CHAPTER

57

WINGS

CHAPTER 57 - WINGS
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CHAPTER 57 - WINGS
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WINGS - DESCRIPTION AND OPERATION

1. General

This topic gives a general description of the structure, and method of construction, of the main and forward wings. For detailed information about the types and thicknesses of materials used refer to the Structural Repair Manual.

2. Description (Ref. Fig. 1)

A. Main Wing

The main wing is constructed in two halves, left and right, which are permanently joined together at the fuselage centerline between the rear pressure bulkhead at FS6000 and the bulkhead at FS6710.

The top and bottom skins are made from aluminum alloy plate machined to form integral stiffeners in a grid pattern. The front and rear spars are made from aluminum alloy plate, machined to form integral webs at the rib locations. Aluminum ribs are riveted or bolted between the integral webs and the chordwise stiffeners of the skin panels. This assembly forms a torsion box which carries all the wing bending, shear and torque loads.

The left and right torsion boxes are sealed and are used as fuel tanks, each tank extending from the centerline joint to the rib at WS6504.

The front and rear spars support machined titanium fittings for the installation of the engine mounting frame. The spars also support the leading edges, trailing edges, and various fittings for the ailerons and flaps.

The aluminum leading edges are installed in three section and incorporate ducting for the wing anti-ice system. The section outboard of the nacelle has a stall strip which is positioned during manufacture. If any section of the leading edge, or a stall strip, is disturbed, reference must be made to the manufacturer to determine flight test requirements, as the flight characteristics of the airplane can be affected.

A third spar, machined from aluminum plate, is installed between the fuselage centerline and each nacelle. The third spar is attached to the rear spar with aluminum skin panels to form a box structure which gives the wing extra torque stiffness in the root area. The box structure supports the inboard flap tracks and forms the trailing edge between the fuselage and nacelle. The inboard flap is made from aluminum honeycomb with thin aluminum skins.

Between the nacelle and aileron the trailing edge is a composite structure manufactured from woven graphite with a foam core. The outboard flap, installed on tracks below the composite trailing edge, is an aluminum fabrication comprising two spars, multiple ribs and aluminum skins.

The outboard trailing edge, installed immediately in front of the aileron, comprises thin aluminum skins, supported by ribs, bolted to the rear spar. Sealing strips, attached to the outboard trailing edge, provide an aerodynamic seal between the trailing edge and aileron.

The aileron is constructed of metallic honeycomb with thin aluminum skins and a single spar. The ailerons are aerodynamically and mass balanced. The right aileron has a trim tab attached with a piano hinge.

B. Forward Wing

The forward wing comprises a one piece wing box with integral trailing edges and removable tips, leading edges and flaps.

(1) Forward Wing

The top and bottom skins are made from aluminum alloy plate machined to form integral stiffeners in a grid pattern. The front spar is made from two brackets located on the upper and lower wing skins respectively, spliced with aluminum alloy plate. The rear spar is a "C" made from aluminum alloy plate. The aluminum leading edge is installed and incorporates the electrical resistances for the wing anti-ice system. The forward wing tips are made of fiberglass to allow access to the internal side of the forward wing.

The flaps are aluminum honeycomb with thin aluminum skins and a single spar.

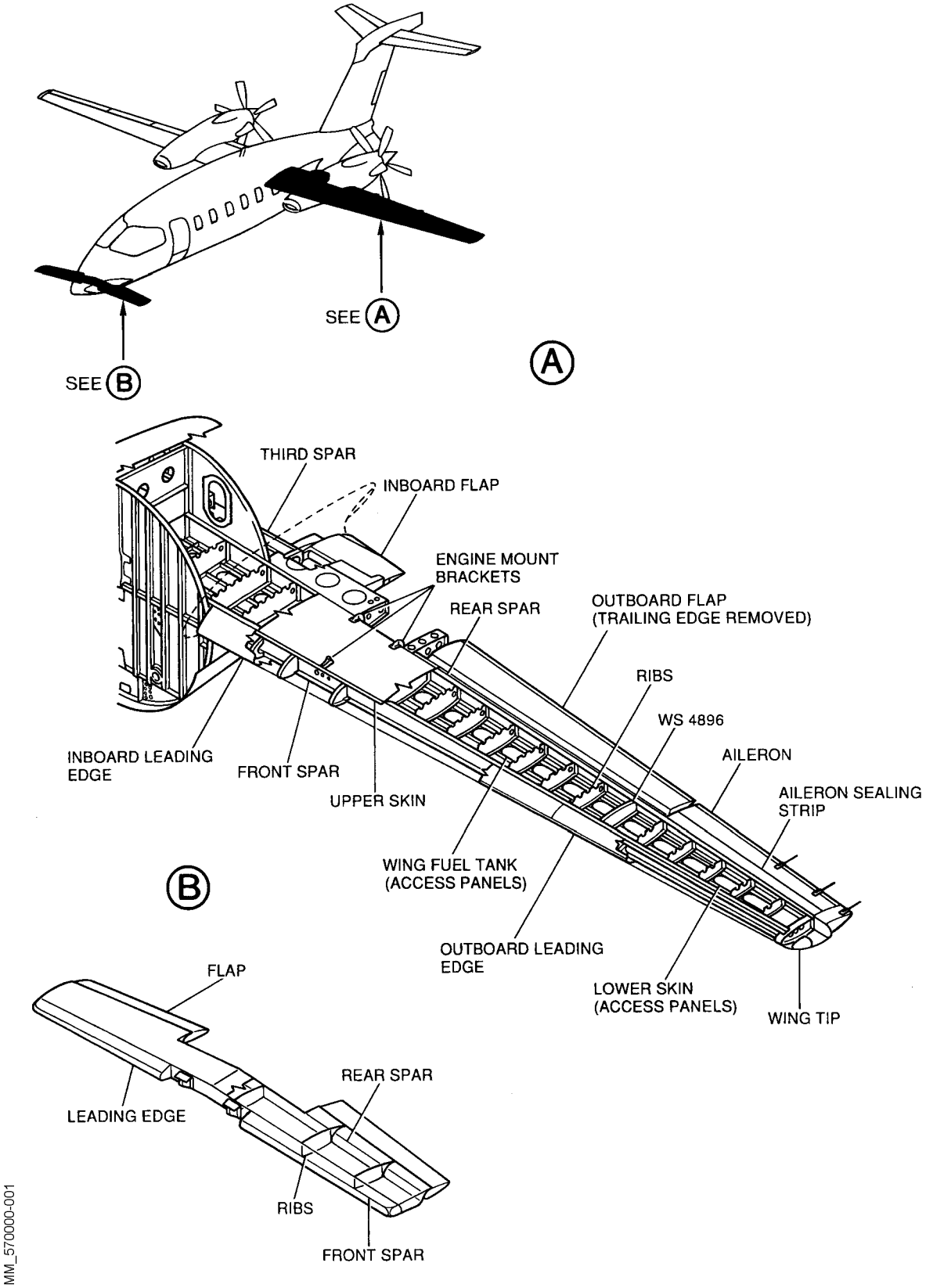

Fig. 1 - Wings - Description and Operation

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MAIN WING - MAINTENANCE PRACTICES

1. General

A. This topic gives the Maintenance Practices applicable to all of the main wing.

B. For the cleaning procedures refer to 12-00-00.

C. For the locations of access/inspection panels refer to 06-00-00.

2. Main Wing Exterior - Inspection

A. Referenced Information

Maintenance Manual Chapter 12-00-00
Maintenance Manual Chapter 27-50-00
Maintenance Manual Chapter 54-10-00

B. Procedure

(1) Make sure the main wing is clean (Refer to 12-00-00).
(2) Remove the nacelle panels (Refer to 54-10-00).
(3) Extend the flaps (Refer to 27-50-00).
(4) Open, tag and safety this circuit breaker:

Copilot CB panel:
FLAPS PWR

(5) Start at the wing tip and examine the wing for the following:
- flaking and blistering of the paint finish (indicates loose fasteners)
- cracks, dents, nicks and other damage
- general deterioration of the surface finish
- security of attachment of the wing tank access panels
- signs of fuel leaks.

During the inspection, examine the following items:

(a) The wing tip transparencies for cracks and signs of water ingress. Make sure the louvers in the bottom skin are clear and not damaged. Make sure the wing tip is securely attached to the wing.
(b) The aileron for damage and cracks. Make sure the static dischargers are securely attached and the sealing strips between the aileron and wing are secure and serviceable. Make sure the drain hole is clear.
(c) The two plastic vent covers for damage, cracks and security of attachment. Make sure the drain hole forward of the inboard end of the aileron is clear.
(d) The outboard flap for damage and corrosion. Make sure there are no excessive dents in the bottom skin. Make sure the drain holes are clear.

(e) The visible parts of the flap tracks and flap support brackets for damage and corrosion. Make sure the bonding springs on the support brackets have good contact with their grounding tracks and the grounding tracks are clean.

(f) The flap track covers for damage, cracks, delamination and security of attachment.

(g) The composite trailing edge for damage and delamination. Examine the joint between the trailing edge and rear spar for cracks, corrosion and security of attachment. Make sure there are no signs of chafing on the bottom surface (indication of contact with flap) and that the chafing strip is secure and serviceable.

(h) The nacelle panel attachment brackets for damage, corrosion and security of attachment to the wing. Make sure the captive nuts are secure.

(i) The wing jacking points for damage and deformation.

(j) The inboard flap for damage and corrosion. Make sure there are no excessive dents in the bottom skin. Examine, as far as possible, the flap rollers and tracks for damage, corrosion and security of attachment. Make sure the bonding spring strips are in contact with the end ribs of the flap.

(k) The leading edges for damage, dents and discoloration (indication of overheating). Make sure the stall strips are secure and not damaged.

(6) If necessary, repair or replace any defective items.

(7) Remove the safety tag and close this circuit breaker:

Copilot CB panel:

FLAPS PWR

(8) Retract the flaps (Refer to 27-50-00).

