

# Section VIII

## Airframe Group

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# Section VIII

## Airframe Group

### 8-1. FUSELAGE.

8-2. DESCRIPTION. The fuselage consists of three main sections; the forward section which extends from the cabin nose to the bulkhead aft of the passenger compartment, the intermediate section which extends from the bulkhead aft of the passenger compartment to the tailboom, and the aft or tailboom section. (See figure 8-1.) The forward section utilizes aluminum honeycomb structure and provides the major load-carrying elements of the forward cabin. The forward section provides for pilot and passenger seating, fuel cell enclosure, and pylon support. The intermediate section utilizes an aluminum semimonocoque construction and provides a deck for engine installation, baggage compartment, and a compartment under the engine deck for heater and electrical equipment. The tailboom is basically a full monocoque structure and supports the horizontal stabilizer, vertical fin, tail rotor drive shafting, and tail rotor. (Refer to Section XIV for classification of damage, limits, repairs, and material requirements.)

**CAUTION**

The tailboom and fuselage inspection panels are structural members and must be in place for flight.

**Note**

Helicopters 914 and subsequent incorporate mounting attachments for the fittings used in the 1500 pound cargo hook kit. This reduces time required for installation of kit in the field.

### 8-3. CABIN DOOR ASSEMBLIES.

**CAUTION**

To prevent internal corrosion of honeycomb panels, immediately repair any damage that penetrates the skin. Seal minor penetrations immediately.

8-4. DESCRIPTION. Four entrance doors are provided for access to the cabin section. The doors utilize a partial honeycomb structure and tinted acrylic windows. Sliding windows are provided for ventilation and straps are installed at the lower hinge to restrain the door.

### 8-5. REMOVAL — DOOR ASSEMBLIES.

- a. Unlatch door and hold to preclude damage.
- b. Remove screw and retainer from post end of door restraining strap.
- c. Remove screws, washers, and nuts from door hinges. Remove door assembly.

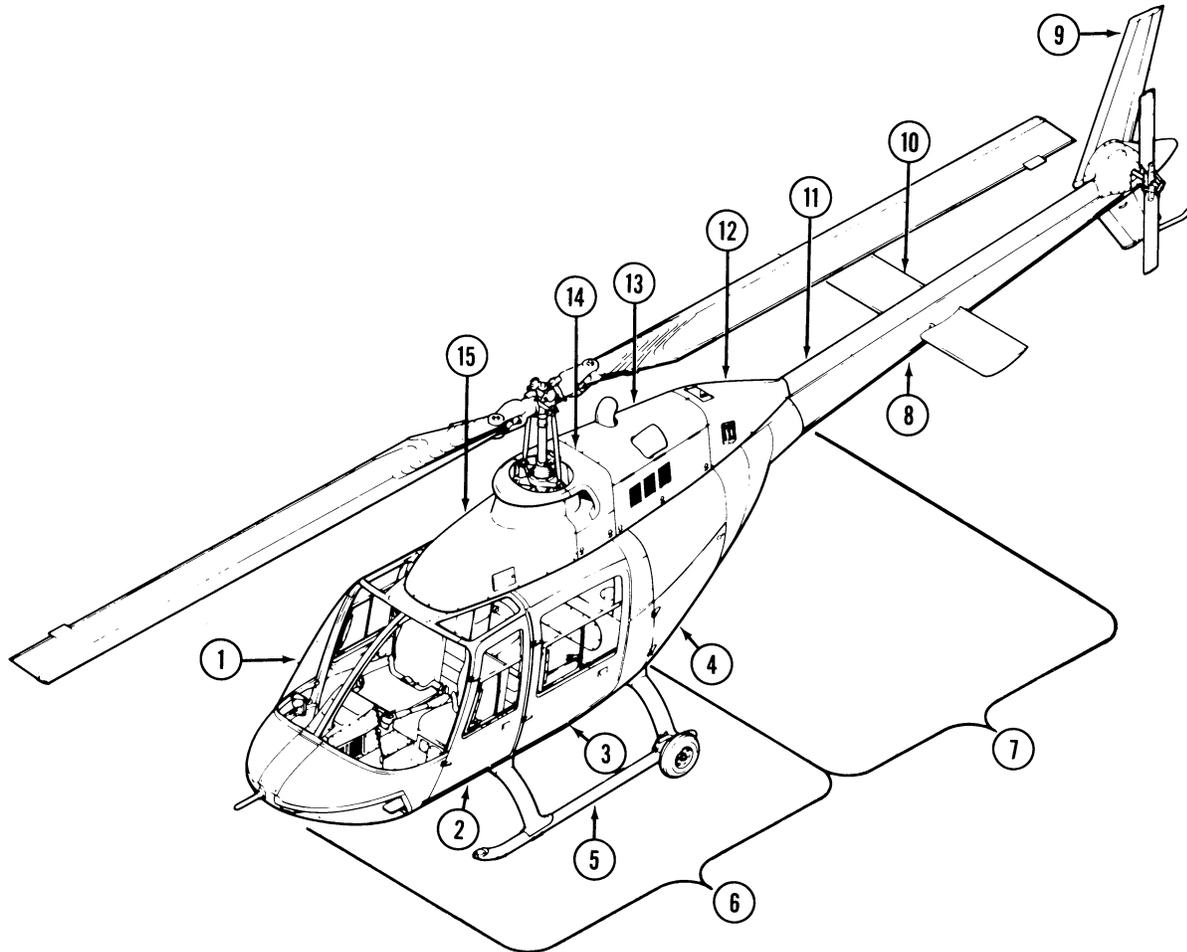
### 8-6. INSPECTION AND REPAIR — DOOR ASSEMBLIES.

- a. Sliding windows may be replaced by removing handle and sliding the window out of the tracks. Install replacement window in tracks and install handle.
- b. Inspect latch assembly for proper operation.
- c. Replace door frame seals and chafing strips if deteriorated or damaged as follows:
  - (1) Abrade the rubber seal or the chafing strip with No. 80 grit abrasive paper (item 15, table 1-1). Clean the abraded area with toluene (item 37, table 1-1) and wipe dry with a clean, dry cloth.

**CAUTION**

Toluene is flammable and skin contact should be avoided.

- (2) Clean the door area to be bonded by abrading the surface lightly with No. 80 grit abrasive paper (item 15, table 1-1). If the area is painted, remove the paint (bond area only) to fiberglass. Clean the abraded area to be bonded with toluene (item 37, table 1-1) and wipe dry with a clean, dry cloth.



- |                         |                                   |
|-------------------------|-----------------------------------|
| 1. Windshield           | 9. Vertical Fin                   |
| 2. Crew Doors           | 10. Horizontal Stabilizer         |
| 3. Passenger Doors      | 11. Tail Rotor Driveshaft Housing |
| 4. Baggage Compartment  | 12. Aft Fairing                   |
| 5. Landing Gear         | 13. Engine Cowl                   |
| 6. Forward Section      | 14. Induction Fairing             |
| 7. Intermediate Section | 15. Forward Fairing               |
| 8. Tailboom             |                                   |

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Figure 8-1. Airframe Group

(3) Brush apply a 10 to 15 mil coating of adhesive (item 11, table 1-1) to both surfaces. Press the two coated surfaces together and apply firm pressure until cured. A curing time of 24 hours at room temperature will provide 50 percent of strength obtainable, while the maximum cure strength time is 4 to 7 days at room temperature.

of door only. Allow adhesive to air dry 30 minutes at room temperature.

d. For removal and installation of single door latch assemblies, refer to paragraph 8-8. For removal and installation of dual door latch assemblies, refer to paragraph 8-13A.

#### 8-6A. REPLACEMENT — DOOR SEALS.

##### Note

Baggage compartment door and miscellaneous access doors use pressure-sensitive chafing tapes and need not be bonded with separate adhesives.

a. Determine type of seal being replaced by cutting a small specimen from damaged seal and subjecting it to flame. Silicone seals are more rapidly affected by flame and will leave a gray ash residue.

b. Remove old seal from door. Cut a length of new seal slightly longer than required. Trim end of seal to be bonded.

c. Clean new seal with toluene (item 37), xylene (item 150), or MEK (item 17). Clean painted surfaces on door thoroughly with aliphatic naphtha (item 36).

d. Sand mating surface of seal and door with No. 80 grit abrasive cloth (item 15)/

##### Note

For maximum bond strength, remove all paint and primer from metal surface where seal is to be applied.

e. Clean sanded areas of seal and door with appropriate solvent, and dry with a clean dry cloth.

f. Bond battery access door silicone composition seals as follows:

(1) Using a brush, apply a thin uniform coat of adhesive primer (item 161) to metallic surface



(2) Apply a thin, uniform coat of adhesive (item 64) to mating surfaces of seal and battery access door. Bond silicone seals on all other doors, in like manner, using adhesive (item 112A).

(3) Apply pressure to seal until adhesive has cured to handling strength (50 percent of maximum strength). Handling strength is obtained in 24 hours at 75°F (24°C); maximum cure will occur in three to five days.

#### 8-7. INSTALLATION — DOOR ASSEMBLIES.

a. Mate door hinge with hinges on doorpost and install screws, washers (one washer under screw and one under nut) and nuts. Install retainer and door restraining strap on forward doorpost.

b. Check door and latches for proper operation.



To prevent wind damage to doors and hinges, ensure all doors are closed and locked when not in use.

#### 8-8. CABIN DOORS — SINGLE LATCH ASSEMBLY.

8-9. DESCRIPTION. Spring loaded, plunger-type latch assemblies are provided on all four entrance doors. The latch assemblies are identical except for a longer link employed in the two aft doors to connect the inside door handle to the latch. (See figure 8-2.)

#### 8-10. REMOVAL — SINGLE LATCH ASSEMBLY.

##### Note

Disassemble latch only to the extent necessary for repair or replacement.

a. Remove pin (1, figure 8-2) that secures inside handle (2) to spindle (3). Remove handle.

b. Remove screws (4) from escutcheon (5). Remove plate and shim (6).

c. Remove screws (7) attaching cover (8) to door.

d. Remove pin (10) and cotter key (9) that connects lever (11) to link (12). Disconnect link (12) from bellcrank (13) by removing pin (14) and cotter key (15).

e. Remove screw (16) from outside handle (17). Remove nut (18) and washer (19) from shaft (20). Remove pin (22), washer (23) and cotter key (21) that secures bellcrank (13) to plunger link. Remove bellcrank (13), shaft (20), shims (25), and handle (17). Remove cotter key (26) and pin (27) connecting link (24) to plunger (28).

f. Remove pin (29) located between springs (30) and remove plunger (28). Remove pin (31) from slot in plunger and unscrew roller assembly (32).

8-11. INSPECTION AND REPAIR — SINGLE LATCH ASSEMBLY. Replace damaged or worn parts as required. Replace unserviceable cabin door locks as follows: (Figure 8-2.)

a. Remove nut (34), washer (35), and cam (36).

b. Remove nut (37) and remove lock (38) from handle (17).

c. Clean threads on new lock and nut (37) with naphtha or methyl-ethyl-ketone (item 17, table 1-1).

d. Apply loctite, grade CV (item 39, table 1-1) to threads of lock in area of contact with nut (37) and insert lock through handle (17), secure with nut (37).

e. Install cam (36), washer (35), and nut (34) on lock.

f. Perform functional check of lock.

#### 8-12. INSTALLATION — SINGLE LATCH ASSEMBLY.

a. Screw roller assembly (32, figure 8-2) into the plunger (28).

b. Insert plunger into outer face of latch housing and install two springs (30) and two washers (33) over plunger (28). Insert plunger (28) through innerface of housing. Install link (24) in fork end of plunger and insert pin (27) with head up. Secure pin (27) with cotter key (26). Separate the springs (30) and washers (33) and install pin (29) between washers (33).

