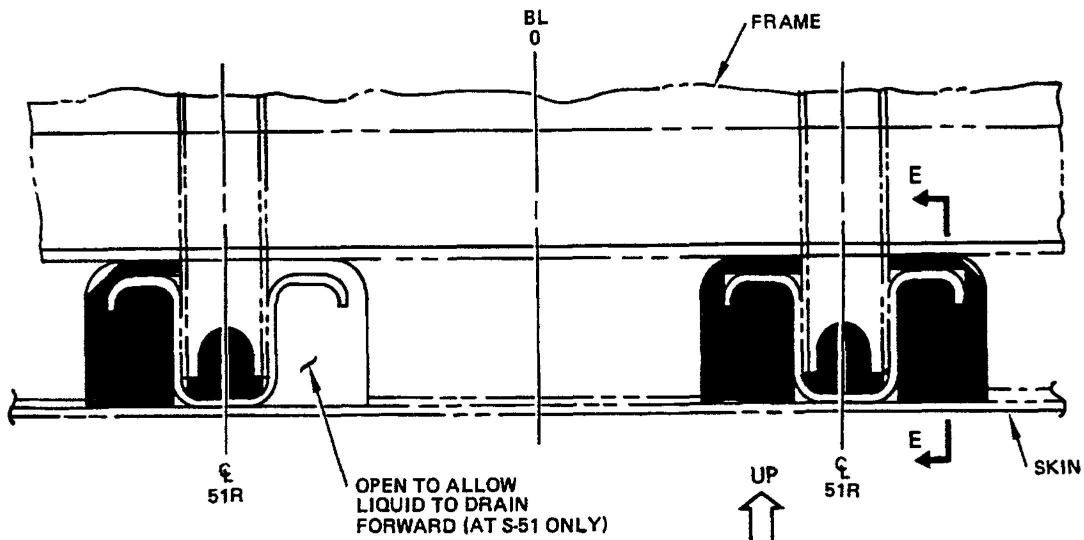


(TYPICAL)
SECTION C–C

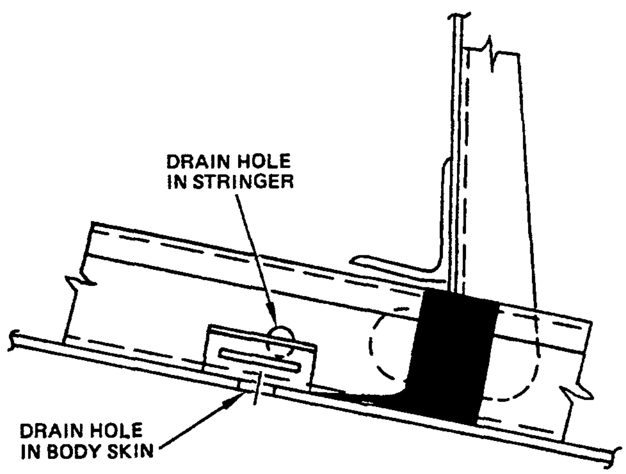
Fuselage Drain Hole
Figure 2 (Sheet 7)



Fuselage Drain Holes
Figure 2 (Sheet 8)



SECTION D–D



SECTION E–E

Fuselage Drain Holes
Figure 2 (Sheet 9)

1. General

A. Overboard drains are either the mechanical closure type (pressurized areas) or open hole type (unpressurized areas). These drains are located at the lowest point in any assembly or area. Drain holes through internal structure and leveling compounds provide drainage paths to the overboard drains. The locations of these drains are shown in the schematic.

B. Lower lobe galley drain systems are provided as optional furnishings. The plumbing systems end at ball valves in the forward and aft lower lobe lower skins. On early installations the stainless steel valves were passivated and installed in contact with the aluminum skins. Galvanic corrosion has been reported at these installations. On line number 233, 253 and on, plus airplanes incorporating SB 51-2020 the valve is cadmium plated, painted and installed with BMS 5-95 fay seal.

C. Inoperative drain valves have been reported on airplanes line number 001 thru 323. Replacement of rubber flapper valves with nylon valves is covered by SB 51-2030.

D. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make periodic inspections of the drain holes. Inspect the flappers on the pressurized skin drains for alignment and freedom of movement. The use of a pipe cleaner or thin wooden dowel to remove debris and contaminants to clear the drain hole is recommended.

B. Where the drain flapper valve is inoperative or damaged, repair or replace the valve.

CAUTION: EXCESSIVE TIGHTENING OF EXTERNALLY SERVICEABLE DRAIN VALVE WILL CAUSE VALVE FLANGE TO CRACK OR BREAK.

C. If required, remove externally serviceable drain valve from outside the fuselage, clean out obstruction and reinstall valve until flange is snug with skin.

D. Open drain holes which have corrosion damage should be cleaned up using corrosion removal methods indicated on fuselage skin Ref Structural Repair Manual).

E. On airplanes prior to line number 253 except line number 233, incorporate SB 51-2020 to preclude the occurrence of galvanic corrosion.

F. Frequency of Inspection

(1) To minimize the risk of corrosion due to moisture accumulation, it is recommended that the overboard drains including canted pressure deck drains be inspected every C check or more frequently in severe conditions. Refer to 53-10-47, Fig. 9 for canted pressure deck drains.

G. Improved Corrosion Protection

(1) Drain holes and leveling compound were added to the area around the nose gear wheel well on airplane line numbers 55 and on, plus airplanes incorporating SB 51-2014.

(2) The drain system on earlier airplanes is not sufficient to prevent collected moisture and corrosion of the structure in the area aft of BS 2180 (1980 for 747SP). As a result, on airplane line numbers 612 and on, PRR 80192 added a better water drainage system for the aft body section. Drain holes of 0.38 inch and pressure control valve are added in each stringer bay between S-44L and S-44R at approximately Sta 2189 (747-100, -200) or Sta 1984 (747-SP). A foam plastic dam is added at each location to collect liquids at the location of the drain hole. Foam dams, leveling compound and transverse holes in stringers are deleted at Sta 2160 except inboard of S-51 L and S-51 R. These changes can be included on some airplanes by SB 51-2037 and 51-2042.

(3) On airplane line numbers 679 and on, PRR 80408 added a better water drainage system for the body interior structure in Section 42, 44 and 46. Drain holes of 0.32-inch diameter are added through hat section stringers below main cabin floor at S-26L to S-26R. Drain holes are located at frames adjacent to skin splices and frames at 60-inch approximate spacing between these locations.

(4) Additional drain holes are necessary to prevent collected moisture from BS 964.25 to the front spar bulkhead at BS 1000. This change can be included on airplane line numbers 1 thru 697 by SB 51-2040 (refer to Detail XI). A coil spring type valve (externally serviceable) or leaf spring type valve is used over the drain hole. A doubler and leaf spring type valve are also used over the drain holes on some airplanes.

(5) At line number 955, PRR 79800-381 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

(6) At line numbers 852 through 1004, there could be stress corrosion on the doubler installed at the upper forward corner of the cutout for the main entry door number 2. This could cause cracks due to suspected improper heat treatment. Service bulletin 747-53-2422 gives instructions to inspect and remedy this situation. See SB for further details.

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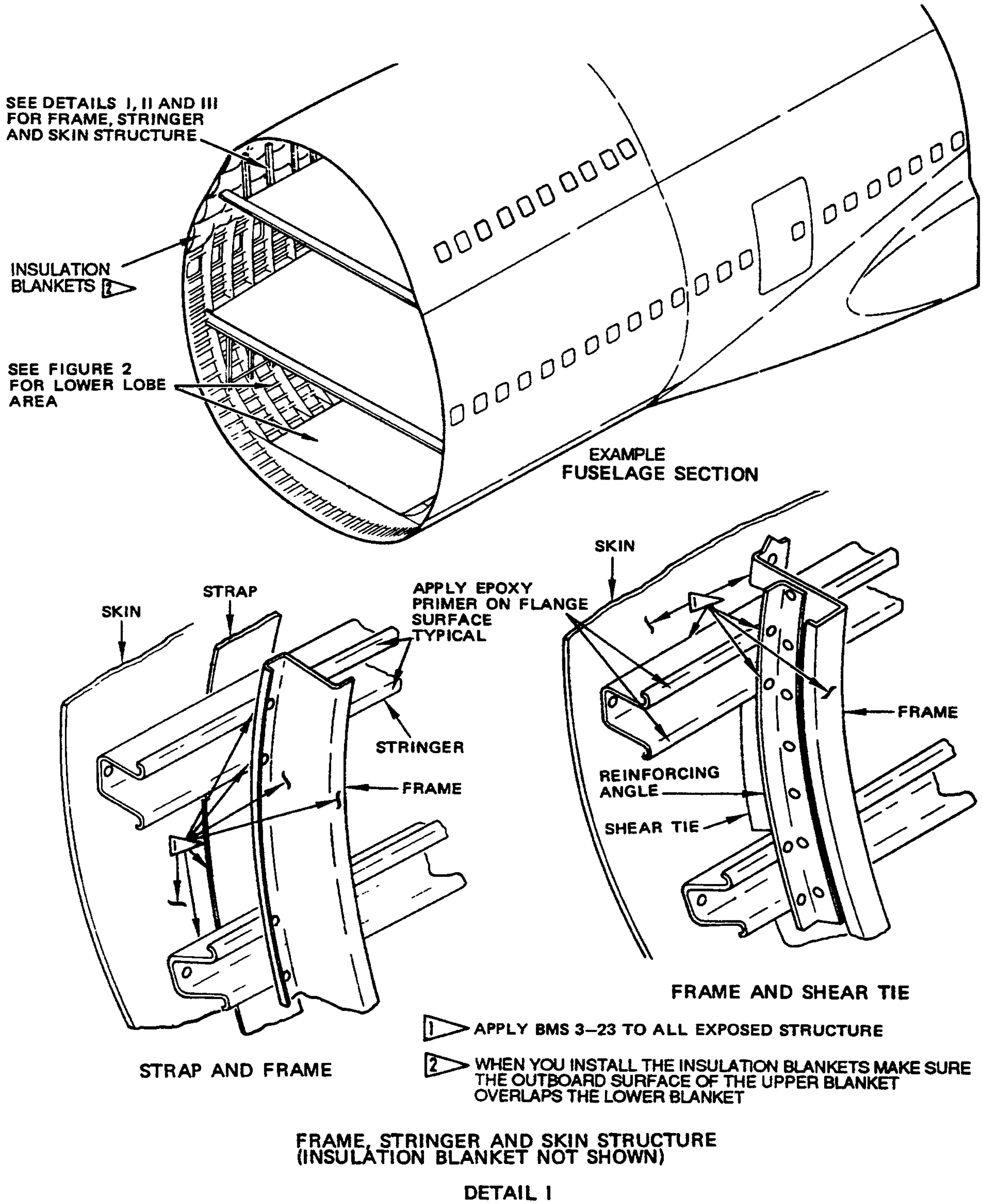
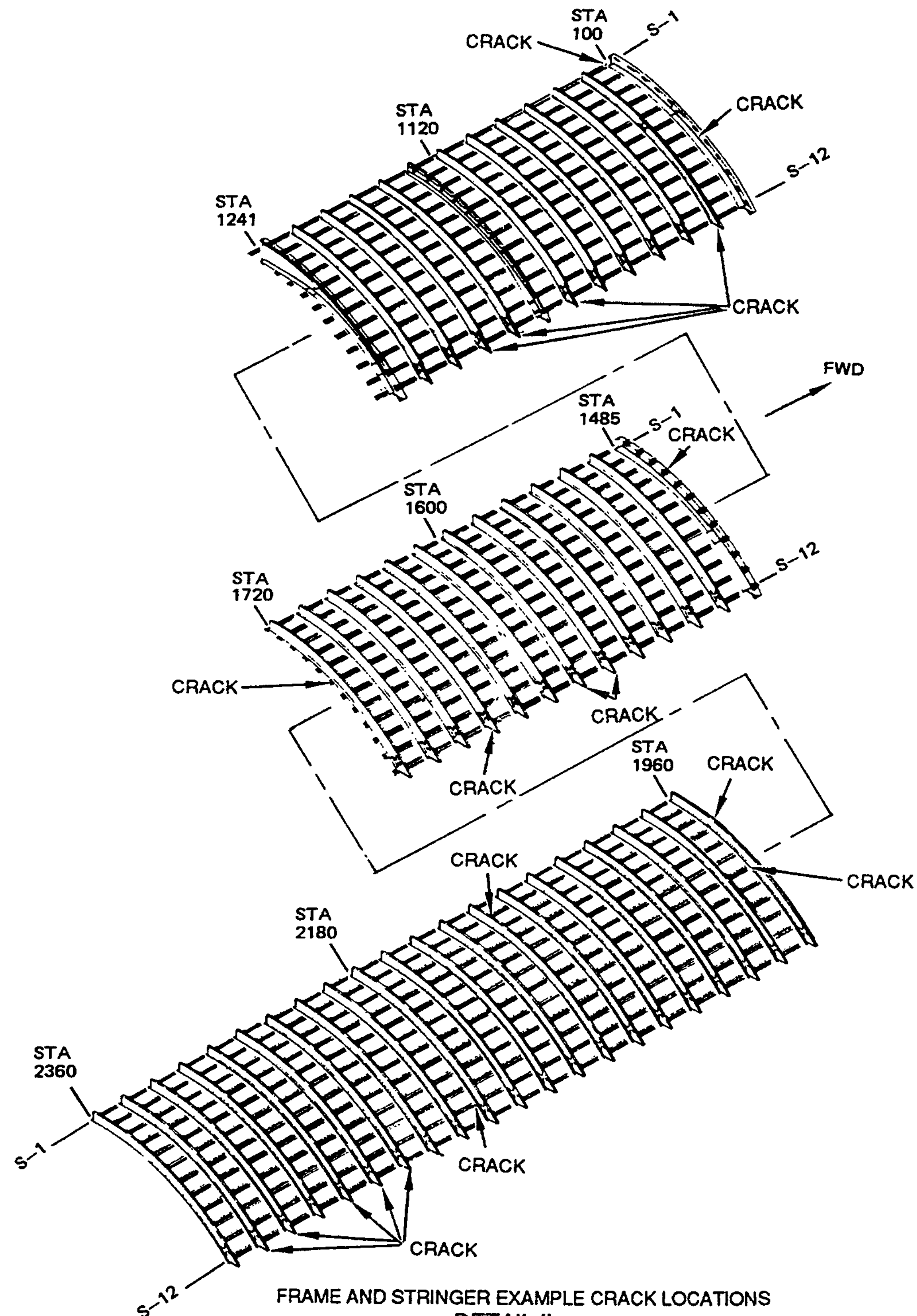
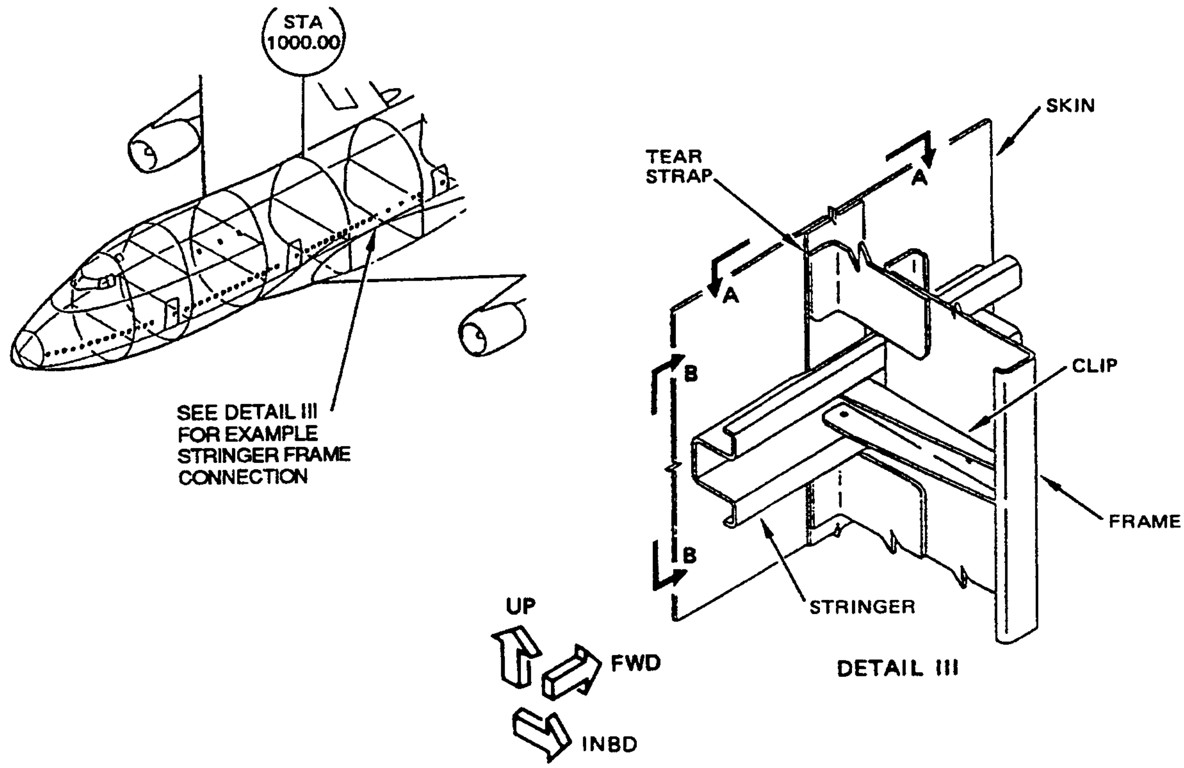


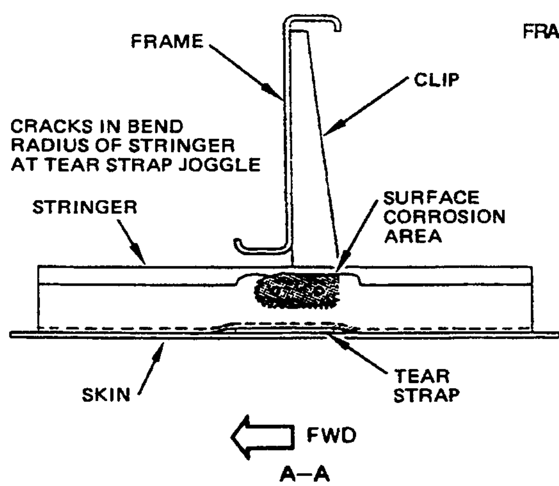
Crown Frames, Stringers and Skin
Figure 1 Sheet 1

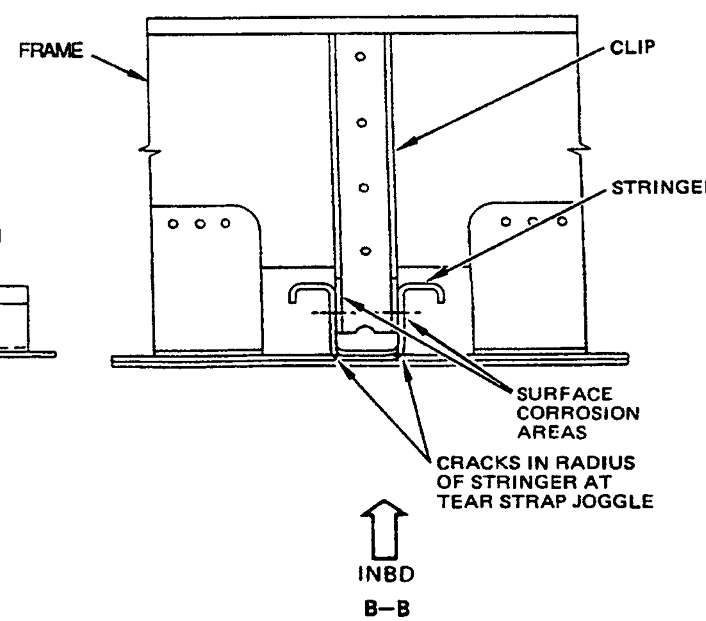


FRAME AND STRINGER EXAMPLE CRACK LOCATIONS
DETAIL II

Crown Frames, Stringers and Skin
Figure 1 (Sheet 2)







Crown Frames, Stringers and Skin
Figure 1 (Sheet 3)

1. General

A. The fuselage is of semimonocoque construction with aluminum skins, circumferential frames and longitudinal stringers. The fuselage skin is installed with butt joints and the longitudinal lap joints are usually flush riveted.

B. The stringers, frames and skins have been found susceptible to corrosion due to moisture entrapment between the skin and insulation blankets. Added to this moisture spillage, condensation or moisture through open doors running along frames or stringers collecting at some dammed location contribute to corrosion. Corrosion can readily start where protective finishes have been broken or deteriorated.

C. Treatment of the interior structure should be accomplished at the same time as longitudinal lap splices are treated or whenever access is gained to expose the frame/stringer/skin structure. For lap splices, refer to 53-30-47,Fig. 2 and 3.

D. Corrosion and cracks have been found on body crown stringers. Several stringers were affected between BS 1000 thru BS 2360 from stringer 12L to 12R. Corrosion pitting of stringer outer surfaces and white powder was found at the stringer clip fastener locations. The corrosion at the stringer clip fastener ranged from 0.026 to 0.053 inch in depth.

E. One 747-200 model operator reported 17 cracks at frame splices between stringers 11 and 12 from body station 1000 to 2360. These cracks were attributed to stress corrosion.

F. Several operators have reported cracks in Stringers 12 left to 12 right between body stations 1000 and 2181. These cracks were attributed to stress corrosion.

G. Multiple severe local corrosion was found on the stringers at the majority of stringer clip connections in an area that extended from BS 1940 to BS 2180, stringer 4L to 4R. Complete perforation of the stringers occurred due to corrosion.

H. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. Skin bulges, missing fasteners or white powdery deposits are signs of corrosion which should alert operators that some corrective action is required. A corrosion prevention program should be initiated to prevent the accumulation of moisture or corrosive compounds in order to minimize the occurrence of corrosion.

B. Where extensive corrosion exists (very noticeable skin bulges, missing fasteners, or large amounts of white deposits at the fastener heads or faying surfaces), refer to Structural Repair Manual for details of corrosion removal.

WARNING: DO NOT APPLY CORROSION INHIBITING COMPOUNDS INTO AREAS WHICH COULD POTENTIALLY BE IN CONTACT WITH OXYGEN SYSTEM COMPONENTS. MIXING OF CORROSION INHIBITORS AND OXYGEN MAY RESULT IN AN EXPLOSION.

CAUTION: DO NOT APPLY CORROSION INHIBITING COMPOUNDS ON INSULATION BLANKETS. THE COMPOUNDS REDUCE THE WATER-REPELLENT QUALITY OF THE BLANKETS.

C. For details of application of water displacing corrosion inhibiting compound, refer to Volume 1, 20-60-00.

D. For minor corrosion detected during the periodic inspections and to minimize the downtime of the airplane, the corrosion products should be cleaned off, followed by an application of a corrosion inhibiting compound into the affected area to retard the corrosion process.

NOTE: The treatment of internal structure described above should be made at first opportunity the area is exposed. Location of the area should be noted and monitored from the outside every 3 months for visual indication of corrosion progression. Any noticeable skin bulges would require scheduling corrosion removal outlined in Structural Repair Manual.

E. Do not use BMS 3-23 corrosion inhibiting compound near oxygen system components. If you find corrosion near oxygen system components:

(1) Clean away corrosion and repair the area per the Structural Repair Manual.

(2) Chemical treat bare material.

(3) Apply one coat of BMS 10-11, Type 1 green primer.

(4) Apply one coat of BMS 10-11, Type 1 yellow primer.

(5) Apply BMS 10-11, Type 2 epoxy or BMS 10-60 polyurethane enamel.

F. Prevention Treatment

(1) At the first time that the maintenance schedule permits access to the structure, do corrosion prevention treatment. For the areas between stations 1480-2180 (1480-2360 on SP airplanes), refer to SB 53-2343 for inspection and treatment procedures.

(2) Remove insulation blankets to expose frame, stringer and skin. Dry blankets thoroughly if found wet.

(3) Replace broken or damaged finishes. Refer to Volume 1, 20-60-00 for protective finish systems.

(4) Apply a coat of BMS 10-il epoxy primer to the inboard flange surfaces of stringer and allow to dry thoroughly.

(5) Apply water displacing corrosion inhibiting compound to all exposed structure. The use of spray equipment with nozzle directed into faying surfaces is recommended.

(6) Allow solvent to evaporate before reinstalling insulation blankets.

(7) Reinstall blankets so they are taut and so that the outboard surface of the upper blanket overlaps the lower blanket.

(8) Reinstall liner and restore airplane to normal.

G. Frequency of Application

(1) Perform a sample inspection at major overhaul or approximately every 5 years to determine the condition of the corrosion inhibitor on the structure and the primer coat on stringer flanges. Reapply the corrosion inhibitor or primer coat if required.

H. Improved Corrosion Protection

(1) At line number 201, a production change added chromate loaded faying surface sealant at the lap joints. Also, this changed the top row of fasteners in sections 42 and 46 to protruding head rivets and added another row of flush head rivets at the lap joint in

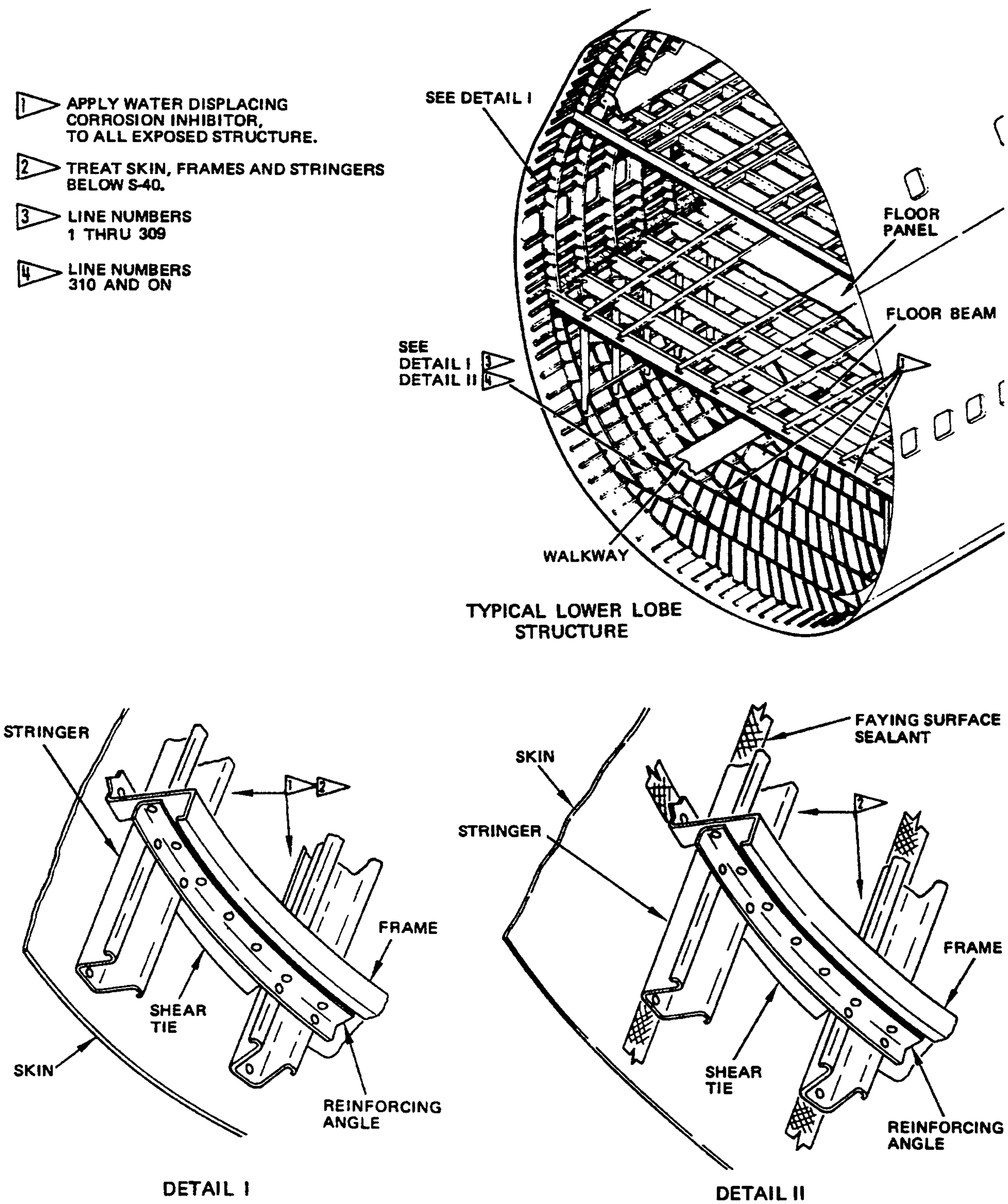
(2) At line number 576, PRR 79997 added additional primer and corrosion inhibitor at frame and stringer splice areas.

(3) At line number 586, Section 48 H11 steel fasteners were installed with wet sealant and the fastener head and nuts were fillet sealed.

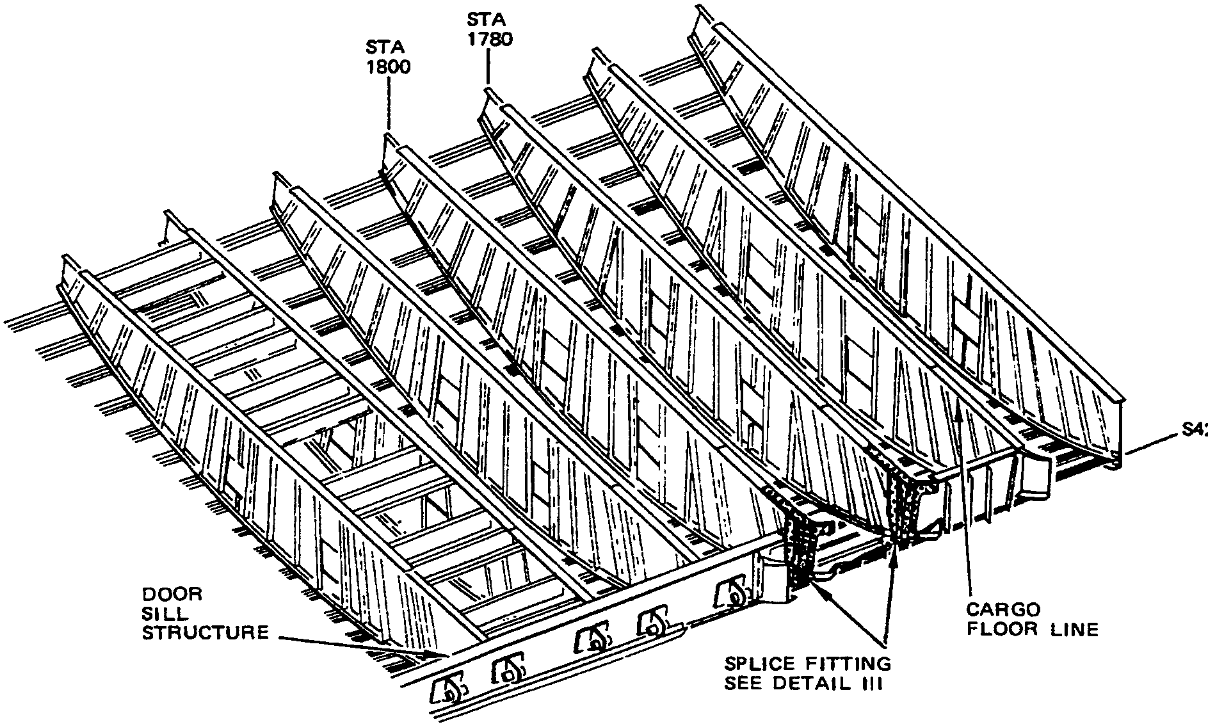
(4) At line number 727, PRR 80856-1 applied BMS 3-23 to the crown skin panels and crown frames from BS 380 to BS 2360 and between stringer 12L to 12R. This can be added to earlier airplanes with SB 53-2343.

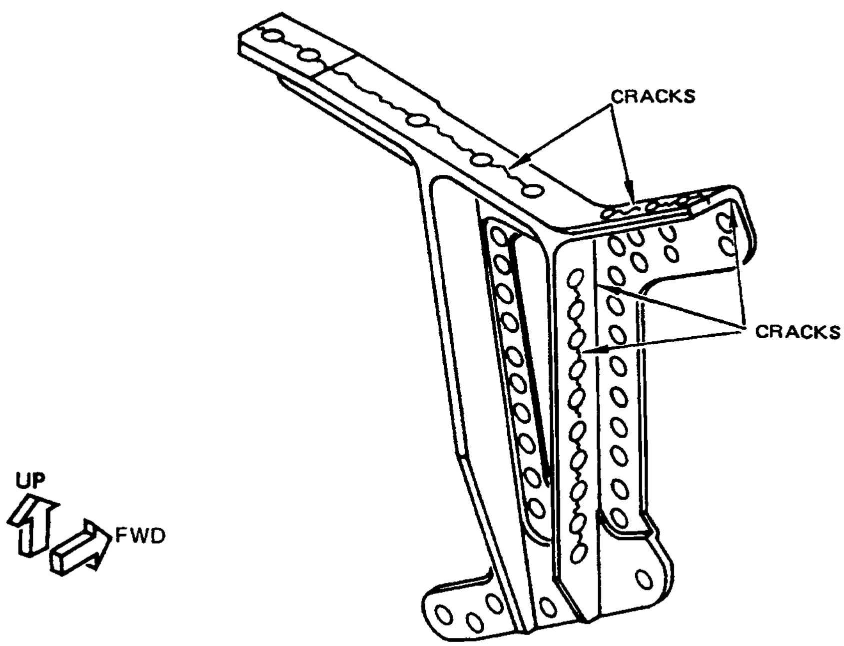
(5) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

(6) At line number 1011, PRR 82788-2 applied Dinol AV8 (BMS 3-23, Type 2) compound to all internal structure.



Lower Lobe Structure
Figure 2 (Sheet 1)





DETAIL III
SPLICE FITTING AT BS 1800 SHOWN
SPLICE FITTING AT BS 1780 SIMILAR

Lower Lobe Structure
Figure 2 (Sheet 2)

1. General

A. The fuselage is of semimonocoque construction utilizing aluminum skins, circumferential frames and longitudinal hat section stringers. The fuselage skin is installed with circumferential butt joints and longitudinal lap joints. The floor beams act as tension ties across the frames. In the lower lobe area, shear ties from the skin to the frame are used between stringers with an inner angle on the frame.

B. The lower lobe structure including stringers, frames, shear ties, faying surfaces at doublers and straps, etc., are susceptible to corrosion due to moisture accumulation, moisture laden insulation blankets, cargo spillage, toilet effluent leakage and environmental contaminants. These lower lobe areas include the cargo compartments, bilge areas and the electronic compartment.

C. One problem area is between stations 1740 and 2_180 and between stringers 46L and 46R. On airplanes with drain plugs which require manual opening, corrosion occurred on the doubler, skin and stringers because of collected moisture and contamination. Opening the drains on a scheduled basis would decrease the risk of corrosion damage.

D. Corrosion can occur in the stringer 46 skin lap joints between stations 1741 and 2360. Refer to 53-60-47, Fig. 5 for more details.

E. Treatment of the areas under galleys and lavatories is described in Fig. 3.

F. Corrosion has been reported in the lower lobe of Section 48.

G. Reports of strap cracks and corrosion of the BS 1241 bulkhead splice strap have been received. The strap cracks, caused by cyclic loading and corrosion, were located at the two large aft bolt holes common to the titanium longeron fitting. Additionally, a coincident bulkhead forging crack at the forward hole has been reported. Unchecked strap cracking may result in cracking of the bulkhead frame forging. Refer to SB 53-2219 for further information.

H. Stress corrosion cracks have been reported on the splice fitting on BS 1800 frame at the intersection with the aft cargo door lower sill. A similar fitting is installed at BS 1780. See Detail III. The cracks have progressed along the horizontal and vertical fastener rows.

I. Corrosion was found in the front-spar-bulkhead-lower chord. The corrosion occurred on the chord angle between stringers S-47L and S-47R on the upper face of the horizontal flange and on the forward face of the vertical flange.

J. Many operators found corrosion in the lower aft fuselage because of water collected between the stringers and skins. The corrosion occurred between stringer 44 left and 44 right. Skin replacement was necessary on some airplanes. (Refer to 53-00-47, Fig. 2.)

K. Corrosion was found in the lower forward fuselage at BS 460 to BS 1000 below S-44. The corrosion was bad on most of the internal skin splice straps, stringers, frames and stringer clips. The corrosion went through some of the adjacent stringers.

L. Stress corrosion can cause cracks in fuselage stringers. On a 747-100 airplane, such cracks occurred in stringers between S-5 and S-11, from BS 1000 to BS 1241.

M. On a 747SP airplane, a stress corrosion crack occurred along the right-hand keel chord at BS 780, RBL 8.5. The crack was in the radius between the inboard vertical leg and the base.

N. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. Skin bulges, missing fasteners, or white powder are evidences of the existence of corrosion which should alert operators that some corrective action is required. A corrosion prevention program should be initiated to prevent the accumulation of moisture or corrosive compounds in order to minimize the occurrence of corrosion

NOTE: For airplanes through line number 284, it is recommended that inspections detailed in SB 53-2156 be made on the lower lobe skins between body stations 1740 and 2180.

B. Where extensive corrosion exists (very noticeable skin bulges, missing fasteners or large amounts of white deposits at the fastener heads or faying surfaces) refer to Structural Repair Manual for details of corrosion removal.

WARNING: DO NOT APPLY CORROSION INHIBITING COMPOUNDS INTO AREAS WHICH COULD POTENTIALLY BE IN CONTACT WITH OXYGEN SYSTEM COMPONENTS. MIXING OF CORROSION INHIBITORS AND OXYGEN MAY RESULT IN AN EXPLOSION.

CAUTION: DO NOT APPLY CORROSION INHIBITING COMPOUNDS ON INSULATION BLANKETS. THE COMPOUNDS REDUCE THE WATER-REPELLENT QUALITY OF THE BLANKETS.

C. For details of application of water displacing corrosion inhibiting compound, refer to Volume 1, 20-60-00.

D. For minor corrosion, to minimize the downtime of the airplane, the corrosion products should be cleaned off, followed by an application of corrosion-inhibiting compound into the affected area to retard the corrosion process. The finish system should be restored at the first opportunity consistent with the maintenance schedule (Ref Volume 1, 20-60-00).

NOTE: The treatment of internal structure described above should be made at first opportunity the area is exposed. Location of the area should be noted and monitored from the outside every 3 months for visual indication of corrosion progression. Any noticeable skin bulges would require scheduling corrosion removal outlined in Structural Repair Manual.

E. Do not use BMS 3-23 corrosion-inhibiting compound near oxygen system components. If you find corrosion near oxygen system components:

(1) Clean away corrosion and repair the area per the Structural Repair Manual.

(2) Chemical treat bare material.

(3) Apply one coat of BMS 10-11, Type 1 green primer.

(4) Apply one coat of BMS 10-11, Type 1 yellow primer.

(5) Apply BMS 10-11, Type 2 epoxy or BMS 10-60 polyurethane enamel.

F. Prevention Treatment

(1) At first opportunity when scheduled maintenance work allows access to the structure, corrosion-prevention treatment should be accomplished.

(2) Remove sidewall lining and insulation blankets in the cargo compartment and beneath the main deck entry and cargo doors to expose frame, stringer, doublers and skin.

(3) Remove floor liners to gain access to bilge areas, if any.

(4) Remove ceiling lining for access to main deck floor beams and intercostals.

(5) Open plugged drains, if any.

(6) Remove and replace drain valves found inoperative or defective.

(7) Open drain plugs, if any, on a scheduled basis.

(8) Clear all drain paths.

(9) Do an internal close visual inspection of the lower body skin panels between stations 460 and 1000, and between stringers 44 left and 44 right for signs of corrosion. Refer to SB 53-2295 for procedures for airplane line numbers 1 thru 309.

(10) Remove corrosion and replace broken or damaged finishes. Refer to Volume 1, 20-60-00 for protective finish systems.

(11) Replace or repair broken or damaged leveling compounds used for drainage.

(12) (Apply water displacing corrosion inhibiting compound to all exposed structure under the cargo floor and to the sidewalls beneath the upper lobe entry and cargo doors. The use of spray equipment with nozzle directed into faying surfaces is recommended. Do not apply excessively.

NOTE: To reduce the possibility of moisture entrapment between insulation blankets and airplane skins in the forward and aft compartments, supports for the insulation blankets were provided on production airplanes at line number 78 and can be provided retroactively by incorporating SB 53-2017. The blanket supports in other lower lobe areas were provided at line number 117 and can be provided retroactively by incorporating SB 53-2049. These supports consist of nylon twine ana brackets. Insulation blankets of revised configuration installed in lower area at line number 107 and on the sidewalls at line number 269. These blankets recommended for replacement when required.Allow solvent to evaporate before reinstalling insulation blankets.

(13) Install blankets so they are taut.

(14) Reinstall liners and floor panels. Install the floor panel fasteners with BMS 3-24 grease.

(15) Apply water displacing corrosion inhibiting compound to skin and structure in Section 48. Refer to Volume 2, 53-10-47, Fig. 10 for corrosion prevention of the aft pressure bulkhead which should be treated concurrently.

G. Frequency of Application

(1) Periodically inspect the lower lobe structure and the condition of the corrosion inhibitor. Reapply the corrosion inhibitor if required.

H. Improved Corrosion Protection

(1) At line number 114, a production change changed the splice fittings at stations 1780 and 1800 (Detail III) from 7079 to 7075 aluminum alloy. This change can be incorporated on earlier airplanes with SB 53-2233.

(2) At line number 264, faying surface seals replaced bonds between the lower skin and the doubler between stations 1740 and 1960.

(3) At line numbers 285, PRR 76107 replaced the bonded skin and doubler skin panel with a chemically milled skin between stations 1960 and 2180. This change can be incorporated on earlier airplanes with SB 53-2156.

(4) At line number 310, BMS 5-95 fay surface seals were added between the structure and skin below stringer S-44 between stations 400 and 1000, and below stringer S-46 between stations 1480 and 2360 (Detail I).

(5) At line number 327, PRR 74988-1 and -2 stopped the use of Section 48 vent holes which let the moisture in. This change can be made on other airplanes with SB 53-2166.

(6) At line number 346, better finish and corrosion inhibiting compounds are used in Section 48.

(7) At line number 402, a production change replaced bonded lower skin panels with chemically milled panels between stations 2360 and 2484.

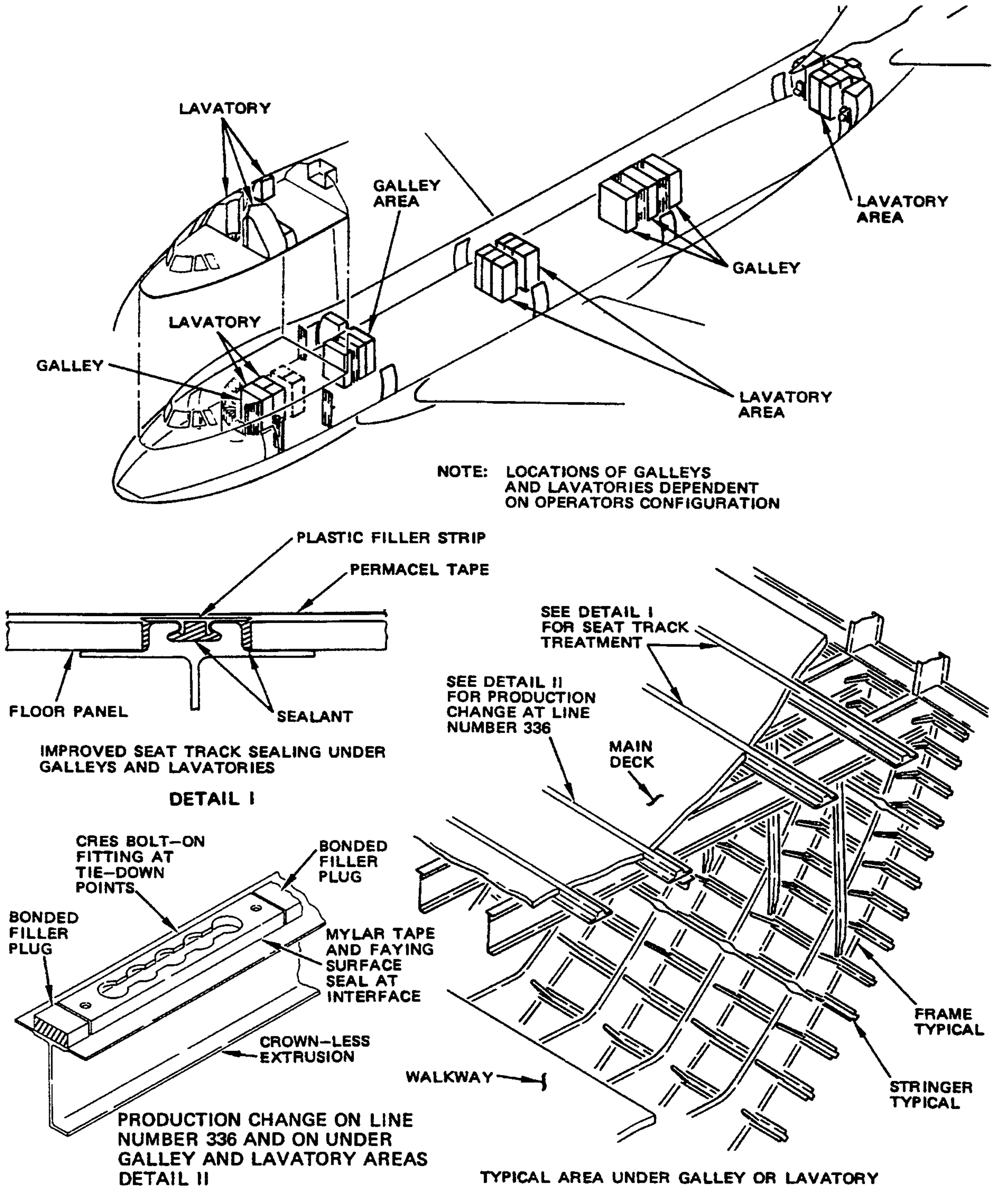
(8) At line number 451, BMS 5-95 fay surface seals were used on all faying surfaces between skin to stringers or intercostals and between skin to frame shear ties. Fay surface seals were applied below S-23 from BS 140 to 1000 and from BS 1480 to 2360. Between BS 1000 to 1350 fay seals were applied from S-23 to 28, and between BS 1350 to 1480 seals were applied from S-23 to 31. The 747-SP model is the same except between BS 1000 to 1350 where seals were applied from S-23 to 32, and in section 46 between BS 1480 to 2140 below S-23.

(9) At line number 836, on some airplanes, MC 5124MP4091 replaced the BMS 3-26, Type I compound with BMS 3-26, Type II in the forward lower lobe structure between stations 460 and 1000.

(10) On some airplanes, RR 47032-54 added BMS 3-23 corrosion inhibiting compound to main deck floor beams aft of station 1094.

(11) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

(12) At line number 1011, PRR 82788-2 replaced the two-layer system of BMS 3-23 and 3-26 compounds with BMS 3-29 compound and added Dinol AV8 (BMS 3-23, Type 2) compound to other areas.



Areas Under Galleys and Lavatories
Figure 3 (Sheet 1)

1. General

A. The areas under galleys and lavatories can get corrosion because of spilled liquids and food. The worst areas are under the H and J lavatories and under the galley that is under the spiral staircase.

B. Most of the corrosion occurs on the floor structure and the seat tracks. Unwanted materials such as spilled food and liquids and dirt collect inside the seat tracks where they are not easily removed. Corrosion can make tiedown points unserviceable. As a result, SB 51-2022 gives inspection and temporary repairs of these areas for airplanes with over 2 years of service.

C. Corrosion can occur at the floor panel set screws on airplanes with 747SP-type galley panels. The corrosion is caused by different metals that touch each other.

D. Corrosion may occur at the cart lift cutout in the upper deck floor, Station 980 floor beam. Corrosion may occur where the stainless steel threshold contacts the aluminum floor structure. This applies to all 747-400, 747-SUD (Stretched Upper Deck), and 747 modified to have SUD that are in line number 570 through 843 and have cart lift. See Service Bulletin 747-53A2400 for details.

2. Corrosion Prevention

A. Make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. White powdery deposits are evidence of the existence of corrosion which should alert operators that some corrective action is required. A corrosion prevention program should be initiated to prevent the accumulation of moisture in the fuselage structure to minimize the occurrence of corrosion.

B. Where extensive corrosion exists (large amounts of white deposits) refer to Structural Repair Manual for details of corrosion removal on structure and Structural Repair Manual for details of corrosion removal on seat tracks in the galley and lavatory areas.

WARNING: DO NOT APPLY CORROSION INHIBITING COMPOUNDS INTO AREAS WHICH COULD POTENTIALLY BE IN CONTACT WITH OXYGEN SYSTEM COMPONENTS. MIXING OF CORROSION INHIBITORS AND OXYGEN MAY RESULT IN AN EXPLOSION.

CAUTION: INSULATION BLANKETS SOAKED WITH CORROSION INHIBITORSARE POTENTIAL FIRE HAZARDS. BLANKETS INADVERTENTLY SPATTERED SHOULD BE ALLOWED TO DRY BEFORE REINSTALLATION.

CAUTION: DO NOT APPLY CORROSION INHIBITING COMPOUND OVER COSMOLENE (OR EQUIVALENT PER MIL-C-16173 GRADE 1).

C. For details of application of water displacing corrosion inhibiting compound, refer to Volume 1, 20-60-00.

D. For minor corrosion, to minimize the down time of the airplane, the corrosion products should be cleaned off, followed by an application of a corrosion inhibiting compound into the affected area to retard the corrosion process. The finish system should be restored at the first opportunity consistent with the maintenance schedule (Ref Volume 1, 20-60-00).

NOTE: The treatment of the internal structure described above should be made at the first opportunity the area is exposed. Location of the area should be noted and monitored from the outside every 3 months for visual indication of corrosion progression. Any indication of corrosion products would require scheduling corrosion removal outlined in Structural Repair Manual.

E. Corrosion Prevention Treatment

(1) At first opportunity when scheduled maintenance work allows access to the structure, corrosion prevention treatment should be accomplished.

(2) Preferred access to the structure is from underneath the main deck.

(3) Remove sidewall lining and insulation blankets to expose frames, stringers, doublers and skin.

(4) Remove floor liners to gain access to bilge areas.

(5) Remove insulation blankets and liners (if any) from bulkheads in the immediate area below galleys or lavatories.

(6) Remove ceiling lining for access to main deck floor beams and intercostals.

(7) Open clogged drains. Make sure all drain paths are clear.

(8) For treatment of seat tracks in the galleys and lavatories, refer to 25-27-03 of the Maintenance Manual.

(9) One operator successfully used wax for corrosion protection of seat tracks under the lavatories and galleys with procedures which are now in SL 51-15.

(10) Replace broken or damaged finishes. Refer to Volume 1, 20-60-00 for protective finish systems. Use interior finish system with polyurethane enamel topcoat.

(11) Replace or repair broken or damaged leveling compounds used for drainage.

(12) Apply corrosion inhibiting compound to all exposed structure under galleys and lavatories except in section 42 where the oxygen bottles are located. Exposed structure of bulkheads should also be included. Special effort should be made to apply the corrosion inhibitor to the top of the floor beams where moisture may be trapped between the floor panel and floor beam. The use of spray equipment with nozzle directed into faying surfaces is recommended. Do not apply excessively.

(13) Let the solvent in the corrosion inhibitor evaporate before you put back the insulation blankets.

(14) Install blankets so they are taut.

(15) Reinstall liners and floor panels and restore airplane to normal. Seal the areas under galleys and lavatories per 25-27-02 of the Maintenance Manual. On airplanes line numbers 1 thru 497 with 747SP type galley panels, install floor panel set screws with MIL-C-11796, Class 3 corrosion preventive compound until you can get the plated set screws or equivalent. On other airplanes, install the screws with BMS 3-24 grease.

F. Frequency of Application

(1) Regularly examine the structure and the condition of corrosion inhibitor. Apply more corrosion inhibitor as necessary.

G. Improved Corrosion Protection

(1) To help keep moisture from between insulation blankets and airplane skins in the forward and aft compartments, PRR 73412 added supports for the insulation blankets at line number 78, which can be added to earlier airplanes with SB 53-2017. PRR 73412-1 added blanket supports in other lower lobe areas at line number 117, which can be added to earlier airplanes with SB 53-2049. These supports consist of nylon twine and brackets.

(2) At line number 107, production changes in the lower lobe cargo compartments replaced the one-piece insulation blankets over the floor structure with a three-piece blanket for easier replacement. At line number 267 in the same areas, new sidewall insulation blankets are installed over the stringers, not across the frames as they were in the earlier configuration.

(3) At line number 277, PRR 78241 added water barriers and better seals under galleys and lavatories. These changes can be added to earlier airplanes with SB 53-2161.

(4) At line number 336, PRR 78474 replaced the seat track extrusion under the galley and lavatory areas with new, thicker extrusions that have no crown. Plugs of floor panel material fill the area where the seat track crown was. Bolt-on corrosion resistant steel track sections are installed at tie-down points. Mylar tape and BMS 5-95 fay seals help to reduce corrosion of different metals that touch. On the floor beams over the wing center section, the aft 7-1/2 inches of the old seat track portions of the beams are replaced with CRES bolt-on track sections. Equivalent changes were made at the galley/stairwell attachments. Aluminum bolt-on track sections are used where seats are necessary where the new extrusions were installed. All of these changes under the galleys can be added on earlier airplanes with SB 53-2154.

(5) On some airplanes, MC 41718K (SB 53-2187) and MC 41719K (SB 53-2188) changed the upper and main deck galley seat tracks and floor panels to give smooth, continuous sealed floors.

(6) At line number 390, production changes were made to the S and T lavatories. Floors of aluminum with a foam core were replaced by fiberglass sheets with nomex honeycomb core. Floor support angles were changed from aluminum to stainless steel. Sealant was applied along the bottom of the foam on the back-sloping wall to prevent foam from being soaked with moisture.

(7) Because of the corrosion at the floor panel, cadmium-plated set screws are used on airplanes with 747SP type galley panels at line number 498 and on.

(8) At line number 570, corrosion preventive compound MIL-C-11796, Class II (MIL-G-23827 grease optional) was installed in seat tracks and over the tops of fitting at all upper deck lavatory-to-seat track attachments. The compound or grease was also installed over bolt heads at all upper deck lavatory-to-hard point and lavatory-to-nutplate attachments.

(9) At line number 620, MIL-C-16173, Grade 1 corrosion preventive compound (Cosmolene) is applied to all floor panel holes under galleys, lavatories, and adjacent structure.

(10) At line number 646, BMS 3-23 corrosion inhibiting compound is applied to the structure below the main and upper deck floors in the areas of entry doorways, lavatories, and galleys.

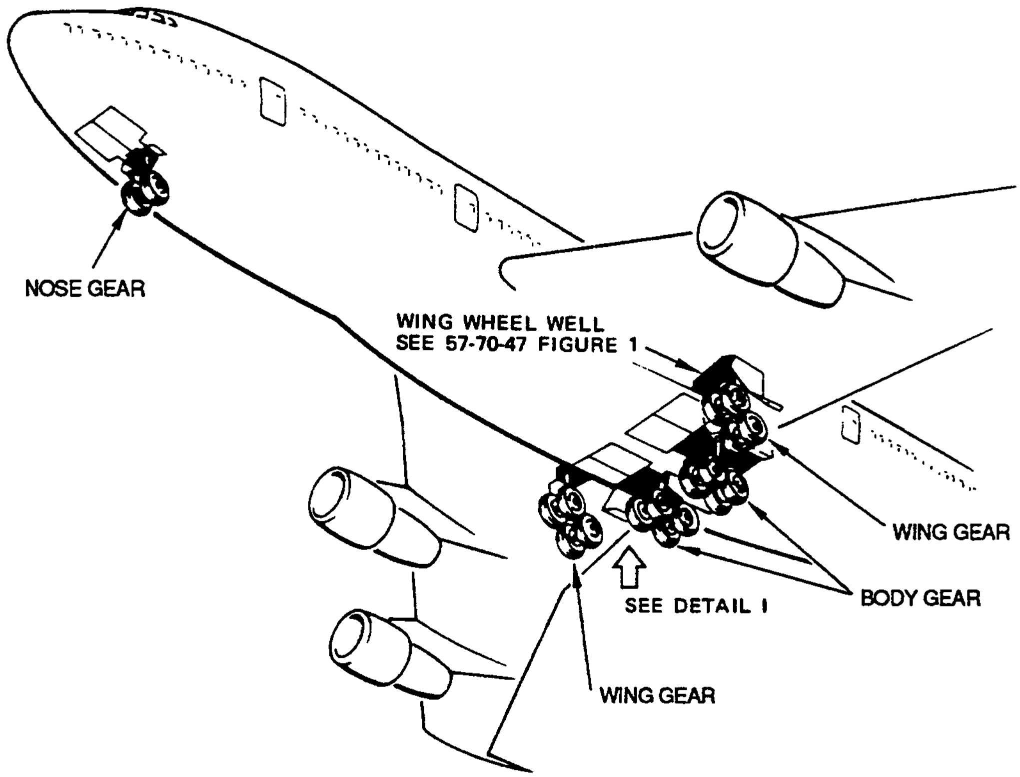
(11) On some airplanes, MC 5124MP4081, 5124MP4082, 5124MP4085 and RR 47005-112 added the protection of a moisture barrier over the cabin floors in the wet areas near the galleys and lavatories. Under this barrier, the seat tracks are filled with grease and covered with seat-track filler.

(12) At line number 657, on some airplanes, MC 5124MP4014 applied BMS 3-23, Type 2 corrosion inhibiting compound to all structure under the floor aft of station 2260.

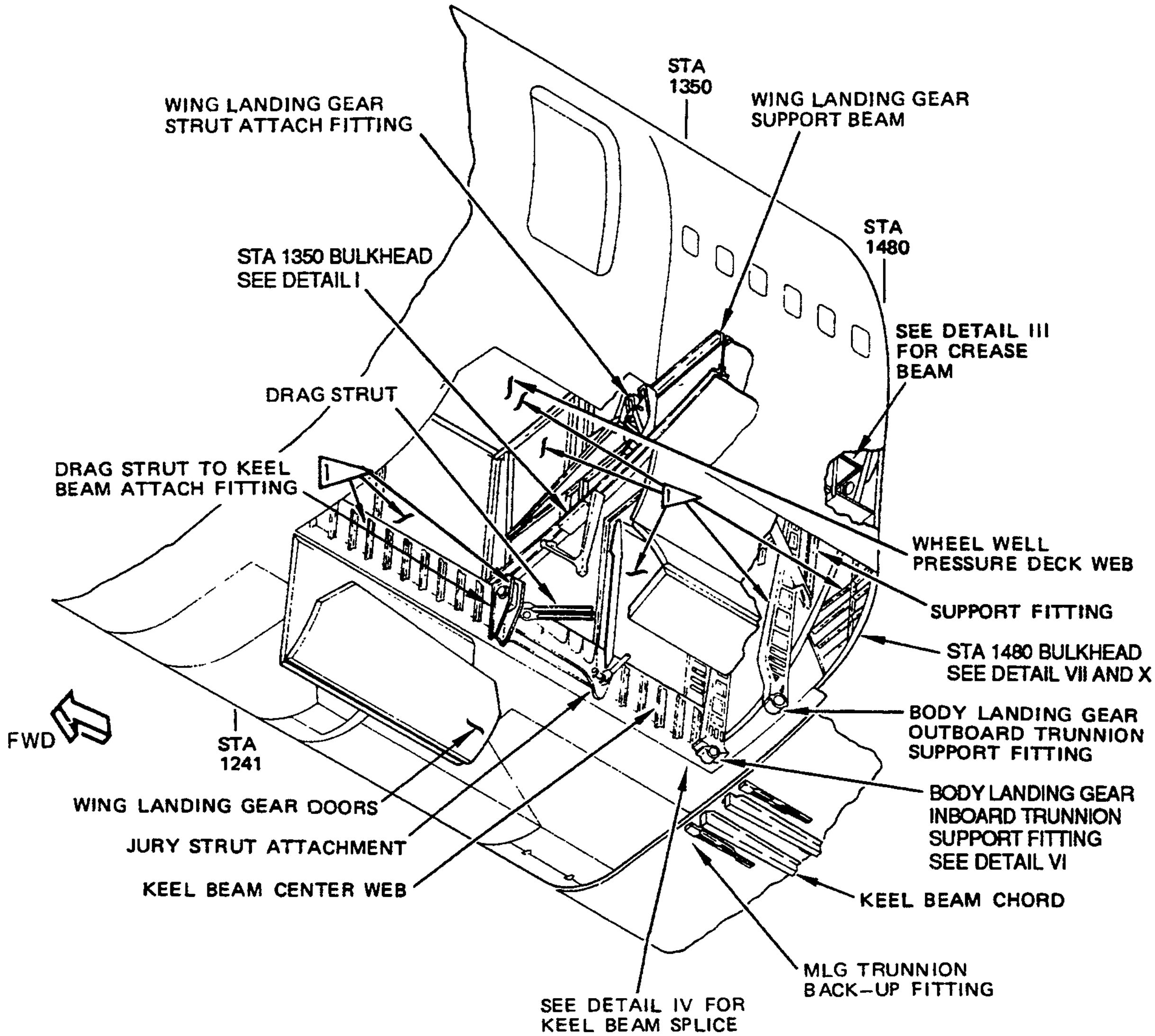
(13) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

(14) At line number 1011, PRR 82788-2 added Dinol AV8 (BMS 3-23, Type 2) compound to all areas of the structure that did not have it.

(15) On some airplanes, MC 2531MP4157 installs the galley tie-down fittings with BMS 5-95 sealant and then applies BMS 3-26, Type 2 corrosion inhibiting compound to the fittings.



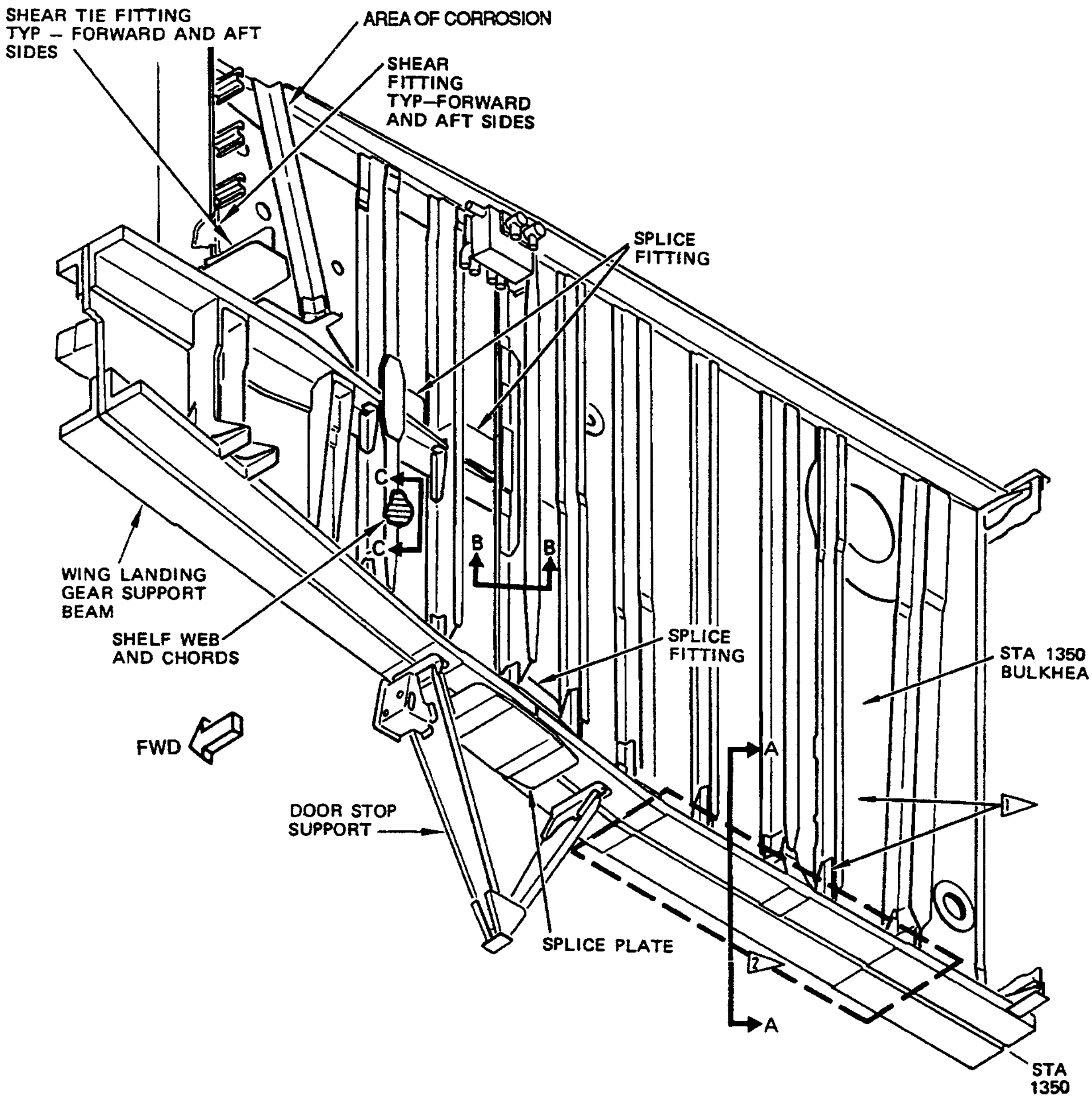
Main Gear Wheel Well and Keel Beam
Figure 4 (Sheet 1)



DETAIL I

Main Gear Wheel Well and Keel Beam

Figure 4 (Sheet 2)

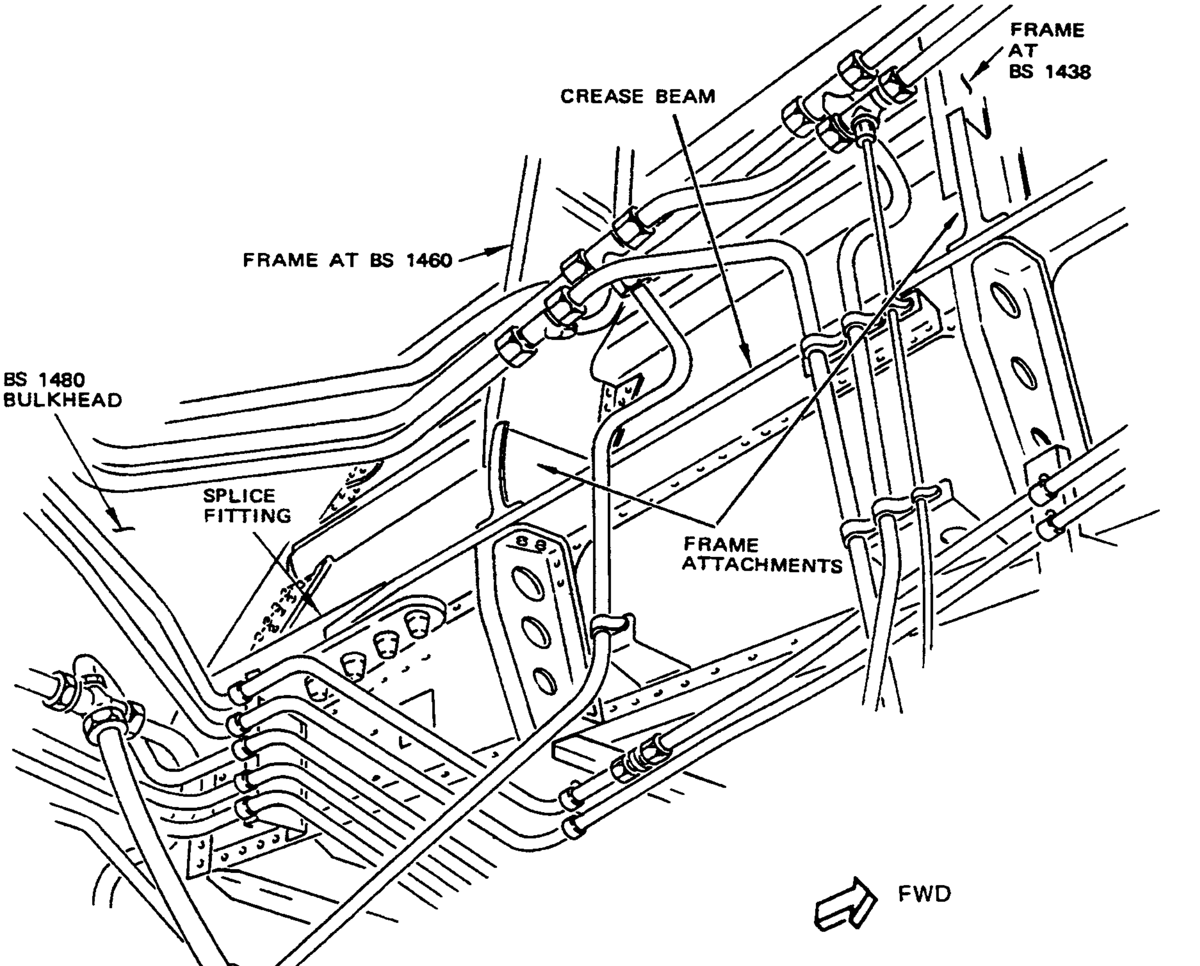


DETAIL II

1 APPLY BMS 3-23 ON ALL EXPOSED STRUCTURE

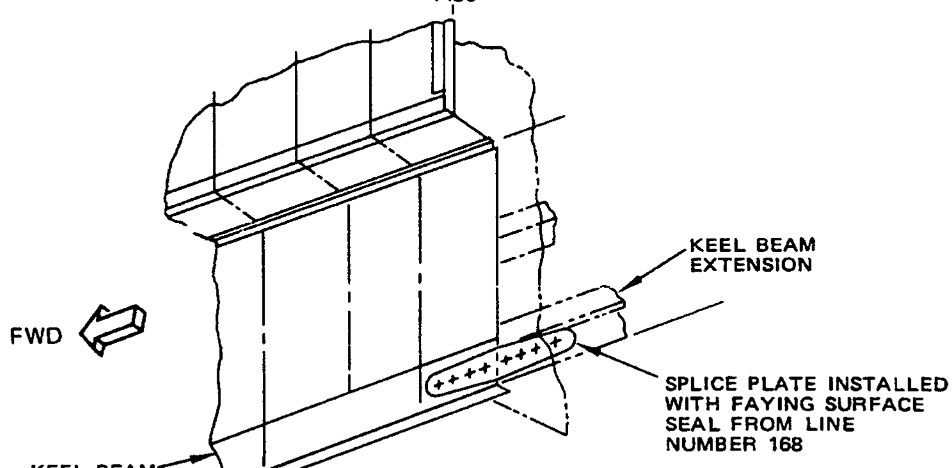
2 CAREFULLY EXAMINE THE LOWER CHORDS OF THIS BULKHEAD FOR DAMAGED FINISH BECAUSE OF RUNWAY DEBRIS FROM THE TIRES. THE DEBRIS COLLECTS ON THE HORIZONTAL FLANGES, ESPECIALLY AT THE FORWARD CHORD. CLEAN OFF THIS DEBRIS REGULARLY

Main Gear Wheel Well and Keel Beam
Figure 4 (Sheet 3)



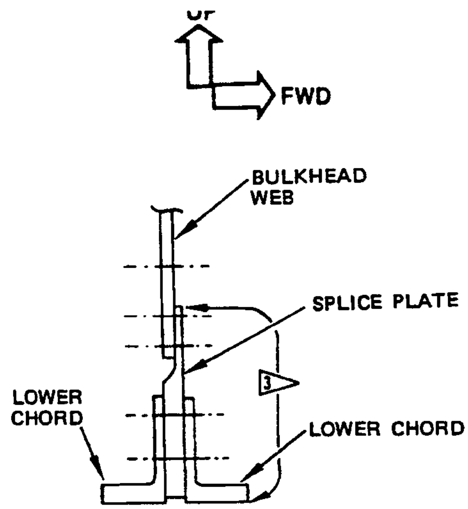
VIEW LOOKING OUTBOARD IN LEFT HAND BODY GEAR WHEEL WELL

DETAIL III

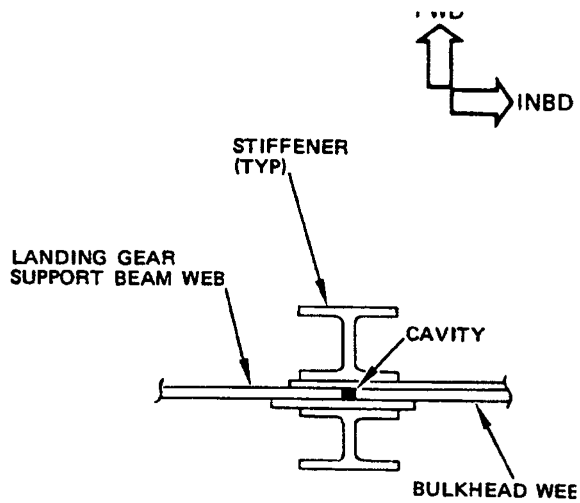


DETAIL IV

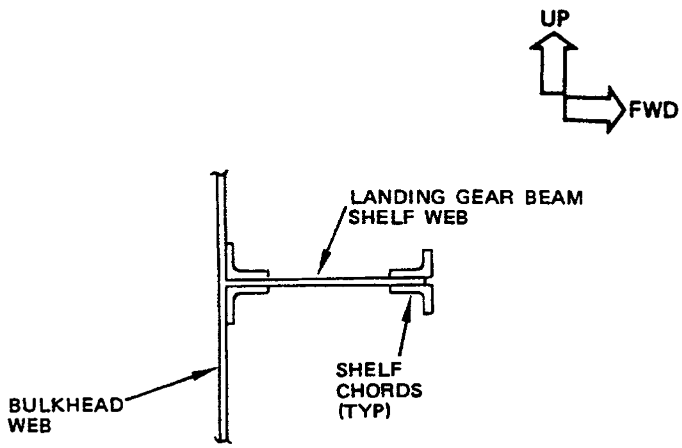
Main Gear Wheel Well and Keel Beam
Figure 4 (Sheet 4)



SECTION A–A

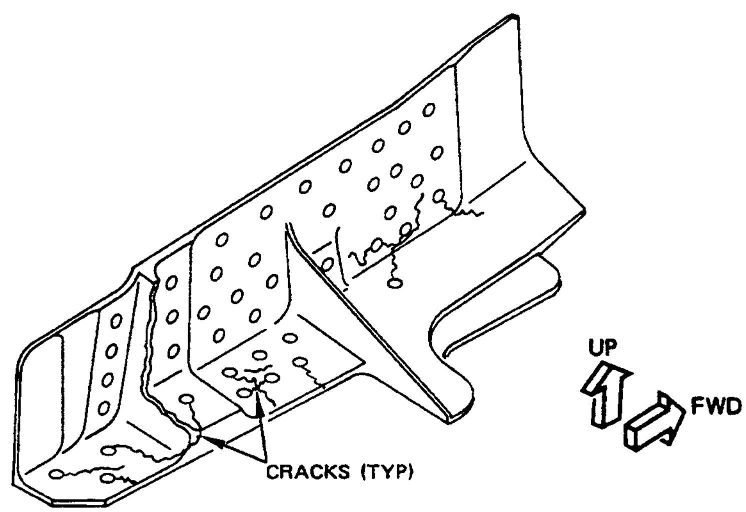


SECTION B–B



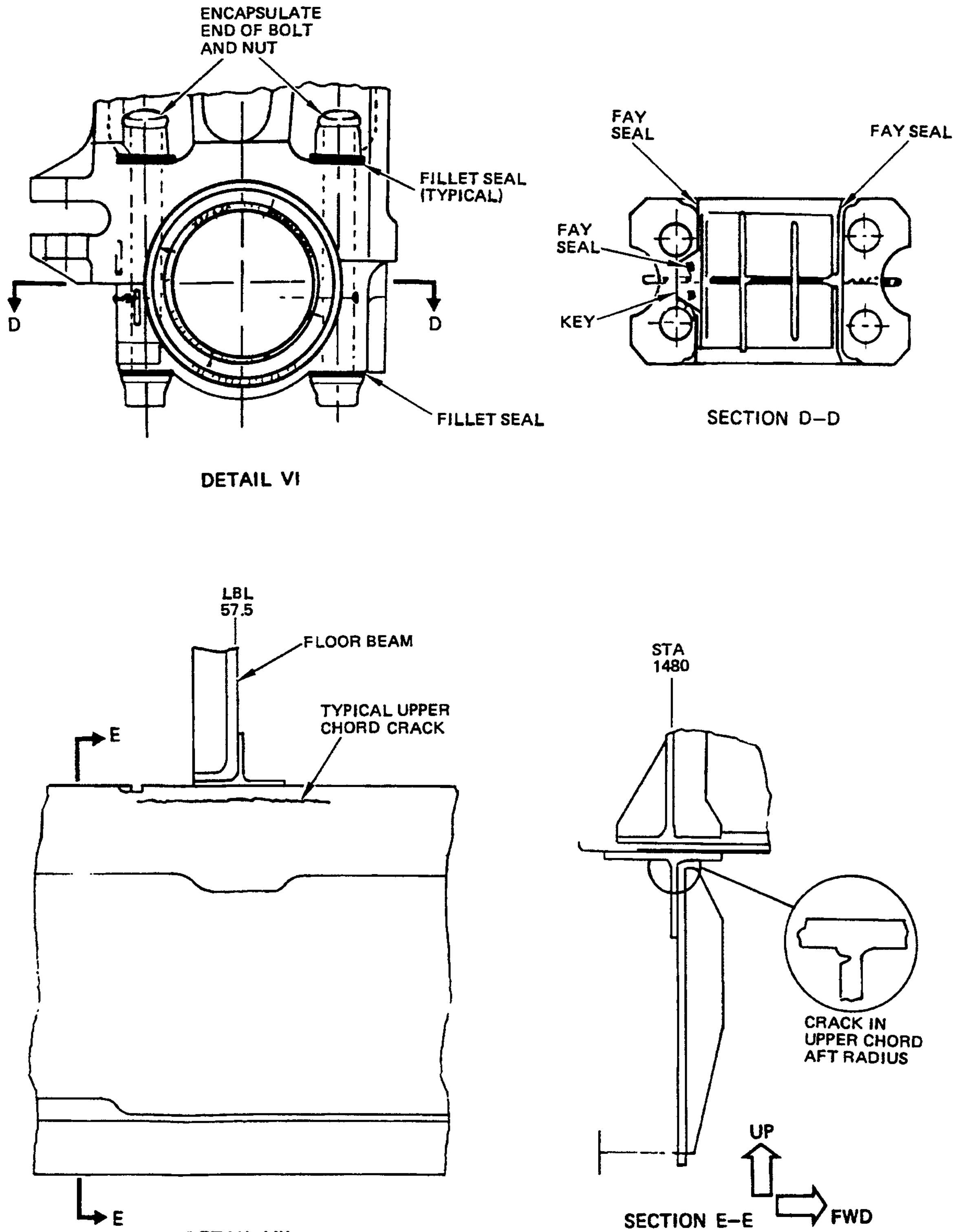
SECTION C–C

3 BMS 3–23 APPLICATION

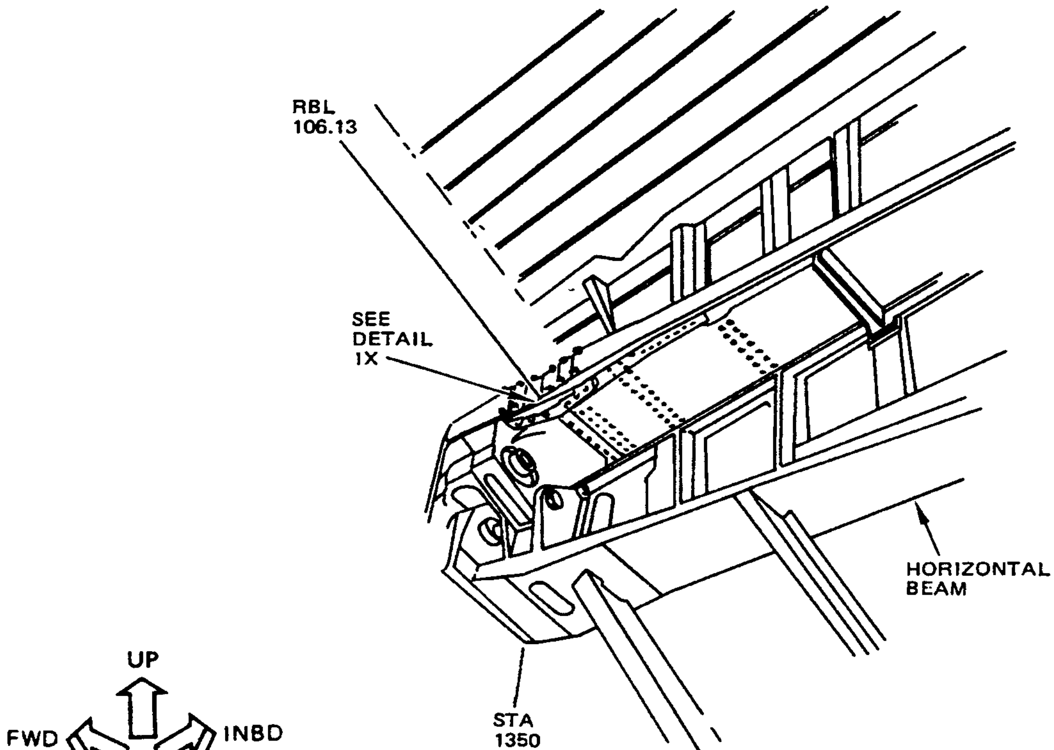


DETAIL V

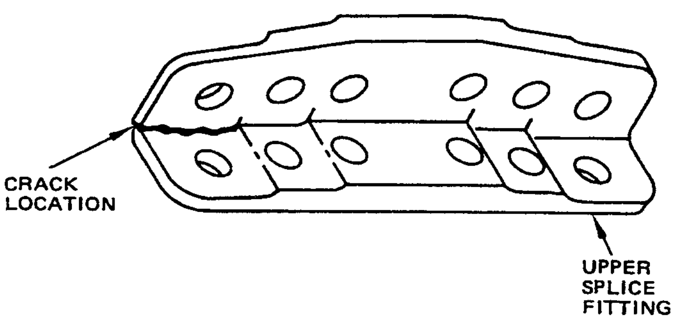
Main Gear Wheel Well and Keel Beam
Figure 4 (Sheet 5)