(9) If required, install the nacelle panels (Refer to 54-10-00).

3. Main Wing Interior - Inspection

A. Fixtures, Test and Support Equipment

Warm Air Blower	Not Specified
Flameproof Light Source	Not Specified
Warning Notice	Not Specified

B. Referenced Information

Maintenance Manual Chapter 07-10-00
Maintenance Manual Chapter 12-00-00
Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 28-00-00
Maintenance Manual Chapter 53-60-00
Maintenance Manual Chapter 54-10-00

C. Procedure

(1) Remove the electrical power (Refer to 24-00-00).
(2) Put a Warning Notice in the flight compartment to tell persons not to apply electrical power.
(3) Defuel the airplane (Refer to 12-00-00).
(4) Lift the airplane on jacks until the wheels are clear of the ground (Refer to 07-10-00).
(5) Remove the structural panels 251A and 252A (Refer to 53-60-00).
(6) Remove the nacelle panels 410AB and 420AB (Refer to 54-10-00).

WARNING: OBEY THE SAFETY PRECAUTIONS GIVEN IN 28-00-00. JET FUEL IS EXPLOSIVE AND POISONOUS.

(7) Remove the wing access panels (Refer to Para. 4).
(8) Ventilate the wing tank using a warm air blower until all fumes are dispersed.
(9) Use the flameproof light source and examine the interior of the wing for the following:
- cracks, dents, nicks and other damage
- corrosion
- deterioration of the sealant over the structural joints and fasteners.

During the inspection, examine the following items:

(a) The overflow and vent tubes and hoses for damage, corrosion, perishing and correct installation.
(b) The rubber grommets where the tubes pass through the ribs for perishing and correct installation.
(c) The electrical cables, clips and strapping for damage, deterioration and security of installation.
(d) The fuel contents transmitters for damage, corrosion and correct installation.

(10) If necessary, repair or replace any defective items.
(11) Remove all tools and equipment from the interior of the wing. Make sure the area of work is clean.
(12) Install the wing access panels (Refer to Para 5).
(13) Install the structural panels 251A and 252A (Refer to 53-60-00).
(14) Lower the airplane to the ground and remove the jacks (Refer to 07-10-00).
(15) Refuel the airplane as necessary (Refer to 12-00-00).
(16) Do a leak check of the fuel storage area (Refer to 28-00-00).
(17) Install the nacelle panels 410AB and 420AB (Refer to 54-10-00).
(18) Remove the Warning Notice from the flight compartment.

4. Wing Access Panel - Removal

NOTE: This procedure is typical for all the access panels located in the bottom skin of the main wing. The three outboard panels on each wing are installed from the inside of the wing and have a captive nut mounted in the center. A bolt can be installed into the captive nut to provide a method of holding the panel in position during removal/installation. The remaining panels are installed from the outside of the wing.

A. Referenced Information

Maintenance Manual Chapter 12-00-00
Maintenance Manual Chapter 53-60-00
Maintenance Manual Chapter 54-10-00

B. Preparation

(1) If you are removing panels 511AB, 511BB, 511CB, 511DB (611AB, 611BB, 611CB, 611DB), which are located inside the fuselage, remove the structural panel 251A (252A) (Refer to 53-60-00).
(2) If you are removing panels 522CB, 522DB, 522EB (622CB, 622DB, 622EB), which are located below the engine, remove the nacelle panel 410AB (420AB) (Refer to 54-10-00).
(3) If you are removing any of the access panels that give access to the wing fuel tank, defuel the airplane (Refer to 12-00-00).

C. Procedure

(1) If more than one panel is to be removed, temporarily identify the locations of the panels with tape.
(2) Remove the bolts attaching the panel to the wing.
(3) Remove the panel.

5. Wing Access Panel - Installation

A. Fixtures, Test and Support Equipment

Non-metallic Scraper	Not specified

B. Materials

Methyl-Ethyl-Ketone (MEK) solvent	02-009
Lint-free Cloth	04-013
Adhesive EC-776	01-007

C. Referenced Information

Maintenance Manual Chapter 12-00-00
Maintenance Manual Chapter 53-60-00
Maintenance Manual Chapter 54-10-00

D. Procedure

(1) Examine the panel for damage, cracks and corrosion.
(2) Examine the rubber gasket for splits, cuts, crushing and perishing.
(3) If necessary, repair or replace any defective parts. If the rubber gasket is damaged, do the following procedure:
(a) Use a non-metallic scraper to remove the old gasket.

WARNING: BE CAREFUL WHEN YOU USE THE MEK AND ADHESIVE. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

(b) Clean the panel with MEK solvent and a lint-free cloth until all the old adhesive is removed.
(c) Apply a coat of adhesive EC-776 to the groove in the panel.
(d) Install a new gasket and allow to cure.
(4) Install the panel to the wing using the bolts.
(5) If necessary, remove the tape used for temporary identification.

E. Completion

(1) If necessary, install structural panel 251A (252A) (Refer to 53-60-00).
(2) If necessary, install nacelle panel 410AB (420AB) (Refer to 54-10-00).
(3) If necessary, refuel the airplane (Refer to 12-00-00).

6. Aileron - Inspection

A. Visual inspection for general condition of:

(1) Upper and lower surfaces for cracks, nicks dents and FOD. Aileron mass balance covers for security of installation. Hinges and hinge supports. Actuation sectors and yokes. Static wicks and static wick supports for security of installation. Trim tab attachments (RH aileron). Bonding jumper attachments.

7. Main Wing Inboard Flap - Inspection

A. Visual inspection for general condition of:

(1) Upper and lower surfaces for cracks, nicks, dents and FOD. Roller bearing supporting lugs. Screwjack actuator attachment. Bonding springs.

8. Main Wing Outboard Flap - Inspection

A. Visual inspection for general condition of:

(1) Upper and lower surfaces for cracks, nicks, dents and FOD. Roller bearing supporting lugs. Screwjack actuator attachment. Bonding springs.

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FORWARD WING - MAINTENANCE PRACTICES

1. General

A. This topic gives the Removal/Installation and Inspection procedures for tforward wing complete with flaps.
For the Removal/Installation and Adjustment/Test of the flaps refer to 27-50-00.

B. Because the leading edges of the forward wing have integral heating elements they are included in the anti-ice system and the Removal/Installation procedures are given in 30-12-00.

2. Forward Wing - Removal (Ref. Fig. 201)

A. Fixtures, Test and Support Equipment

Blanking Caps	Not specified

B. Referenced Information

Maintenance Manual Chapter 34-41-00
Maintenance Manual Chapter 34-51-00
Maintenance Manual Chapter 53-10-00

C. Procedure

NOTE: The removal procedure applies either the wing manufactured with composite material than the metal one.

(1) Remove the radome/nosecone (Refer to 53-10-00).
(2) Move the support-structure to allow removal of the forward wing.

NOTE: Complete removal of the support-structure will require the removal/ cutting of the cable strapping and ties.

(3) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L FWD WING HTR	R FWD WING HTR
L FWD WING HTR CONT	R FWD WING HTR CONT
	FLAPS PWR

(4) Remove the forward-wing-tip access panels 561A and 661A.
(5) Disconnect the electrical connector at each flap actuator.

(6) Disconnect the connector (4) at the inboard end of each leading edge.
(7) Make a note of the positions of the terminal connections (7) at the terminal block (1).
(8) Remove the nuts (3) and washers (2) and disconnect the terminals (7) from the terminal block (1) at the inboard end of each leading edge.
(9) Remove the strapping attaching each flap actuator cable (6) to the forward wing.
(10) Carefully pull each flap actuator cable (6), complete with connector, through each leading edge.
(11) Remove the forward wing leading edge (Refer to 30-12-00).
(12) Put blanking caps on the electrical connectors.
(13) Remove the bonding jumpers (18) between the forward wing box and nose fuselage structure.
(14) Remove the cotter pins (11) from the nuts (12).
(15) Remove the nuts (12), special washers (10) and washers (9).
(16) Remove the nuts (14) and washers (15).
(17) Support the forward wing (8).
(18) Remove the bolts (13).
(19) Remove the bolts (17).

WARNING: BE CAREFUL WHEN YOU MOVE THE FORWARD WING. THIS COMPONENT IS HEAVY. INCORRECT MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(20) Remove the forward wing (8).

3. Forward Wing - Installation (Ref. Fig. 201)

A. Referenced Information

Maintenance Manual Chapter 27-50-00
Maintenance Manual Chapter 30-12-00
Maintenance Manual Chapter 34-41-00
Maintenance Manual Chapter 34-51-00
Maintenance Manual Chapter 53-10-00

B. Procedure

NOTE: The installation procedure applies either the wing manufactured with composite material than the metal one.

(1) Make sure as necessary that:
- The applicable circuit breakers are open, tagged and safetied
- The system is safe
- Access is available
(Refer to the Removal Procedure).

WARNING: BE CAREFUL WHEN YOU MOVE THE FORWARD WING. THIS COMPONENT IS HEAVY. INCORRECT MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Support the forward wing (8) in the installed position and install the bolts (13) and (17).
(3) Install the washers (9), special washers (10) and nuts (12).
(4) Install the washers (15) and nuts (14).
(5) Carefully pass the flap actuator cables (6) through each leading edge.
(6) Install the forward wing leading edge (Refer to 30-12-00).
(7) Install the bonding jumpers (18).
(8) Remove the blanking caps and connect the connectors (18) to the flap actuators.
(9) Remove the blanking caps and connect the connectors (4).
(10) Connect the terminals (7) to the terminal blocks (1), at the positions noted in the Removal Procedure, and secure with the washers (2) and nuts (3).
(11) Install the support structure.
(12) Make sure all the electrical cables are correctly strapped or tied as applicable.
(13) Install new cotter pins (11) through the nuts (12).
(14) Install the forward-wing-tip access panels 561A and 661A.
(15) Remove the safety tags and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L FWD WING HTR	R FWD WING HTR
L FWD WING HTR CONT	R FWD WING HTR CONT
	FLAPS PWR

(16) Do an operational test of the forward wing flaps (Refer to 27-50-00).
(17) Do an operational test of the forward wing anti-icing system (Refer to 30-12-00).
(18) Remove all tools and equipment from the avionics compartment. Make sure the compartment is clean.
(19) Install the radome/nosecone (Refer to 53-10-00).