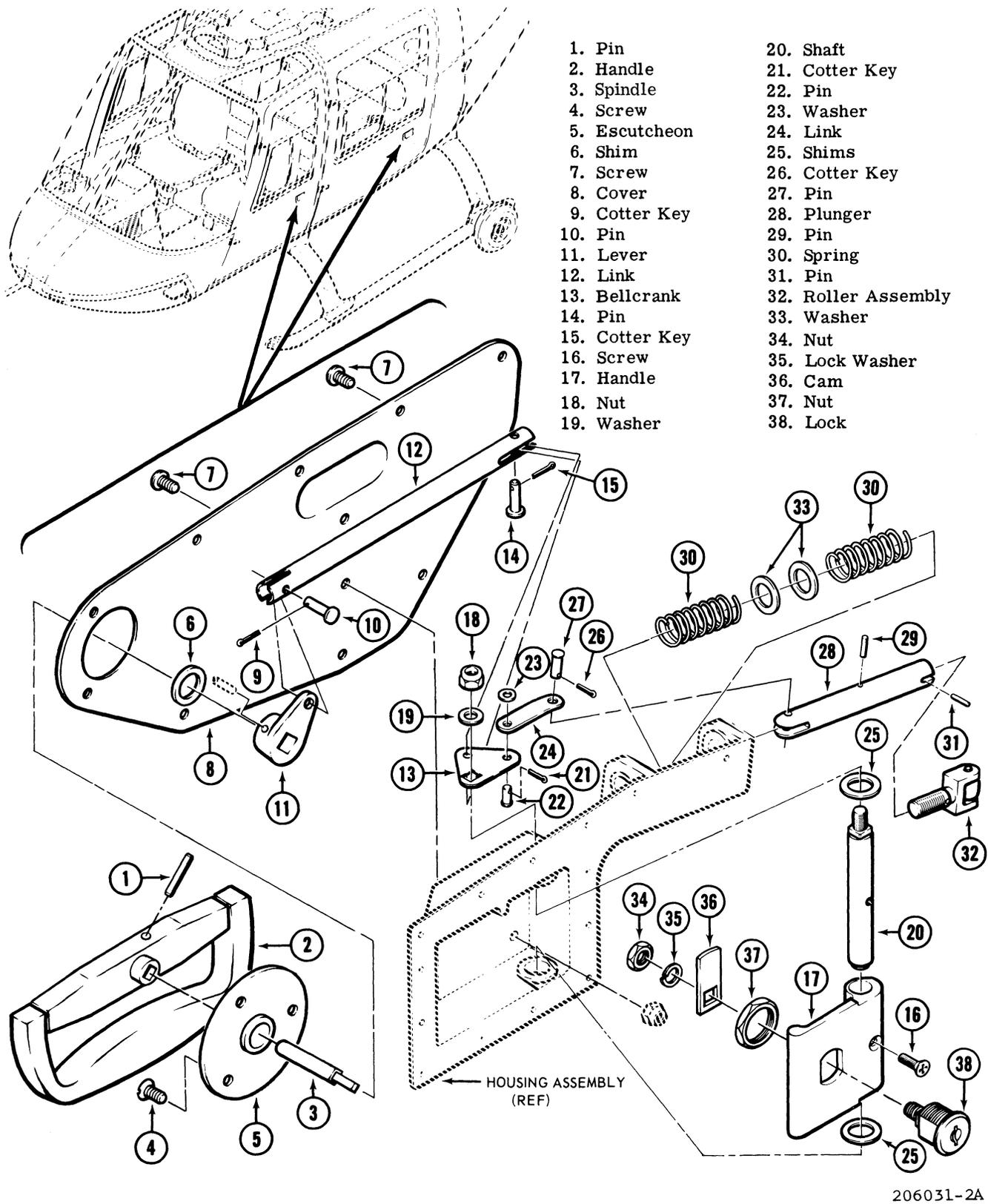


Figure 8-2. Door Assembly — Single Latch Assembly

c. Position handle (17) in housing and install shims (25) on both sides of handle to maintain approximately 0.030 inch clearance between handle and housing assembly. Insert shaft (20) (threaded end up) through handle (17) and shims (25). Install bellcrank (13) over threaded end of shaft (20) and secure with washer (19) and nut (18). Align holes in link (24) and bellcrank (13) and install pin (22) (head down) and washer (23). Secure pin with cotter key (21). Install screw (16) in outside face of handle (17), securing handle to shaft.

d. Install link (12) on bellcrank (13) and secure with pin (14) and cotter key (15).

e. Install lever (11) on inside handle spindle (3) and secure with pin (if removed). Connect lever (11) and link (22) with pin (10) and cotter key (9).

f. Position cover (8) over spindle (3) and install shim (6) and plate (5) on spindle (3). Install inside handle (2) on spindle (3) and secure with pin (1) through handle and spindle. Install cover (8) on door with screws (7). Align holes of escutcheon (5) and install screws (4). The door handle should be positioned in a horizontal position. Check door latch for operation, if adjustment is required proceed to paragraph 8-13.

### 8-13. ADJUSTMENT — SINGLE LATCH ASSEMBLY.

a. Adjust the clearance between the roller assembly (3, figure 8-3) and the inner wall of the housing (1) 0.090 to 0.140 inch (2) when the latch assembly is in the closed position.

b. Adjust the peel type shim (5) for a smooth door operation, with minimum door panel deflection, to prevent door rattle.

### 8-13A. CABIN DOORS — DUAL LATCH ASSEMBLY.

8-13B. DESCRIPTION. The cabin doors dual latch assemblies are similar in design and operation. Each cabin door incorporates two blade-type latches with connecting linkage, flush exterior handles with provisions for door locks, and standard handle on interior of doors. Dual latch assemblies provide for a more positive air and water seal to fuselage. (See figure 8-3A.)

### 8-13C. REMOVAL — DUAL LATCH ASSEMBLY.

#### Note

Remove and disassemble latch assemblies only to the extent necessary for repair or replacement of parts.

a. Remove pin (3, figure 8-3A) that secures interior handle (1) to spindle (8). Remove handle.

b. Remove screws (2) from small cover (4) on cabin door. Remove cover and shim (9).

c. Remove screws (6) attaching large cover (7) to cabin door. Remove cover and lift spindle (8), lever (10), and link (14) out of receptacle (11). Disconnect link from lever by removing cotter pin and pin (13).

d. Remove spring (23) attached to hook portion of bellcrank (18) and to lower latch housing (35) at rod end (50).

e. Disconnect bellcrank (47) by removing bolt (43) and at housing (16) by removing bolt (17) and washers (36).

f. Remove cover (29) over upper latch (31) by removing screws (30).

g. Remove four screws (25 and 28) and washers (26) from upper and lower latches (31 and 35) to cabin door. Thin washers may be used for shimming at latches, retain for reinstallation.

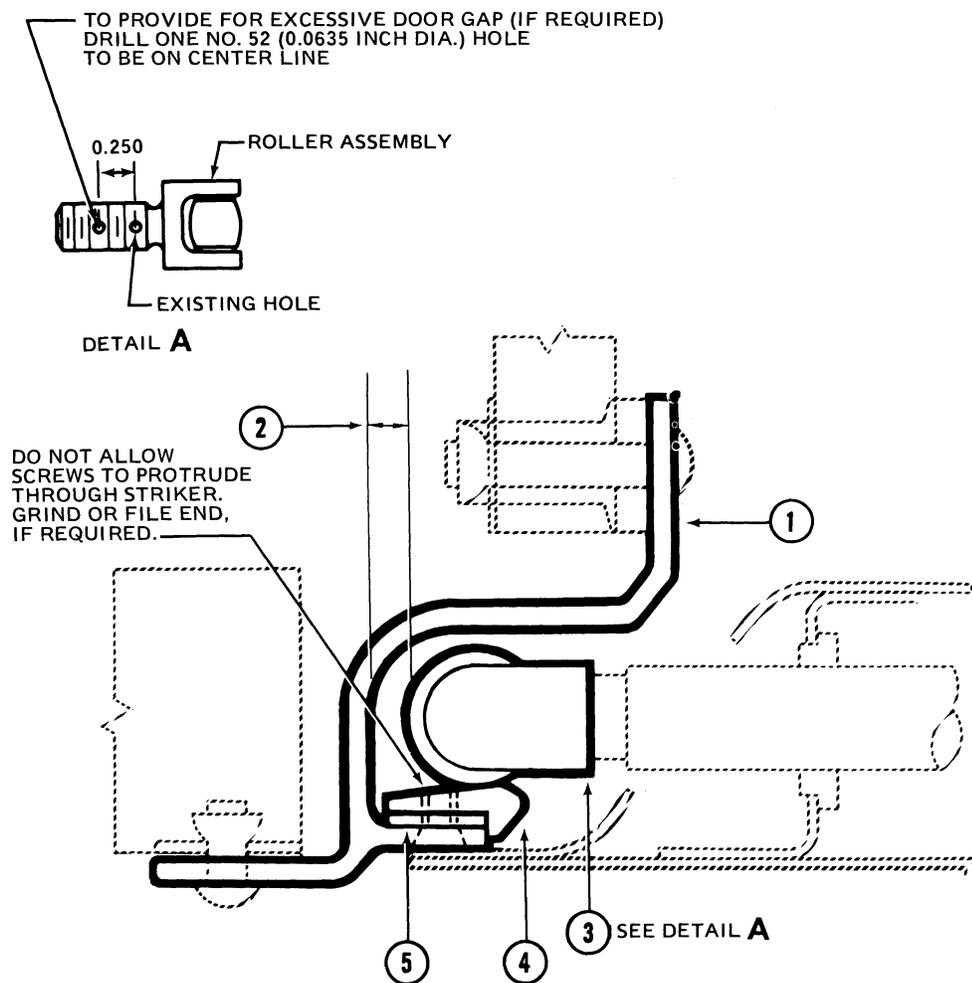
h. Shift both the upper and lower latches (31 and 35) up in hat section of cabin door frame and disconnect rod (27) from upper latch by removing cotter pin, washer, and pin (32).

i. Shift lower latch (35) and rod (27) down in hat section of cabin door frame and disconnect rod from lower latch by removing cotter pin, washer, and pin (32). Remove lower latch. Remove clevis (33) and nut (34) from lower end of rod. Pull rod (27) through opening for upper latch.

j. Only when replacement of parts are required should exterior handle (39) and housing (16) be removed. Remove housing as a complete assembly as follows:

#### Note

To replace exterior door handle (39), shims (37), bushings (59), shaft (38) with cam (53), it will be necessary to remove housing (16) from cabin door.



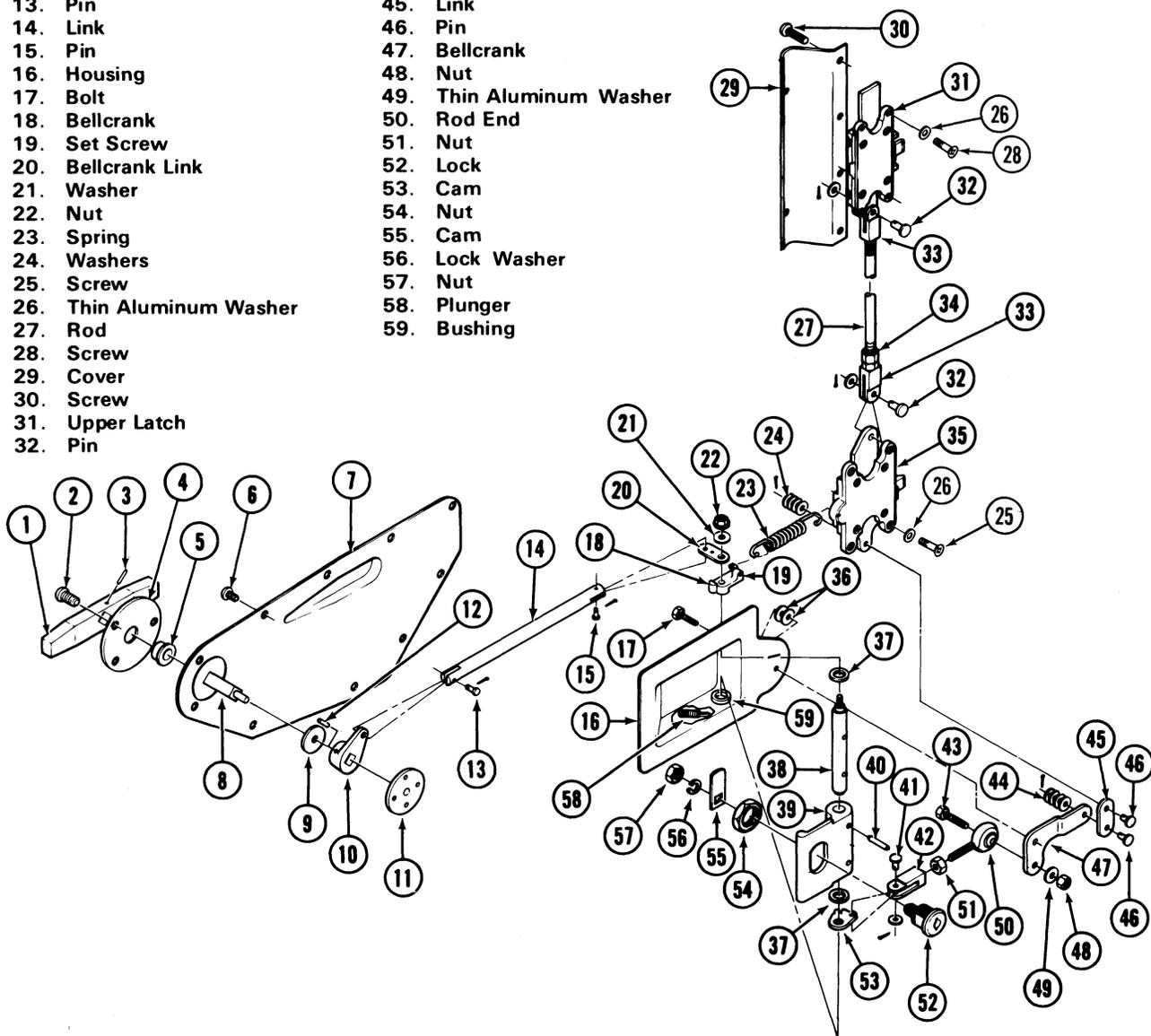
1. Striker Housing
2. 0.09 to 0.140 Inch Clearance
3. Roller Assembly
4. Striker
5. Shim

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Figure 8-3. Adjustment — Single Latch Assembly

- 1. Interior Handle
- 2. Screw
- 3. Pin
- 4. Cover
- 5. Bushing
- 6. Screw
- 7. Cover
- 8. Spindle
- 9. Shim
- 10. Lever
- 11. Receptacle
- 12. Pin
- 13. Pin
- 14. Link
- 15. Pin
- 16. Housing
- 17. Bolt
- 18. Bellcrank
- 19. Set Screw
- 20. Bellcrank Link
- 21. Washer
- 22. Nut
- 23. Spring
- 24. Washers
- 25. Screw
- 26. Thin Aluminum Washer
- 27. Rod
- 28. Screw
- 29. Cover
- 30. Screw
- 31. Upper Latch
- 32. Pin

- 33. Clevis
- 34. Nut
- 35. Lower Latch
- 36. Thin Aluminum Washer
- 37. Shim
- 38. Shaft
- 39. Exterior Handle
- 40. Pin
- 41. Pin
- 42. Clevis
- 43. Bolt
- 44. Thin Aluminum Washer
- 45. Link
- 46. Pin
- 47. Bellcrank
- 48. Nut
- 49. Thin Aluminum Washer
- 50. Rod End
- 51. Nut
- 52. Lock
- 53. Cam
- 54. Nut
- 55. Cam
- 56. Lock Washer
- 57. Nut
- 58. Plunger
- 59. Bushing



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Figure 8-3A. Cabin Door — Dual Latch Assembly

(1) Remove bolt (43) connecting rod end (50) to bellcrank (47). Bellcrank may be removed if required by removing bolt (17) and washers (36).