Main Gear Wheel Well and Keel Beam
Figure 4 (Sheet 6)

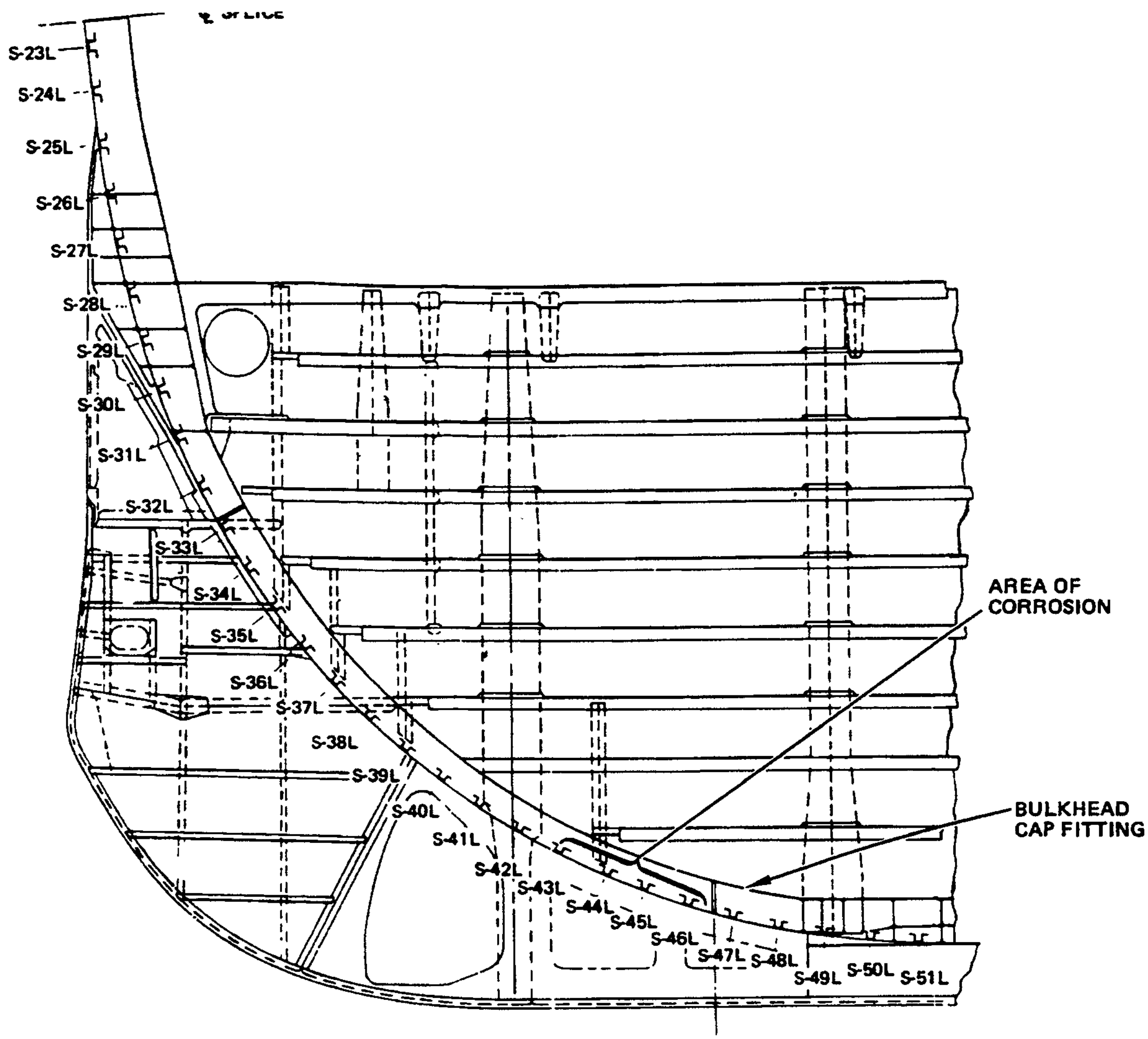


DETAIL VIII



DETAIL IX

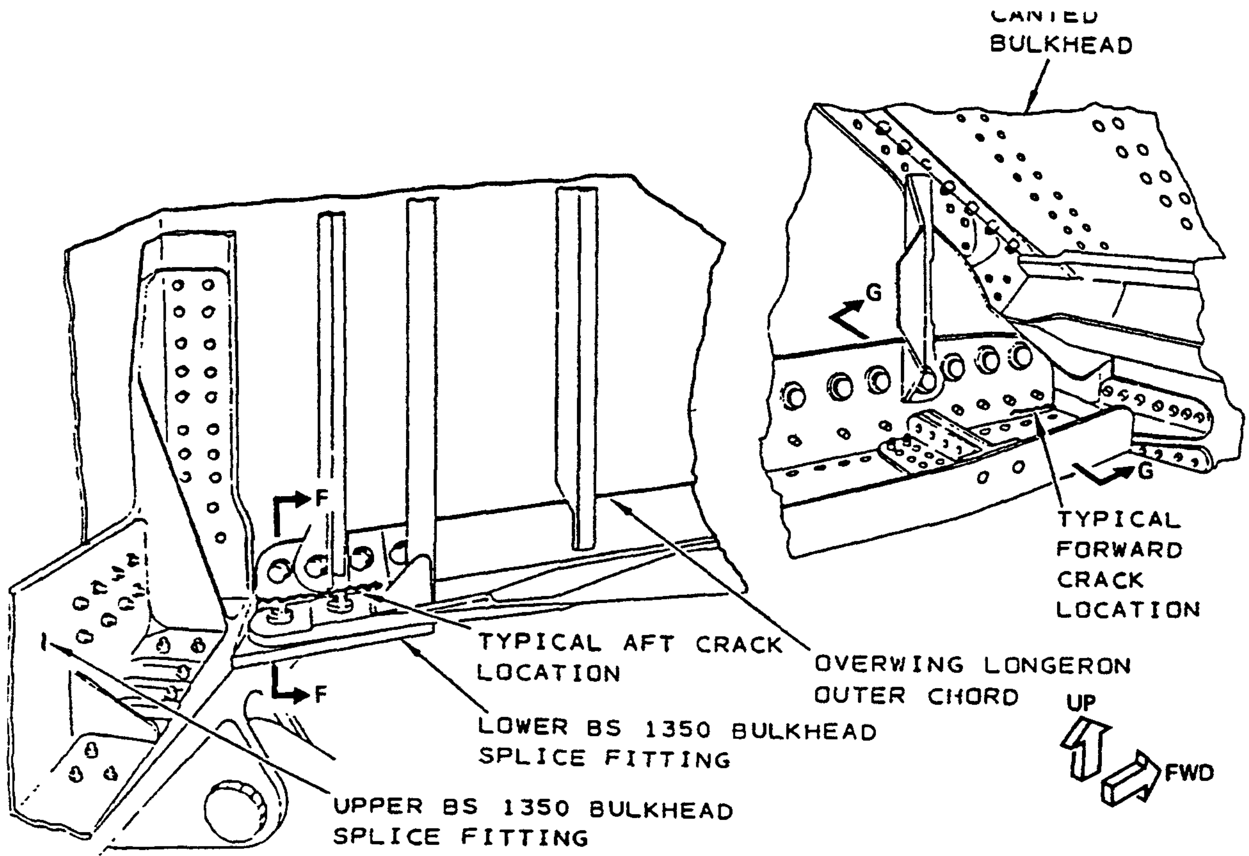
Main Gear Wheel Well and Keel Beam
Figure 4 (Sheet 7)



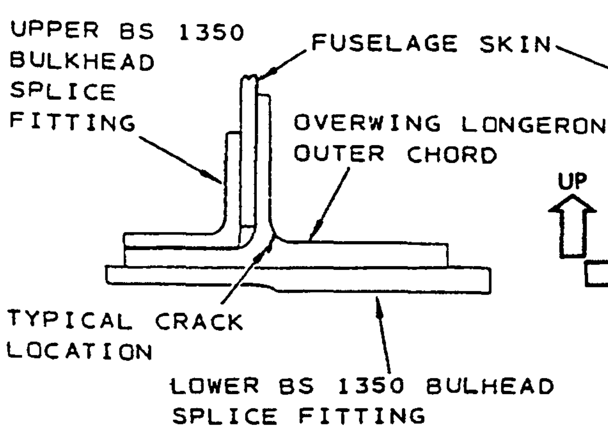
STA 1480 BULKHEAD

DETAIL X

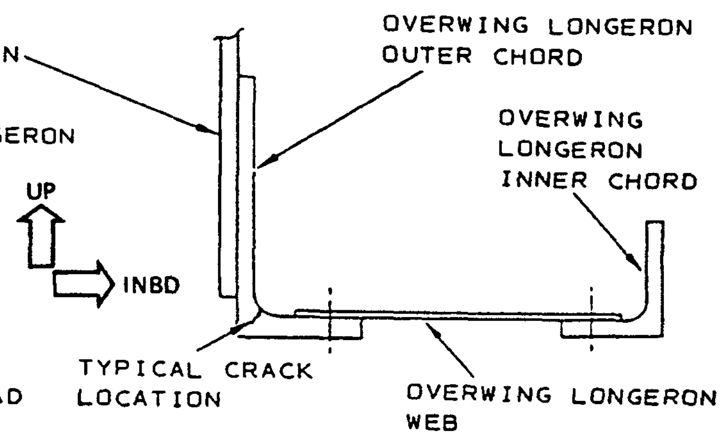
Main Gear Wheel Well and Keel Beam
Figure 4 (Sheet 8)



DETAIL XI

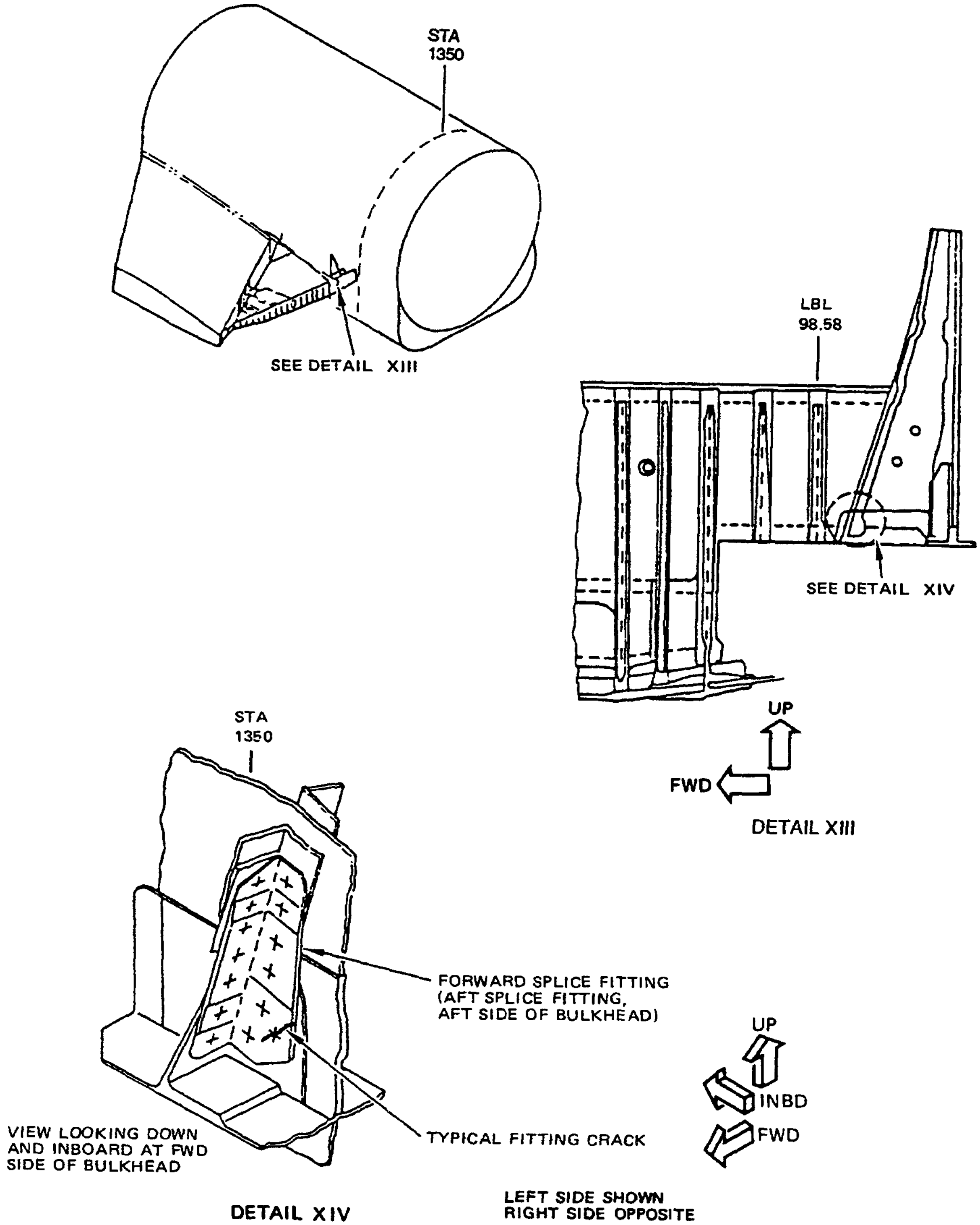


SECTION F–F

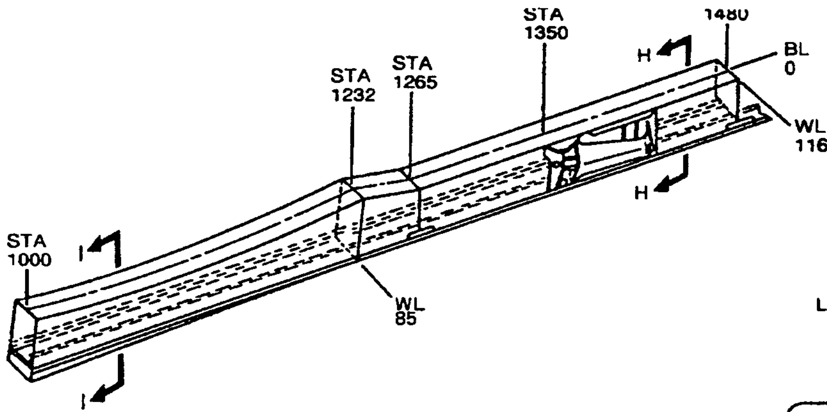


SECTION G–G

Main Gear Wheel Well and Keel Beam
Figure 4 (Sheet 9)

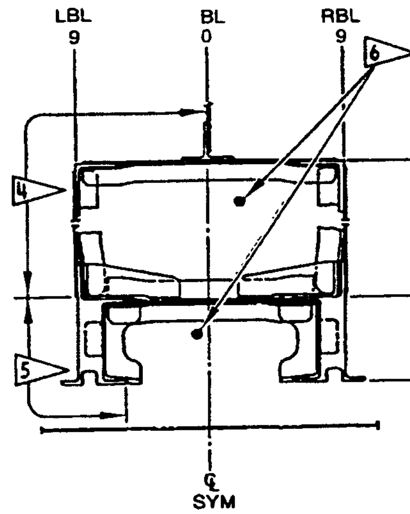


Main Gear Wheel Well and Keel Beam
Figure 4 (Sheet 10)



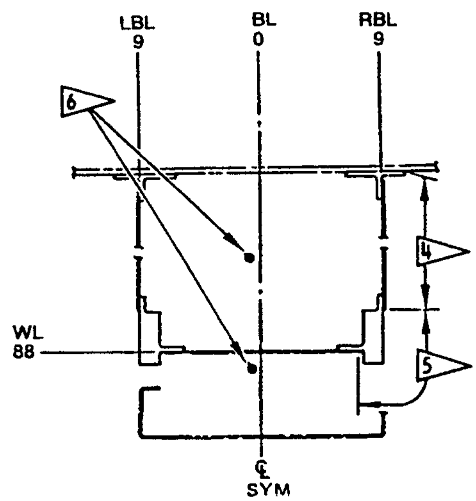
KEEL BEAM BOX

DETAIL XV



(TYPICAL FROM STA 1232 TO STA 1480)

SECTION H—H



(TYPICAL FROM STA 1000 TO STA 1232)

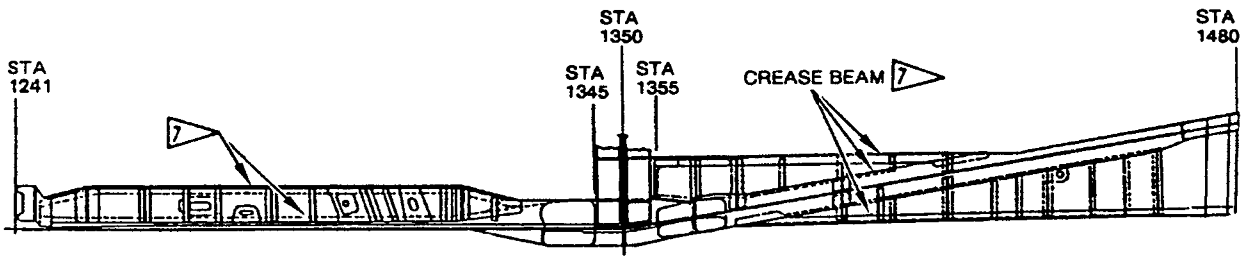
SECTION I—I

[4] APPLY BMS 3-23 TYPE II, EXCEPT USE BMS 3-26 TYPE I ON AIRPLANE LINE NUMBERS 646 THRU 750.

[5] APPLY MIL-C-16173 GRADE 1 (COSMOLENE) IN THIS AREA. HOWEVER, STARTING AIRPLANE LINE NO. 677 AND ON, APPLY BMS 3-26 TYPE II.

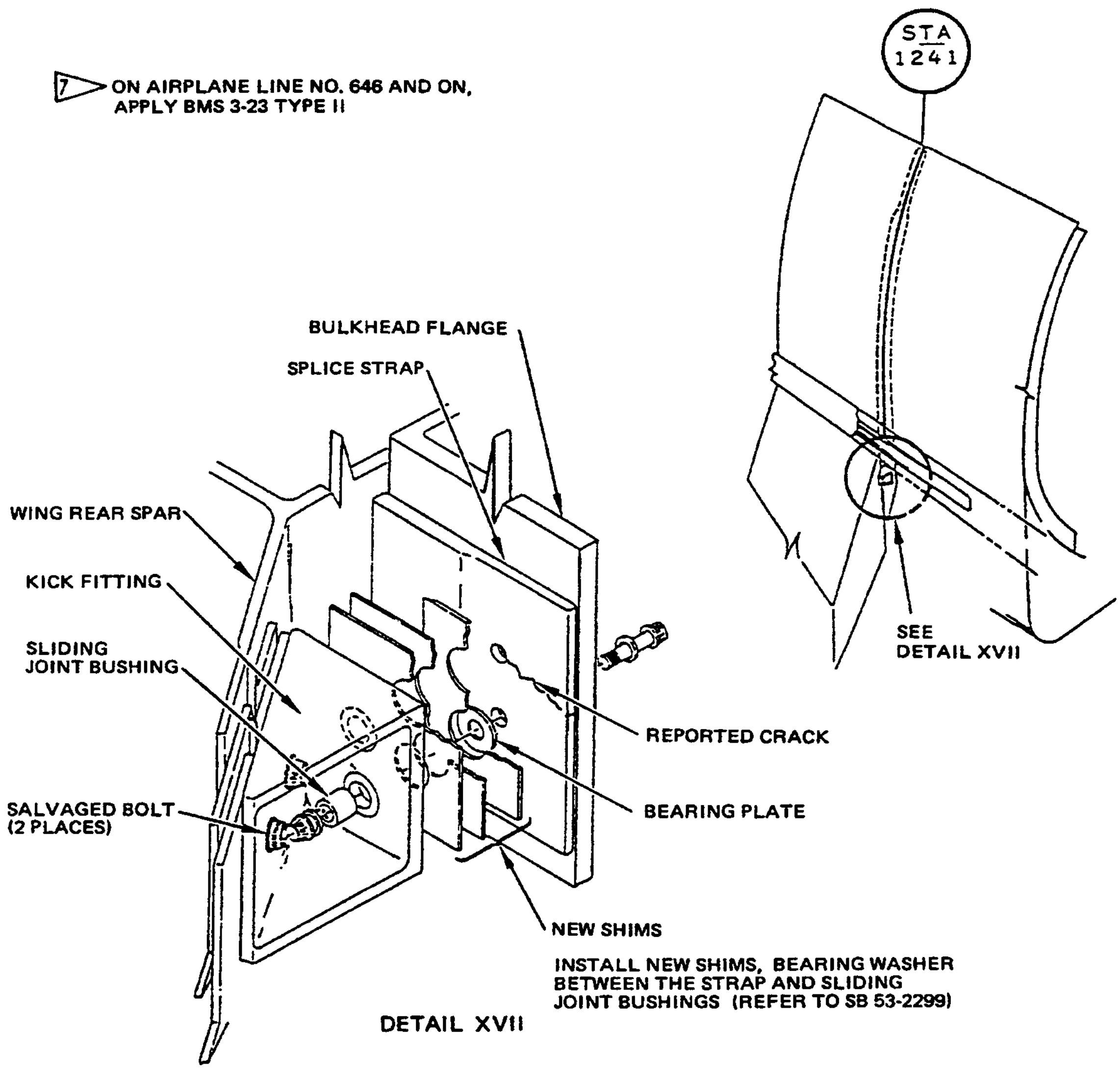
[6] APPLY BMS 3-23 TYPE II, LPS-3 TO THE ENTIRE CAVITY.

Main Gear Wheel Well and Keel Beam
Figure 4 (Sheet 11)



OVERWING LONGERON AND CREASE BEAM
DETAIL XVI

7 ON AIRPLANE LINE NO. 646 AND ON, APPLY BMS 3-23 TYPE II



INSTALL NEW SHIMS, BEARING WASHER BETWEEN THE STRAP AND SLIDING JOINT BUSHINGS (REFER TO SB 53-2299)

DETAIL XVII

Main Gear Wheel Well and Keel Beam
Figure 4 (Sheet 12)

1. General

A. The main landing gear wheel well is in the lower fuselage of section 44 between bulkheads at stations 1241 and 1480. The wheel well is divided into forward and aft sections by a bulkhead at station 1350 with the forward section housing the wing landing gear and the aft section housing the body landing gear. The keel beam and the keel beam center web separates the left and right sections.

B. The ceiling of the wheel well is formed by the pressure deck extending from the wing center section rear spar to station 1480 bulkhead. The pressure deck is attached to the underside of the main deck floor beams.

C. The surfaces inside the wheel well are exposed to air contaminants and runway splash and are subject to corrosion if there is deterioration of the finish. The body landing gear trunnion fittings, drag strut attachment fittings and jury strut attachment fittings are also susceptible to corrosion if the finish has been damaged.

D. The lower chords of station 1350 bulkhead are subject to exposure to runway splash and debris kicked up from the landing gear tires. The lower surfaces of the chords have experienced damaged finishes from debris off the runway and the horizontal leg of the forward chord are subject to accumulations of corrosive debris and moisture.

E. Evidence of corrosion has been reported on the area adjacent to the main landing gear trunnion backup fitting aft of BS 1480.

F. Exfoliation corrosion was found at frame attachments and interior keel beam structure, usually around hole location or at edges of parts. The keel beam and keel beam center web which are part of the wheel structure should be treated at the same time as the rest of the structure.

G. Corrosion has been reported on the upper surfaces of the crease beam in the body landing gear wheel well. Surface corrosion was visible without disassembly, and removal of the splice fittings at the BS 1480 bulkhead and the fittings at the frame intersection at BS 1450, 1438, 1416, 1394 and 1372 revealed more extensive corrosion. Corrosion was also evident on splice plate at BS 1478-1480 and overwing longeron.

H. Cracking has been reported in the wheel well pressure deck web between STA 1265 and 1480. SB 53-2183 provides instructions for inspection, preventive maintenance and corrosion removal. This corrosion is a subject of an Airworthiness Directive and is associated with stress corrosion cracking of the longitudinal floor beam lower chords (Fig. 11).

I. Corrosion has been reported between the keel beam lower chord and the splice plates at station 1480. Improved corrosion protection was provided on airplanes.line number 168 and on by the use of faying surface seals. On airplanes 1 thru 167, SB 53-2160 provides inspection and preventive modification procedures.

J. You could treat the wing wheel well at the same time with the body wheel wells (Ref 57-70-47, Fig. 1).

K. Corrosion has been reported in the main wheel well pressure deck web between BS 1265 and BS 1480. This is attributed to moisture from condensation and lavatory leakage penetrating into the faying surface between the pressure deck web and floor beam chords. It has resulted in pressure deck web cracking and missing fastener heads. SB 53-2186 provides inspection and rework instructions for airplane line numbers 1 thru 372.

L. Stress corrosion cracking has been reported on BS 1350 bulkhead shear fittings. This is attributed to fit up stresses. Cracking has been reported on the BS 1350 bulkhead forward and aft shear tie fittings. Cracking is attributed to stress corrosion.

M. One operator reported a crack in the right horizontal beam upper splice fitting 69313663-6. The crack was attributed to stress corrosion. (See Detail VIII.)

N. Corrosion can occur through the lower end of the BS 1350 bulkhead outer and inner cap plates (65B11203-10, 65B11204-6), between the forward and aft fuselage skin panels above the overwing longeron splice fitting vertical flange. Corrosion included the outboard edge of the bulkhead web above the wing landing gear beam and behind the bulkhead corner fitting.

O. Cracking due to stress corrosion has been reported on the BS 1480 upper tee chord beneath the LBL 57.50 floor beam. See Detail VII. The material was changed to 7075-T73 introduced at line number 627.

One operator has reported corrosion on the forward face of BS 1480 bulkhead cap fitting between stringers 43L and 46L.

P. Stress corrosion caused cracks in the overwing longeron chord between BS 1241 and BS 1350. (See Detail XI.)

Q. Stress corrosion caused cracks in the forward and aft splice fittings connecting the wing landing gear beam to the body station 1350 bulkhead frame. (See Detail XIV.)

R. Stress corrosion caused cracks in the bolts at the longeron splice fittings at station 1480 between stringers 32 and 33, left and right side.

S. Corrosion occurred between the left side inboard trunnion support fitting and the horizontal support and bridge fittings at station 1480. The corrosion was at the aft drag tab of the support fitting, in and around three bolt holes above the cap fitting.

T. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the regular inspection of Volume 1, 20-20-00 to prevent or find the start of corrosion. Fasteners that are gone, or white powdery, or other deposits are signs of corrosion.

B. After you clean the areas, do the inspection of Volume 1, 20-20-00 to make sure that protective finishes stay serviceable.

C. If you find corrosion (bulges of the skin or white deposits of corrosion products at fastener heads or joint edges), refer to Structural Repair Manual for details of corrosion removal.

D. For small amounts of corrosion, to decrease the downtime of the airplane, clean off the corrosion products. Apply a corrosion inhibiting compound into the affected areas to stop the corrosion process. Refer to Volume 1, 20-60-00 for how to apply corrosion inhibiting compound. Repair the finish system when the maintenance schedule permits.

E. Prevention Treatment

CAUTION: DO NOT APPLY CORROSION INHIBITING COMPOUND OVER COSMOLENE (OR EQUIVALENT PER MIL-C-16173 GRADE 1).

DO NOT APPLY CORROSION PREVENTIVE COMPOUND TO AREAS WHICH WILL BE SUBSEQUENTLY PAINTED OR SEALED.

(1) Do a visual inspection of the fairing frames and support fittings and keel beam interior for any signs of corrosion. Apply BMS 3-23, Type II corrosion inhibiting compound to frame attachment and interior beam structure.

(2) Inspection of the wheel well pressure deck web as described in SB 53-2183 should be maintained until the preventive modification of SB 53-2183 is incorporated. If no corrosion is found, apply water displacing corrosion inhibiting compound to the floor beams and pressure webs.

(3) Remove runway debris and generally clean the entire wheel well area.

CAUTION: OBSERVE PRECAUTIONS OF VOLUME 1, 20-60-00 FOR SPRAYING CONTROL CABLES WITH CORROSION INHIBITING COMPOUND. DO NOT APPLY CORROSION INHIBITING COMPOUND TO SILICONE RUBBER, RUBBER SEALS OR CUSHIONED TUBING CLAMPS. CORROSION INHIBITING COMPOUND MAY CAUSE THE SEALS OR CUSHIONS TO SWELL.

(4) Replace damaged or broken protective finishes if at all possible. Refer to Volume 1, 20-60-00 for protective finish systems.

(5) Treat the keel beam as prescribed below.

NOTE: Although SB 53-2158 has been released to treat the keel beam areas for line numbers 1 thru 234 the need exists to accomplish the preventive maintenance procedures herein described on all airplanes.

(a) Remove keel beam side panels to gain access to cavity area between BS 1000 to BS 1480 and clean the cavity area.

NOTE: It will not be necessary to remove every side panel. Remove only enough panels for easy access to the keel beam cavity and inner structure of the sidewalls.

(b) Apply water displacing corrosion inhibiting compound to the inner surface of the keel beam side panels and entire structure on the inside of the keel beam for the entire length.

(c) Apply water displacing corrosion inhibiting compound to the inside surface at the panels removed for access.

(6) On airplanes through line number 305 and except those modified by SB 53-2159, apply MIL-C-16173, Grade I (Cosmolene) corrosion inhibiting compound to the lower chords forward and aft of the BS 1350 bulkhead.

NOTE: Refer to Volume 1, 20-60-00 for details of application of MIL-C-16173, Grade I corrosion inhibitor.

(7) On airplanes line number 306 and on, and airplanes modified by SB 53-2159, check condition of Cosmolene application. Reapply Cosmolene where a continuous film is not evident.

(8) On airplanes line number 1 thru 167, the areas under the splice fittings attaching the upper and lower chord of the wing landing gear support beam to station 1350 bulkhead can get corrosion. Since corrosion cannot be detected early from external inspection, it is recommended that these splice fittings, both upper and lower, fore and aft be removed to determine if corrosion is evident in the joints. Refer to SB 53-2115 for inspection and preventive modification procedures. If extensive corrosion exists, refer to par. 2.C. If corrosion is minor, remove corrosion products, refinish per Volume 1, 20-50-00 and 20-60-00 and reinstall splice fittings with BMS 5-95 faying surface sealant. Reinstall bolts common to aluminum structure wet with BMS 5-95 sealant.

(9) Apply BMS 3-23 corrosion inhibiting compound to all exposed wheel well structure including the exposed surfaces of the keel beam and keel beam center web, and the wheel well pressure deck web. Special effort should be made to apply the corrosion inhibitor along doubler edges, along faying surfaces and on fastener heads. The use of spray equipment with nozzle directed into faying surface is recommended.

(a) Apply BMS 3-23 compound to unpainted hydraulic tubing in the area.

(b) Shield or protect control cables, pulleys, wire bundles, etc., to prevent direct application of corrosion preventive compound.

(c) Mask off electrical connectors to avoid application to any electrical contacts.

(d) Protect oxygen systems including fittings from contamination in accordance with Chapter 35 of the Maintenance Manual.

(e) Do not apply corrosion preventive compound to teflon bearings or lubricated joints.

(10) Apply water-displacing corrosion-inhibiting compound to landing gear attachment fittings. Ensure that all lugs and lug faces are treated.

(11) Apply BMS 3-23 compound to the keel beam chords, main landing gear trunnion back-up fittings and skin or doubler in the area aft of BS 1480 shown in detail I.

NOTE: When the maintenance schedule permits, remove the MLG trunnion back-up fittings to determine if corrosion exists on the faying surfaces of the doubler and fittings. If extensive corrosion exists refer to par. 2.C. If corrosion is minor, remove corrosion products, refinish per Volume 1, 20-50-00 and 20-60-00 and reinstall fittings with BMS 5-95 faying surface sealant. Reinstall fasteners wet with BMS 5-95 sealant.

(12) Treat the crease beam area aft of BS 1372 as follows:

CAUTION: THE AIRPLANE MUST BE PROPERLY SUPPORTED TO PREVENT MISALIGNMENT OF HOLES THROUGH FITTINGS IF THEY ARE REMOVED.

(a) The crease beam area should be cleaned concurrently with the rest of the wheel well. Evidence of corrosion on the upper surface of the crease beam justifies removal of the splice fittings and the fittings at the intersections with the frame, in order to make a more comprehensive inspection. Crease beam structure should also be checked from inside the fairing mounted escape slide compartment.

(b) Having established that the crease beam is free from corrosion, restore any damaged finish as described in Volume 1, 20-60-00.

(c) Where splice fittings or frame tie fittings have been removed for inspection, reinstall with BMS 5-95 faying surface seal.

(d) Apply water displacing corrosion inhibiting compound to all exposed surfaces of the crease beam, paying particular attention to the mating surfaces with the fittings. Do not spray cushioned tubing clamps as corrosion inhibitor causes the rubber to swell.

(13) Regrease all grease fittings in the treatment area.

F. Frequency of Application

(1) Regular inspection is required in areas that can get corrosion and should agree with the schedule in the Maintenance Planning Document. Operators must know of reported problems and areas.

(2) Regular application of BMS 3-23 compounds is necessary in areas identified and should agree with the schedule in the Maintenance Planning Document.

G. Improved Corrosion Protection

(1) On airplane line numbers 306 and on, additional corrosion protection treatment of MIL-C-16173, Grade 1 (Cosmolene) has been applied on the forward and aft side of the chord at station 1350 and the keel beam lower chords (Fig. 4, Detail XV). However, starting at line number 677 and on, a production change replaced the MIL-C-16173, Grade 1 (Cosmolene) with BMS 3-26, Type II for corrosion protection.

(2) To prevent fretting and corrosion of BS 1241 strap on the fastener locations at the wing-rear-spar-kick fitting requires the installation of bearing plates between the sliding joint bushings and the straps (refer to Detail XVI). Fretting and corrosion can start a crack on the splice strap. This change can be added on airplane line numbers 676, 679, 685 and 690 thru 699 by SB 53-2299.

(3) SB 53-2240 gives procedures for the center section BS 1241 to BS 1350 overwing longeron chord on airplane line numbers 2 thru 587 except 747SP. This will help you find cracks in the overwing longeron chord.

(4) SB 53-2213 gives replacement procedures for the bulkhead station 1350 forward and aft shear fitting, for up to line number 87.

(5) At line number 168, PRR 74538 added faying surface seals in the areas under the splice fittings attaching the upper and lower chords of the wing landing gear support beam to the bulkhead. This also includes the keel beam splice plates at station 1480. These changes can be incorporated on earlier airplanes with SB 53-2310 (which supersedes SB 53-2115) and SB 53-2160.

(6) Production changes provide improved corrosion protection changes for BS 1350 bulkhead by applying injection sealant in the cavity between bulkhead web and landing gear support beam web, and applying faying surface sealant as follows:

(a) Between lower chords, splice plate and bulkhead web.

(b) Between shelf web, shelf chords, acid bulkhead web.

(7) Production changes provide improved corrosion protection for BS 1480 bulkhead by applying faying surface sealant between inboard trunnion, outboard trunnion, support fitting and bulkhead web.

(8) At line number 452, a production change added fay surface seals on all faying surfaces in the keel beam box, and faying surfaces between wing center section rear spar to station 1480 bulkhead. This also includes fay surface and pre-pack seals in corners or cavities at attachments on all longeron structure station 1241 to station 1480.

(9) At line number 646, BMS 3-23 corrosion inhibiting compound is applied to the overwing longeron and crease beam chords and splice area between BS 1241 and BS 1480, to the main landing gear support structure, and to the exterior of the keel beam box (Fig. 4, Detail XV).

(10) At line number 657, the trunnion bushings are fay sealed with BMS 5-95 sealant, and the fitting bolts and nuts are fillet sealed and encapsulated (See Detail VI).

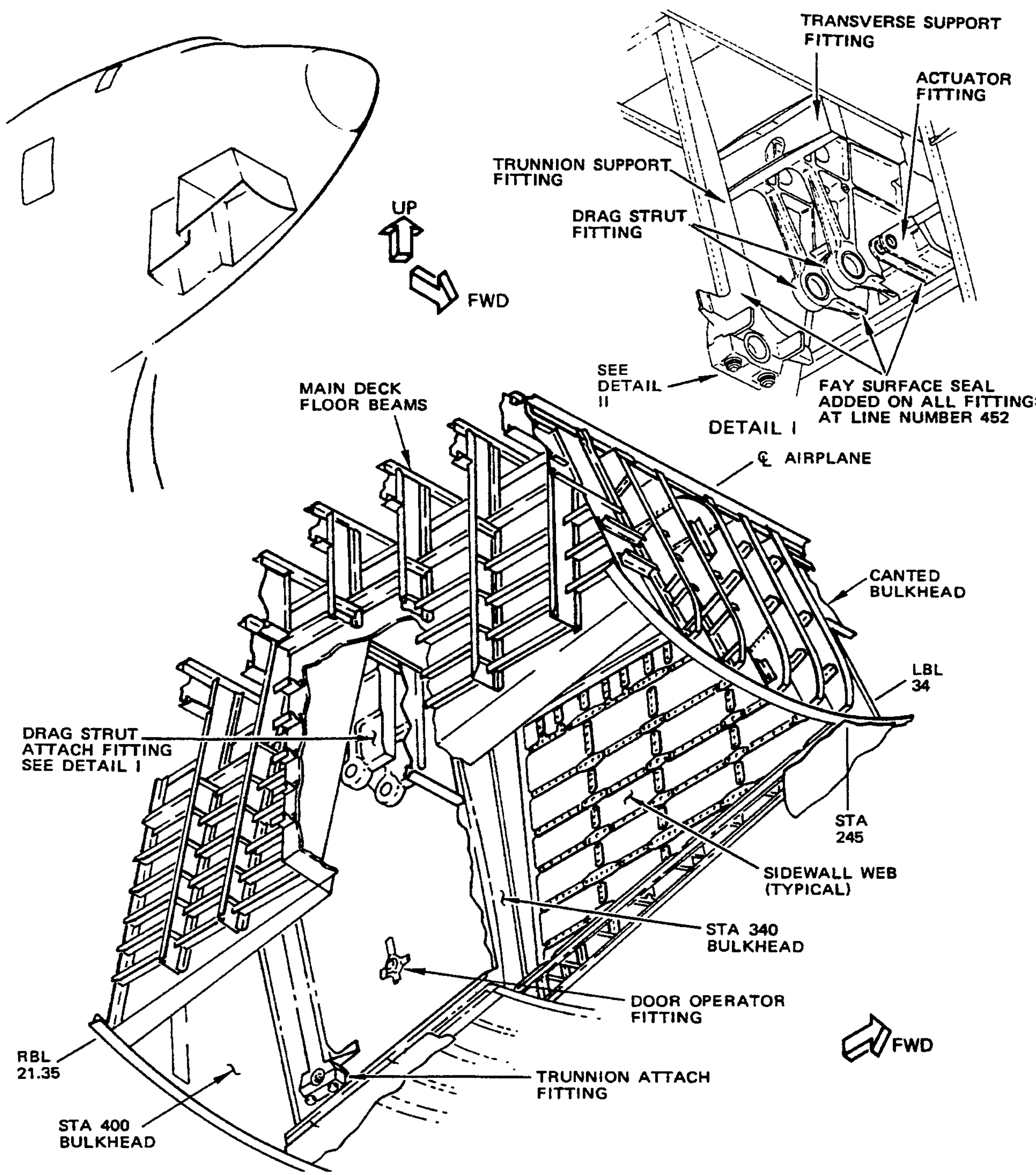
(11) At line number 618, faying surface sealant is applied between the keel beam, the landing gear door support structure and the door hinges of the main landing gear.

(12) At line number 88, the forward and aft splice fittings between the wing landing gear beam and the station 1350 bulkhead frame were changed from

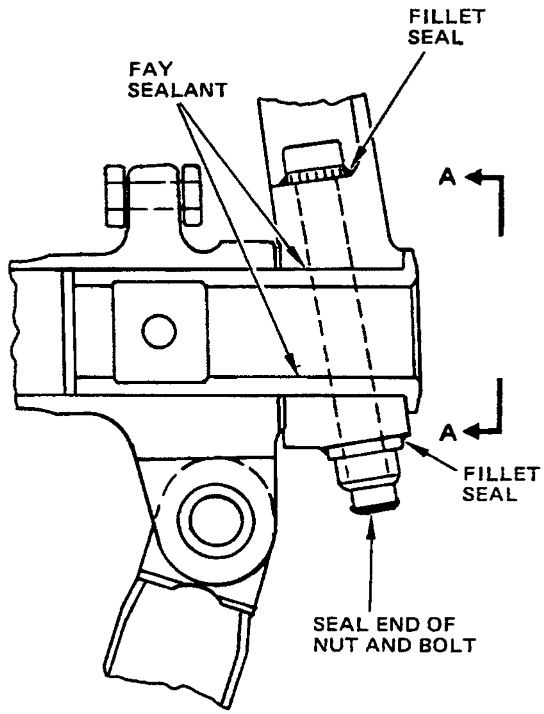
4330M steel to 15-5PH CRES. This change can be incorporated on earlier airplanes with SB 53-2257.

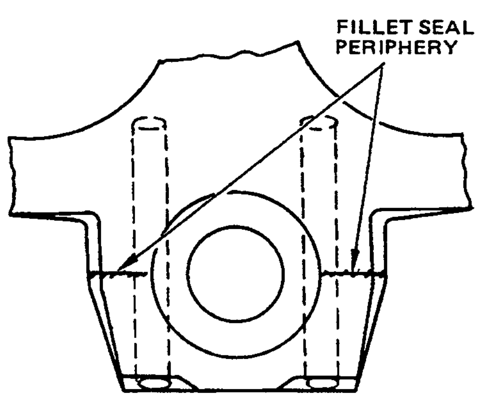
(13)At line number 80, PER 73748 changed the bolts of the longeron splice fittings at station 1480 between stringer 32 and 33, left and right side to decrease the risk of stress corrosion cracks. This change can be incorporated on other airplanes with SB 53-2015.

(14)At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.



Nose Gear Wheel Well
Figure 5 (Sheet 1)





SECTION A–A

Nose Gear Wheel Well
Figure 5 (Sheet 2)

1. General

A. The nose gear wheel well is a rigid box structure consisting of a ceiling, two sidewalls, a forward and an aft wall and is located in the forward fuselage. The nose gear attachment fittings are located in the wheel well.

B. The surfaces inside the box structure are open to air contaminants and runway splash and can get corrosion. The nose gear attachment fittings can also get corrosion.

C. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. Missing fasteners, white powdery or discolored deposits are evidences of the existence of corrosion which should alert operators that some corrective action is required. A corrosion prevention program should be initiated to prevent the ingress and accumulation of moisture or corrosive products into the wheel well structure to minimize the occurrence of corrosion.

B. Where extensive corrosion exists (very noticeable web bulges, missing fasteners or large amounts of discolored deposits at fastener heads or faying surfaces), refer to Structural Repair Manual for details of corrosion removal.

C. For details of application of water displacing corrosion inhibiting compound, refer to Volume 1, 20-60-00.

D. For minor corrosion, to minimize the downtime of the airplane, the corrosion products should be cleaned off, followed by an application of a corrosion inhibiting compound into the affected area to retard the corrosion process. The protective finish system should be restored at the first opportunity consistent with the maintenance schedule (Ref Volume 1, 20-60-00).

E. Treat hydraulic tubing, tubing supports and fittings per 29-00-47, Fig. 1.

F. Prevention Treatment

(1) At first opportunity consistent with scheduled maintenance activity, corrosion prevention treatment should be accomplished in the wheel well.

(2) Treatment of the wheel well at the same time as the nose gear is recommended.

(3) Remove runway debris and generally clean the entire wheel well.

(4) Replace damaged or broken protective finishes if at all possible. Refer to Volume 1, 20-60-00 for protective finish systems.

CAUTION: OBSERVE PRECAUTIONS OF VOLUME 1, 20-60-00 FOR SPRAYING CONTROL CABLES WITH BMS 3-23.

DO NOT APPLY BMS 3-23 TO SILICONE RUBBER, RUBBER SEALS OR CUSHIONED CLAMPS. BMS 3-23 WILL CAUSE THE SEALS OR CUSHIONS TO SWELL.

(5) Apply BMS 3-23 to all exposed wheel well structure. Special effort should be made to apply the corrosion inhibitor along doubler edges, along faying surfaces and on fastener heads. The use of spray equipment with nozzle directed into faying surfaces is recommended.

(6) Apply BMS 3-23 to nose gear drag strut attachment fitting, nose gear door operator support fittings and miscellaneous other fittings. Ensure that all lugs and lug faces are treated.

CAUTION:DO NOT APPLY CORROSION PREVENTIVE COMPOUND TO AREAS THAT WILL BE SUBSEQUENTLY PAINTED OR SEALED.

(7) Apply BMS 3-23 to unpainted hydraulic tubing in the area.

(8) Shield or protect control cables, pulleys, wire bundles, etc., in same manner to prevent direct application of corrosion preventive compound.

(9) Mask off electrical connectors to avoid application to any electrical contacts.

(10) Protect oxygen systems, including fittings, from contamination in accordance with Chapter 35 of the Maintenance Manual.

(11) Do not apply corrosion preventive compound to teflon bearings, surfaces or joints which are lubricated in another manner, or hot areas where coking could cause a problem.

(12) Regrease all grease fittings in the treatment area.

(13) If you cleaned the wheel well with steam or high pressure water and detergent, apply the BMS 3-23 again.

G. Improved Corrosion Protection

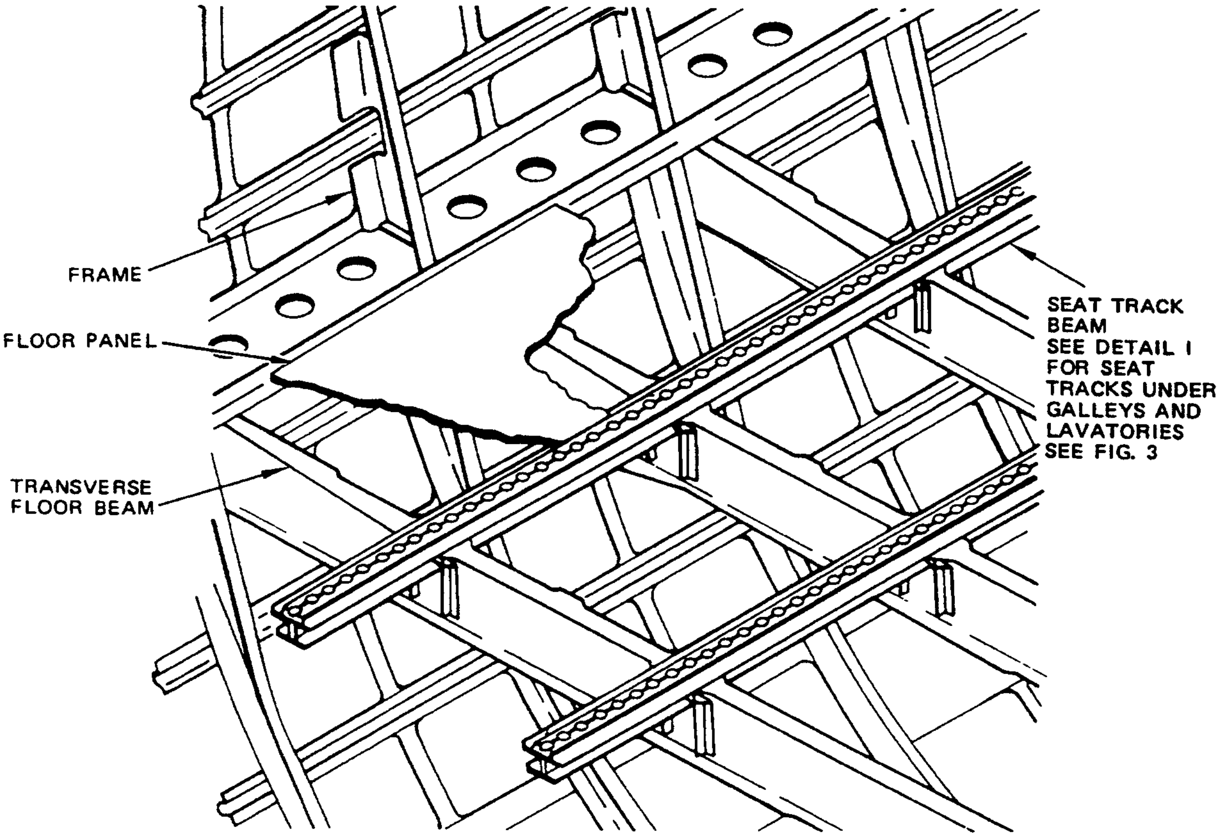
(1) At line number 452, all faying surfaces were sealed on trunnion support fittings, transverse support fittings, drag strut fittings, and actuator fittings.

(2) At line number 667, BMS 5-95 was added as a faying surface sealant on the trunnion bushings. Also, a fillet seal was added to the cap attach bolts and the bolt end and nut were encapsulated.

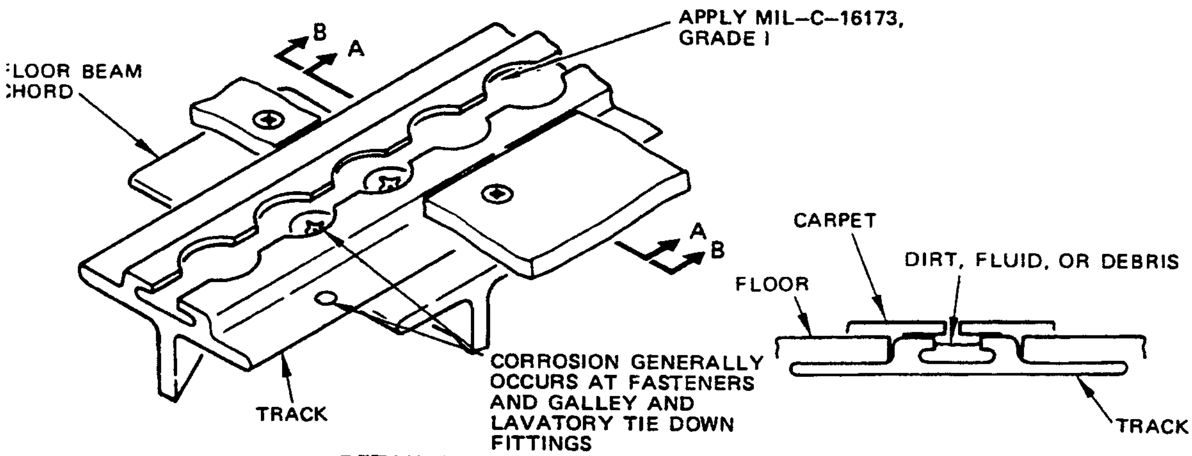
(3) At line number 646, BMS 3-23 corrosion inhibiting compound was applied to the nose wheel well structure.

(4) On some airplanes, SB 29-2047 (MC 2910MK4012) installs new hydraulic tubes which are chromic acid anodized and then painted with BMS 10-11, Type I primer.

(5) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.



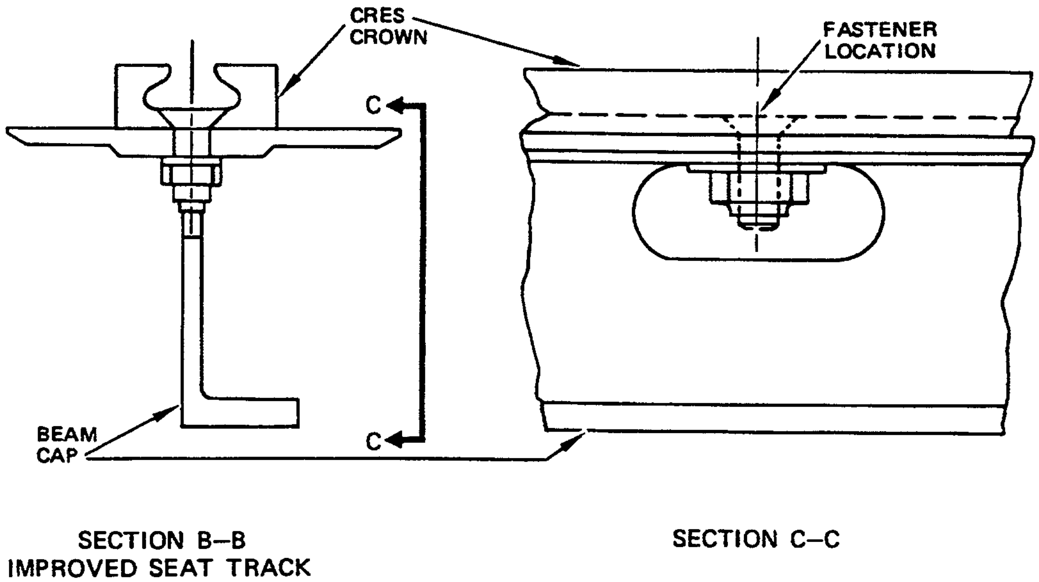
TYPICAL FLOOR STRUCTURE



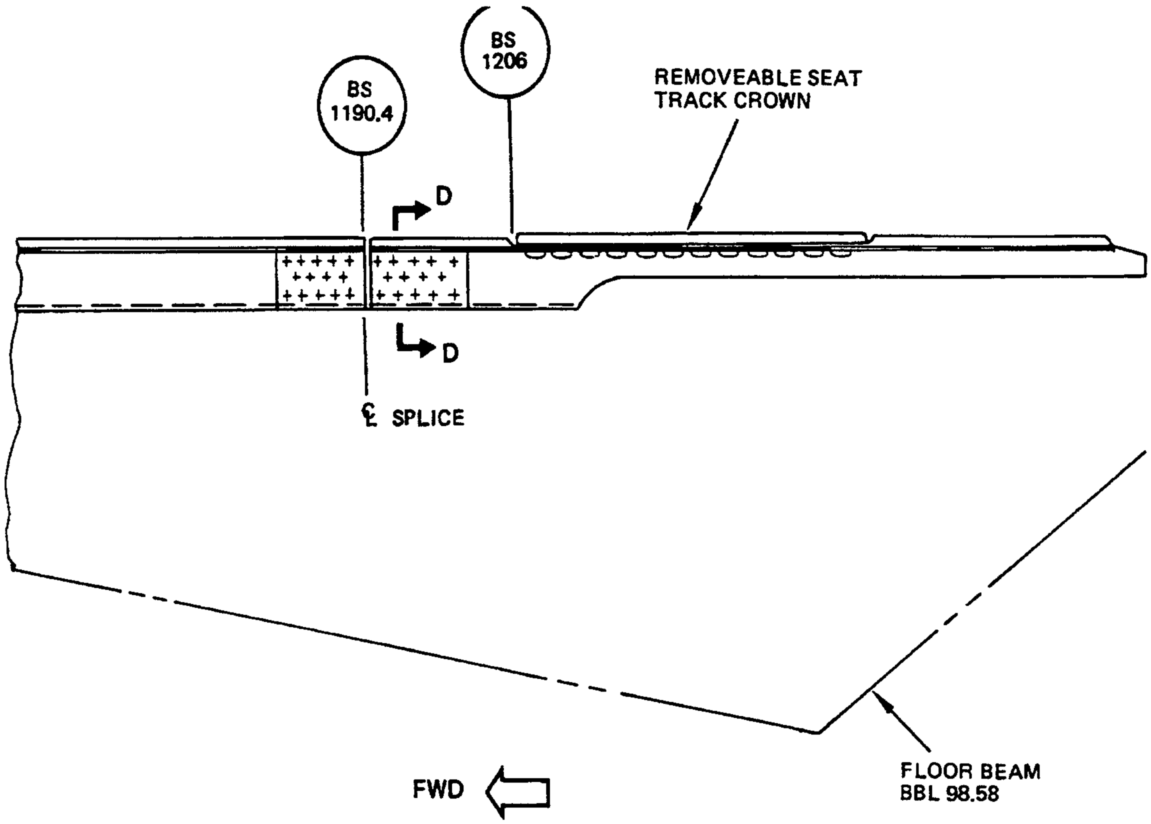
DETAIL I

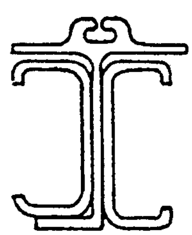
SECTION A-A

Seat and Cargo Tracks
Figure 6 (Sheet 1)



Seat and Cargo Tracks
Figure 6 (Sheet 2)





D-D

Seat and Cargo Tracks
Figure 6 (Sheet 3)

1. General

A. The passenger seat and cargo tracks are extrusions of 7178 aluminum alloy.

B. Because they are a channel on the floor, the seat and cargo tracks collect dirt and spilled liquids. Dirt holds the moisture and permits corrosion to start.

CAUTION: IN THE PORTIONS OF TRACKS FILLED WITH SEALANT IN PRODUCTION AND WHERE THE SEALANT HAS BEEN DAMAGED OR BROKEN DUE TO SERVICE, REPLACEMENT OF SEALANT IS RECOMMENDED. THE TRACK MUST BE THOROUGHLY CLEANED AND CAREFULLY INSPECTED FOR CORROSION. THE APPLICATION OF SEALANT MAY COVER UP CORROSION THAT MAY HAVE ALREADY STARTED.

C. Production techniques currently used to prevent corrosion include the use of dams, inserts and filling of unused portions of the seat tracks with sealant. Improved surface treatments are also being used for corrosion prevention.

D. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the regular inspection of Volume 1, 20-20-00 to prevent or find the start of corrosion.

B. For seat tracks that go into galleys, lavatories and bars see Fig. 3.

C. If you find moisture, dirt, or debris on or near the tracks, start a corrosion treatment program.

D. White powdery or discolored deposits are signs of corrosion which should alert operators that some corrective action is required.

E. Tracks in the passenger seating areas can be inspected and treated by removing the inserts installed in the unused portion of the track.

F. Tracks in the cargo section are usually open but may have inserts for cargo handling which should be removed for inspecting and treating the area underneath.

G. Where extensive corrosion exist, refer to Structural Repair Manual for details of corrosion removal.

H. For minor corrosion, the corrosion products should be cleaned off followed by an application of a corrosion preventive compound into the affected area to retard the corrosion process. The finish system should he restored at the first opportunity consistent with the maintenance schedule (Ref Volume 1, 20-50-00 and 20-60-00).

I. For track treatment remove mylar or vinyl tape and inserts to expose track channel.

J. Vacuum seat and cargo tracks regularly as part of the cabin cleaning procedure to prevent buildup of dirt and debris.

K. Open any plugged drains in dammed portion of the tracks.

L. Solvent clean tracks with freon for removal of oil and grease.

M. Repair or replace damaged or broken dams.

N. Replace damaged or broken finishes if at all possible. Refer to Volume 1, 20-50-00 and 20-60-00 for protective finish systems.

CAUTION: CARPETING SOAKED WITH CORROSION INHIBITORS ARE POTENTIAL FIRE HAZARDS. CARPETING INADVERTENTLY SOAKED SHOULD BE ALLOWED TO DRY BEFORE REINSTALLING.

O. Apply MIL-C-16173 Grade I corrosion preventive compound or BMS 5-95 sealant to the track.

P. Allow the corrosion preventive compound to dry before reinstalling inserts and restoring the airplane to normal.

3. Frequency of Application

A. In entrance ways, where carpeting covers the tracks, the area can be monitored both from the top or from underneath as access permits.

B. Where spills of liquids or large quantities of rain or water wet the carpet, dry the carpet to prevent corrosion. Lift the carpet to inspect and look for moisture on the tracks when the maintenance schedule permits.

4. Improved Corrosion Protection

A. On airplane line numbers 674 and on, PRR 80777 replaced the seat track between STA 1208 and 1245 with tracks of corrosion resistant crowns.

B. On some airplanes, the main deck forward galley seat tracks are replaced with crownless tracks between BS 520 and 900 and LBL 33.99 and RBL 98.58. The use of larger floor panels which cover the new seat tracks give a smooth continuous sealed floor. The upper deck aft galley seat tracks from BS 720 (BL 65.31 left and right) are also replaced with crownless tracks. These changes can be added by SB 53-2187 and SB 53-2188 on some airplanes.

C. At line number 336, production changes replaced the seat track extrusion under the galley and lavatory areas with new extrusions with increased thickness and no crown. Plugs of floor panel material fill the area previously occupied by the seat track crown under galleys and lavatories. Bolt-on corrosion-resistant-steel track-sections are installed at tie-down points. Mylar tape and BMS 5-95 fay seal help prevent corrosion of dissimilar metals.

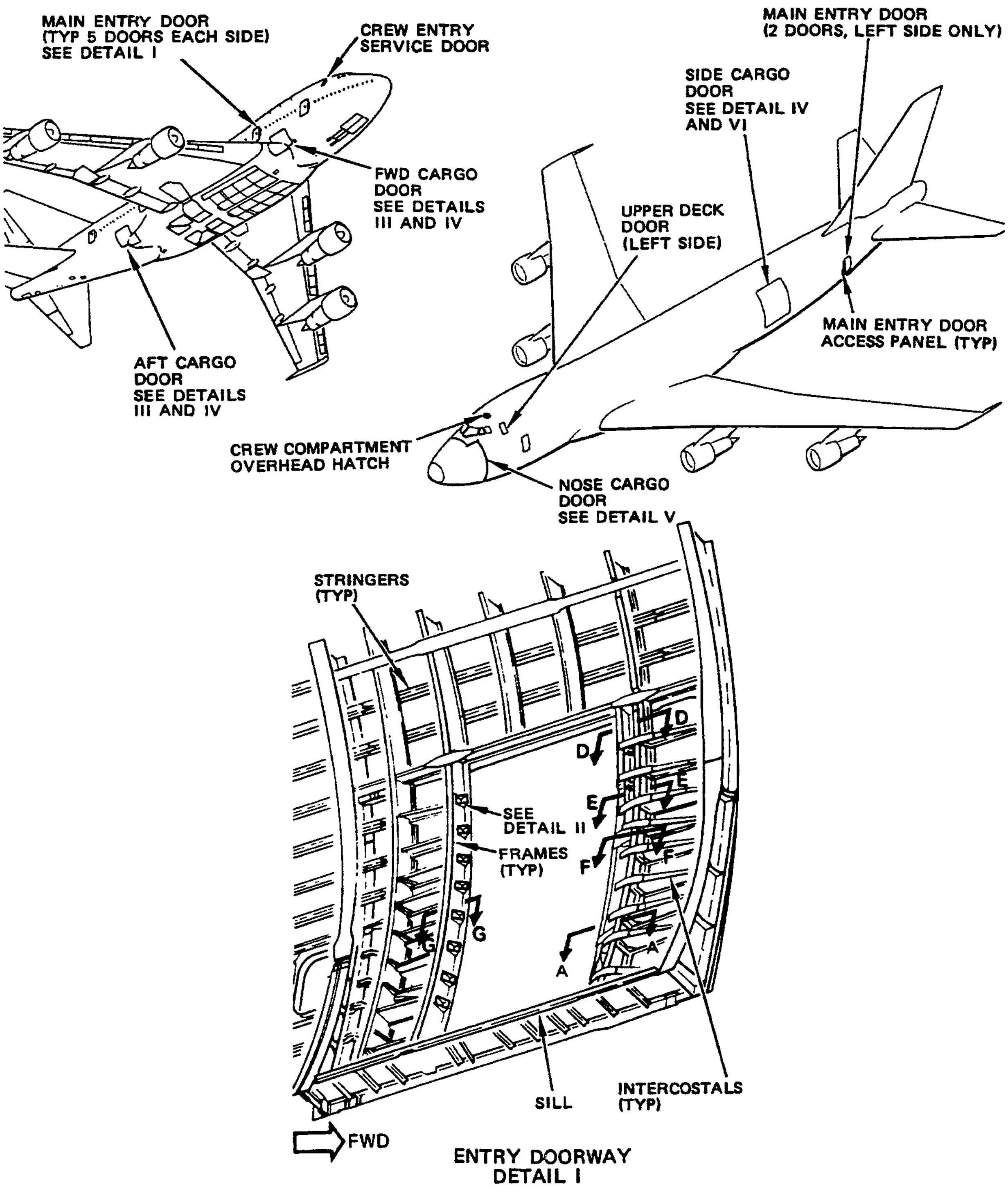
D. On some airplanes, MC 5124MP4085 and RR 47005-112 added the protection of a moisture barrier over the cabin floors in the wet areas near the galleys and lavatories. Under this barrier, the seat tracks are filled with grease and covered with seat-track filler.

E. On some airplanes, MC 5124MP4081 or 5124MP4082 added plastic fillers, grease, sealant, and dams for exposed seat tracks near doors, cross aisles, lavatories and galleys.

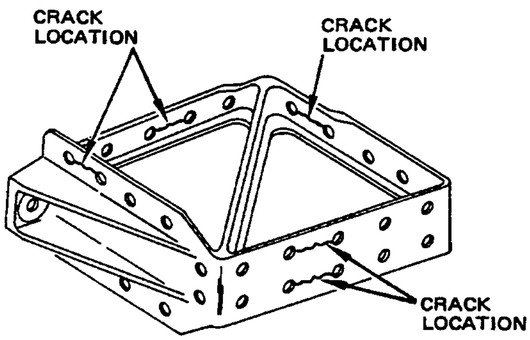
F. At line number 895, a production change installed with sealant the seat track crowns on the main deck between stations 2270 and 2330. This change can be added to other airplanes with SB 53-2351.

G. At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

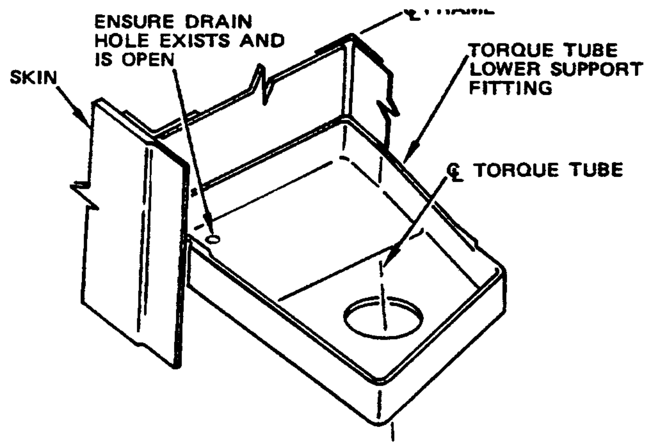
H. At line number 1011, PRR 82788-2 applied Dinol AV8 (BMS 3-23, Type 2) compound to all seat track crown interior surfaces.