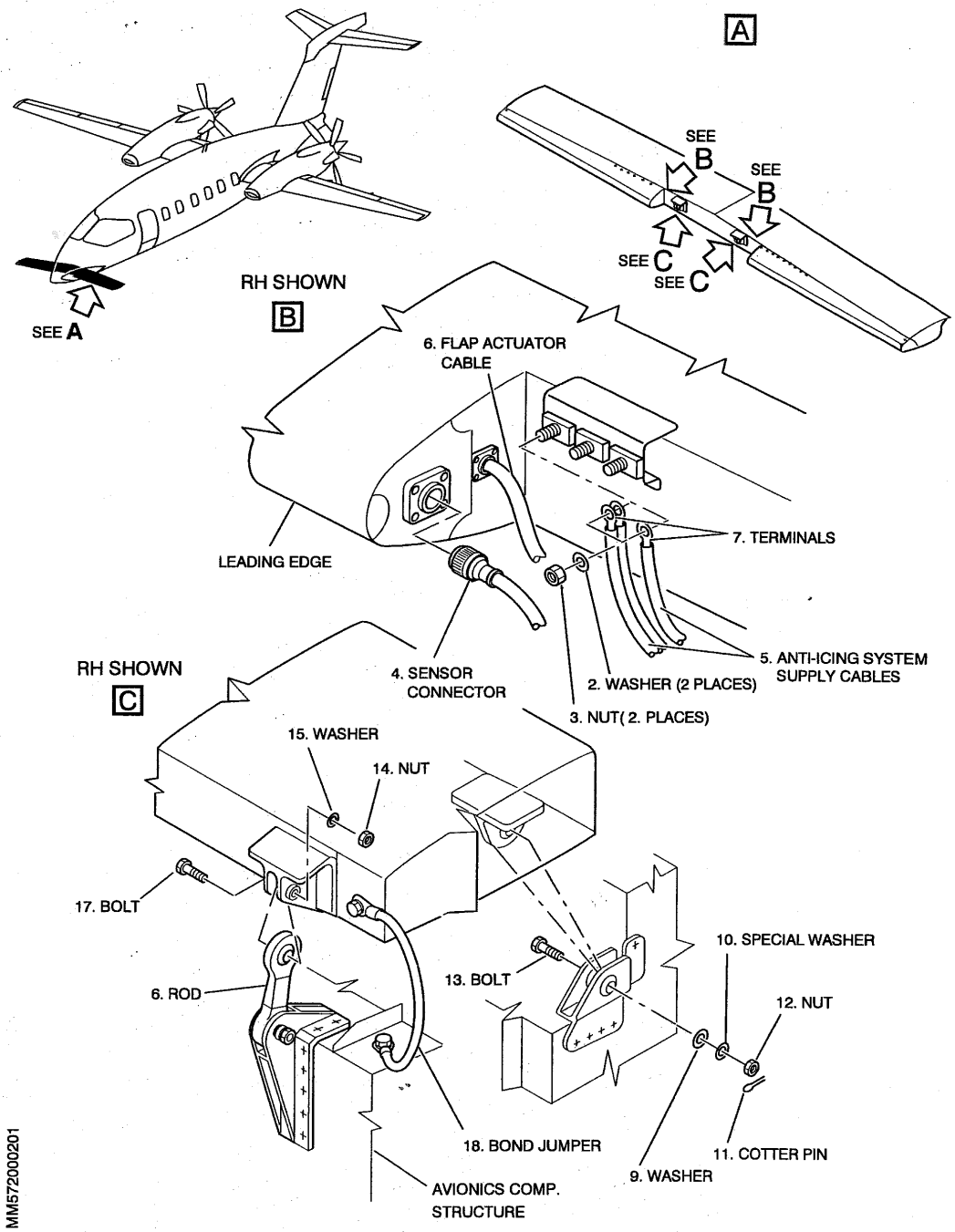

Fig. 201 - Forward Wing - Removal/Installation

4. Forward Wing - Inspection

A. Referenced Information

Maintenance Manual Chapter 12-00-00
Maintenance Manual Chapter 27-50-00
Maintenance Manual Chapter 53-10-00

B. Procedure

(1) Make sure the forward wing is clean (Refer to 12-00-00).
(2) Extend the flaps (Refer to 27-50-00).
(3) Open, tag and safety this circuit breaker:

Copilot CB panel:

FLAPS PWR

(4) Remove the radome/nosecone (Refer to 53-10-00).
(5) Examine the forward wing and flaps for the following:
- cracks, delamination, nicks and other damage
- deterioration of the surface finish
- flaking or blistering of the paint at the fastener positions (indication of loose filler or loose fasteners).

During the inspection, examine the following items:

(a) The wing tip access panels for security of attachment.
(b) The static dischargers on the flaps for damage and security of attachment.
(c) Make sure the drain holes in the flaps are clear.
(d) The flap attachment hinge bolts for correct installation and locking.
(e) The forward wing attachment bolts for security of installation.
(f) The electrical connections to the forward wing for security of installation.

(6) If necessary, repair or replace any defective items.
(7) Install the radome/nosecone (Refer to 53-10-00).
(8) Remove the safety tag and close this circuit breaker:

Copilot CB panel:

FLAPS PWR

(9) Retract the flaps (Refer to 27-50-00).

5. Forward Wing Flap - Inspection

A. Visual inspection for general condition of:

(1) Upper and lower surfaces for cracks, nicks, dents and FOD. Hinges and hinge supports. Flap actuation rods and levers. Bonding springs. Static wicks and static wick supports for security of installation.

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WING TIP - MAINTENANCE PRACTICES

1. General

A. The inspection of the wing tip is included in the Main Wing Exterior - Inspection in 57-10-00.

2. Main Wing Tip - Removal (Ref. Fig. 201)

A. Fixtures, Test and Support Equipment

Sharp Knife	Not specified

B. Referenced Information

Maintenance Manual Chapter 27-10-00

C. Procedure

(1) Remove the Aileron (Refer to 27-10-00).
(2) Remove the Main Wing Leading Edge as described in this Chapter.
(3) Open, tag and safety this circuit breaker:

Copilot CB panel:
POS LTS

(4) Remove the Bolts (1, 2) and Washers (3, 4) that secure the Main Wing Tip Assembly (5) to the Main Wing Forward Spar (6).
(5) Remove the Bolts (7, 8) and Washers (9, 10) that secure the Main Wing Tip Assembly (5) to the Main Wing Rear Spar (11).
(6) Remove the two Screws (12) that secure the Main Wing Trailing Edge Lower Extension Stripe (13) to the Main Wing (14).
(7) Remove the two Screws (15) that secure the Main Wing Trailing Edge Upper Extension Stripe (16) to the Main Wing (14).
(8) Remove the Screws (17) that fasten the Main Wing Tip Assembly (5) to the Main Wing Upper Skin (14).
(9) Remove the Screws (18) that fasten the Main Wing Tip Assembly (5) to the Main Wing Lower Skin (14).

NOTE: If it is necessary use a sharp knife to cut the sealant between the trailing edge and the wing.

(10) Slide out the Main Wing Tip Assembly (5) from the wing and disconnect the Electrical Connector (19).
(11) Remove the Main Wing Tip Assembly (5).

3. Main Wing Tip - Installation(Ref. Fig. 201)

A. Materials

Methyl-Ethyl-Ketone (MEK) solvent	02-009
Lint-free Cloth	04-013
Sealant	06-005
Filler	01-008

B. Referenced Information

Maintenance Manual Chapter 27-10-00

Maintenance Manual Chapter 51-35-00

Procedure

WARNING: BE CAREFUL WHEN YOU USE THE MEK AND SEALANT. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

(1) Make sure the circuit breaker POS LTS is open, safetied and tagged.
(2) Use MEK and a lint-free cloth to clean the interfaces of the Main Wing (14) and the Main Wing Tip Assembly (5).
(3) Apply a coat of sealant to the interface (Refer to 51-35-00).
(4) Place the Main Wing Tip Assembly (5) close the Main Wing (14).
(5) Connect the Electrical Connector (19).
(6) Install the Bolts (1, 2) and Washers (3, 4) that secure the Main Wing Tip Assembly (5) to the Main Wing Forward Spar (6).
(7) Install the Bolts (7, 8) and Washers (9, 10) that secure the Main Wing Tip Assembly (5) to the Main Wing Rear Spar (11).
(8) Install the Screws (17) that fasten the Main Wing Tip Assembly (5) to the Main Wing Upper Skin (14).
(9) Install the Screws (18) that fasten the Main Wing Tip Assembly (5) to the Main Wing Lower Skin (14).
(10) Install the two Screws (12) that secure the Main Wing Trailing Edge Lower Extension Stripe (13) to the Main Wing (14).
(11) Install the two Screws (15) that secure the Main Wing Trailing Edge Upper Extension Stripe (16) to the Main Wing (14).
(12) Install the Main Wing Leading Edge as described in this Chapter.
(13) Install the Aileron (Refer to 27-10-00)
(14) Remove the safety tag and close this circuit breaker: .