(2) Remove nut (22) and washer (21) from threaded end of shaft (38) and lift bellcrank link (20) and bellcrank (18) from end of shaft.

(3) From handle side of housing (16), remove two pins (40) securing handle (39) to shaft (38). Pilot holes are provided in base of housing for driving out pins. Remove clevis (42) by removing pin (41), washer, and cotter pin. Back off plunger (58).

(4) Work shaft (38) out of housing (16), separating handle (39). Separate parts and retain shims (37) between handle and housing for reinstallation.

#### Note

Cam (53) is serrated to shaft (38), do not remove.

k. If required, remove lock (52) from handle (39) by removing nut (57), lockwasher (56), cam (55), and nut (54). Remove lock from handle.

#### 8-13D. INSPECTION AND REPAIR — DUAL LATCH ASSEMBLY.

a. Inspect dual latch assembly for proper adjustment with the latch handles in the locked position. Press firmly against both the upper and lower latch blades to verify they are locked in position. The travel of the latch slider from the open to the locked position must be 1.06 inch as shown in figure 8-3B. Latches that do not meet these conditions will require adjustment in accordance with paragraph 8-13F.

b. Check latch mechanism with the use of both the interior and exterior handles (1 and 39, figure 8-3A) for proper response, ease of operation, and that exterior handle is flush to door.

c. Anytime covers (4, 7, and 29) are removed, inspect dual latch mechanism and linkage for liberal coating of grade 2, corrosion preventive compound (item 24, table 1-1).

#### 8-13E. INSTALLATION — DUAL LATCH ASSEMBLY.

a. Install exterior handle (39, figure 8-3A) in housing (16) as follows:

(1) Install clevis (42) and nut (51) on rod end (50) and to cam (53), and secure with pin (41), washer, and cotter pin. Install pin so that head will be inboard to housing (16) when assembled.

(2) Insert handle (39) in housing (16) and install shaft (38) through housing from plunger (58) side. Temporarily install two pins (40) in handle and shaft.

(3) Install bellcrank (47) to housing (16) with bolt (17) and thin aluminum washers (36) as shown in figure 8-3B, view B. Short arm of bellcrank is to be installed to rod end (50, figure 8-3A). Adjust rod end to a nominal dimension of 1.63 inches and connect to bellcrank with bolt (43), washer (49) and nut (48).



When shimming handle (39) and shaft (38) for axial movement it is mandatory that cam (53) be aligned with plunger (58) centerline.

(4) Check axial movement of shaft (38), handle (39), and the displacement of cam (53) from plunger (58) centerline. Add shims (37), as required, between bushings (59) and handle on shaft to allow 0.010 inch plus or minus 0.005 inch axial movement and alignment of cam to a centerline through plunger.

(5) After shimming is completed visually check to ensure that cam (53) will align with a centerline through plunger (58) while actuating bellcrank (47) back and forth.

(6) Install bellcrank (18, figure 8-3A) and bellcrank link (20) on square end of shaft (38). Secure with washer (21) and nut (22). (See figure 8-3B, view D.)

#### Note

Bellcrank link (20, figure 8-3A) is not symmetrical. Locate punch mark on bellcrank link and position mark up for left side housing assemblies. Position punch mark down for right side housing assemblies.

b. Loosen set screw (3, figure 8-3B) using a 0.050 inch allen wrench. Rotate plunger (58, figure 8-3A) with blade screwdriver, if plunger is

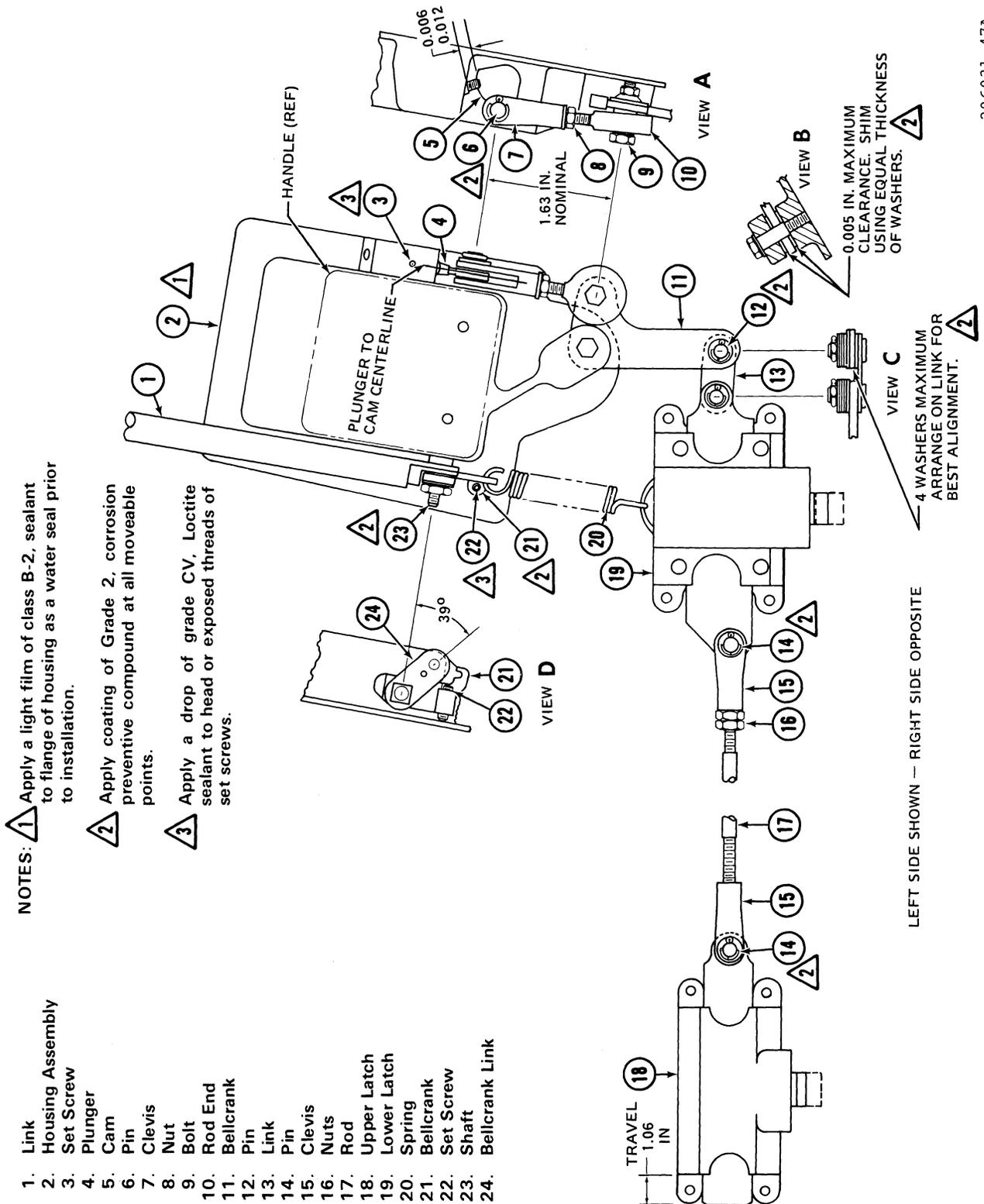


Figure 8-3B. Cabin Doors — Dual Latch Assembly, Adjustment

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stiff to turn or the hex plunger tip cannot be moved with thumb pressure, remove and lubricate as follows:

(1) Using a 0.50 inch allen wrench remove set screw (3, figure 8-3B) and small brass plug underneath. Do not misplace plug. Some latches do not have brass plug.

(2) Using 5/64 inch allen wrench and 1/8 inch open end wrench remove plunger. Unthread allen screw in end of plunger and remove spring and hex tip.

**Note**

When removing allen screw from plunger count the number of turns to remove allen screw and reinstall the same number of turns to maintain correct spring tension.

(3) Coat internal and external threads of plunger, spring, and hex tip with grade 2, corrosion preventive compound (item 24, table 1-1). Reassemble and install in housing.

(4) Insert small brass plug in opening for setscrew (3, figure 8-3B) and loosely install setscrew.

c. Adjust plunger housing to clear cam by 0.006 to 0.012 (See figure 8-3B).

**Note**

With the plunger (58, figure 8-3A) engaged in the V-slot of cam (53) the handle (39) will be set to the "slammable position" detent.

d. With the handle (39) set in the slammable position and plunger (58) engaged in V-slot of cam (53), adjust setscrew (19) in bellcrank (18) using 1/16 inch allen wrench until screw just touches inner face of housing (16).

e. Adjust and install rod (27) as follows:

(1) Fabricate a work aid from a 3-foot length of 0.25 inch OD soft aluminum tubing. Tap one end to number 10-32UNF-2B threads, 1 inch deep.

(2) Install one clevis (33) to mid-thread point. This is now the upper end of the rod and will be attached to the upper latch (35). Locate mid-thread point on opposite end of rod and reference mark with ink, dye, or paint.

(3) Slide threaded end of the fabricated work aid tube through opening in cabin door for the lower latch (31). Bend tube as required to follow hat section and contour of cabin door.

(4) At cabin door opening for upper latch (35), thread rod (27) into threaded end of fabricated work aid tube. Grasp exposed portion of tube at opening for lower latch (31) and pull down on tube. When rod (27) reaches opening for lower door latch, unthread tube from rod and attach upper clevis (33) and two nuts (34) to reference mark at mid-thread point.

f. Position lower latch (35) in opening in cabin door and attach lower clevis (33) to slide plate of latch with pin (32), washer, and cotter pin. Install pin with head outboard and undercut on clevis mating with pin head.

g. Shift lower latch (35) and rod (27) up in hat section of cabin door. Position upper latch (31) to upper clevis (33) and install pin (32), washer, and cotter pin. Install pin with head outboard and undercut on clevis mating with pin head.

h. Position upper and lower latches (31 and 35) to mounting point in cabin door frame and secure each with four screws (25 and 28) and thin aluminum washers (26).

i. Temporarily position assembled housing (16) to inside skin of cabin door frame. Connect bellcrank (47) to link (45) with pins (46), thin aluminum washers (24 and 44), and cotter pins

(1) Align housing (16) to cutout in cabin door and to lower latch (35). As required, drill 0.096 or 0.128 inch rivet holes in housing, using existing holes in cabin door skin for pattern.

(2) Disconnect bellcrank (47) from link (45) by removing one of the pins (46). Remove housing (16) from cabin door.

(3) Locate rivet hole in corner of housing (16) that is adjacent to surface that will be contacted by setscrew (19) in bellcrank (18). Lightly countersink rivet hole on inboard-flange face. Deburr all rivet holes and remove drill shavings from all surfaces.

#### Note

Housing rivet located below setscrew (19) must be flush to prevent improper spring force adjustment.

(4) Clean flange face of housing (16) and interior edge surface of cabin door skin at cutout with naphtha (item 36, table 1-1). Wipe surface dry before naphtha evaporates.

(5) Apply a light film of class B-2 sealant (item 7, table 1-1) to flange face of housing (16, figure 8-3A) and to mating surface on interior of cabin door.

(6) Position housing (16) inside cabin door and secure with ten MS20470AD3 or AD4 rivets, as required. Check to ensure that bucked head of rivet below setscrew (19) is flush with flange face of housing. Trim sealant on exterior of housing to remove excess and to ensure all voids are sealed between housing and cabin door skin.