Door Openings
Figure 7 (Sheet 1)

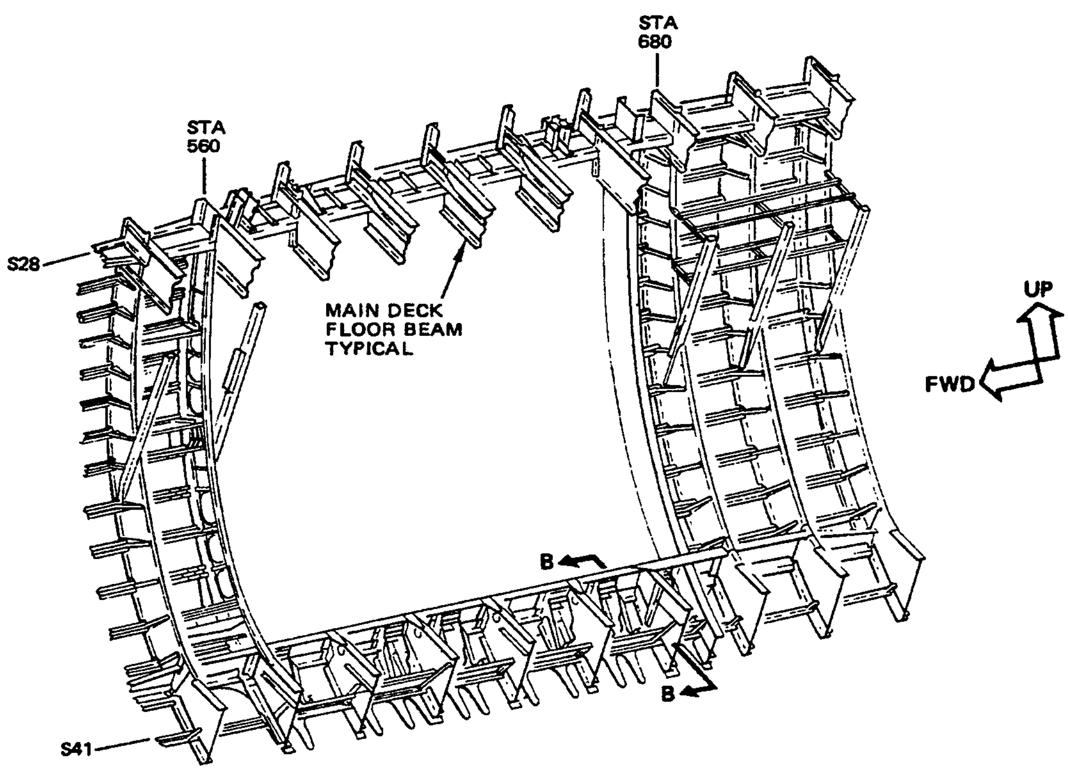


STOP FITTING
DETAIL II



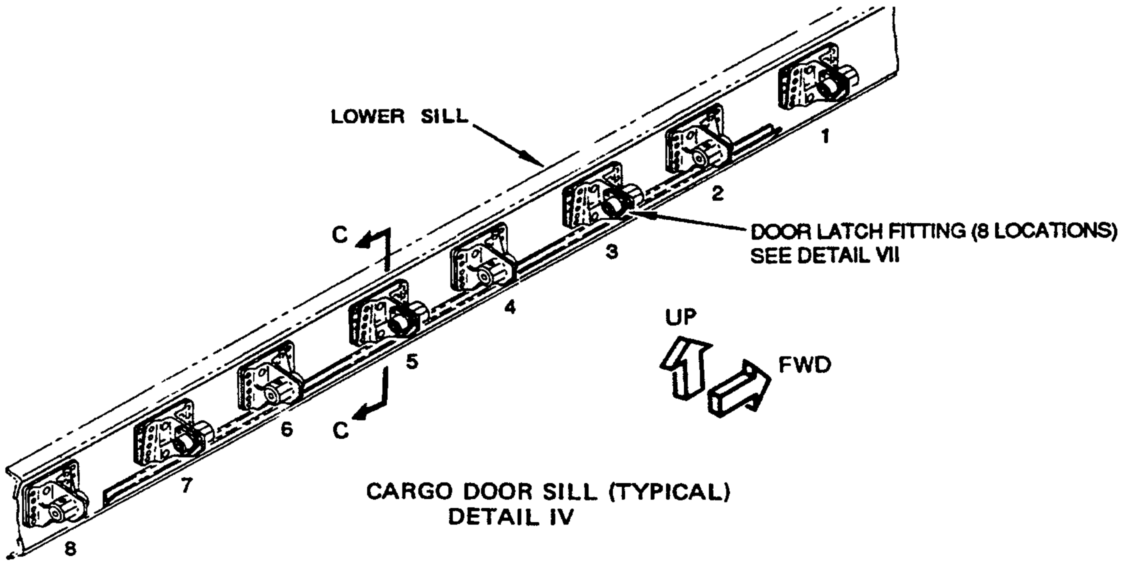
TORQUE TUBE SUPPORT FITTING SHOWN FOR DOOR 1 – OTHER DOOR FITTINGS SIMILAR EXCEPT WITH MORE DRAIN HOLES

SECTION A–A

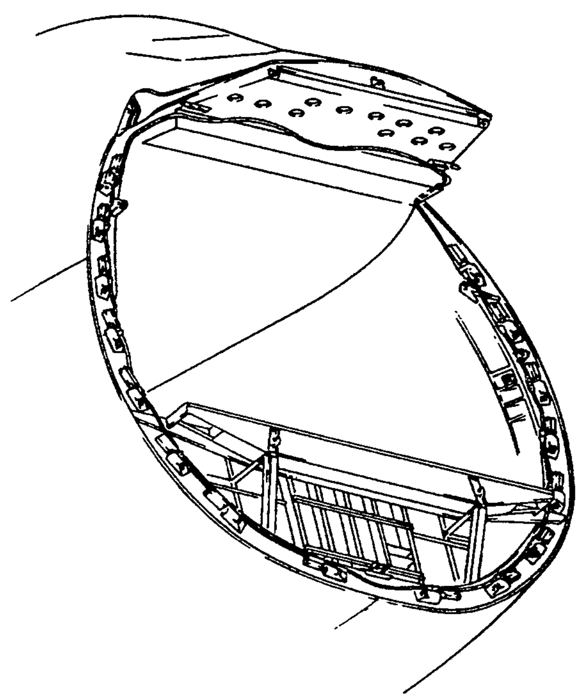


FORWARD CARGO DOORWAY
DETAIL III

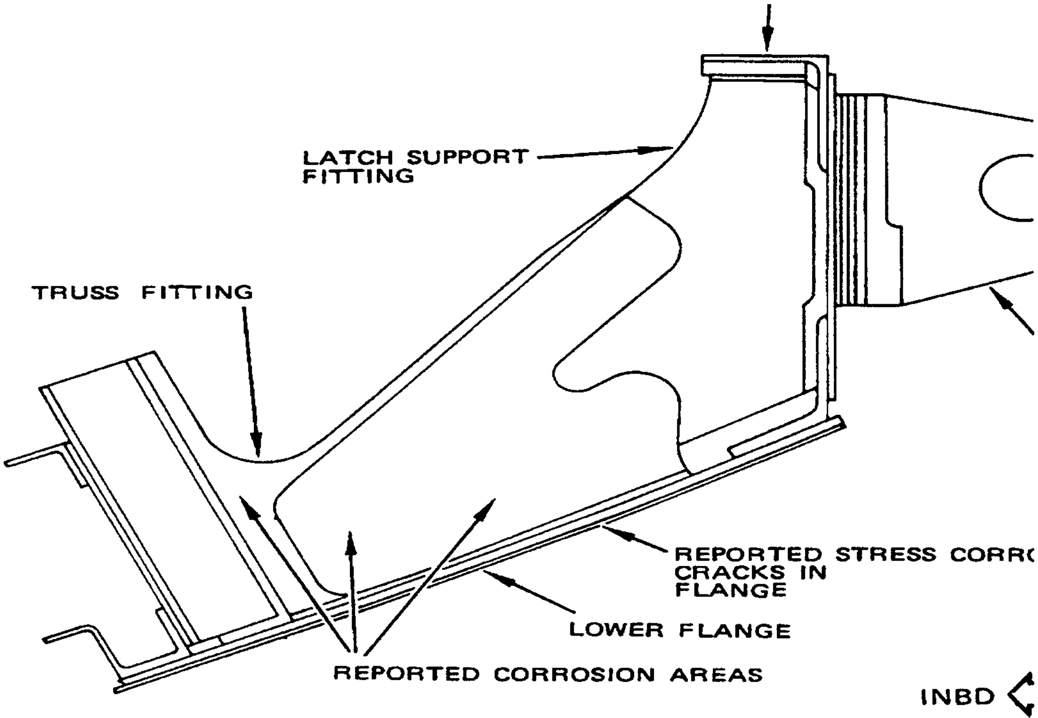
Door Openings
Figure 7 (Sheet 2)



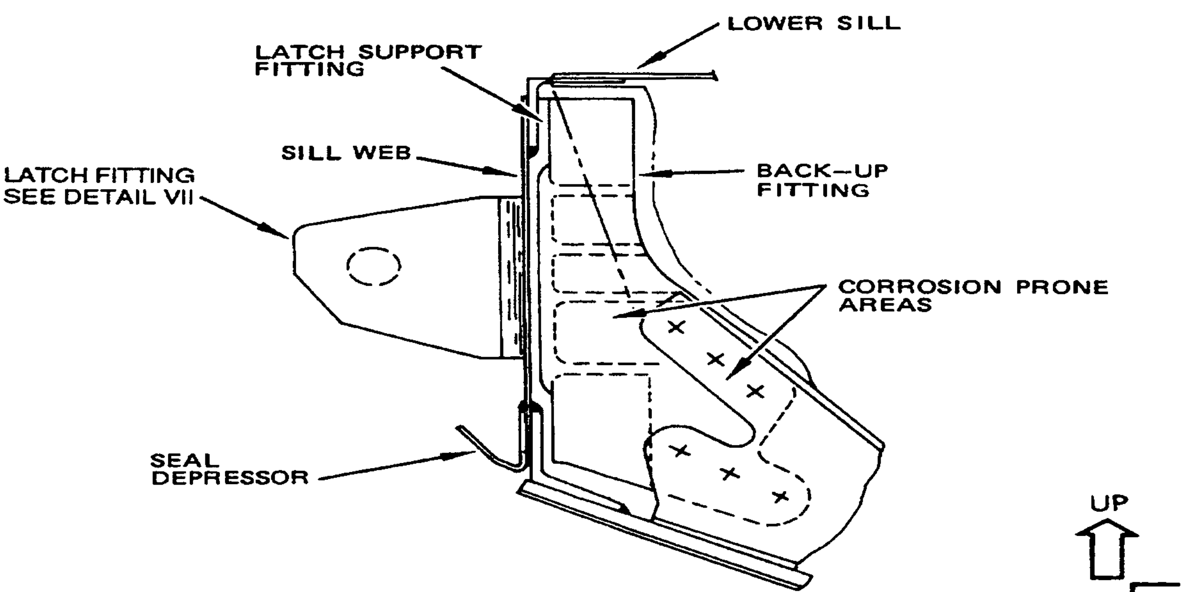
CARGO DOOR SILL (TYPICAL)
DETAIL IV


NOSE CARGO DOORWAY
DETAIL V

Door Openings
Figure 7 (Sheet 3)

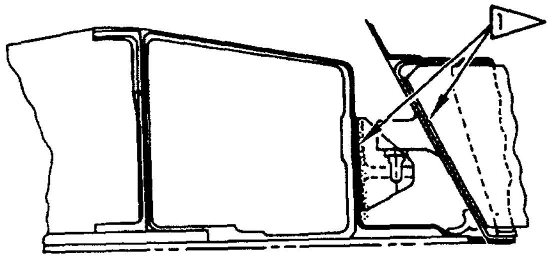


SECTION B—B

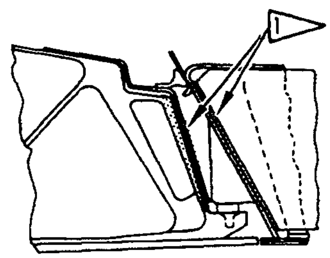


SECTION C—C

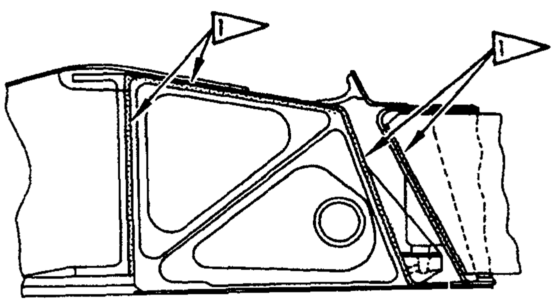
Door Openings
Figure 7 (Sheet 4)



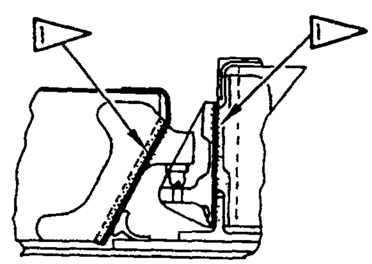
SECTION D-D



SECTION E-E



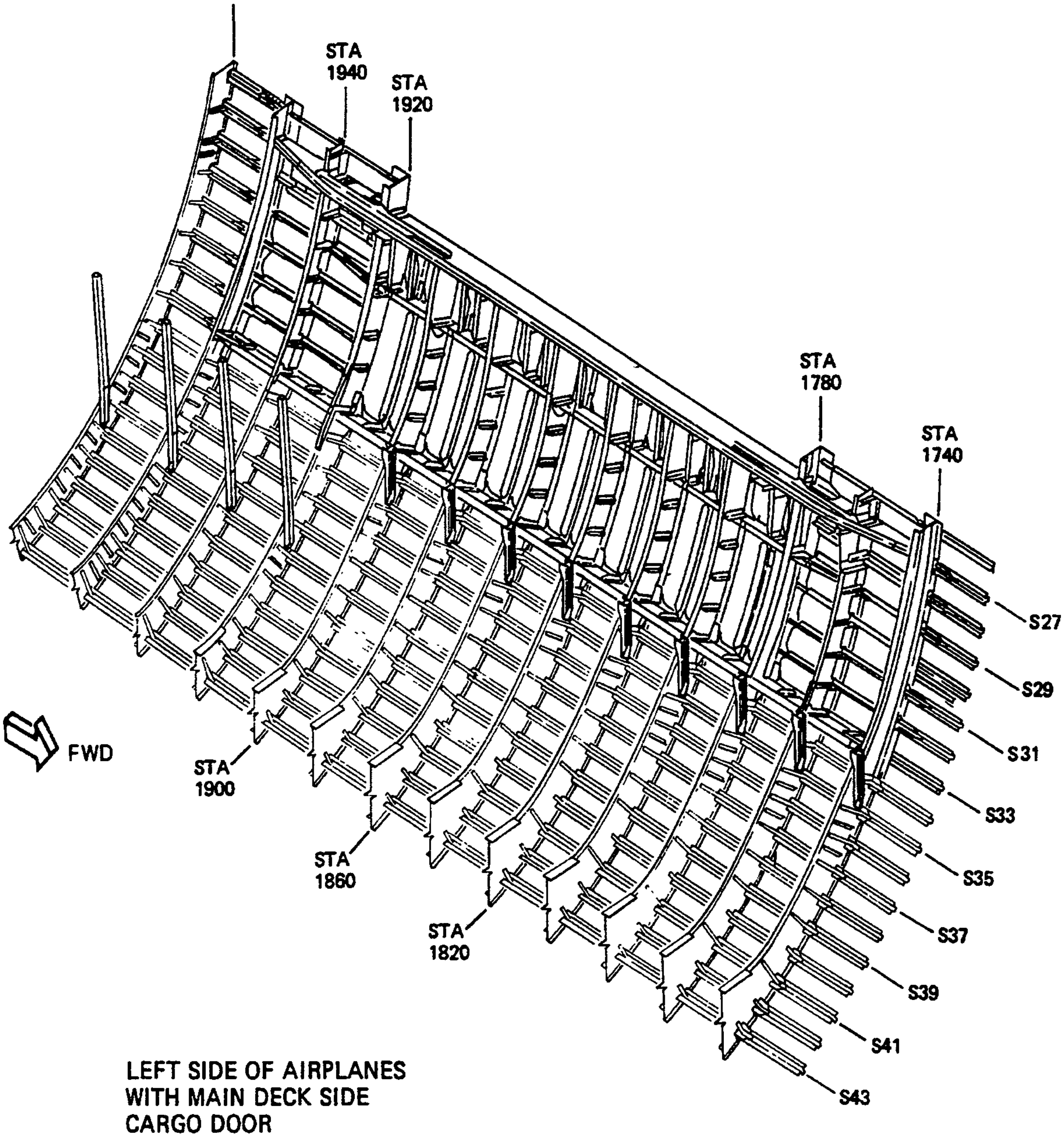
SECTION F-F



SECTION G-G

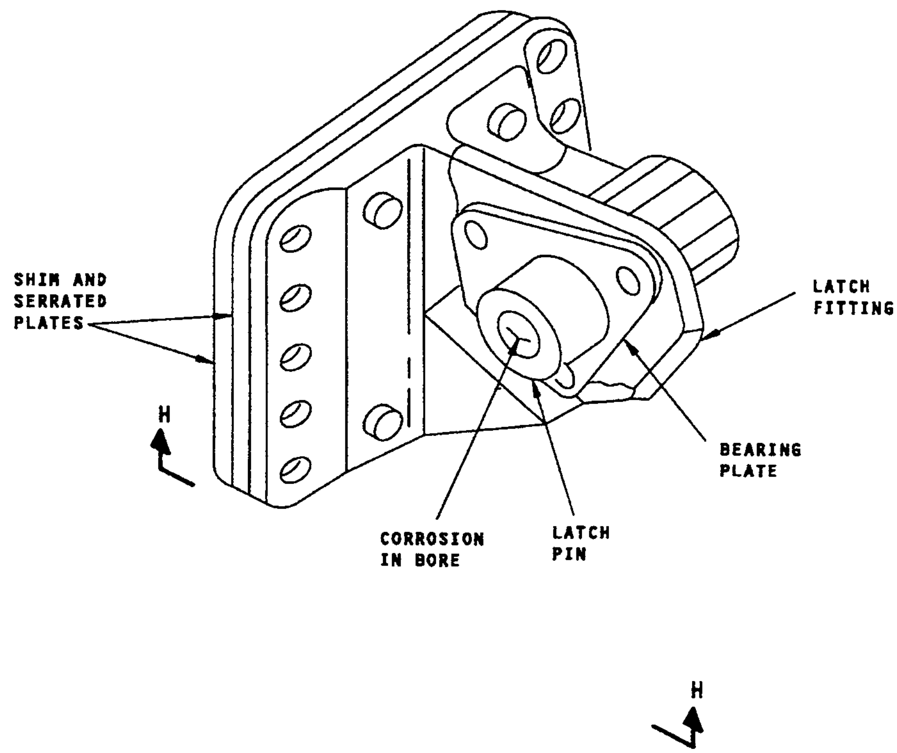
[1] APPLY BMS 3-23 TO DOOR AND FUSELAGE STOP FITTING FAYING SURFACE EDGE

Door Openings
Figure 7 (Sheet 5)

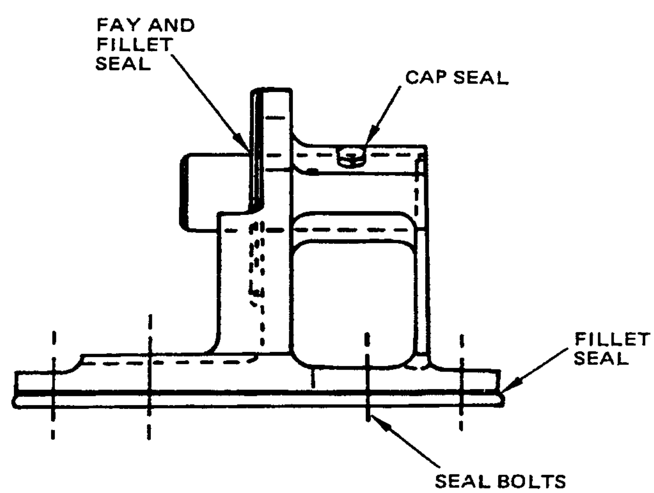


DETAIL VI

Door Openings
Figure 7 (Sheet 6)



DETAIL VII



H—H

Main Gear Wheel Well and Keel Beam
Figure 7 (Sheet 7)

1. General

A. The door openings and surrounding structure in the fuselage section are made up of frames, doublers, fittings, stiffeners and intercostals. In addition, the passenger and/or crew entry doors have reveals and scuff plates.

B. Accumulation of water in the main entry door body torque tube lower support fittings has been reported with signs of minor corrosion. Early production airplanes may not have been provided with drain holes or may have been plugged with rivets.

C. Corrosion and longitudinal stress cracks have been found on truss fittings at the forward and aft lower cargo doorway sills, and latch supports made of 7079-T6 aluminum alloy. At line number 201, the material was changed to 7075-T7351 (limited usage) or 7075-T73. Truss fitting cracking could eventually reduce door latch strength to the point that cabin pressurization could not be maintained. In production at line number 452, fay surface seals have been applied between the lower sill web to back up fittings and to seal depressor angle for improved corrosion protection. This procedure replaces existing fillet seals.

D. Stress corrosion cracks have been reported in the stop fittings on left and right No. 3 entry doorway forward frame. The cracks ran horizontally along the fastener holes. The stop fitting material was changed late in 1975 from 7079 to 7075 aluminum. Any stop fittings with cracks should be replaced with the 7075 material fittings.

E. Corrosion has been reported on the inner surface of the skin at the edge of entry door cutouts. Corrosion will most likely occur under nonmetallic surfacing compounds used to form a smooth surface for the door seal.

F. Corrosion occurred on the girt bar attach fittings on the main entry door thresholds.

G. Corrosion can occur on the latch fittings of the cargo doors.

H. Stress corrosion can break the BACB30MT attachment bolts for the cargo door latch fittings. This is the subject of NPRM 92-NW-93-AD, which tells you to replace all of these bolts with BACB30US bolts.

I. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the regular inspections described in Volume 1, 20-20-00 to prevent or find the start of corrosion. Fasteners that are gone, white powdery or other deposits are signs of corrosion.

B. After you clean the areas, do the inspection of Volume 1, 20-20-00 to make sure that protective finishes stay serviceable.

C. If you find corrosion (bulges of the skin or white deposits of corrosion products at fastener heads or joint edges), refer to Structural Repair Manual for details of corrosion removal.

D. For small amounts of corrosion, clean off the corrosion products. Apply a corrosion inhibiting compound into affected area to stop the corrosion process. Refer to Volume 1, 20-60-00 for how to apply corrosion inhibiting compound.

E. Prevention Treatment

(1) At first opportunity consistent with scheduled maintenance activity corrosion prevention treatment should be accomplished in the door opening area.

(2) Treatment of the door at the same time as the door opening is recommended.

(3) Remove traffic debris and generally clean the entire door opening area. Remove reveal and scuff plate where applicable.

(4) Threshold drains have been provided in production at cum line No. 147. These drain holes and drain tubes should be checked periodically.

(5) Replace damaged or broken finishes if at all possible. Refer to Volume 1, 20-60-00 for protective finish systems.

(6) Remove main entry door torque tube access panels located on the fuselage forward of each door and inspect for proper drain openings in the torque tube lower support fittings. Remove superficial corrosion and apply two coats of BMS 10-11 primer.

NOTE: On airplanes without drain holes or with rivets installed in drain hole locations incorporate SB 53-2104 to provide the drain paths.

NOTE: On airplanes incorporating SB 25-2632 or airplanes cum line number 597 and on with deactivated number 3 door, remove BMS 3-23 from stop fittings at faying surface, inspect and reapply BMS 3-23.

CAUTION: TAKE SPECIAL CARE TO PREVENT SPRAYING CORROSION INHIBITOR ON ACTUATOR RODS AND LUBRICATED PARTS.

OBSERVE PRECAUTIONS OF VOLUME 1, 20-60-00 FOR SPRAYING CONTROL CABLES WITH WATER DISPLACING CORROSION INHIBITING COMPOUND.

DO NOT APPLY WATER DISPLACING CORROSION INHIBITING COMPOUND TO SILICONE RUBBER, RUBBER SEALS OR CUSHIONED CLAMPS. THE CORROSION INHIBITOR MAY CAUSE SEALS AND CUSHIONS TO SWELL.

(7) Apply BMS 3-23 to door surround. Apply the corrosion inhibitor along doubler edges, along faying surfaces and on fastener heads. Spray all doors and fuselage fittings at the faying surfaces. Use spray equipment with nozzle directed into faying surface.

NOTE: The area of the door opening which may come in contact with passenger clothing should not be sprayed. Do not spray the scuff plates.

Bearings in door fittings should be protected before applying the corrosion inhibitor.

(8) Relubricate all lube points per standard servicing procedures.

(9) Where accessible, apply BMS 3-23 to the internal lower sill area for corrosion protection.

(10) Visually examine all entry door openings and bulk cargo door opening for corrosion, especially under nonmetallic surfacing compounds.

(11) Examine nonmetallic surfacing compounds used to form a smooth door seal surface for cracks, delamination and signs of embrittlement at approximately yearly intervals, except inspect no. 3 doors deactivated on airplanes line no. 597 and on, or by SB 25-2632 every 7200 flight hours maximum (Ref 52-10-47, Fig. 1).

(12) Examine the latch fittings and attachment bolts for corrosion per SB 52-2186. Replace BACB30MT attachment bolts with BACB30US bolts per NPRM 92-NW-93-AD.

F. Frequency of Application

(1) Regular inspection is required in areas that can get corrosion and should agree with the schedule in the Maintenance Planning Document. Operators must know of reported problems and areas.

(2) Regular application of BMS 3-23 compounds is necessary in areas identified and should agree with the schedule in the Maintenance Planning Document.

G. Improved Corrosion Protection

(1) On all doorways at line number 452, production changes added BMS 5-79 fay surface seals between the entire mating surfaces of the scuff plate, and those parts that are directly in contact with the scuff plate, and between the second and third layers of the adjacent structure. They also added a parting agent to the entire mating surface on the underside of the scuff plate. All the fasteners thru the scuff plate and structure are now installed with BMS 5-79 sealant. These changes are applicable to all entry and service doorways, lower lobe and main deck cargo doorways.

(2) At line number 572, a production change applied BMS 10-11, Type 1 primer to the interior surfaces of the number 3 entry door after bonding.

(3) At line number 588, for freighters, a production change on the main deck cargo doors installed the door stop fasteners with wet BMS 5-95 sealant and fillet sealed the fasteners.

(4) On airplanes with deactivated number 3 doors, the following changes were made at line number 597, and airplanes changed by SB 25-2632:

(a) BMS 3-23 compound is applied to door and fuselage stop fittings at faying surfaces.

(b) Insulation is added around the edge of the door between the door and the door cutout structure.

(5) At line number 621, improved fillet and fay sealant application is added to the cargo door latch fittings. See Detail VII.

(6) SB 53-2116 tells how to add a row of skin rivets just aft of a missing bond area on airplane line numbers 207-255. This will make sure the bond between the body skin and the doubler stays serviceable.

(7) At line number 707, more BMS 3-23, Type II (LPS-3) is applied on the aft side of the door frame, the upper surface of the main upper main sill structure, and the forward side of the forward door reveal.

(8) At line number 201, PRR 72254-3 changed the material of the truss fittings and latch supports to 7075-T7351 or 7075-T73 aluminum. These changes can be incorporated on earlier airplanes with SB 53-2200. This is also the subject of Airworthiness Directive 79-17-02.

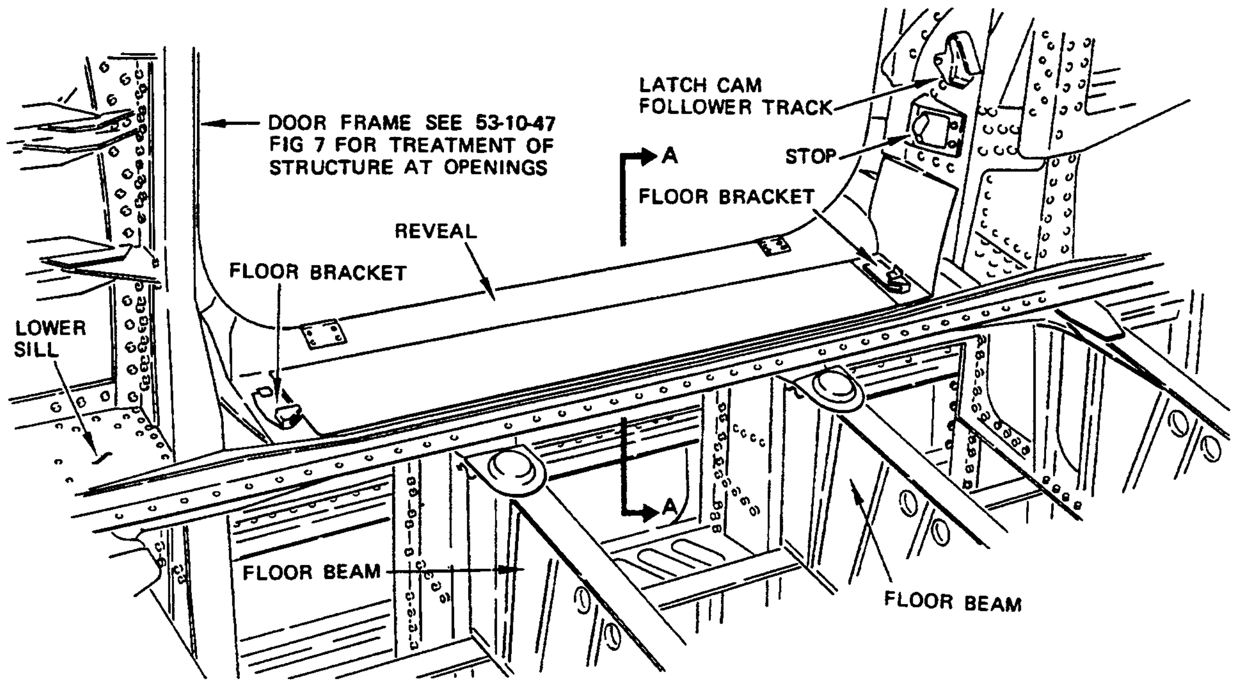
(9) At line number 865, PRR 82324 added BMS 5-95 fay surface sealant between the entry door lower sills and all parts that install the girt bar support fittings. Also, the fastener material was changed to aluminum-coated titanium. The fasteners are now installed with sealant or corrosion preventive compound. These changes can be incorporated on earlier airplanes with SB 25A2831.

(10) On some airplanes, MC 5124MP4081 or 5124MP4082 added tape on floor panel fasteners near entry doors, cross aisles, and toilets.

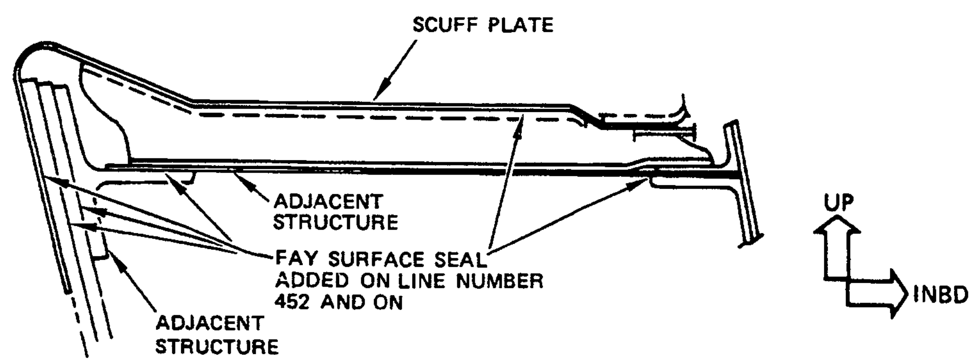
(11) On some airplanes, RR 47011-21 applied BMS 10-79 primer instead of BMS 10-11, on skin reinforcement plates and hinge covers at the main entry doors and the bulk cargo door.

(12) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

(13) At line number 1011, PRR 82788-1 applied BMS 3-23 compound to the sill structure under the scuff plates at the main entry.

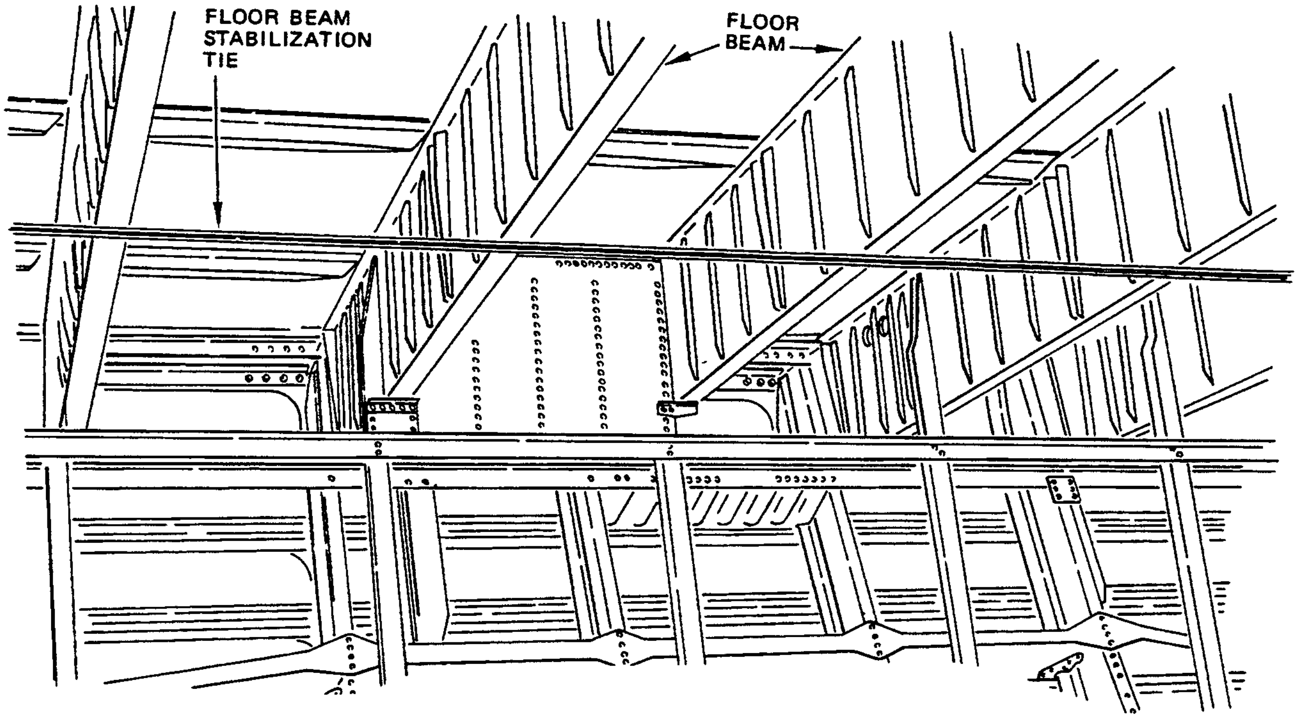


VIEW LOOKING DOWN AT STRUCTURE UNDER ENTRANCES



SECTION A-A

Floor Structure Under Entrances
Figure 8 (Sheet 1)



Floor Structure Under Entrances
Figure 8 (Sheet 2)

1. General

A. The structure under the entry doors are made up of floor beams, fuselage frames, stringers, intercostals and doorsills.

B. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. Missing fasteners, white powdery or any discolored deposits are evidences of the existence of corrosion which should alert operators that some corrective action is required. A corrosion prevention program should be initiated of prevent the ingress and the accumulation of moisture or corrosive products into the floor structure in order to minimize the occurrence of corrosion.

B. Where extensive corrosion exists (very noticeable web bulges, missing fasteners or large amounts of discolored deposits at fastener heads or faying surfaces), refer to Structural Repair Manual for details of corrosion removal.

C. For details of application of water displacing corrosion inhibiting compound, refer to Volume 1, 20-60-00.

D. For minor corrosion, to minimize the downtime of the airplane, the corrosion products should be cleaned off, followed by an application of a corrosion inhibiting compound into the affected area to retard the corrosion process. The finish system should be restored at the first opportunity consistent with the maintenance schedule (Ref Volume 1, 20-60-00).

E. Treat hydraulic tubing, tubing supports and fittings per 29-00-47, Fig. 1.

F. Prevention Treatment

(1) At first opportunity consistent with scheduled maintenance activity corrosion prevention treatment should be accomplished.

NOTE: Preferred access to the structure is from underneath the main deck.

(2) Remove sidewall lining and insulation blankets to expose frames, stringers, doublers and skin.

(3) Remove floor panels to gain access to bilge areas.

(4) Remove door reveal and scuff plate where applicable.

(5) Remove ceiling lining for access to main deck floor beams and intercostals.

(6) Open plugged drains, if any.

(7) Clear all drain paths.

(8) Replace damaged or broken finishes. Refer to Volume 1, 20-60-00 for protective finish system.

(9) Replace or repair broken or damaged leveling compounds used for drainage.

WARNING: DO NOT APPLY CORROSION INHIBITING COMPOUNDS INTO AREAS WHICH COULD POTENTIALLY BE IN CONTACT WITH OXYGEN SYSTEM COMPONENTS. MIXING OF CORROSION INHIBITORS AND OXYGEN MAY RESULT IN AN EXPLOSION.

CAUTION: INSULATION BLANKETS SOAKED WITH CORROSION INHIBITORS ARE POTENTIAL FIRE HAZARDS. BLANKETS INADVERTENTLY SPATTERED SHOULD BE ALLOWED TO DRY BEFORE REINSTALLATION.

(10) Apply corrosion inhibitor to all adjacent structure. Special efforts should be made to apply the corrosion inhibitor along doubler edges, along faying surfaces and on fastener heads. The use of spray equipment with nozzle directed into faying surfaces is recommended. Special attention should be given to flanges of floor beam, doorsills and floor beam to fuselage frame splice.

(11) Allow solvent in corrosion inhibitor to evaporate before reinstalling insulation blankets.

(12) Install blankets so they are taut.

(13) Reinstall liners and floor panels. Install the floor panel fasteners with BMS 3-24 grease.

G. For more corrosion protection, add BMS 5-95 faying surface sealant between scuff plates, support structure angles, reveals, plate assemblies, and angle assemblies.

(1) Apply faying surface sealant with parting agent to let you remove the scuff plates later.

(2) Install countersunk fasteners thru scuff plates with BMS 5-95 sealant without catalyst.

H. Frequency of Application

(1) The corrosion inhibitors should be reapplied every 2 years.

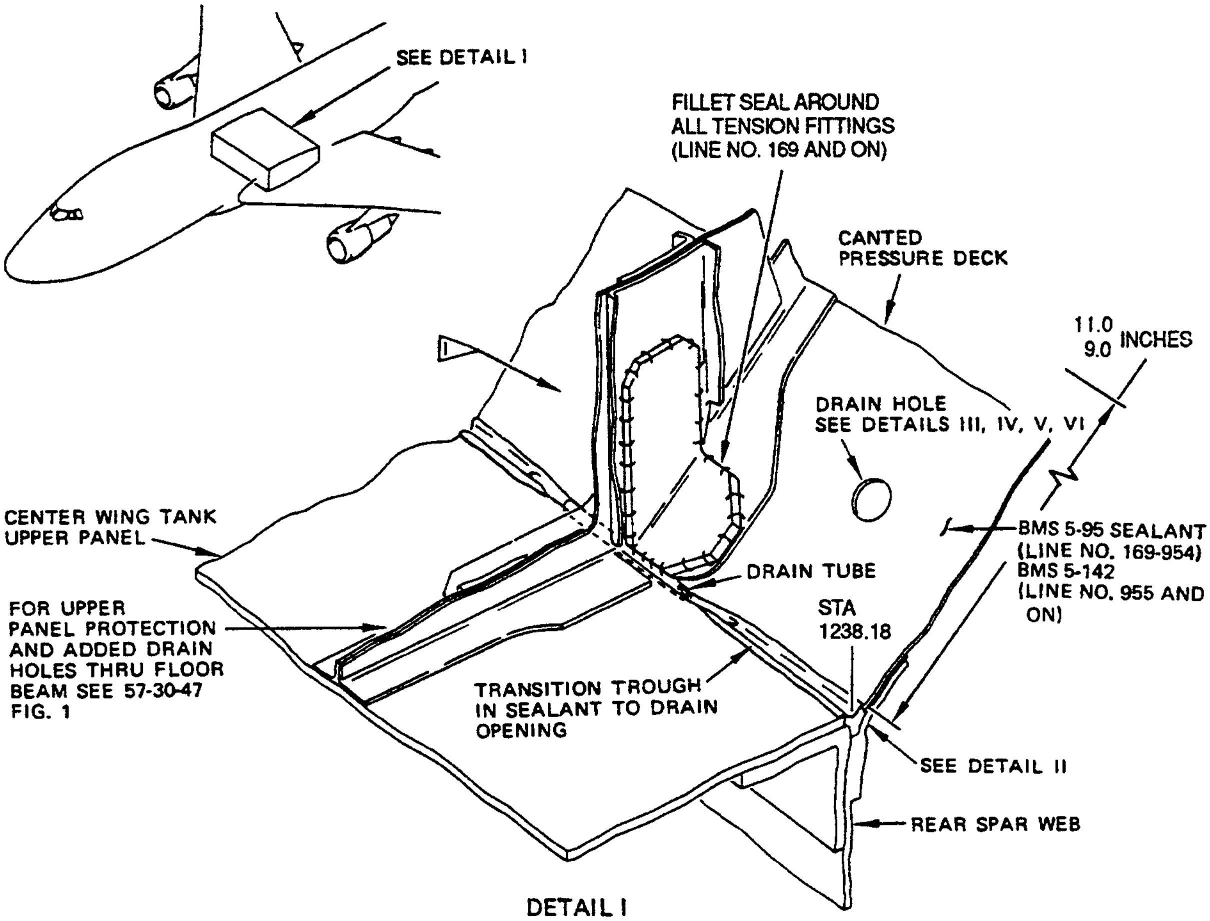
I. Improved Corrosion Protection

(1) At line number 452, production changes added BMS 5-79 fay surface seals between the entire mating surface of the scuff plate, and those parts that are directly in contact with the scuff plate, and between the second and third layers of the adjacent structure. Some of the fasteners thru the scuff plate and structure were installed with BMS 5-79 sealant. These changes are applicable to all entry and service doorways lower lobe and main deck cargo doorways.

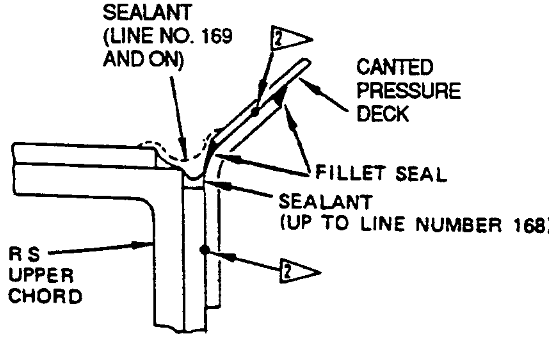
(2) At line number 620, Cosmolene is applied to floor panel holes under entry ways and adjacent areas.

(3) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

(4) At line number 1011, PRR 82788-1 applied BMS 3-23 compound to the sill structure under the scuff plates at the main entry.



DETAIL I
TYPICAL UPPER JOINT

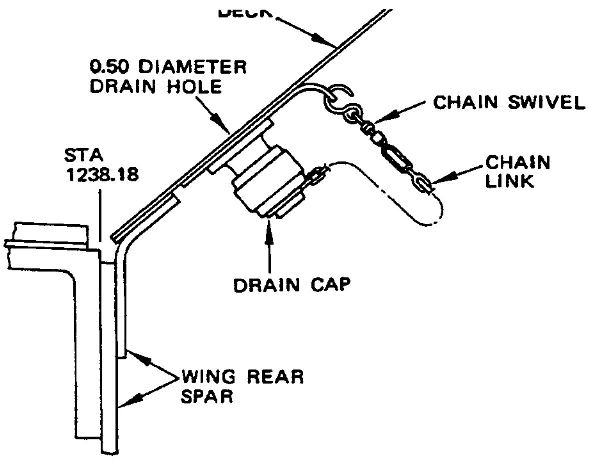


DETAIL II

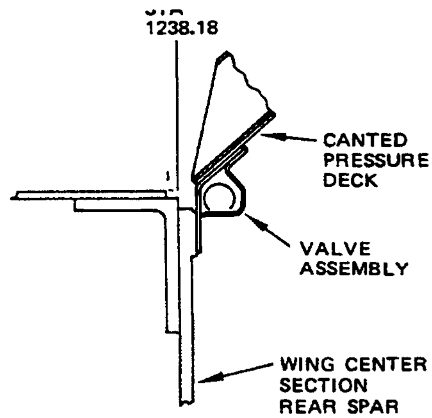
1 CLEAN OFF THE DIRT. IF NECESSARY APPLY A COAT OF BMS 3-23 TYPE II COMPOUND, WITH AN OVERCOAT OF BMS 3-26 TYPE II COMPOUND (UP TO LINE NUMBER 1010). OR APPLY A COAT OF BMS 3-29 COMPOUND (LINE NO. 1011 AND ON)

2 BMS 5-95 FAYING SURFACE SEALANT FROM LBL 108 TO RBL 108 (LINE NUMBER 586 AND ON)

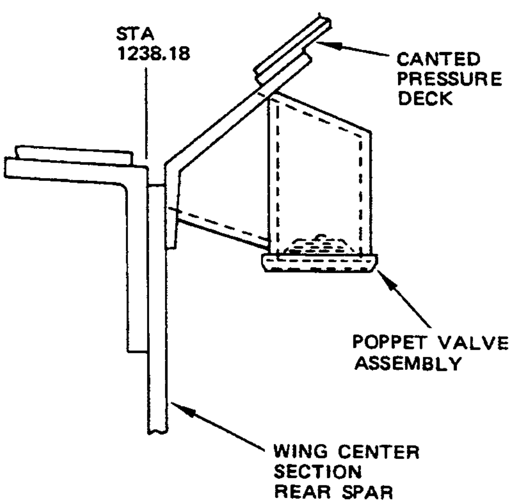
Canted Pressure Deck
Figure 9 (Sheet 1)



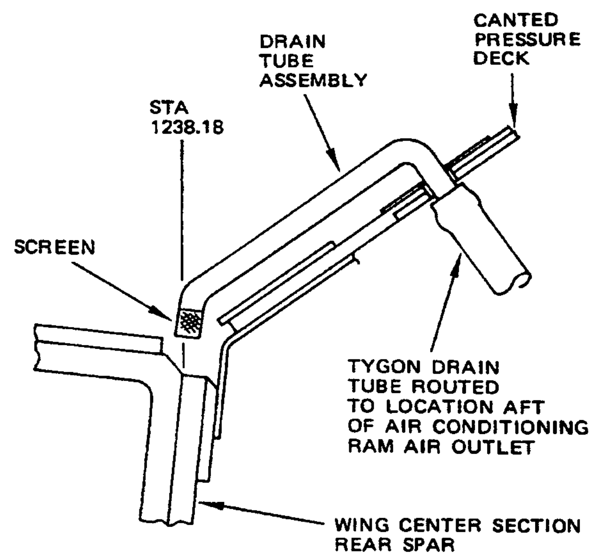
DETAIL III
DRAIN FITTING INSTALLATION
(LBL 42.75 AND RBL 65)
(LINE NOS. 161-776 AND SB 51-2015)
(REPLACED AT LINE NO. 777
BY MANUAL VALVES) (SB 51-2045)



DETAIL IV
BALL CHECK VALVE INSTALLATION
(LBL 101 AND RBL 101)
(LINE NOS. THRU 220) (REPLACED BY
POPPET VALVES PER DETAIL V)



DETAIL V
POPPET VALVE INSTALLATION
(LBL 101 AND RBL 101)
(LINE NOS. 221-308)



DETAIL VI
OVERBOARD DRAIN INSTALLATION
(LBL 101 AND RBL 101)
(LINE NOS. 309-ON AND SB 51-2026)

Canted Pressure Deck
Figure 9 (Sheet 2)

1. General

A. The upper joint between the canted pressure deck and the wing center section skin can get corrosion from water from the air conditioning system of airplanes with integral plenums and from liquids dripping from the main deck.

2. Corrosion Prevention

A. Make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect early stages of corrosion.

CAUTION: ON AIRPLANE LINE 161 THRU 206, PLUS AIRPLANES INCORPORATING THE ORIGINAL ISSUE OF SB 51-2015 DATED OCTOBER 12, 1971, A 6-INCH CHAIN ASSEMBLY WAS USED TO ATTACH EACH DRAIN CAP TO STRUCTURE (SEE DETAIL III). A REMOTE POSSIBILITY EXISTS THAT THE DRAIN CAP COULD BECOME ENTANGLED WITH A CONTROL CABLE SHOULD THE DRAIN CAP VIBRATE OFF THE DRAIN ASSEMBLY OR INADVERTENTLY BE LEFT OFF. A SHORTER CHAIN (THREE LINKS SHORTER) WILL PREVENT THE DRAIN CAP FROM ENTANGLING WITH A CONTROL CABLE.

B. When a potable water line failure or galley or lavatory overflow occurs, remove the drain caps to drain the collected liquid in the trough. Make sure you put the caps back on after maintenance, or ice could collect on the lateral control cables and cause aileron control problems.

C. Gain access to the trough area (BS 1238.18) and clean debris from all holes through structure and drain tubes.

D. Clean debris from all drain openings.

E. Clean off collected dirt from the forward side of the canted pressure deck. If necessary, apply BMS 3-29 compound, or a layer of BMS 3-23, Type 2 compound followed by a layer of BMS 3-26 compound.

NOTE: BMS 5-95 sealant followed by a top coat of BMS 10-11, Type 2 enamel was applied to the canted pressure deck at line number 169. Before you add this to earlier airplanes, remove the old enamel from the deck, because the sealant will not bond to the enamel. Also, remove all signs of surface corrosion, because the sealant will hide the evidence of further corrosion as it grows.

F. If you find corrosion, refer to Structural Repair Manual.

G. Frequency of Inspection

(1) To minimize the risk of corrosion due to fluid accumulation, examine and clean out the drain tubes under each longitudinal floor beam at BS 1238 and the overboard drain tubes at LBL 101 and RBL 101 at every C check, or more frequently in severe conditions.

H. Improved Corrosion Protection

(1) Early 747 airplanes had ball float valves at LBL 101 and RBL 101. At line number 153, a production change added vent holes to the valve housing. The vent holes reduce the possibility of valve malfunction caused by air caught above the ball. This change can be added to other airplanes with SB 51-2015.

(2) At line number 161, PRR 75278 added drain fittings at LBL 42.75 and LBL 65 plus airplanes incorporating SB 51-2015. More drain fittings at LBLs 25.7, 66.5, and RBLs 24.7, 60.0 were added at line number 767, plus airplanes incorporating SB 51-2044.

(3) At line number 221, poppet valves (Detail V) replaced the ball check valves. At line number 309, PRR 78754 replaced the poppet valves with an overboard drain system, which can be added to earlier airplanes with SB 51-2026.

(4) At line number 561 and on, the leveling compound was replaced by foam to eliminate water traps.

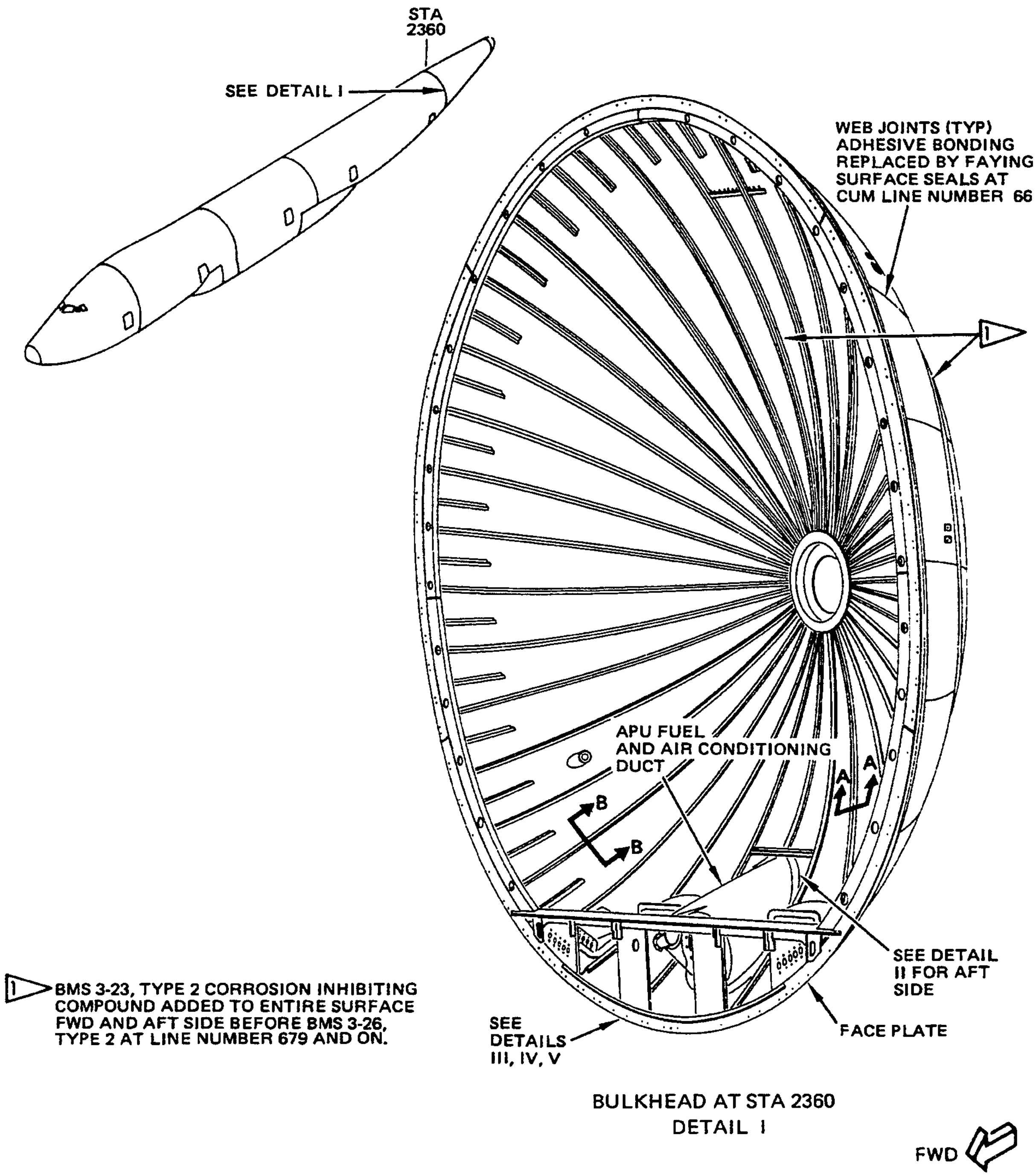
(5) Improved fillet and fay surface seals were incorporated on line number 586 and on (see Detail II).

(6) The drain system on some airplanes is not sufficient to prevent collected moisture and corrosion of major structure in the guppy pond. As a result, on airplane line numbers 767 and on, PRR 78754-1 added 4 drain tubes to the canted pressure deck at LBL and RBL 66.71 and 22.6. The drain tubes go through the vapor barrier in LBL and RBL 62. They come out at STA 1096.05 at the lower surface of the underwing fairing, aft of the air conditioning pack exhaust.

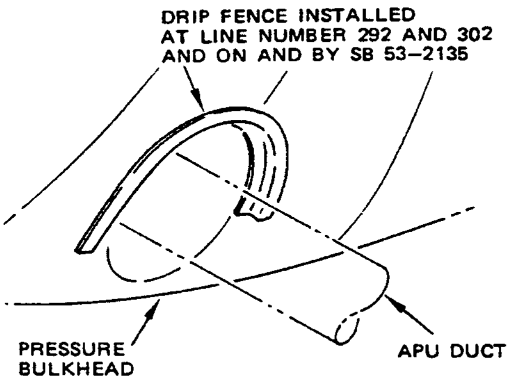
(7) To prevent aileron control problems because of ice on the control cables because drain caps were not replaced, at line number 777 PRR 78754-2 replaced the capped drains at LBL 42.75 and 64 with manual valves. This change can be added to earlier airplanes with SB 51-2045.

(8) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

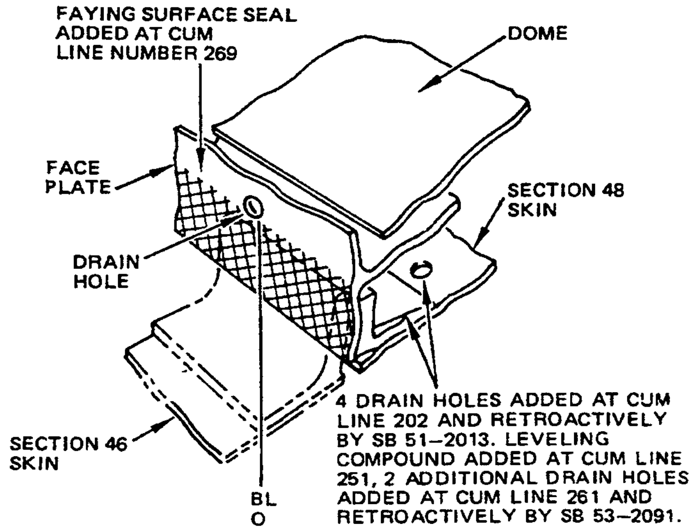
(9) At line number 1011, PRR 82788-2 replaced the two-layer system of BMS 3-23 and BMS 3-26 compounds with one layer of BMS 3-29 compound, and added Dinol AV8 (BMS 3-23, Type 2) compound to other areas.



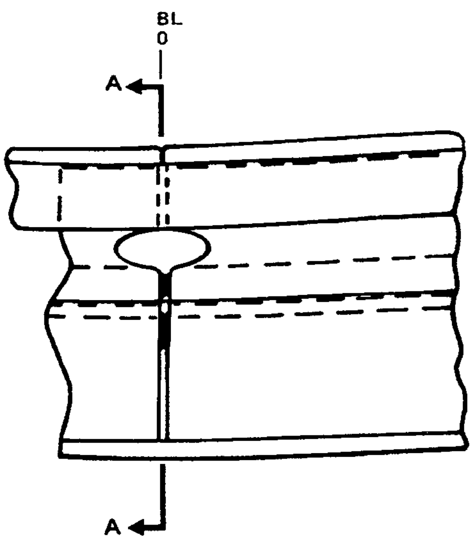
Aft Pressure Bulkhead
Figure 10 (Sheet 1)

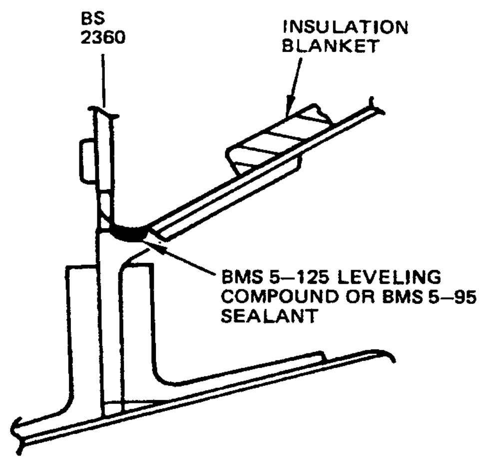


DETAIL II



DETAIL III



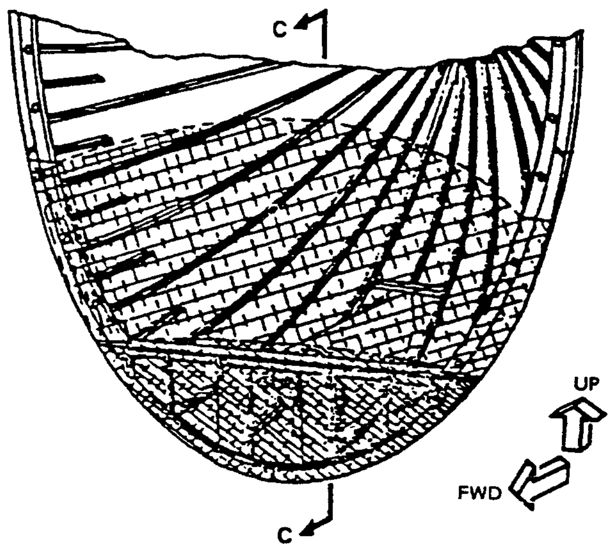


SECTION A-A

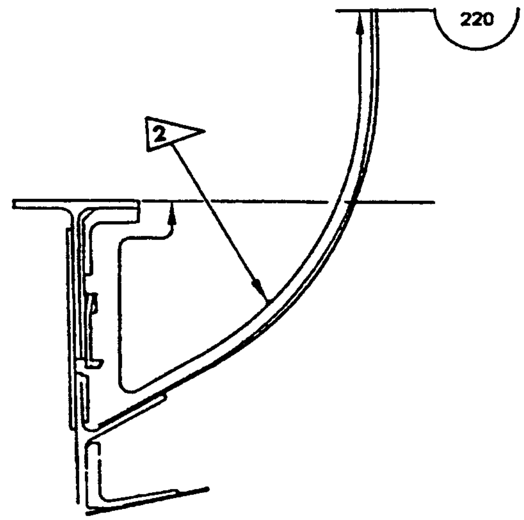
DRAIN HOLE ENLARGED, CORROSION PREVENTIVE COMPOUND APPLIED WHERE INDICATED, AND INSULATION BLANKET TRIMMED AT LINE NUMBER 555 AND THOSE AIRPLANES INCORPORATING SB 53-2220

DETAIL IV

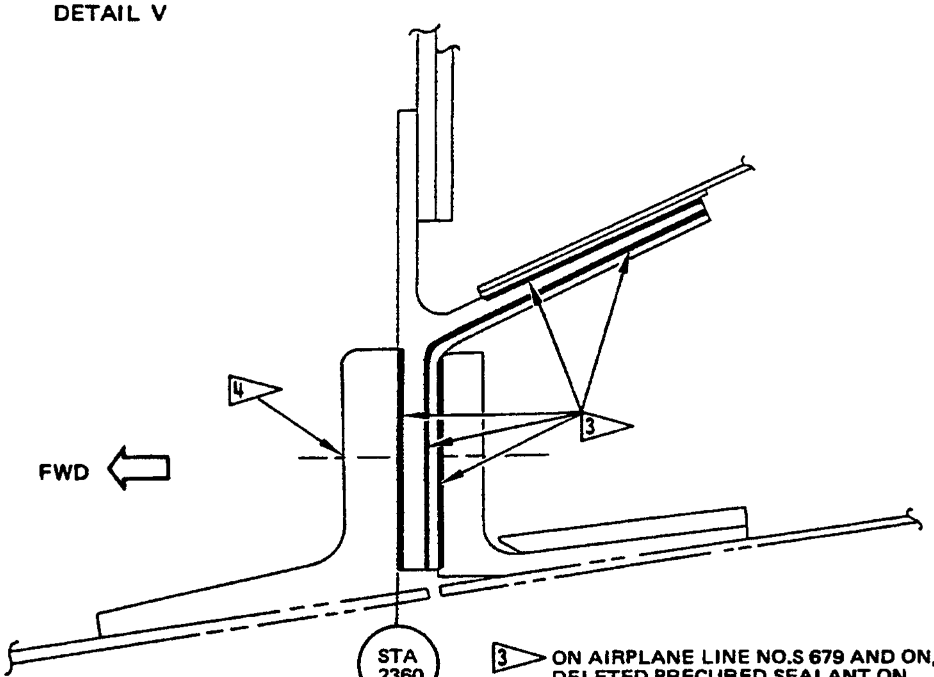
Aft Pressure Bulkhead
Figure 10 (Sheet 2)



DETAIL V



SECTION C–C



DETAIL VI

2 APPLY BMS 3-26 TYPE 2 (ON FWD SIDE ONLY) FROM BOTTOM OF PRESSURE SOME TO APPROX WL 220, AND ENTIRE AFT SURFACE OF FLOOR BEAM, BS 2360. ON AIRPLANE PRIOR TO LINE NO. 707, MIL–C–16173 GRADE I HAS BEEN APPLIED.

3 ON AIRPLANE LINE NO.S 679 AND ON, DELETED PRECURED SEALANT ON FORWARD FACE OF FACE PLATE AND ADDED FAY SURFACE SEALANT AROUND PERIPHERY AND THE AFT SIDE OF BULKHEAD CHORD.

4 ON AIRPLANE LINE NO.S 679 AND ON, INSTALLED FASTENER WITH BMS 5-95 BELOW WL 220.

Aft Pressure Bulkhead
Figure 10 (Sheet 3)

1. General

A. The aft pressure bulkhead forms the rear end of the pressurized region of the fuselage. It also forms the joint between fuselage sections 46 and 48 at BS 2360.

B. Corrosion can occur in the different web joint configurations which were built. Corrosion problems occurred in adhesive-bonded web joints on other models. Joints which are not fully sealed can let moisture in. Moisture caught in the joints can then cause corrosion. The sealant was replaced by corrosion inhibiting compound to keep out the moisture and help prevent corrosion.

C. At the APU duct penetration of the pressure bulkhead, there is an APU duct fiberglass pressure pan. Hydraulic fluid contamination has caused deterioration of the pressure pan and corrosion of the APU duct.

D. Several operators $ave reported corrosion at the bottom of the aft pressure bulkhead. In many instances the bulkhead chord and/or web area at Buttock Line (BL) 0 required extensive corrosion repair. Plugged drain holes in the upper leg of the bulkhead chord or water trapped behind insulation blankets is suspected of the cause. SB 53-2220 trimmed insulation blankets and applied corrosion inhibiting compound to the lap splices and radial stiffeners. See Detail I. Also the drain hole was enlarged. See Detail IV. This is also the subject of Airworthiness Directive 86-16-05.

E. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the periodic inspections as described in Volume 1, 20-20-00 to ensure that the protective finishes provided at manufacture remain intact. The preferred treatment for broken finishes is to replace the finish. Since in some cases it is impractical to use this approach between overhaul cycles, the following treatment is recommended:

NOTE: The application of corrosion inhibiting compounds is recommended even though the original finishes have been restored.

B. Where corrosion has already started, refer to Structural Repair Manual for details of corrosion removal.

C. For details of application of water displacing corrosion inhibiting compound, refer to Volume 1, 20-60-00.

D. For corrosion prevention, apply corrosion inhibitor to fastener heads and edges of panels where the paint system has been cracked or flaked. Wipe off excess. See Detail I.

E. Gain access to aft side of pressure bulkhead through access door and apply water-displacing corrosion inhibiting compound to lap joints and circumferential straps. See Detail I.

NOTE: For line numbers 1 thru 17, SB 53-2137 provides for similar corrosion protection procedures.

NOTE: Refer to SB 53-2220 for details regarding enlarging drain holes, trimming insulation blankets, and applying corrosion preventive compounds to the pressure bulkhead. See Detail IV.

F. Repeat the application of corrosion inhibitor as necessary based on service experience.

3. Improved Corrosion Protection

A. On airplanes up to line number 65, adhesive bonded the aft pressure bulkhead joints together. Because of corrosion problems on other airplanes, sealing was added to the bonded joints. Because moisture could be caught in existing joints, SB 53-2008 now recommends corrosion inhibiting compound, not sealant, at these joints. At line number 66, faying surface seals replaced adhesive-bonded construction.

B. At line number 202, PRR 74988 added four drain holes aft of the bulkhead. This change can be added to other airplanes with SB 51-2013. At line number 251, leveling compound was added for a better flow of liquids to the drain holes. At line number 261, PRR 75350 added two more drain holes. These changes can be added to other airplanes with SB 53-2091. At line number 300, PRR 74988-1 added scuppers to the drain holes. This can be added to earlier airplanes with SB 51-2024.

C. On line No. 269 and on, a faying surface seal was added between the section 46 break ring and the bulkhead faceplate below water line 220.

D. Because of corrosion problems at the APU duct penetration, at line numbers 292, 302 and on, PRR 78625 installed a drip fence on the aft side of the pressure bulkhead. This can be added on other airplanes with SB 53-2135.

E. Airplanes earlier than line number 555 had BMS 3-23 compound on the two sides of the station 2360 floor beam and on the two sides of the aft pressure bulkhead below water line 220. At line number 555, PRR 78963 replaced the BMS 3-23 with Cosmoline 1058 or Dinitrol AV-100 compound on the aft side of the floor beam and the forward side of the bulkhead. Some airplanes have AV-5 compound under the AV-100. Some airplanes have BMS 3-23 (T-9 only) on all of the two sides of the beam and the bulkhead. Some airplanes have different applications of corrosion inhibiting compound, such as with MC 5124MP4080 and RR 47007-112. Airplanes between line numbers 555 and 576 did not have BMS 3-23 on the forward side of the beam or the aft side of the bulkhead, but the compound was added there at line number 577.

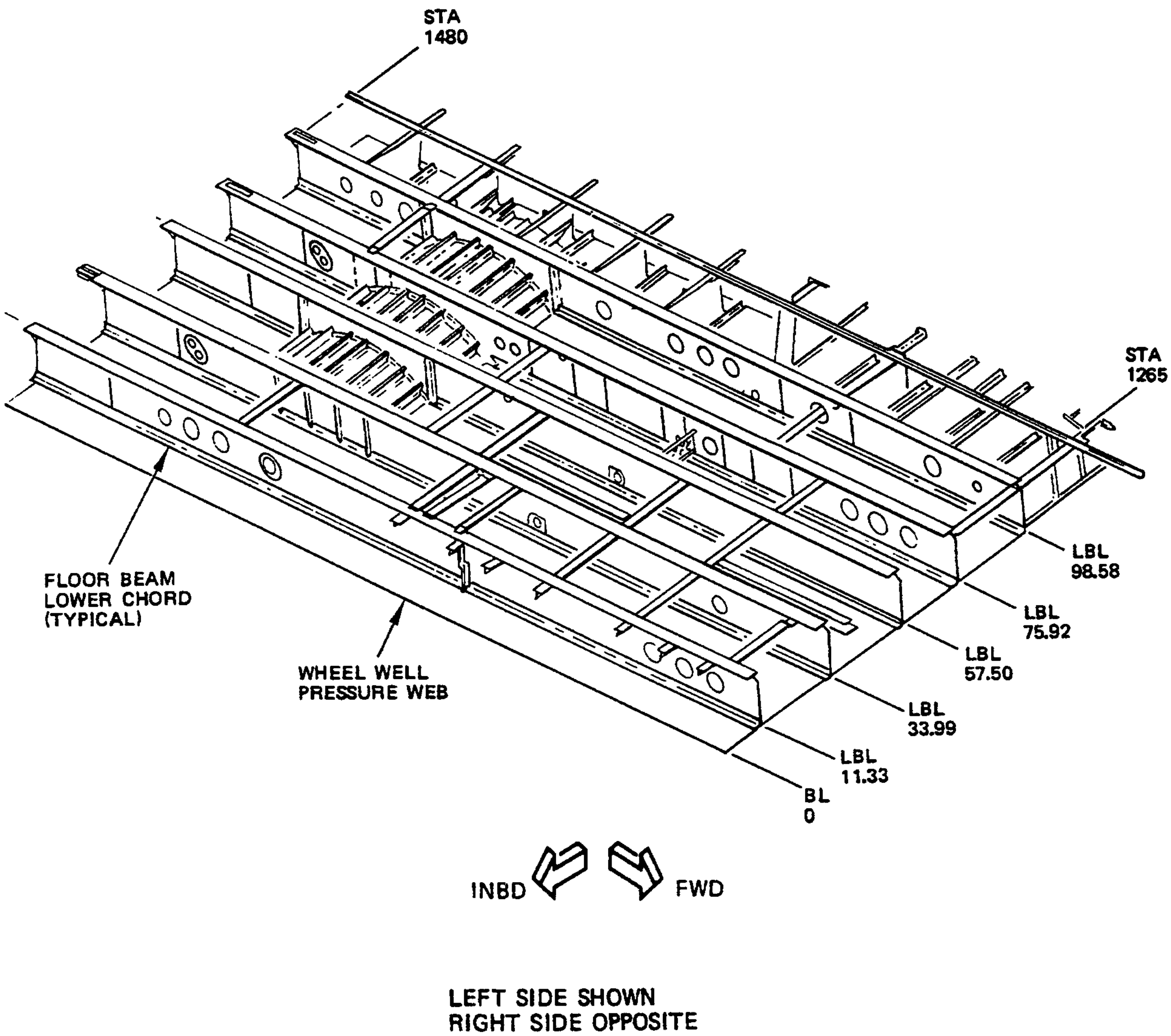
F. At line number 586, a production change installed Section 48 H11 steel fasteners with wet sealant and fillet sealed the fastener heads and nuts.

G. At airplane line number 679, PRR 80572 deleted precured sealant below WL220 on forward face of pressure dome face plate. Fay surface sealant is added around the edge and to the aft side of bulkhead chord. BMS 3-23 Type II corrosion inhibiting compound is applied to the entire surface of the bulkhead forward and aft sides. MIL-C-16173 Grade I requirement is replaced by BMS 3-26, Type II.

H. At airplane line number 751, PRR 81931 stopped the use of Dinitrol products (AV5B-2 and AV100B) as an alternative in production for corrosion protection. However, other corrosion preventive compounds qualified under BMS 3-23, Type I and BMS 3-26, Type II are used.

I. At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

J. At line number 1011, PRR 82788-2 replaced the two-layer system of BMS 3-23 and BMS 3-26 compounds with one layer of BMS 3-29 compound.



Longitudinal Floor Beams - STA 1265 to 1480
Figure 11

1. General

A. Stress corrosion cracking has been reported in the longitudinal floor beam lower chords between STA 1265 and 1480. The chord cracks originated at the juncture of the chord horizontal and vertical flanges where the pressure web lateral "Z" stiffeners connect to the floor beam. The floor beam webs in this area are susceptible to cracking if cracks exist in the lower chord. On airplanes with severe lower chord cracking, adjacent secondary cracking in the main wheel well pressure web was found. SB 53-2224 has been issued (superseding SB 53-2176 and SB 53-2183) to provide instructions for inspection, preventive maintenance, corrosion removal and floor beam modification. An airworthiness directive has been issued for this area.

B. The longitudinal floor beam lower chord cracking can result in cracking of the wheel well pressure deck web (Ref Fig. 4).

C. Corrosion has been reported in the main wheel well pressure deck web faying surface under the floor beam chords, between BS 1265 and 1480, from left to right BL 98.58. This corrosion has been attributed to moisture from condensation or lavatory leakage penetrating into the faying surface between the pressure deck web and floor beam chord. SB 53-2186 has been issued to provide instructions for inspection, preventive maintenance, and corrosion removal for airplanes thru cum line number 372.

D. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

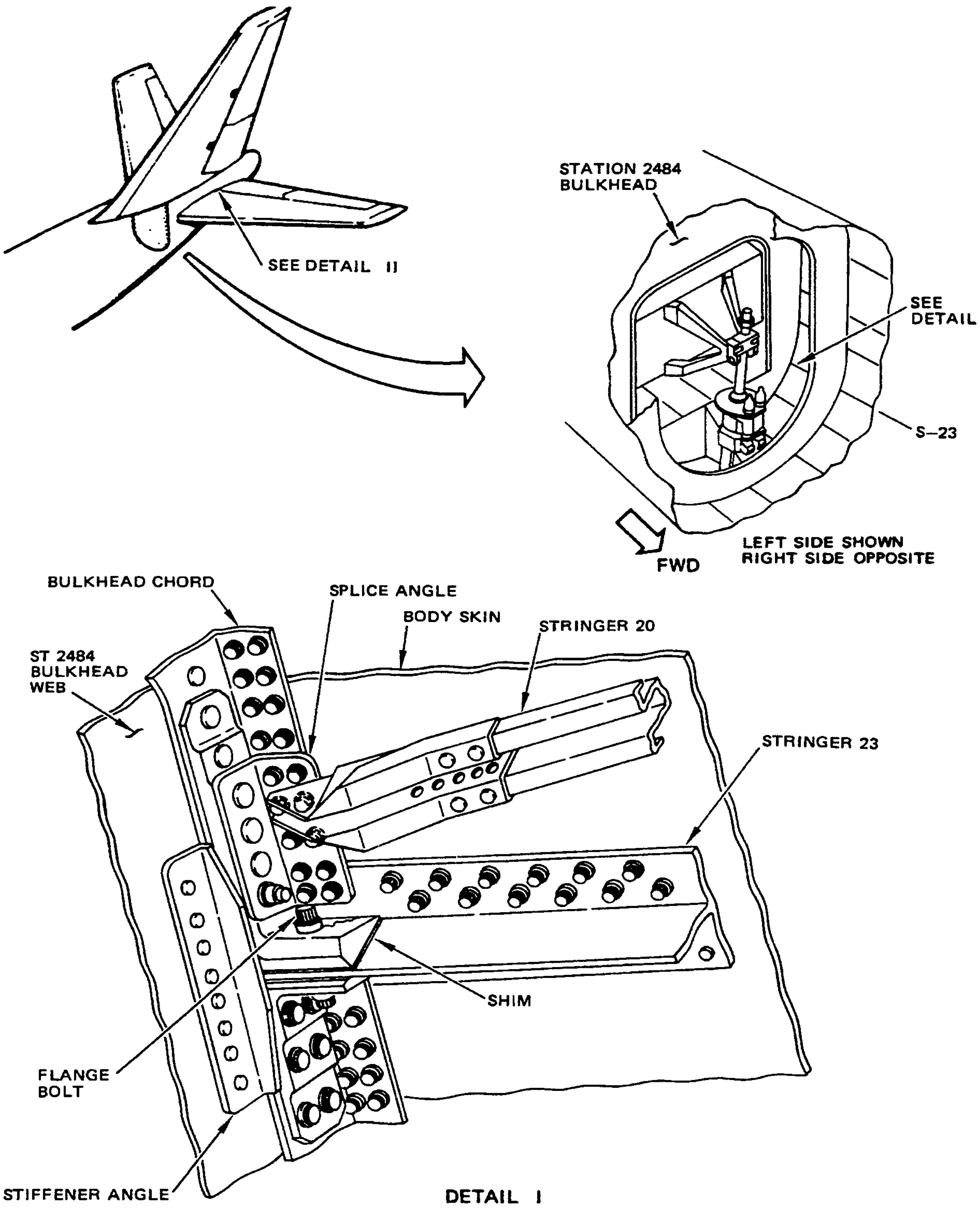
A. Make an inspection as described in Volume 1, 20-20-00 of the longitudinal floor beam lower chords and webs when cracks are discovered in the wheel well pressure deck web, or make inspection as described in SB 53-2224 or 53-2186.

B. At the first opportunity when inspection or scheduled maintenance work allows access to the area, corrosion prevention treatment should be accomplished.

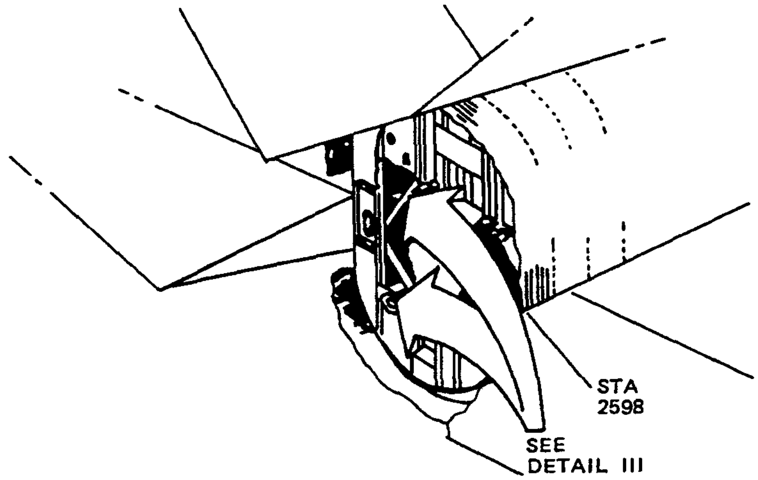
C. Clean the area (Ref Volume 1, 20-40-00) and replace broken or damaged finishes (Ref to Volume 1, 20-60-00).

D. Apply water displacing corrosion inhibiting compound (Ref Volume 1, 20-60-00) to pressure deck and longitudinal floor beams particularly at the juncture of the floor beam lower chord and the pressure deck.

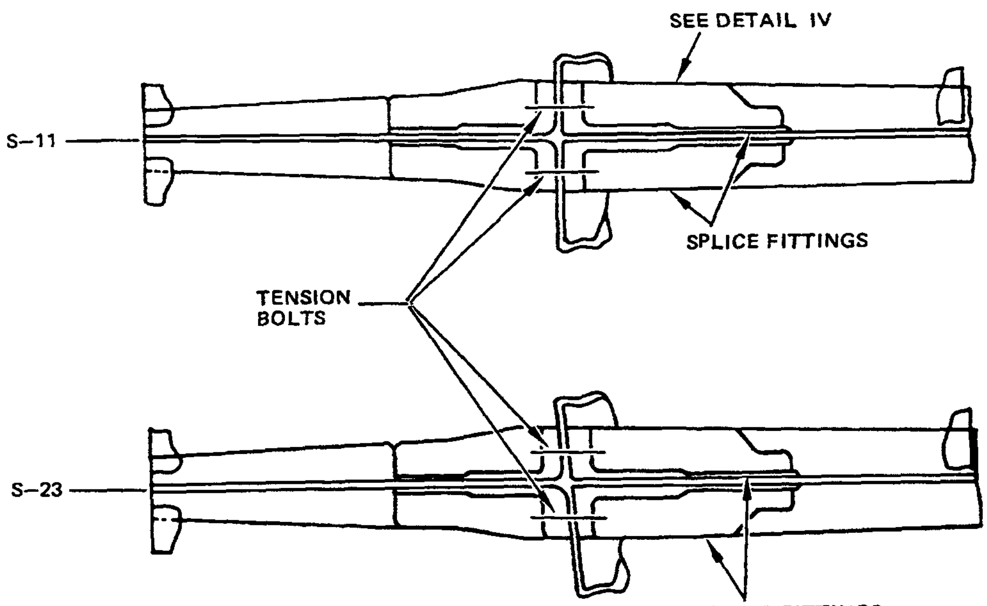
E. Refer to Structural Repair Manual for corrosion removal procedures.



Section 48
Figure 12 (Sheet 1)

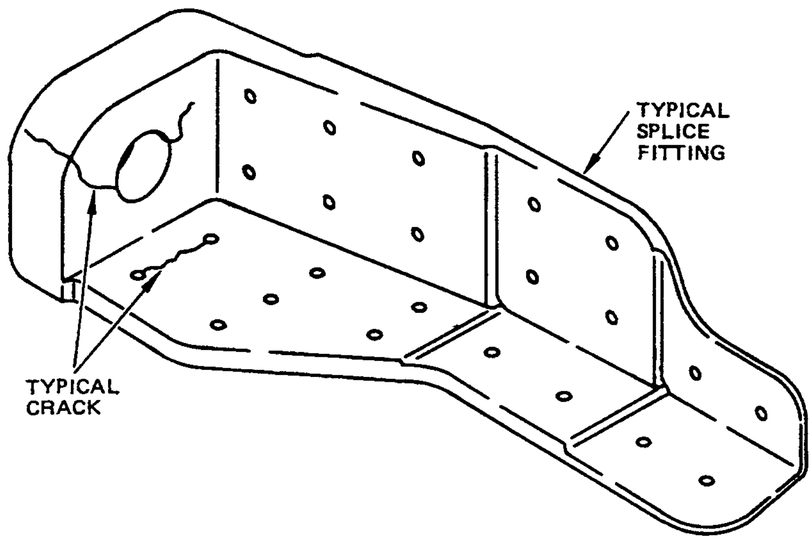


LONGER ON SKIN SPLICE FITTINGS STA 2598
DETAIL II



DETAIL III

Section 48
Figure 12 (Sheet 2)



DETAIL IV

Section 48
Figure 12 (Sheet 3)

1. General

A. Stress corrosion cracks occurred on station 2484 bulkhead splice fittings at stringer 23. Stress corrosion cracks also occurred on the longeron (stringer 23) aft of station 2484.

B. Stress corrosion cracks occurred on 7079-T6 aluminum longeron skin splice fittings common to stringers 11 and 23 at station 2598. Also, some H-11 steel tension bolts broke at the lower left side splice fitting at stringer 11 longeron.

C. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. Skin bulges, missing fasteners or white powdery deposits are evidences of the existence of corrosion which should alert operators that some corrective action is required. A corrosion prevention program should be initiated to prevent the accumulation of moisture or corrosive compounds in order to minimize the occurrence of corrosion.

B. Where extensive corrosion exists (very noticeable skin bulges, missing fasteners, or large amounts of white deposits at the fastener heads or faying surfaces), refer to Structural Repair Manual for details of corrosion removal.

C. For details of application of water displacing corrosion inhibiting compound, refer to Volume 1, 20-60-00.

D. For minor corrosion detected during the periodic inspections and to minimize the downtime of the airplane, the corrosion products should be cleaned off, followed by an application of a corrosion inhibiting compound into the affected area to retard the corrosion process.

E. Prevention Treatment

(1) Clean the area and repair any damaged or corroded parts.

(2) Open plugged drain fittings aft of BS 2360. Damaged fittings must be replaced.

(3) Replace broken or damaged finishes. Refer to Volume 1, 20-60-00 for protective finish systems. Optional: Add an additional coat of BMS 10-11 primer with a topcoat of BMS 10-11 enamel.

(4) Apply BMS 3-23, Type II water displacing corrosion inhibiting compound to all exposed structure from BS 2360 to 2484, S-23L to S-23R including the aft side of BS 2360 bulkhead web. The use of spray equipment with nozzle directed into faying surfaces is recommended.