Copilot CB panel:

POS LTS

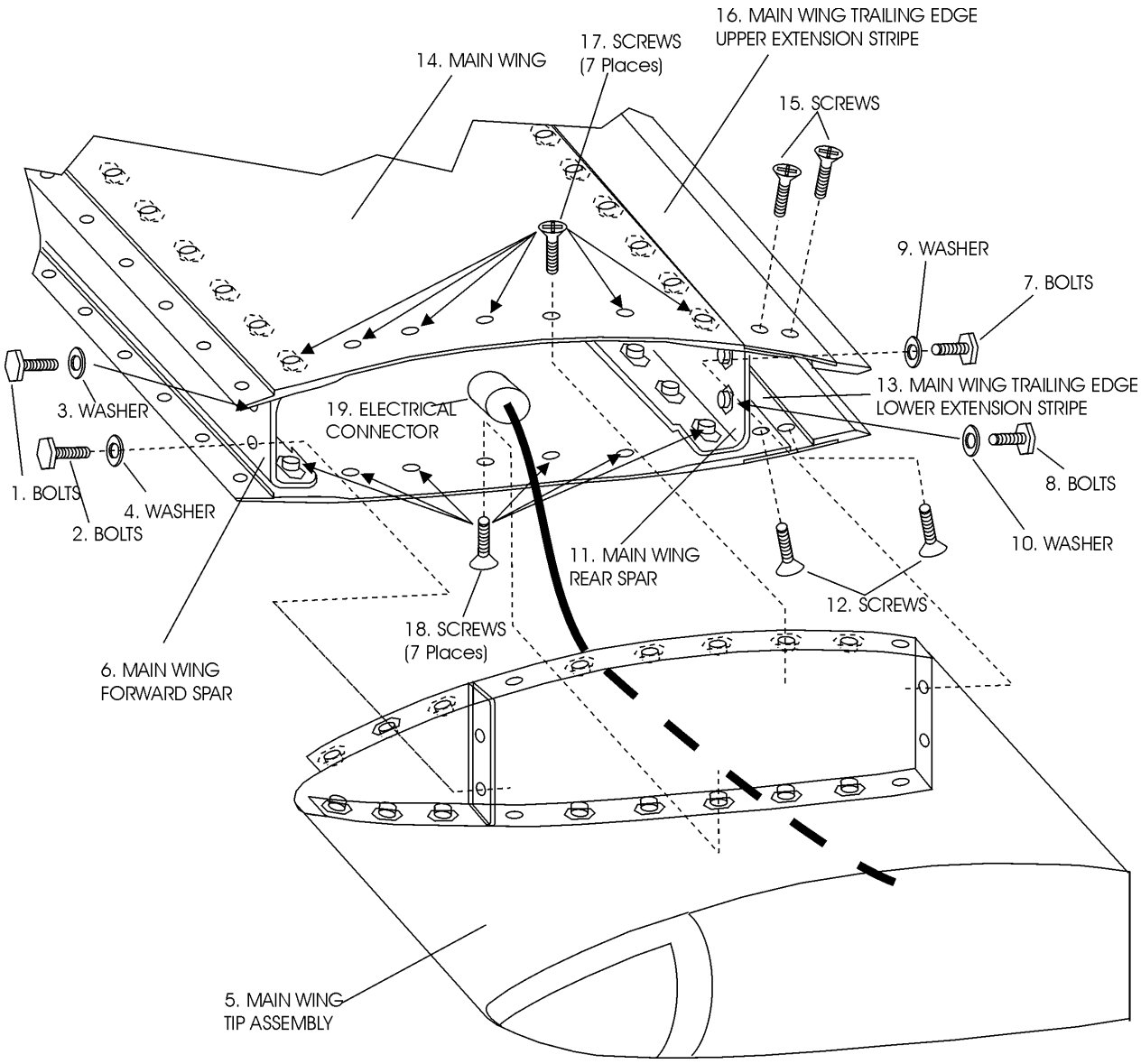

Fig. 201 - Main Wing Tip - Removal / Installation

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LEADING EDGE - MAINTENANCE PRACTICES

1. General

A. This topic gives the Removal/Installation procedures for the inboard and outboard leading edges of the main wing. The Inspection of the leading edges is included in the Main Wing Exterior-Inspection in 57-10-00.

CAUTION: IF YOU DISTURB THE LEADING EDGES OR THE STALL STRIPS, THE FLIGHT CHARACTERISTICS OF THE AIRPLANE CAN CHANGE. AFTER INSTALLATION OF A LEADING EDGE OR STALL STRIP, CONTACT THE MANUFACTURER TO DETERMINE FLIGHT TEST REQUIREMENTS.

B. For information about the forward-wing leading-edge, refer to 57-20-00.

2. Inboard Leading Edge - Removal (Ref. Fig. 201)

NOTE: This procedure is applicable to the LH inboard leading edge. Data for the RH inboard leading edge is given between parentheses.

A. Fixtures, Test and Support Equipment

Sharp Knife	Not specified

B. Referenced Information

Maintenance Manual Chapter 51-25-00
Maintenance Manual Chapter 57-10-00

C. Procedure

(1) Remove the nacelle panels 410AT/410AB (420AT/420B) (Refer to 57-10-00).
(2) Remove the forward fuselage/wing fairing.
(3) Strip the paint off the leading edge (6) to locate the attachment bolts (1) (Refer to 51-25-00).
(4) Remove the filler from the heads of the bolts (1).
(5) Remove the clamp (4) and collect the two O-rings (3,5).
(6) Discard the O-rings (3,5).
(7) Remove the bolts (1) attaching the leading edge (6) to the wing structure.
(8) Use a sharp knife to cut the sealant between the leading edge (6) and the wing.
(9) Remove the leading edge (6).

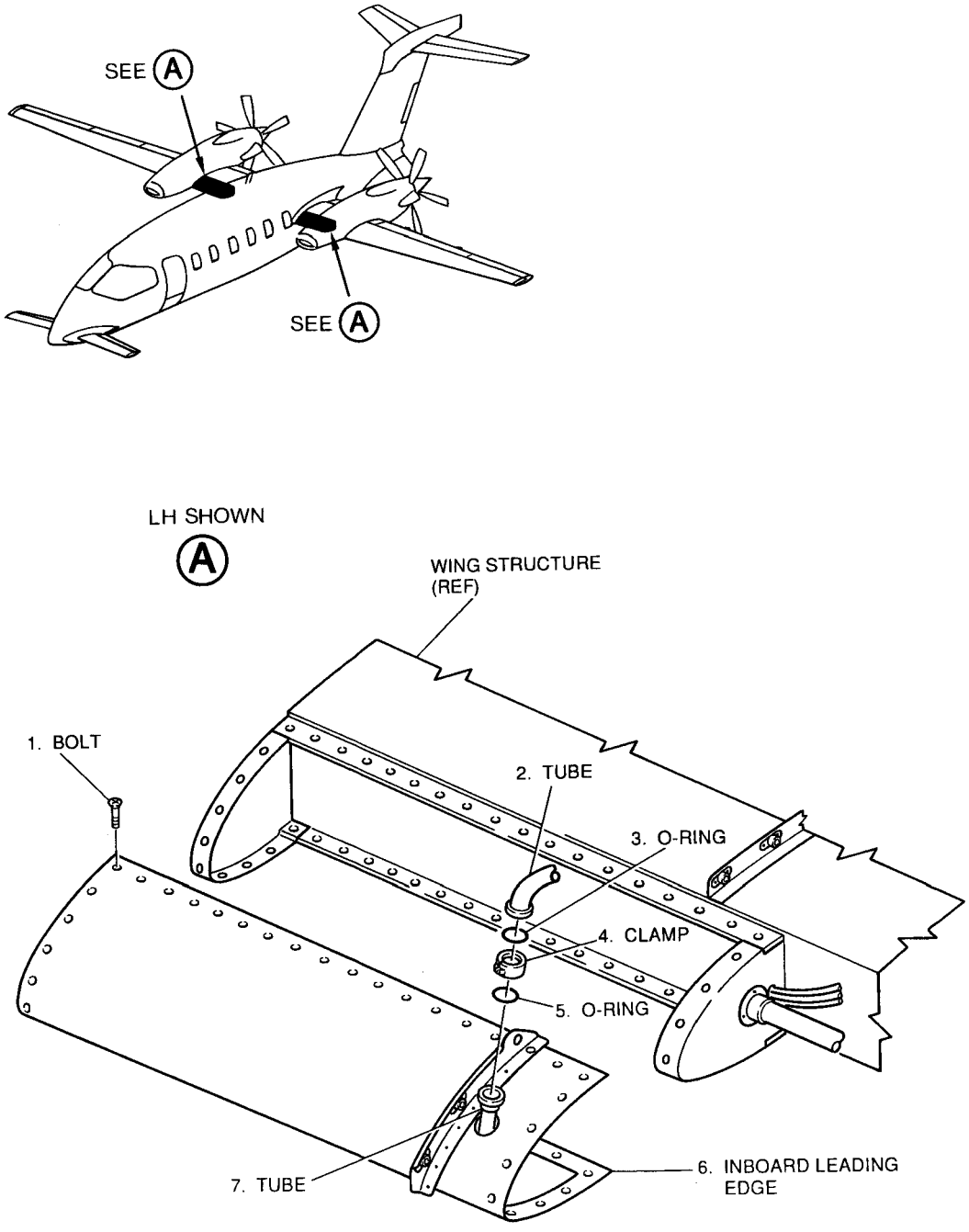

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Fig. 201 - Inboard Leading Edge - Removal/Installation

3. Inboard Leading Edge - Installation (Ref. Fig. 201)

NOTE: This procedure is applicable to the LH inboard leading edge. Data for the RH inboard leading edge is given between parentheses.

A. Expendable Parts

ITEM	NOMENCLATURE	IPC-CSN
3,5	O-ring	301100 05-230

B. Materials

Methyl-Ethyl-Ketone (MEK) solvent	02-009
Lint-free Cloth	04-013
Sealant	06-005
Filler	01-008

C. Referenced Information

Maintenance Manual Chapter 51-25-00
Maintenance Manual Chapter 51-35-00
Maintenance Manual Chapter 54-10-00

D. Procedure

CAUTION: BE CAREFUL WHEN YOU USE THE MEK, SEALANT AND FILLER. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

(1) Use the MEK and lint-free cloth to clean the interfaces between the leading edge (6) and the wing structure.
(2) Put the leading edge (6) in the installed position and install the bolts (1).
(3) Install the new O-rings (3,5).
(4) Connect the tubes (2) and (7) and install the clamp (4).
(5) Fill the gap between the leading edge skin and wing skin with sealant.
(6) Fill the leading-edge attachment-bolt heads with filler.
(7) Allow the sealant and filler to cure.
(8) Restore the paint finish (Refer to 51-25-00).
(9) Install the forward fuselage/wing fairing.
(10) Install the nacelle panels 410AT/410AB (420AT/420AB) (Refer to 54-10-00).
(11) Refer to the manufacturer to determine flight test requirements.