(7) Reconnect bellcrank (47) to link (45) with pin (46) and thin aluminum washers (25 or 44). Arrange washers, as required, for best alignment, not to exceed a maximum of four on each pin. (See figure 8-3B, view C.)

j. Install square cut end of link (14) to bellcrank link (20) and secure with pin (15) and cotter pin. Link (14) is to be installed with bevel cut end forward and up for crew doors, and half moon cut forward for passenger doors. Install pin with head towards housing.

k. Install spring (23, figure 8-3A) to cut out on back of lower latch (35) and to hook portion of bellcrank (18).

l. Install interior door handle (1) as follows:

(1) Install lever (10) on spindle (8) and secure with pin (12). Connect lever to link (14) with pin (13) and cotter pin.

(2) Apply a coating of grade 2, corrosion preventive compound (item 24, table 1-1) to bushing in receptacle (11, figure 8-3A). Insert spindle (8) into receptacle.

#### Note

Lever (10) must be installed on spindle (8) at an angle of 45 degrees aft of a vertical center when handle (1) is horizontal.

(3) Position shim (9) on spindle (8) with small cover (4) and temporarily install handle (1) in horizontal position.

(4) Adjustment of shim (9) and final installation of covers (4, 7, and 29) will be accomplished after adjustment of latches. (Refer to paragraph 8-13F.)

### 8-13F. ADJUSTMENT — DUAL LATCH ASSEMBLY.

a. If not previously accomplished remove the following to gain access to dual latch mechanism.

(1) Remove pin (3, figure 8-3A) that secures handle (1) to spindle (8). Remove screws (2), small cover (4), and cover (7) from cabin door. Leave spindle, lever (10), and link (14) installed in receptacle (11). Temporarily reinstall handle.

(2) Remove cover plate from upper latches (29) by removing screws (30).

b. Check upper latch (18, figure 8-3B) for correct cam plate or slider travel and proper adjustment of rod end (10) and rod (17) as follows:

(1) Remove bolt (9) from rod end (10) and bellcrank (11) using 7/32 inch box end wrench, bent to a 45 degree angle. Disconnect spring (20) from bellcrank (21) and lower latch (19).

(2) Using bellcrank (11) as a lever, actuate upper and lower latches (18 and 19) through full range of travel. Check cam plate or slider of upper latch for 1.06 inches, plus or minus 0.02 inch of travel while actuating bellcrank through full travel range. (See figure 8-3B for measuring points on upper latch.)

(3) Check both upper and lower latches (18 and 19), pins (14), and clevises (15) for possible

binding or contact with cabin doorframe. This may be accomplished by actuating bellcrank (11) by hand through full travel range and using a piece of paper to check for contact between doorframe, pins, and clevises.

(4) If binding is evident install thin aluminum washers between latch and cabin doorframe, as required, using washers equally. As an example, if upper latch pin or clevis is binding, add washers between latch and doorframe at two lower mounting screws.

#### Note

The 1.06 inches, plus or minus 0.02 inch travel of rod (17) and corresponding movement of upper and lower latches (18 and 19) cam plate is mandatory for proper latch operation.

(5) If the 1.06 inches, plus or minus 0.02 inch of travel is not available, remove screws securing upper latch (18) to cabin door and remove pin (14). Adjust upper clevis (15), as required, to obtain required travel.

c. Check axial play of handle in housing (2). If axial handle motion is not within 0.010 inch plus or minus 0.005 inch, housing will require reshimming. (Refer to paragraph 8-13C, step j. (removal) and paragraph 8-13E, step a. (installation).

d. Deleted

e. Position exterior handle to slammable position. Move handle until tip of plunger (4) engages V-slot in cam (5), this is the slammable position. Check plunger (4) for correct adjustment as follows:

(1) Visually check that plunger (4) contacts V-slot of cam (5). If dimension is not correct, proceed with the following steps.

#### Note

Visually check that tip of plunger (4) is in line with a centerline through cam (5), if not, repeat c.

(2) Partially loosen setscrew (3), do not remove.

(3) Using blade screwdriver adjust plunger housing to clear cam 0.006 to 0.012 inch.

(4) Tighten setscrew (3) to secure plunger (4) in housing (2).

f. Adjust rod end (10) to a nominal dimension of 1.63 inches. Check to ensure that handle is in closed position, and upper and lower latch sliders in up (lock) position.

(1) Position rod end (10) to bellcrank (11). Adjust rod end, as required, to align bolt holes for bolt (9).

(2) Install bolt (9) and secure with washer and nut.

g. Install spring (20) between lower latch (19) and hook on bellcrank (21).

h. With exterior handle and lower latch (19) in slammable position, initially adjust setscrew (22) until it just contacts inside flange surface of housing (2). Final adjustment of setscrew will be accomplished after applying corrosion preventive compound and locking setscrews.

i. Apply a liberal coating of grade 2, corrosion preventive compound (item 24, table 1-1) with small brush to the following parts as a corrosion preventive and lubricant.

(1) Hex end of plunger (4) and cam (5).

- (2) Pin (6) and washers.
- (3) Two pins (12) and washers in link (13).
- (4) Two pins (14) and washers in clevises (15).
- (5) Both ends of link (1) at pins.

j. Check exterior door handle and plunger (4) for over-travel of cam (5) rectangular slot by flipping handle in and out of slam position several times. If cam over-travels plunger each time handle is flipped, adjust setscrew (22), as required, until plunger engages V-slot of cam. Do not ride handle while making this adjustment. Recheck adjustments using interior handle.

k. Check that exterior handle is flush with housing (2). If handle will not close completely, the length of rod end (10) will require readjustment by lengthening rod end in one-half turn increments until free play is eliminated. Align clevis (7) and rod end to attaching parts and secure nut (8). Repeat step j. to ensure setscrew (22) does not require further adjustment.

l. Apply a drop of grade CV, Loctite sealant (item 39, table 1-1) to head or exposed threaded portions of setscrews (3 and 22) to prevent their movement during normal operation.

m. Check that all pins (6, 12, and 14) and those attaching link (1) are properly cotter-pinned. Check washer arrangement on link (13) to minimize freeplay. Misalignment of one thin washer (0.015 inch) is permitted. (See figure 8-3B, view C.)

n. Reinstall covers (4 and 7, figure 8-3A) and adjust interior door handle as follows:

- (1) Remove interior handle (1) and small cover (4) with screws (2), if installed.
- (2) Position large cover (7) to cabin door and secure with screws (6).
- (3) Insert full shim (9) on spindle (8) and position small cover (4) and handle (1) on spindle. Peel shim, as required, to permit smooth door handle operation, and minimum deflection of covers and handle.

(4) After adjustment of shim (9), remove handle (1) and cover (4). Apply a film of grade 2, corrosion preventive compound (item 24, table 1-1) to shims and inside diameter of bushing (5) in cover.

(5) Reinstall cover (4) and secure with screws (2). Close cabin door and position exterior handle to locked position. Install interior handle (1) on spindle (8) in horizontal position and secure with pin (3).

o. Check cabin door latch mechanism for proper operation using both the exterior and interior handles (1 and 39).

#### 8-14. CARGO AND MAINTENANCE PLATFORMS.

8-15. DESCRIPTION. A dual-purpose cargo and maintenance platform is provided as optional equipment. When used as an interior cargo platform, the rear seats are removed and two sections of flooring are installed in the rear compartment. The platforms consist of bonded honeycomb panels and provide airframe attachment points and cargo tiedown rings. When not in use as a cargo or work platform, the sections are stowed in the baggage compartment. The work platform may be installed on either side of the helicopter.

8-16. BAGGAGE COMPARTMENT. The baggage compartment is located on the left side of the helicopter. A hinged access door is provided and the compartment provides 16 cubic feet of space. The baggage compartment is constructed of aluminum alloy and honeycomb paneling and provides access to the heater and electrical compartment door. Procedure for lock replacement is the same as for cabin door locks except that a spacer is used in the baggage door. (Refer to paragraph 8-11 for repair of latch assembly and to Section XIV for repair of honeycomb compartment floor.)

#### 8-17. ENGINE AND TRANSMISSION COWLING.

8-18. DESCRIPTION. The engine and transmission cowling consist of four sections: forward fairing, induction fairing, engine cowl assembly, and aft fairing. The cowling is constructed of aluminum alloy, fiberglass, and honeycomb material and is readily removable for

engine and transmission changes. Cowling access panels are provided with snap-open fasteners which permit inspection without removing the cover unit. (See figure 8-4.)

#### Note

On helicopters 154 and subsequent, forward and aft fairing assemblies are secured with dzus fasteners.

On helicopters prior to 914, the engine cowl side panels and aft fairing contain louvers, and the forward fairing contains a screen for ventilation.

On helicopters 914 and subsequent, the forward fairing does not include a screen, but screens were incorporated into the engine cowl, cowl side panels, and aft fairing.

#### 8-19. REMOVAL — COWLING.



Protect compressor inlet and exhaust port opening when cowl is removed.

a. Remove screws and washers or unfasten dzus fasteners securing the forward fairing (1, figure 8-4). Remove fairing.

b. Remove screws and washers or unfasten dzus fasteners securing the aft fairing (5). Remove the fairing.

c. Unlatch access door on each side of induction fairing (2) and remove screws or unfasten dzus fasteners attaching induction fairing to roof deck. Remove screws and washers or unfasten dzus fasteners attaching aft end of fairing to forward firewall. Unlatch engine cowl panels to gain access to internal screws.

d. Unlatch engine cowl side panels (7) and remove exhaust stack assemblies (4). (Refer to Section VII.) Remove screws and washers or unfasten dzus fasteners attaching cowl to forward firewall and aft firewall. Remove engine cowl.

e. Remove screws and washers or unfasten dzus fasteners from aft fairing (5). Remove fairing.

#### 8-20. REPAIR — COWLING. (Refer to Section XIV.)

#### 8-21. INSTALLATION — COWLING.

a. Position engine cowl (3, figure 8-4) over forward and aft firewalls and install screws and washers or fasten dzus fasteners. Install exhaust stack (4). (Refer to Section VII.)

b. Position aft fairing (5, figure 8-4) over aft firewall, align holes, and install screws and washers or fasten dzus fasteners.

c. Position induction fairing (2) over forward firewall and align mounting holes. Install screws or fasten dzus fasteners securing fairing to roof deck. Install screws and washers or fasten dzus fasteners in forward firewall.

d. Install forward fairing (1), align holes with induction fairing (2) and roof deck attachment angle, and install screws and washers or fasten dzus fasteners.

e. Check cowling and fairings for security and lock all access door panel latches.

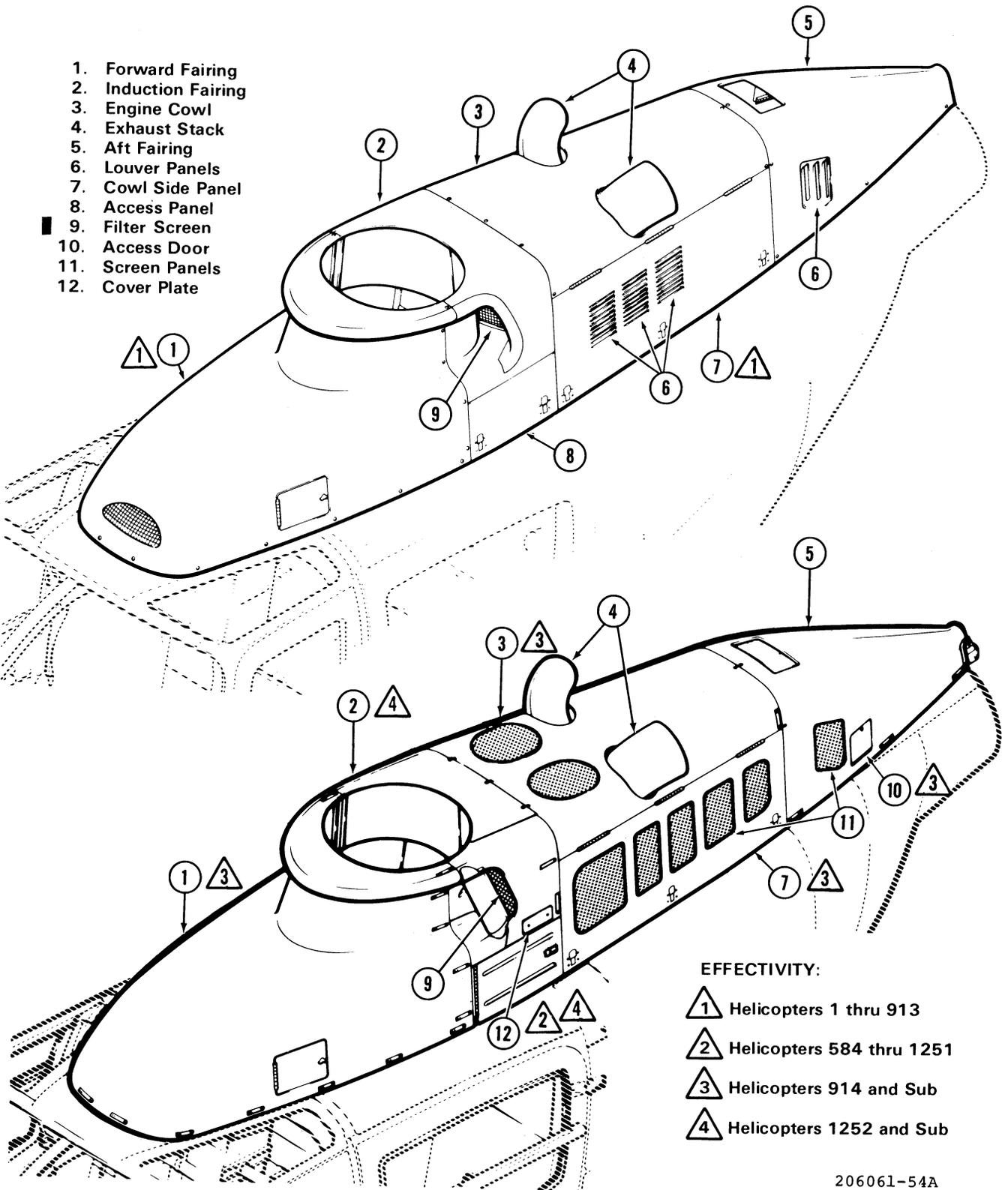


Figure 8-4. Engine and Transmission Cowling

206061-54A

**8-22. FORWARD SEATS.**

8-23. DESCRIPTION. The two forward seats are constructed of aluminum honeycomb panels and form an integral part of the airframe. The left seat converts from passenger to copilot with the dual control kit installed. Each seat is equipped with cushions and lap type safety belt.