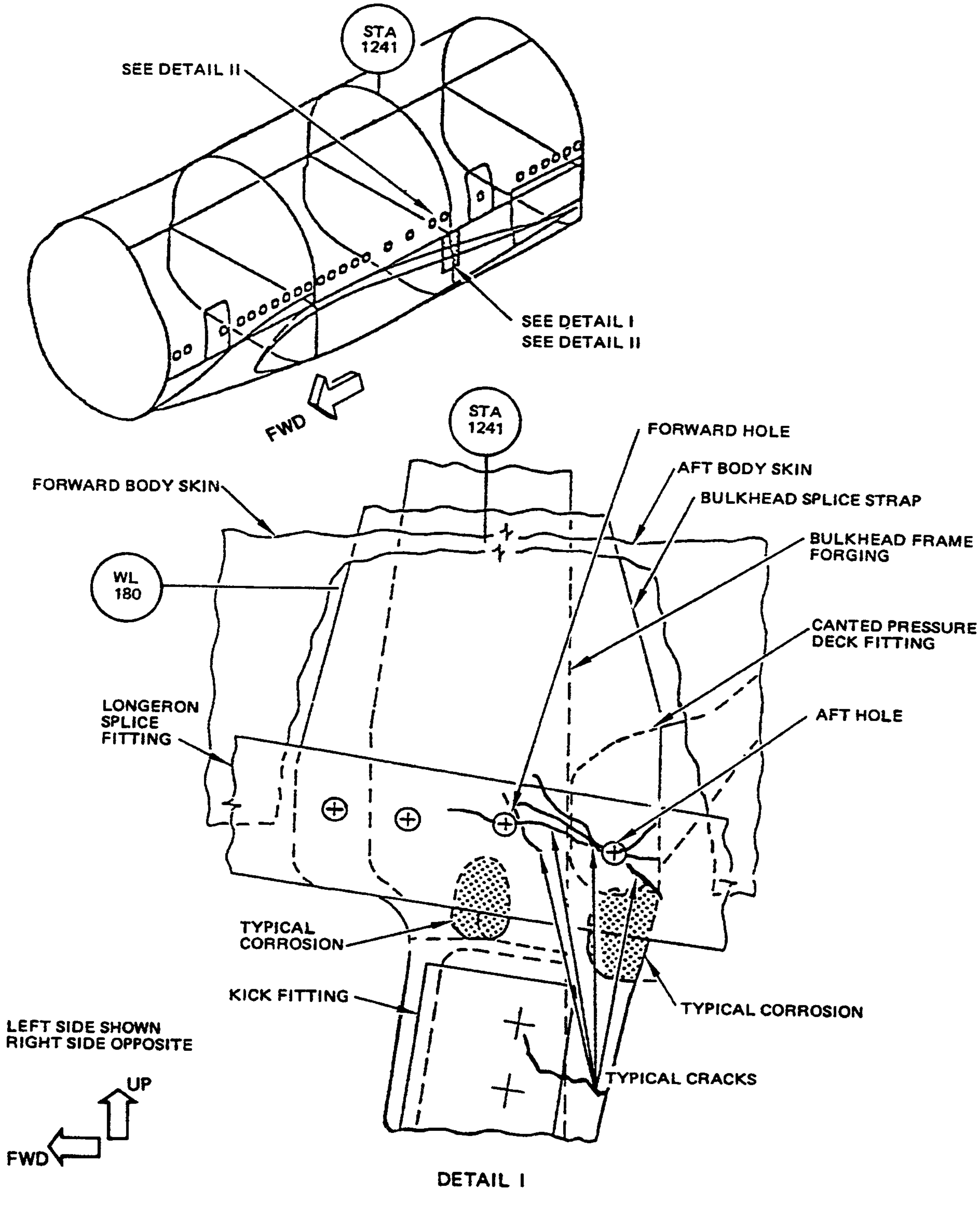
F. Improved Corrosion Protection

(1) For airplanes thru line number 200, SB 53A2280 gives procedures to replace 7079-T6 aluminum fittings with 7075-T73 fittings and H-11 steel bolts with Inconel bolts.

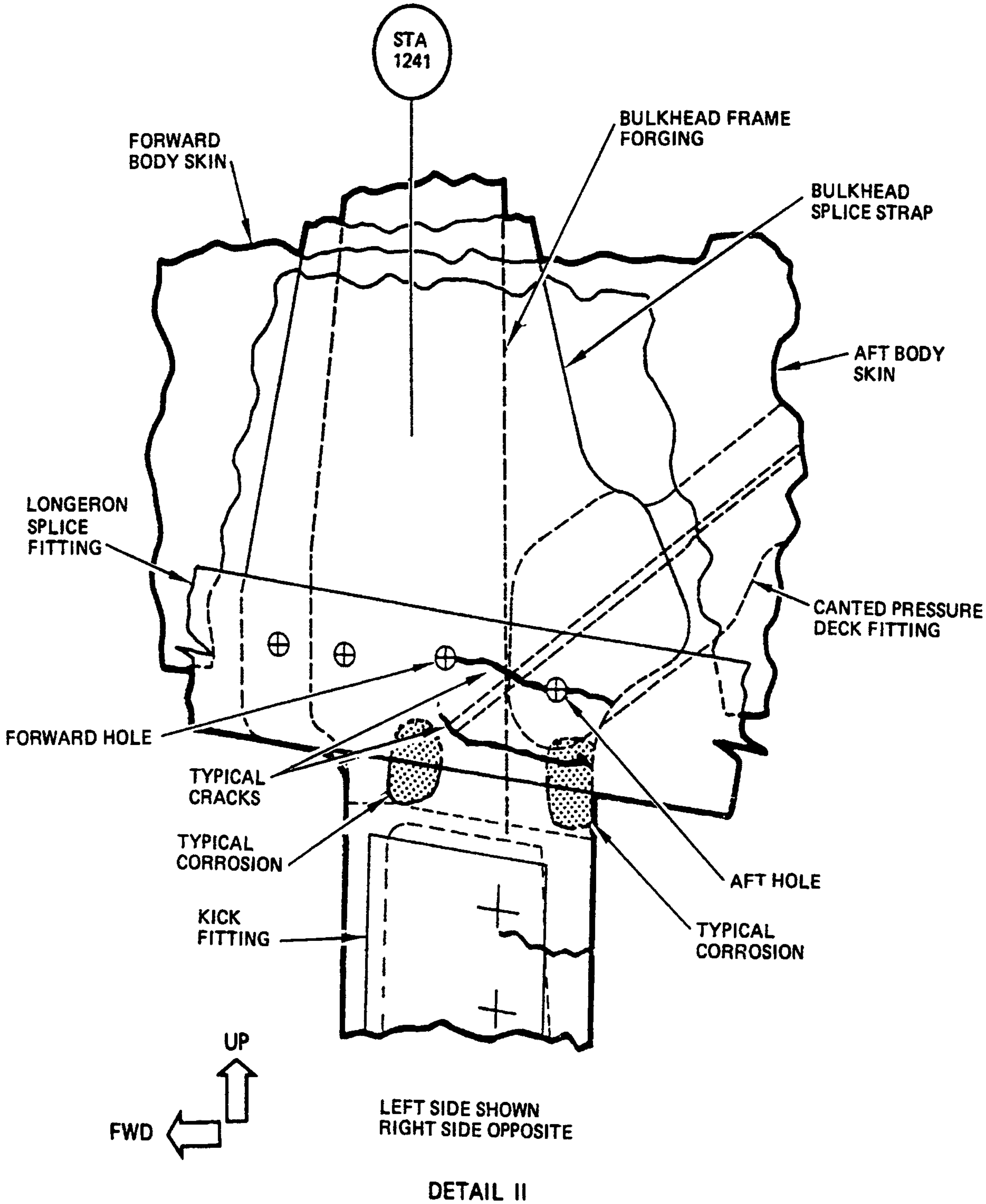
(2) At line number 453, the 7075-T6 alloy fittings were changed to 7075-T73 fittings which have a higher resistance to stress corrosion cracking. This change can be made on earlier airplanes with SB 53-2162.

(3) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

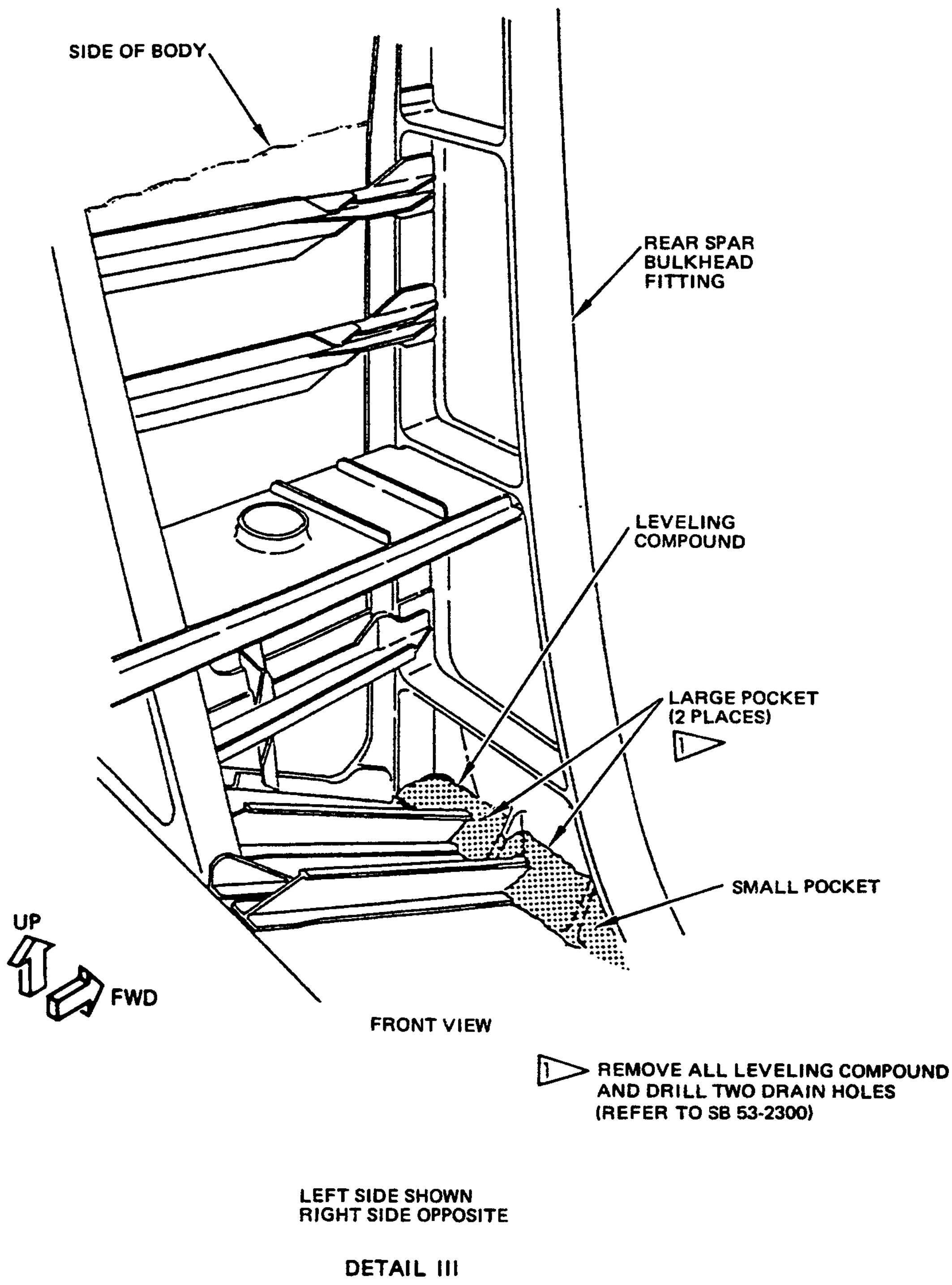
(4) At line number 1011, PRR 82788-2 added Dinol AV8 (BMS 3-23, Type 2) compound to all Section 48 structure, except on the forward face of the aft firewall.



Upper Lobe Frames, Stringers and Skins
Figure 13 (Sheet 1)



Upper Lobe Frames, Stringers and Skins
Figure 13 (Sheet 1)



Upper Lobe Frames, Stringers and Skins
Figure 13 (Sheet 1)

1. General

A. The main compartment structure include the skins, frames, stringers, doublers and shear ties from S-26 to the crown area. Fuselage skin of butt joints and longitudinal lap joints attached to the structure with rivets aligned to the skin. The stringers and skin have been found to be easily damaged by corrosion because of the moisture caught between the skin and insulation blankets.

B. Cracks and corrosion were found on the forward and aft bolt holes at the longeron fitting, BS 1241. Cracks were also found on the bulkhead forging and bulkhead splice straps.

C. Corrosion was found on the BS 1241 fitting where the wing rear spar is attached to the fuselage. Corrosion started because of the moisture collected between leveling compound and the fitting surface.

D. Stress corrosion cracks can occur in H-11 steel bolts in the BS 1241 bulkhead.

E. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. The basic corrosion prevention philosophy is to make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. Skin bulges, missing fasteners or white powdery deposits are evidences of the existence of corrosion which should alert operators that some corrective action is required. A corrosion prevention program should be initiated to prevent the accumulation of moisture or corrosive compounds in order to minimize the occurrence of corrosion.

B. Where extensive corrosion exists (very noticeable skin bulges, missing fasteners, or large amounts of white deposits at the fastener heads or faying surfaces), refer to Structural Repair Manual for details of corrosion removal.

WARNING: DO NOT APPLY CORROSION INHIBITING COMPOUNDS INTO AREAS WHICH COULD POTENTIALLY BE IN CONTACT WITH OXYGEN SYSTEM COMPONENTS. MIXING OF CORROSION INHIBITORS AND OXYGEN MAY RESULT IN AN EXPLOSION.

CAUTION: INSULATION BLANKETS SOAKED WITH CORROSION INHIBITORS ARE POTENTIAL FIRE HAZARDS, BLANKETS INADVERTENTLY SPATTERED SHOULD BE ALLOWED TO DRY BEFORE REINSTALLATION.

C. For details of application of water displacing corrosion inhibiting compound, refer to Volume 1, 20-60-00.

D. For minor corrosion detected during the periodic inspections and to minimize the downtime of the airplane, the corrosion products should be cleaned off followed by an application of a corrosion inhibiting compound into the affected area to retard the corrosion process.

NOTE: The treatment of internal structure described above should be made at first opportunity the area is exposed. Location of the area should be noted and monitored from the outside every 3 months for visual indication of corrosion progression. Any noticeable skin bulges would require scheduling corrosion removal outlined in Structural Repair Manual.

E. BMS 3-23 corrosion inhibiting compound should not be used in the vicinity of oxygen system components. The suggested protection system for areas close to oxygen system components is as follows:

(1) Clean corrosion and repair affected area per the Structural Repair Manual.

(2) Chemical treat bare aluminum surfaces.

(3) Apply one coat of BMS 10-11, type 1 green primer.

(4) Apply one coat of BMS 10-11, type 1 yellow primer.

(5) Apply BMS 10-11, type 2 epoxy or BMS 10-60 polyurethane enamel top coat.

F. Prevention Treatment

(1) At first opportunity when schedule maintenance work allows access to the structure, corrosion prevention treatment should be accomplished.

(2) Remove insulation blankets to expose frame, stringer and skin. Dry blankets thoroughly if found wet.

(3) Open plugged drains, if any.

(4) For airplane line numbers 1-675, 677-678, 680-684, 686-689; refer to SB 53-22-83 for the inspection and the rework procedures of the forward and aft bolt holes at the longeron fitting, BS 1241. Splice strap replacement is included in the rework procedures.

(5) Replace broken or damaged finishes. Refer to Volume 1, 20-60-00 for protective finish systems.

(6) Apply a coat of BMS 10-11 epoxy primer to the inboard flange surfaces of stringer and allow to dry thoroughly.

(7) Apply water displacing corrosion inhibiting compound to all exposed structure. The use of spray equipment with nozzle directed into faying surfaces is recommended.

(8) Allow solvent to evaporate before reinstalling insulation blankets.

(9) Reinstall blankets so they are taut and so that the outboard surface of the upper blanket overlaps the lower blanket.

(10) Reinstall liner and restore airplane to normal.

G. Frequency of Application

(1) Perform a sample inspection at major overhaul or approximately every 5 years to determine the condition of the corrosion inhibitor on the structure and the primer coat on stringer flanges. Reapply the corrosion inhibitor or primer coat if required.

H. Improved Corrosion Protection

(1) At line number 707, PRR 80856 made some important changes for the BS 1241 fitting where the wing rear spar is attached to the fuselage. This removed the leveling compound from both large and aft pockets (refer to Detail III), drilled two 0.375 inch diameter drains through each fitting, and added sealant and BMS 3-23 Type 2 corrosion inhibiting compound to both large aft pockets. These changes can be made on earlier airplanes with SB 53-2300.

(2) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

(3) At line number 1011, PRR 82788-2 added Dinol AV8 (BMS 3-23, Type 2) compound to all interior structure that did not have it.

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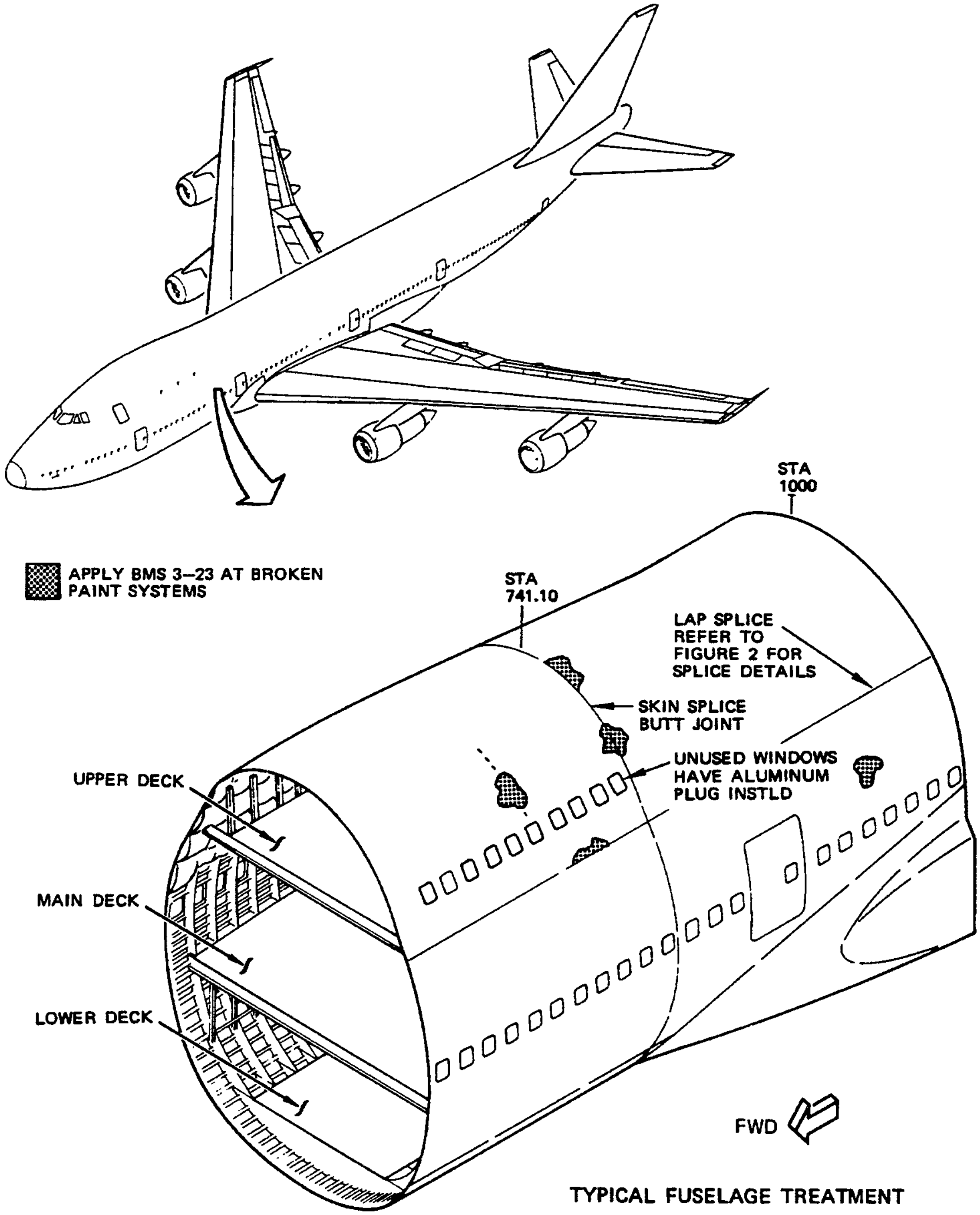


External Surfaces of Fuselage Skins
Figure 1 (Sheet 1)

1. General

A. The exterior surfaces of fuselage skins at fastener locations and panel edges are susceptible to filiform corrosion. The small gap between the dimpled or countersunk skin and the head of flush fasteners leaves an unsupported area for the paint system leading to cracking of the paint around the fastener head and an opening for moisture and contaminants to enter. Breaks between skin and protruding head fasteners and edges of skin panels where the paint system has cracked or flaked are starting points for filiform corrosion.

B. The preventive action described in this figure applies to the exterior surfaces of either butt jointed or lap spliced skin panels. See Fig. 2 when working with lap spliced panel edges so that the preventive action for the lap joints may be worked together.

C. Corrosion has been found beneath Corogard on several 747 airplanes that have been in service for 4 - 5 years. In the early stages, corrosion is difficult to detect through the Corogard coating. Most operators are not stripping Corogard prior to refinishing. By not stripping, an operator runs the risk of missing corrosion in its early stages and thus increases the risk of more extensive rework at a later date.

D. Corrosion has been reported on lower fuselage skins for airplanes operating in a severe abrasive environment.

E. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the periodic inspection described in Volume 1, 20-20-00 to ensure that the protective finishes provided at manufacture remain intact. The preferred treatment for broken finishes is to restore the finish. Refer to Volume 1, 20-60-00 for protective finish systems. Since in some cases, it is impractical or impossible to use this approach between overhaul cycles, the following treatment is recommended:

(1) Apply BMS 3-23 compound (Ref Volume 1, 20-60-00) to fastener heads or edges of skin panels where the paint system has been cracked or flaked. Wipe off excess.

(2) If you clean with steam and high pressure water and detergent, apply the BMS 3-23 compound again.

(3) Repeat the application of BMS 3-23 as necessary based on service experience. In the event operator experience precludes the establishment of application intervals, the following periods are suggested according to the operating environment:

(a) Severe zones - 6 months

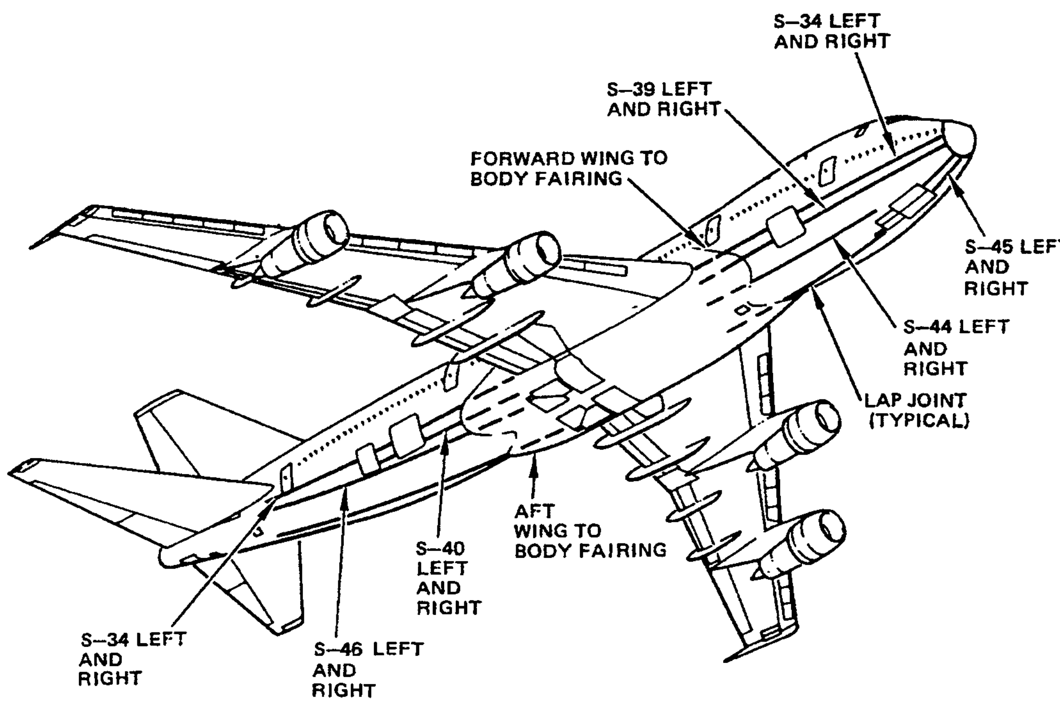
(b) Moderate zones - 12 months

(c) Mild zones - 18 months

B. Where corrosion has already started, refer to Structural Repair Manual for details of corrosion removal.

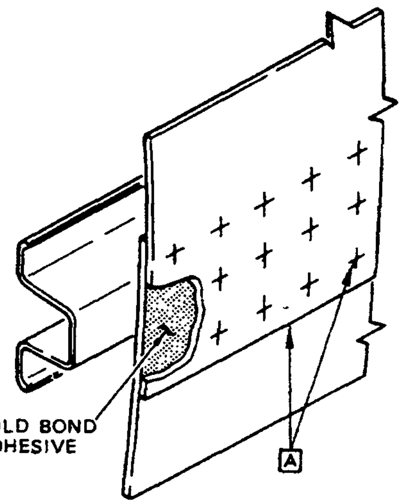
C. Improved Corrosion Protection

(1) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

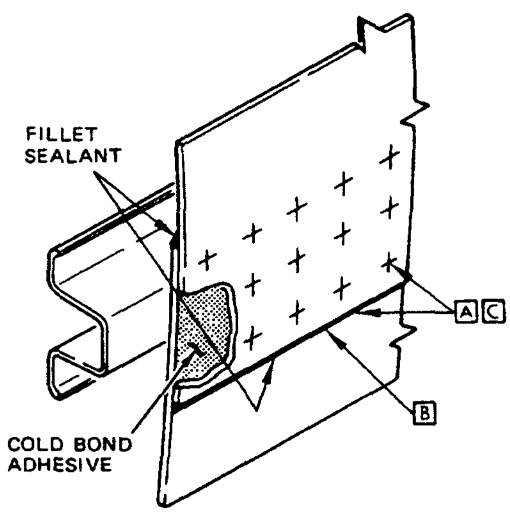


LOCATION OF LOWER BODY LONGITUDINAL SKIN LAP JOINTS

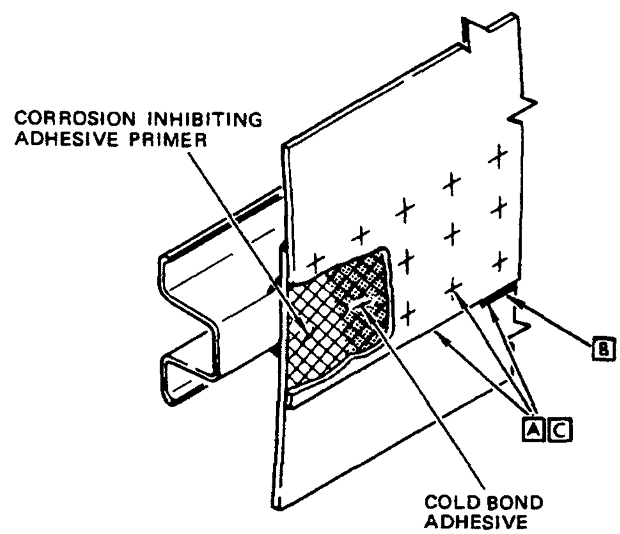
Fuselage Skin Lap Joints - External Treatment
Figure 2 (Sheet 1)



COLD BOND LAP SPLICE

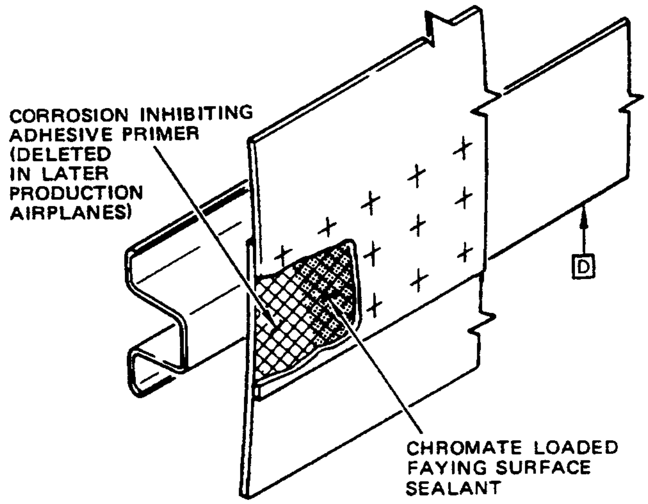


COLD BOND LAP SPLICE
FILLET SEALED



COLD BOND LAP SPLICE
WITH CORROSION INHIBITING
ADHESIVE PRIMER

Fuselage Skin Lap Joints - External Treatment
Figure 2 (Sheet 2)



LAP SPLICE WITH FAYING SURFACE SEAL

NOTE

REFER TO FIGURE 3 FOR TREATMENT OF INTERNAL SURFACES.

[A] APPLY CORROSION INHIBITOR ALONG EDGE OF LAP SPLICE AND FASTENER HEADS

[B] THE ADDITION OF FILLET SEALS AT THE INTERIOR AND/OR EXTERIOR EDGE OF LAP, AT THE HEEL OF THE STRINGER, AND BRUSH COATING OF FASTENER HEADS HAS OCCURRED AT VARIOUS PHASES IN PRODUCTION AND MAY NOT BE ON ALL AIRPLANES.

[C] ON AIRPLANES WITH COLD-BOND LAP JOINTS, BROKEN FILLET SEALS SHOULD NOT BE REPLACED UNLESS JOINTS ARE REWORKED PER 53-30-47, PART III. REMOVE LOOSE SEALS.

[D] STRAP HOT BONDED TO UPPER SKIN FOR SKIN THICKNESSES 0.056 AND UNDER

Fuselage Skin Lap Joints - External Treatment
Figure 2 (Sheet 3)

1. General

A. The longitudinal lap splices of fuselage skins are located at stringers 0, 6, 12, 14, 19, 23, 34, 39 and 44/46. The lapped skins are joined by rivets and were supplemented by a cold bond process at the joint up to line number 201. Several changes were initiated on the lap splice because of splice delamination problems. The first major change maintained the cold bonding process with filet sealing of the interior and exterior laps and along the heels of the attaching stringer. The bucked head of the rivets were brush coated. A later design change supplemented the cold bonding process with a corrosion inhibiting adhesive primer (CIAP) on the skin panels of the binding area. The latest change replaced the cold bond in the lap splices with a redesigned joint that incorporated a chromate loaded faying surface sealant.

B. The faying surface of the cold bonded lap splices has been found susceptible to corrosion. Over an extended period of time, exposure to moisture or high humidity can cause deterioration of the cold bonding adhesive. Delamination of the joint may follow leaving the area vulnerable to attack by corrosive agents. Lap splices with faying surface sealant are not subject to faying surface corrosion and do not require periodic treatment with water displacing corrosion inhibiting compound.

C. Corrosion can occur on the fuselage skin lap joints under the wing-to-body fairings on airplanes with bonded joints (line number 1 thru 200). Bond deterioration let moisture and other agents to come into the joint. A production change at line number 201 replaced the bonds with chromate loaded faying surface sealant at the lap joints, changed the top row of fasteners in sections 42 and 44 to protruding head rivets, and added another row of flush head rivets at the lap joint in section 41.

D. Treatment of the interior surface requires extensive work and should be accomplished as access is gained to the interior surfaces. Corrosion prevention for the interior lap splice is described in Fig. 3.

E. Corrosion and bulging of skin have been found at upper body lap joints of stringer 12 from station 1515 to 1735 and stringer 4L at station 1710. There have been several incidents of corrosion found at the stringer 23 lap joint.

F. On one airplane, the outer skin cracked at a fastener hole in the lap splice near station 738 at stringer 0. This could be related to corrosion of the cold bonded lap splice.

G. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. Skin bulges between fasteners or white powdery deposits are evidences of the existence of corrosion. A corrosion prevention program should be initiated to prevent the ingress of contaminants and moisture into the joints from the outside.

NOTE: The application of fillet sealant on the exterior surface of in-service airplanes manufactured without the seal installed is not recommended. Moisture and contaminants may have already entered the joint and sealing the joint will only trap the corrosion producing elements.

B. For minor corrosion detected during the periodic inspections and to minimize the downtime of the airplane between overhaul cycles, the application of a corrosion inhibiting compound into the joint may be used to retard the corrosion process.

C. A comprehensive corrosion inspection and preventive maintenance procedure for lap joints under the wing-to-body fairing for line numbers 1 thru 200 is provided in SB 53A2131.

D. External inspection and preventive maintenance procedures for lower body lap joints not under the wing-to-body fairing, tear strap joints, skin doublers and window forgings are provided in SB 53-2157. SB 53-2307 supersedes that part of SB 53-2157 which addresses the upper body skin longitudinal lap joints.

E. Where extensive corrosion exists (noticeable skin bulges or large amount of white deposits at fastener heads or joint edges) refer to Structural Repair Manual for details of corrosion removal.

F. For details of application of water displacing corrosion inhibiting compound, refer to Volume 1, 20-60-00.

G. For corrosion prevention apply corrosion inhibitor into lap joints and on lap joint rivet heads. On fillet sealed splices apply corrosion inhibitor along the edge of panel and on lap joint rivet heads. On airplanes with cold-bond lap joints, broken fillet seals should not be replaced unless joints are reworked per 53-30-47, Structural Repair Manual. The water displacing corrosion inhibiting compound should be left on for 30 minutes and the excess removed with a dry rag. The use of pressure spray equipment with nozzle directed into joint is recommended.

H. The recommended frequency of application is 12 months for the crown areas and 6 months for the lower lobe areas. Operators who wash frequently with detergent and those who operate in severe zones should adjust these frequencies accordingly.

I. These service bulletins give details of preventive maintenance for specific areas of the airplane. Each service bulletin recommends water displacing corrosion inhibiting compound.

(1) SB 53-2008 --Body Longitudinal Lap Joint, Window Forging, Tear Strap Splice, Pressure Bulkhead and Control Cabin Doubler

(2) SB 53-2009 --Lower Lobe Galley Drain Doubler, Static Port Doublers, No. 3 Entry Door Window Forging, Sat Com and VHF Antenna Doublers, Skin Panel External Doublers, BS 1350-1416

(3) SB 53-2131 --Fuselage Skin Lap Joint Under Wing-to-Body Fairings (superseded by SB 53A2267)

(4) SB 53-2157 --Body Longitudinal Skin Lap Joints, Tear Strap/Skin Lap Splices, Window Forgings, Skin Panel Doublers and Selected Skin Panels (incorporates the intent of SB 53-2008 and SB 53-2009; superseded by SB 53A2267 for Skin Lap Joints)

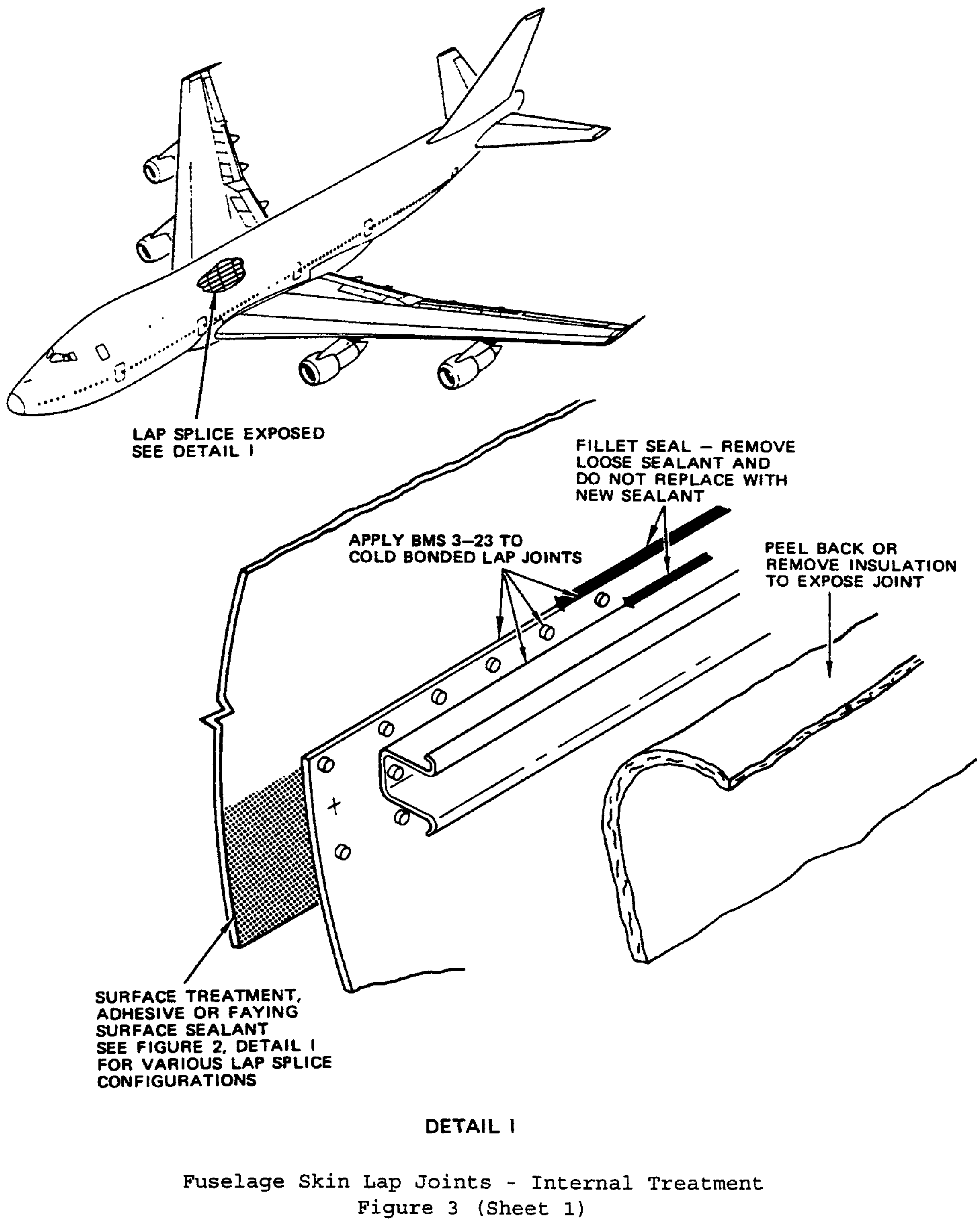
(5) SB 53A2267 --Fuselage-Skin - Lower Body Longitudinal Skin Lap Joints (supersedes SB 53-2131, 53-2157)

(6) SB 53-2307 --Fuselage-Skin - Upper Body Longitudinal Lap Joints (supersedes SB 53-2157. Added by AD 88-NM-194)

J. Regularly examine all cold bonded joints to look for the start of corrosion.

K. Improved Corrosion Protection

(1) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.



Fuselage Skin Lap Joints - Internal Treatment
Figure 3 (Sheet 1)

1. General

A. The longitudinal lap splices of fuselage skins are located at stringers 0, 6, 12, 14, 19, 23, 34, 39 and 44/46. The lapped skins are joined by rivets and early models were supplemented by cold bond process at the joint. Several changes were initiated on the lap splice because of splice delamination problems. The first major change maintained the cold bonding process with fillet sealing of the interior and exterior laps and along the heels of the attaching stringer. The bucked head of the rivets were brush coated. A later design change supplemented the cold bonding process with a corrosion inhibiting adhesive primer (CIAP) on the skin panels of the bonding area. The latest change replaced the cold bond in the lap splices with a redesigned joint that incorporated a chromate loaded faying surface sealant at line number 201. Joints with this configuration are not subject to faying surface corrosion.

B. The faying surface of the cold bonded lap splices have been found susceptible to corrosion. Over an extended period of time, exposure to moisture or high humidity can cause deterioration of the cold bonding adhesive. Delamination of the joint may follow leaving the area vulnerable to attack by corrosive agents.

C. Treatment of the exterior surface of the splice is described in Fig. 2.

D. Some operators have recently reported that structural components inside Body Section 48 of newly delivered airplanes were not protected by primer or paint. In all reported cases, subsequent investigation revealed that the components were in fact protected with a coat of BMS 5-89 corrosion inhibiting adhesive primer (CIAP).

(1) CIAP is the required production primer for all structural bonded assemblies. The change to CIAP on all 747 structural bonded assemblies was completed on all airplanes delivered after March 1972.

(2) In a structural bonded assembly where only certain portions are bonded and the remainder is not, CIAP is applied to the entire surface, including those areas of the assembly which are not in contact with the structural adhesive. In many instances where added corrosion protection is not specified, this coat of CIAP becomes the final protective coating for these non-bond surfaces. Where added corrosion protection is specified for a structural bonded assembly, the entire assembly receives a subsequent coating of BMS 10-11 or BMS 10-79 primer on top of the CIAP.

(3) Note that CIAP is not applied to unbonded components or assemblies. Unbonded structure is typically primed with BMS 10-11 Type 1, BMS 10-20 or BMS 10-79.

(4) The appearance of CIAP varies, depending on the aluminum alloy, the alloy surface condition and the prebonding treatment. As a result of these variables, a cured coat of CIAP can vary from being practically transparent to being yellowish or a light gold color similar in appearance to Alodine 1200, conversion coating.

E. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. Skin bulges or white powdery deposits are evidences of the existence of corrosion which should alert operators that some corrective action is required. A corrosion prevention program should be initiated to prevent the ingress of contaminants and moisture into the joints to minimize the occurrence of corrosion.

B. Where extensive corrosion exists (very noticeable skin bulges, missing fasteners, or large amounts of white deposits at fastener heads or joint edges), refer to Structural Repair Manual for details of corrosion removal.

C. For details of application of water displacing corrosion inhibiting compound, refer to Volume 1, 20-60-00.

WARNING: DO NOT APPLY CORROSION INHIBITING COMPOUNDS INTO AREAS WHICH COULD POTENTIALLY BE IN CONTACT WITH OXYGEN SYSTEM COMPONENTS. MIXING OF CORROSION INHIBITORS AND OXYGEN MAY RESULT IN AN EXPLOSION.

CAUTION: INSULATION BLANKETS SOAKED WITH CORROSION INHIBITORS ARE POTENTIAL FIRE HAZARDS. BLANKETS INADVERTENTLY SPATTERED SHOULD BE ALLOWED TO DRY BEFORE REINSTALLATION.

D. For minor corrosion detected during the periodic inspections and to minimize the downtime of the airplane, the corrosion products should be cleaned off followed by an application of a corrosion inhibiting compound into the joint to retard the corrosion process.

NOTE: The treatment of internal surfaces described above should be made at first opportunity splice area is exposed. Location of the area should be noted and monitored from the outside every 3 months for visual indication of corrosion progression. Any noticeable skin bulges would require scheduling corrosion removal outlined in Structural Repair Manual.

E. Apply water displacing corrosion inhibiting compound into lap joints, rivet heads, and heel of stringers as noted below. The preferred method is to make the applications at the first opportunity that the internal splice area is exposed. Apply water displacing corrosion inhibiting compound to cold bonded structure whenever the area is open for inspection or modification work.

(1) Insulation blankets should be protected or removed from the immediate treatment area to prevent spattering of the blankets. Insulation inadvertently spattered should be allowed to dry before installation.

(2) Some airplanes have fillet sealants. If you find this sealant broken or loose, remove but do not replace it, because moisture in the joint will be caught under the new sealant.

(3) Apply water displacing corrosion inhibiting compound into lap joint edges, rivet heads and heel of the stringer. The use of pressure spray equipment with nozzle directed into joint is recommended.

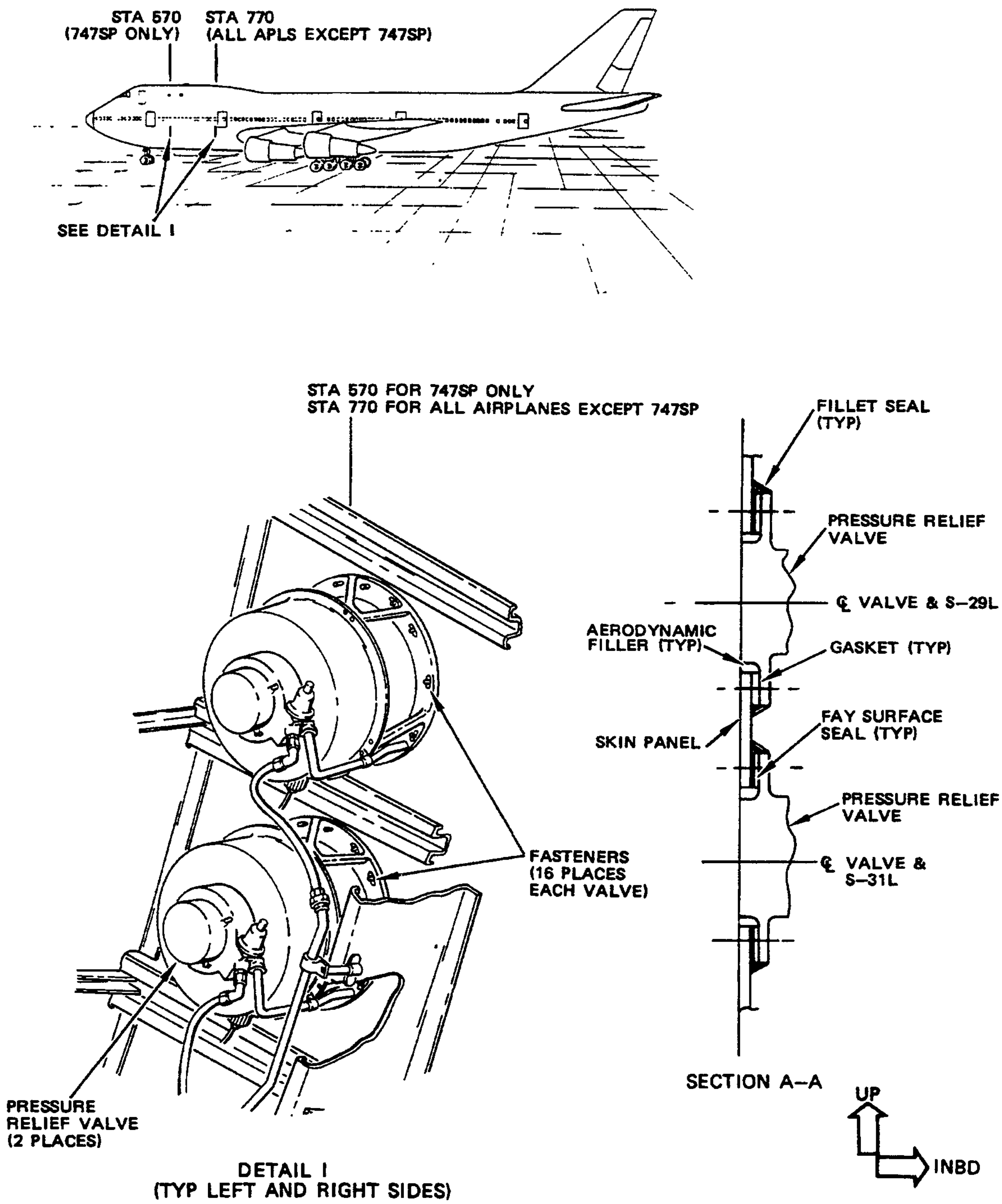
F. Frequency of Application

(1) It is recommended that the corrosion inhibitor be reapplied whenever access is available to the area, preferably at approximately 2-year intervals.

G. Improved Corrosion Protection

(1) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

(2) At line number 1011, PRR 82788-2 applied Dinol AV8 (BMS 3-23, Type 2) compound on all surfaces that did not have it.



Fuselage Skin at Pressure Relief Valves
Figure 4

1. General

   A. Corrosion can occur on the internal fuselage skin at the locations of the pressure relief valves. Moisture can come in around the seal at the pressure relief valves.

2. Corrosion Prevention

   A. Remove the valves and look for corrosion. Install the valve with a new gasket and seal as shown in Section A-A. Install fasteners with wet BMS 5-95 sealant.

   B. Where corrosion has already started, refer to Structural Repair Manual for details of corrosion removal.

   C. Apply water displacing corrosion inhibiting compound to damaged finish on exposed surfaces. Refer to Volume 1, 20-60-00 for how to apply corrosion inhibiting compound.

   D. For added corrosion protection, install valve fasteners with wet BMS 10-11 primer.

   E. Improved Corrosion Protection

      (1) At line number 386, a production change added better finish and sealing the edge of the skin cutout for the valve.

      (2) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

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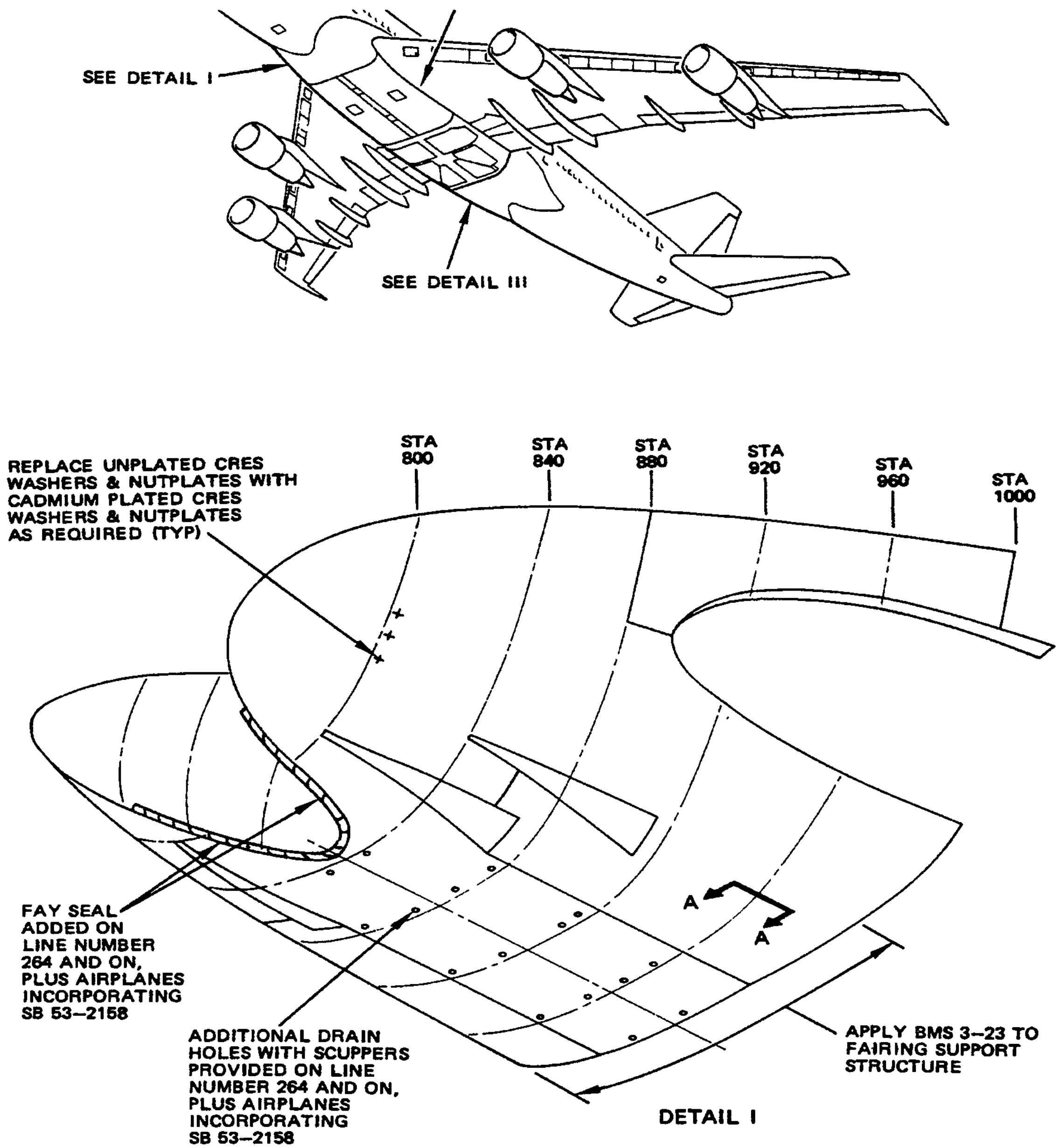
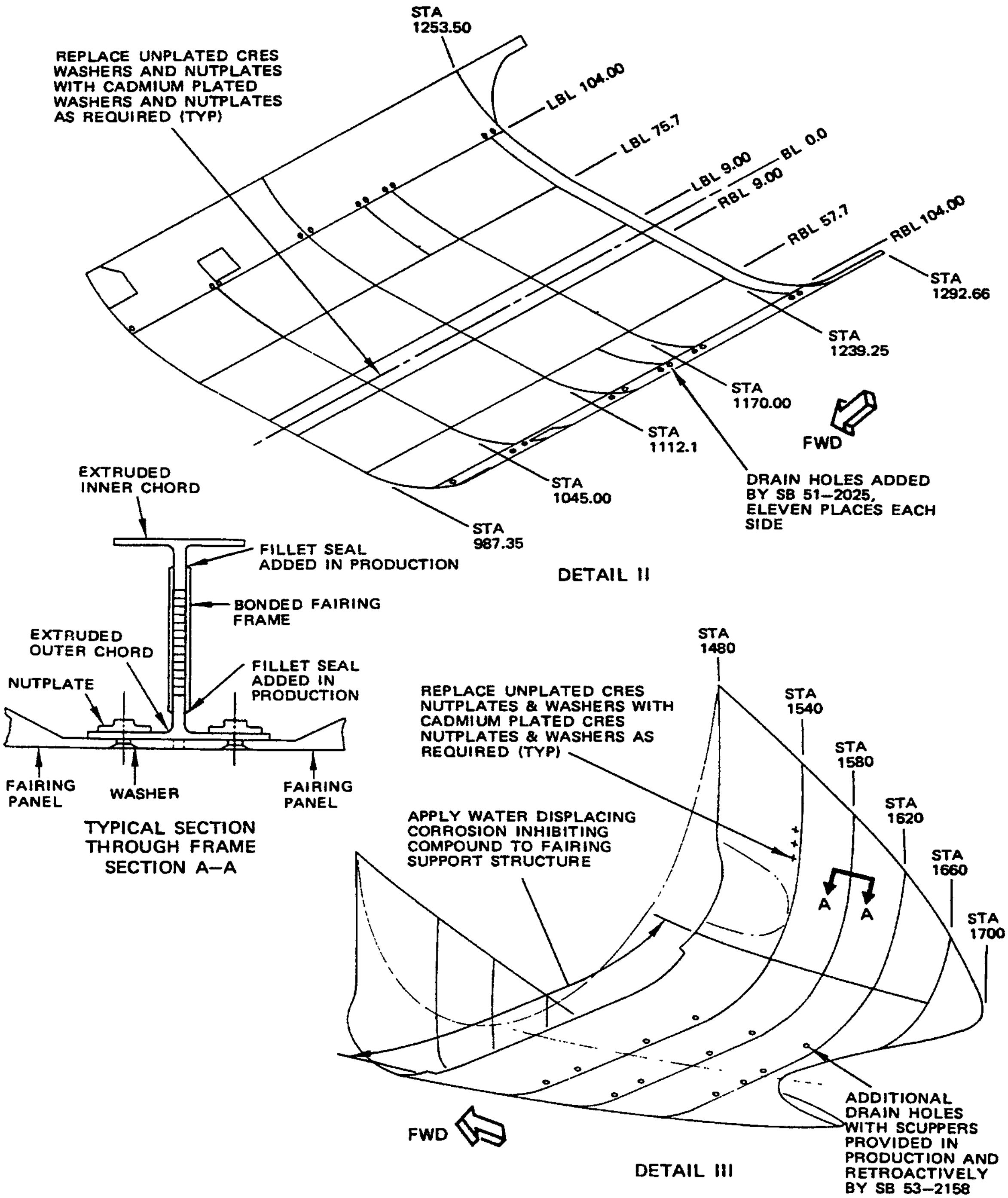


Wing to Body Fairing
Figure 1 (Sheet 1)



Wing to Body Fairing
Figure 1 (Sheet 2)

1. General

A. The outer skin of the wing-to-body fairing is constructed of fiberglass sandwich with reinforced nylon honeycomb core and extends from station 740 to station 1700. It provides aerodynamic smoothness in this area. Pitting and exfoliation can occur on the wing-to-body fairing frame lower chords and webs. Faying surface sealing of the forward fairing-to-body skin joints and the application of BMS 3-23 to the lower fairing structure and to the body skin at the fairing interface were added at line number 235. The change in heat treat of the frame chord material, fillet sealing of the web-to-chord joints, replacement of the epoxy bonding agent of shims at skin laps with chromate filled polysulfide sealant and additional drain holes with scuppers were other changes on line number 264. Service Bulletin 53-2158 incorporates the production changes. CRES nutplates and washers can be replaced with cadmium plated nutplates and washers on the fairing frames to provide additional corrosion protection. Cadmium plated nutplate and washer installations are partially incorporated in production airplanes on line number 242 thru 268. On line number 269 and on, complete incorporation of the design change was made.

B. Corrosion protection has been improved by various production changes made to the materials, finishes and seals at line number 457. These changes included replacement of clad 7075-T6 bonded webs with bare 7075-T6 bonded webs with an additional coat of BMS 10-11 primer in sections 42 and 48. In section 44 extruded chords made of 7075-T6 have been replaced with 7075-T73 chords. The fairing panels in sections 42, 44 and 46 have been installed with MIL-C-11796, Class II (Class III optional) compound and fay sealing has been applied to panel edges at attach flange to body skin. A final improvement applied BMS 10-79 primer to all pressure skin under the fairing.

C. Fluid drainage along the left and right buttock line 104 underwing fairing support beam has been improved by SB 51-2025. Existing drain holes are replaced by 11 holes at a lower location for airplanes line number 001 through 299.

D. Effective with line number 646, BMS 3-23 corrosion inhibiting compound is applied to the exterior surface of the skin under the wing to body fairing at sections 42 and 46.

2. Corrosion Prevention

A. When the wing-to-body fairing is removed, check fairing frame lower chords and webs for corrosion.

B. Refer to Structural Repair Manual for corrosion removal procedures.

C. When corrosion is removed, apply BMS 3-23 to the fairing frames.

1. General

   A. The outer skin of the wing-to-body fairing is constructed of fiberglass sandwich with reinforced nylon honeycomb core and extends from station 740 to station 1700. It provides aerodynamic smoothness in this area.

   B. Pitting and exfoliation can occur on the wing-to-body fairing frame lower chords and webs.

   C. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

   A. When the wing-to-body fairing is removed, examine the fairing frame lower chords and webs for corrosion.

   B. Refer to Structural Repair Manual for corrosion removal procedures.

   C. After corrosion is removed, apply BMS 3-23 to the fairing frames.

   D. Refer to 51-40-09 of Structural Repair Manual for restoration of flame sprayed surfaces.

   E. When nutplates or washers require replacement, use cadmium plated nutplates (BACNIOGF) and cadmium plated washers (BACW10UC).

   F. Exterior of the wing-to-body fairing can be cleaned and painted in accordance with Volume 1, 20-50-00 and 20-60-00.

   G. Improved Corrosion Protection

      (1) At line number 235, the forward fairing-to-body skin joints were fay-surface sealed and BMS 3-23 corrosion inhibiting compound was applied to the lower fairing structure and the joint between the fairing and the body skin. At line number 264, the heat treatment was changed for the frame chord material, the web-to-chord joints were fillet sealed, the shims at skin laps were bonded with chromate-filled polysulfide sealant, and more drain holes with scuppers were added. All of these changes can be added to other airplanes with SB 53-2158.

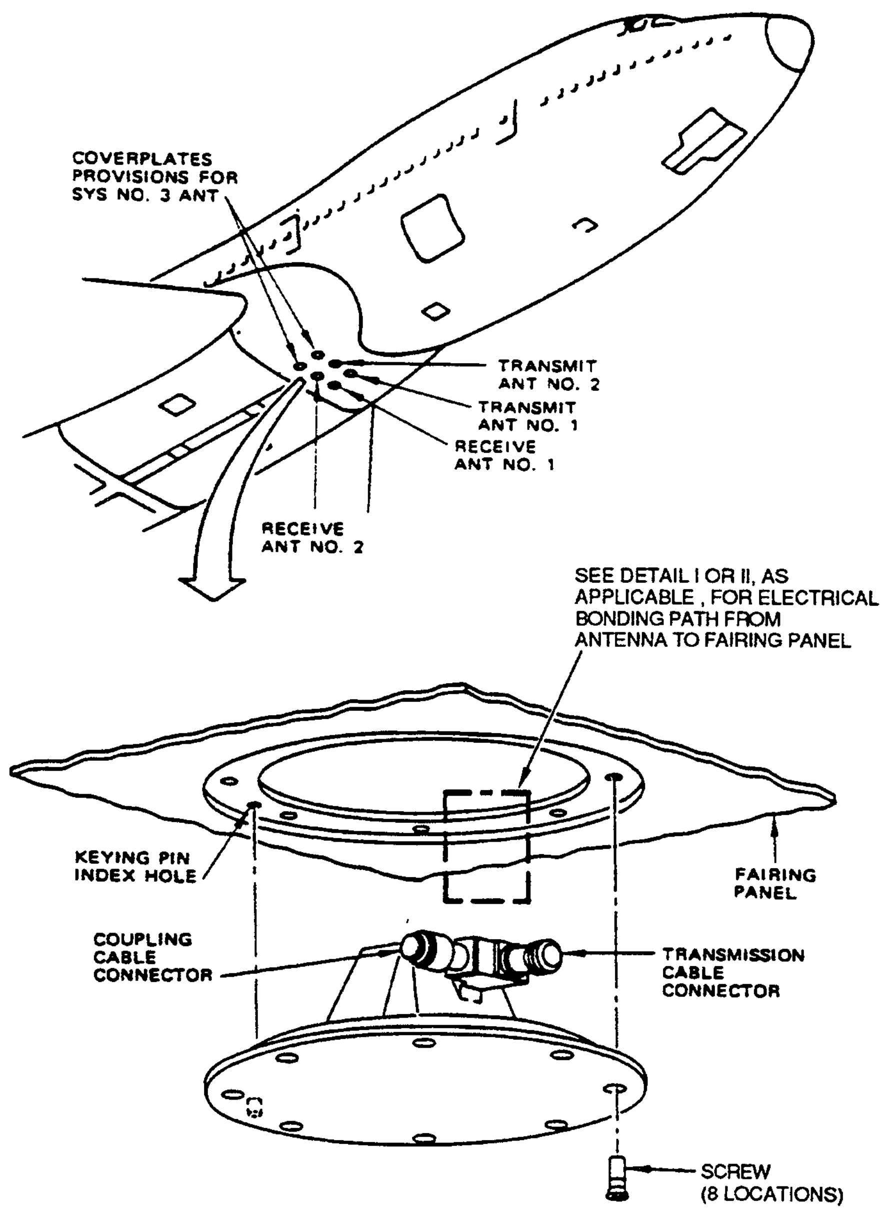
      (2) At line number 269, cadmium plated nutplates and washers were used. Some of these fasteners were installed on airplanes between line numbers 242 and 268.

      (3) At line number 300, PRR 78733 changed the location of drain holes in the left and right outboard underwing fairing and support beam. This change can be made on earlier airplanes with SB 51-2025.

(4) At line number 457, production changes were made to materials, finishes, and seals. In Sections 42 and 48, bonded webs were changed from clad to bare aluminum with one more layer of BMS 10-11 primer. In Section 44, the material of extruded chords was changed from 7075-T6 to 7075-T73. In Sections 42, 44 and 46, the fairing panels were installed with MIL-C-11796 Class II or III corrosion preventive compound, and the edges of the panels were fay sealed between the attach flange and the body skin. Also, BMS 10-79 primer was applied to all pressure skin under the fairing.

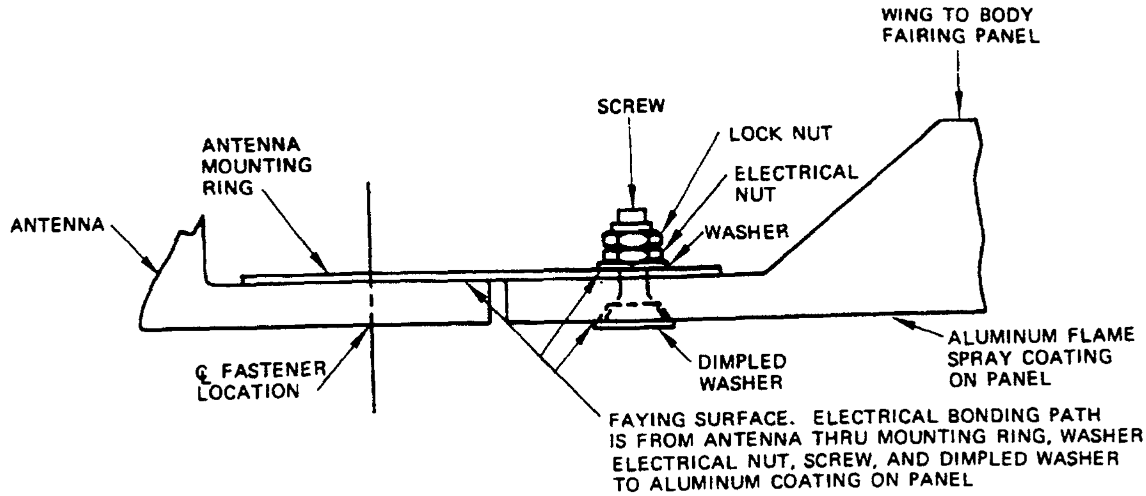
(5) At line number 646, BMS 3-23 corrosion inhibiting compound is applied to the exterior surface of the skin under the wing to body fairing at Sections 42 and 46.

(6) At line number 955, PRR 79800-361 changed all sealant installations from BMS 55-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

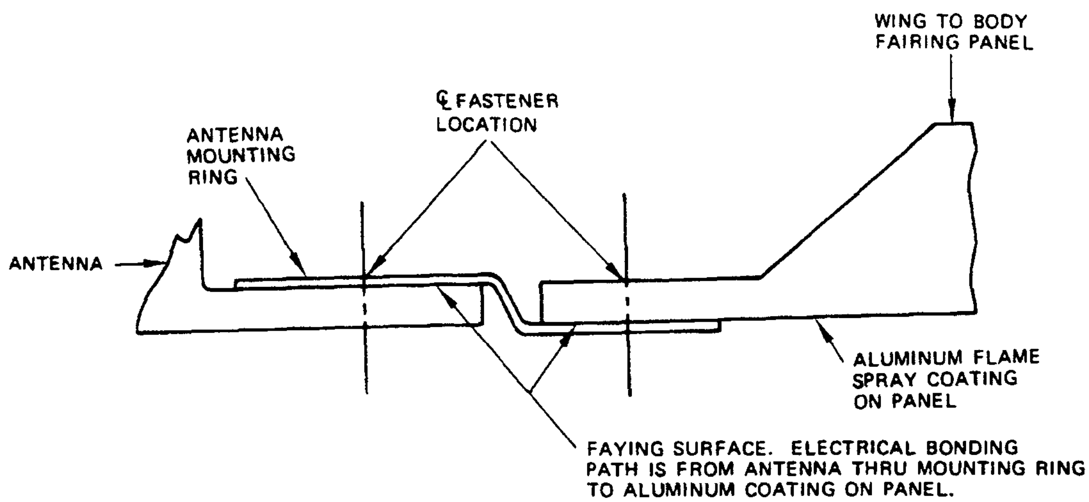


EXAMPLE LOW-RANGE RADIO ALTIMETER ANTENNA INSTALLATION

Antenna Mount - Wing-to-Body Fairing
Figure 2 (Sheet 1)



DETAIL I
(AIRLANES THRU LINE NUMBER 202)



DETAIL II
(AIRLANES THRU LINE NUMBER 203 AND ON)

Antenna Mount - Wing-to-Body Fairing
Figure 2 (Sheet 2)

1. General

A. Different amounts of corrosion can occur on faying surfaces at the Low Range Radio Altimeter (LRRA) antenna-to-mount ring attachment in the wing-to-body fairing panel. Corrosion in this area reduces the electrical bond, causes a bad ground between the antenna and the fairing structure, and results in LRRA antenna malfunctions.

B. Corrosion can occur in the Bendix LRRA antenna coupling assembly.

C. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Regularly, or when antenna malfunctions occur, remove the antenna from its mount ring and examine the faying surfaces and the mount holes, for signs of corrosion.

B. If you find corrosion, refer to Structural Repair Manual, for corrosion removal procedures.

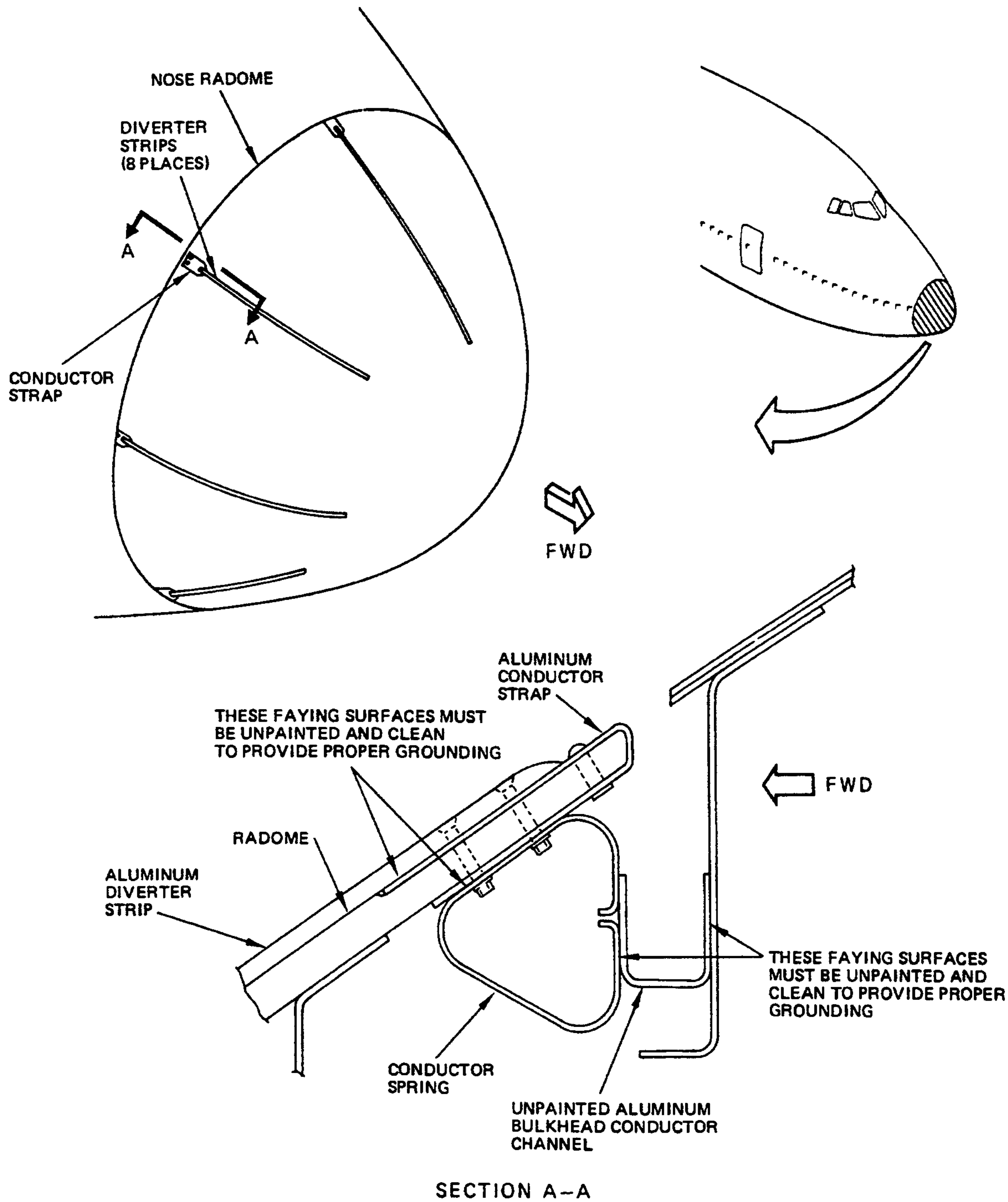
C. Before you install a removed antenna, apply BMS 3-23 corrosion inhibiting compound to the faying surfaces.

D. If you have Bendix LRRA antenna coupling problems, refer to Bendix SB M-962 for inspection and repair procedures.

E. Improved Corrosion Protection

(1) At line number 203, a different mount ring configuration is used (Detail II). This can be used on earlier airplanes, but be sure to seal the wing-to-body fairing forward edge.

(2) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay surface seals and wet installation of fasteners.



Nose Radome Lightning Diverters
Figure 3 (Sheet 1)

1. General

   A. Eight aluminum lighting diverter strips are installed on the outer radome surface. These are connected to aluminum conductor straps which are wrapped around the rear edge of the radome. Inside the radome the conductor straps are attached to conductor springs which make contact with channels attached to the fuselage frame. To ensure good electrical contact between these parts it is essential that the mating faces are unpainted and clean.

   B. Corrosion has been experienced at the mating faces of the conductor strap and the conductor spring.

   C. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

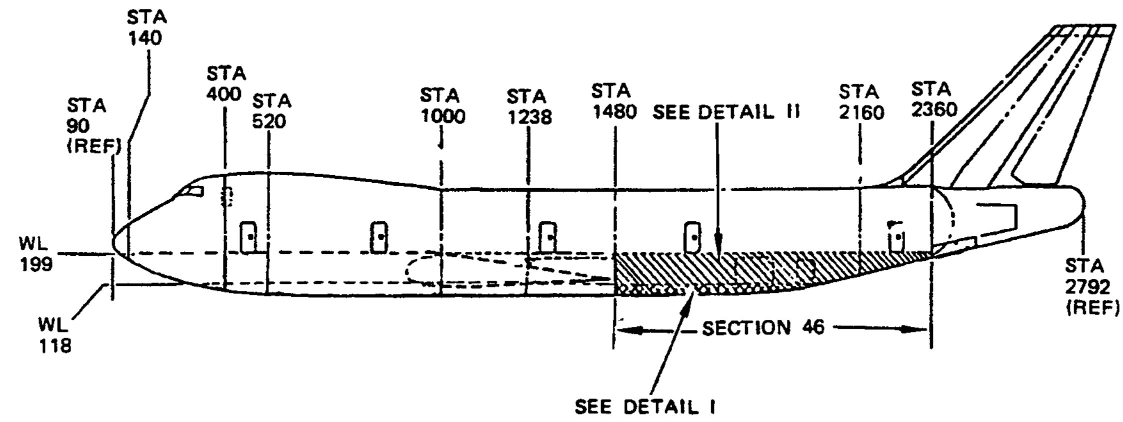
2. Corrosion Prevention

   A. Regularly examine the conductor straps and springs for signs of corrosion. Excessive resistance indicated during the conductivity check described in 53-52-01 of the Maintenance Manual can also be because of corrosion products between the faying surfaces.

   B. Apply water displacing corrosion prevention compound BMS 3-23 to the conductor straps and springs. BMS 3-23 will not have an adverse effect on the conductivity of the parts. Care should be taken to ensure that BMS 3-23 is not allowed to come into contact with the rubber seals. Overspray on the radome should also be avoided although light amounts would not be objectionable.

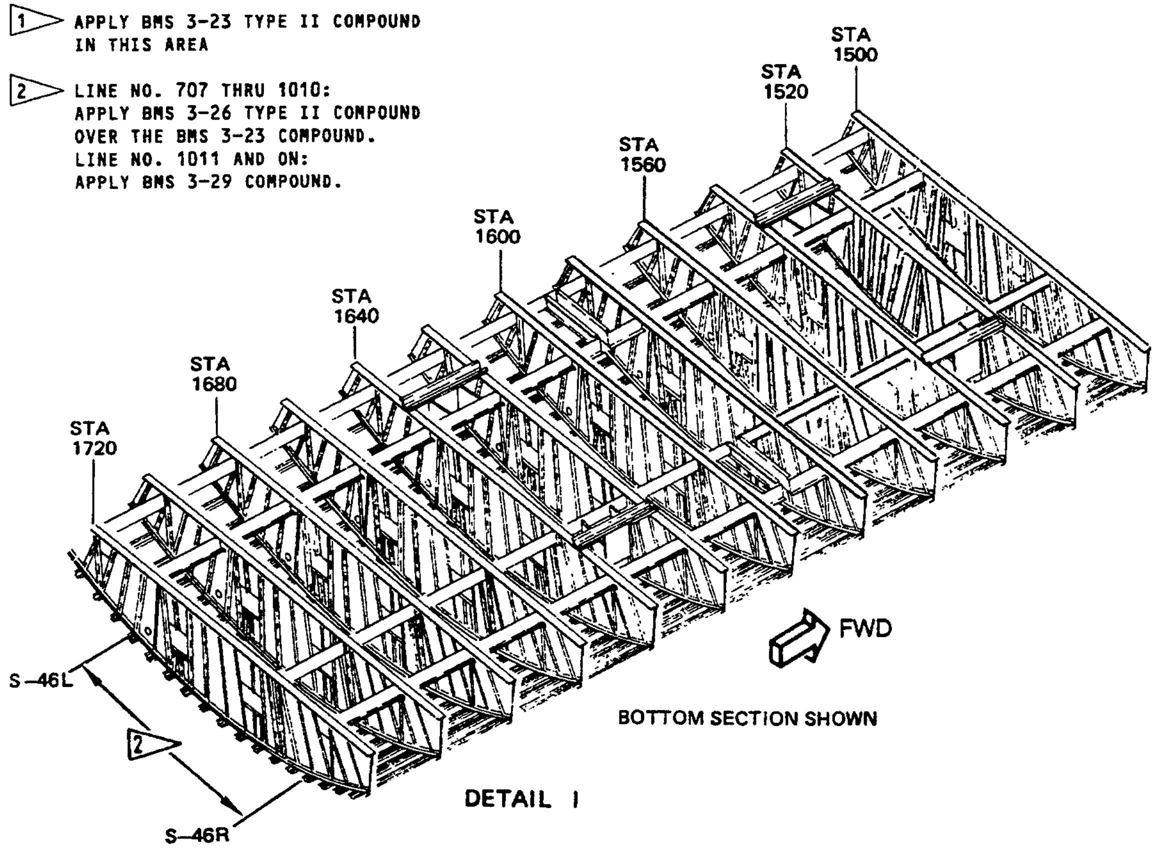
   C. Repeat the application of BMS 3-23 at intervals as required. The condition of the compound can be determined during the course of scheduled inspections.