4. Outboard Leading Edge - Removal (Ref. Fig. 202)

NOTE: The outboard leading edge is manufactured in two sections, the inner section from WS2325 (engine nacelle) to WS4575, and outer section from WS4575 to WS6825 (wing tip). The removal and installation procedures are divided to give a separate procedure for each section. The procedure given is applicable to the LH outboard leading edge. Data for the RH outboard leading edge is given between parentheses.

A. Fixtures, Test and Support Equipment

Sharp Knife	Not specified

B. Referenced Information

Maintenance Manual Chapter 51-25-00
Maintenance Manual Chapter 54-10-00

C. Procedure

(1) Remove the inner section (6) of the leading edge:

(a) Open, tag and safety this circuit breaker:

Pilot CB panel:	(Copilot CB panel:)
POS LTS	R WING HTR
L WING HTR	
WING OVHT	

(b) Remove the nacelle panels 410AT/410AB (420AT/420AB) (Refer to 54-10-00).

(c) Cut the navigation-light wire (2) at a convenient position to allow connection using an in-line connector during the installation procedure.

(d) Strip the paint off the inner section (6) to locate the attachment bolts (5) (Refer to 51-25-00).

(e) Remove the filler from the heads of the bolts (5).

(f) Remove the attachment bolts (5).

(g) Use a sharp knife to cut the sealant between the inner section (6) and the wing structure.

(h) Carefully remove the inner section (6) and collect the O-ring (3) from the tube (4).

(i) Discard the O-ring (3).

(2) Remove the outer section (7) of the leading edge:

(a) Strip the paint off the outer section (7) to locate the attachment bolts (8) (Refer to 51-25-00).

(b) Remove the filler from the heads of the bolts (8).

(c) Remove the attachment bolts (8).

(d) Use a sharp knife to cut the sealant between the outer section (7) and the wing structure.

(e) Remove the outer section (7).

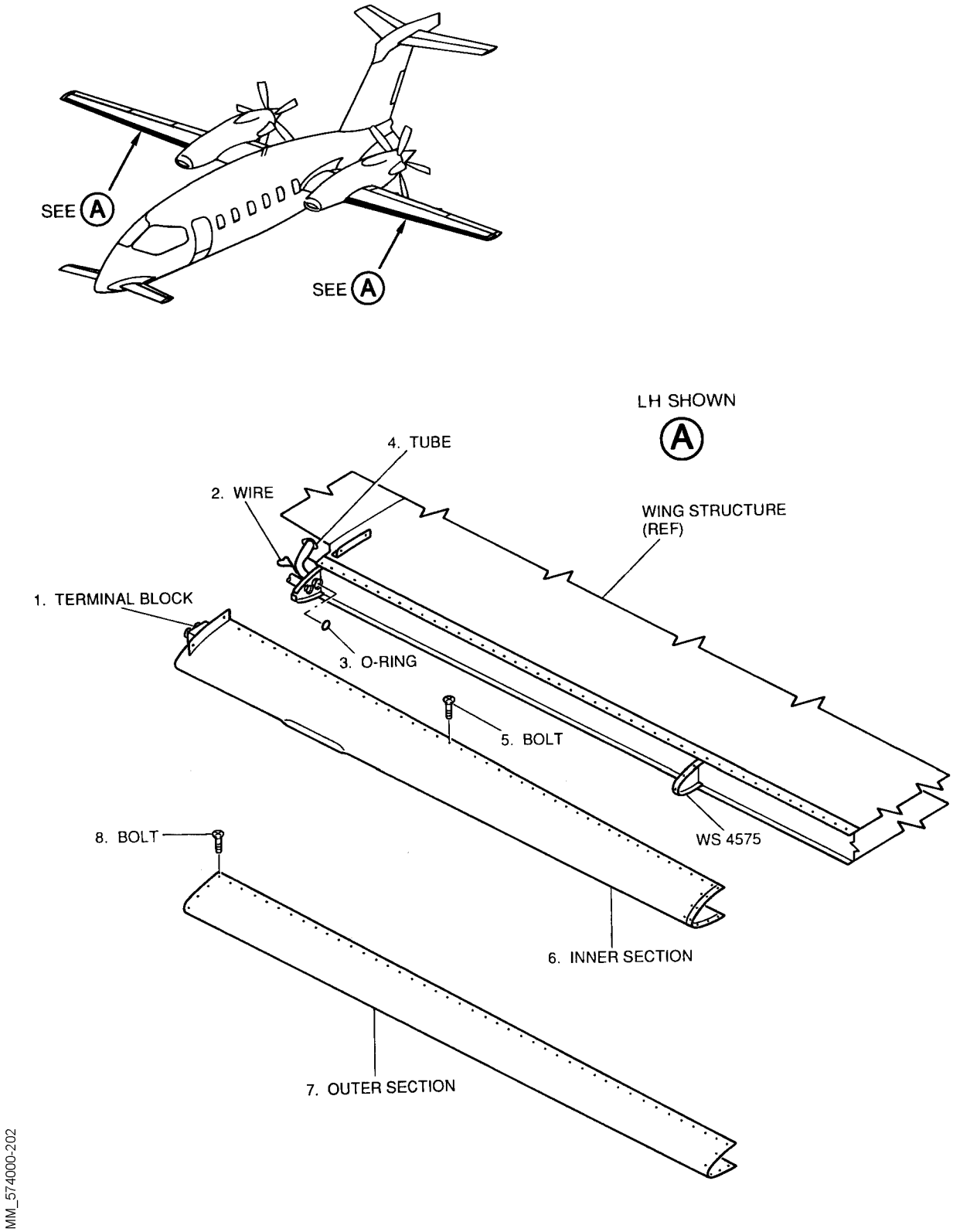

Fig. 202 - Outboard Leading Edge - Removal/Installation

5. Outboard Leading Edge - Installation (Ref. Fig. 202)

NOTE: The procedure given is applicable to the LH outboard leading edge. Data for the RH outboard leading edge is given between parentheses.

A. Expendable Parts

ITEM	NOMENCLATURE	IPC-CSN
3	O-ring	301100 05-170

B. Materials

Methyl-Ethyl-Ketone (MEK) solvent	02-009
Lint-free Cloth	04-013
Sealant	06-005
Filler	01-008

C. Referenced Information

Maintenance Manual Chapter 20-00-01
Maintenance Manual Chapter 51-25-00
Maintenance Manual Chapter 51-35-00
Maintenance Manual Chapter 54-10-00

D. Procedure

(1) Install the inner section (6) of the leading edge:
  (a) Make sure as necessary that:
    – The applicable circuit breakers are open, tagged and safetied
    – The system is safe
    – Access is available
    (Refer to the Removal Procedure).

    WARNING: BE CAREFUL WHEN YOU USE THE MEK, SEALANT AND FILLER. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

  (b) Use the MEK and lint-free cloth to clean the interfaces between the inner section (6) and the wing structure.
  (c) Install the new O-ring (3) onto the tube (4).
  (d) Put the inner section (6) in the installed position. Make sure the tube (4) connects with the anti-icing duct inside the inner section (6).
  (e) Install the bolts (5).
  (f) Fill the gap between the inner section skin and the wing skin with sealant (Refer to 51-35-00).
  (g) Fill the inner-section attachment-bolt heads (5) with filler.
  (h) Allow the sealant and filler to cure.
  (i) Restore the paint finish (Refer to 51-25-00).
  (j) Connect the electrical wires to the terminal block (1).
  (k) Install the nacelle panels 410AT/410AB (420AT/420AB) (Refer to 54-10-00).

(2) Install the outer section (7) of the leading edge:

WARNING: BE CAREFUL WHEN YOU USE THE MEK, SEALANT AND FILLER. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

(a) Use the MEK and a lint-free cloth to clean the interfaces between the outer section (7) and the wing structure.
(b) Put the outer section (7) in the installed position and install the bolts (8).
(c) Fill the gap between the outer section skin and wing skin with sealant (Refer to 51-35-00).
(d) Fill the attachment bolt heads with filler.
(e) Allow the sealant and filler to cure.
(f) Restore the paint finish (Refer to 51-25-00).
(g) Remove the safety tags and close these circuit breakers:

Pilot CB panel:	(Copilot CB panel:)
POS LTS	R WING HTR
L WING HTR	
WING OVHT	

(h) Refer to the manufacturer to determine flight test requirements.

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TRAILING EDGE - MAINTENANCE PRACTICES

1. General

   A. This topic gives the Removal/Installation procedures for the trailing edge and the outboard-flap tracks. The Removal/Installation procedures for the flaps are given in 27-50-00.

   B. The Inspection of the trailing edge and flaps is included in the Main Wing Exterior-Inspection in 57-10-00.

2. Trailing Edge - Removal (Ref. Fig. 201)

   A. Fixtures, Test and Support Equipment

Sharp Knife	Not specified

   B. Referenced Information

   Maintenance Manual Chapter 27-50-00

   C. Procedure

   (1) Extend the flaps (Refer to 27-50-00).
   (2) Open, tag and safety this circuit breaker:

   Copilot CB panel:

   FLAPS PWR

   (3) Remove the forward flap-track fairings.
   (4) Remove the bolts (2,3) attaching the trailing edge (1) to the wing rear spar (5).
   (5) Use a sharp knife to cut the sealant between the trailing edge and the wing.
   (6) Remove the trailing edge (1).

   NOTE: The following steps are applicable only with Main Wing Outboard Flap external screwjack cover installed (Ref. to Service Bulletin 80-0318 latest revision).