**8-24. REMOVAL – FORWARD SEATS.**

a. Remove seat cushions. Cushions are secured by hook and pile attachment.

b. Remove screws and washers securing honeycomb panels to gain access to area under seat.

**8-25. INSTALLATION – FORWARD SEATS.**

a. Align honeycomb panels and install screws and washers.

b. Position seat cushions and engage hooks and pile.

**8-26. AFT PASSENGER SEATS.**

8-27. DESCRIPTION. The aft compartment provides seating for three passengers or, with seats removed, space for cargo is provided. The seat support is constructed of aluminum honeycomb panels and covers the forward portion of the fuel cell. The seat deck is composed of three panel assemblies and the center panel is removable to gain access to the forward part of the fuel cell. The aft seats are provided with cushions and lap type safety belts.

**8-28. REMOVAL AND INSTALLATION – SEATS.**

a. Remove seat cushions. Cushions are secured by hook and pile attachment. Tubular seats are secured with bolts.

b. If access is desired to forward part of fuel tank, remove the screws securing the center honeycomb panel.

c. Install seat cushions by engaging hooks and pile or on tubular seats install bolts and washers.

**8-29. SEAT BELT.**

8-30. DESCRIPTION. Each seat is equipped with a lap type safety belt and is attached to fittings secured to the seat back bulkhead.

8-31. REMOVAL – SEAT BELT. Remove cotter key, nut, washers and bolts attaching safety belt to fitting.

8-32. INSTALLATION – SEAT BELT. Install bolt, two washers (one under bolthead, one under nut) and nut. Tighten nut and install cotter key.

**8-33. FIRST AID KIT.**

The first aid kit is provided as optional equipment and mounted to the console pedestal or in map and data case for easy access.

**8-34. FIRE EXTINGUISHER.**

The fire extinguisher kit is installed on left side of the console or right hand side of center control column. The extinguisher is hand operated and employs a quick release type support and pull pin release for the handle.

**8-35. DATA CASE.**

The registration certificate data case is located on the right side of the console.

**8-36. TAIL BOOM.**

8-37. DESCRIPTION. The tail boom, a basic monocoque structure, is attached to the aft fuselage by a four-bolt attachment. The tail boom supports the tail rotor drive shafting, tail rotor, gear box, vertical fin and horizontal stabilizer. Covers are provided to protect and provide a fairing for the tail rotor drive shaft and gear box.

**8-38. REMOVAL – TAIL BOOM (HELICOPTERS 4 THROUGH 1251).**

a. Remove access door from right side of fuselage just forward of tail boom forward bulkhead (9, figure 8-5).

b. Remove aft engine fairing. (Refer to paragraph 8-19.)

c. Disconnect studs (6) from clips (5) on both sides of tail rotor drive shaft cover (1). Remove cover from top of tail boom (3).

d. Position left pedal full forward and disconnect tail rotor control tube just forward of tail boom forward bulkhead (9, figure 8-5) in aft fuselage. (Refer to Section IV.)

e. Disconnect electrical connectors, as required, at forward bulkhead (9, figure 8-5).

f. Disconnect tail rotor drive shaft just forward of bulkhead (9) on aft fuselage. (Refer to Section VI.)

g. Support the tail boom (3, figure 8-5) and remove nuts and washers from four attaching bolts. (See figure 8-5, view A-A.) Carefully drive the four bolts out and remove tail boom.

**8-39. REMOVAL – TAIL BOOM (HELICOPTERS 1252 AND SUBSEQUENT).**

a. Remove access door from right side of fuselage just forward of tail boom forward bulkhead (8, figure 8-5A).

b. Disconnect studs (3) from clips (4) on both sides of tail rotor drive shaft cover (1). Remove cover from top of tail boom (9).

c. Remove aft engine fairing. (Refer to paragraph 8-19.)

d. Position left pedal full forward and disconnect tail rotor control tube just forward of tail boom forward bulkhead (8, figure 8-5A) in aft fuselage. (Refer to Section IV.)

e. Disconnect electrical connectors, as required, at forward bulkhead (8, figure 8-5A).

f. Disconnect the first tail rotor drive shaft segment at coupling just forward of bulkhead (8). (Refer to Section VI.)

g. Support the tail boom (9, figure 8-5A) and remove nuts and washers from four attaching bolts. (See figure 8-5A, view A-A.) Carefully drive the four bolts out of the aft fuselage and tail boom (9).

#### 8-40. INSPECTION AND REPAIR – TAIL BOOM (HELICOPTERS 4 THROUGH 1251).

a. Inspect bulkhead (9, figure 8-5) and mating bulkhead on aft end of fuselage for cracks, elongation of holes, damage, and general condition. The maximum allowable hole diameter is 0.391 inches.

b. Inspect attachment bolts for stripped threads or any indication of damage. Replace as necessary.

c. With the aid of drop lights and extension mirrors inspect the tail boom (3) for cracks, corrosion, loose rivets, and foreign material.

d. Inspect vertical fin supports (2) for cracks, corrosion, or other damage. Inspect for cracks using fluorescent test kit (item 103, table 1-1). If cracks are discovered in supports, the cracked support must be replaced in accordance with Service Bulletin 206-01-73-5.

e. Inspect left side of tail boom (3, figure 8-5) between BS131.89 (FS300.00) to BS171.89 (FS341.00) for loose or working rivets, and cracks in skin. Any loose rivets should be replaced immediately with (AN470AD4-2 or CR2249-4-2) rivets.

#### Note

It is suspected that either tail rotor out of balance and/or improperly installed tail rotor gearbox are contributing factors to loose or working rivets, and cracks in tailboom skin at BS131.89 (FS300.00) to BS171.89 (FS341.00).

f. Refer to Section XIV for negligible, repairable, and replacement damage limits, including skin repairs. If tailboom skin is discovered to be cracked, notify the Service Manager, Bell Helicopter Company, for repair.

g. Check tape (7, figure 8-5) for deterioration and security.

#### 8-41. INSPECTION AND REPAIR – TAIL BOOM (HELICOPTERS 1252 AND SUBSEQUENT).

a. Inspect bulkhead (8, figure 8-5A) and mating bulkhead on aft end of fuselage for cracks, elongation of holes, damage, and general condition. The maximum allowable hole diameter is 0.391 inches.

b. Inspect attachment bolts for stripped threads or any indication of damage. Replace as necessary.

c. With the aid of drop lights and extension mirrors inspect the tail boom (9) for cracks, corrosion, loose rivets, and foreign material.

d. Inspect vertical fin supports (2) for cracks, corrosion, or other damage. (Refer to Section XIV for damage limits.)

e. Inspect left side of tail boom (9, figure 8-5A) between BS131.89 (FS300.00) to BS171.89 (FS341.00) for loose or working rivets, and cracks in skin. Any loose rivets should be replaced immediately with (AN470AD5-2 or CR2249-5-2) rivets.

#### Note

It is suspected that either tail rotor out of balance and/or improperly installed tail rotor gearbox are contributing factors to loose or working rivets, and cracks in tailboom skin at BS131.89(FS300.00) to BS171.89(FS341.00).

f. Refer to Section XIV for negligible, repairable, and replacement damage limits, including skin repair. If tail boom skin is discovered to be cracked, notify the Service Manager, Bell Helicopter Company, for repair.

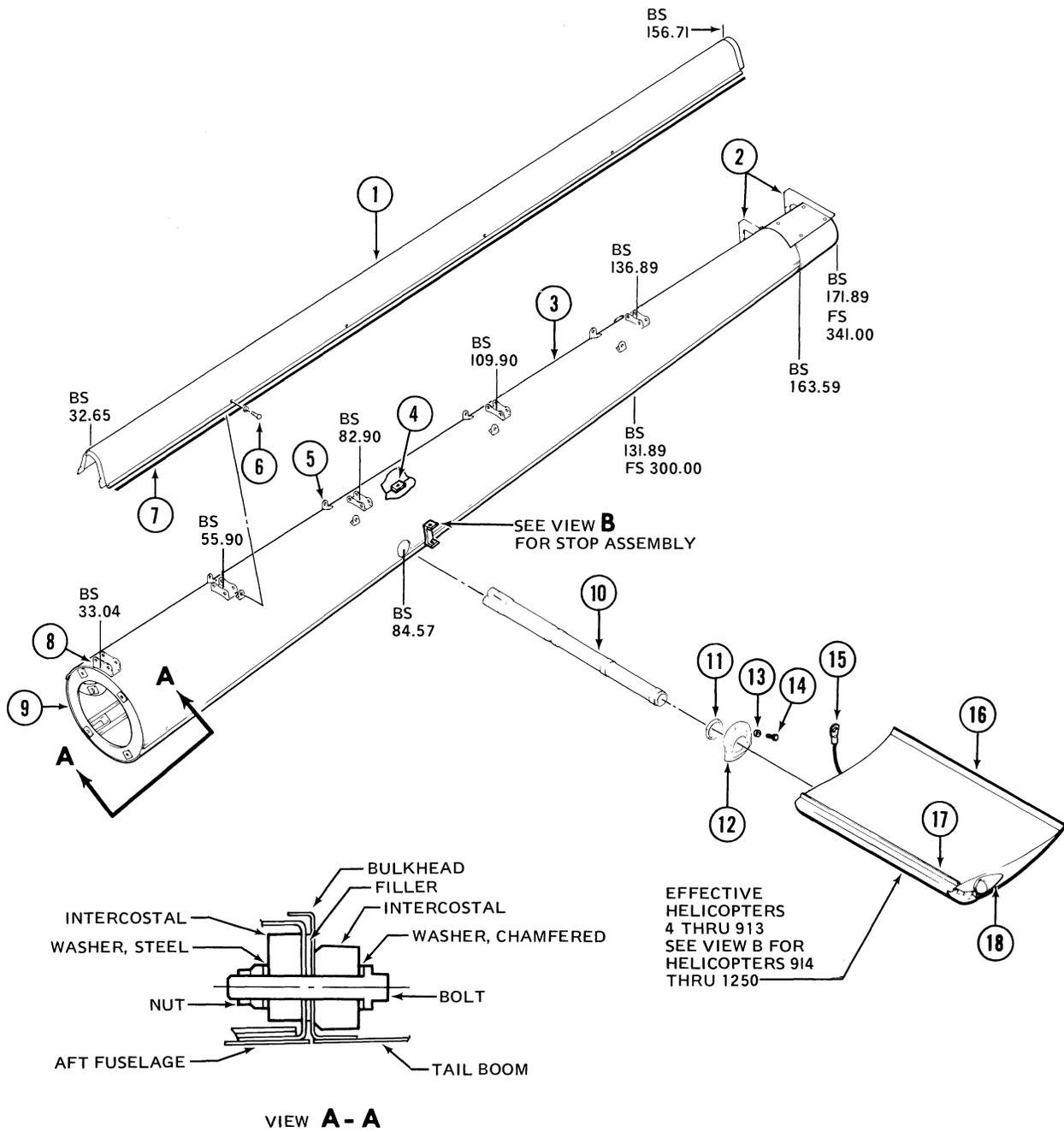
g. Check tape (6, figure 8-5A) for security and deterioration.

#### 8-42. INSTALLATION – TAIL BOOM (HELICOPTERS 4 THROUGH 1251).

a. Position tail boom (3, figure 8-5) against fuselage bulkhead and place suitable supports at each end of the boom.

b. Align tail boom bulkhead (9) and fuselage attachment holes. Install bolts (longest bolts at top) from the tailboom side with a chamfered washer under head of each bolt. (See figure 8-5, view A-A.) Install two steel washers on shank of each bolt with a new nut. Torque nuts to 360 to 390 inch-pounds.

c. Position left tail rotor control pedal full forward. Connect tail rotor control tube in aft end of fuselage, just forward of bulkhead (9).