   D. If you find where there is evidence of corrosion, refer to Structural Repair Manual.

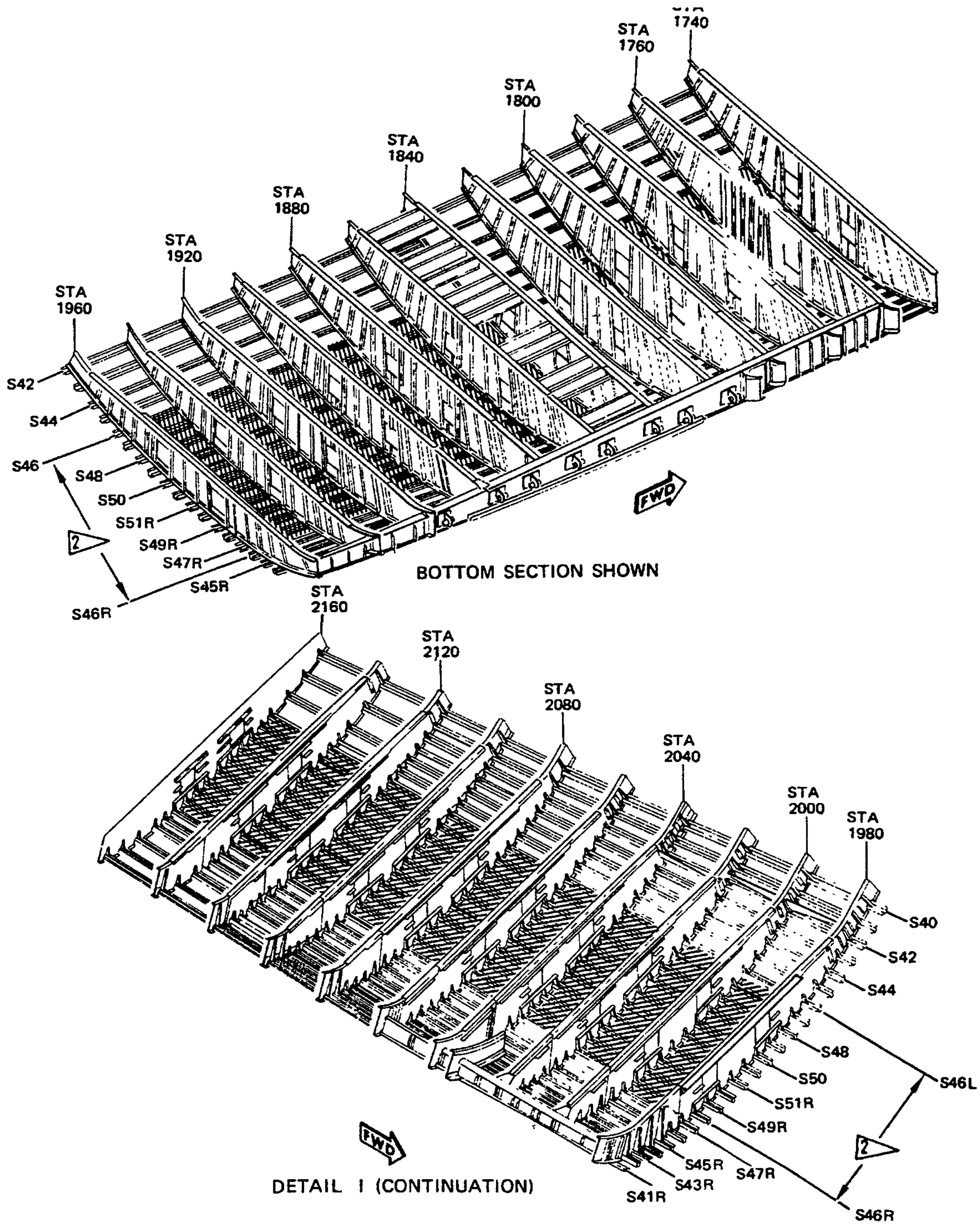


1 APPLY BMS 3-23 TYPE II COMPOUND IN THIS AREA

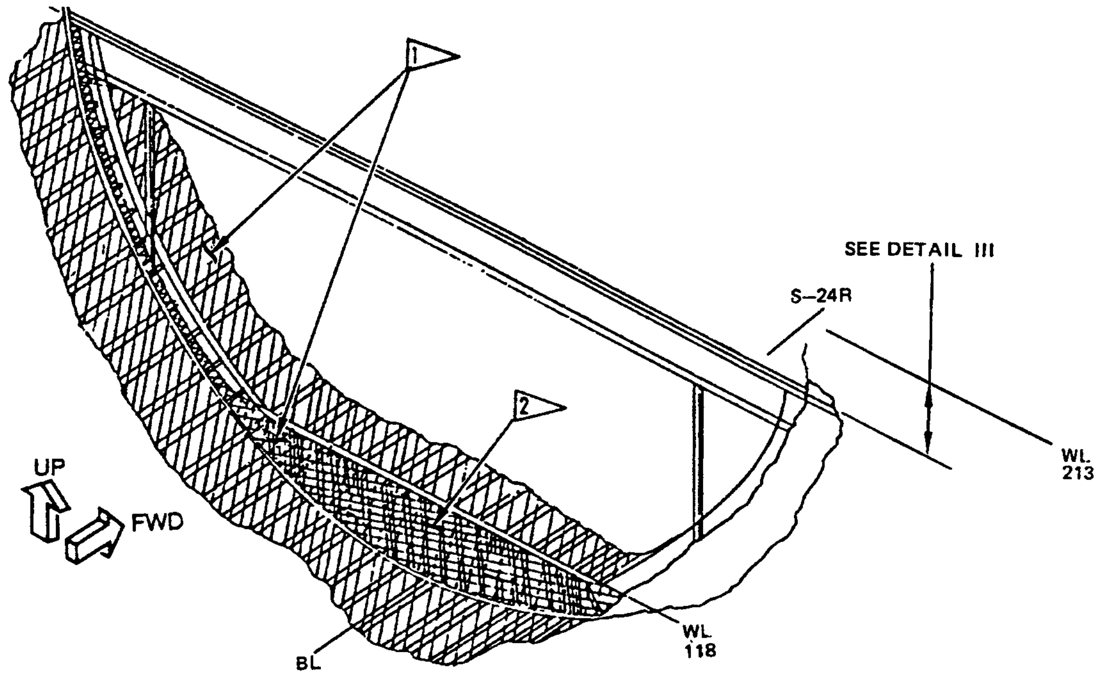
2 LINE NO. 707 THRU 1010: APPLY BMS 3-26 TYPE II COMPOUND OVER THE BMS 3-23 COMPOUND. LINE NO. 1011 AND ON: APPLY BMS 3-29 COMPOUND.



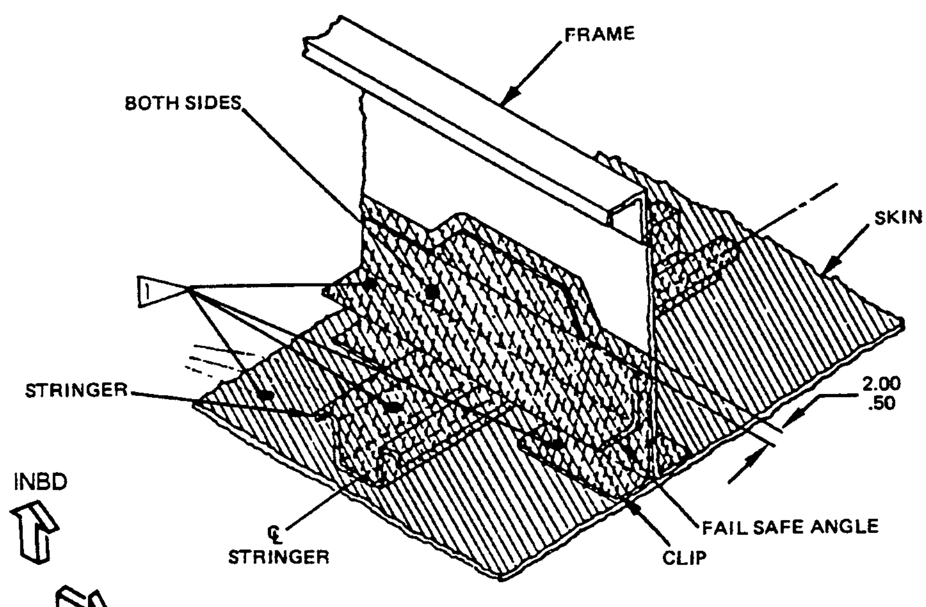
Section 46 Fuselage Stringers and Skin Panels
Figure 1 (Sheet 1)



Section 46 Fuselage Stringers and Skin Panels
Figure 1 (Sheet 2)

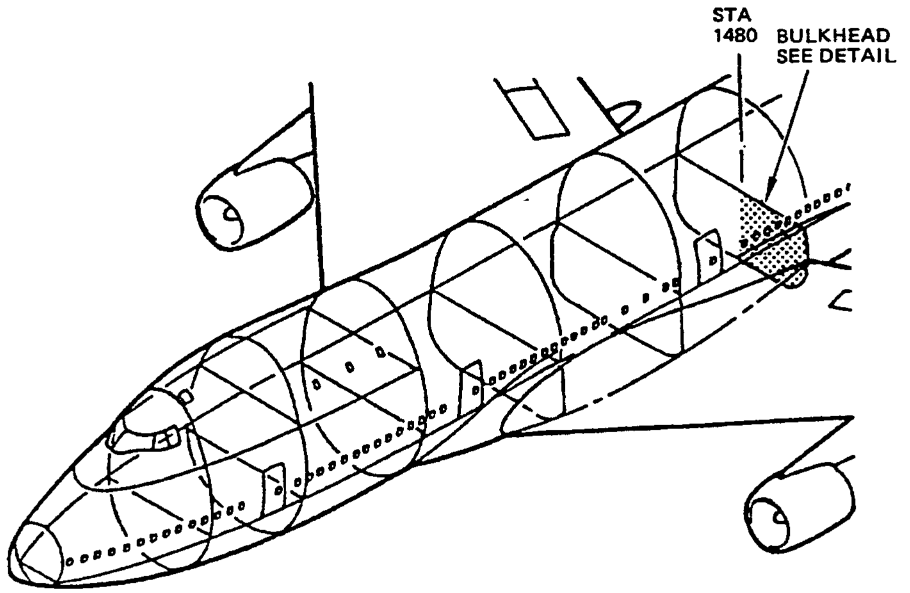


DETAIL II

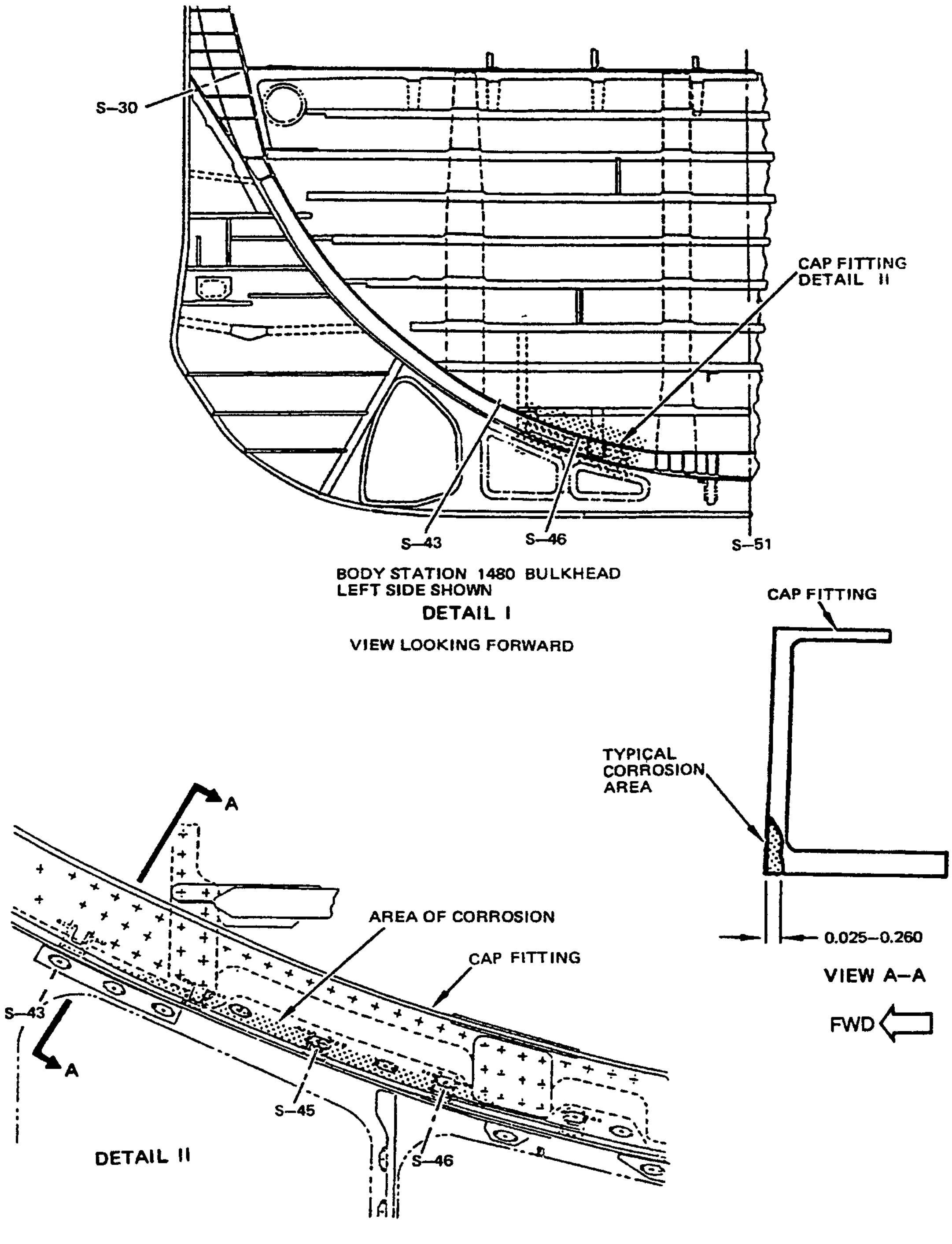


DETAIL III

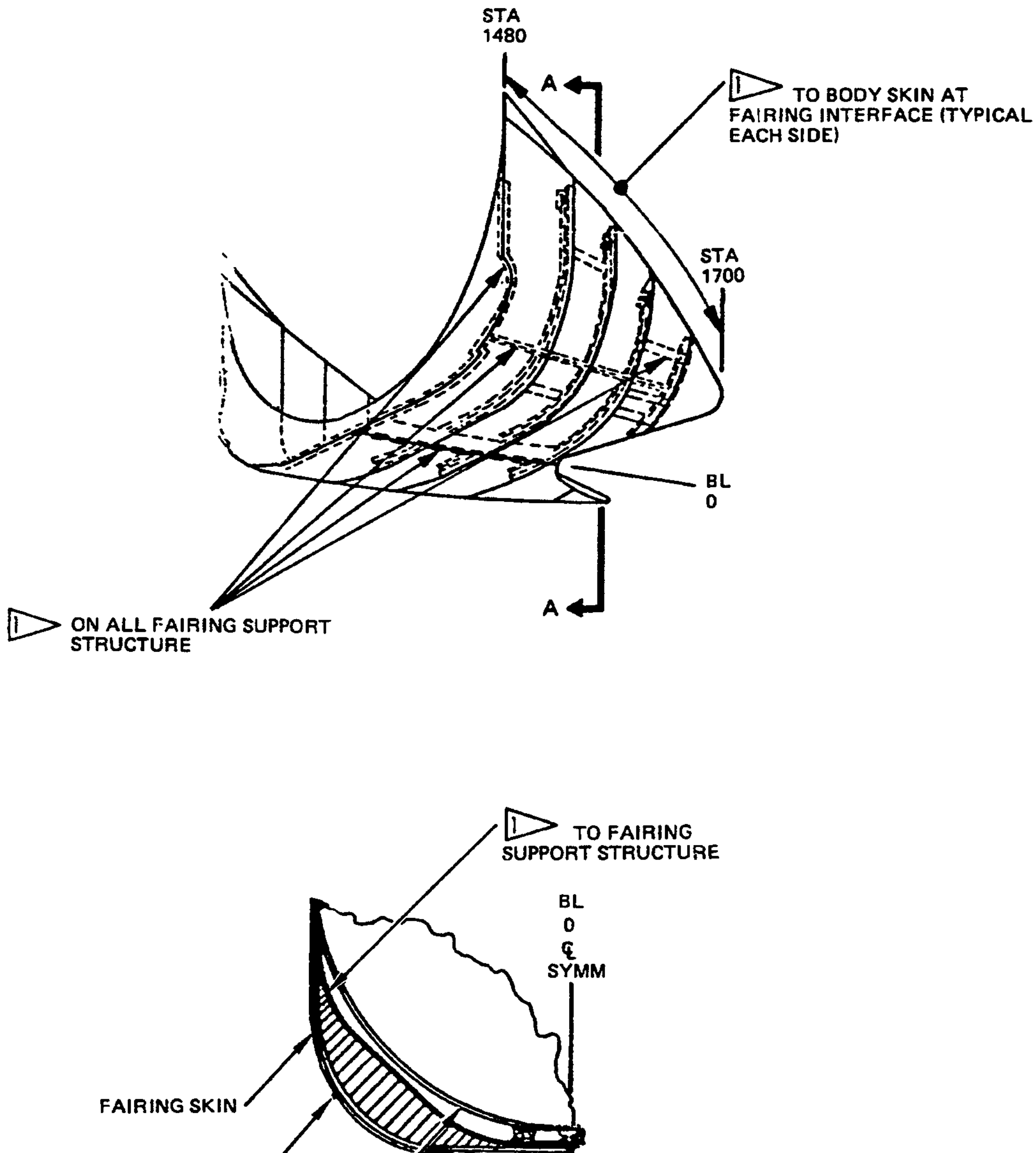
Section 46 Fuselage Stringers and Skin Panels
Figure 1 (Sheet 3)



Section 46 Fuselage Bulkhead
Figure 2 (Sheet 1)



Section 46 Fuselage Bulkhead
Figure 2 (Sheet 2)



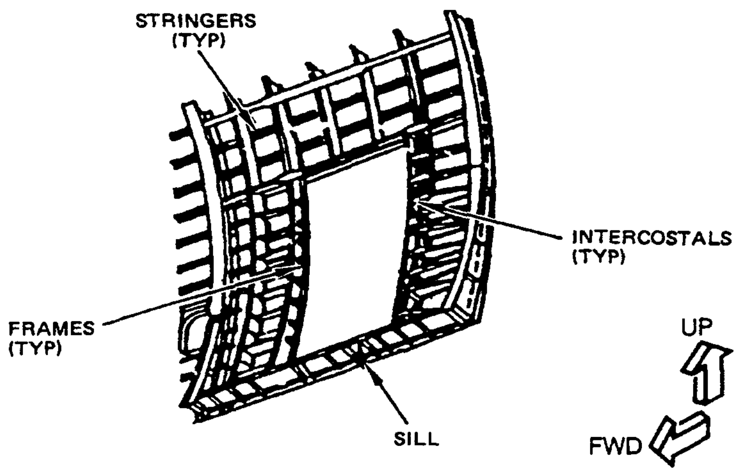
(TYPICAL FAIRING INSTL)

SECTION A–A

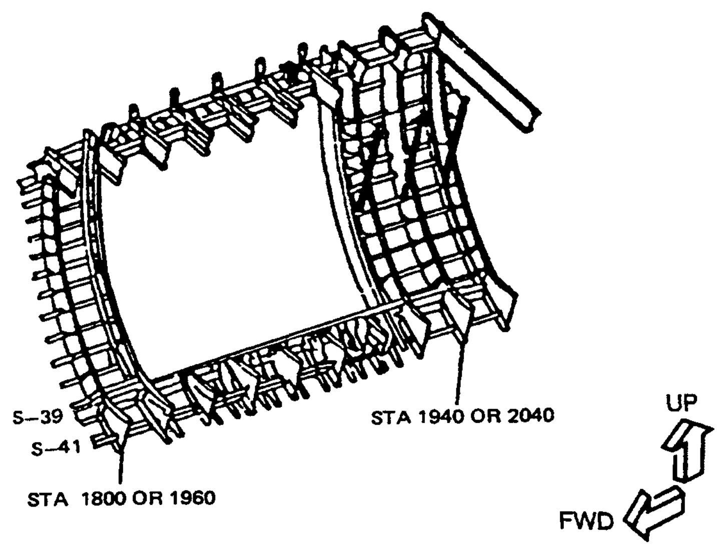
1 APPLY BMS 3–23 TYPE II IN THIS AREA.

NOTE: SECTION 46 FUSELAGE LOWER DRAINAGE IS LOCATED IN 53-00-47, FIGURE 2.

Section 46m Fuselage Wing-to-Body Fairing
Figure 3



ENTRY DOOR (TYPICAL)



LOWER CARGO DOOR
(TYPICAL)

NOTE: SECTION 46 FUSELAGE LOWER DRAINAGE IS LOCATED IN 53-00-47, FIGURE 2.

Section 46 Fuselage Door Structural Opening
Figure 4

1. General

A. Section 46 extends from stations 1480 to 2360. The upper lobe contains the passenger compartment. Structural openings in the passenger compartment are the passenger and service doors, and passenger windows. The lower lobe contains aft cargo compartments. The right aft cargo door has approximately 68 by 104 inches of structural opening and the bulk cargo door has approximately 47 by 44 of structural opening. The aft pressure bulkhead connects section 46 and section 48.

B. The stringers, frames, and skins can get corrosion because of moisture caught between the skin and insulation blankets. Corrosion can easily start where protective finishes are broken or deteriorated.

C. Corrosion can occur on the lower body skin panel at BS 1740 to 2180, S-46L to S-46R. Usually the signs of corrosion are local skin bulges, cracks, or missing fastener heads.

D. Corrosion can occur in the stringer 46 skin lap joints between stations 1741 and 2360, on airplanes line number 200 and on. On these airplanes, the skin lap joints have BMS 5-95 fay surface sealant.

E. Corrosion can occur on the forward face of station 1480 bulkhead cap fitting between LBL 40 and LBL 60 (stringer 43L-46L). Corrosion depth ranged from 0.260 inch at S-43L to 0.025 inch at S-46L. Corrosion can be caused by debris and moisture caught between the forward face of the cap fitting and the fitting diaphragm (Fig. 2).

F. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the regular inspections of Volume 1, 20-20-00 to prevent or find the start of corrosion. Missing fasteners, white powdery or any discolored deposits are signs of corrosion.

B. Following cleaning of suspected areas, a thorough inspection as described in Volume 1, 20-20-00 is effective to ensure that protective finishes provided during manufacture remain intact. Refer to Volume 1, 20-60-00 for details on the application of corrosion inhibiting compound.

C. For minor corrosion, to minimize the downtime of the airplane, the corrosion products should be cleaned off, followed by the application of a corrosion inhibiting compound into the affected area to retard the corrosion process (Ref Volume 1, 20-60-00). The finish system should be restored at the first opportunity consistent with the maintenance schedule.

D. Prevention Treatment

(1) At the first opportunity consistent with maintenance schedule activity, corrosion prevention treatment should be accomplished in the passenger and cargo compartments, on drain paths and drain holes, and in door openings.

(2) Lower Lobe Structures

(a) Remove sidewall lining and insulation blankets in the cargo compartment beneath the main deck entry and cargo doors to expose frame, stringer, doublers and skin.

(b) Remove floor liners to gain access to bilge areas, if any.

(c) Remove ceiling lining for access to main deck floor beams and intercostals.

(d) Replace broken or damaged finishes. Refer to Volume 1, 20-60-00 for protective finish systems.

(e) Replace or repair broken or damaged leveling compounds used for drainage.

(f) Apply BMS 3-23, Type 2 water displacing corrosion inhibiting compound except as noted in Fig. 1 to all exposed structure under the cargo floor and to the sidewalls beneath the upper lobe entry and cargo doors. The use of spray equipment with nozzle directed into faying surfaces is recommended. Do not apply excessively.

(g) Apply BMS 3-26, Type 2 in the bilge area of Section 46 skin panels, S-46L to S-46E (Fig. 1, Detail I).

(h) Allow solvent to evaporate before reinstalling insulation blankets.

(i) Install blankets so they are taut.

(j) Reinstall liners and floor panels. Install the floor panel fasteners with BMS 3-24 grease.

(k) SB 53-2156 gives procedures for internal and external inspection and repair of corrosion on aft body skin panels between BS 1740 to 2180, S-46L to 46R. This now includes corrosion limits to let you make a decision to see if repair is necessary before the next pressurized flight.

(3) Cargo and Passenger Door Opening

(a) Treatment of the door at the same time as the door opening is recommended.

(b) Remove traffic debris and generally clean the entire door opening area. Remove reveal and scuff plate where applicable.

(c) Replace damaged or broken finishes if at all possible. Refer to Volume 1, 20-60-00 for protective finish systems.

(d) Relubricate all lube points per standard servicing procedures.

(e) Where accessible, apply corrosion inhibitor to the internal lower still area.

(f) Apply BMS 3-23, Type II (LPS-3) in the cargo and passenger door opening structure (Fig. 5) at the following detail locations:

1) To the aft side of the aft door frame. Overspray the skin, stringers, and doorstop intercostals for a minimum of 4.0 inches aft of the frame.

2) To the upper surface of the upper main sill structure for a minimum of 4.0 inches beyond the forward and aft door frames. Overspray the skin for 4.0 inches minimum above sill. Do not apply excessively.

3) To the forward side of the forward door reveal, to all structures within the cavity between the reveal and the forward dry-farm and to both sides of the forward dry-farm. Overspray the skin, stringers, and doorstop intercostals for a minimum of 4.0 inches forward of the dry-farm.

(g) Special effort should be made to apply the BMS 3-23, Type I corrosion inhibitor along doubler edges, along faying surfaces and on fastener heads. Spray all doors and fuselage fittings at the faying surfaces. The use of spray equipment with nozzle directed into faying surface is recommended.

E. Frequency of Application

(1) Periodic inspection is required to areas identified as susceptible to corrosion and should be consistent to the schedules specified in the Maintenance Planning Document. Operators must be aware of reported problems and areas of occurrences.

(2) Periodic applications of BMS 3-23 compounds is necessary to areas identified and should be consistent to the schedule specified in the Maintenance Planning Document.

F. Improved Corrosion Protection

(1) At line number 236, a production change applied BMS 3-23, Type 2 compound to transverse fairing support frames and longitudinal fairing support intercostals of the wing-to-body fairing (Fig. 4).

(2) At line number 387, a production change applied BMS 3-23, Type 2 compound under the scuff plate to these areas of the door structure:

(a) At the aft side of the entry door's frame, the upper surface of the upper main sill structure, and the forward side of the forward door reveal.

(b) At the cargo door's forward and aft frames.

(3) On airplane line numbers 612 to 642, SB 51-2042 tells how to change the Section 46 lower body drainage between BS 2180 and 2200, stringers 44L to 44R, to install foam dams and leveling compound adjacent to the drains if they did not have it. This increases Section 46 lower body drainage to help prevent corrosion in the area aft of the bulk cargo area (Fig. 3).

(4) At line numbers 655 and on, a production change applied BMS 3-23, Type 2 compound to exterior surface of skin under the wing-to-body fairing from Sta 1480 to Sta 1700.

(5) At line number 707, a production change applied Dinol AV-100 (BMS 3-26, Type 2) in the bilge area of Section 46 skin panels, S-46L to S-46R, over the BMS 3-23 corrosion inhibiting compound. Then, at line number 751, PRR 81931 stopped the use of Dinitrol products in production as an alternative material for corrosion protection.

(6) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

(7) At line number 1011, PRR 82788-2 replaced the two-layer system of BMS 3-23 and BMS 3-26 compounds with one layer of BMS 3-29 compound, and applied Dinol AV8 (BMS 3-23, Type 2) compound to other areas.

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CHAPTER

54

NACELLES/ PYLONS

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AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Nacelle Strut	Diagonal brace	54-10-47	SB 54-2027
	Upper links	Fig. 1	
	Hollow bolts and fuse pins		SB 54-2017 SB 54-2040
	Mid-spar fuse pins		SB 54-2063 SB 54A2150
	Diagonal brace fitting to lower spar fasten- ers		SB 54-2039
	Skin to torque bulkhead fasteners.		SB 54-2039
	Strut-to-diagonal brace attach fittings		
	Strut skin		SB 54-2004 SB 54-2020
	Forward and aft engine mount holes		
	Mid-spar attach fittings		SB 54-2118

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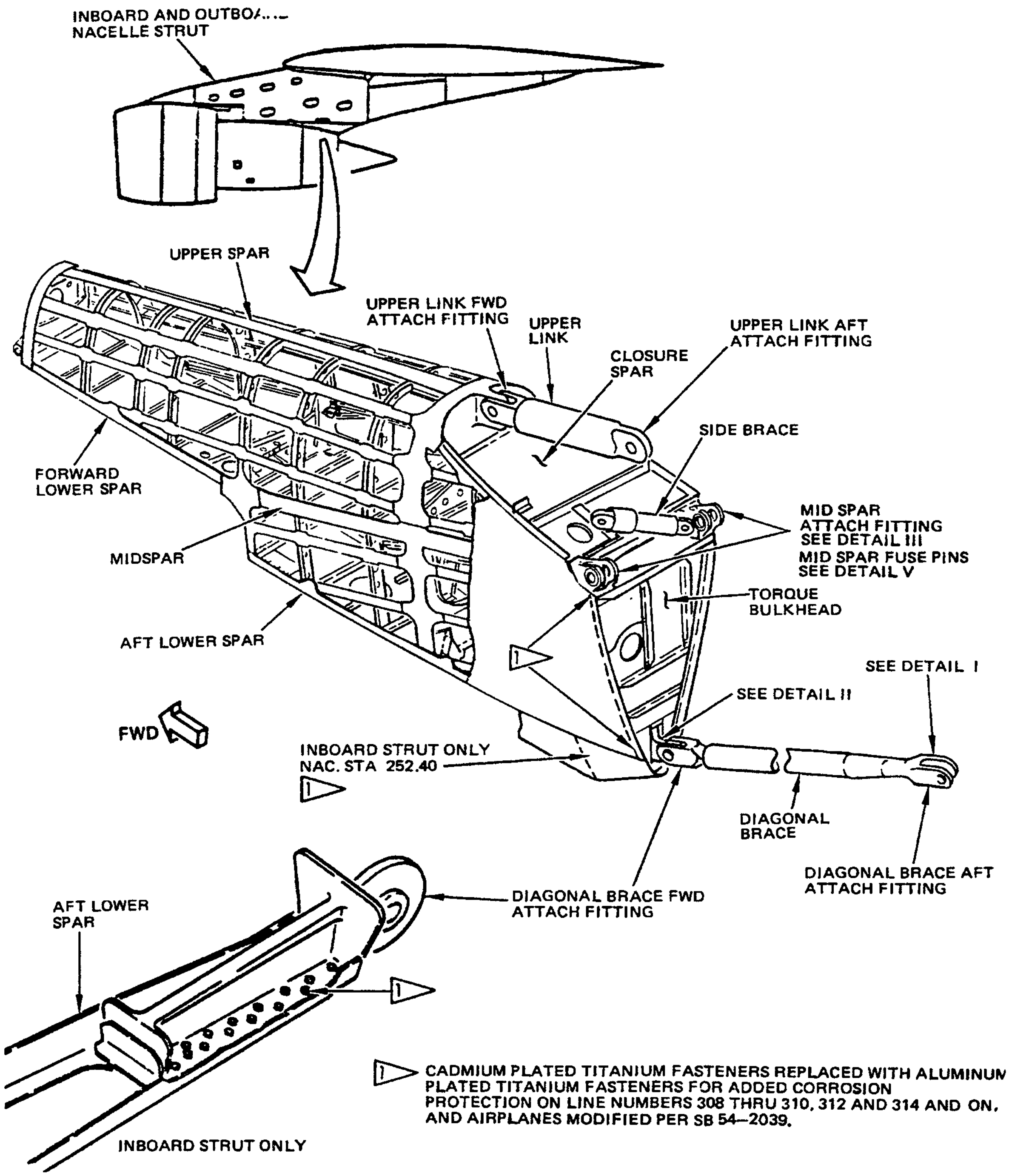
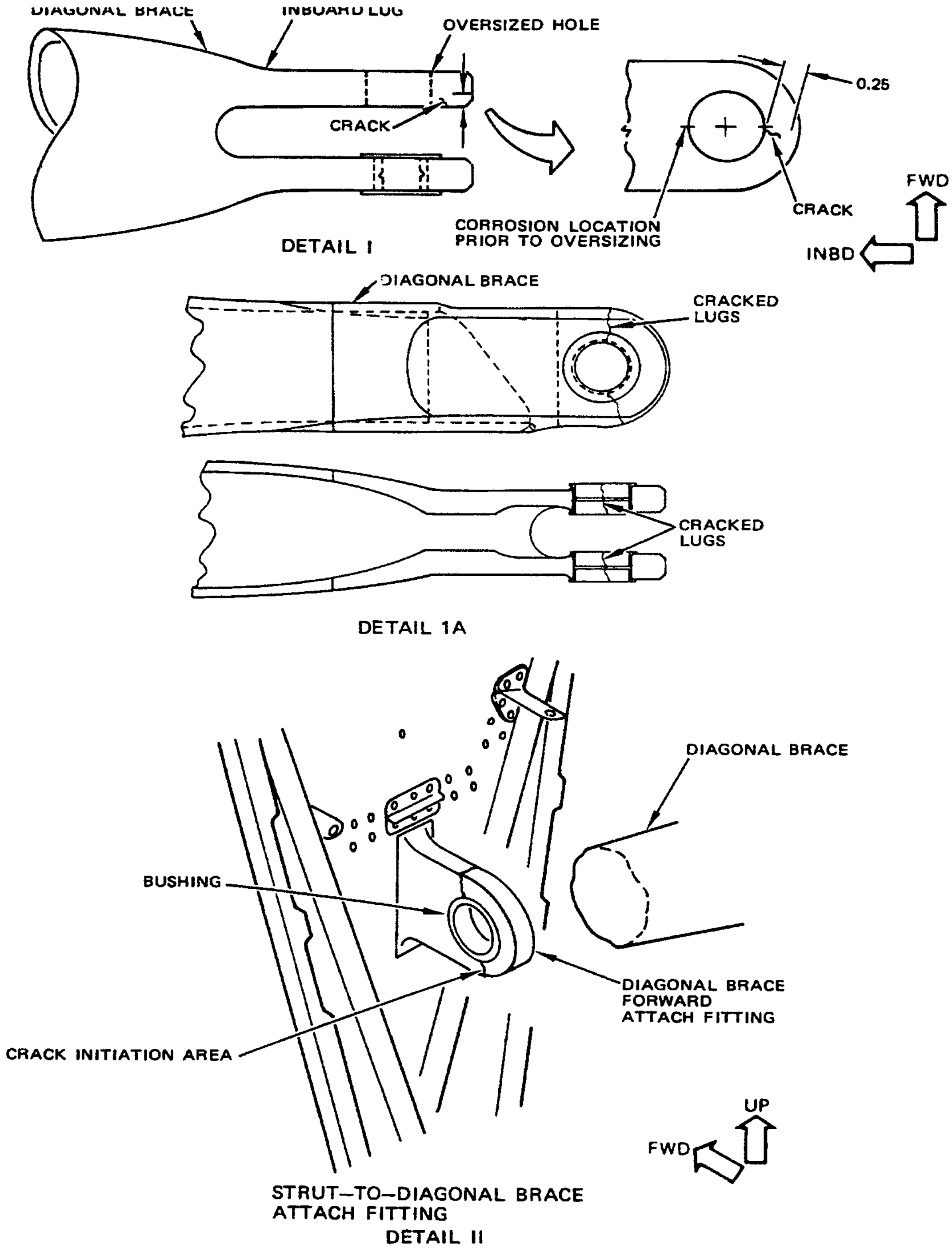
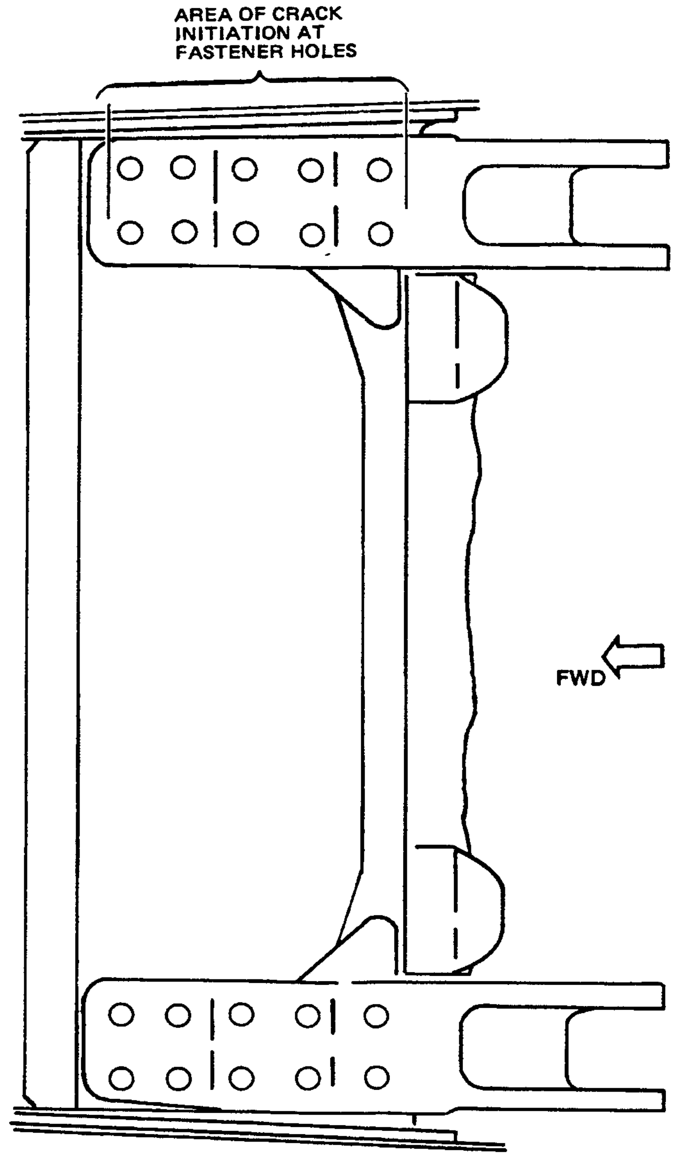


Nacelle Strut
Figure 1 (Sheet 1)



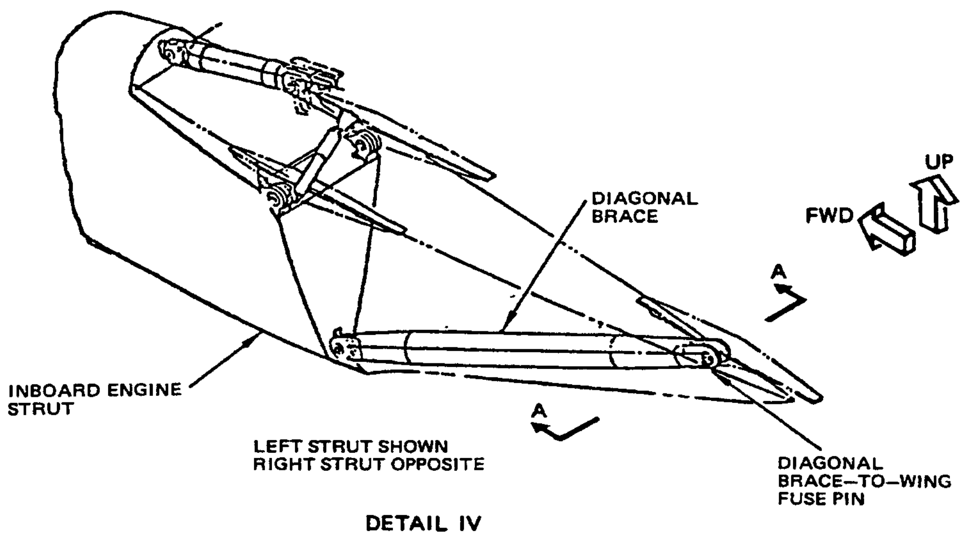
Nacelle Strut
Figure 1 (Sheet 2)

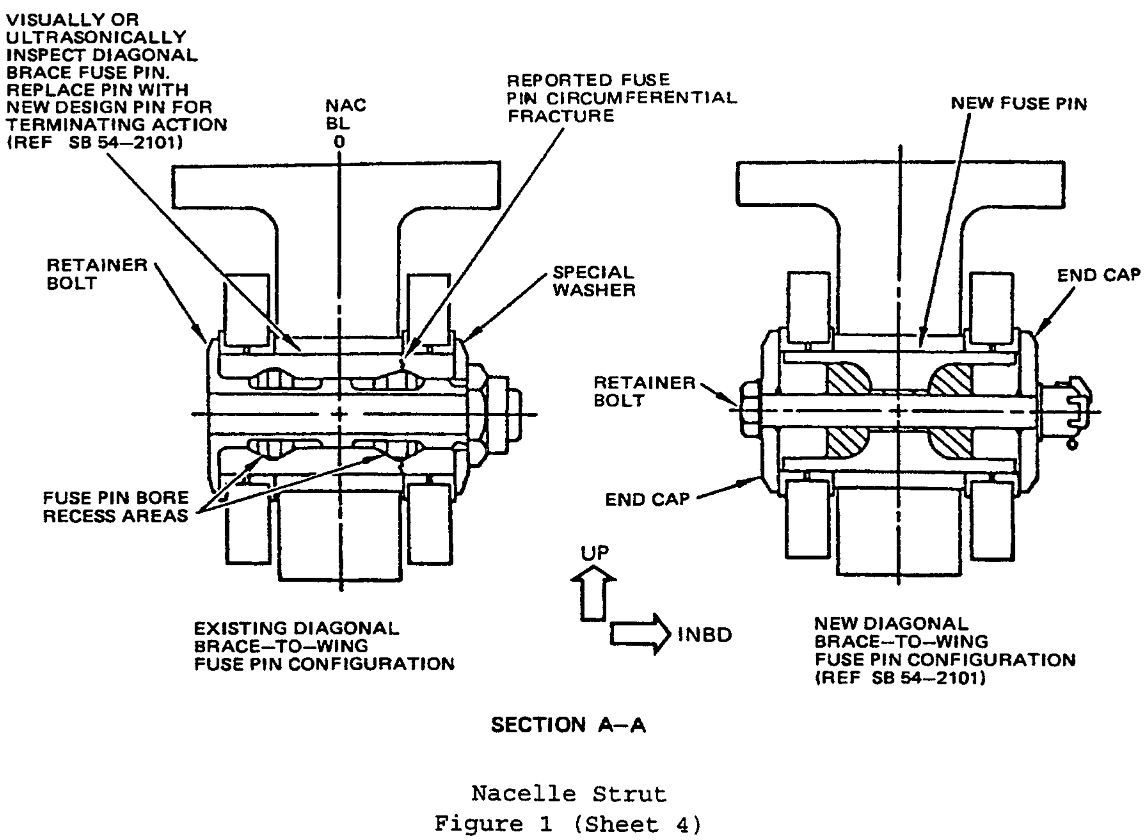


MID SPAR ATTACH FITTING

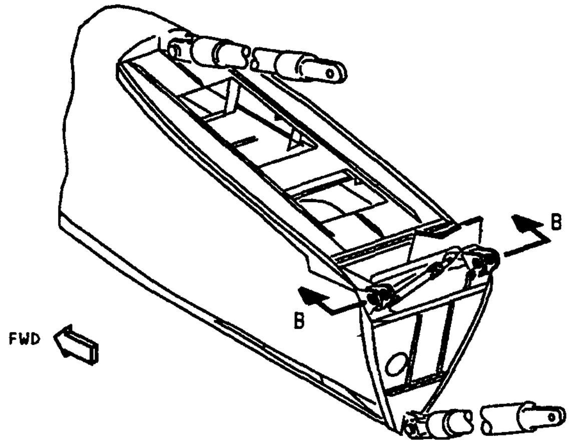
DETAIL III

Nacelle Strut
Figure 1 (Sheet 3)

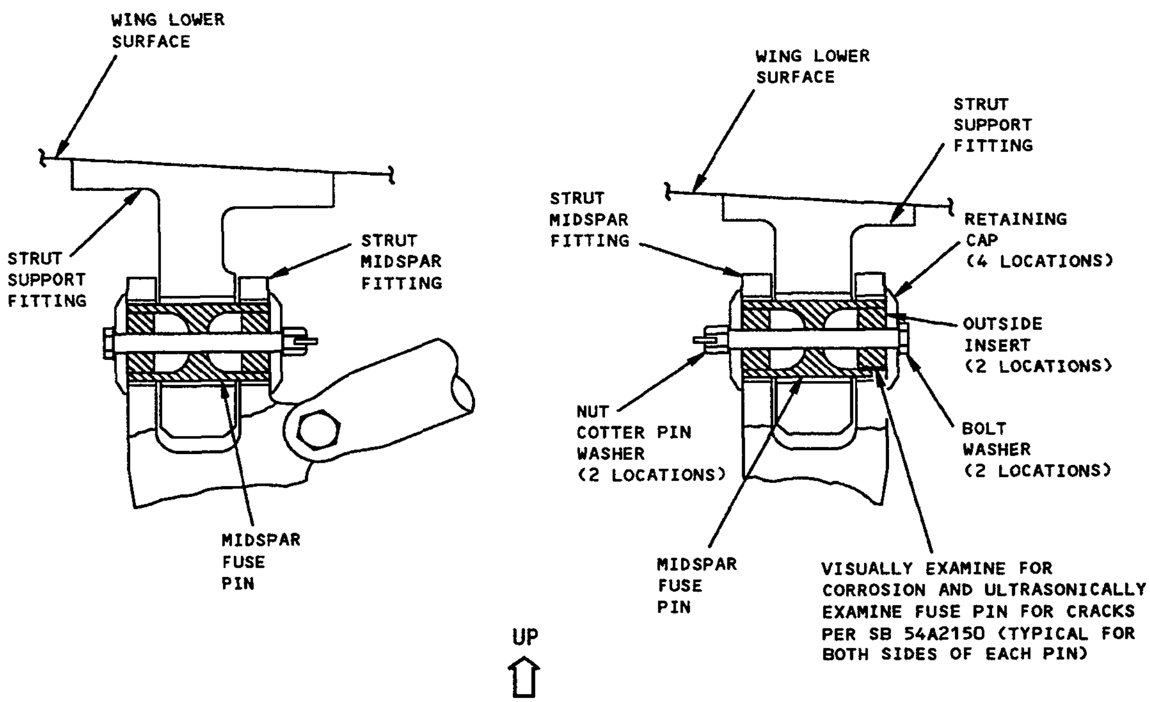




Nacelle Strut
Figure 1 (Sheet 4)



OUTBOARD AND INBOARD STRUTS
(TYPICAL)
DETAIL V



B-B

Nacelle Strut
Figure 1 (Sheet 5)

1. General

A. Corrosion has been encountered on some airplanes on the diagonal brace. Aft clevis lugs on the diagonal brace for the inboard engines are subject to stress corrosion on the inboard face of the lug. There has been a reported case of both aft lugs separating as the result of corrosion pitting between the ends of the lugs and bushings (Fig. 1, Detail 1, 1A).

B. The upper links installed on early airplanes were found to have an unsatisfactory fatigue life. On inboard struts the links of improved design in 7075-T73 were introduced at line number 129 and retroactively by SB 54-2027. On outboard struts steel links were introduced line number 221 and retroactively by SB 54-2030.

C. Corrosion has been reported on the nacelle strut hollow bolt bores and fuse pins. The corrosion is believed to be the result of condensation collecting on the bolts and pins. Improved protection was provided in production on line numbers 266, 285 and on, by the application of MIL-C-11796, Class I, corrosion prevention compound to all nacelle strut hollow bolt bores and fuse pins. SB 54-2017 and SB 54-2040 provide inspection, rework and repair for airplanes 1 thru 265 and 267 thru 284.

D. Corrosion damage has been experienced on cadmium plated titanium fasteners which attach the diagonal brace fitting to the aft lower spar on the inboard strut. In addition the fasteners through the rib and the fairing skin at inboard strut nacelle station 252.40 have failed in service. These fasteners were replaced with aluminum plated titanium fasteners on line number 308 thru 310, 312, 314 and on, plus airplanes incorporating SB 54-2039.

E. In the same area, in the inboard and outboard struts, corrosion damage has been found on cadmium plated titanium fasteners through the skin and torque bulkhead. These fasteners, again, are being replaced with aluminum plated titanium fasteners on line number 308 thru 310, 312, 314 and on, plus airplanes incorporating SB 54-2039.

F. Strut-to-diagonal brace attach fittings on the No. 2 strut are subject to fatigue failure initiated by corrosion on the lower side of the lug bore. Susceptible fittings are made of 7075-T73 aluminum alloy. Attach fittings on line numbers 501 and on are made of 15-5PH CRES.

G. Abrasive damage and corrosion of the strut skin has been reported. Refer to SB 54-2004 and 54-2020 for abrasive resistant finish application.

H. Pitting - scaling surface corrosion has been reported around and in the forward and aft engine mount holes of the struts.

I. Corrosion and cracks were found in the fastener holes of the mid spar attach fittings. Cracks started at the fastener holes and continued through the horizontal legs of the fitting clevis (see Detail III). Refer to SB 54-2118 for inspection and rework procedure.

J. Corrosion has been the cause of fatigue cracking on both lugs of the midspar attach fitting at the inboard pylon. Several instances of midspar fitting lug bushing migration have also been reported.

K. On midspar fuse pins that have no primer or corrosion preventive compound in the interior, corrosion pits can cause fatigue cracks that could break the pins. Refer to SB 54-2063 and 54A2150 for details.

L. Corrosion has been found on the aft diagonal brace-to-wing fuse pin (Fig. 1, Detail IV).

M. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion, Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. Missing fasteners, white powdery or any discolored deposits are evidence of the existence of corrosion which should alert operators that some corrective action is required. A corrosion prevention program should be initiated to prevent the accumulation of corrosive products in order to minimize the occurrence of corrosion.

B. Following cleaning of suspected areas, a thorough inspection as described in Volume 1, 20-20-00 is effective to ensure that protective finishes provided during manufacture remain intact.

C. Where corrosion exists (noticeable bulges of the skin or white deposits of corrosion products at fastener heads or joint edges), refer to Structural Repair Manual for details of corrosion removal.

D. For minor corrosion, to minimize the downtime of the airplane, the corrosion products should be cleaned off, followed by the application of a corrosion inhibiting compound into the affected area to retard the corrosion process (Ref Volume 1, 20-60-00). The finish system should be restored at the first opportunity consistent with the maintenance schedule.

E. Prevention Treatment

(1) At first opportunity consistent with the scheduled maintenance activity, corrosion prevention treatment should be applied to the nacelle strut and components.

(2) Examine the diagonal brace and upper links periodically for damaged finish and corrosion.

(3) SB 54-2118 gives an inspection and modification procedure on midspar clevis attach fitting. This is also the subject of Federal Aviation Administration (FAA) Airworthiness Directive 87-04-13. This service bulletin now recommends the changes be added on aging 747 airplanes at or before 20,000 flight-cycles. If you do the fastener hole rework or fitting replacement per this service bulletin, we recommend you also do the following service bulletins at the same time, because the access is the same.

54-2039	INBOARD AND OUTBOARD ENGINE STRUT FASTENER REPLACEMENT
54-2062	INBOARD ENGINE STRUT-TO-DIAGONAL BRACE ATTACHFITTING INSPECTION AND MODIFICATION
54-2063	ENGINE STRUT MIDSPAR FUSE PIN INSPECTION AND REPLACEMENT
54-2064	OUTBOARD ENGINE STRUT DIAGONAL BRACE ATTACH LUGBEARING INSPECTION AND REPLACEMENT
54-2066	DIAGONAL BRACE-TO-INBOARD ENGINESTRUT ATTACH PIN INSPECTION AND REPLACEMENT
54-2100	ATTACH FITTING MIDSPAR LUG INSPECTION AND MODIFICATION
54-2101	INBOARD STRUT DIAGONAL BRACE-TO-WINGFUSE PIN INSPECTION AND REPLACEMENT
54A2150	NACELLE STRUT/ATTACH MIDSPAR FUSEPIN INSPECTION AND REPLACEMENT
57A2235	WING-NACELLE STRUT ATTACH FITTINGS FASTENER INSPECTION AND REPLACEMENT

(4) Where corrosion is not evident in hollow bolts and fuse pins, fill the cavity to within 0.00 to 0.10 of each end with MIL-C-11796, Class I corrosion preventive compound.

(5) Examine the attachments at the end of the upper link, at each end of the diagonal brace and at the midspar fitting for damaged finish and evidence of corrosion. The modified version of these attachments introduced two coats of primer and grease to the inside diameter of the pins and also provided drainage provisions. SB 54-2017 provides modification procedures of the attachment fittings.

(6) SB 50-2039 provides inspection procedures and replacement of cadmium plated titanium fasteners in the strut torque bulkhead area.

(7) SB 54-2100 provides inspection procedure for detecting cracks in the bores of pylon midspar attach fittings. Compliance with this SB is recommended to ensure the integrity of the midspar fitting.

(8) SB 54-2101 provides inspection procedure on strut diagonal brace-to-wing fuse pin. Compliance with this SB is recommended and is the subject of Federal Aviation Administration (FAA) Airworthiness Directive 83-24-05.

(9) SB 54-2063 and 54A2150 give inspection and replacement details for the midspar fuse pins. This is also the subject of FAA Airworthiness Directives 86-22-01, 91-09-01, and T92-24-51.

F. Frequency of Application

(1) Periodic inspection is required to areas identified as susceptible to corrosion and should be consistent to the schedules specified in the Maintenance Planning Document. Operators must be aware of reported problems and areas of occurrences.

(2) Periodic application of BMS 3-23 compounds is necessary to areas identified and should be consistent to the schedule specified in the Maintenance Planning Document.

G. Improved Corrosion Protection

(1) On airplane line numbers 266, 285, and on, the bores of hollow bolts and fuse pins have been filled with MIL-C-11796, Class 1, corrosion preventive compound in addition to zinc phosphate finish and primer. For inspection, remove the corrosion preventive compound, bake for 1 hour at 290-310°F, cool, and then remove any remaining compound with solvent.

(2) On some airplanes, SB 29-2076 (MC 2910MK4012) installs new hydraulic tubes which are chromic acid anodized and then painted with BMS 10-11. Type 1 Primer.

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CHAPTER

55

STABILIZERS

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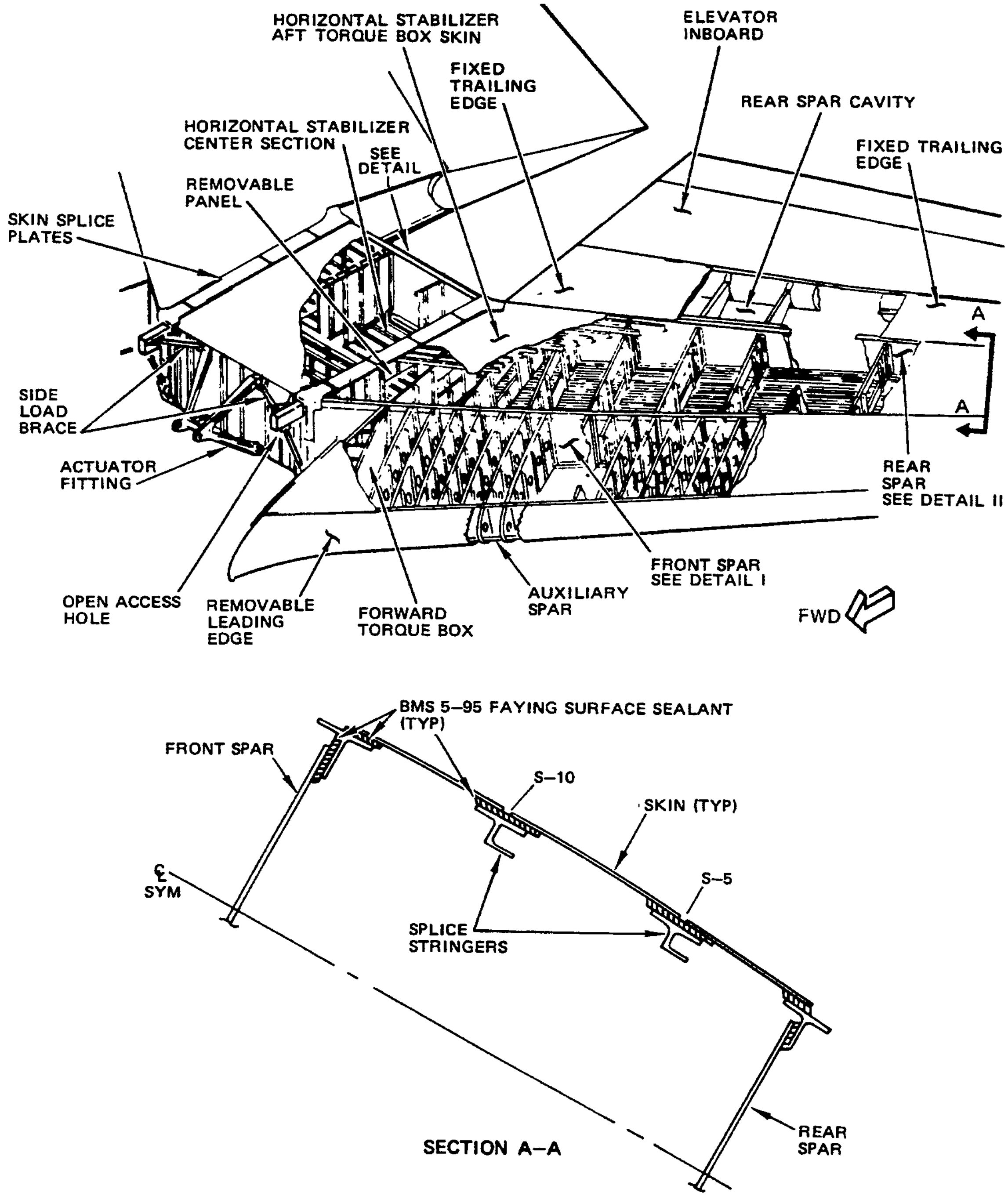
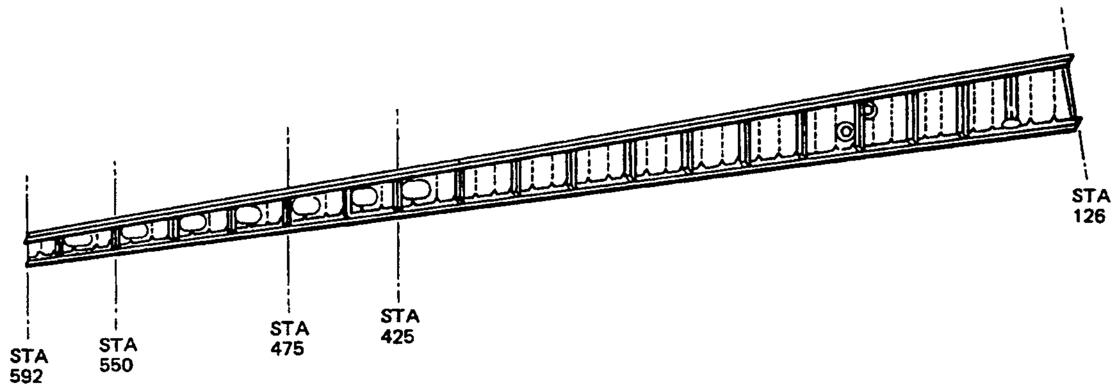
AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Horizontal Stabilizer	External surfaces	55-10-47 Fig. 1	
	Rear spar		SB 55-2009
	Trailing edge cavity		
	Inner and outer pivot pins hinge fitting bores		SB 55-2022 SB 55-2026
	Forward closure channel of outboard trailing edge panel		
	In-spar surface areas		
	Fasteners common to upper and lower skins		
	Forward and rear spar chords		SB 55A2028
	Rear spar cavities		
	Center section side load brace assemblies		
	H-11 bolt sealant installation		
	Center section aft torque box -interior surfaces		
	Front spar upper and lower chords and stringer No. 5		
	Outboard trailing edge wedge		SB 55-2017
	Broken H-11 steel bolts at hinge attachment BS 2598	55-10-47	SB 51-2048
	Corrosion and cracks in bore and faces of hinge support fittings	SB 53-237981	SB 53-2379
Outboard Elevator Balance Weights	Balance weights - depleted uranium	55-20-47 Fig. 1	
	Balance weights - tungsten		
Vertical Stabilizer	Exterior skins	55-30-47 Fig. 1	
	Rear spar and rear spar cavity		SB 55-2011
	Trailing edge cavity		

AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
	In-spar structure		
	Vertical fin interior surfaces		
	Fasteners common to skin panels between front and rear spars		
	Rear spar cavity		
Upper Rudder Balance Weights	Balance weights - depleted uranium	55-40-47 Fig. 1	
	Balance weights - tungsten		

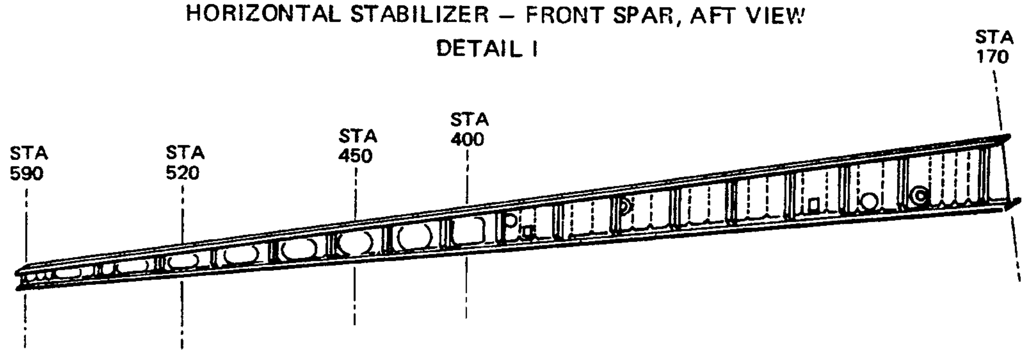
Specific Corrosion Problems - Stabilizers
Figure 1



Horizontal Stabilizer
Figure 1 (Sheet 1)

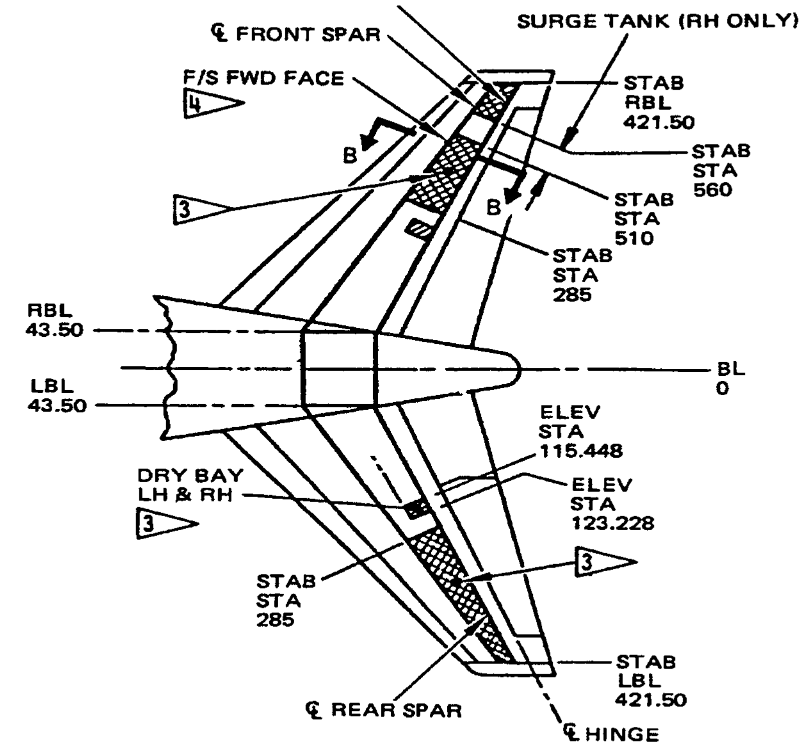


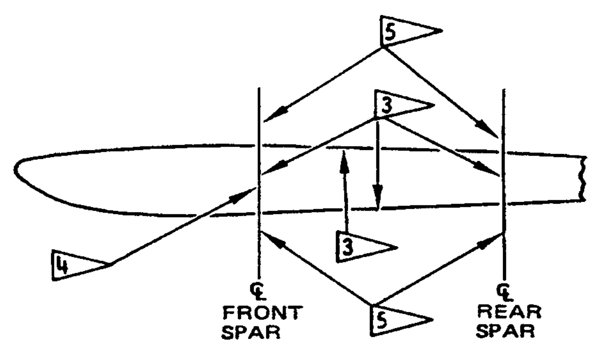
HORIZONTAL STABILIZER – FRONT SPAR, AFT VIEW
DETAIL I



HORIZONTAL STABILIZER – REAR SPAR, AFT VIEW
DETAIL II

Horizontal Stabilizer
Figure 1 (Sheet 2)





SECTION B–B

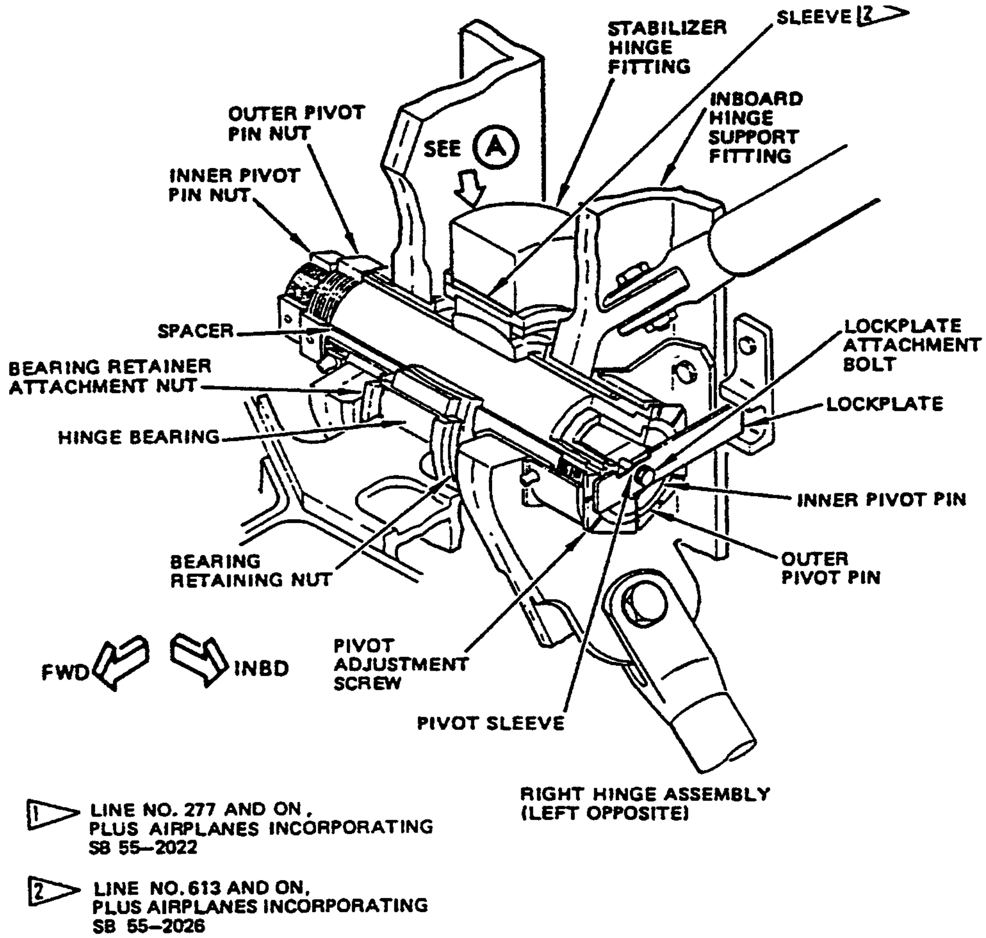
3 APPLY BMS 3-26 TYPE II IN THIS AREA.

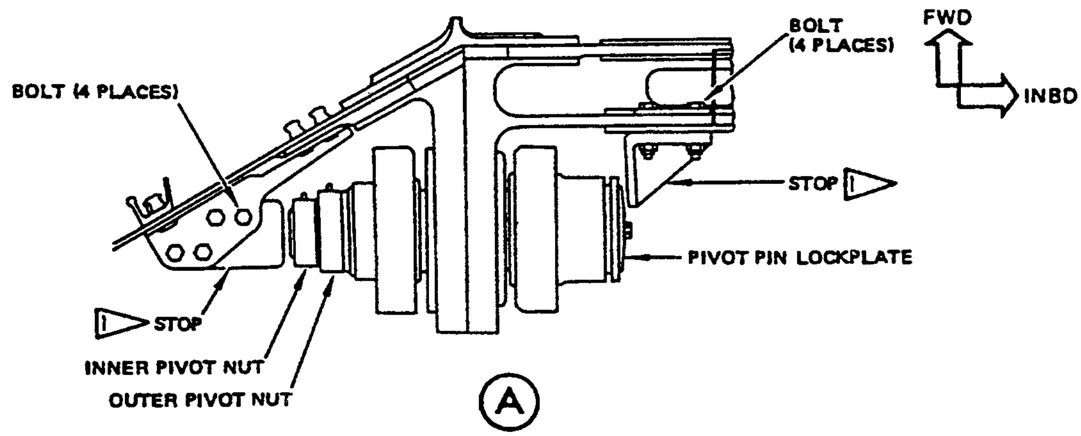
4 APPLY BMS 3-26 TYPE II AFTER 5 IN THIS AREA

5 APPLY BMS 10-79 TYPE III AND AEROFLEX G12E25

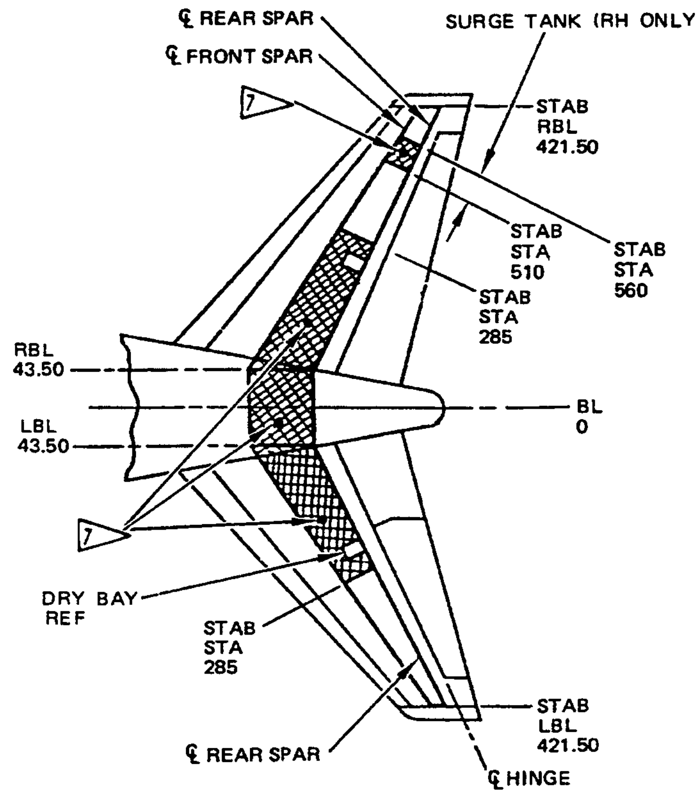
6 APPLY BMS 3-23 TYPE II IN THIS AREA.

Horizontal Stabilizer
Figure 1 (Sheet 4)





Horizontal Stabilizer
Figure 1 (Sheet 3)



7 APPLY BMS 3-26 TYPE II IN THIS AREA FOR NON-400 A/P. OTHERWISE APPLY BMS 3-23

Horizontal Stabilizer
Figure 1 (Sheet 5)

1. General

A. Corrosion can occur on the external surfaces of the horizontal stabilizers. Problem areas are at the fastener locations where filiform and exfoliation corrosion have been experienced. The upper skin panels of outboard horizontal stabilizers and the center sections can be contaminated with toilet servicing chemicals. The contaminants enter the center section cavity through the stabilizer vent doors. The skins have suffered subsequent corrosion damage.

B. Production changes minimize the effects of corrosion. Corogard finish on the upper inspar skins of the outboard stabilizers was added at line number 138; however, some operators did not elect to have this finish applied to their fleet. A change in chemical conversion coating process to chromic acid anodize was initiated on all inspar skins of the outboard and center section horizontal stabilizers at line number 201 except for the upper forward outboard skins of aft torque box which were changed at line numbers 221, 224 and 227 and on. Filiform resistant primer and flexible polyurethane enamel were added to the lower skin at line number 209 and this was replaced by Corogard at line number 302. From line number 317 all airplanes have Corogard on upper and lower inspar skins.

C. Corrosion has been reported in the trailing edge structure and on the rear spar especially under fixed trailing edge panels. To preclude the occurrence of corrosion a production change was initiated at line number 212 to provide sealing of fastener heads through the spar chords, fillet sealing of spar chord and spar web joint, and fillet sealing of spar chord and spar stiffeners joints. Application of BMS 3-23 per SB 55-2009 is recommended in preference to the application of sealant.

D. The trailing edge cavity has corrosion protection of filiform resistant primer and polyurethane enamel at line number 202.

E. Corrosion has been reported on the horizontal stabilizer inner and outer pivot pins and hinge fitting bores. Refer to 27-41-02 of the Maintenance Manual for removal, inspection, rework or replacement of the stabilizer hinge pin. A thin film of MIL-G-23827 grease has been added to the pivot (hinge) pins on airplane line number 371 and on, plus airplanes incorporating SB 55-2022. On production airplanes line number 613 and on the stabilizer pin bearing retainer is installed with wet sealant. On airplanes incorporating SB 55-2026, a stainless steel sleeve is installed between the bearing retainer and the lug bore. On airplane line number 660 the inner and outer 9N14C0 pivot pins are replaced by 15-5PH stainless steel pins for improved corrosion resistance.

F. Corrosion has been reported on the forward closure channel of the outboard trailing edge panel. This is attributed to conductive paint applied to the channel prior to primer (BMS 10-11). Conductive paint does not offer adequate protection against corrosion. Conductive paint has been deleted on the outboard trailing edge channel on production airplanes from line number 322.

G. Stress corrosion cracks have been reported on the horizontal stabilizer center section side load brace assemblies.

H. Stress corrosion cracks can occur on the front and rear spar upper and lower chords. SB 55A2028 gives procedures for inspection of these areas for corrosion.

I. Broken bolts may occur at horizontal stabilizer hinge attachment (BS 2598). Replace broken H-11 steel bolts with Inconel 718 Bolts per SB 51-2048.

J. Corrosion and cracks may occur in the bore and the faces of the hinge support fittings for the horizontal stabilizer. There are four hinge support fittings attached to the station 2598 bulkhead on each airplane. Refer to Service Bulletin 747-53-2379 for details. Service Bulletin 747-53-237981 revision gives further instructions as to inspection intervals.

K. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the regular inspection of Volume 1, 20-20-00 to prevent or find the start of corrosion. Fasteners that are gone, or white powdery or other corrosion deposits are signs of corrosion.

B. After you clean the areas, do the inspection of Volume 1, 20-20-00 to make sure that protective finishes stay serviceable.

C. If you find corrosion exists (bulges of the skin or white deposits of corrosion products at fastener heads or joint edges), refer to Structural Repair Manual for details of corrosion removal.

D. For small amounts of corrosion, to decrease the downtime of the airplane, clear off the corrosion products. Apply a corrosion inhibiting compound into the affected area to stop the corrosion process. Refer to Volume 1, 20-60-00 for how to apply corrosion inhibiting compound. Repair the finish system when the maintenance schedule permits.

E. Prevention Treatment

(1) At first opportunity consistent with scheduled maintenance activity, corrosion prevention treatment should be accomplished in the horizontal stabilizer.

(2) Periodically examine horizontal stabilizer pivot (hinge) pins for corrosion (Ref 747 Maintenance Manual, 27-41-02).

CAUTION: DO NOT APPLY CORROSION INHIBITING COMPOUND OVER COSMOLENE (OR EQUIVALENT PER MIL-C-16173 GRADE 1).

(3) Apply BMS 3-23 corrosion inhibiting compound annually to the fastener heads and skin joint on the upper and lower surfaces at the rear spar. Wipe off the excess with a clean, dry rag after 30 minutes.

(4) On airplane line numbers 1 thru 321, improved corrosion protection on the outboard trailing edge channel can be provided as follows:

(a) Remove conductive paint from channel by abrasive blasting (Ref Volume 1, 20-40-00).

(b) Chemical treat and apply two coats of BMS 10-11, Type 1 primer.

(5) On airplanes which do not incorporate application of MIL-C-16173 Grade I on the horizontal stabilizer inspar surfaces (airplane line numbers 1 thru 401) or on the horizontal stabilizer aft torque box center section interior surfaces (airplane line number 1 thru 586), apply BMS 3-23, Type 2 to the following areas:

(a) Aft face of the front spar

(b) Inside surfaces of the upper and lower skin, stringers, and shear ties

(c) Forward and aft face of the rear spar

(6) BMS 3-23 water displacing compound may be applied to the trailing edge area including the aft face of the rear spar and rear spar cavities.

(7) For airplanes up to line number 644, SL 20-19 tells you about the application of additional corrosion protection of BMS 3-23, Type II to rear spar cavities.

(8) For airplanes up to line number 686, SL 20-20 tells you to use BMS 3-26, Type II as a replacement of MIL-C-16173, Grade 1 (Cosmolene) when the corrosion protection in the interior surfaces of the horizontal fin requires repair.

(9) For airplanes up to line number 680, SL 20-22 and 51-16 tell you to use BMS 10-79, Type III primer and Aeroflex G12E25 as an alternative to the original primer and Corogard when the corrosion protection in the upper and lower inspar skins requires repair or replacement. Corogard is chemically but not cosmetically compatible with Aeroflex.

F. Frequency of Application

(1) Periodic inspection is required to areas identified as susceptible to corrosion and should be consistent to the schedules specified in the Maintenance Planning Document. Operators must be aware of reported problems and areas of occurrences.

(2) Periodic application of BMS 3-23 compounds is necessary to areas identified and should be consistent to the schedule specified in the Maintenance Planning Document.

G. Improved Corrosion Protection

(1) On airplane line number 402 and on, a production change applied BMS 5-95 sealant to these faying surfaces in the horizontal stabilizer inspar structure.

(a) between skin and spar chords

(b) between skin and splice stringers (S-5 and S-10)

(c) between spar webs and spar chords

(2) At line number 440, all fasteners common to upper and lower skins between front and rear spar centurions, were installed using BMS 5-79 sealant in the countersinks.

(3) At line number 646, corrosion inhibiting compound was applied on the rear spar cavity of the horizontal stabilizer.

(4) At line number 586, a production change installed H11 steel fasteners with wet sealant and fillet sealed the fastener heads and nuts.