   (7) Verify the correct alignment of the reference line marked on the cover body and the bolt head (Ref. to Fig. 201) and the absence of any sign of loosening of the covering cage installation.

(8) In case of misalignment, or if any sign of loosening of the covering cage is observed:
- remove the covering cage
- inspect the screwjack body for absence of lubricant leakage
- inspect the screwjack for general condition, absence of damage and security of installation
- Inspect the covering cage and the gaskets for absence of damage and general condition
- discard the removed bolt, washer and nut
- install the removed covering cage with new bolt, washer and nut (Ref. to Service Bulletin 80-0318 latest revision for installation and test)

3. Trailing Edge - Installation (Ref. Fig. 201)

A. Fixtures, Test and Support Equipment

Straight Edge (10 ft / 3 m)	Not specified

B. Materials

Methyl-Ethyl-Ketone (MEK) solvent	02-009
Lint-free Cloth	04-013
Sealant PR1422A-2	06-004

C. Referenced Information

Maintenance Manual Chapter 27-50-00
Maintenance Manual Chapter 51-25-00
Maintenance Manual Chapter 51-35-00

D. Procedure

CAUTION: WHEN REPLACING LEFT OR RIGHT TRAILING EDGE MAKE SURE THAT THE AILERON ACTUATING BELLCRANK P/N 80-305118-403 IS INSTALLED, OTHERWISE REPLACE.

(1) For the Aileron Actuating Bellcrank removal installation procedures refer to Chapter 27-10-00 page block 201.

NOTE: The Trailing Edge Attachment Edges must be drilled before its first installation on aircraft.

(2) Place the trailing edge (1), attachment edges down, on a clean flat surface.
(3) Put a straight edge along the top skin and measure the distortion at the center position. Make a note of the measurement (dimension X).
(4) Multiply dimension X by 1,5. Note the result as dimension Y.
For example, if X = 2 mm then Y = 2 x 1,5 = 3 mm.
(5) Stick a pad of masking tape to the reinforcing (6) on the bottom surface of the trailing edge (1) to protect the paint finish.

NOTE: During the installation a force is applied to the reinforcing using a piece of wood, or similar.

WARNING: BE CAREFUL WHEN YOU USE THE MEK AND SEALANT. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

(6) Use MEK and a lint-free cloth to clean the interfaces of the trailing edge (1) and the wing rear spar (5).

(7) Apply a coat of sealant to the interface (Refer to 51-35-00).

(8) Put the trailing edge in the installed position.

(9) Install, but do not fully tighten, two bolts (2,3) at each end of the trailing edge (1).

(10) Use a piece of wood, or similar, against the reinforcing (6) to push the center of the trailing edge up until the top skin is Y mm above the wing top skin (Ref. step (4)).

(11) Fully tighten the bolts (2,3) installed at each end of the trailing edge and then install the rest of the bolts (2,3), working inwards from each end of the trailing edge towards the center. Remove the force from the reinforcing (6) before you install the bolts (2,3) at the center.

(12) Fill the gap between the trailing edge skin and the wing skin with sealant. Allow the sealant to cure. (Refer to 51-35-00).

(13) Remove the tape from the reinforcing (6).

(14) If necessary, restore the paint finish (Refer to 51-25-00).

(15) Install the forward flap-track fairings.

(16) Remove the safety tag and close this circuit breaker:

Copilot CB panel:

FLAPS PWR

(17) Retract the flaps (Refer to 27-50-00).

CAUTION: IF A NEW TRAILING EDGE IS INSTALLED, CHECK THE AIRERON FOR FREEDOM OF MOVEMENT IN ITS FULL UP / DOWN TRAVEL, AS DESCRIBED IN CHAPTER 27-10-00.
CHECK THAT THE MINIMUM GAP BETWEEN THE WING TRAILING EDGE AND THE AILERON ACTUATING BELLCRANK IN FULL UP AND FULL DOWN POSITION IS AT LEAST 5 mm.

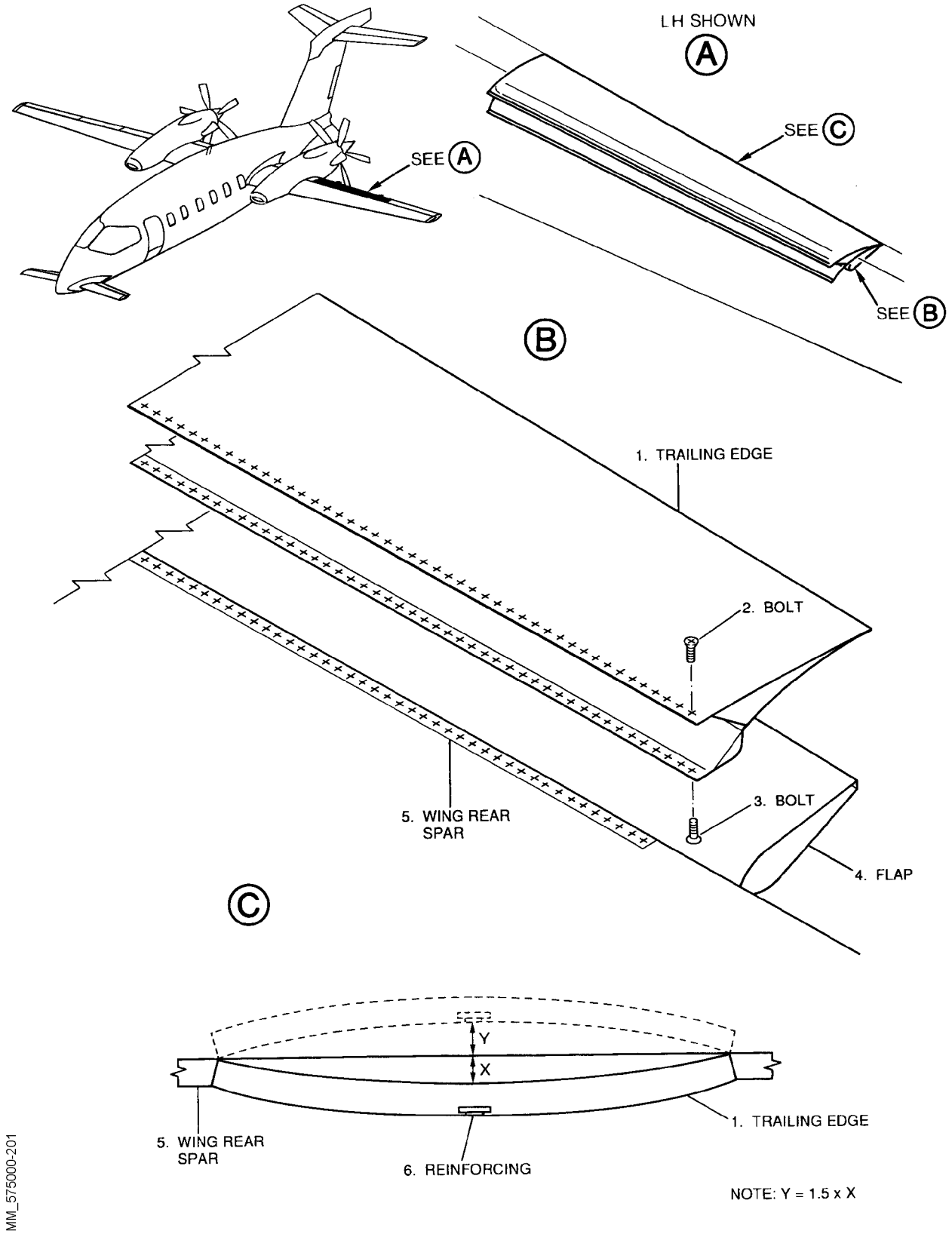

Fig. 201 - Trailing Edge - Removal/Installation (Sheet 1 of 2)