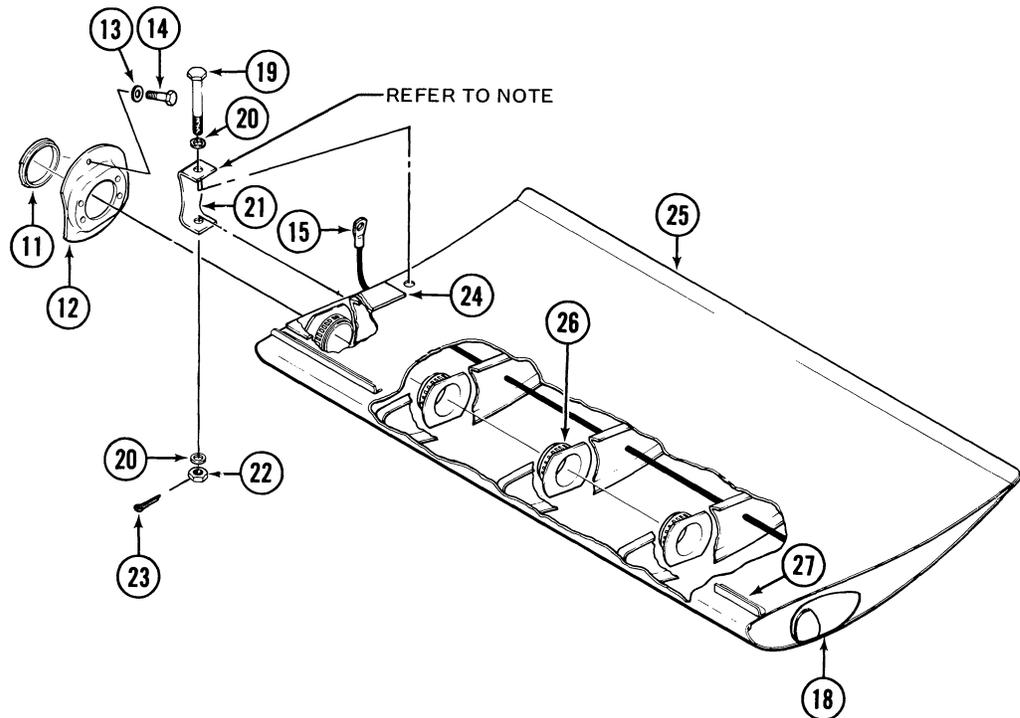


206031-45-1A

Figure 8-5. Tail Boom and Horizontal Stabilizer – Helicopters 4 through 1251 (Sheet 1 of 2)

**NOTE**

Install horizontal stabilizer stop (21) in accordance with Service Bulletin 206-01-74-1. Effective helicopters 4 through 1251.



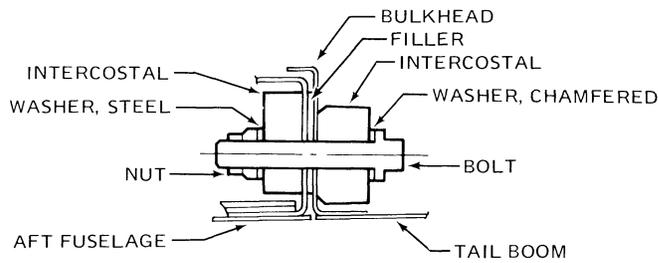
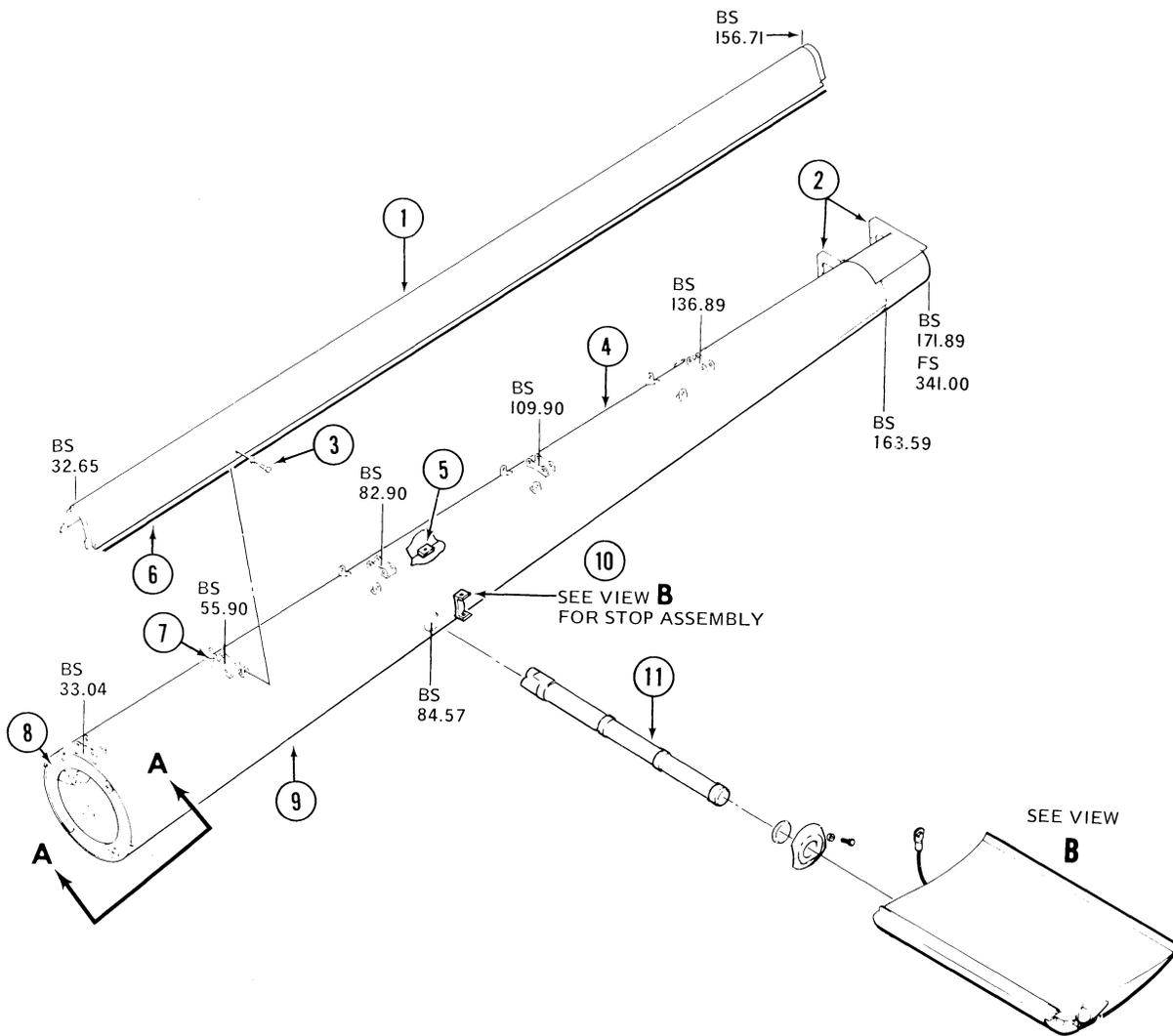
EFFECTIVE HELICOPTERS 914 THROUGH 1251

**VIEW B**

- |                                           |                            |
|-------------------------------------------|----------------------------|
| 1. Cover, Tail Rotor Drive Shaft          | 15. Wiring, Position Light |
| 2. Supports, Vertical Fin                 | 16. Horizontal Stabilizer  |
| 3. Tail Boom                              | 17. Spoiler                |
| 4. Terminal Block                         | 18. Position Light         |
| 5. Clip                                   | 19. Bolt                   |
| 6. Stud                                   | 20. Washer, Aluminum       |
| 7. Tape, Glass Cloth                      | 21. Stop                   |
| 8. Bracket, Tail Rotor Drive Shaft Hanger | 22. Nut                    |
| 9. Bulkhead                               | 23. Cotter Pin             |
| 10. Spar Assembly                         | 24. Doubler                |
| 11. Bushing                               | 25. Horizontal Stabilizer  |
| 12. Fitting Assembly                      | 26. Clamp                  |
| 13. Washer, Aluminum                      | 27. Spoiler                |
| 14. Bolt                                  |                            |

206031-45-2

Figure 8-5. Tail Boom and Horizontal Stabilizer – Helicopters 4 through 1251 (Sheet 2 of 2)



VIEW A - A

SEE VIEW B

206031-44-1A

Figure 8-5A. Tail Boom and Horizontal Stabilizer – Helicopters 1252 and Subsequent (Sheet 1 of 2)

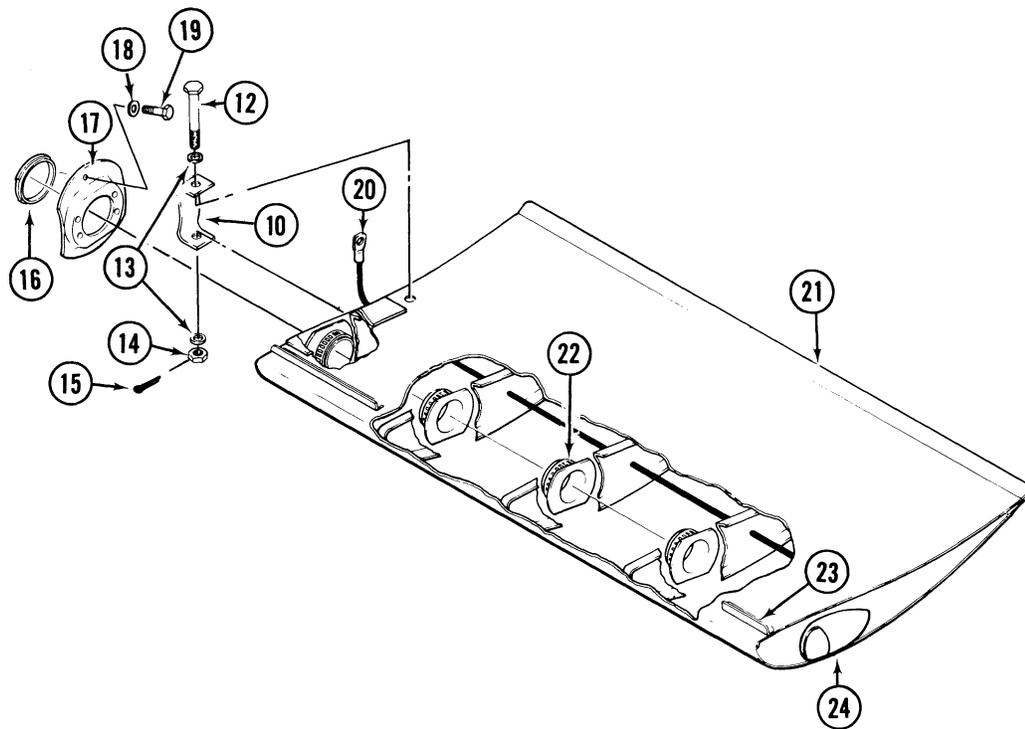
d. Connect electrical connectors, as required, at bulkhead (9).

e. Connect tail rotor drive shaft at coupling just forward of bulkhead (9).

f. Install access door on right side of aft fuselage just forward of bulkhead (9).

g. Install tail rotor drive shaft cover (1). (Refer to paragraph 8-47.)

h. Install aft engine fairing. (Refer to paragraph 8-21.)



VIEW B

- |                                            |                            |
|--------------------------------------------|----------------------------|
| 1. Cover, Tail Rotor Driveshaft            | 13. Washer, Aluminum       |
| 2. Supports, Vertical Fin                  | 14. Nut                    |
| 3. Stud                                    | 15. Cotter Pin             |
| 4. Clip                                    | 16. Bushing                |
| 5. Terminal Block                          | 17. Fitting Assembly       |
| 6. Tape, Glass Cloth                       | 18. Washer, Aluminum       |
| 7. Bracket, Tail Rotor Drive Shaft Segment | 19. Bolt                   |
| 8. Bulkhead                                | 20. Wiring, Position Light |
| 9. Tail Boom                               | 21. Horizontal Stabilizer  |
| 10. Stop                                   | 22. Clamp                  |
| 11. Spar Assembly                          | 23. Spoiler                |
| 12. Bolt                                   | 24. Position Light         |

206031-44-2

Figure 8-5A. Tail Boom and Horizontal Stabilizer – Helicopter 1252 and Subsequent (Sheet 2 of 2)



i. Remove supports from beneath tail boom.

j. Perform functional check of anti-collision light, position lights, and anti-torque controls.

k. Retorque tail boom attaching bolts (figure 8-5, view A-A) at the first 100-Hour Inspection following installation. (Refer to Section I, MODEL 206 – SPECIAL INSPECTION.)