(5) On airplane line numbers 402 and on, a production change applied MIL-C-16173, Grade I on the interior inspar surfaces. Then, at line number 687 another production change replaced the MIL-C-16173, Grade 1 with BMS 3-26, Type II. However, at line number 751, PRR 81931 stopped the use of Dinitrol products as an alternative for corrosion protection.

H. Frequency of Application

(1) Periodic inspection is required to areas identified as susceptible to corrosion and should be consistent to the schedules specified in the Maintenance Planning Document. Operators must be aware of reported problems and areas of occurrences.

(2) Periodic application of BMS 3-23 compounds is necessary to areas identified and should be consistent to the schedule specified in the Maintenance Planning Document.

I. Improved Corrosion Protection

(1) On airplane line number 402 and on, a production change applied BMS 5-95 sealant to these faying surfaces in the horizontal stabilizer inspar structure.

(a) between skin and spar chords

(b) between skin and splice stringers (S-5 and S-10)

(c) between spar webs and spar chords

(2) At line number 440, all fasteners common to upper and lower skins between front and rear spar centurions, were installed using BMS 5-79 sealant in the countersinks.

(3) At line number 646, corrosion inhibiting compound was applied on the rear spar cavity of the horizontal stabilizer.

(4) At line number 586, a production change installed H11 steel fasteners with wet sealant and fillet sealed the fastener heads and nuts.

(5) On airplane line numbers 402 and on, a production change applied MIL-C-16173, Grade I on the interior inspar surfaces. Then, at line number 687 another production change replaced the MIL-C-16173, Grade 1 with BMS 3-26, Type II. However, at line number 751, PRR 81931 stopped the use of Dinitrol products as an alternative for corrosion protection.

(6) At line number 587, additional corrosion protection treatment of MIL-C-16173, Grade 1 has been applied on the interior surfaces of the aft torque box center section. At line number 687, a production change replaced the MIL-C-16173, Grade 1 (Cosmolene) with BMS 3-26, Type II. However, at line number 751, PRR 81931 stopped the use of Dinitrol products as an alternative in production for corrosion protection.

(7) At line number 681, BMS 10-79, Type III primer and Aeroflex G12E25 have been used to replace the Corogard as the standard primer and paint for exterior surfaces of the inspar skins. Corogard is chemically but not cosmetically compatible. This can be incorporated on earlier airplanes with SL 20-22 and 51-16.

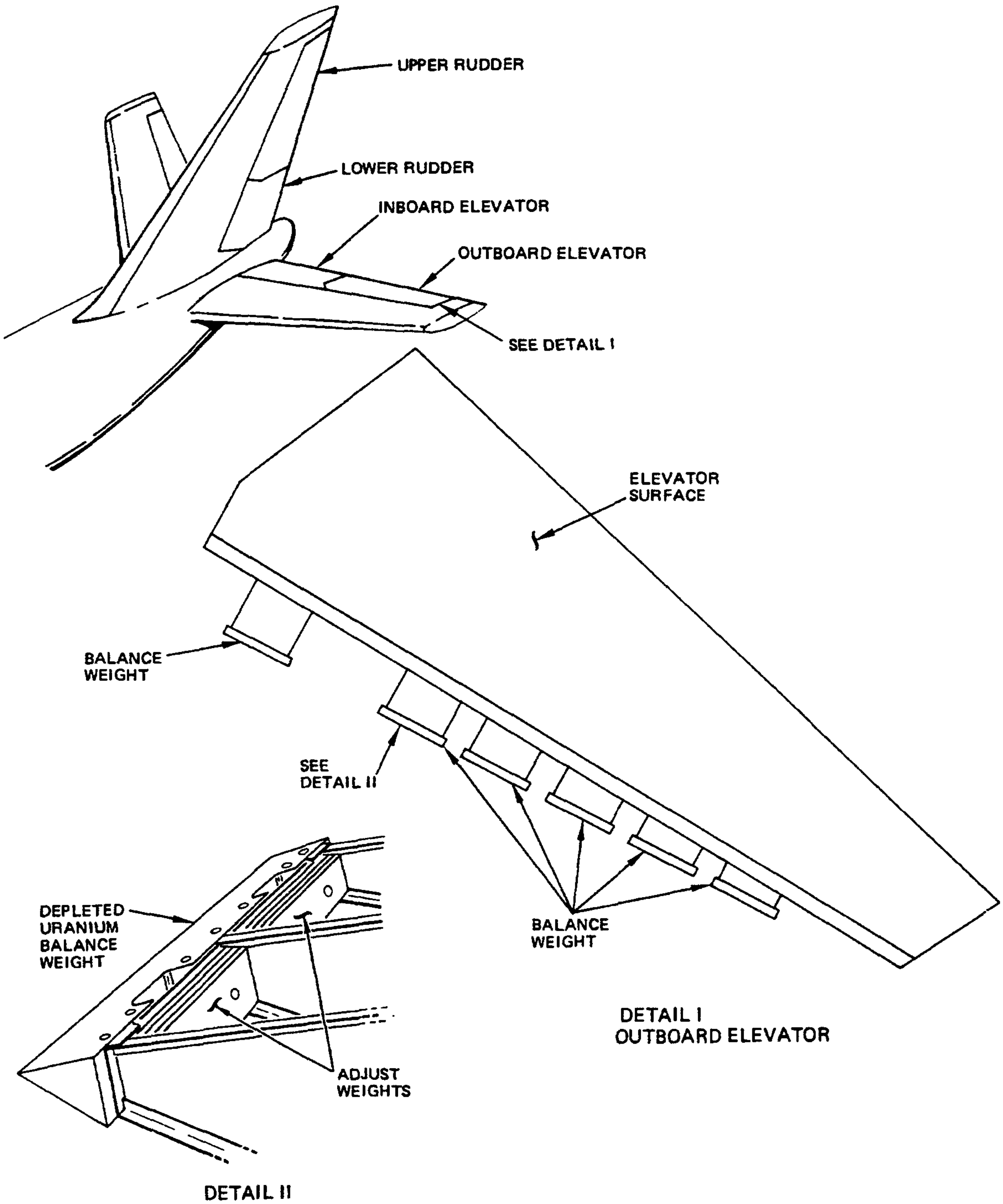
(8) SB 55-2017 provides inspection, repair and modification procedures for the outboard trailing edge wedge. This will prevent possible outboard elevator unbalance condition resulting from water ingestion in the inboard and outboard ends of the honeycomb trailing edge assembly.

(9) On some airplanes, SB 29-2076 (MC 2910MK4012) installs new hydraulic tubes which are chromic acid anodized and then painted with BMS 10-11, Type I primer.

(10) On some airplanes, MC 5124MP4080 applies BMS 5-95, Type F coating (as a primer before the Aeroflex coating) to the inspar skin at the front and rear spar chords and the sparwise skin splices.

(11) On some airplanes, MC 5130MP4020 adds BMS 5-95 sealant between the horizontal stabilizer trailing edge beam and the seal and its retainer, to prevent corrosion that could occur from water caught in the gap.

(12) At line number 1011, PRR 82788-1 applied BMS 3-23 compound to all metallic structure inside the horizontal stabilizer and the elevators.



Outboard Elevator Balance Weights
Figure 1 (Sheet 1)

1. General

A. Corrosion has been reported on the balance weights of the outboard elevator. Some balance weights are made from depleted uranium, which is naturally occuring uranium that has been "depleted" of most of the isotope U235. This remaining low-level radioactive uranium, similar to other heavy metals, is toxic if ingested, absorbed, or inhaled into the body. These weights are identified with legends permanently stamped into the surface of each weight, to assure special handling during maintenance. Protective coatings have been electro-plated on the weights to contain the depleted uranium. If these coatings are penetrated, certain precautionary measures are required to minimize the small health risk. Refer to Volume 1, 20-40-00 for more data.

NOTE:Depleted uranium balance weights should not be confused with adjust weights which are made of tungsten based metal (detail II).

B. PRR 78818-1 changed the balance weights from depleted uranium to tungsten on airplanes line numbers 541, 544, 547, 548, 552 and on.

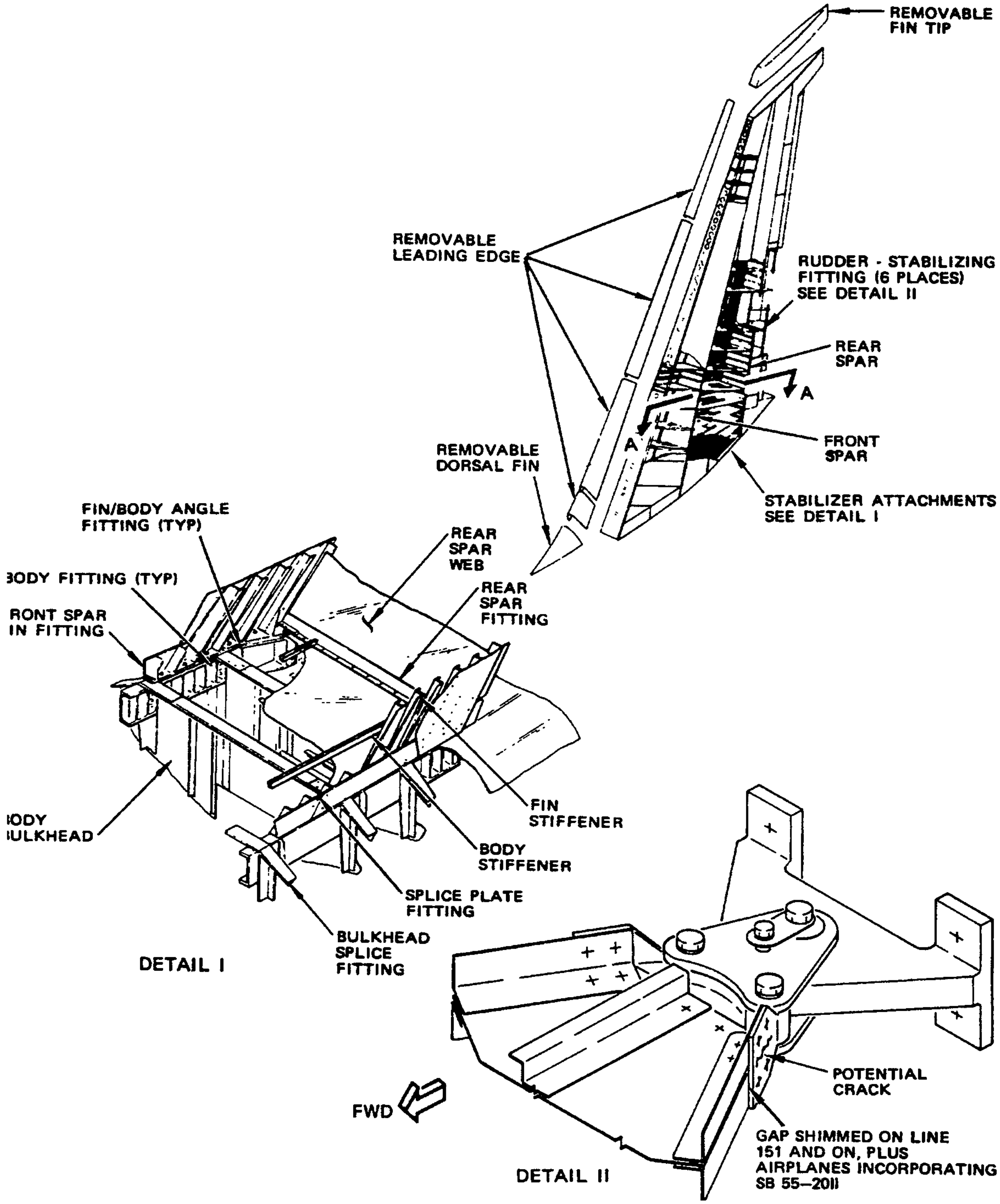
2. Corrosion Prevention

A. Make regular inspections of the balance weights to be sure that the protective finishes stay serviceable. If there is no damage, apply water displacing corrosion inhibiting compound per Volume 1, 20-60-00.

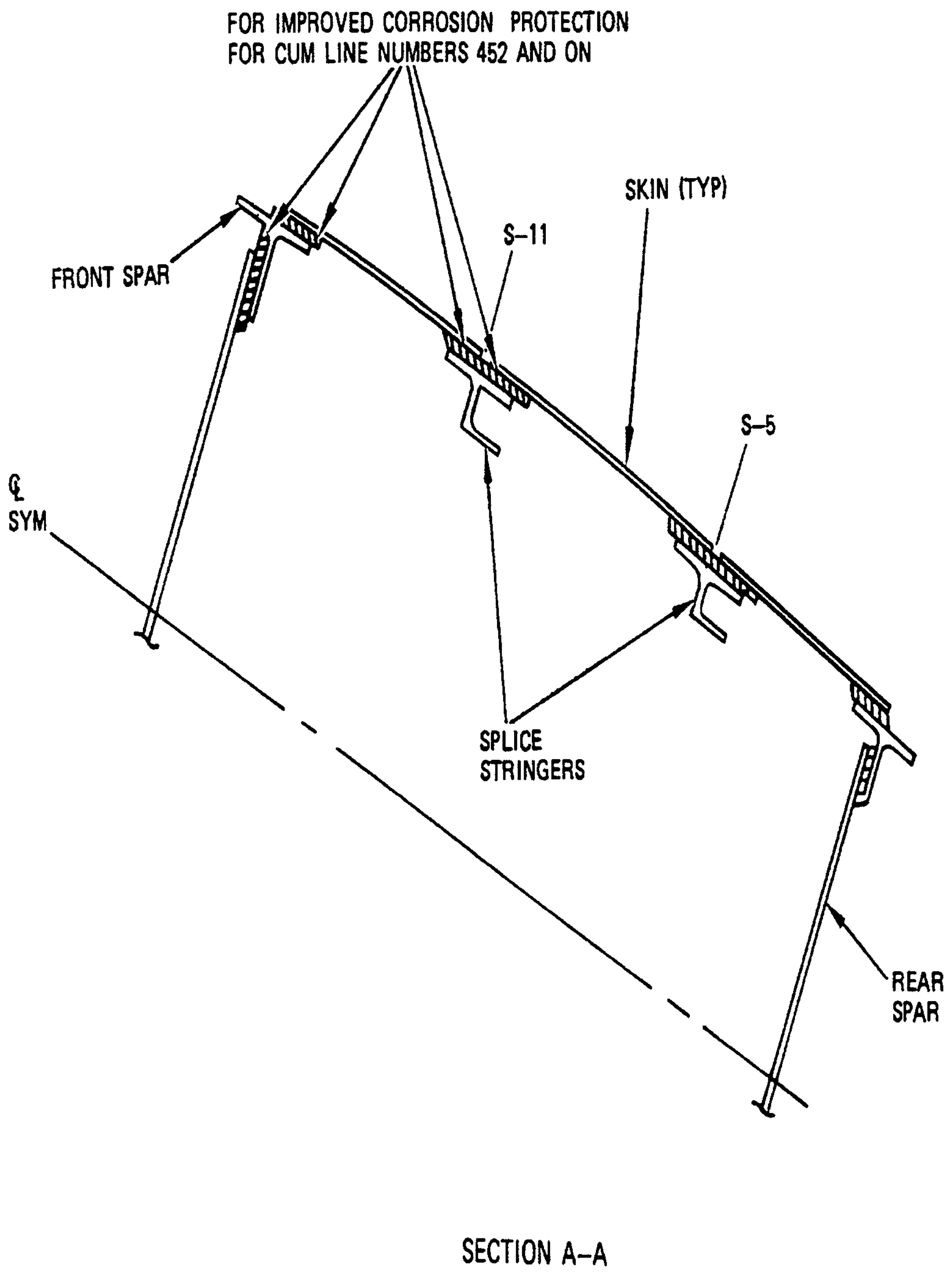
WARNING: REWORK, SUCH AS FILING, SANDING OR MACHINING, OF DEPLETED URANIUM WEIGHTS THAT WOULD DAMAGE THE PLATING OR REMOVE ANY BASE METAL IS PROHIBITED. INHALATION OR INGESTION OF FILINGS, DUST, ETC., FROM THE WEIGHTS MAY BE HARMFUL. THE ONLY APPROVED REPAIRS TO DEPLETED URANIUM BALANCE WEIGHTS IS PER VOLUME 1, 20-40-00.

B. To remove corrosion from the depleted uranium balance weights, refer to the instructions in Volume 1, 20-40-00.

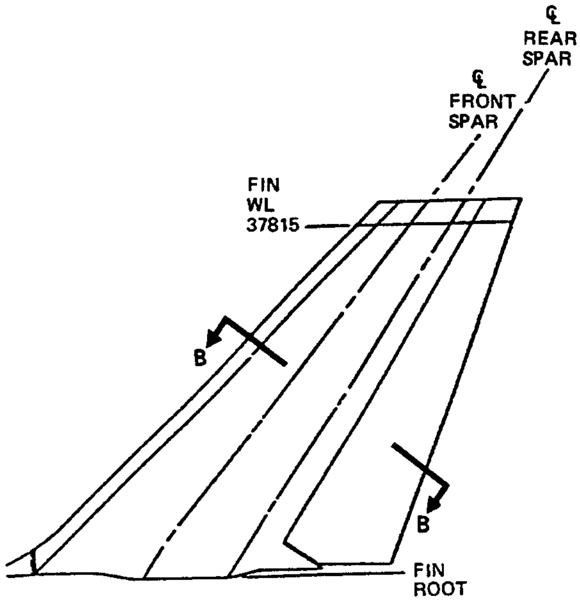
C. To remove corrosion from the tungsten balance weights, refer to the instructions in 747 Overhaul Manual 55-20-21.

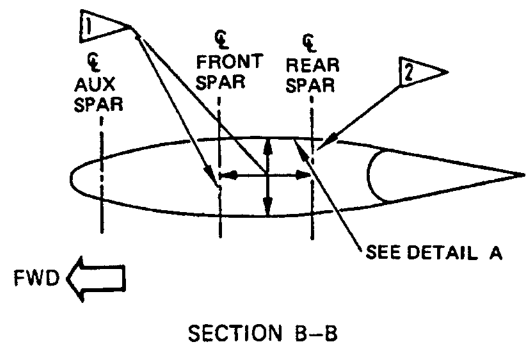


Vertical Stabilizers
Figure 1 (Sheet 1)



Vertical Stabilizers
Figure 1 (Sheet 2)





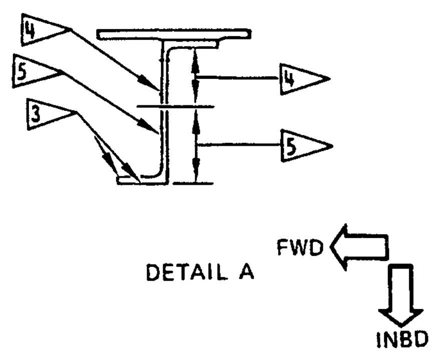
1 APPLY BMS 3–26 TYPE II IN THIS AREA.

2 APPLY BMS 3–23, TYPE II (LPS–3) TO THE ENTIRE AFT FACE OF THE REAR SPAR.

3 APPLY BMS 3–26, TYPE II, NOT REQUIRED ON EITHER SIDE OF FLANGE OF STRINGERS (TYPICAL ALL AREAS).

4 APPLY BMS 3–26 TYPE II, REQUIRED AT THIS AREA AT 50% MIN FLANGE OF FLANGE HEIGHT.

5 TAPER APPLICATION OF CORROSION INHIBITING COMPOUND TO ZERO IN THIS AREA.



Vertical Stabilizer
Figure 1 (Sheet 3)

1. General

A. Filiform and exfoliation corrosion has been reported on the exterior of skins of the vertical stabilizer. At line number 201, skins were chromic acid anodized. Filiform resistant primer, BMS 10-79 and BMS 10-60, Type II polyurethane enamel was used from line number 209.

B. The rear spar and rear spar cavity are susceptible to corrosion, especially the rear spar chords under the fixed trailing edge panels. Vertical stabilizer attachments similarly warrant preventative maintenance. Stress corrosion cracking has been encountered in the rudder stabilizing fittings. Cracking is attributable to installation preload and resultant stress corrosion. At line number 151, the fittings were changed to a material with a heat treat less susceptible to corrosion, and shims were added to prevent installation load. These changes can be made on airplanes up to line number 150 with SB 55-2011.

C. Cracks in the rudder power control rod were found which started at the fastener location. The cause of the cracks is not known. But to increase the resistance to stress corrosion, the rod material was changed to 2024-T81 and the rivets were installed with wet primer.

D. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make regular inspections of Volume 1, 20-20-00 to prevent or find the start of corrosion. Fasteners that are gone, or white powdery or other deposits are signs of corrosion.

B. After you clean the areas, do the inspections of Volume 1, 20-20-00 to make sure that protective finishes stay serviceable.

C. If you find corrosion (bulges of the skin or white deposits of corrosion products at fastener heads or joint edges), refer to Structural Repair Manual for details of corrosion removal.

D. For minor corrosion, to minimize the downtime of the airplane, the corrosion products should be cleaned off, followed by the application of a corrosion inhibiting compound into the affected area to retard the corrosion process (Ref Volume 1, 20-60-00). The finish system should be restored at the first opportunity consistent with the maintenance schedule.

E. Prevention Treatment

(1) At earliest opportunity consistent with the scheduled maintenance activity, corrosion prevention treatment should be applied in the vertical stabilizer.

(2) Periodically inspect the vertical stabilizer for damaged finish and evidence of corrosion. Pay particular attention to the rudder stabilizing fittings on airplanes up to cum line number 150 that have not had SB 55-2011 incorporated.

CAUTION: DO NOT APPLY CORROSION INHIBITING COMPOUND OVER COSMOLENE (OR EQUIVALENT PER MIL-C-16173, GRADE 1).

(3) Apply corrosion inhibiting compound to the exposed surface of the rear spar, paying particular attention to the spar chords, and the rear spar cavity especially faying surfaces and the rudder hinge points.

(4) Apply corrosion inhibiting compound to the vertical stabilizer-to-body attachments.

(5) Service Letter (SL)-20-20 has been issued concerning airplanes prior to line number 687, to inform operators about using the BMS 3-26 Type TI as a replacement of MIL-C-16173, Grade 1 (Cosmolene) when the corrosion protection in the interior surfaces of the vertical fin requires repair or replacement.

F. Frequency of Application

(1) Regular inspection is required on areas that can get corrosion. This should agree with the schedules in the Maintenance Planning Document. Operators must know of reported problems and areas.

(2) Regular application of BMS 3-23 compounds is necessary on the areas identified. This should agree with the schedules in the Maintenance Planning Document.

G. Improved Corrosion Protection

(1) The trailing edge cavity has been topcoated with filiform resistant primer and polyurethane enamel at line number 202.

(2) For airplanes line numbers 452 an on, faying surface sealant (BMS 5-95) has been applied to the vertical stabilizer inspar structure as follows to provide improved corrosion protection:

(a) between skin and spar chords

(b) between skin and splice stringers (S-5 and S-11)

(c) between spar webs and spar chords

(3) At line number 434, all fasteners in the skin panels between the front and the rear spar are installed with BMS 5-79 sealant in the countersinks.

(4) Some airplanes are built with corrosion inhibiting compound applied on the wing rear spar, and rear spar cavity of the vertical stabilizer.

(5) At line number 586, a production change installs H-11 steel fasteners with wet sealant and fillet seals the fastener head and nuts.

(6) At line number 641, all BACB30MT bolts were replaced with BACB30US bolts at the vertical stabilizer-to-body attachment. The bolt material is changed from H-11 steel to Inconel 718, which is more corrosion resistant.

(7) At line number 452, more MIL-C-16173, Grade 1 corrosion preventive compound is on the interior surfaces of the vertical stabilizer. But at line number 687 and on, a production change replaced the MIL-C-16173, Grade 1 (Cosmolene) with BMS 3-26, Type II. On line numbers 751 and on, PRR 81931 stopped the use of Dinitrol products as an alternative in production for corrosion protection. It has been applied in the interior surfaces of the vertical fin as follows:

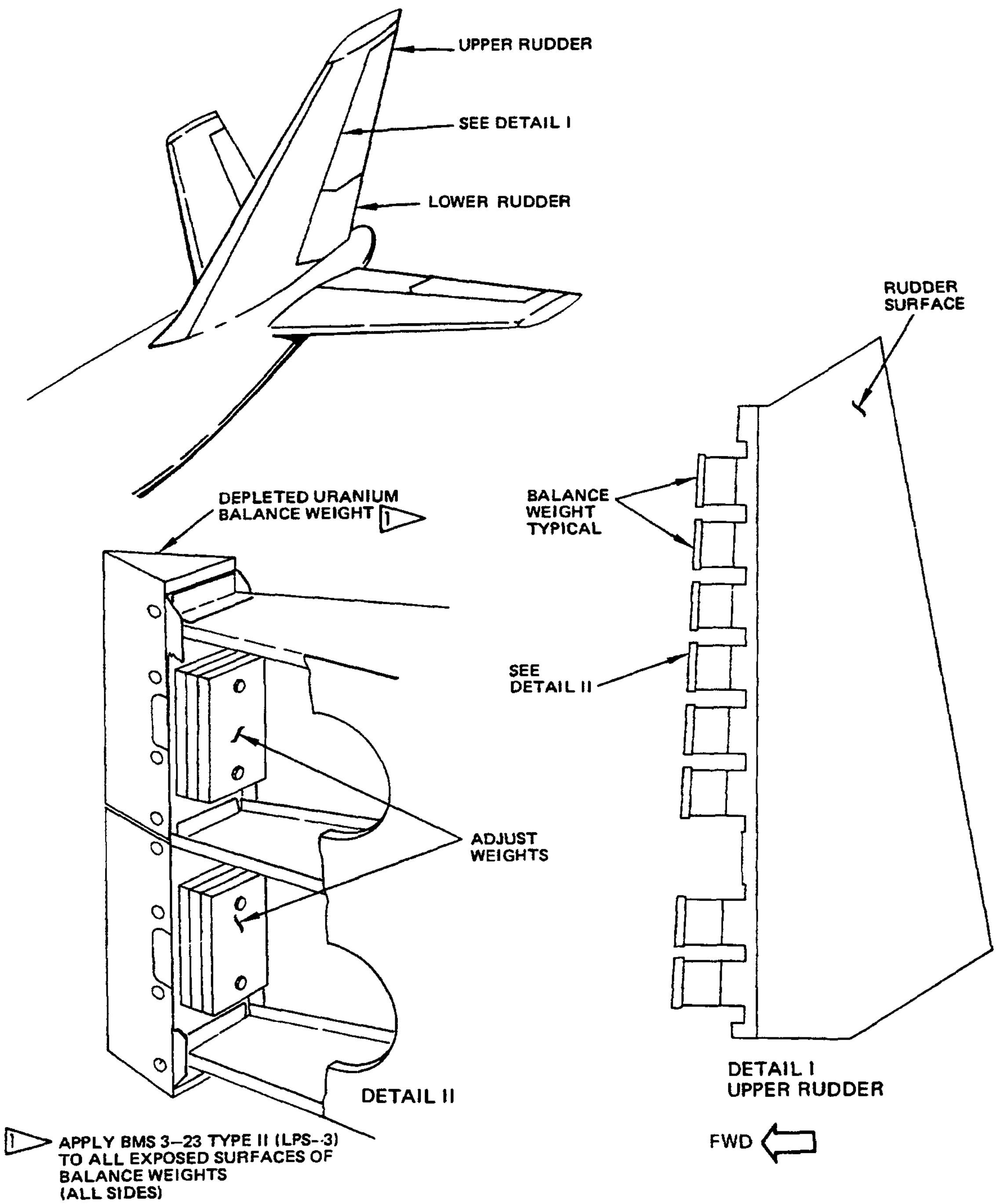
(a) Forward and aft faces of the front spar including spar chord, root to tip.

(b) Skin, stringers and shear ties aft of main torque box, root to tip.

(c) Forward face of rear spar including spar chord, root to tip.

(8) On some airplanes, SB 29-2076 (MC 2310MK4012) installs new hydraulic tubes which are chromic acid anodized and then painted with BMS 10-11, Type 1 primer.

(9) At line number 1011, PRR 82788-1 applied BMS 3-23 compound to all metallic structure inside the fin and the rudder.



Upper Rudder Balance Weights
Figure 1 (Sheet 1)

1. General

A. Corrosion has been reported on the balance weights of the upper rudder. Some balance weights are made from depleted uranium, which is naturally occurring uranium that has been depleted of most of the isotope U235. This remaining low-level radioactive uranium, similar to other heavy metals, is toxic if ingested, absorbed, or inhaled into the body. These weights are identified with legends permanently stamped into the surface of each weight, to assure special handling during maintenance. Protective coatings have been electro-plated on the weights to contain the depleted uranium. If these coatings are penetrated, certain precautionary measures are required to minimize the small health risk. Refer to Volume 1, 20-40-00 for more data.

NOTE: Depleted uranium balance weights should not be confused with adjust weights which are made of tungsten based metal (detail II).

B. PRR 78818-1 changed the balance weights from depleted uranium to tungsten on airplane line numbers 541, 544, 547, 548, 552 and on.

2. Corrosion Prevention

A. Make regular inspections of the balance weights to be sure that the protective finishes stay serviceable. If there is no damage, apply water displacing corrosion inhibiting compound per Volume 1, 20-60-00.

WARNING: REWORK, SUCH AS FILING, SANDING OR MACHINING, OF DEPLETED URANIUM WEIGHTS THAT WOULD DAMAGE THE PLATING OR REMOVE ANY BASE METAL IS PROHIBITED. INHALATION OR INGESTION OF FILINGS, DUST, ETC., FROM THE WEIGHTS MAY BE HARMFUL. THE ONLY APPROVED REPAIRS TO DEPLETED URANIUM BALANCE WEIGHTS IS PER VOLUME 1, 20-40-00.

B. To remove corrosion from the depleted uranium balance weights, refer to the instructions in Volume 1, 20-40-00.

C. To remove corrosion from the tungsten balance weights, refer to the instructions in 747 Overhaul Manual 55-40-31.

CHAPTER

56

WINDOWS

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AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Inspection and Observation	Corrosion on freighter viewing window frames	56-40-47 Fig. 1	

Specific Corrosion Problems - Windows
Figure 1

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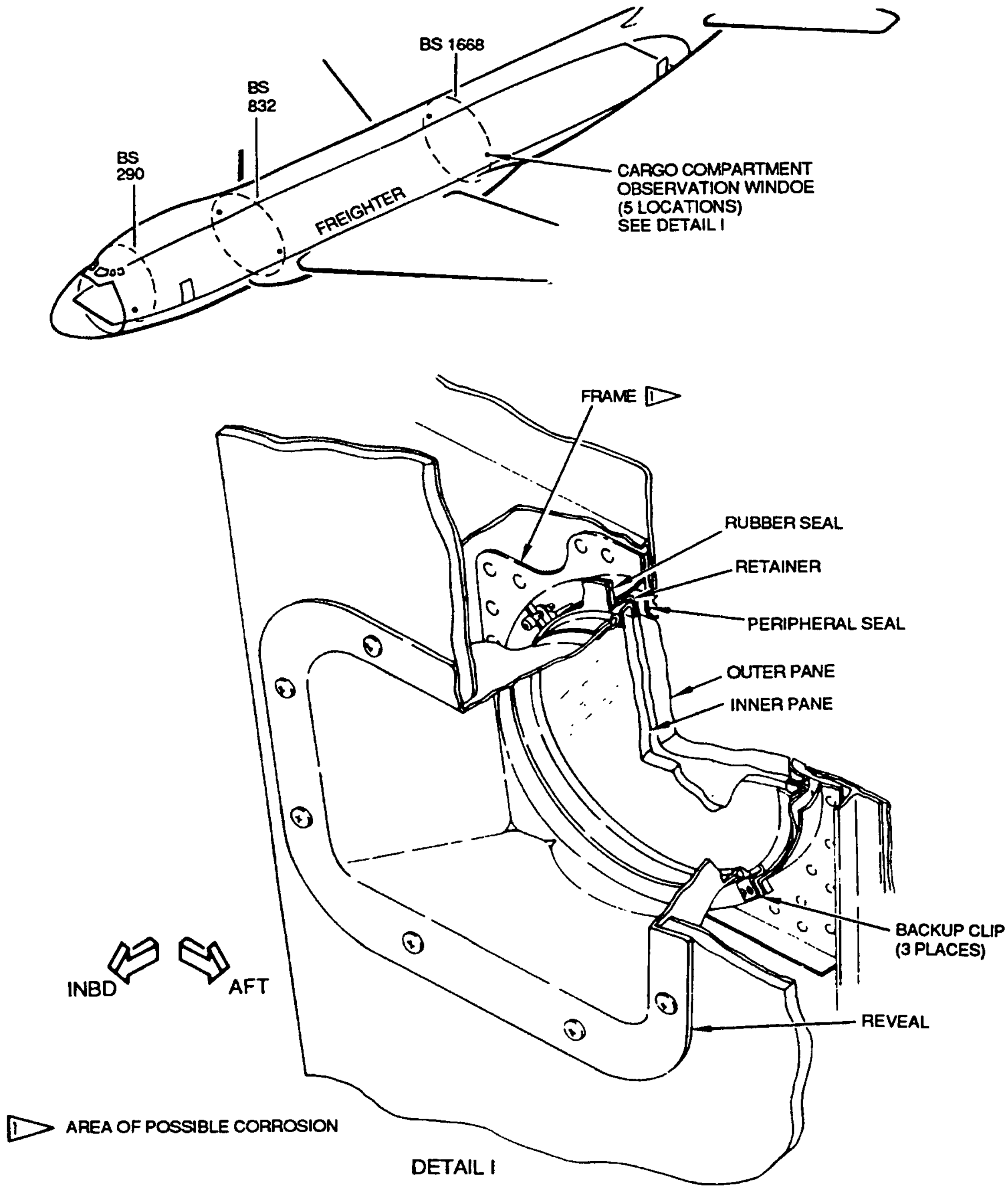

Main Cargo Component Observation Window
Figure 1 (Sheet 1)

1. General

A. On freighters, there are 5 observation windows in the sidewalls of the main cargo compartment to let light in and let you see out of the airplane.

B. Corrosion can occur on the round window frame. The corrosion occurred on the outer surface, centered on the lower edge adjacent to the window pane.

2. Corrosion Prevention

A. Regularly examine the window frames for corrosion.

B. Remove small amounts of corrosion. Manually chemical treat the surface. Then apply primer BMS 10-11 Type I and enamel BMS 10-60 on the surfaces which were painted.

C. For larger amounts of corrosion, replacement of the frame is recommended.

CHAPTER

57

WINGS

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AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Center Wing Section	Upper surface of wing center section	57-10-47 Fig. 1	
	Center sections with integral plenum chambers for conditioned air		SB 57-2159
	Rear spar trough Between upper skin and stringers at the skin splices		
	Rear spar web at bulkhead fitting at Sta1241		SB 57-2263
	Wing center section lower exterior surface		
	Front spar web stiffener chords		
	Upper and lower skin panels		SB 57-2291 SB 57-2291 R1 SB 57-2291 R2
Outer Wing Section	Front and rear spar chords	57-20-47 Fig. 1-6	
	Nacelle strut fittings		
	Leading edge machined ribs		
	Boost pump access door and cutouts		
	Fuel tank access panel		
	Wing lower skin in area of access door cutout	57-20-47 Fig. 1-6	
	Leading edge fittings attached to lower inspar panels		
	Fasteners common to spar chords and web		
	Between spar webs and chords		
	Rear spar web under spoiler No. 12		

AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Outer Wing Section (Cont)	Lower skin, upper surface, forward of front spar		SB 57-2183
	Rear spar aft cavity		
	Front spar vertical flanges		SB 57-2188
	Front spar lower chord horizontal flange at fastener holes		SB 57-2158
	Front spar, lower forward face		
Wing Inspar Skins	Between fasteners and skin	57-30-47 Fig. 1	
	Upper and lower inspar skin around straight shank titanium fasteners		SB 57-2169
	Inspar skins at rear spar and trailing edge		SB 57-2157
	Collected water and corrosion on the upper skin of the wing		SB 51-2038
Wing Landing Gear Trunnion Support Structure	Forward trunnion fitting	57-40-47 Fig. 1	
	Threads of forward trunnion bearing		
	Bolts common to wing gear aft outboard trunnion fitting and trunnion back up fitting		
	Landing gear beam end fitting		
Flaps	Outboard fore flap sequence carriage stop attach bolts	57-50-47 Fig. 1	SB 57-2128
	Between inboard flap track and wing landing gear beam		
	Attach bolts for inbd and outbd aft flap support arms		
	Aft, mid, and fore flaps aluminum honeycomb upper panels		
	Flap track attach points to rear spar		SB 57-2078
	Bearing plates		SB 57-2063
	Trailing edge flap carriage spindle near spindle bearing		

AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
	Trailing edge aft flap drive geneva cam roller shaft adjacent to the two chrome plated journals		
	Flap carriage track rollers		
	Attach bolts of aft flap support arm to the midflap rear spar		SB 57-2227
	Fuse bolts and dead weight roller aft track support of trailing edge flap tracks		
	Flap tracks 4 and 5 forward fuse bolts		
	Flap trap forward support fitting		SB 57-2262
	Fairing drive links to the Trailing edge flap transmission output shaft bearing	57-50-47 Fig. 1	SB 27-2123
	Trailing edge flap ballscrew		
	Trailing edge flap transmission output shaft	57-50-47 Fig. 2	SL 27-47
	Bolts attaching trailing edge flaps to wing vertical webs	57-50-47 Fig. 1	
	Upper trailing edge wing skin extension joint in area of outboard spoilers		
	Upper surface of No. 4 and 5 flap tracks		SB 57-2207
	Aft flap track webs		SB 57A2225
	Flap spar and skin interface		
	Fore flap track		
	Flap track forward section		SB 57A2229
	Fwd and aft spar webs		
	Wing Wheel Well Exposed structure	57-70-47 Fig. 1	
Wing Drain Holes	Hole locations		

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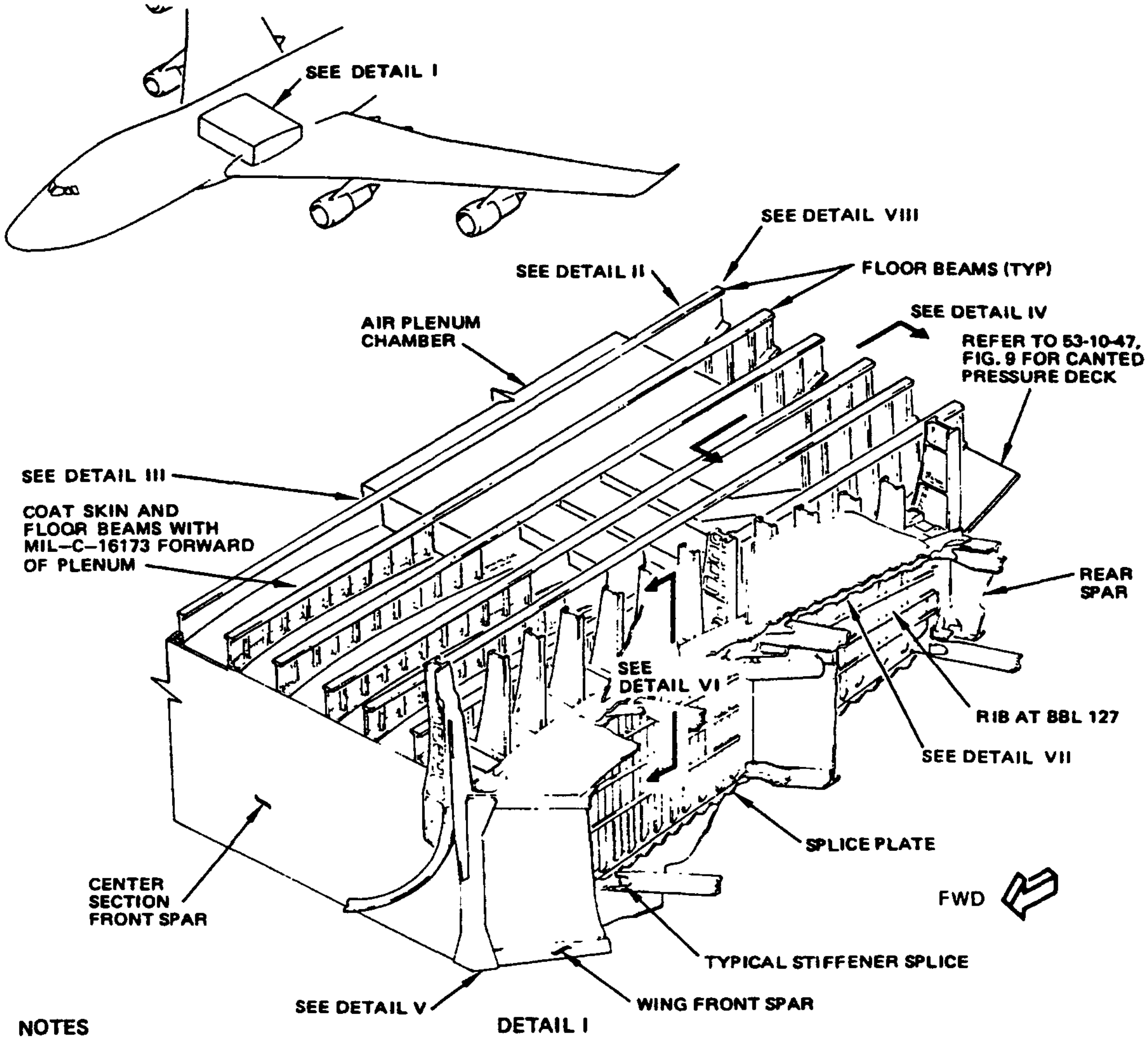


NOTES

1. APPLY BMS 3-23 TO EXPOSED STRUCTURE EXCEPT WHERE SECONDARY FUEL BARRIER IS APPLIED ON UPPER SKIN.

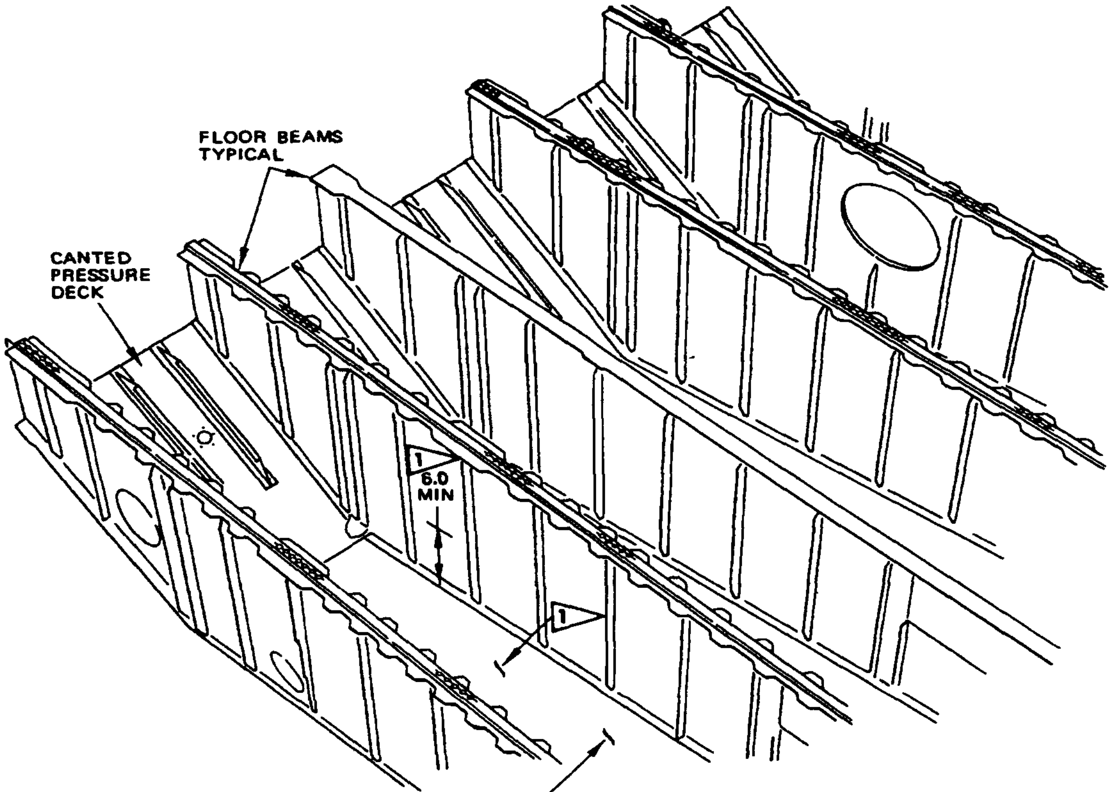
2. DRAINAGE OF UPPER SKIN AREA MAY BE IMPROVED FOR AIRPLANE LINE NUMBER 1 THRU 056 AND 058 BY INCORPORATING SB 51-2021. AIRPLANES WITH DUCTED PLENUM CHAMBER DO NOT HAVE BULKHEAD AT THIS LOCATION.

3. TOOL HOLE HAS BEEN ENLARGED IN PRODUCTION AT AIRPLANE LINE NUMBER 169 ON ALL FLOOR BEAMS EXCEPT AT LBL 57.50 AND CAN BE PROVIDED RETROACTIVELY BY INCORPORATING SB 51-2015. ENLARGED HOLES PROVIDE IMPROVED CROSS FLOW OF ACCUMULATED LIQUIDS TO THE DRAINS

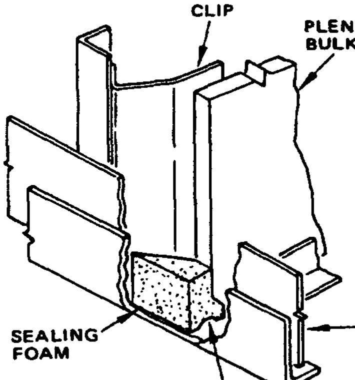
4. DETAILS OF PRODUCTION CHANGE AT LINE NUMBER 293 WHICH CAN BE ACCOMPLISHED RETROACTIVELY BY INCORPORATING SB 57-2145

5. DETAILS OF PRODUCTION CHANGE AT LINE NUMBER 260 WHICH CAN BE ACCOMPLISHED RETROACTIVELY BY INCORPORATING SB 57-2145

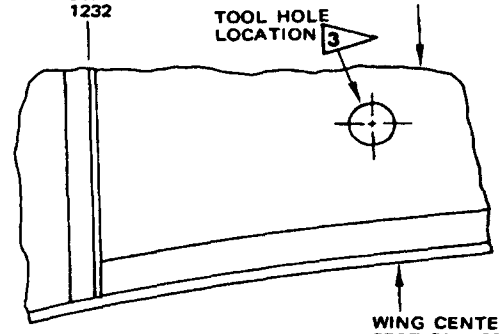
Center Wing Section
Figure 1 (Sheet 1)



DETAIL II

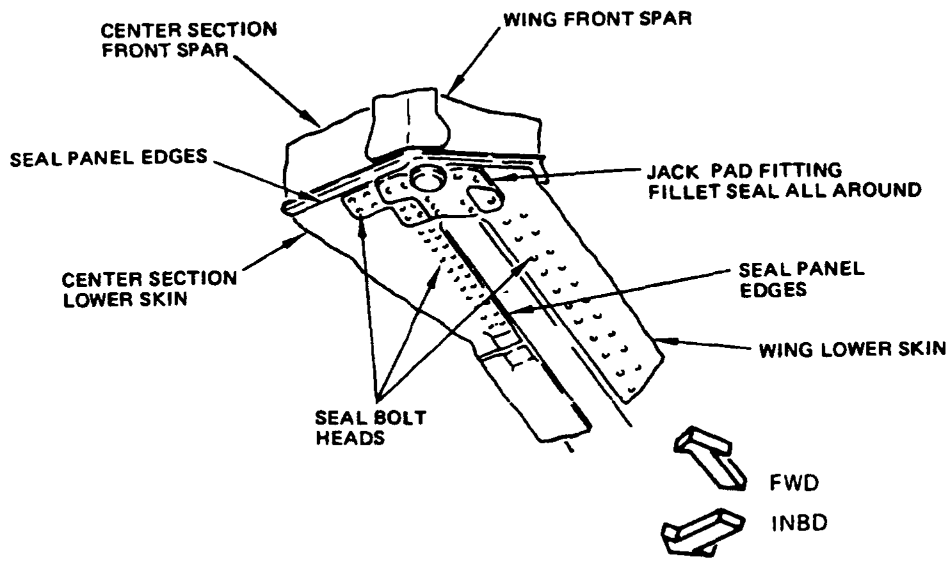


FORWARD PLENUM BULKHEAD 2
DETAIL III

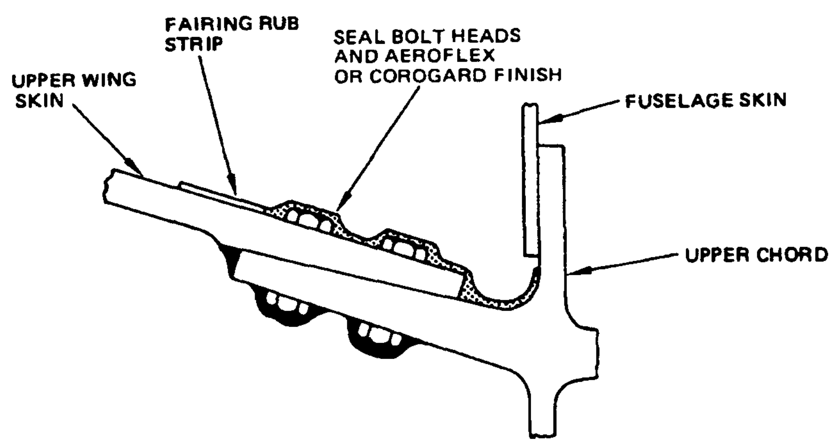


SECTION SHOWING FLOOR BEAM
DETAIL IV

Center Wing Section
Figure 1 (Sheet 2)

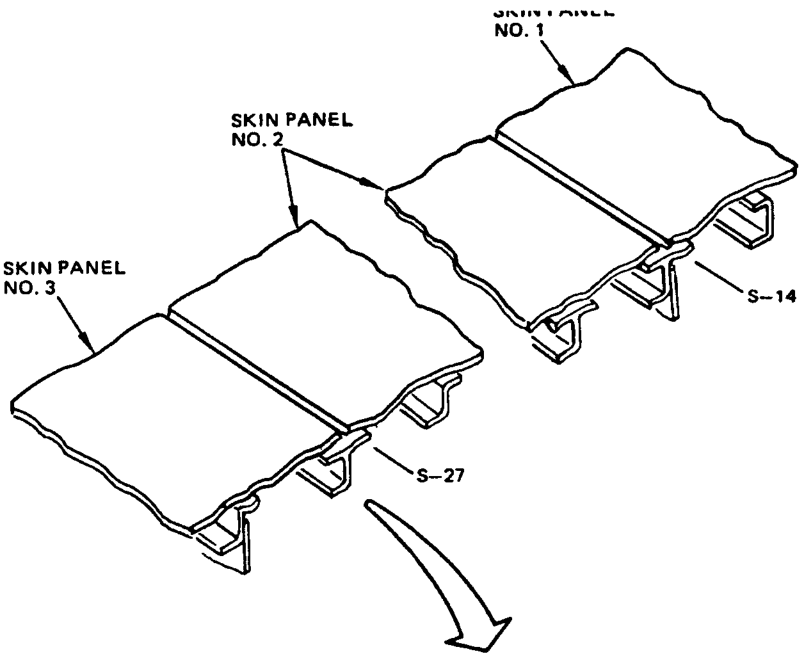


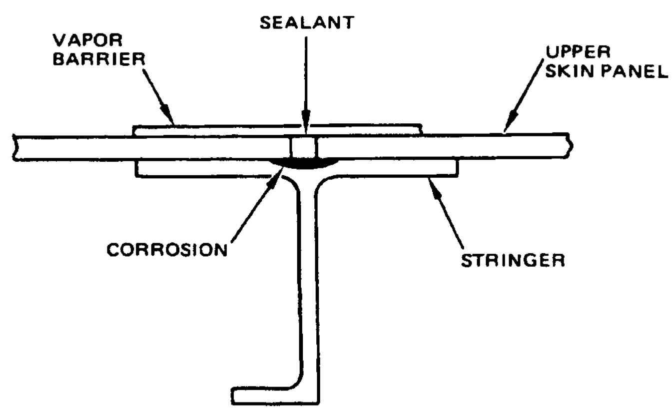
DETAIL V [4]



DETAIL VI [5]

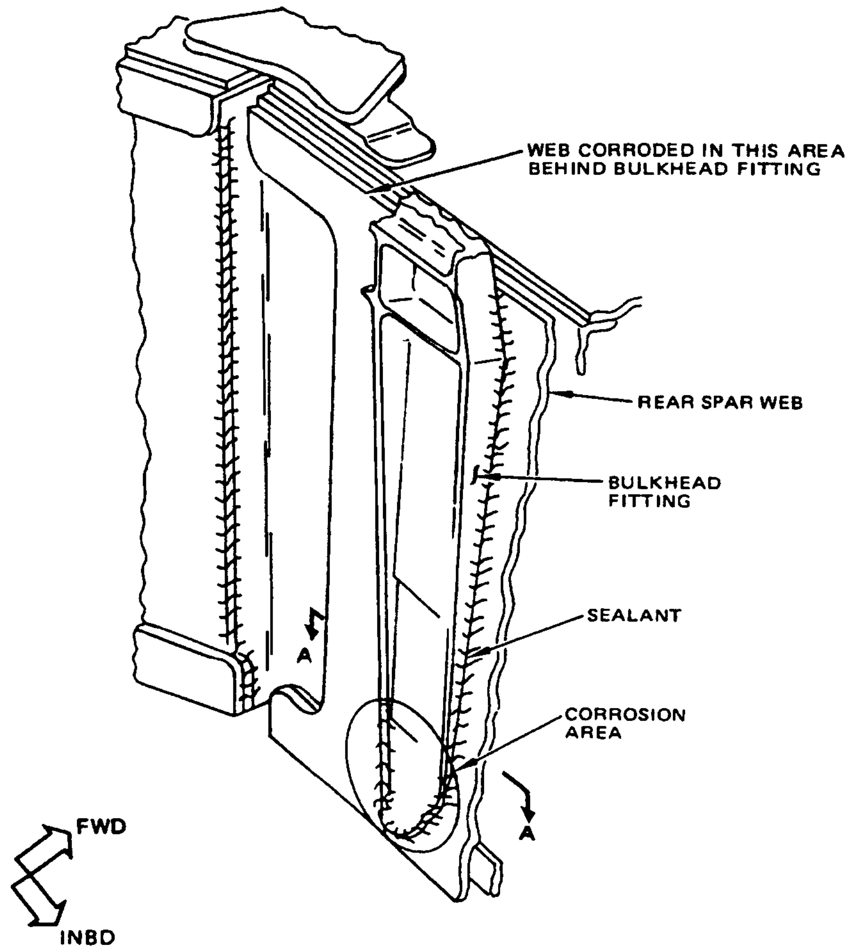
Center Wing Section
Figure 1 (Sheet 3)



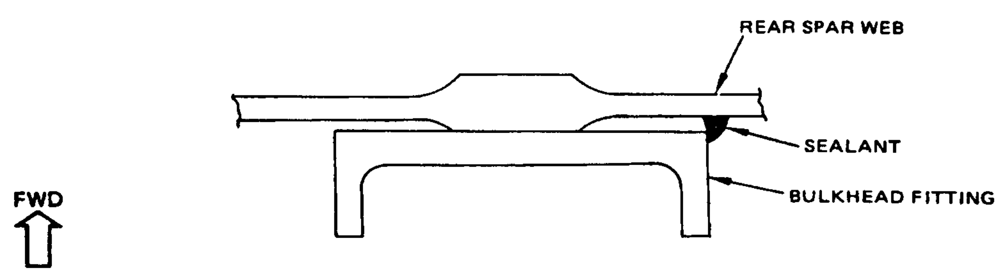


DETAIL VII

Center Wing Section
Figure 1 (Sheet 4)



DETAIL VIII



SECTION A--A

Center Wing Section
Figure 1 (Sheet 5)

1. General

A. The center wing consists of skins, primary structure, fillets, fairings of the center wing, and attach fittings.

B. Corrosion can occur on the upper surface of the wing center section in the air plenum area and is attributed to water accumulation caused by plugged drain passages.

Early production airplanes had integral plenum chambers for conditioned air which resulted in moisture condensation in the plenum chamber. Later airplanes incorporated ducted plenum chambers which eliminated the condensation problem.

C. Potable water line failures and lavatory or galley overflow can cause water to collect at the trough at the rear spar. (Ref 53-10-47, Fig. 9 for other improved drain provisions.)

D. Corrosion and fuel leaks can occur in the wing-to-body joints on the lower skin surface in the front spar area.

E. Corrosion can occur along the outboard wing panel edges at the upper and lower wing skins at the wing-to-body joints.

F. Corrosion can occur between the upper panel skin and the stringers at the skin splices because of failure of the skin gap sealant near the galley and lavatory installations. See Detail VII.

G. Corrosion can occur on the aft face of the rear spar web at the bulkhead fitting because of contamination caught behind the fillet seal at the lower end of the fitting. Sealant was changed at line No. 643. See Detail VIII.

H. Corrosion can occur on the wing center section rear spar web behind the BS1241 bulkhead fitting. The worst corrosion was approximately 0.030 deep.

I. Stress corrosion cracks can occur in the stiffener chords of the front spar web. The cracks were in the radius of the parts, approximately 3 inches from the lower end.

J. Stress corrosion cracking of index head rivets has occurred on wing upper skin panels between WS 528 and WS 778. PRR 85900-48 has provided an improved rivet beginning with line number 1082.

K. Service Bulletin 747-57-2291 outlines detail instructions for inspections of the wing upper and lower skin panels to find cracked rivets or rivets with broken, missing or titled heads. These rivets go through the skin and the stringers. This could cause fuel leaks and corrosion in the skin panels. Service Bulletin 747-57-229181 revision gives detail inspection intervals. Service Bulletin 747-57-2291 R2 revision shows access and crawl paths in the fuel tank. Refer to Service Bulletins for further details.

L. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the regular inspection of Volume 1, 20-20-00 to prevent or find the start of corrosion. Fasteners that are gone, or white powdery, or other deposits are signs of corrosion.

B. After you clean the areas, do the inspection of Volume 1, 20-20-00 to make sure that protective finishes stay serviceable.

C. If you find corrosion (bulges of the skin or white deposits of corrosion products at fastener heads or joint edges), refer to Structural Repair Manual for details of corrosion removal.

D. For small amounts of corrosion, to decrease the downtime of the airplane, clean off the corrosion products. Apply a corrosion inhibiting compound into the affected area to stop the corrosion process. Refer to Volume 1, 20-60-00 for how to apply corrosion inhibiting compound. Repair the finish system when the maintenance schedule permits.

E. Prevention Treatment

(1) At first opportunity when scheduled maintenance work allows access to the wing center section and wing-to-body joints, corrosion preventive treatment should be accomplished.

(2) Apply water displacing corrosion inhibiting compound on the center section upper wing surface over dry bay areas (areas over fuel tanks have secondary fuel barrier applied) and to both sides of the vertical web of the floor beams to a height equal to one half of total beam depth but never less than 6 inches. Pay particular attention to fastener holes, joints and faying surfaces. But do not apply corrosion inhibiting compound over the fuel barrier until all damage to the barrier coating is repaired, because the coating will not bond to a surface that has corrosion inhibiting compound on it. Refer to SB 57A2247 and 57-2253 for repair procedures.

(3) For airplanes earlier than line number 643, remove the fillet seal from the lower end of the rear spar bulkhead fitting. Apply BMS 3-23 to the interface of the spar web and the bulkhead fitting.

F. Frequency of Application

(1) Regular inspection is required in areas that can get corrosion and should agree with the schedule in the Maintenance Planning Document. Operators must know of reported problems and areas.

(2) Regular application of BMS 3-23 compounds is necessary in areas identified and should agree with the schedule in the Maintenance Planning Document.

G. Improved Corrosion Protection

(1) Airplanes line numbers 169 and on have better sealing on the center section upper wing surface over the dry bay areas.

(2) At line number 260, PRR 78133 added more sealant to bolt heads and panel edges at the wing-to-body joints. At line number 293, PRR 78133-1 added this treatment to more areas. SB 57-2145 provides cleaning and sealing procedures of joints and bolt heads in the center wing section.

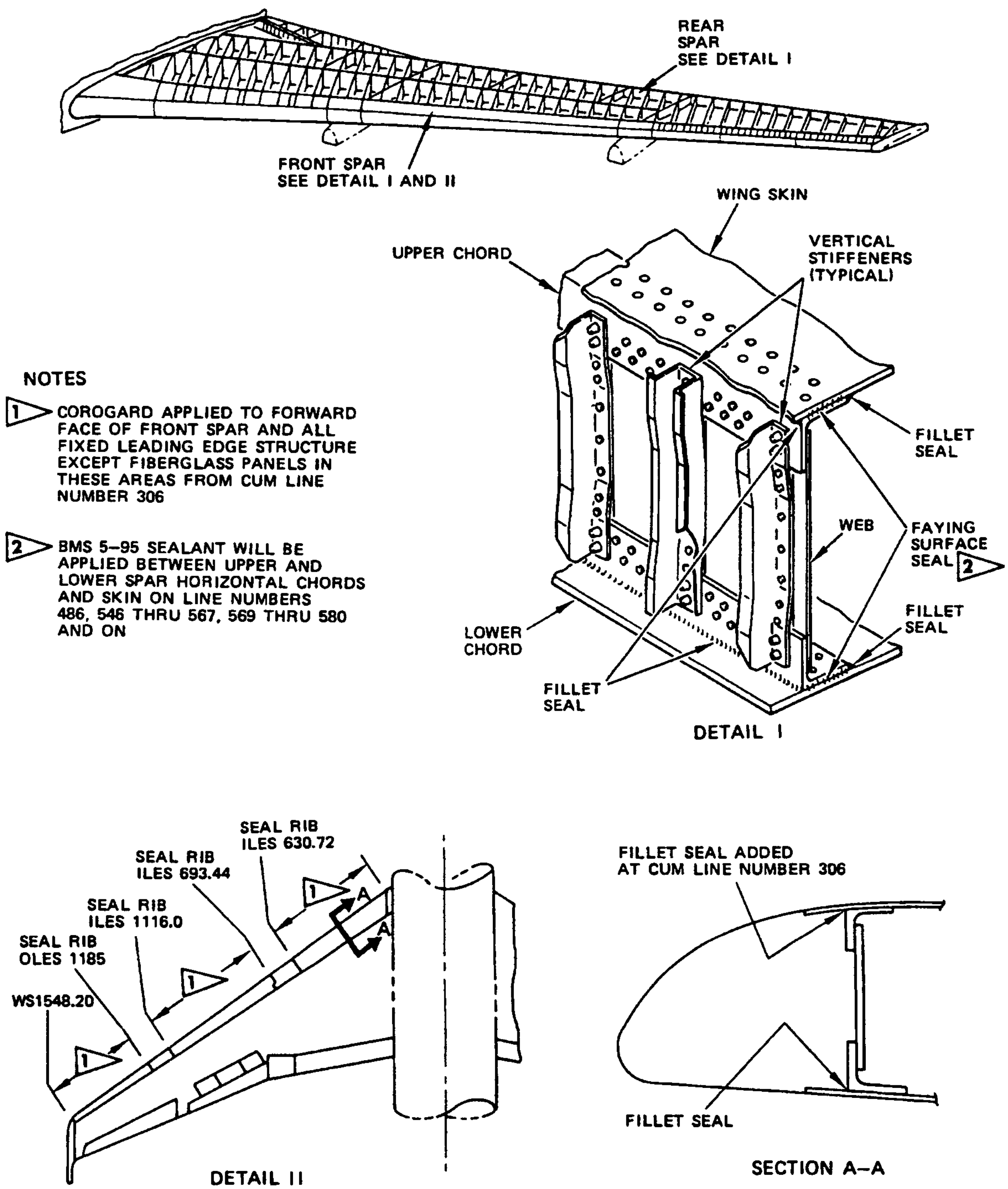
(3) SB 57-2159 gives details of inspection and corrosion preventive compound application in the area forward of air plenum for a minimum of 20 inches. On airplanes prior to line number 087, this will help prevent corrosion forward of the plenum.

(4) On airplane line number 646 and on, more BMS 3-23, Type II is applied on the lower exterior surface of the wing center section. Some operators use BMS 3-26, Type I.

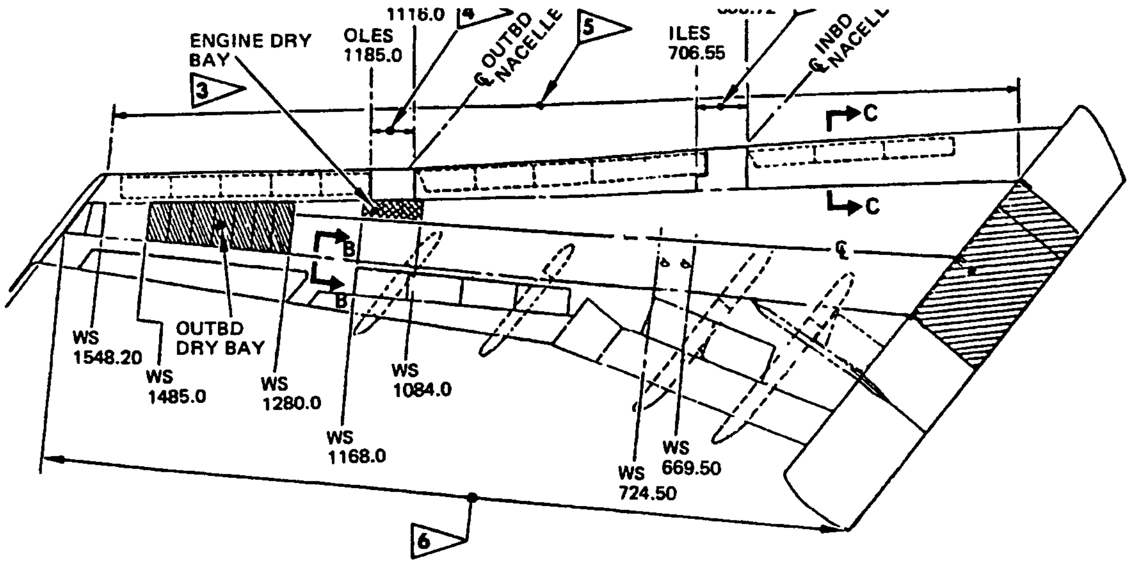
(5) On the 747-400 airplanes, more BMS 3-26, Type II is used on the upper exterior surface of wing center section of Sta 1230 to Sta 1240.

(6) For airplanes thru line number 816, SB 57-2263 gives details of inspection of the rear spar web behind the body station 1241 bulkhead fitting.

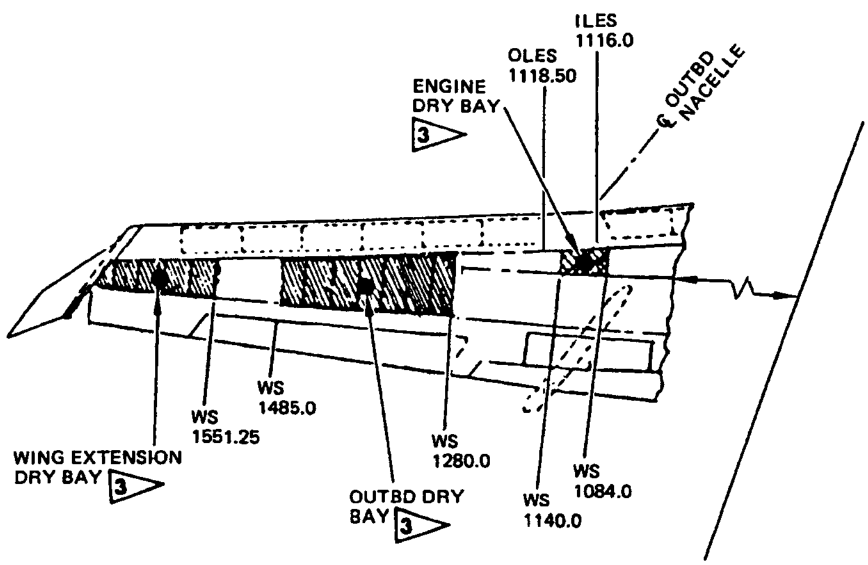
(7) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.



Outer Wing Front and Rear Spars
Figure 1 (Sheet 1)



NON 747–400 AIRPLANES



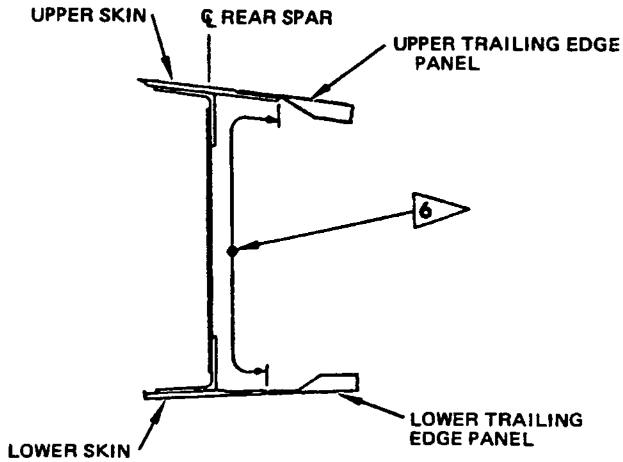
747–400 AIRPLANES
(CORROSION PROTECTION APPLICATION IS SIMILAR TO NON–400 EXCEPT AS NOTED)

NOTES

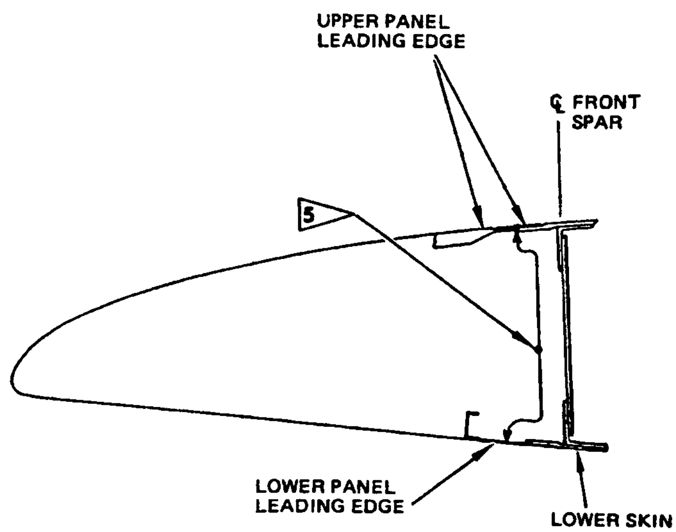
3 APPLY BMS 3–23 TYPE II TO ALL INTERIOR SURFACES OF THE CAVITY

4 APPLY BMS 3–23 TYPE II TO LOWER FORWARD SIDE OF FRONT SPAR AND INSIDE LOWER COVE AREA BETWEEN SEAL RIBS

Outer Wing Front and Rear Spars
Figure 1 (Sheet 2)



REAR SPAR
SECTION B–B



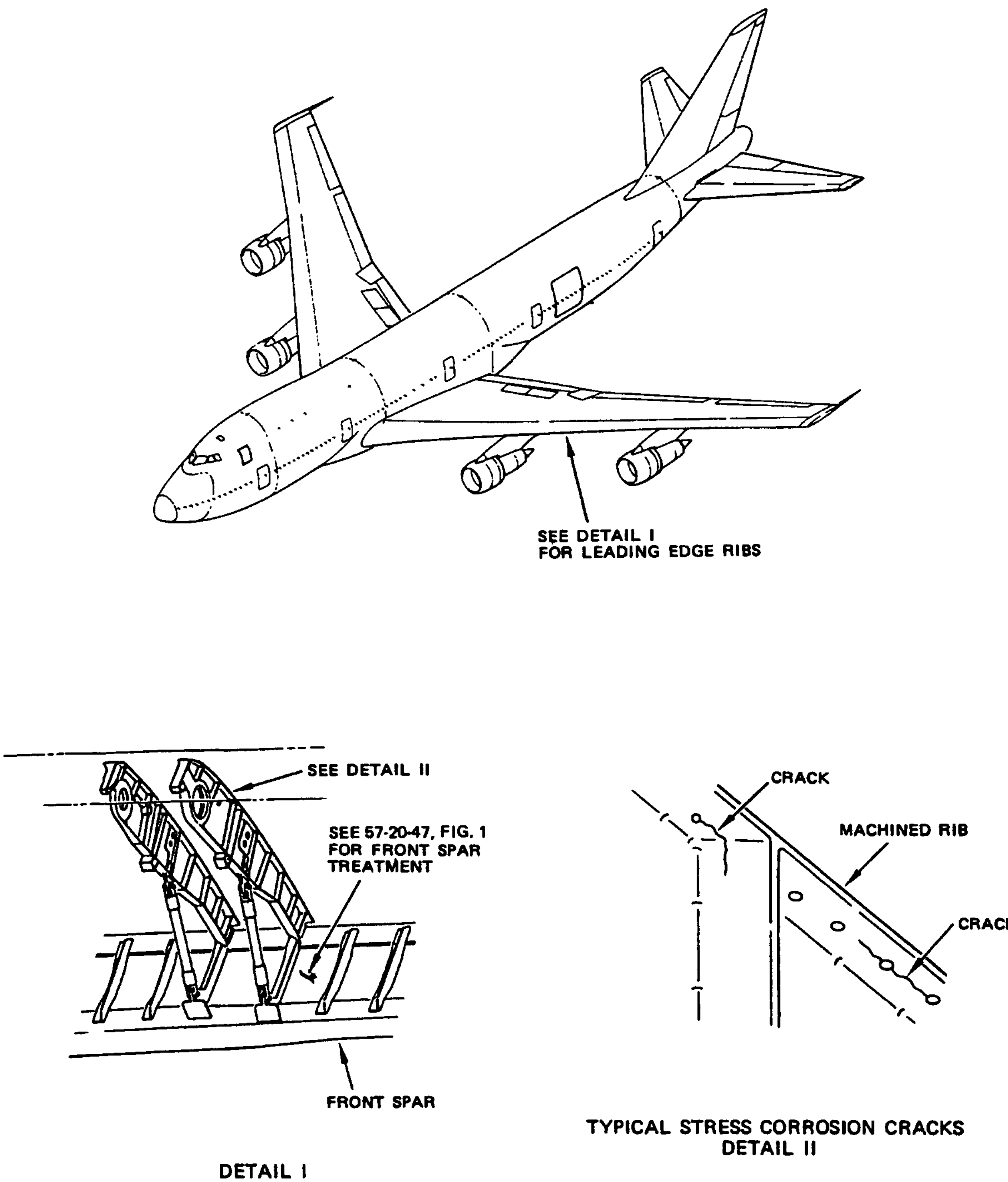
FRONT SPAR
SECTION C–C

NOTES

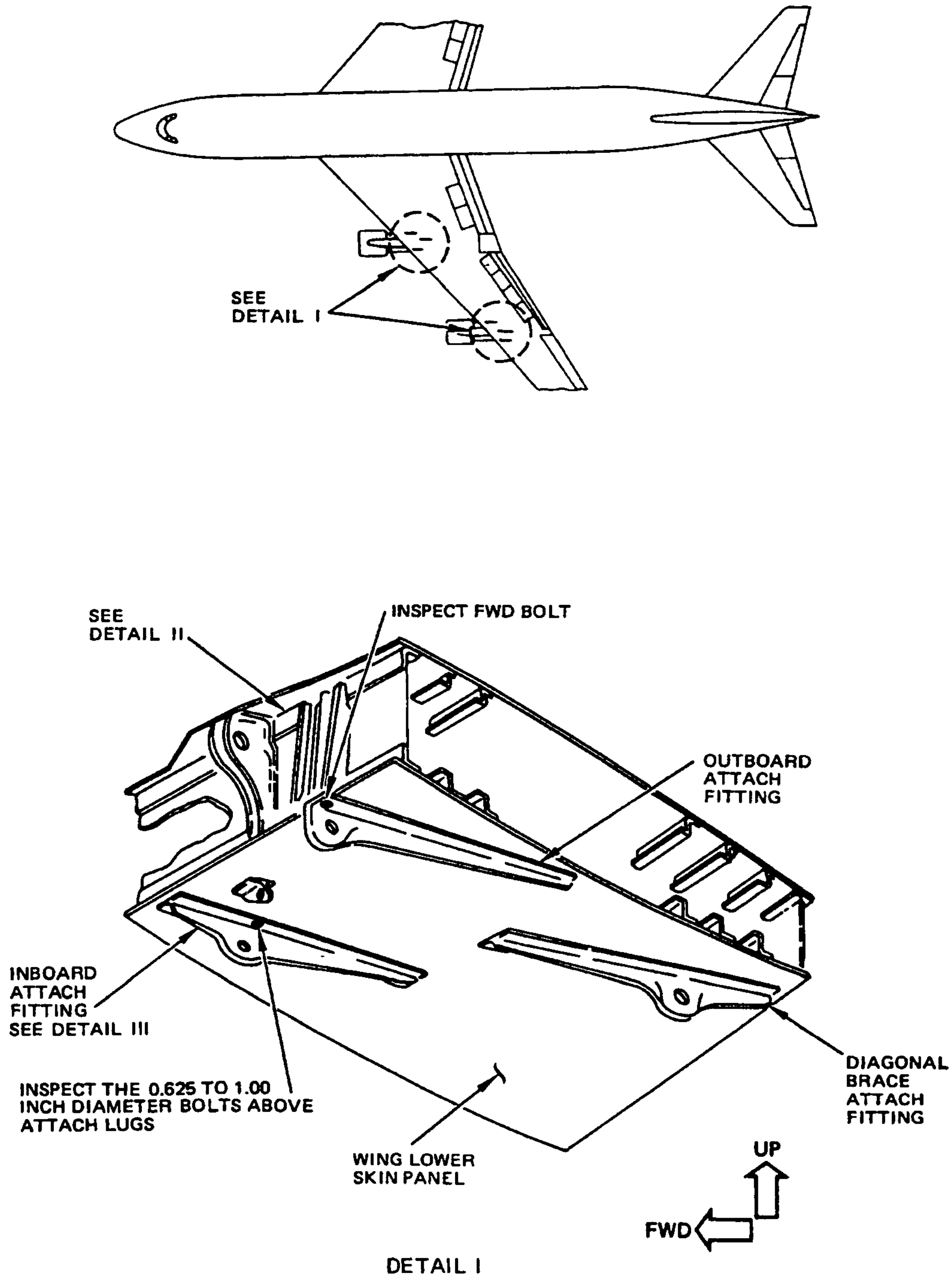
5 APPLY BMS 3-23 TYPE II TO FORWARD SIDE OF FRONT SPAR WEB ALONG ENTIRE LENGTH OF FRONT SPAR FROM SIDE OF BODY TO WS 1548.2.