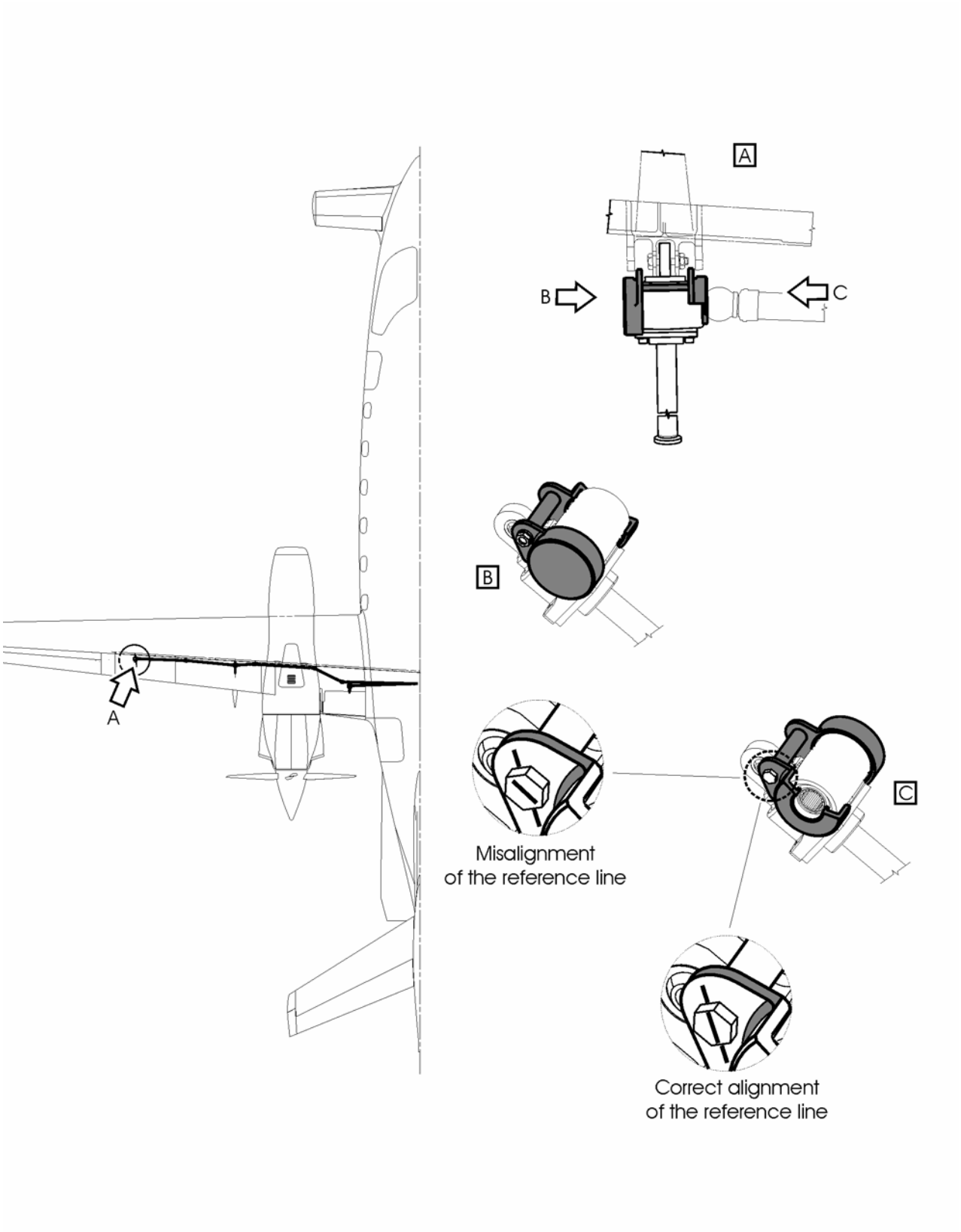

Fig. 201 - Trailing Edge - Removal/Installation (Sheet 2 of 2)

4. Flap Track / Fairing Inner - Removal (Ref. Fig. 202)

A. Referenced Information

Maintenance Manual Chapter 27-50-00

B. Procedure

(1) Remove the outboard flap (Refer to 27-50-00).
(2) Remove the bolts (10) and the fairing (11).
(3) Remove the nuts (8,16) and washers (9,15).
(4) Support the flap track (5) and remove the bolts (1,3), the flap track external washer (12,15), and the flap track internal washers (14).

CAUTION: THE BOLTS (1,3), THE THE FLAP TRACK EXTERNAL WASHER (12,15), AND THE FLAP TRACK INTERNAL WASHERS (14) CAN NOT BE REUSED AND MUST BE DISCHARGED.

(5) Remove the flap track (5).
(6) If necessary, remove the bolts (7) and the inner fairing (6).

5. Flap Track / Fairing Inner - Installation (Ref. Fig. 202)

A. Referenced Information

Maintenance Manual Chapter 27-50-00

B. Procedure

(1) Examine the brackets (2,4) for damage, corrosion and cleanliness. If necessary, repair, replace or clean the brackets.
(2) Check that the bracket bushing (17) is correctly inserted in the bracket hole.
(3) Check that the flap track bushings (13) are properly installed on the flap track.
(4) Put the flap track (5) in the installed position and install the bolts (1,3).
(5) Install the flap track external washers (12,15), the flap track internal washers (14) and the nuts (8,16).

NOTE: If the previously inner fairing have to be installed, following the steps below. If a new inner fairing model have to be installed is necessary mark the flap track holes position on the new fairing inner and drill.

CAUTION: TO AVOID INTERFERENCE BETWEEN THE FLAP TRACK FAIRING SCREWS AND THE FEMALE THREAD BLOCK (22, 23) CHECK THAT THE SCREWS (18, 19, 20, 21) LENGHT DOES NOT EXCEED THE ANCHOR NUTS LENGHT. THE ANCHOR NUTS ARE LOCATED ON THE ROLLER SUPPORT (24, 25).

(6) Install the inner fairing (6) using the bolts (7).
(7) Install the fairing (11) using the bolts (10).
(8) Install the outboard flap (Refer to 27-50-00).
(9) Do an operational test of the flaps (Refer to 27-50-00).

6. Flap Tracks - Inspection (Ref. Fig. 202)

A. Referenced Information

Maintenance Manual Chapter 27-50-00

B. Procedure

(1) Extend the flaps (Refer to 27-50-00).
(2) Open, tag and safety this circuit breaker:

Copilot CB panel:

FLAPS PWR

(3) Remove the forward flap-track fairings (11).
(4) Examine the flap tracks (5) for the following:
- damage, cracks and corrosion
- security of attachment to the wing. Try to move the flap track by hand to check for play at the brackets (2,4).
- wear on the roller track. Try to move the flap by hand to check for excessive play.
- security of attachment of the fairing support brackets and captive nuts.

(5) Examine the covers (6) for distortion and cleanliness of the bonding tracks. Make sure the covers are securely attached.
(6) If necessary, repair, replace or clean any defective parts.
(7) Install the forward flap-track fairings (11).
(8) Remove the safety tag and close this circuit breaker:

Copilot CB panel:

FLAPS PWR

(9) Retract the flaps (Refer to 27-50-00).

7. Main Wing Inboard Flap Tracks - Inspection

A. Check the roller tracks for wear and abnormal contacts. Check the bonding track - to - spring contact areas for wear.

8. Forward Support of Main Wing Outboard Flap Tracks - Inspection(Ref. Figg. 202, 203)

CAUTION: ANY EVENT HAS BEEN REPORTED OF A MAIN WING OUTBOARD FLAP (MWOF) SURFACE TWISTING DURING DEPLOYMENT AT LANDING. THE EVENT WERE CAUSED BY THE FORWARD SUPPORT FAILURE OF ONE OF THE TWO TRACKS DRIVING THE SURFACE DURING MOTION. THE AIRPLANE WAS CONTROLLABLE AND LANDED SUCCESSFULLY.
THE SUPPORT STRUCTURAL FAILURE WERE CAUSED BY INDUCED CORROSION PROBLEMS LEADING TO MICRO-CRACKS AND MATERIAL REDUCED STRENGHT.

A. Procedure

(1) Remove the Flap Track Fairing (11) from each flap track.

(2) Check the clearance between the forward support flange and the flap track forward attack: a minimum clearance of 0.05 millimeters must be assured.

CAUTION: IF THE ABOVE CLEARANCE IS NOT CHECKED AND/OR A CONTACT IS OBSERVED, IMMEDIATELY CONTACT PIAGGIO AERE INDUSTRIES PRODUCT SUPPORT DEPT. FOR THE CORRECTIVE ACTION.

(3) Remove the bolt (1), nut (12) and washer (13) connecting the flap track to the forward support (2).

NOTE: The removed bolt, nut and washer can be reused at reinstallation.

CAUTION: IN ORDER TO AVOID DAMAGING THE SURFACES PROTECTIVE COAT, UNSCREW THE BOLT BY KEEPING THE BOLT HEAD STEADY AND ROTATING THE NUT.

(4) Rotate down (and away from the support) the forward attack of the flap track in order to gain a complete access and view of the forward support (2).

(5) Make an accurate visual inspection of each forward support of the LH and RH MWOF tracks for absence of cracks and corrosions.

(6) In the event that a complete absence of crack and corrosions, are observed and a correct clearance is found as per the above requirements on all the support, then:

(a) reconnect the flap track forward attack to the forward support as described in this section.

CAUTION: PARTICULAR CARE IS TO BE TAKEN WHILE ALIGNING THE FLAP TRACK FORWARD ATTACK TO THE SUPPORT AND WHILE INSERTING THE CONNECTING BOLT IN ORDER TO AVOID DAMAGING THE SURFACES PROTECTIVE COAT. TIGHTEN THE BOLT BY KEEPING THE BOLT HEAD STEADY AND ROTATING THE NUT.

(b) reinstal the removed fairing.

(7) Check for interference absence between the Flap Track Fairing Screws (18, 19, 20, 21) and the Female thread Block (22, 23).

(8) In the event that evidence of cracks and corrosion is observed on any support, following the visual inspection, then immediately contact PiaggioAeroIndustries Product Support Dept. for corrective action.

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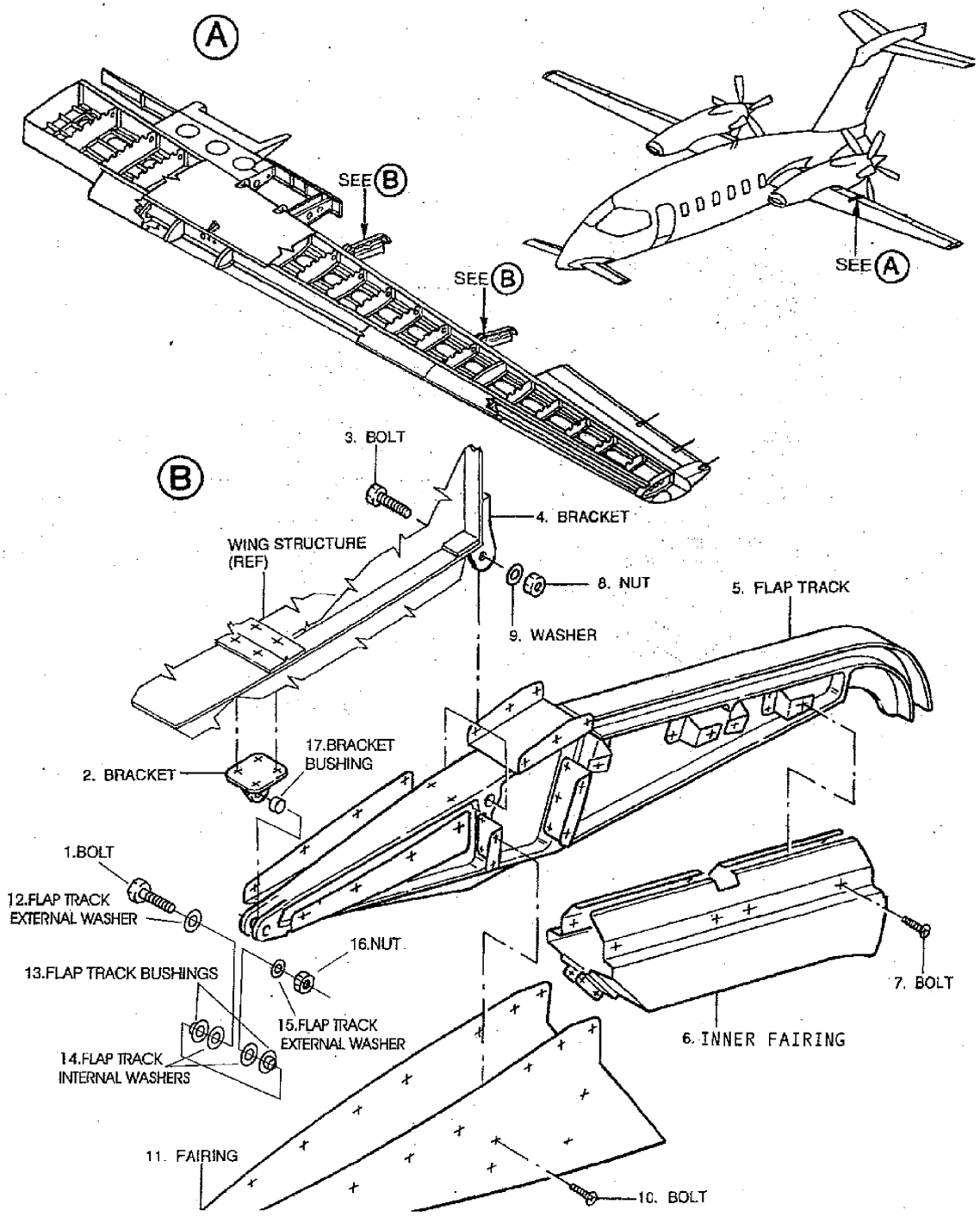