#### 8-43. INSTALLATION – TAIL BOOM (HELICOPTER 1252 AND SUBSEQUENT).

a. Position tail boom (9, figure 8-5A) against fuselage bulkhead and place suitable supports at each end of the tail boom.

b. **Align tail boom bulkhead (8) and fuselage attachment holes. Install bolts (longest bolts at top) from the tail boom side with a chamfered washer under head of each bolt. (See figure 8-5A, view A-A). Install one steel washer on shank of each bolt with a new nut. Torque nuts 360 to 390 inch-pounds.**

c. Position left tail rotor control pedal full forward. Connect tail rotor control tube in aft end of fuselage, just forward of bulkhead (8).

d. Connect electrical connectors, as required, at bulkhead (8).

e. Connect tail rotor drive shaft segment at coupling just forward of bulkhead (8).

f. Install access door on right side of aft fuselage just forward of bulkhead (8).

g. Install tail rotor drive shaft cover (1). (Refer to paragraph 8-47.)

h. Install aft engine fairing. (Refer to paragraph 8-21.)

i. Remove supports from beneath tail boom (9).

j. Perform functional check of anti-collision light, position lights, tail light, and anti-torque controls.

k. Retorque tail boom attaching bolts (figure 8-5A, view A-A) at the first 100-Hour Inspection following installation. (Refer to Section I, MODEL 206 – SPECIAL INSPECTION.)

#### 8-44. TAIL ROTOR DRIVE SHAFT COVER.

#### 8-45. REMOVAL – TAIL ROTOR DRIVE SHAFT COVER.

a. Remove aft engine fairing. (Refer to paragraph 8-19.)

b. Disengage studs (6, figure 8-5 or 3, figure 8-5A) and lift tail rotor drive shaft cover (1) clear of tail boom.

#### 8-46. INSPECTION AND REPAIR – TAIL ROTOR DRIVE SHAFT COVER.

a. Inspect tail rotor drive shaft covers (1, figure 8-5 or 8-5A) for cracks, corrosion, loose studs and clips, and deterioration of tape.

b. Repairs shall be accomplished in accordance with Section XIV.

c. Replace deteriorated or loose tape as follows:

(1) Clean surfaces to receive tape with a safety solvent (item 84, table 1-1) and wipe dry.

(2) Apply glass cloth tape (item 72, table 1-1) along edge (lengthwise) of cover and to mating surface on tail boom. Width of tape strips should be 0.5 inch by 125.0 inches in length.

#### 8-47. INSTALLATION – TAIL ROTOR DRIVE SHAFT COVER.

a. Position tail rotor drive shaft cover (1, figure 8-5 or 8-5A) on tail boom and align studs (6, figure 8-5 or 3, figure 8-5A) with clips (5, figure 8-5 or 4, figure 8-5A). Engage studs and secure cover.

b. Install aft engine fairing. (Refer to paragraph 8-21.)

#### 8-48. HORIZONTAL STABILIZER.

#### 8-49. REMOVAL – HORIZONTAL STABILIZER. (Helicopters 4 through 1251.)

a. Loosen or remove aft engine fairing. (Refer to paragraph 8-19.)

b. Remove tail rotor drive shaft cover (1, figure 8-5) (Refer to paragraph 8-45.)

c. Position POS LT switch OFF and disconnect position light wiring (15, figure 8-5) from terminal block (4)

d. Remove cotter pin (23, figure 8-5, view B), nut (22) washers (20), and bolt (19) from horizontal stabilizer stop (21).

#### Note

Horizontal stabilizer stop (21) is installed in accordance with Service Bulletin 206-01-74-1. Effective helicopters 4 through 1251.

e. On helicopters 4 through 913 remove two bolts (14, figure 8-5) and washers (13) from fitting assembly (12). Carefully pull horizontal stabilizer (16) off spar assembly (10) working position light wiring (15) out of tailboom.

f. On helicopters 914 through 1251 remove two bolts (14, figure 8-5, view B) and washers (13) from fitting assembly (12). From lower surface of horizontal stabilizer (25) loosen four clamps (26) through holes provided in skin. Carefully pull horizontal stabilizer (25) off spar assembly (10) working position light wiring (15) out of the tailboom (3).

g. Remove opposite horizontal stabilizer (16 or 25) in the same manner. Slide spar assembly (10) out of tail boom.

#### 8-49A. REMOVAL — HORIZONTAL STABILIZER. (Helicopters 1252 and Subsequent.)

a. Loosen or remove aft engine fairing. (Refer to paragraph 8-19.)

b. Remove tail rotor drive shaft cover (1, figure 8-5A). (Refer to paragraph 8-45.)

c. Position POS LT switch OFF and disconnect position light wiring (20, figure 8-5A, view B) from terminal block (5).

d. Remove cotter pin (15, figure 8-5A, view B), nut (14), washers (13), and bolt (12) from horizontal stabilizer stop (10).

e. Remove two bolts (19) and washers (18) from fitting assembly (17). From lower surface of horizontal stabilizer (21) loosen four clamps (22) through holes provided in skin. Carefully pull horizontal stabilizer (21) off spar assembly (11) working position light wiring (20) out of tailboom (9).

f. Remove opposite horizontal stabilizer in the same manner. Slide spar assembly (11) out of tail boom (9).

#### 8-50. INSPECTION AND REPAIR — HORIZONTAL STABILIZER. (Helicopters 4 through 1251.)

a. Inspect horizontal stabilizers (16 or 25, figure 8-5) for cracks in inboard rib, giving particular attention to the area where fitting assembly (12) is riveted to rib. If a crack is found refer to Service Bulletin 206-01-73-7.

b. Inspect stop (21, figure 8-5, view B) for installation and security. (Refer to Service Bulletin 206-01-74-1.)

c. Inspect skin surfaces of horizontal stabilizer (16 or 25, figure 8-5) for cracks, dents, and corrosion. Also check spoiler (17 or 27) and position lights (18) for damage and security.

d. Inspect parts for excessive wear and exceeding service limits as follows:

(1) Clearance on the inboard land of spar assembly (10) and bushing (11) shall not exceed a maximum gap of 0.012 inch.

(2) Wear limits on the inboard land of the spar assembly (10) is 1.828 inches, minimum outside diameter.

(3) The limits of steps (1) and (2) above will allow a maximum cumulative clearance on the diameter of 0.024 inch.

(4) Wear limits on the outboard land of spar assembly (10) is 1.712 inches, minimum outside diameter.

(5) The outboard retainer bushings can not be measured, consequently no dimensional limits are provided.

(6) Play between spar assembly (10) and bushing (11) is not cause for replacement. Bushing will come to bear on the spar assembly when the stabilizer is loaded in flight.

e. Inspect position lights (18) and wiring (15) for security and serviceability. (Refer to Section XI.)

f. Refer to Section XIV for damage classification, inspection limits, and repairs.

#### 8-50A. INSPECTION AND REPAIR — HORIZONTAL STABILIZER. (Helicopters 1252 and Subsequent.)

a. Inspect horizontal stabilizers (21, figure 8-5A, view B) for cracks in inboard rib, giving particular attention to the area where fitting assembly (17) is riveted to inboard rib. If a crack is found refer to Service Bulletin 206-01-73-7.

b. Inspect stop (10, figure 8-5A, view B) for security.

c. Inspect skin surfaces of horizontal stabilizer (21) for cracks, dents, and corrosion. Also check spoiler (23) for damage and security.

d. Inspect parts for excessive wear and exceeding service limits. (Refer to paragraph 8-50d.)

e. Inspect position light wiring (20, figure 8-5A), and position lights (24) for damage, security, and serviceability. (Refer to Section XI.)

f. Refer to Section XIV for damage classification, inspection limits, and repairs.

8-51. INSTALLATION — HORIZONTAL STABILIZER. (Helicopters 4 through 1251).

a. Insert spar assembly (10, figure 8-5) through supports in tail boom (3).

b. Route position light wiring (15) through horizontal stabilizers (16 or 25) and install position lights (18), if required.

c. Bond bushings (16) in fitting assemblies (17) using EA934 adhesive (item 31, table 1-1).

d. Slide one horizontal stabilizer (16 or 25) onto spar assembly (10). If horizontal stabilizers (25) are to be used it may be necessary to loosen clamps (25) through holes in lower skin. Work horizontal stabilizer close to surface of tail boom (3) and route position light wiring (15) to terminal block (4).

e. Position horizontal stabilizers (16 or 25) between flanges of stop (21, figure 8-5, view B). Align bolt holes in fitting assembly (12) with holes in tail boom (3) and install bolts (14) and washers (13). Torque bolts (14) to 50 to 70 inch-pounds. On horizontal stabilizers (25) tighten clamps (26) through holes in lower skin surface to 35 inch-pounds.

f. Install bolt (19, figure 8-5, view B), washers (20), and nut (22) to stop (21). Tighten nut (22) finger tight and secure with cotter pin (23).

g. Install opposite horizontal stabilizer (16 or 25) in the same manner.

h. Ensure that POS LT switch is OFF and connect position light wiring (15) to terminal block (4). Perform a functional check of position lights.

i. Apply a bead of sealant (item 7 or 113, table 1-1) to fillet between fitting assemblies (21, figure 8-5) and skin on tail boom (3). Also apply a bead sealant to fillet area between fitting assemblies (12) and horizontal stabilizers (16 or 25).

j. Install tail rotor drive shaft cover (1). (Refer to paragraph 8-47.)

k. Install aft engine fairing. (Refer to paragraphs 8-21.)

8-51A. INSTALLATION — HORIZONTAL STABILIZER. (Helicopters 1252 and Subsequent.)

a. Insert spar assembly (11, figure 8-5A) through supports in tailboom (9).

b. Route position light wiring (20) through horizontal stabilizers (21) and install position lights (24) if required.

c. Bond bushings (11) in fitting assemblies (12), using EA934 adhesive (item 31, table 1-1).

d. Slide one horizontal stabilizer (21) onto spar assembly (11). Work horizontal stabilizer onto spar loosening clamps (22) through holes in lower skin. Work horizontal stabilizer close to surface of tailboom (9) and route position light wiring (20) to terminal block (5).

e. Position horizontal stabilizer (21) between flanges of stop (10). Align bolt holes in fitting assembly (17) with holes in tailboom (9) and install two bolts (19) with aluminum washers (18). Torque bolts (19) to 50 to 70 inch-pounds.

f. Install bolt (12), aluminum washers (13), and nut (14) through stop (10) and horizontal stabilizer (21). Tighten nut (14) finger tight and secure with cotter pin (15).

g. Tighten four clamps (22) through holes in lower skin surface of horizontal stabilizer (21) to 35 inch-pounds.

h. Install opposite horizontal stabilizer in the same manner. (Refer to steps b through g.)

i. Ensure that POS LT switch is OFF and connect position light wiring (20) to terminal block (5). Perform a functional check of position lights.

j. Apply a bead of sealant (item 7 or 113, table 1-1) to fillet between fitting assemblies (17, figure 8-5A) and skin on tailboom (9). Also apply a bead of sealant to fillet area between fitting assemblies (17) and horizontal stabilizers (21), if required.



k. Install tail rotor drive shaft cover (1). (Refer to paragraph 8-47.)

l. Install aft engine fairing. (Refer to paragraph 8-21.)

**8-52. TAIL ROTOR GEAR BOX FAIRING.**

**8-53. REMOVAL — TAIL ROTOR GEAR BOX FAIRING (Helicopters 4 through 1251).**

a. Ensure POS LT and ANTI COLL LT switches are in the OFF position.

b. Remove tail rotor drive shaft cover (16, figure 8-6). (Refer to paragraph 8-45.)

c. Remove screws (6, figure 8-6) from upper and lower tail rotor gear box fairings (5). Hold aft tail rotor gear box fairing and disconnect tail light wiring (8) from terminal block or quick disconnects at aft end of tail boom (11). Do not suspend aft tail rotor gear box fairing section by tail light wiring (8) for damage to wiring or tail light (7) may occur.

**8-53A. REMOVAL — TAIL ROTOR GEAR BOX FAIRING (Helicopters 1252 and subsequent).**

a. Ensure POS LT and ANTI COLL LT switches are in the OFF position.

b. Remove tail rotor drive shaft cover. (Refer to paragraph 8-45.)

c. Remove bolts (5, figure 8-6A) and washers (4) securing top fairing to lower fairing (8) and vertical fin former. Remove top fairing.

d. Disconnect electrical wiring for tail light (3) at aft end of tailboom.

e. Remove remaining bolts (5) and washers (4) securing lower fairing (8) to vertical fin former. Do not suspend lower fairing by tail light electrical wiring for damage to wiring or tail light may occur.

**8-53B. INSPECTION AND REPAIR — TAIL ROTOR GEAR BOX FAIRING.**

**Note**

The tail rotor gear box fairings (5, figure 8-6) used on helicopters 4 through 1251 is constructed of fiber glass. On helicopters 1252 and subsequent the tail rotor gear box fairings (2 and 8, figure 8-6A) is constructed of aluminum alloy.

a. Inspect fairings for cracks, dents, distortion, and discoloration or crazing of window.

b. Inspect plate nuts for damaged threads and security.

c. Inspect mating surfaces of fairings for chafing. Apply chafing tape (item 117, table 1-1) to all chafed areas and replace deteriorated or loose tape.

d. Refer to Section XIV for repairs.