6 APPLY BMS 3–23 TYPE II TO REAR SPAR AFT CAVITY ALONG ENTIRE LENGTH OF REAR SPAR FROM SIDE OF BODY TO WBL 1169. REF SL–20–19 ON AIRPLANES PRIOR TO LINE NUMBERS 646.

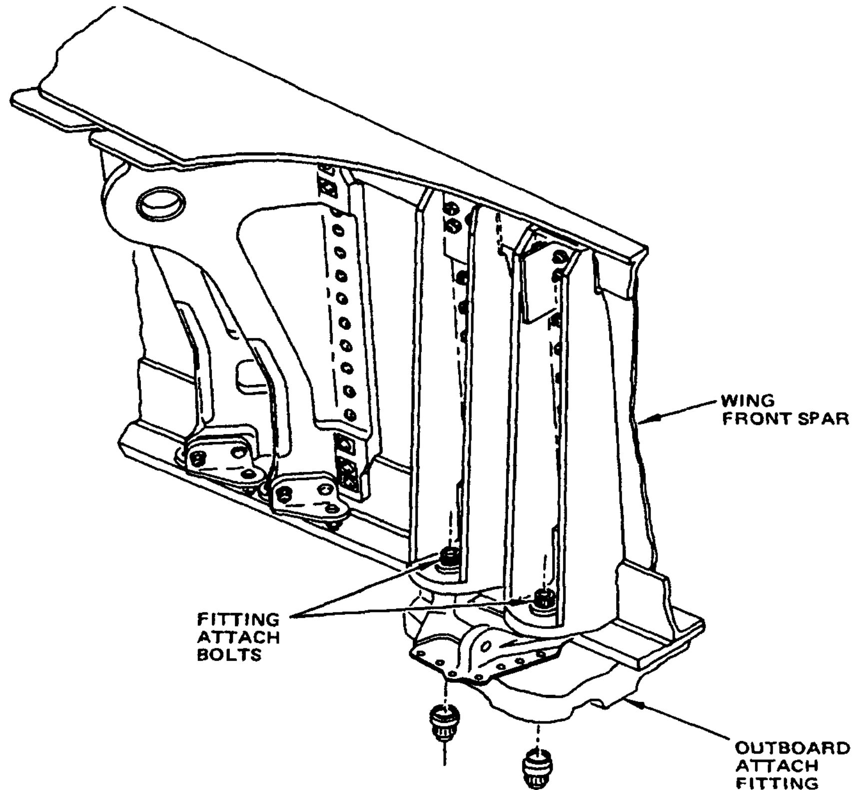
Outer Wing Front and Rear Spars
Figure 1 (Sheet 3)



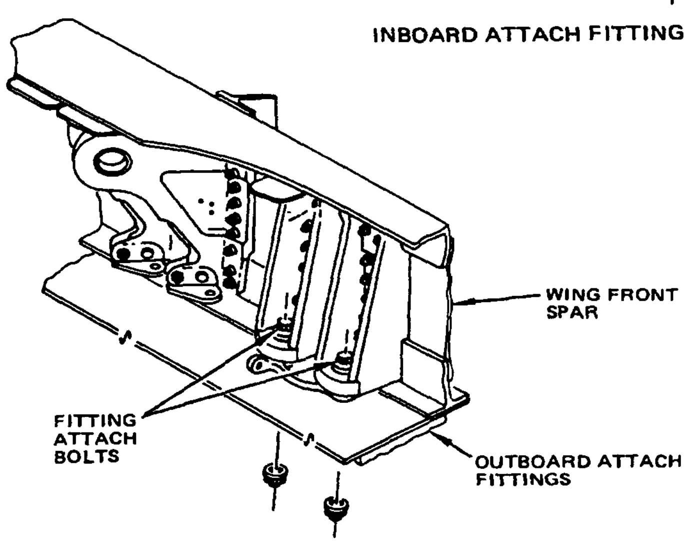
Outer Wing Leading Edge Machined Ribs
Figure 2



Outer Wing Nacelle Strut Support Fittings
Figure 3 (Sheet 1)

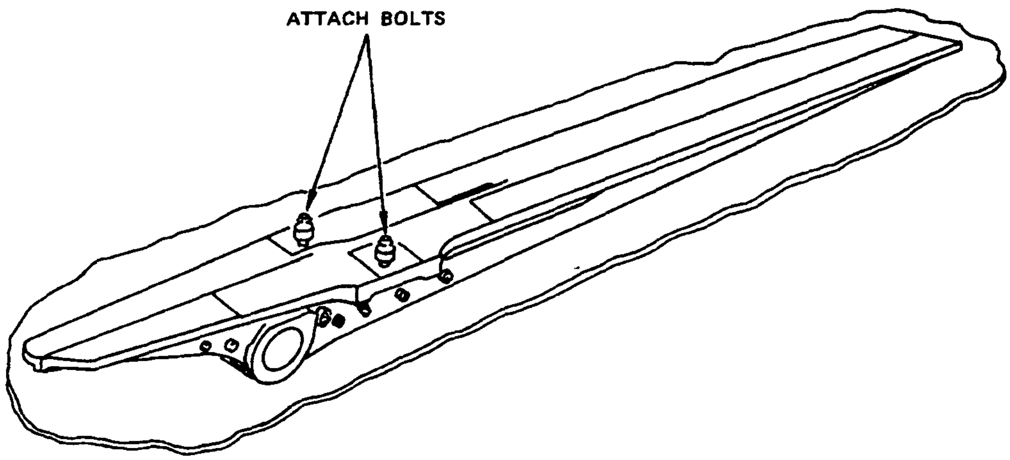


INBOARD ATTACH FITTING BOLT REPLACEMENT

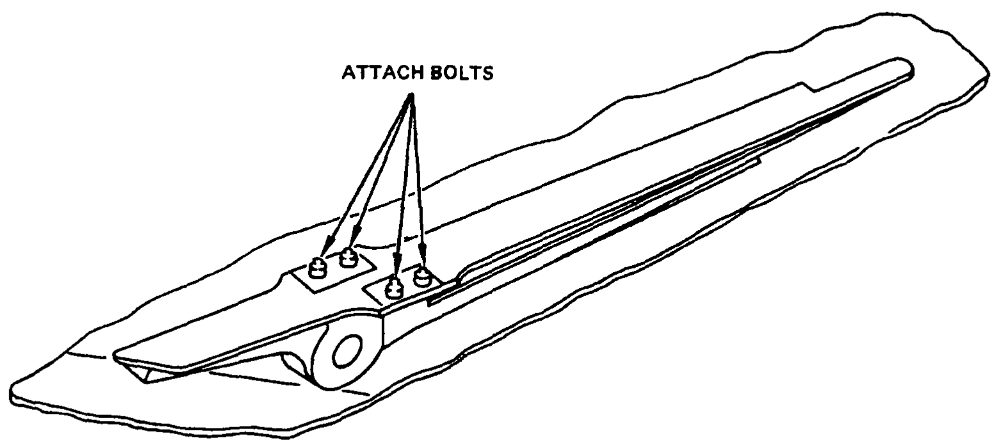


OUTBOARD ATTACH FITTING BOLT REPLACEMENT
DETAIL II

Nacelle Strut Support Fittings
Figure 3 (Sheet 2)

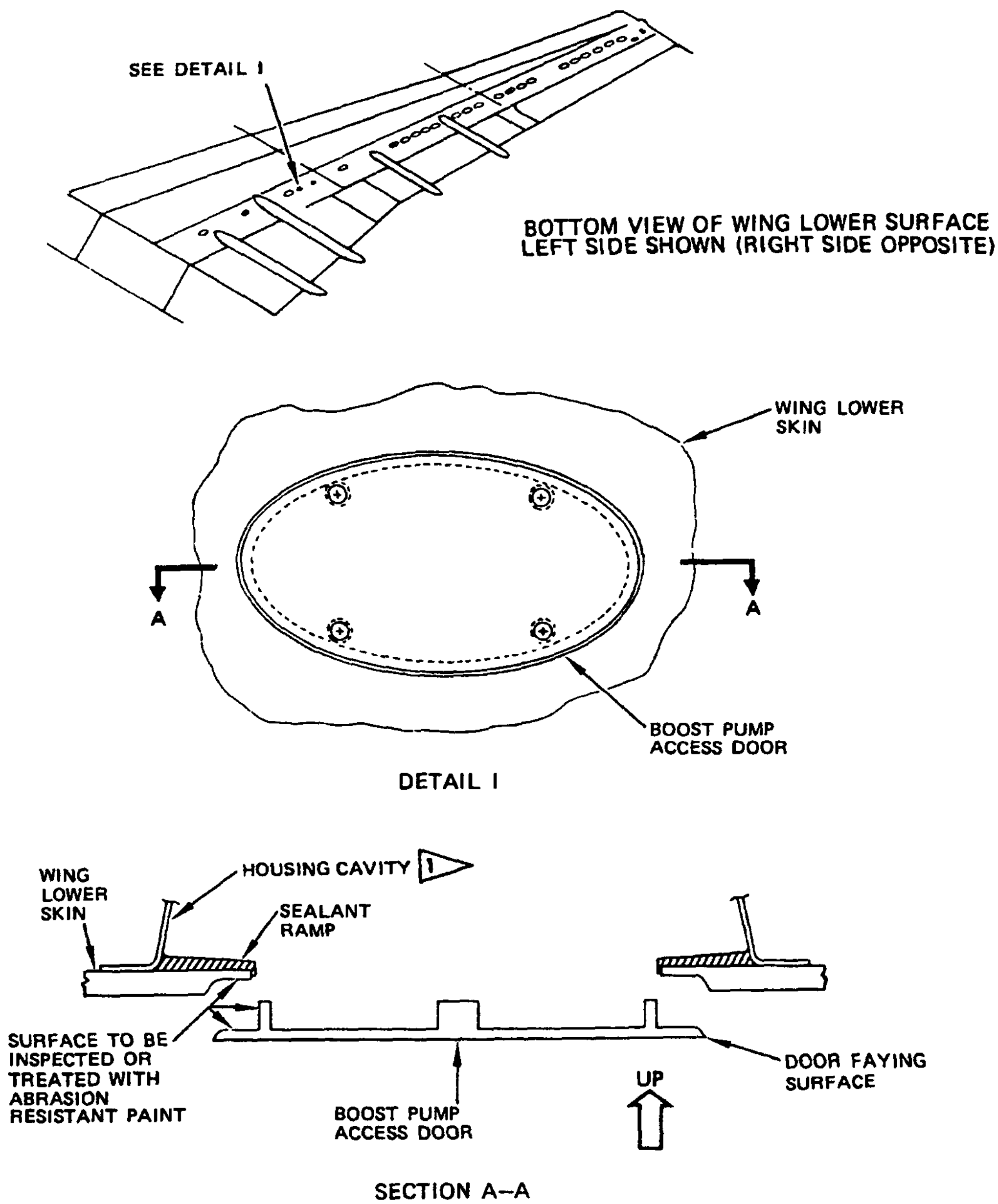


OUTBOARD STRUT INBOARD ATTACH FITTING



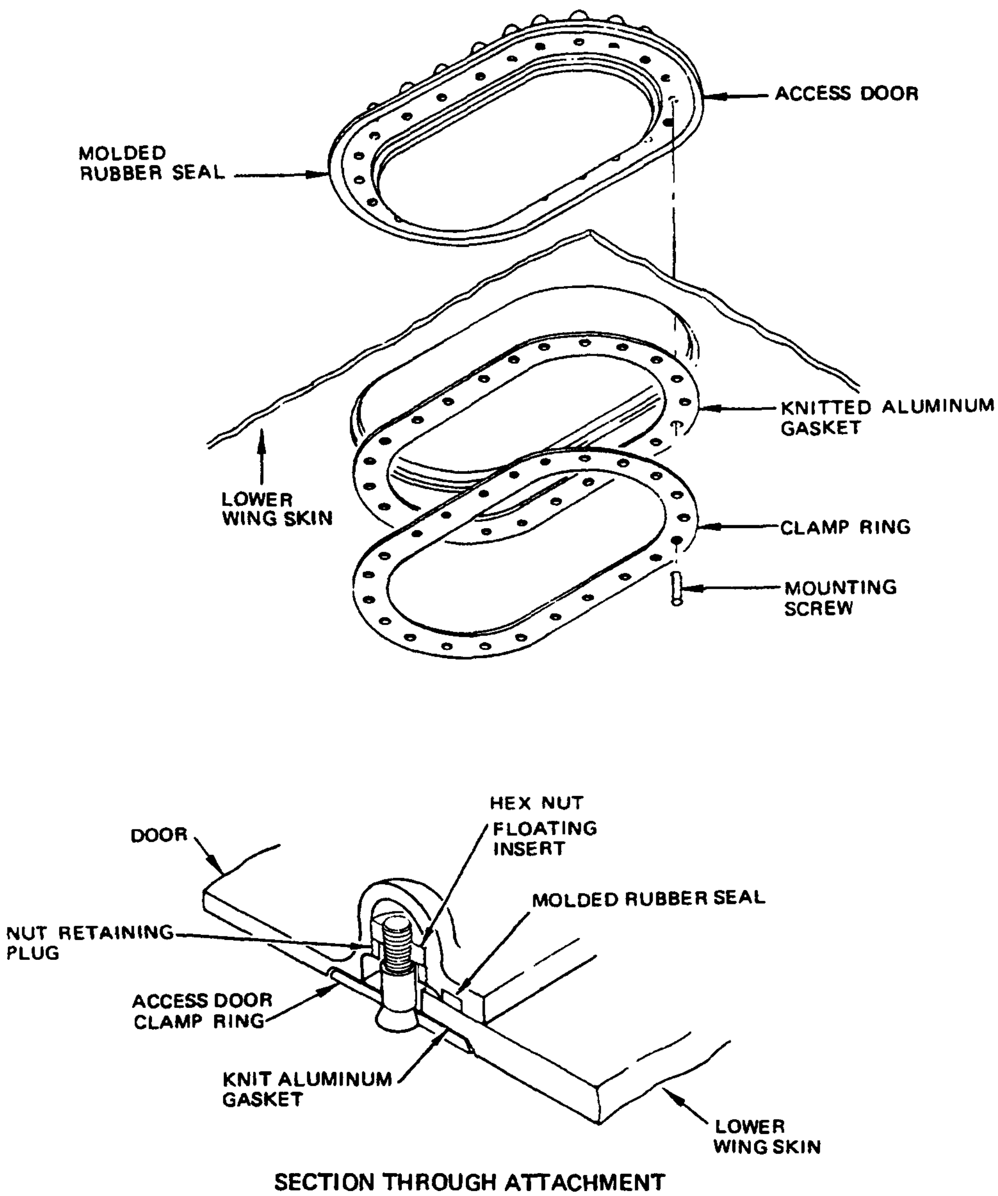
INBOARD STRUT INBOARD ATTACH FITTING
DETAIL III

Nacelle Strut Support Fittings
Figure 3 (Sheet 3)



1 APPLY BMS 3-23 TYPE II TO ALL INTERIOR SURFACES OF CAVITY

Outer Wing Boost Pump Access Door and Cutouts
Figure 4



Outer Wing Fuel Tank Access Panel
Figure 5

1. General

A. The outer wing consists of the structural units and associated components and members which support the airplane in flight. These include spars, skin, ribs, stringers, clamshells, scuppers, etc. and integral fuel tank structure.

B. The front and rear spars on the left and right wing boxes are primary structural components of the main wing frame. They extend from the wing root rib to the wingtip. The spars consist of vertical sheet metal webs tapering down in depth towards the wingtips and are provided with chords along the upper and lower edges. Vertical stiffeners are attached to the vertical faces of the spars, both internally and externally (Fig. 1).

(1) The deployment of flight control surfaces expose the spars to the ground and near ground air contaminants, runway dirt and debris and inclement weather elements all of which contribute to corrosion.

(2) The spar chords are the details of this structure most susceptible to corrosion and it originates most frequently at the fasteners common to the chord and web, or chord to leading or trailing edge structure. Instances of corrosion at edges have also been observed.

(3) Spanwise cracks have been reported on the wing front spar vertical flanges. This is attributed to intergranular corrosion in the wing front spar upper and lower chords. SB 57-2188 gives inspection and repair procedures for airplanes thru line number 305.

(4) Cracks have been found in the front spar lower chord horizontal flange at the fastener holes. This is attributed to lower skin corrosion which penetrates the skin-spar chord faying surface. SB 57-2158 gives inspection and repair procedures for airplanes thru line number 305.

(5) Corrosion has been reported on the wing lower skin upper surface forward of the front spar. SB 57-2183 Rev. 1 adds drain holes to the wing lower skin forward of the front spar of airplanes line No. 306 thru 423.

(6) Corrosion has been reported on right wing rear spar web just under spoiler No. 12 at WS1114 to WS1117, WS1143 to WS1152 and WS1160 to wS1165.

C. The nacelle strut support fittings attach bolts have instances of failures attributed to stress corrosion. Failure was initiated by corrosion pits formed at damaged areas of nickel-cadmium plating. From airplane line No. 254, these bolts have been installed with sealant, and the boltheads, nuts, and thread fillet sealed after installation. SB 57-2127 provides instruction procedures for inspection, replacement, and installation with BMS 5-95 sealant of these bolts (Fig. 3).

(1) Stress corrosion fractures have been reported on two forward nacelle strut outboard support attach fitting bolts at the No. 4 strut.

(2) Cracking of more that one of the nacelle strut attach fitting fasteners could result in significant damage to adjacent structure and potential loss of the engine and the strut.

D. The boost pump access door and cutouts are susceptible to intergranular corrosion. This is attributed to exposed aluminum end grain combined with fretting between the door and wing skin. Abrasion resistant paint has been applied to the interfacing surfaces (line number 196 and on), and this modification may be incorporated on airplanes with earlier line numbers by SB 57-2091. The modification provides corrosion protection at the boost pump access door cutouts (Fig. 4).

(1) Corrosion has been found on the inner surface of the skin within the boost pump housing cavity.

E. Ribs and Stringers

(1) Reports of corrosion cracking on the wing leading edge machined 7079-T651 or 7075-T652 ribs outboard of the inboard engines have been reported. The 7079-T651 and 7075-T652 materials were installed on 747-100, 747 SR and 747 SP airplanes (Fig. 2).

NOTE: Service Bulletins 57-2116 and 57-2160 provide inspection and preventive measure procedures and repairs for cracked ribs

(2) On 747-200, -200C, and -200E airplanes, the subject ribs were machined from 7075-T73 forgings which have a substantially greater resistance to stress corrosion cracking.

F. The wing lower skin in the area of the reserve and main fuel tank access door cutouts can get intergranular and fretting corrosion, because of exposed aluminum end grain, and because of fretting between the access panel and the wing lower skin (Fig. 5).

G. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. Missing fasteners, white powdery or any discolored deposits are evidences of the existence of corrosion which should alert operators that some corrective action is required. A corrosion prevention program should be initiated to prevent the accumulation of corrosive products in order to minimize the occurrence of corrosion.

B. Following cleaning of suspected areas, a thorough inspection as described in Volume 1, 20-20-00 is effective to ensure that protective finishes provided during manufacture remain intact.

C. Where corrosion exists (noticeable bulges of the skin or white deposits of corrosion products at fastener heads or joint edges), refer to Structural Repair Manual for details of corrosion removal.

D. For minor corrosion, to minimize the downtime of the airplane, the corrosion products should be cleaned off, followed by the application of a corrosion inhibiting compound into the affected area to retard the corrosion process (Volume 1, 20-60-00). The finish system should be restored at the first opportunity consistent with the maintenance schedule.

E. Prevention Treatment

(1) At first opportunity consistent with scheduled maintenance activity, corrosion prevention treatment should be accomplished to the outer wing structure and components.

(2) Front and Rear Spar

(a) Apply BMS 3-23, Type II corrosion-inhibiting compound to unsealed forward surface areas of the front spar paying particular attention to spar chord and web joints and faying surfaces of stiffeners and brackets. Some operators may prefer to use BMS 3-26, Type I (Dinitrol AV-5B-2) on their airplanes (Fig. 1, Section A-A).

NOTE: Application of corrosion inhibitor to areas of the front spar finished with Corogard (line number 306 and on) is not required. Retroactive application of Corrogard may be made by incorporating SB 57-2158.

(b) Apply water-displacing corrosion-inhibiting compound to unsealed aft surface areas of the rear spar including the spar upper and lower chords, web joints, faying surfaces of stiffeners, upper and lower skins, brackets, and around high strength boltheads for the entire length of the rear spar. Some operators may prefer to use BMS 3-26, Type I (Dinitrol AV-5B-2) on their airplanes (Fig. 1, Section B-B).

(c) Incorporation of the rework procedures of SB 57-2158 will reduce the possibility of corrosion to the lower chord of the front spar.

(d) Regrease all grease fittings in treated areas.

(e) In cases where the spars or spar cavities are cleaned with steam or high pressure water and detergents, the reapplication of corrosion inhibitor is recommended.

(3) Boost Pump Access Door and Cutouts

(a) Apply BMS 3-23, Type II corrosion-inhibiting compound on all interior surfaces of the boost pump cavity. Some operators may prefer to use BMS 3-26, Type I (Dinitrol AV-5B-2) on their airplanes (Fig. 4, Section A-A).

(b) On airplanes without the abrasion resistant paint, inspect the mating faces of the door and skin every six months for evidence of corrosion.

NOTE: The application of abrasion resistant paint to interfacing surfaces per SB 57-2091 is recommended to minimize corrosion.

(c) On airplanes with the abrasion resistant coating, inspect the mating faces every 2 years for deterioration of coating and reapply as necessary.

(4) Ribs and Stringers

(a) Application of BMS 3-23, Type II corrosion-prevention compound should be accomplished when maintenance work allows access to the leading edge structure.

(b) Periodically inspect the leading edge ribs to preclude or detect the early stages of corrosion.

NOTE: For 747-100, 747 SR, or 747 SP airplanes, refer to SB 57-2116 or 57-2160 for inspection procedure.

(c) For interspar ribs common to front spar and rear spar, apply BMS 3-23, Type II corrosion-prevention compound at the same time with front spar and rear spar.

(5) Fuel Tank Access Panel

(a) Inspection of the mating surfaces of the access door clamp ring and wing skin should be made at regularly scheduled maintenance periods for evidence of corrosion.

(b) If there is no corrosion, the access clamp rings should be installed using knitted aluminum gaskets, soak with anti-corrosion grease for corrosion protection.

F. Frequency of Application

(1) Regular inspection is required in areas that can get corrosion and should agree with the schedule in the Maintenance Planning Document. Operators must know of reported problems and areas.

(2) Regular application of BMS 3-23 compounds is necessary in areas identified and should agree with the schedule in the Maintenance Planning Document.

G. Improved corrosion Protection

(1) Front and Rear Spar

(a) On airplane line number 285, the lower forward face of the front spar and fixed leading edge structure was treated with water displacing corrosion inhibiting compound to improve corrosion protection.

(b) On airplane line number 306, Corogard paint has been added to the forward face of the front spar and the fixed leading edge structure with the exception of fiberglass skin panels. See Detail II for specific areas in which Corogard has been applied. Fillet seals have been added as shown in Section A-A. Fillet seals and injection sealing have been added to the front spar fittings at the lower chord and skin.

(c) On airplanes line numbers 733, 740, 759, 762, 806 and on, PRR 80922-1 changed the primer from BMS 10-11 to BMS 10-79 on the exterior surface of the wing leading edge.

(d) On airplane line number 306, leveling compound has been added to all leading edge fittings attached to the lower inspar panels. This provides sealant ramps to prevent the accumulation of moisture at skin pads. Drain holes were added in the leading edge fiberglass panels and fillet seals were added to the forward edge of the lower inspar skin. Refer to Volume 2, 57-30-47, Fig. 4 for details.

(e) On airplane line number 483, the full length of the front spar chords are being shot peened to reduce the possibility of stress corrosion cracking. At the same time the existing 3/8 aluminum rivets (BACR15BB12DD) common to the spar chords and web between FSS 1381 and 1410 are being replaced with 5/16 titanium riv-bolts (BACR15EK5A).

(f) On airplane line number 476, improved corrosion protection is being provided by installing BMS 5-95 fay surface sealant between the spar web and chords on both the front and rear spars in addition to the fillet sealing described in par. F.

(g) On airplane line number 646, BMS 3-23 corrosion inhibiting compound is applied to the rear spar aft cavity for the entire length of the wing. Some operators may prefer to use BMS 3-26, Type I on their airplanes. However, starting airplane line number 751 and on, PRR 81931 stopped the use of Dinitrol products as an alternative in production for corrosion protection.

(h) At line number 645, to provide a more corrosion resistant fastener, a production change replaced four (ea) BACB30MT with BACB30US bolts at the vertical-to-body attachment. The bolt material was changed from an H-11 steel to an Inconel 718.

(i) SB 57-2183 provides procedures to add drain holes in the wing lower skin forward of the front spar of airplane line No. 306 thru 423. This will help prevent collected water that could cause corrosion.

(2) Nacelle Strut Support Fitting - At line number 645, the inboard and outboard H-11 attach fitting bolts were replaced with Inconel 718 bolts, which do not get stress corrosion as easily. This change can be made on other airplanes with SB 57A2235.

(3) Boost Pump Access Doors and Cutouts - At line number 367, BMS 5-26 sealant was applied as a ramp on the inside lower skin of the boost pump cavity. This change can be made on other airplanes with SB 57-2180.

(4) Ribs and Stringer

(a) At line number 645, a production change replaced eight H-11 steel BACB30MT bolts with Inconel 718 steel BACB30US bolts at the following locations:

1) Rib WBL 353 between S-5 and S-8

2) Rib WBL 585 between S-6 and S-8

3) Rib WBL 743.828 between S-6 and S-8

(5) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

(6) At line number 1011, PRR 82788-1 applied BMS 3-23 compound to all metallic structure inside the wings. At line number 1028, the flaps and ailerons are included.

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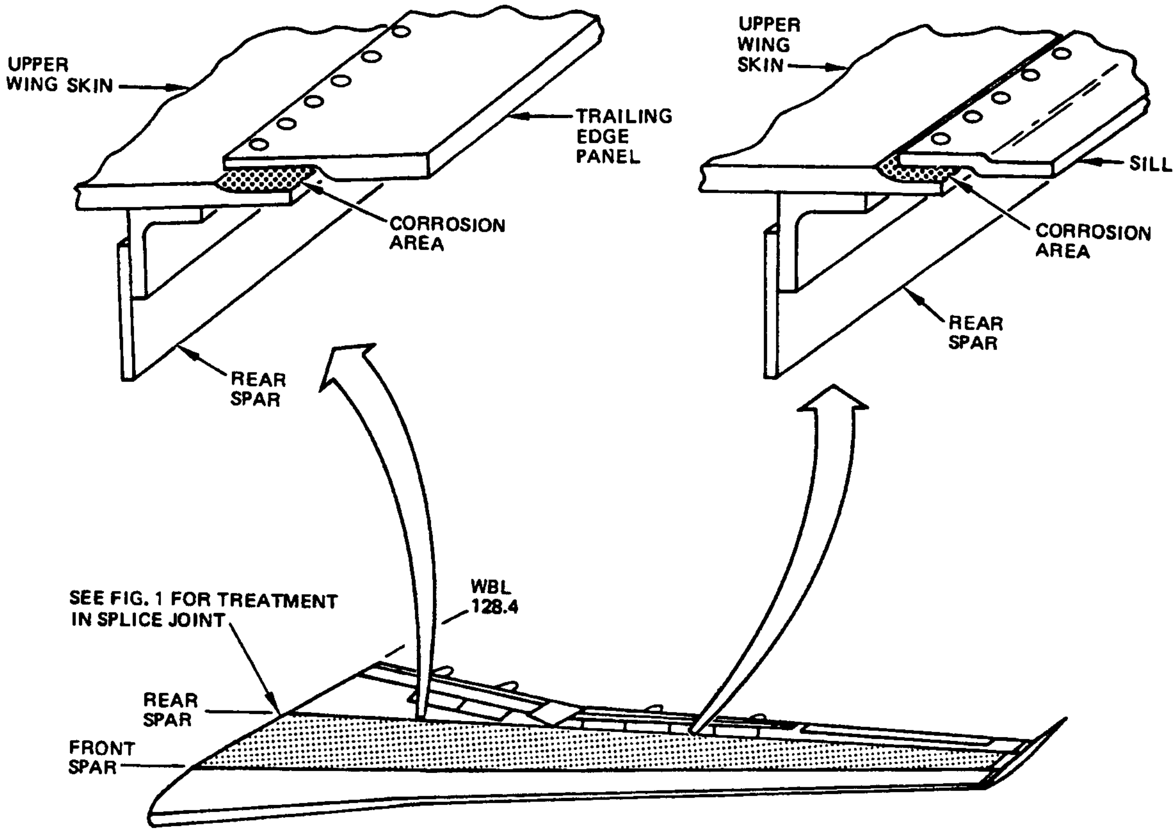
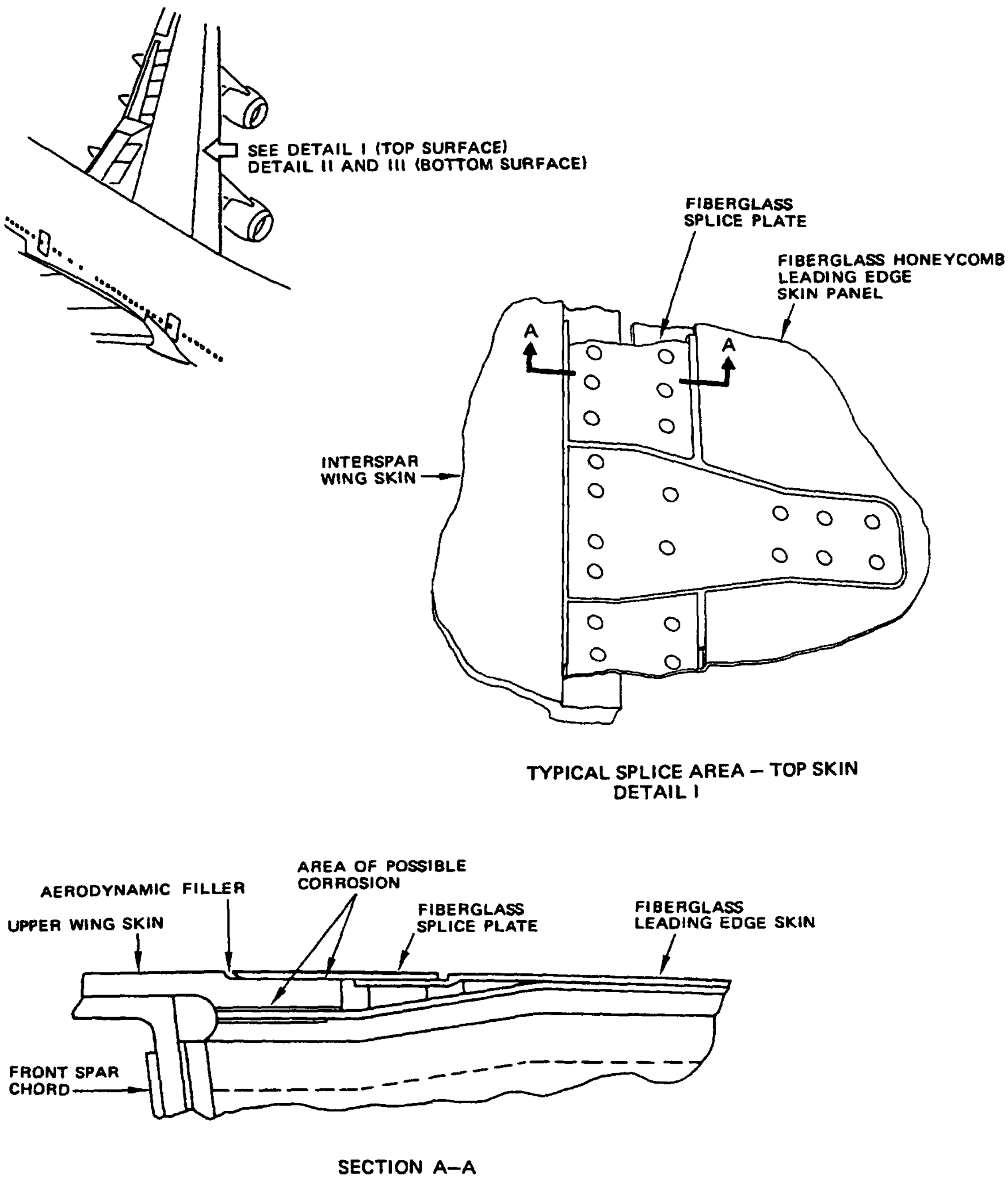
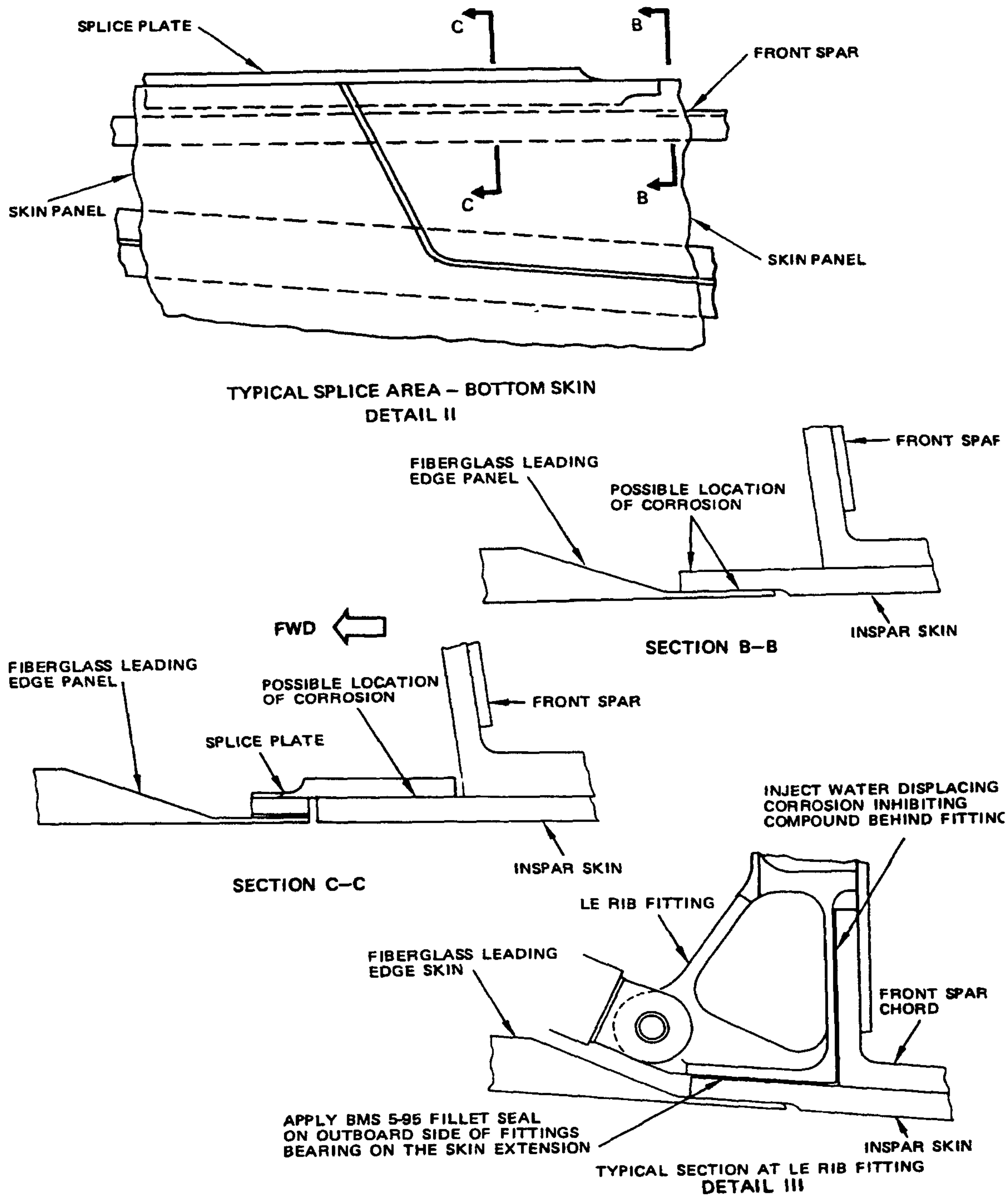


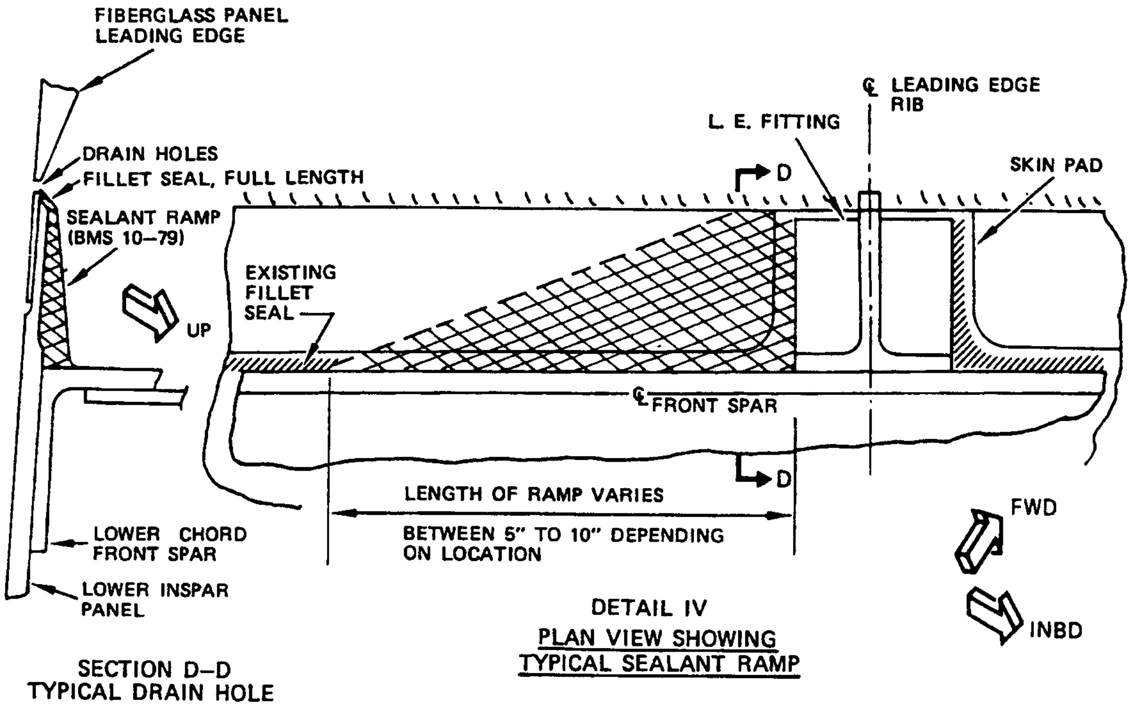
Wing Skin
Figure 1 (Sheet 1)



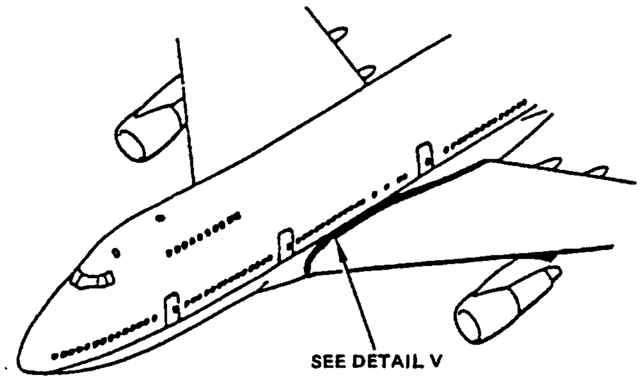
Wing Skin
Figure 1 (Sheet 2)



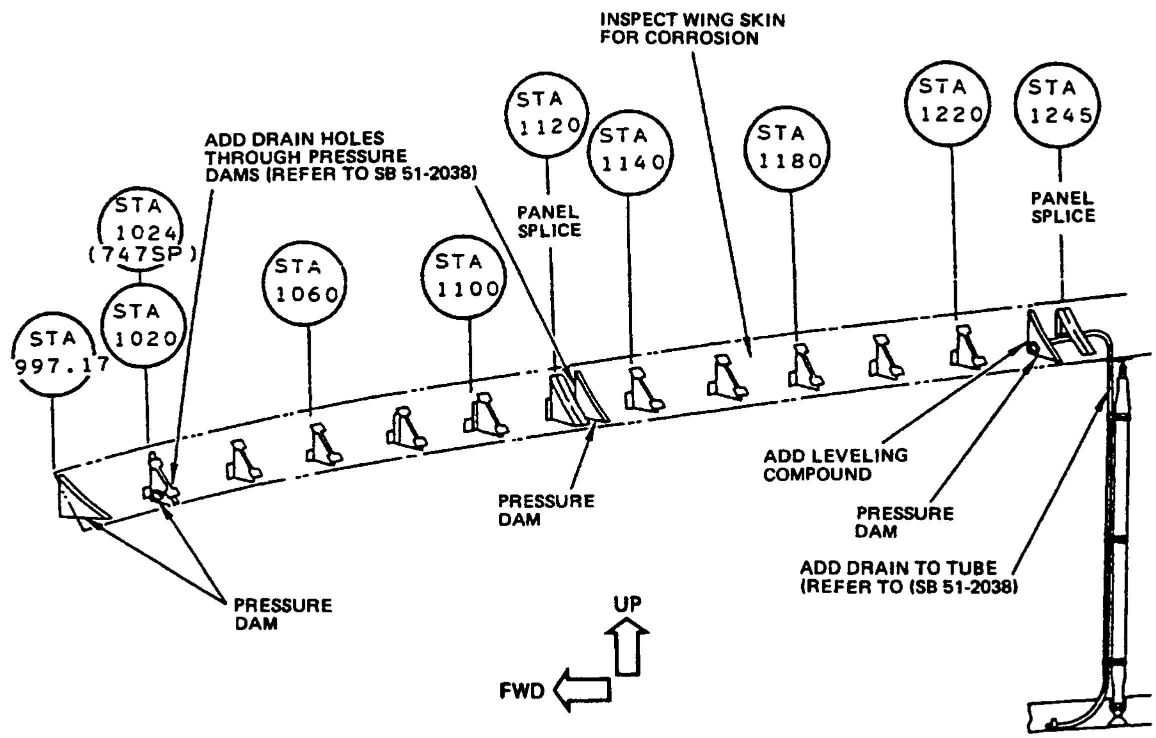
Wing Skin
Figure 1 (Sheet 3)



Wing Skin
Figure 1 (Sheet 4)



LEFT SIDE SHOWN
RIGHT SIDE OPPOSITE
TYPICAL 747 AND 747SP AIRPLANES



OVERWING FAIRING SUPPORT FRAMES
AND FOAM PRESSURE BARRIERS
DETAIL V

Wing Skin
Figure 1 (Sheet 5)

1. General

A. The joint between removable fiberglass honeycomb leading edge panels and the top main wing skin is covered with a fiberglass splice plate.

(1) The faying surfaces of main wing skin under the fiberglass splice plate, mainly outboard of the outboard engine, can get corrosion where moisture comes in through the fastener location or a break in the aerodynamic sealer.

(2) Corrosion can also occur on the upper surface of the lower skin including the area under the splice plates particularly outboard of FSS 1200.

NOTE: This problem is related to corrosion of the front spar lower chord. Refer to Volume 2, 57-10-47, Fig. 1 for more data.

B. The exterior surfaces of the upper and lower inspar skins of the wing can get corrosion generally at fastener locations. The small gap between the countersunk skin and the head of the flush fastener may leave an unsupported area for the paint system leading to cracking of the paint system around the fastener head and an opening for moisture and contaminants to enter.

(1) Corrosion can occur on the upper and lower inspar skins primarily around straight shank titanium fasteners (BACB30PT) treated with a phosphate fluoride conversion coating. Airplane line numbers having this installation are 124 thru 232. A few random cases of corrosion around cadmium plated taper shank fasteners (BACB30M) and cadmium plated straight shank titanium fasteners (BACB30PT) have also been reported. Airplane line numbers having the above installations are 1 thru 123, and 233 and on, respectively. SB 57-2169 provides inspection and rework procedures for airplanes without the cadmium plate finish on the titanium fasteners.

(2) Corrosion has been reported on the inspar skins at the trailing edge joints. Exfoliation corrosion and cracking has also been reported on the upper skin at the forward edge rabbet cut.

(3) Corrosion was found on the upper skin plates of the wing. The corrosion is usually around the bolt heads and reaches a maximum depth of 0.15 inch.

C. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the regular inspections of Volume 1, 20-20-00 to stop or find the start of corrosion. Fasteners that are gone, white powdery or other deposits are signs of corrosion.

B. After you clean the areas, do the inspection of Volume 1, 20-20-00 to make sure that protective finishes stay serviceable.

C. If you find corrosion (bulges of the skin or white deposits of corrosion products at fastener heads or joint edges), refer to Structural Repair Manual for details of corrosion removal.

D. For small amounts of corrosion, to decrease the downtime of the airplane, clean off the corrosion products. Apply a corrosion inhibiting compound into the affected area to stop the corrosion process. Refer to Volume 1, 20-60-00 for how to apply corrosion inhibiting compound. Repair the finish system when the maintenance schedule permits.

E. Prevention Treatment

(1) At earliest opportunity consistent with the maintenance activity, corrosion prevention treatment should be accomplished to the upper and lower inspar skin.

(2) Top Skin

(a) Repair any broken or cracked aerodynamic filler along the joint on outer surface.

(b) Apply water displacing corrosion inhibiting compound along joint edges, fastener heads, inner skin surfaces and adjacent front spar. Wipe off excess.

NOTE: For details of application of water displacing corrosion inhibiting compound, refer to Volume 1, 20-60-00. Before repainting, all traces of corrosion inhibitor would have to be removed as described in Volume 1, 20-60-00.

(c) Consider removal of the fiberglass straps and reinstallation with faying surface seals as described in SB 57-2157.

(3) Bottom Skin

(a) Apply BMS 5-95 fillet seals to the outboard sides of leading edge rib fittings at the bearing surfaces on the wing skin extensions.

(b) Apply water displacing corrosion inhibiting compound to the front spar and skin extension except for areas painted with Corogard (Ref Volume 2, 57-10-47, Fig. 1). Inject the corrosion inhibitor behind the rib fittings.

NOTE: For details of application of water displacing corrosion inhibiting compound, refer to Volume 1, 20-60-00.

(c) The procedures of SB 57-2158 will decrease the possibility of corrosion on the leading edge lower surface inspar skins.

(4) For airplanes before line number 681, SL 20-22 and 51-16 tell you to use BMS 10-79, Type III primer and Aeroflex G12E25 as an alternative to the original primer and Corogard when the corrosion protection in the upper inspar skin requires repair or replacement. Corogard agrees chemically but not visually with Aeroflex.

F. Frequency of Application

(1) Regular inspection is required in areas that can get corrosion and should agree with the schedules in the Maintenance Planning Document. Operators must be aware of reported problems and areas of occurrences.

(2) Regular application of BMS 3-23 compounds is necessary on areas identified and should agree with the schedule in the Maintenance Planning Document.

G. Improved Corrosion Protection

(1) At line number 229, PRR 75962 added faying surface sealant on the main wing skin under the fiberglass splice plate. This change can be incorporated on earlier airplanes with SB 57-2157.

(2) At line number 298, PRR 78548-1 added sealing between the splice plates and the upper and lower skins. At line number 306, Corogard paint was applied, and a drain hole at Inboard Leading Edge Station 270 was added. These changes can be incorporated on earlier airplanes with SB 57-2158.

(3) The 747-400 has BMS ?-23 water displacing compound on all interior surfaces between the ribs at WS 1551.25 and WBL 1243.75, the front and rear spars and the upper and lower skin panels.

(4) On airplane line numbers 306, 385 and on, leveling compound has been added to all leading edge fittings attached to the lower inspar panels (Ref Detail IV). This provides sealant ramps to prevent the accumulation of moisture at skin pads. Drain holes were added in the leading edge fiberglass panels and fillet seals were added to the forward edge of the lower inspar skin, (Ref Section D-D).

(5) On airplane line number 376, all titanium (BACB30PT) bolts through wing skin panels have been installed with BMS 5-26 sealant in countersinks to improve corrosion protection.

(6) On airplane line number 233 and on, the Corogard paint system has been applied on the lower inspar wing skin. However, on airplane line numbers 681 and on, BMS 10-79, Type III primer and Aeroflex G12E25 have been used to replace Corogard as standard primer and point for exterior surfaces of the inspar skins. This can be incorporated on earlier airplanes with SL 20-22 and 51-16.

(7) The drain system on some airplanes is not sufficient to prevent collected water and corrosion on the upper skin of the wing. As a result, on airplane line number 597 and on, PRR 1432GP added drain holes to fairing-support-pressure barriers, and installed drain tube in the fairing cavity to collect and drain water overboards. These changes can be added on some airplanes by SB 51-2038 (Ref Detail V).

(8) On some 747-400 airplanes, MC 5124MP4080 applies BMS 5-95,Type F(PR 1432GP)coating (as a primer before the Aeroflex coating) to the fastener rows in the outer wing inspar skin at the front and rear spar chords and spanwise skin splices.

(9) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

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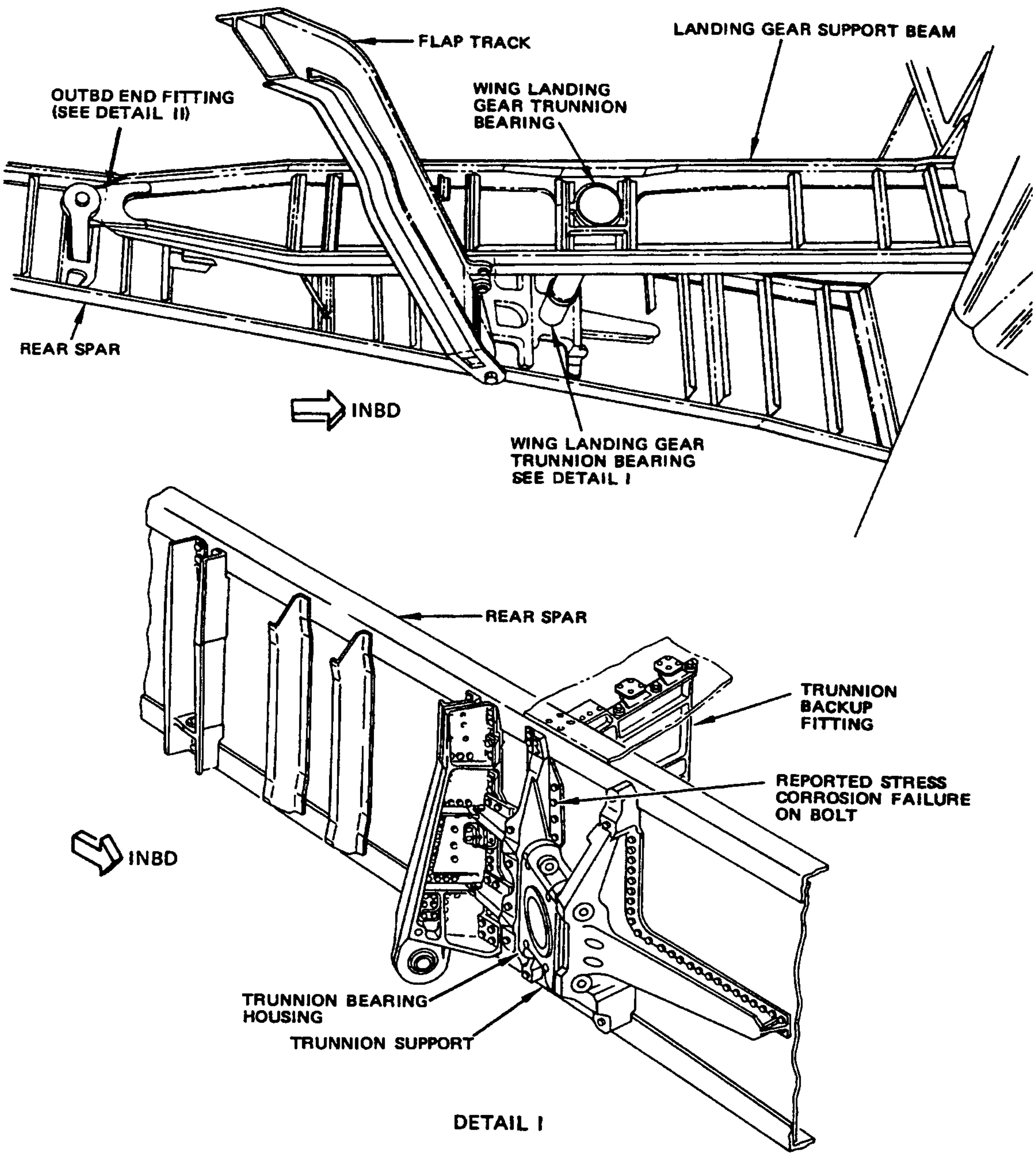
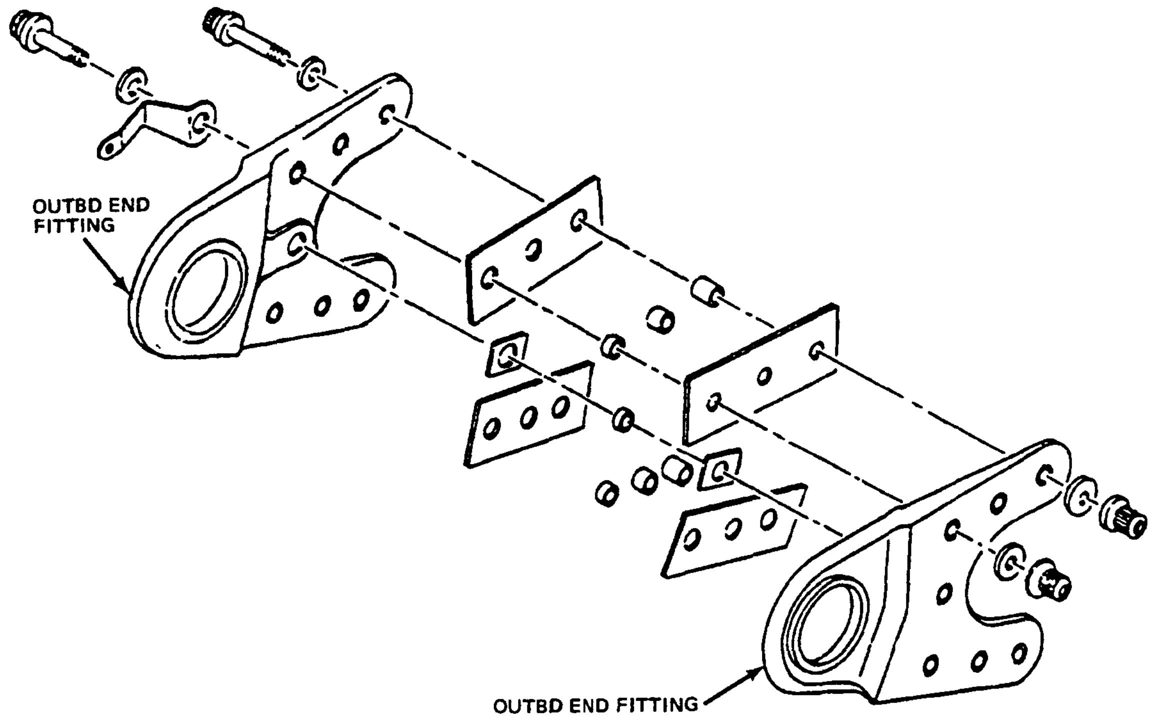
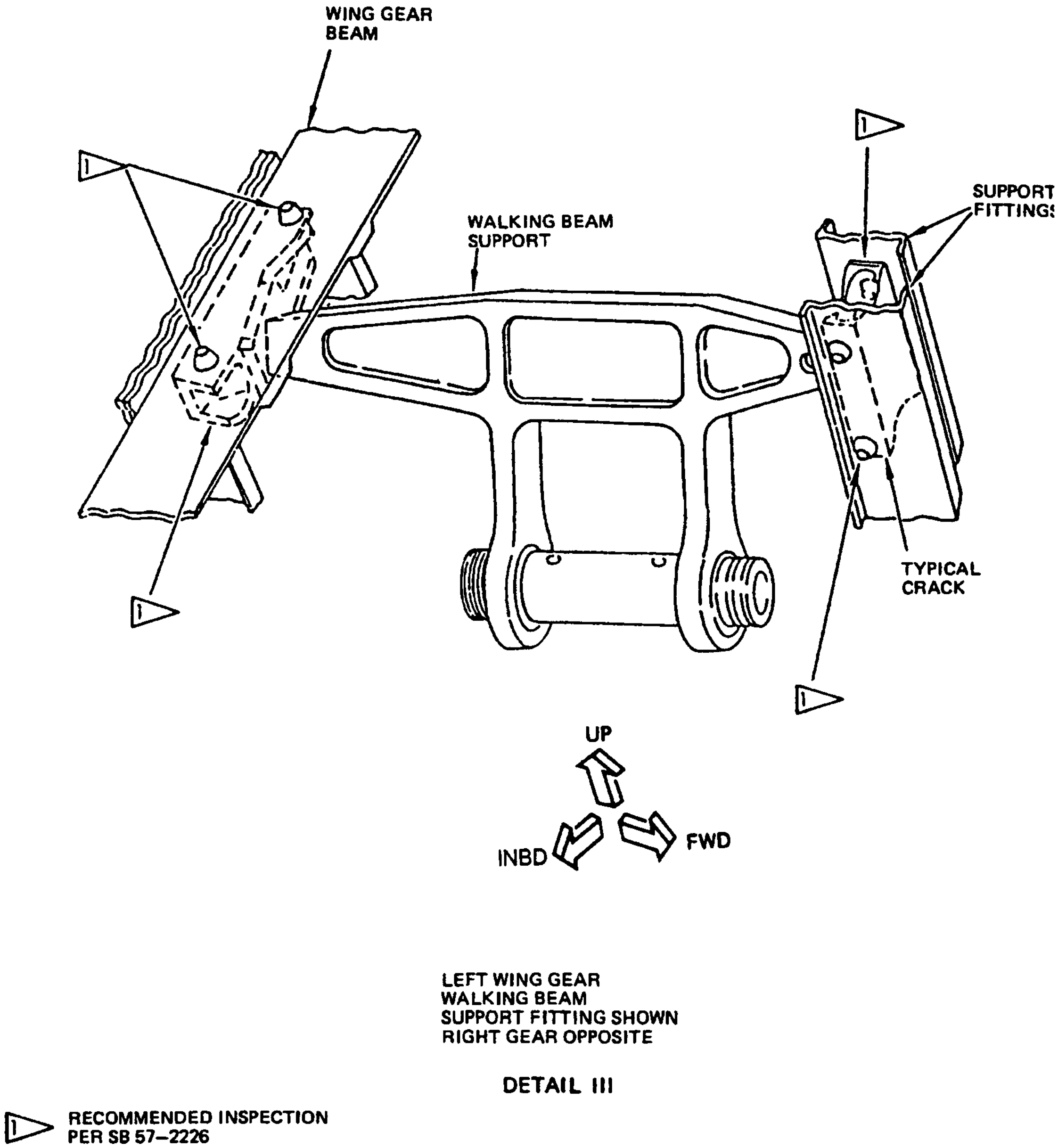


Wing Landing Gear Trunnion Support Structure
Figure 1 (Sheet 1)



Wing Landing Gear Trunnion Support Structure
Figure 1 (Sheet 2)



Wing Landing Gear Trunnion Support Structure
Figure 1 (Sheet 3)

1. General

A. The main landing gear support beam is manufactured from titanium and therefore has a high resistance to corrosion. Instances of corrosion have been reported at the forward trunnion fitting which is attached to the rear spar. Additional lubrication grooves have been added to the bearing and chrome plate to the bearing housing at line number 2147 and may be embodied retroactively by SB 32-2151. The aft trunnion has also been modified at line number 51 by the addition of chrome plate and further improved for corrosion resistance at line number 236. These improvements may be incorp.orated retroactively during landing gear overhaul.

B. Corrosion has been reported in the threads of the trunnion bearing housing.

C. Stress corrosion has been reported on the bolts common to the wing gear aft outboard trunnion fitting and trunnion back up fitting (right and left).

D. Corrosion has been found on the outboard end fitting lug bore after the bushing has been removed (Fig. 1, Detail III).

E. Stress corrosion has been the cause of bolt breakage or looseness at the walking beam support fitting bearing housings.

F. Corrosion was the cause of a broken wing-landing-gear-beam-outboard-end fitting. The cracks started at corrosion pits in the fitting bore and became larger because of stress corrosion. Corrosion was also found in the fitting bore, attach bolt holes and faying surface of the end fitting.

G. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. Missing fasteners, white powdery or any discolored deposits are evidences of the existence of corrosion which should alert operators that some corrective action is required. A corrosion prevention program should be initiated to prevent the accumulation of corrosive products in order to minimize the occurrence of corrosion.

B. Following cleaning of suspected areas, a thorough inspection as described in Volume 1, 20-20-00 is effective to ensure that protective finishes provides during manufacture remain intact.

C. For minor corrosion, to minimize the downtime of the airplane, the corrosion products should be cleaned off followed by the application of the corrosion inhibiting compound into the affected area to retard the corrosion process (Ref Volume 1, 20-60-00). The finish system should be restored at the first opportunity consistent with the maintenance schedule.

D. Prevention Treatment

CAUTION: DO NOT APPLY CORROSION INHIBITING COMPOUNDS ON GREASE JOINTS OR SEALED BEARINGS. THESE COMPOUNDS DISSOLVE GREASE AND OTHER LUBRICANTS. THEY ARE PENETRATING COMPOUNDS AND CAN GET AROUND THE SEALS AND INTO THE BEARINGS.

(1) Apply inhibitor to bolts common to the wing gear aft outboard trunnion fitting and trunnion back up fitting (right and left) for corrosion prevention.

(2) SB 57-2226 provides inspection and modification procedure for the walking beam support fitting bearing housing at the wing landing gear attach fitting.

E. Frequency of Application

(1) Periodic inspection is required to areas identified as susceptible to corrosion and should be consistent to the schedules specified in the Maintenance Planning Document. Operators must be aware of reported problems and areas of occurrences.

(2) Periodic application of BMS 3-23 compounds is necessary to areas identified and should be consistent to the schedule specified in the Maintenance Planning Document.

F. Improved Corrosion Protection

(1) Some operators have applied Mastinox 6856K compound, instead of BMS 5-95, to the threads of the retaining nut on the trunnion bearing housing installation.

(2) SL 57-50 gives recommended procedures to remove corrosion on the outboard end fitting.

(3) On airplane line numbers 696 and on, PRR 80981 added corrosion protection to the landing gear beam end fitting. The end fitting, bushings and shims at the outboard end of beam are installed with fay and fillet seals. The bolts common to the beam and end fitting are installed with wet sealant and fillet seals. These changes can be added on some airplanes by SB 57-2244. This service bulletin now includes corrosion inspection for the landing-gear-beam-outboard-end fitting. This inspection is best done at the same time as the ultrasonic inspection of the end fitting.

(4) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

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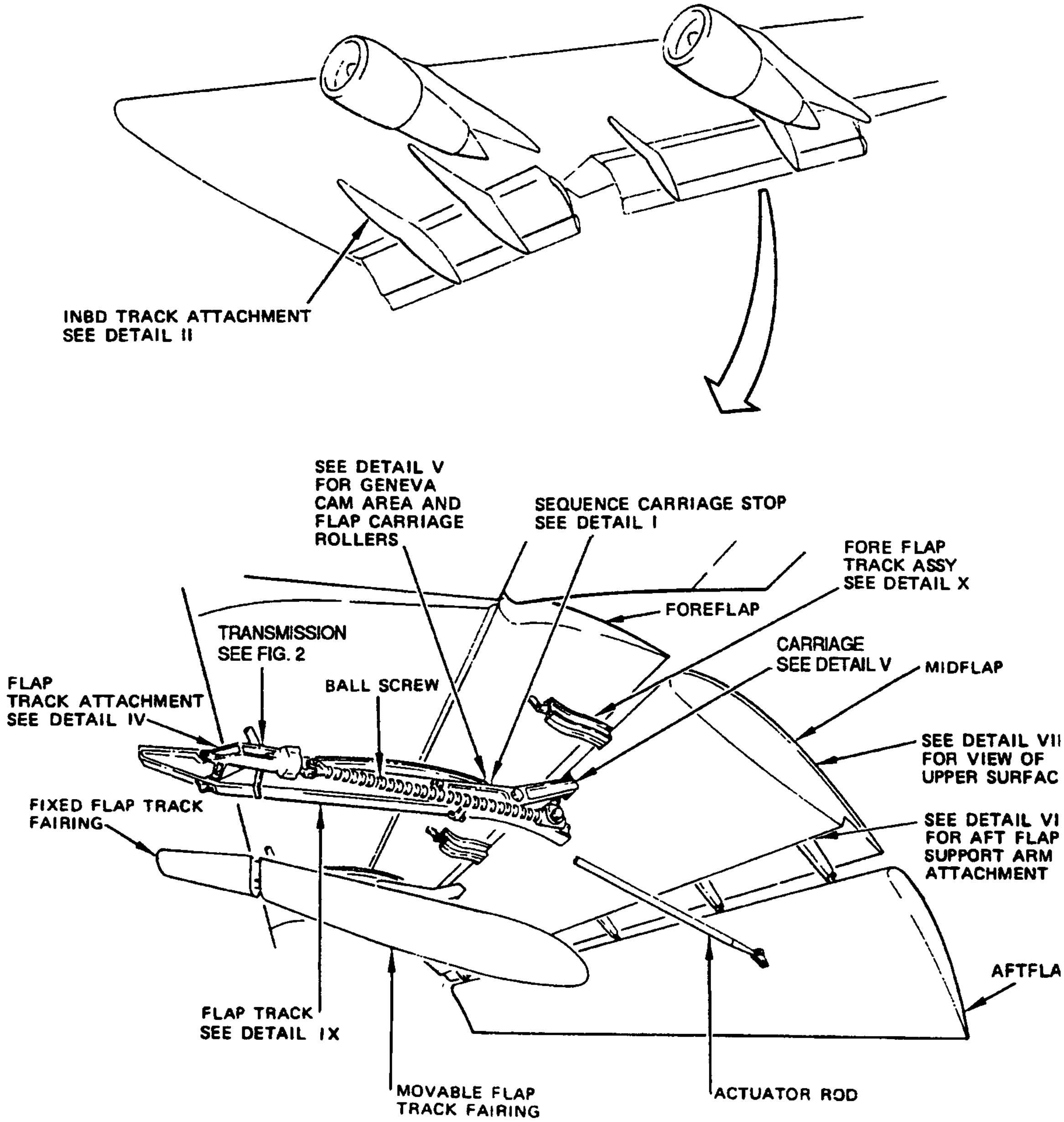
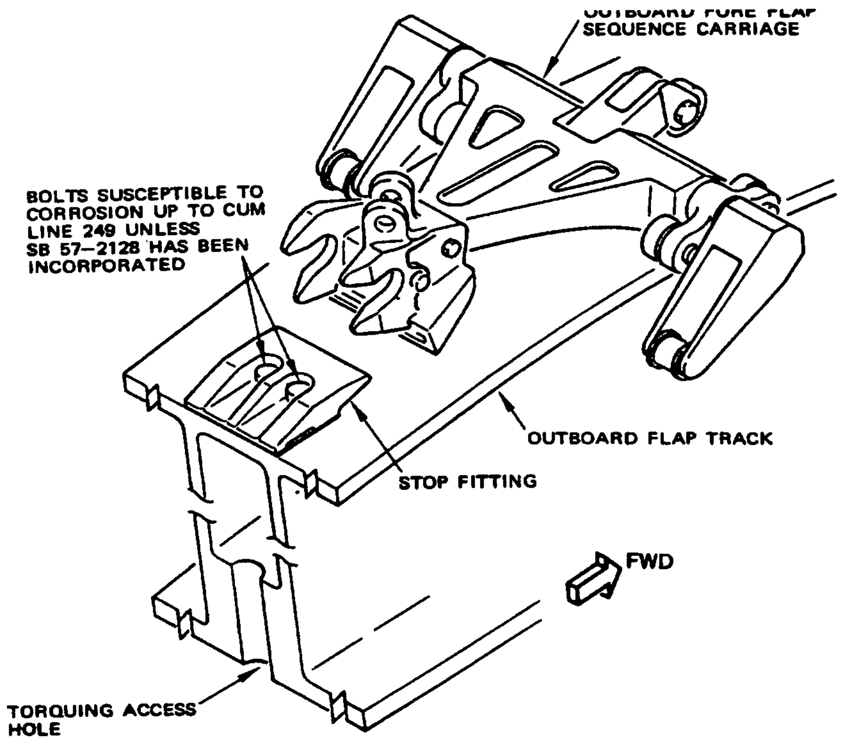
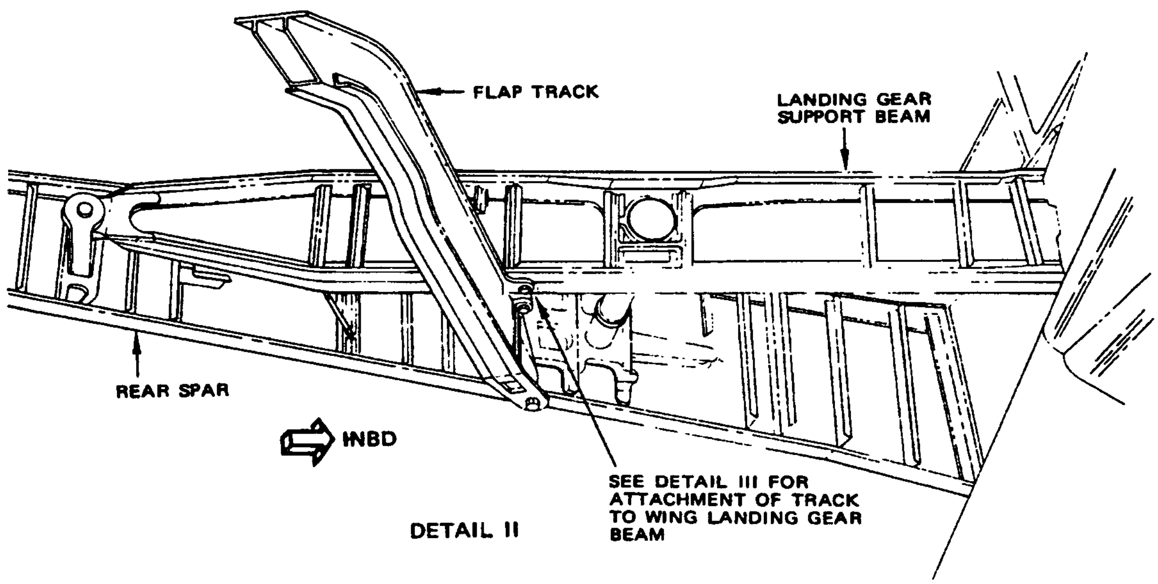


Trailing Edge Flaps
Figure 1 (Sheet 1)

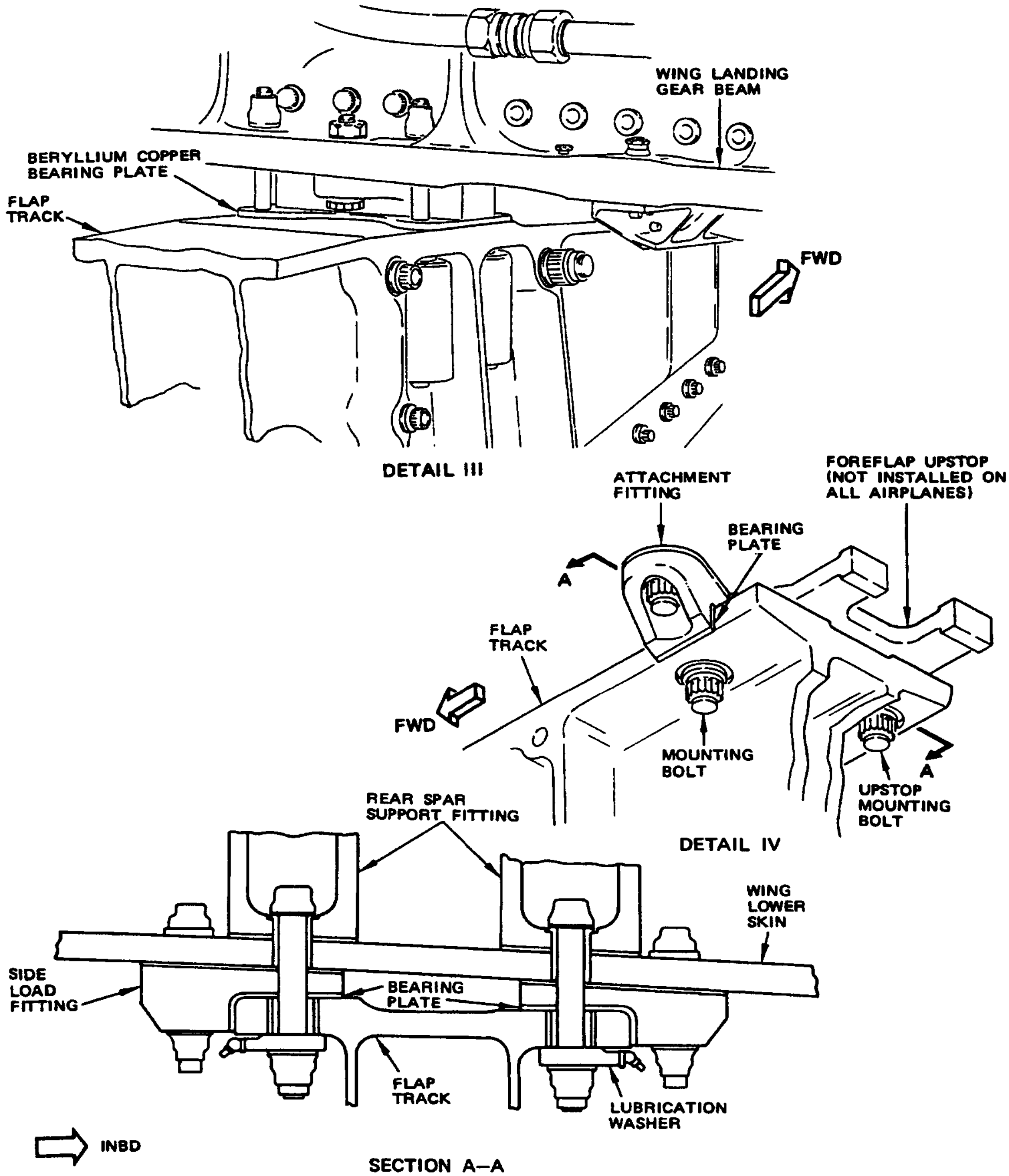


DETAIL I

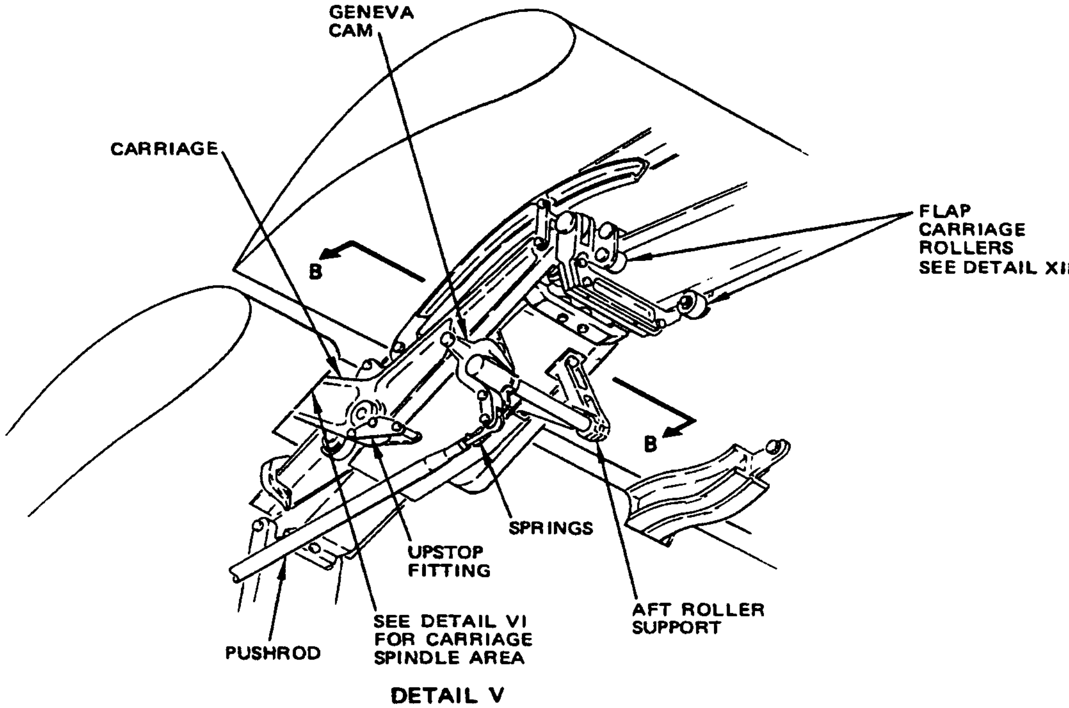


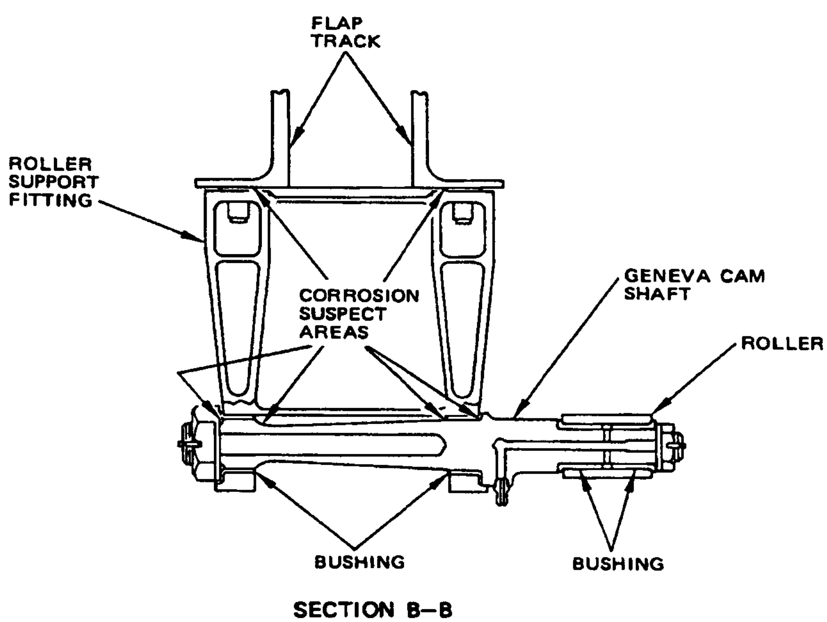
DETAIL II

Trailing Edge Flaps
Figure 1 (Sheet 2)