Fig. 202 - Flap Track - Removal/Installation (Sheet 1 of 2)

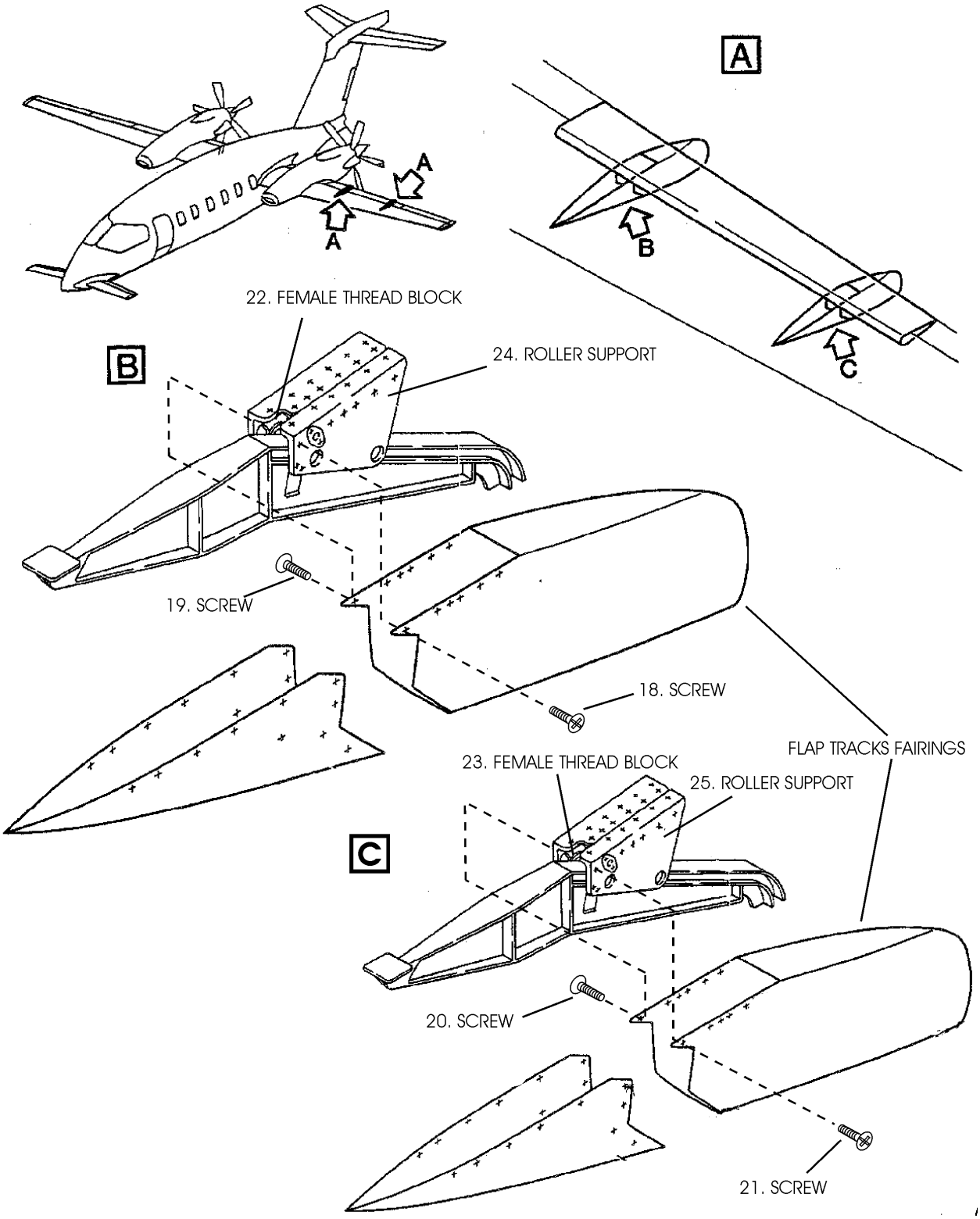

Fig. 202 - Flap Track - Removal/Installation (Sheet 2 of 2)

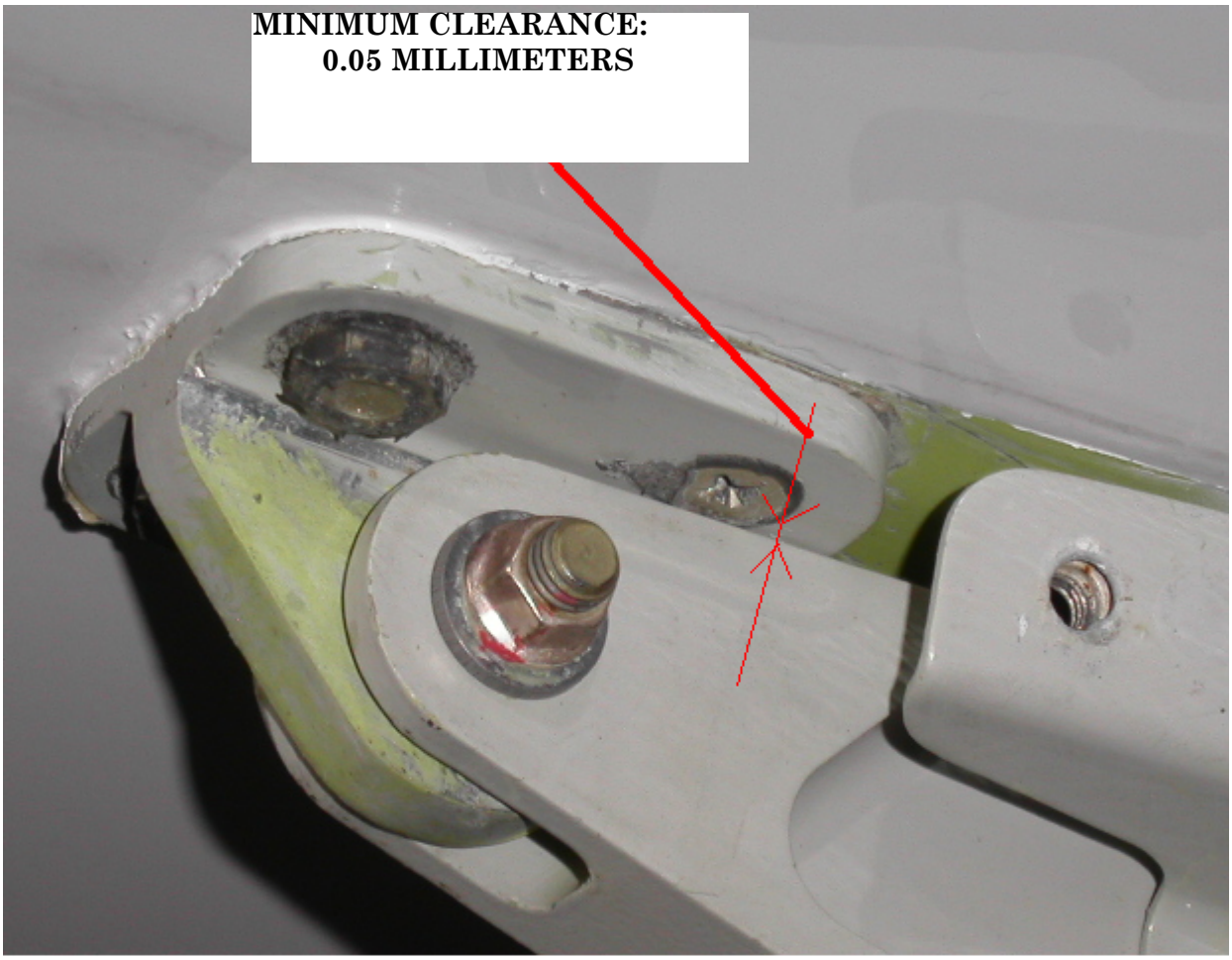

Fig. 203 - Forward Support of Main Wing Outboard Flap Tracks - Inspection

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AILERON AND TAB - MAINTENANCE PRACTICES

1. General

   A. The Removal/Installation procedures for the aileron and tab are given in 27-10-00.

   B. For the aileron inspection refer to 57-10-00.

   C. The procedure for balancing the ailerons is given in 51-61-00.

   D. For the better trimming is installed a fixed tab on the left aileron trailing edge.

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