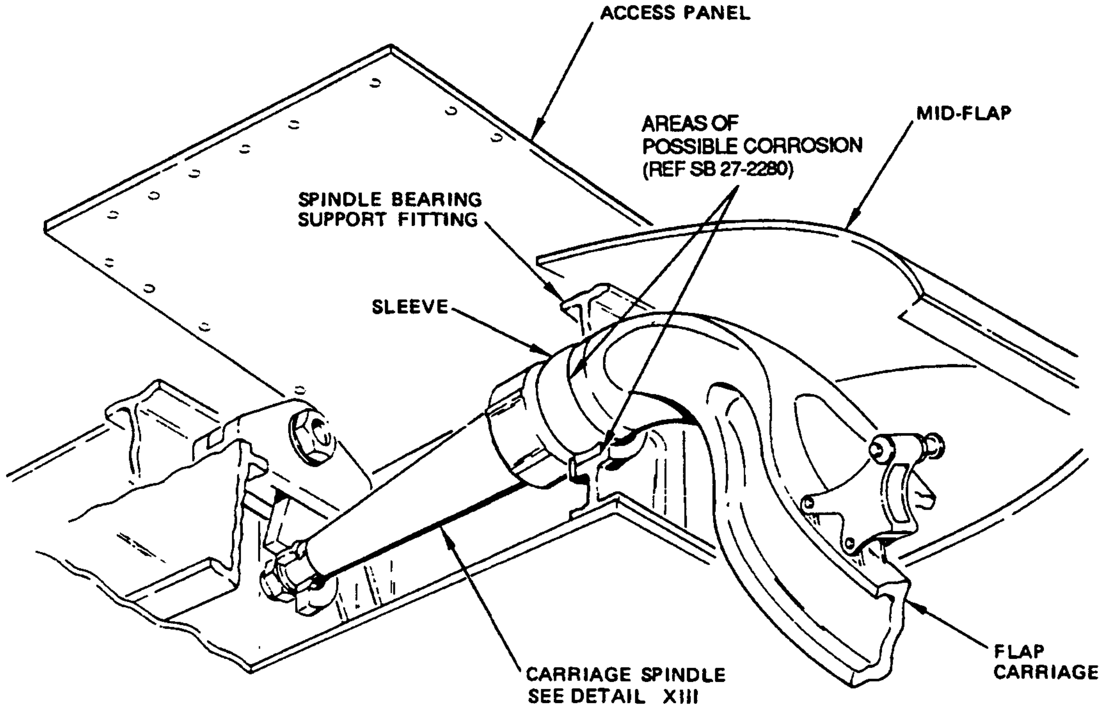


Trailing Edge Flaps
Figure 1 (Sheet 3)



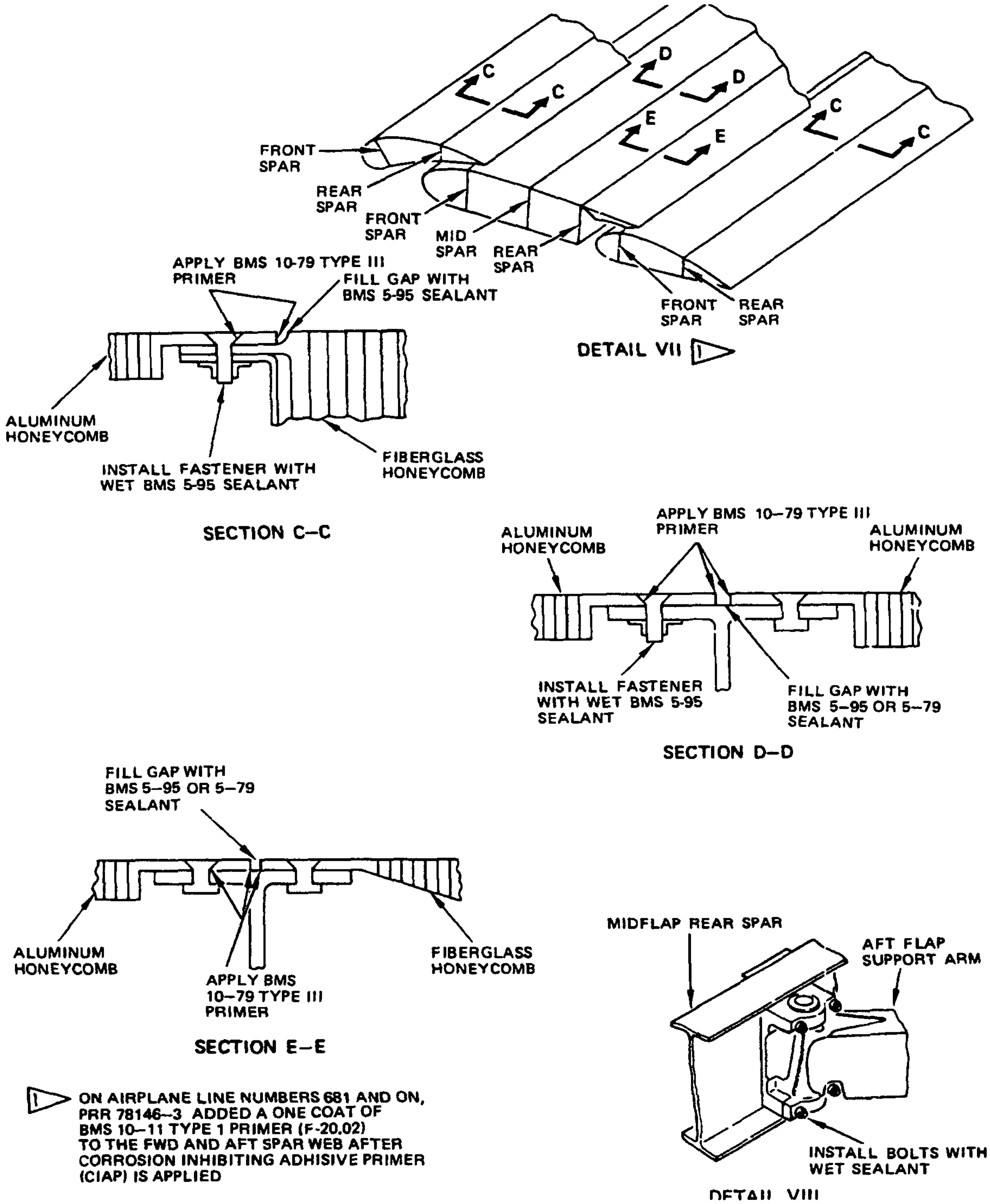


Trailing Edge Flaps
Figure 1 (Sheet 4)



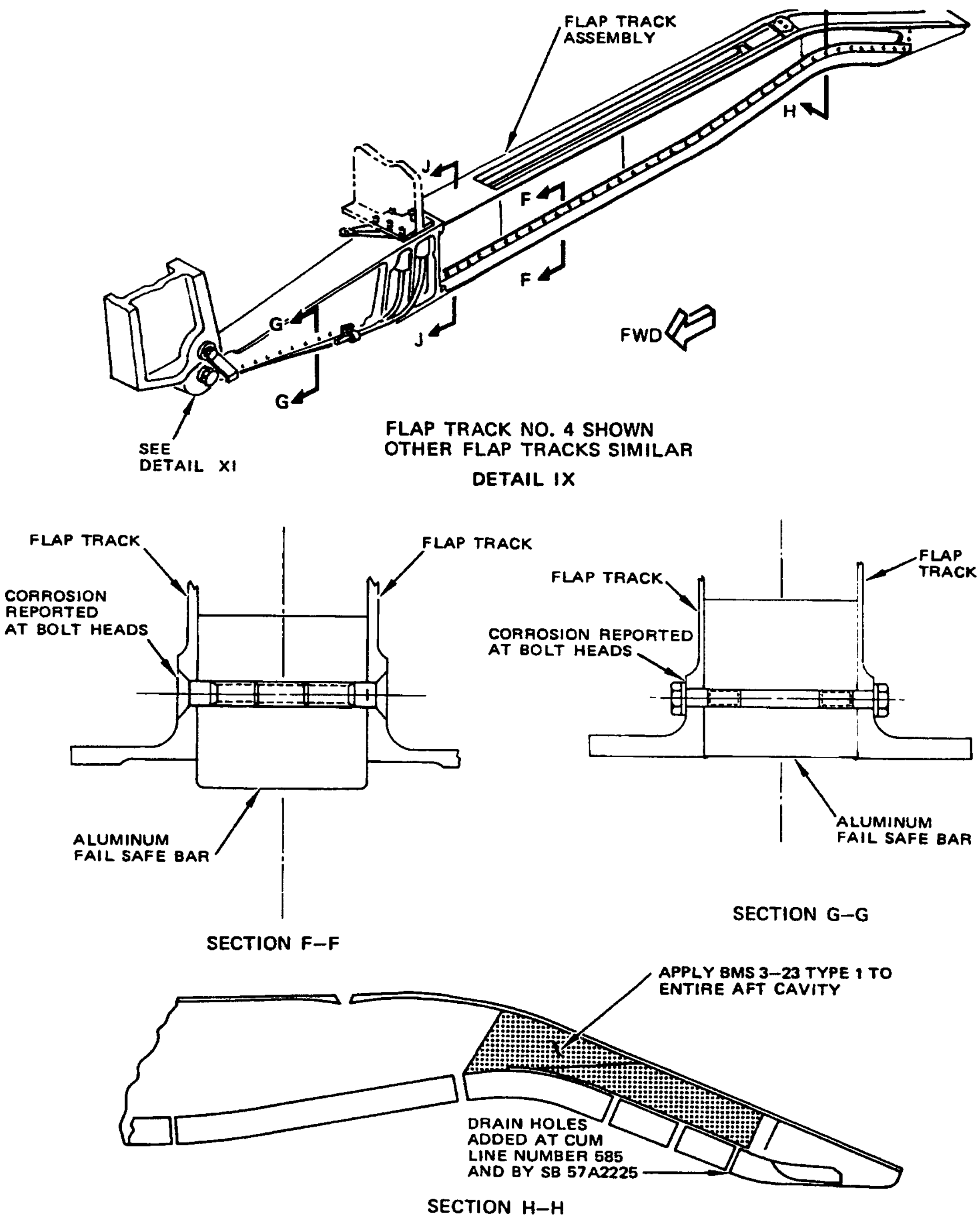
DETAIL VI

Trailing Edge Flaps
Figure 1 (Sheet 5)

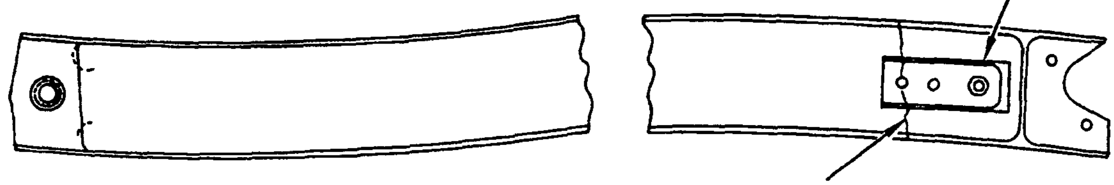


1 ON AIRPLANE LINE NUMBERS 681 AND ON, PRR 78146–3 ADDED A ONE COAT OF BMS 10–11 TYPE 1 PRIMER (F-20.02) TO THE FWD AND AFT SPAR WEB AFTER CORROSION INHIBITING ADHISIVE PRIMER (CIAP) IS APPLIED

Trailing Edge Flaps
Figure 1 (Sheet 6)

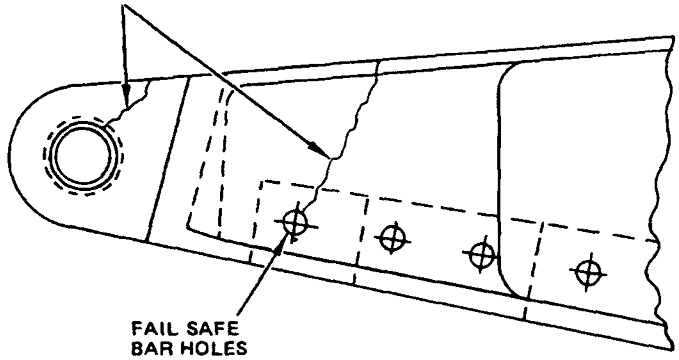


Trailing Edge Flaps
Figure 1 (Sheet 7)



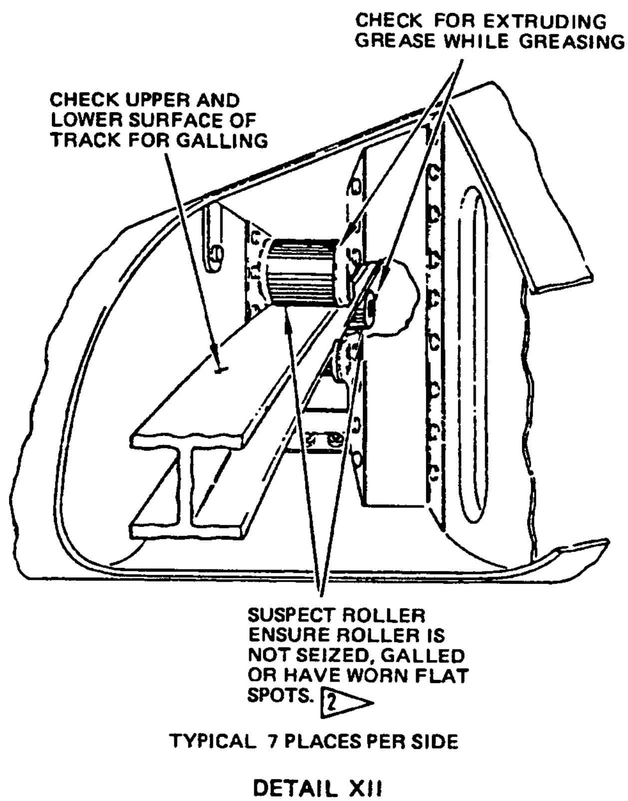
FORE FLAP TRACK ASSEMBLY
(TYPICAL)

DETAIL X



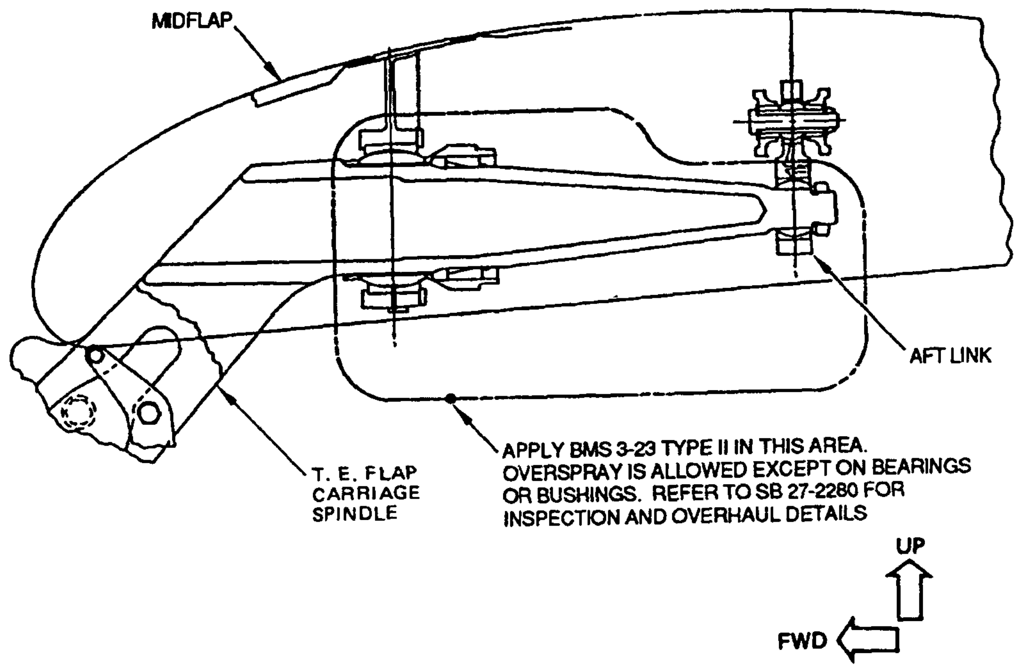
DETAIL XI

Trailing Edge Flaps
Figure 1 (Sheet 8)



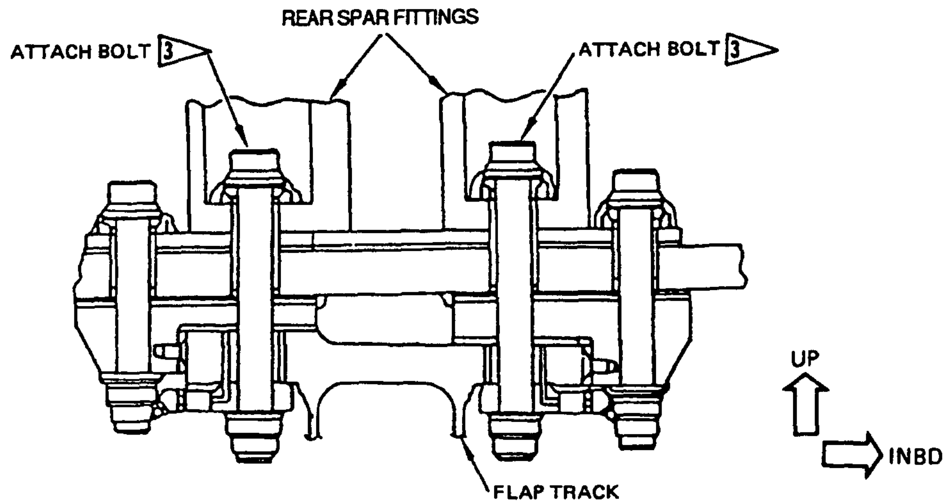
2 RECOMMENDED TO LUBRICATE WITH MIL–6–23827 OR EQUIVALENT GREASE NOT CONTAINING MoS2 ON AIRPLANE PRIOR TO LINE NUMBER 253 PER SB 57–2107.

Trailing Edge Flaps
Figure 1 (Sheet 9)



DETAIL XIII

Trailing Edge Flaps
Figure 1 (Sheet 10)



SECTION J-J

3 POSSIBLE STRESS CORROSION CRACKS (REF SB 57-2228)

Trailing Edge Flaps
Figure 1 (Sheet 11)

1. General

A. The flap tracks, track attachment fittings on rear spar and actuator rods, being in exposed positions are all prone to corrosion. Damaged finishes of these fittings are attributed to exposure to the weather and runway debris. Service wear also contributes to galling of the movable bearing surfaces.

B. Specific corrosion problems have been associated with the bolts attaching the outboard fore flap sequence carriage stop to the flap track. Breakage of one of these bolts permits the stop to rotate which may cause high stresses resulting in sequence carriage breakage. From airplane line No. 250, BMS 5-95 sealant has been used for this bolt installation and this may be introduced retroactively by the incorporation of SB 57-2128.

NOTE: Attachment bolts of the inboard fore flap sequence carriage stops are stainless steel and are not susceptible to corrosion.

WARNING: BEARING PLATES ARE MADE OF BERYLLIUM, COPPER ALLOY. DUST, FUMES, OR MISTS OF BERYLLIUM COMPOUNDS ARE HAZARDOUS IF INHALED. OBTAIN APPROVAL OF PROCEDURES FROM AUTHORIZED INDUSTRIAL HYGIENE OR MEDICAL UNIT BEFORE FILING, SANDING, OR MACHINING BERYLLIUM ALLOY PARTS.

C. Corrosion of the inboard most flap track has occurred at the rear attachment to the wing landing gear beam. A cadmium plated beryllium copper bearing plate is installed between the track and the beam and in some instances relative motion has worn the protective cadmium plating on the track and the bearing plate, permitting the initiation of galvanic corrosion. Production changes at airplane line number 243 have been made to add epoxy primer and polyurethane enamel to the track in the area of the bearing plate, and to install the bearing plate with a faying surface seal of BMS 5-95.

D. From airplane line number 250 the bolts attaching the aft flap support arms on inboard and outboard flaps have been installed with sealant for added corrosion protection.

E. Reports have been received of local delamination and filiform corrosion along edges and around fasteners of the aluminum honeycomb upper panel, of the aft flaps, mid flaps and fore flaps. A break in the protective finish is suspected to allow moisture entry leading to subsequent delamination and corrosion. Production changes in the finish, the application of BMS 10-79 primer to countersinks and panel edges and filling gaps with BMS 5-95, Class B sealant was incorporated at airplane line number 260. A later change which will replace the clad aluminum skins to bare aluminum for better paint adhesion will be incorporated at airplane line number 352.

F. Specific corrosion problems have been encountered at the rear spar attach points of the flap track as shown in detail IV. Stress corrosion cracking of the attach bolts has been attributed to the presence of moisture at these locations. The use of wet sealant at bolt installation was introduced at airplane line number 181. SB 57-2078 recommended the application of corrosion inhibiting compound at these locations unless the bolt is removed for inspection. When the bolt is removed for inspection, the area is cleaned thoroughly and a corrosion free bolt is installed with wet sealant.

G. At the same location as above galling and cracking of the bearing plates used to protect the side load fittings were encountered. A production change was introduced at airplane line number 145, 147 and on, where a lubrication washer with a zerk fitting was used to lubricate the moving surfaces. This change can be accomplished retroactively by incorporating SB 57-2063.

H. Flap Carriage Spindle

(1) Corrosion can occur on the spindle near the spindle bearing. Damage resulted from the migration of the spindle sleeve exposing the spindle. Some spindle bearing inner races became seized on the spindle sleeve because of galvanic corrosion. SB 57-2133 gives procedures for inspection and use of a new flanged sleeve with a thrust collar and a new bearing of stainless steel with chrome plated inner race. Also in the same area corrosion has been reported in the spindle bearing bore in the spindle support fitting which is attached to the front spar of the mid flap.

(2) Corrosion and pitting occurred under the aft carriage spindle sleeve. The corrosion moved the No. 4 carriage out of position and broke the No. 3 carriage bearing. Stress corrosion that started at a corrosion pit caused trailing edge flap carriage spindles to break. The No. 4 carriage aft spindle broke forward of the journal sleeve and the No. 3 carriage forward spindle broke under the journal sleeve at the forward end. SB 27-2280 gives procedures for inspection and overhaul of these parts. This is also the subject of FAA Airworthiness Directive 88-04-06.

I. Corrosion has been found on the trailing edge aft flap drive geneva cam roller snaft in the areas adjacent to the two chrome plated journals common to the shaft mounting fittings. The problem has been attributed to galvanic interaction along the borders of the chrome plating resulting in pitting and subsequent damage to adjacent areas. Generous amounts of MIL-C-11796, Class 3 corrosion preventive compound will be applied in production at airplane line number 305. In addition, BMS 5-95 fay surface seal will be applied on installation of the shaft mounting fittings to the flap track.

J. Seizure of various track rollers on the flap carriages have been reported. Seizure is due to internal corrosion presumably from the lack of lubrication. The problem has been identified at the main flap carriage dead weight (small) rollers, the main flap carriage flight load (large) rollers, the fore flap support track flight load rollers and on the aft bogie side load rollers.

K. Failure of the bolts securing the aft flap support arm to the midflap rear spar have been attributed to fatigue and stress corrosion. Improved protection was added on line number 250 thru 320, 437, 465, 572, 579, all 747SP and 581 and on, plus airplanes incorporating SB 57-2227 (supersedes SB 57-2131).

L. Corrosion has been reported on the fuse bolts and on the bolts of the dead weight roller aft track support of the trailing edge flap tracks.

M. Corrosion has been reported on the forward fuse bolt on the extreme forward end of flap tracks 4 and 5.

N. Corrosion has been found on the attachment of the fairing drive links to the flap track. Bolt loosening and cracking has also been experienced in this location.

O. Corrosion can occur on the trailing edge flap ballscrew assemblies. The corrosion was on the balls, the screw, and the nut.

P. Corrosion and subsequent deterioration of the output shaft bearing for the trailing edge flap transmission has been a problem. The output shaft bearing spacer has been provided with a lube fitting on line number 267 and on, plus airplanes incorporating SB 27-2123.

Q. Corrosion has been reported around the heads of bolts common to the vertical webs of the wing trailing edge flap tracks. A large number of bolts have flush heads without removal provisions. This design was necessary because the flap carriage side load rollers run over these areas and disassembly of the flap track assembly was not anticipated.

R. Two instances of exfoliation corrosion have been found at the upper trailing edge wing skin extension joint in the vicinity of the outboard spoilers.

S. Corrosion has been reported on the No. 4 and No. 5 flap track upper surface. Corrective action is detailed in SB 57-2207 for airplanes line No. 001 thru 523 except 747SP.

T. Corrosion and cracking have been reported in the aft flap track webs. Corrosion has been attributed to water accumulation in the aft cavity. On line number 585 and on, plus airplanes incorporating SB 57A2225, drain holes were added through the fail safe bars at the aft end of the flap tracks. BMS 3-23 is applied to the internal aft cavity of the flap tracks.

U. Internal corrosion has been reported on the inboard and outboard trailing edge flaps common to the horizontal flanges of upper and lower spar chords and skin. Starting at line number 681, BMS 10-79 Type III primer is applied to bare edges of upper and lower square edge panels with the gaps between panels filled with BMS 5-79 sealant. Also the lower panels are installed with BMS 5-95 fay surface sealant.

V. Several reported instances of fractured inboard fore flap track assemblies. These factures are the result of stress corrosion. See Detail X for location of fracture.

W. A crack was reported on the forward lug (one face only) of the inboard-inboard flap track. The crack was corrosion related. Effective with cum line 680 bushings are installed with higher interference fit, wet sealant and sealant around bushing flanges (Detail IX).

One operator reported a broken flap track No. 3 at the first outboard and second inboard failsafe barholes. The cracking was initiated by corrosion. SB 57A2229 call s, for inspection of the flap tracks. Terminating action is to replace the tracks for airplane line numbers 1 thru 220, 222 thru 228, 232, 233, 235, 236, 274 and 283 (Detail IX).

X. Corrosion has been found on the bore of the lug, after removal of the bushing, at the forward end clevis lug of Ño. 5 flap track.

Y. Corrosion can occur on the bearings of the forward support fittings of the flap tracks 1 thru 8. SB 57-2262 gives procedures for inspection and repair of this location.

Z. Stress corrosion cracks have been found on the flap track aft mount attach bolt (Fig. 1, Section J-J). Bolt breakage could result in subsequent damage to the trailing edge flap and surrounding structure.

AA. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. General Philosophy

(1) The basic corrosion prevention philosophy is to make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. Missing fasteners, white powdery or any discolored deposits are evidences of the existence of corrosion which should alert operators that some corrective action is required. A corrosion prevention program should be initiated to prevent the accumulation of corrosive products in order to minimize the occurrence of corrosion.

B. Following cleaning of suspected areas, a thorough inspection as described in Volume 1, 20-20-00 is effective to ensure that protective finishes provided during manufacture remain intact. Refer to Volume 1, 20-60-00 for details on the application of corrosion inhibiting compound.

C. Where corrosion exists (noticeable bulges of the skin or white deposits of corrosion products at fastener heads of joint edges), refer to Structural Repair Manual for details of corrosion removal.

D. For minor corrosion, to minimize the downtime of the airplane, the corrosion products should be cleaned off, followed by the application of a corrosion inhibiting compound into the affected area to retard the corrosion process (Ref Volume 1, 20-60-00). The finish system should be restored at the first opportunity consistent with the maintenance schedule.

E. Prevention Treatment

(1) Apply water displacing corrosion inhibiting compound to all exposed parts of the flap actuating mechanism except the ball screw and the wearing surfaces of the flap track. Special attention should be given to the inboard aft flap track attachment at the faying surface of the copper bearing plate and flap track, unless there is evidence of a faying surface seal introduced in production or at rework of this area.

(2) At earliest convenience maintenance schedule will allow remove mid-flap carriage access panel and inspect for spindle sleeve migration. Apply water displacing corrosion inhibiting compound around periphery of spindle forward and aft of sleeve. Reinstall access panel.

NOTE: For cum line numbers thru 224 refer to SB 57-2133 for rework of spindle sleeve migration problem or for replacement of seized (corroded) bearings.

(3) For airplanes with SB 27-2060 (Aft Trailing Edge Flap and Track Fairing Actuation System Conversion) incorporated and line numbers 88 and 92 thru 304 except 747SP, remove and inspect the aft flap drive geneva cam roller shafts for corrosion at the earliest convenience maintenance schedule will allow. If no corrosion is present, reinstall shafts with a liberal amount of MIL-C-11796, Class 3 corrosion preventive compound around the borders of the chrome plated journal. Fill all recesses completely with the compound. Corroded shafts should be replaced or reworked per 27-51-92 of the Overhaul Manual. At the same time the shaft support fittings should be removed to inspect for corrosion of the faying surfaces between fittings and flap track. Minor corrosion should be removed using one of the methods described in Volume 1, 20-40-00. Restore protective finish and reinstall with BMS 5-95 faying surface seal.

(4) On the inboard and outboard flaps apply BMS 10-79 to panel edges prior to finish coats and fill the gaps between panels with BMS 5-95 sealant. If it is necessary to remove fasteners, apply BMS 10-79 primer to countersinks and reinstall fasteners wet with BMS 5-95 sealant (Detail VII).

(5) On the flap track attach bolts common to the rear spar fittings, check for failed fasteners by applying torque to nuts as described in SB 57-2078. If bolt checks out satisfactorily apply water displacing corrosion inhibiting compound around periphery of bolthead. Make sufficient applications so that "wetting" of the bolt shank can occur.

NOTE: If the flap track attach bolts are to be removed for inspection as described in SB 57-2078, provide preventative maintenance as prescribed in the service bulletin. At the time bolt removal is accomplished it is recommended that SB 57-2063 be incorporated (Ref par. 2.E.(7)).

(6) If bolt failure occurs refer to Structural Repair Manual.

(7) Remove the flap track fixed fairing and inspect for corrosion at boltheads common to the vertical webs of the flap track over the entire length. Service experience indicates that very little corrosion occurs in the boltholes because bolts were installed in production with wet sealant. However, removable bolts which have evidence of corrosion may be removed to permit inspection of the holes. If corrosion is found in the holes or on the tracks refer to Structural Repair Manual. If no corrosion is found reinstall bolts with wet BMS 5-79 or BMS 5-95 sealant. Apply water displacing corrosion inhibiting compound to boltheads and nuts common to the vertical webs of the flap tracks. Wipe off excess and refinish with epoxy primer and polyurethane enamel.

NOTE: On earlier airplanes stress corrosion cracks have occurred at the subject bolthole locations. Redesigned flap tracks were installed on line number 221, 229 thru 231, 234, 237 thru 273, 275 thru 282 and 284 and on. Inspection and replacement procedures on earlier airplanes are the subject of SB 57-2146.

(8) On flap track 1 thru 3 and 6 thru 8 for line numbers through 141 and 143 thru 146, it is recommended that lubrication provisions for the side load fitting bearing plate be added by incorporating SB 57-2063. On subsequent airplanes and on airplanes incorporating 57-2063, inspect the bearing plate and lubricate as necessary.

(9) After application of corrosion inhibiting compound, relubricate the system in accordance with 12-21-20 of the Maintenance Manual.

(10)Apply MIL-C-16173/MIL-G-23827 annually to areas of flap tracks which are corrosion prone.

(11) Inspect the attachment of the aft flap support arm to the rear spar. If removal of the bolts is necessary, install them with wet sealant per SB 57-2227 (which supersedes SB 57-2131).

(12)Give the forward fuse bolt at the forward end of flap tracks 4 and 5 the protection of MIL-G-25760 grease.

(13)Use wet primer or sealant when you install the bolts at the attachment of the fairing drive links to the flap track.

(14)Apply corrosion preventive compounds and lubricants again after you clean with steam or high pressure water and detergent.

(15)Remove corrosion in forward lugs of flap tracks per Maintenance Manual 27-51-22, 27-51-25 and 27-51-27 and install bushings with higher interference fit and sealant and seal the bushing flanges. This will decrease the risk of stress corrosion cracks in lugs (Detail IX).

(16)Regularly examine the condition of the corrosion inhibiting compound and apply more compound as necessary.

(17)BMS 3-23 water displacement compound can be applied to the trailing edge area.

(18)For all airplanes except 747SP, SL 27-86 tells about the inspection and rework requirements on the flap carriage spindle.

F. Frequency of Application

(1) Regular inspection is required in areas that can get corrosion and should agree with the schedule in the Maintenance Planning Document. Operators must know of reported problems and areas.

(2) Regular application of BMS 3-23 compounds is necessary in areas identified and should agree with the schedule in the Maintenance Planning Document.

G. Improved Corrosion Protection

(1) At line number 648, the flap track support bolts at WBL 353.0 were changed from H-11 steel to Inconel 718.

(2) SB 57-2107 gives inspection procedure on the wing trailing edge fore flap track flight load roller. This will help you prevent corrosion on the roller.

(3) SB 57-2023 tells how to make modifications on the outboard fore flap sequence carriage clevis assembly. This will help you decrease the possibility of failure of the clevis.

(4) SB 57-2231 gives procedures to replace old bushings with new bushings with wet sealant and higher interference fit at the forward lug of the inboard flap track.

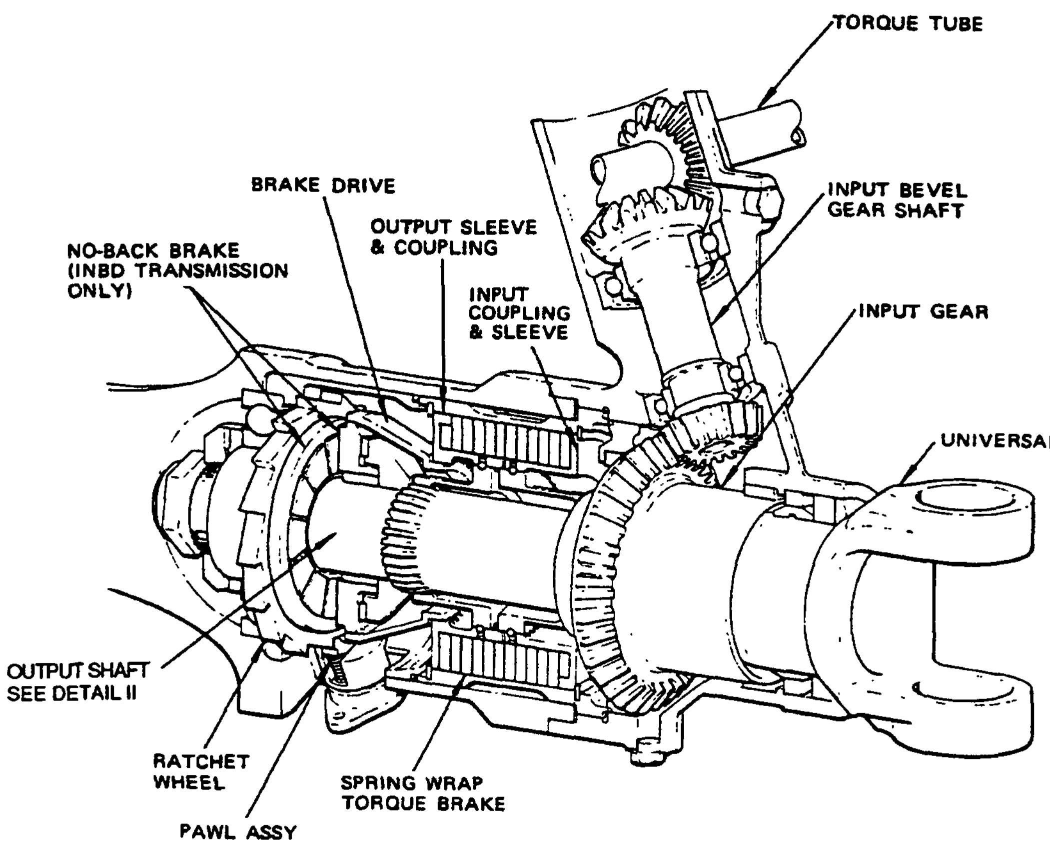
(5) At line number 707, BMS 3-23, Type II compound is applied on all of the aft cavity of the flap track. Some operators prefer to use BMS 3-26, Type I. However, at line number 751, PRR 81931 stopped the use of Dinitrol products as an alternative in production for corrosion protection. This change can be incorporated on earlier airplanes with SB 57A2225.

(6) SB 57-2228 gives inspection and replacement procedures for the aft mount attach bolt on airplanes earlier than line number 596. This change will prevent stress corrosion cracking of the bolts.

(7) At line number 6$1, PRR 78146-3 added a layer of BMS 10-11, Type 1 primer to the forward and aft spar webs after the corrosion inhibiting adhesive primer was applied (refer to Detail VII). This change can be added on other airplanes by SB 57-2242.

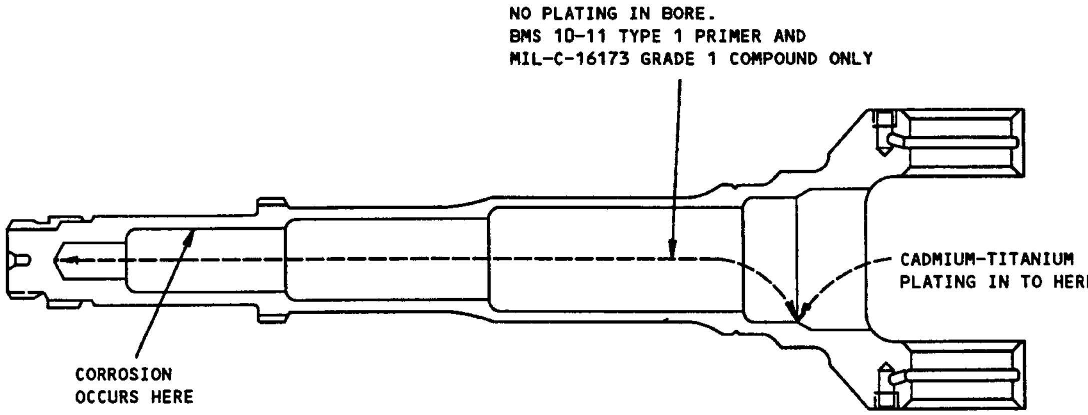
(8) At line number 225, on the flap carriage spindle, PRRs 75362 and 7595? installed a new flanged sleeve with a thrust collar and a new chrome-plated stainless steel bearing. These changes can be incorporated on earlier airplanes with SB 27-2280, which is also the subject of FAA Airworthiness Directive 88-04-06.

(9) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

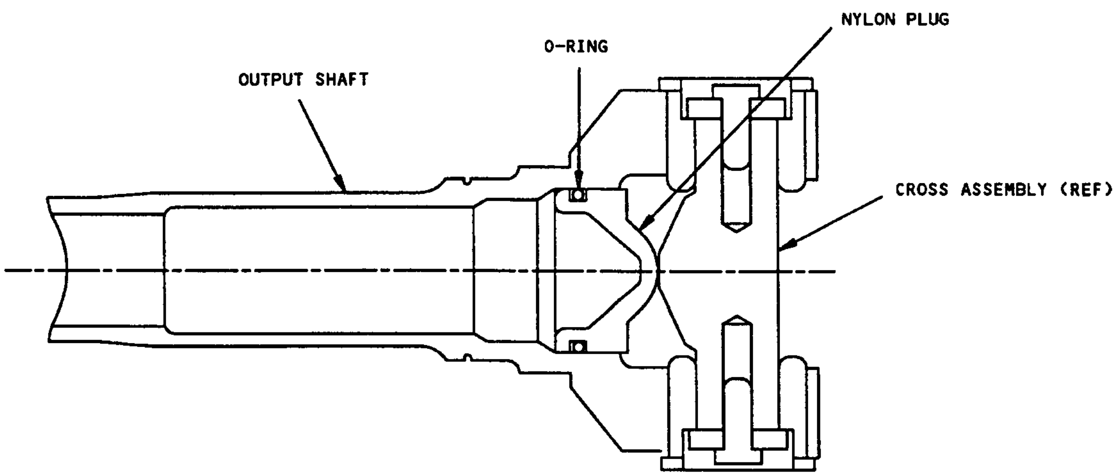


TRANSMISSION ASSEMBLY
DETAIL I

Trailing Edge Flap Transmission
Figure 2 (Sheet 1)



EXAMPLE OUTPUT SHAFT BEFORE PRR 79009-3



IMPROVEMENTS PER PRR 79009-3 AND SL 27-47

Trailing Edge Flap Transmission
Figure 2 (Sheet 2)

1. General

A. Corrosion occurs in the bores of the trailing edge flap transmission output shafts. This is because the bore is open to the outside environment, although the bore has the protection of BMS 10-11, Type 1 primer and MIL-C-16173, Grade 1 corrosion preventive compound.

2. Corrosion Prevention

A. When you overhaul these transmissions, examine the bore of the output shaft for corrosion.

B. If you find corrosion, refer to the applicable subject in Chapter 27 of the Overhaul Manual.

C. Improved Corrosion Protection

(1) At line number 538, PRR 79009-3 installs molded nylon plugs with O-ring seals in the bores of the flap transmission output shafts. This will keep out moisture and cleaning compounds. This change can be done on earlier airplanes (except SP models) with SL 27-47.

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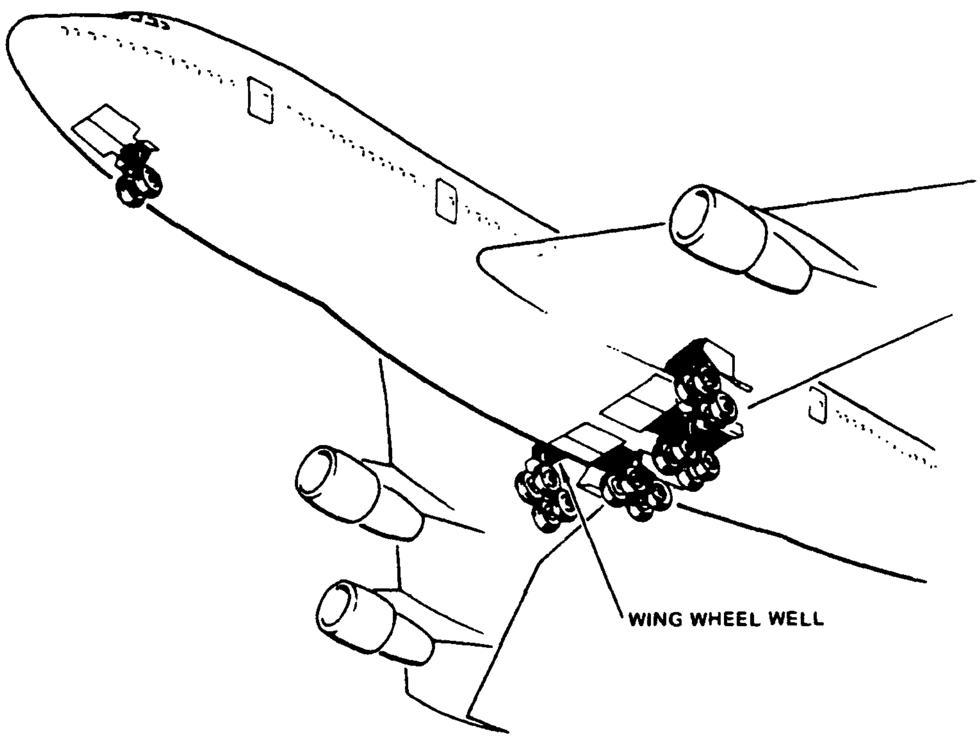

Wing Wheel Well
Figure 1

1. General

A. The wing wheel well, located in the inboard trailing edge area immediately aft of the rear spar, houses the main landing gear struts and trunnion.

B. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. Missing fasteners, white powdery or any discolored deposits are evidences of the existence of corrosion which should alert operators that some corrective action is required. A corrosion prevention program should be initiated to prevent the accumulation of corrosive products in order to minimize the occurrence of corrosion.

B. Following cleaning of suspected areas, a thorough inspection as described in Volume 1, 20-20-00 is effective to ensure that protective finishes provided during manufacture remain intact. Refer to Volume 1, 20-60-00 for details on the application of corrosion inhibiting compound.

C. Where corrosion exists (noticeable bulges of the skin or white deposits of corrosion products at fastener heads or joint edges), refer to Structural Repair Manual for details of corrosion removal.

D. For minor corrosion, to minimize the downtime of the airplane, the corrosion products should be cleaned off, followed by the application of a corrosion inhibiting compound into the affected area to retard the corrosion process (Ref Volume 1, 20-60-00). The finish system should be restored at the first opportunity consistent with the maintenance schedule.

E. Prevention Treatment

(1) At the first time permitted by scheduled maintenance activity, do corrosion treatment in the wing wheel well.

(2) Treat the wing wheel well at the same time as the wing torque box, trunnion and trunnion support fittings.

(3) Remove runway debris and generally clean the entire wheel well area.

(4) Apply BMS 3-23 to all exposed wheel well structure. Be sure to include it along doubler edges, along edges of structure, forgings, and on fastener heads. Use spray equipment with the nozzle pointed into faying surfaces.

(5) Apply BMS 3-23 to landing gear attachment fittings. Be sure to include the lugs and lug faces.

(6) Apply grease at all grease fittings in the treated area.

(7) If you clean the wheel well with steam or high pressure water and detergent, apply the BMS 3-23 compound again.

F. Frequency of Application

(1) Regular inspection is necessary in areas that can get corrosion and should agree with the schedules in the Maintenance Planning Document. Operators must know of reported problems and areas.

(2) Regular application of BMS 3-23 compound is necessary and should agree with the schedules in the Maintenance Planning Document.

G. Improved Corrosion Protection

(1) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

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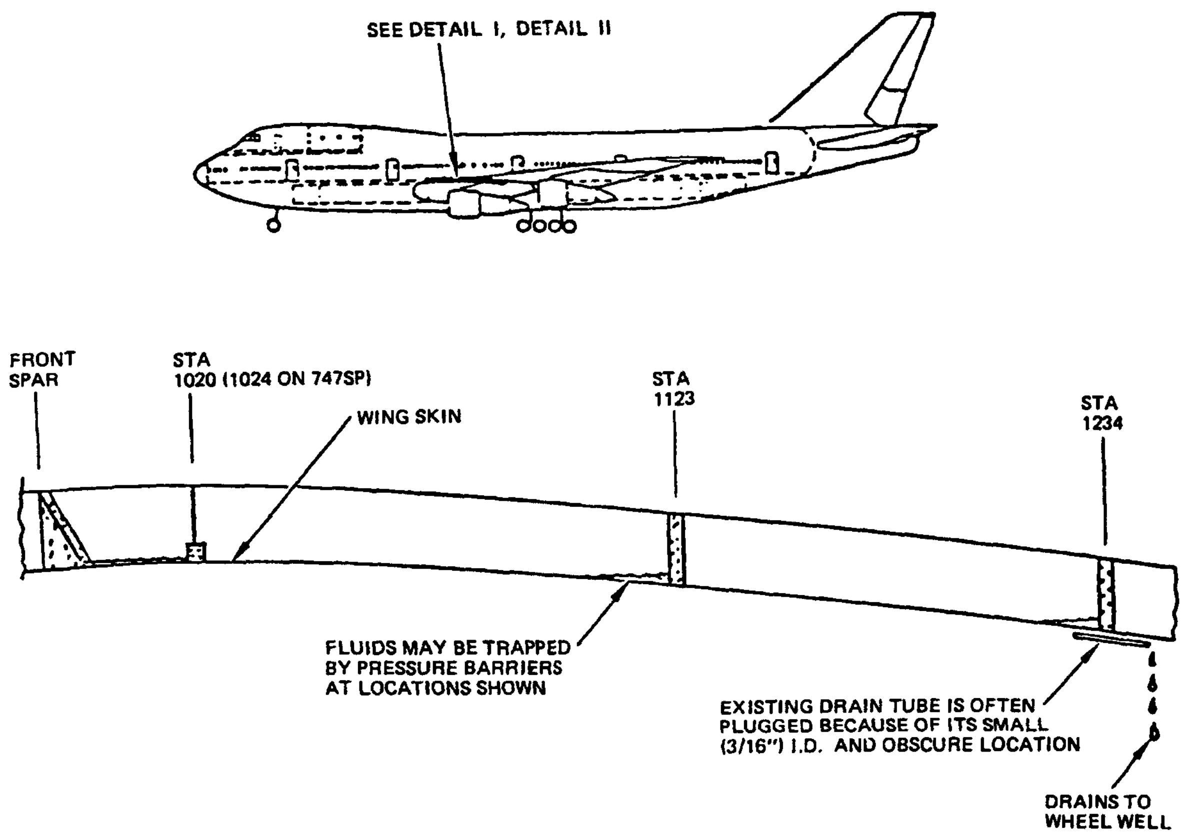
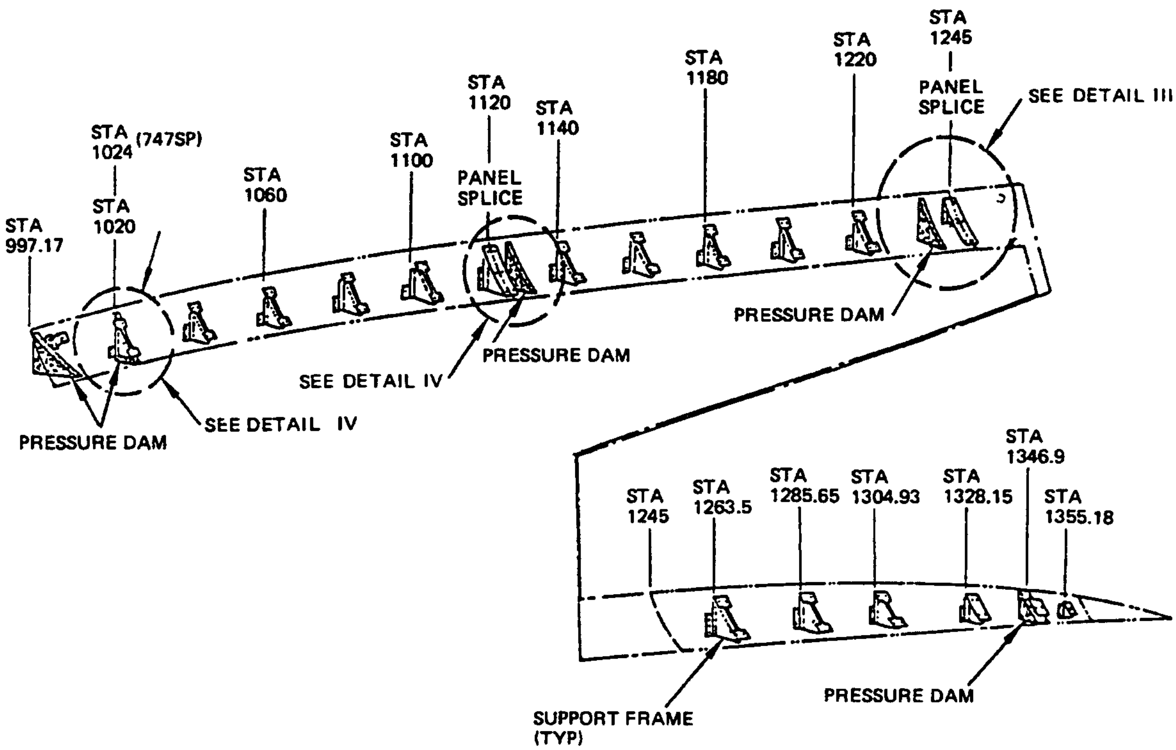


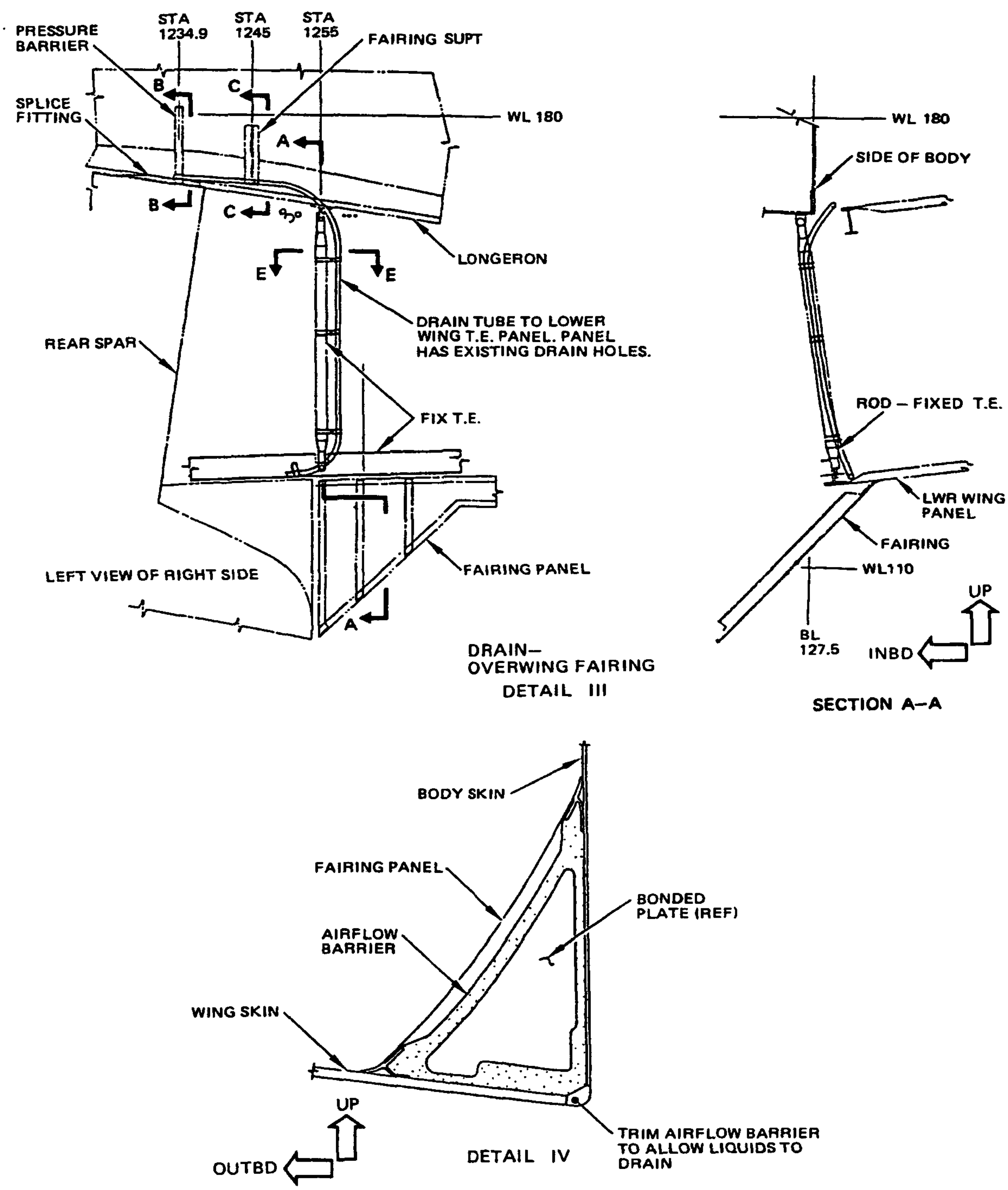
EXISTING CONFIGURATION
(AIRPLANES BEFORE LINE NO 587)

DETAIL I

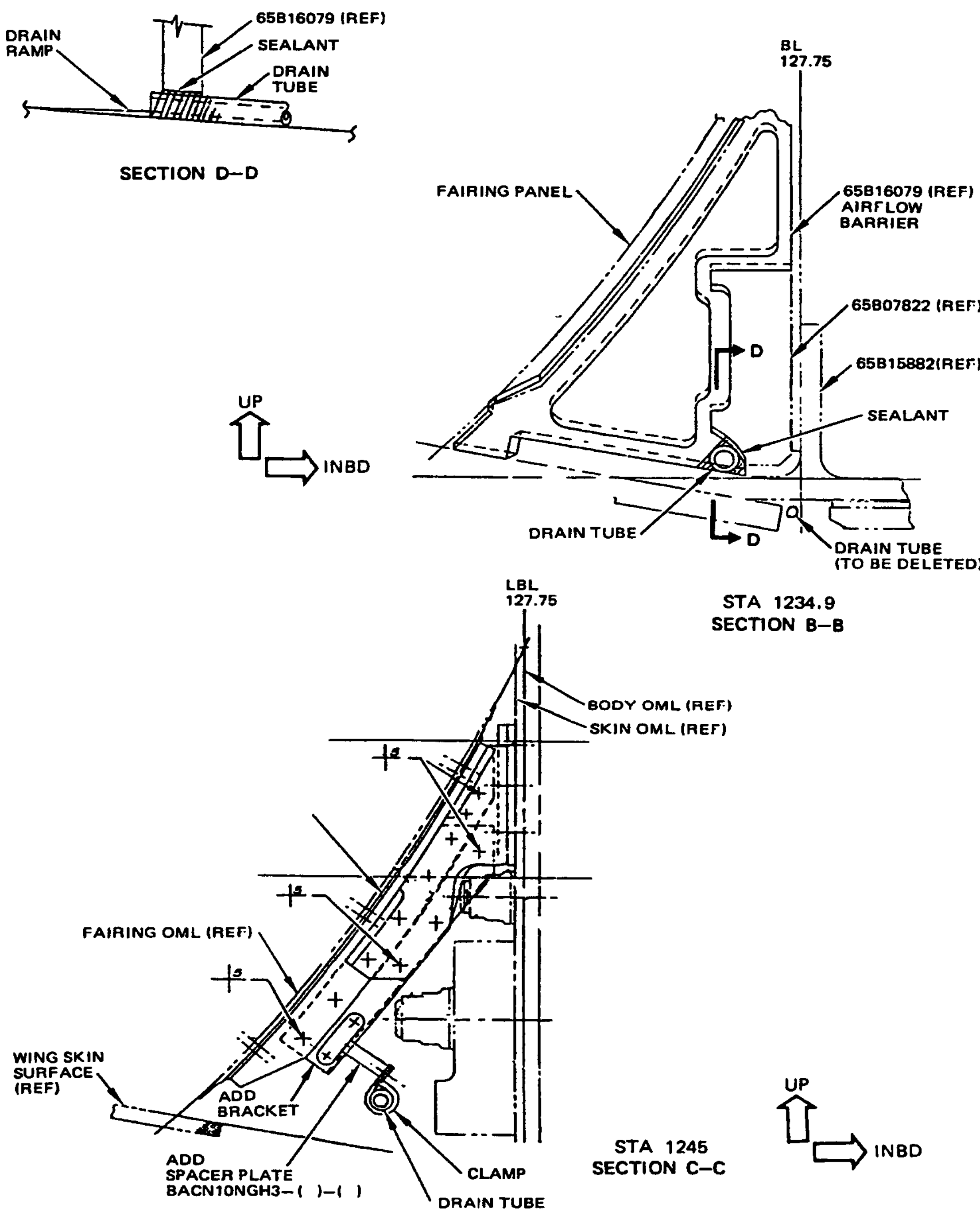
Wing Drain Holes
Figure 1 (Sheet 1)



Wing Drain Holes
Figure 1 (Sheet 2)



Wing Drain Holes
Figure 1 (Sheet 3)



Wing Drain Holes
Figure 1 (Sheet 4)

1. General

A. Overboard drains are the open hole type because the wing is a nonpressurized area. Drains are located in the lowest point in any given area. Drain paths through the internal structure lead to the overhead drains.

B. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

2. Corrosion Prevention

A. Make the periodic inspection described in Volume 1, 20-20-00 to preclude or detect the early stages of corrosion. Missing fasteners, white powdery or any discolored deposits are evidences of the existence of corrosion which should alert operators that some corrective action is required. A corrosion prevention program should be initiated to prevent the accumulation of corrosive products in order to minimize the occurrence of corrosion.

B. Following cleaning of suspected areas, a thorough inspection as described in Volume 1, 20-20-00 is effective to ensure that protective finishes provided during manufacture remain intact.

C. For minor corrosion, to minimize the downtime of the airplane, the corrosion products should be cleaned off, followed by the application of a corrosion inhibiting compound into the affected area to retard the corrosion process (Ref Volume 1, 20-60-00). The finish system should be restored at the first opportunity consistent with the maintenance schedule.

D. Preventive Maintenance

(1) At the first time that scheduled maintenance work permits access to the overboard drains, do corrosion preventive treatment.

(2) Use a pipe cleaner or thin wooden dowel to remove debris and contaminants from the drain holes.

(3) When the airplanes are operated in a harsh environment, more frequent inspection is recommended to decrease the risk of corrosion because of collected moisture.

E. Frequency of Application

(1) Periodic inspection is required to areas identified as susceptible to corrosion and should be consistent to the schedules specified in the Maintenance Planning Document. Operators must be aware of reported problems and areas of occurrences.

F. Improved Corrosion Protection

(1) At line number 597, to improve corrosion resistance of upper skin of wing, drainage was added for liquid that could become caught in the cavity of the overwing fairing. At the pressure barrier at sta 1020 (sta 10214 for 747 SP), 1123 and 1234 in the overwing fairing cavity, the foam plastic barriers were changed to let caught liquids drain. At the barrier at sta 1234, a drain tube was added to drain collected liquid to the upper surface of the lower wing trailing edge panel, where it can drain overboard through the existing drain holes (Fig. 1).

(2) At line number 955, PRR 79800-361 changed all sealant installations from BMS 5-95 to low-density BMS 5-142, except for fay-surface seals and wet installation of fasteners.

CHAPTER

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POWER PLANT

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AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Cowling	Acoustic panels	71-10-47 Fig. 1	
Mounts	Aft engine mounts	71-20-47 Fig. 1	

Specific Corrosion Problems - Power Plant
Figure 1

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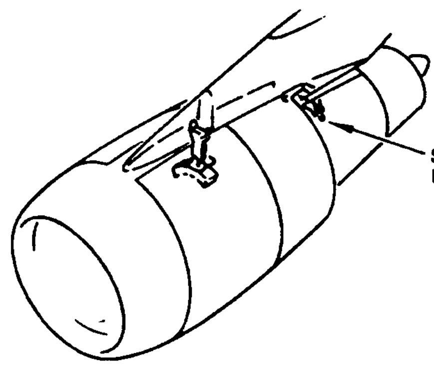

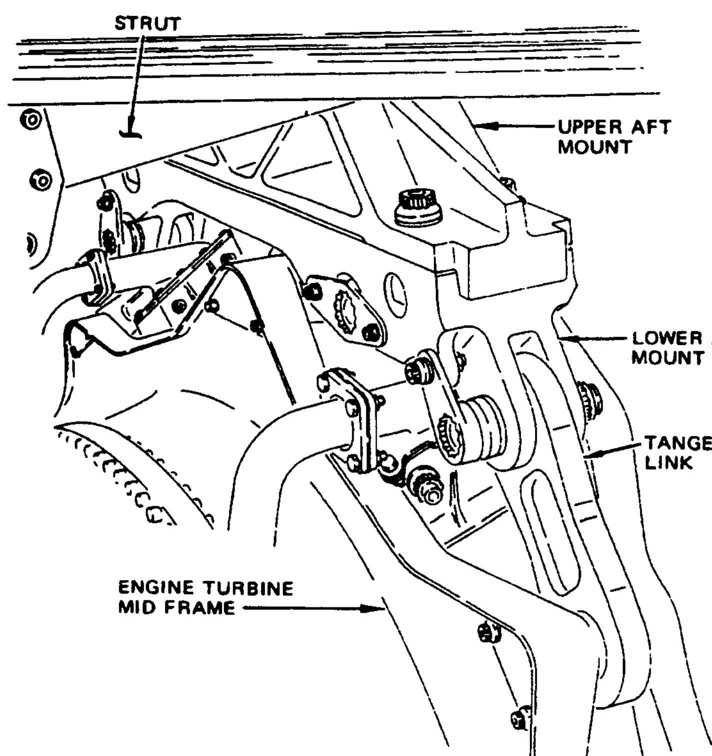

DETAIL I

Aft Engine Mounts
Figure 1

1. General

A. The engine mounts consist of upper and lower forward mounts, and upper and lower aft mounts. The mounts are made of high-strength, heat-treated steel.

B. Corrosion has been reported on the aft engine mounts of airplanes with CF-6 engines.

2. Corrosion Prevention

A. Regularly examine the engine mounts for signs of corrosion.

B. If you find corrosion, refer to Structural Repair Manual.

CHAPTER

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ENGINE FUEL AND CONTROL

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AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Cowling	Acoustic panels	71-10-47 Fig. 1	
Mounts	Aft engine mounts	71-20-47 Fig. 1	

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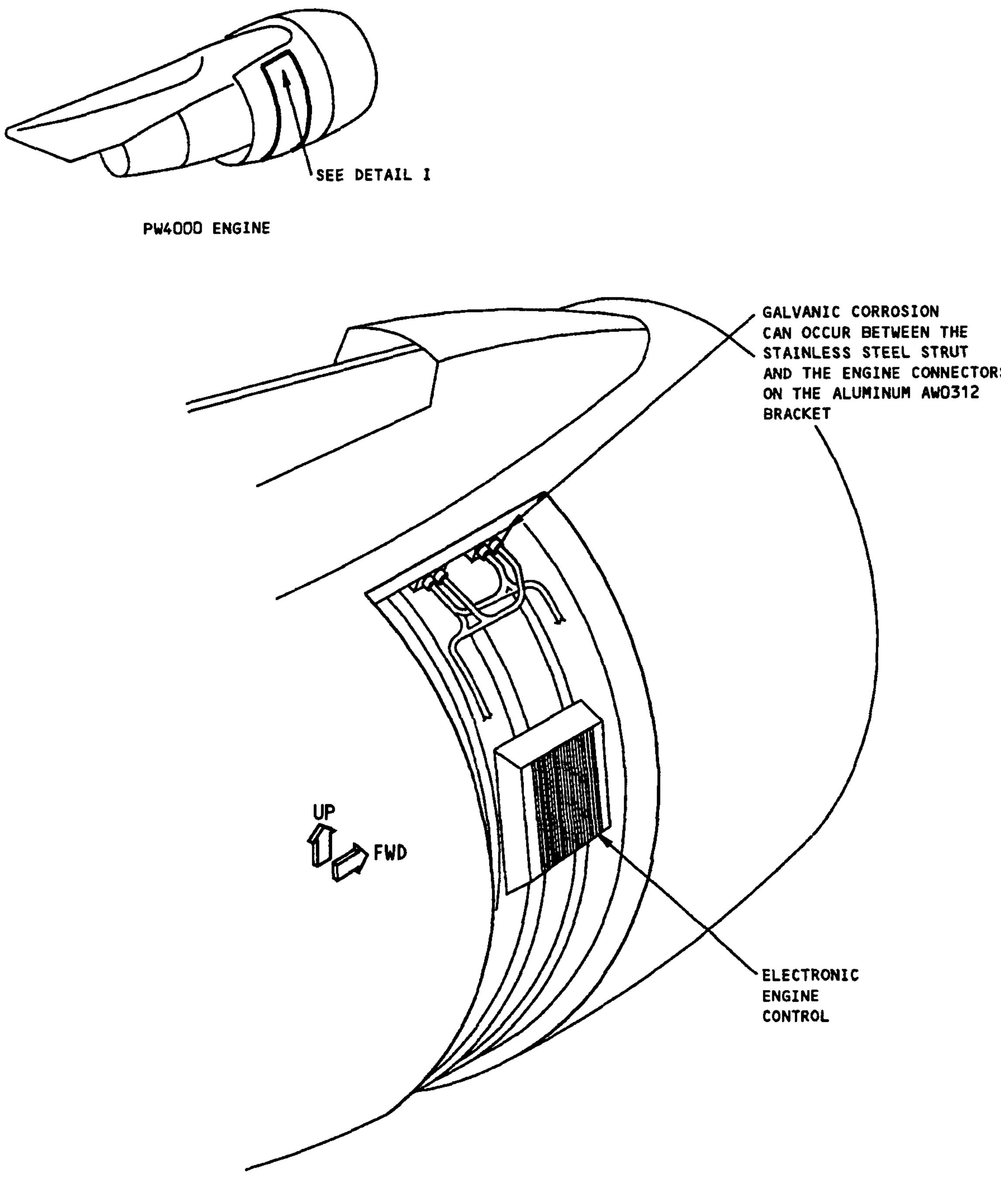

PW4000 Electronic Engine Control Installation
Figure 1 (Sheet 1)

1. General

   A. On some airplanes with PW4000 engines, galvanic corrosion can occur between stainless steel connectors and the aluminum fan cowl disconnect bracket AW3012. This could make the electrical ground become weak and increase the risk of a lightning strike to the electronic engine control unit.

2. Corrosion Prevention

   A. Regularly examine the engine/strut stainless steel connectors at the fan cowl disconnect bracket AW3012.

   B. Improved Corrosion Protection -- At line number 869, PRR 80451-86 changed the material of these connectors to cadmium plated aluminum. This change can be made on other airplanes with SB 73-2056.

CHAPTER

76

ENGINE CONTROL

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AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Engine Controls	Engine Controls Wing to body pressure seal	76-10-47 Fig. 1	SB 76A2065

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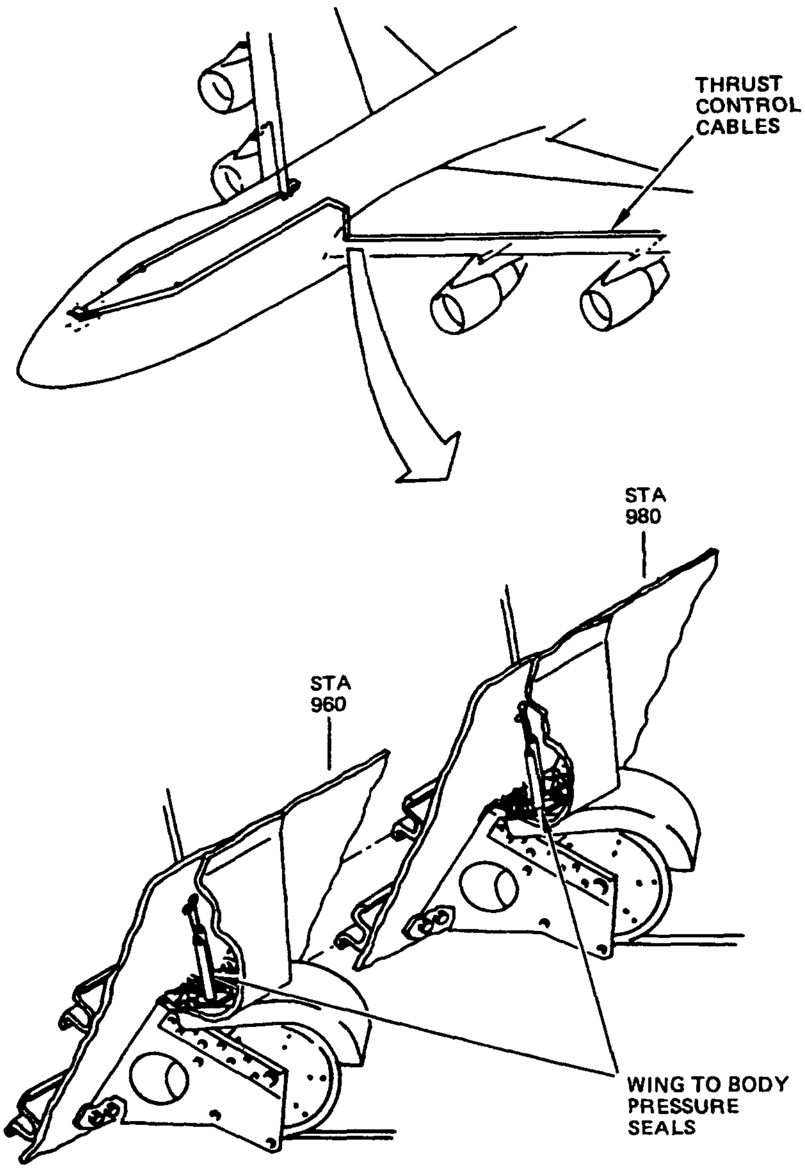

Engine Controls
Figure 1 (Sheet 1)

1. General

A. Control cables have a light coat of grease for corrosion protection. Throttle cables in wing and nacelle area are in a high temperature environment, and the grease may go bad more quickly than in other cable locations.

B. Corrosion caused some thrust control cables to break near the wing to body pressure seal. SB 76A2065 gives inspection and replacement details about these cables.

2. Corrosion Prevention

A. Make the regular inspection of Volume 1, 20-20-00 to prevent or find the start of corrosion. Fasteners that are gone, or white powdery or other deposits are signs of corrosion.

B. Prevention Treatment

(1) After you clean the area, do the inspection of SB 76A2065.

(2) For small amounts of corrosion, to decrease the downtime of the airplane, clean off the corrosion products. Apply BMS 3-24 grease to the cables. Refer to SB 76A2065 for more data.

C. Frequency of Application

(1) Regular inspection is required in areas that can get corrosion and should agree with the schedule in the Maintenance Planning Document. Operators must know of reported problems and areas.

(2) Regular application of BMS 3-24 grease, or operator's comparable compound, is necessary to areas identified and should agree with the schedule in the Maintenance Planning Document.

CHAPTER

78

EXHAUST

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AREA	PROBLEM	INDEX PREVENTION VOLUME 2	TERMINATING ACTION (IF ANY)
Thrust Reverser on CF6-45/50	Follow-up drive mechanism	78-30-47 Fig. 1	SB 78-2110

Specific Corrosion Problems - Exhaust
Figure 1

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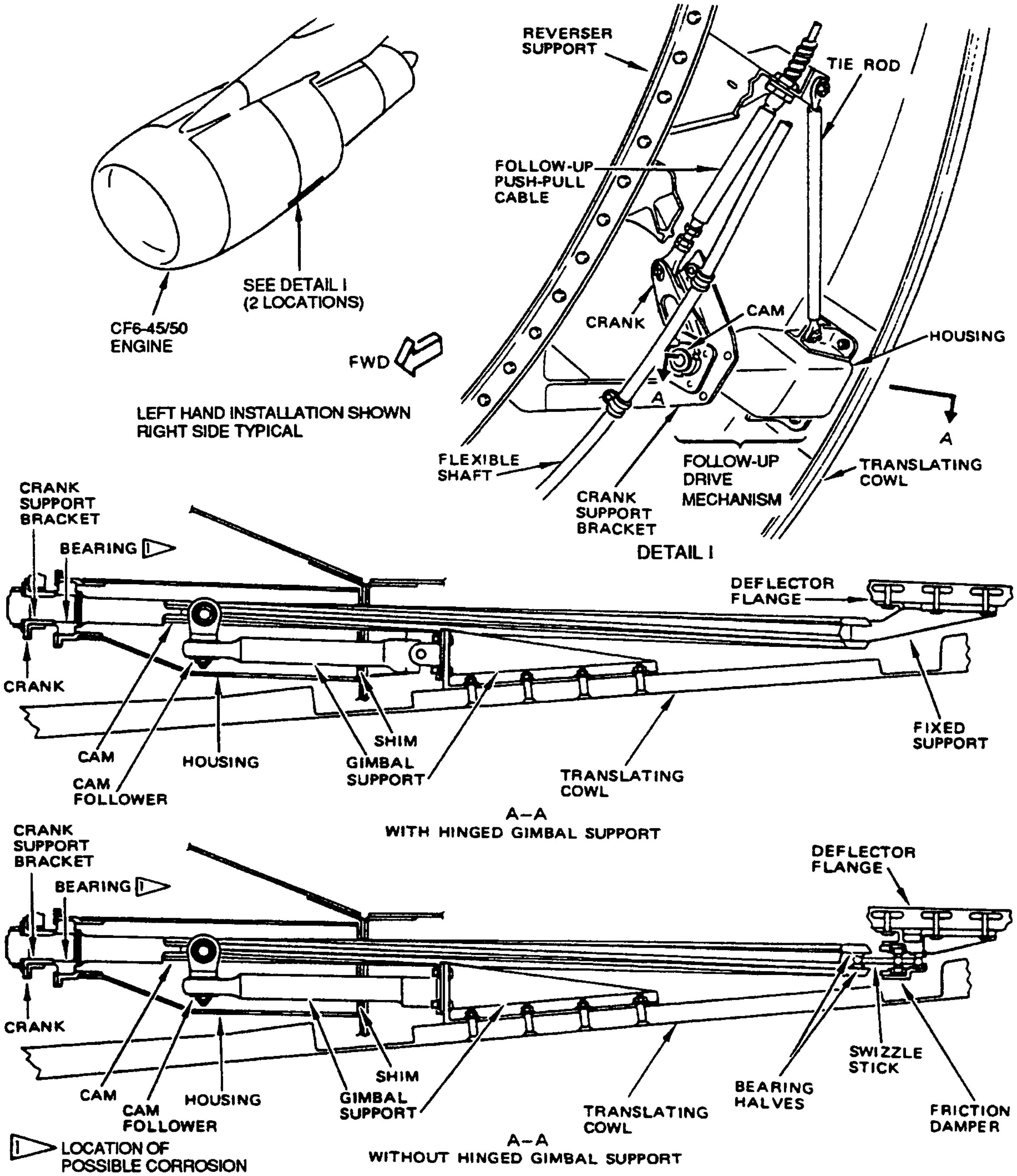

Thrust Reverser Follow-up Drive Mechanism
Figure 1

1. General

A. On airplanes with CF6-45 or CF6-50 engines, corrosion can occur on bearings in the thrust reverser follow-up drive mechanism if the bearings are not lubricated. Then the bearings become caught and prevent the operation of the thrust reverser. For airplanes line numbers 232 to 810 with these engines, SB 78-2110 gives details to install a lube fitting to let you lubricate the bearing.

2. Corrosion Prevention

A. Make regular inspections of the follow-up drive mechanism. Look for corrosion on the bearings, or bearings that cannot move.

B. Refer to SB 78-2110 for how to add a lube fitting at the bearing to make lubrication easier. Regular lubrication will prevent bearing corrosion.