**8-53C. INSTALLATION — TAIL ROTOR GEAR BOX FAIRING (Helicopters 4 through 1251).**

a. Ensure POS LT and ANTI COLL LT switches are in the OFF position.

b. Position aft section of tail rotor gear box fairing (5, figure 8-6) to end of tail boom (11) and connect tail light wiring. Loosely install screws (6) to forward end of fairing.

c. Install upper and lower tail rotor gear box fairings (5) and loosely install all remaining screws (6) into fairings, vertical fin (4), and tail boom (11). Tighten screws to secure fairings.

d. Install tail rotor drive shaft cover (16). (Refer to paragraph 8-47.)

e. Perform a functional check of tail light (7, figure 8-6).

**8-53D. INSTALLATION — TAIL ROTOR GEAR BOX FAIRING (Helicopters 1252 and Subsequent).**

a. Ensure POS LT and anti COLL LT switches are in the OFF position.

b. Position lower fairing (8, figure 8-6A) to end of tail boom and connect electrical wiring for tail light (3). Loosely install bolts (5) and washers (4) to lower fairing (8), tail boom, and vertical fin former.

c. Position top fairing (2) over lower fairing (8) and loosely install all remaining bolts (5) and washers (4). Tighten all bolts to secure fairings.

d. Install tail rotor gear shaft cover. (Refer to paragraph 8-47.)

e. Perform a functional check of tail light (3, figure 8-6A).

**8-54. VERTICAL FIN.**

**8-55. REMOVAL — VERTICAL FIN (Helicopters 4 through 1251).**

a. Ensure POS LT and ANTI-COLL LT switches are in the OFF position.

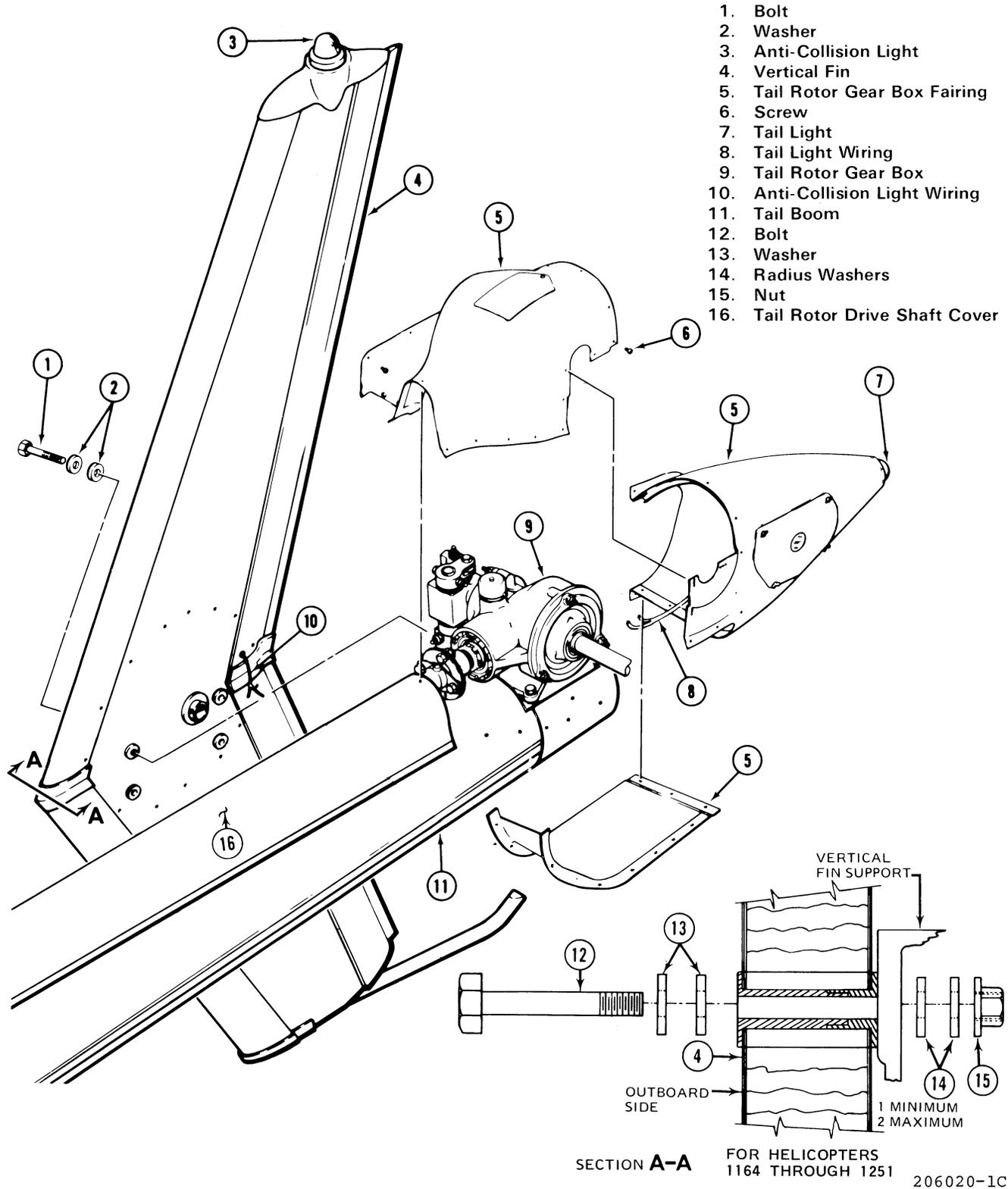
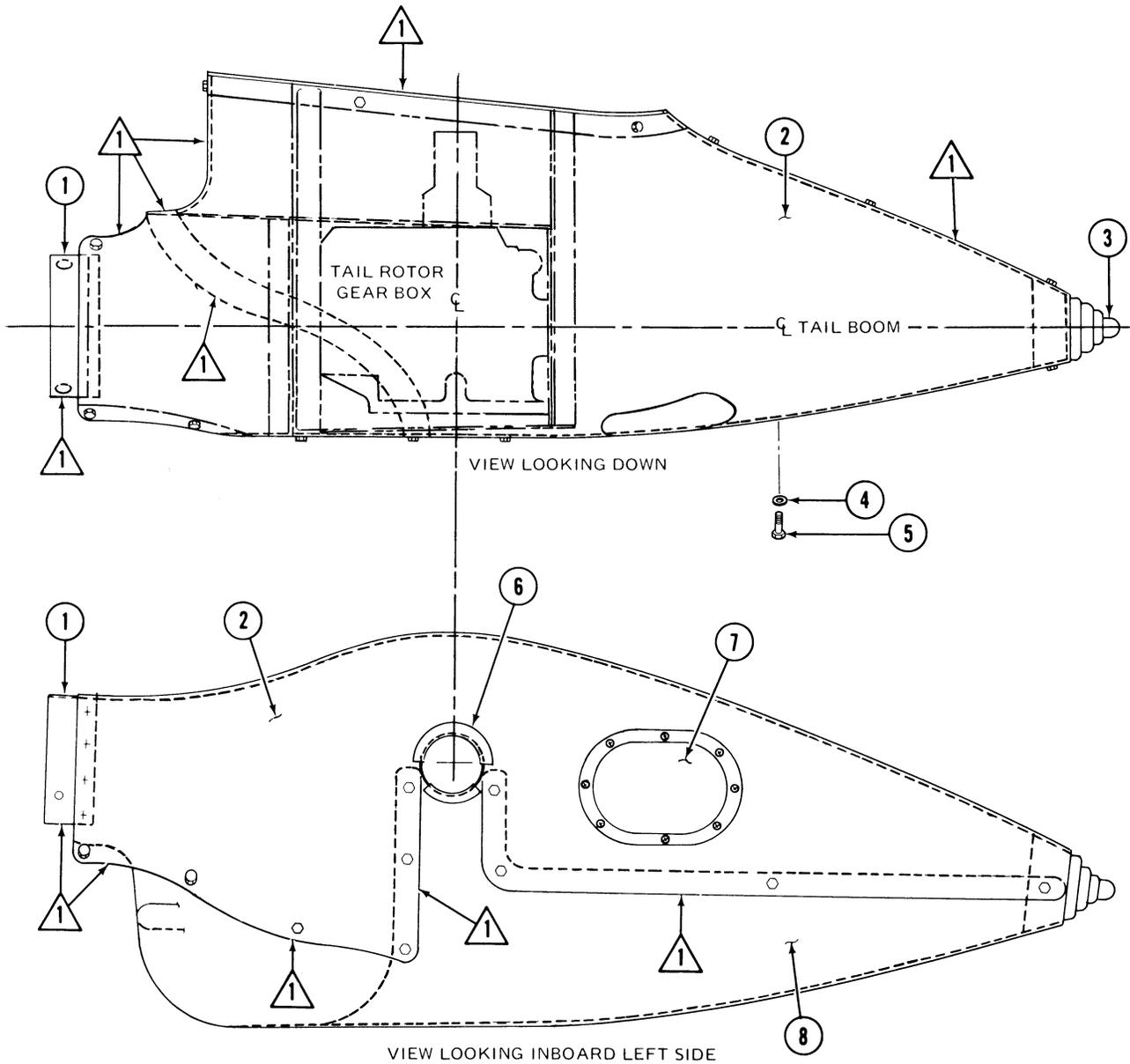


Figure 8-6. Vertical Fin and Tail Rotor Gear Box Fairing – Helicopters 4 through 1251

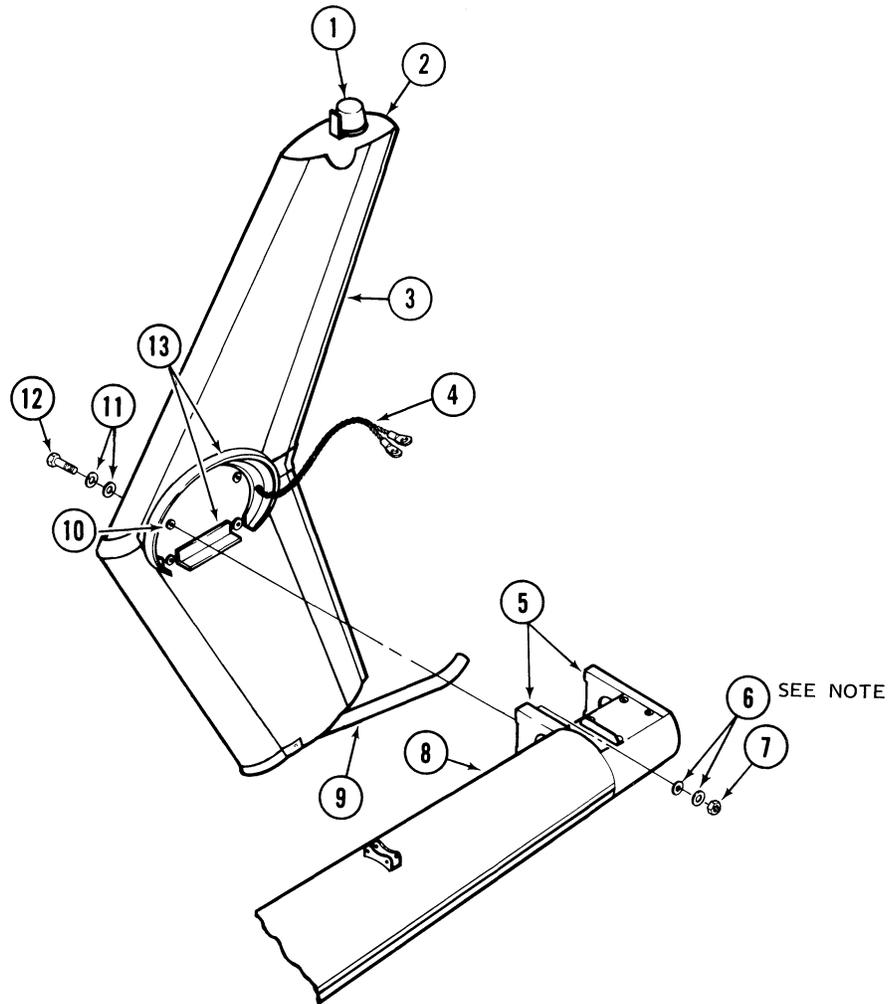


- 1. Doubler — Tail Rotor Driveshaft Cover
- 2. Top Fairing
- 3. Tail Light
- 4. Washer
- 5. Bolt
- 6. Edge Cover
- 7. Window — Acrylic
- 8. Lower Fairing

**Note**  
 ⚠ Apply chafing tape (item 117, table 1-1) to all mating surfaces.

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Figure 8-6A. Tail Rotor Gear Box Fairing — Helicopters 1252 and Subsequent



- 1. Anti-Collision Light
- 2. Fairing
- 3. Vertical Fin
- 4. Anti-Collision Light Wiring
- 5. Fin Supports
- 6. Radius Washers
- 7. Nut
- 8. Tail Boom
- 9. Tail Skid
- 10. Sleeve and Plug
- 11. Thin Aluminum Washers
- 12. Bolt
- 13. Former — Tail Rotor Gearbox Fairing

NOTE: Install radius washers between nut and fin support, 1 minimum, 2 maximum.

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Figure 8-6B. Vertical Fin Assembly — Helicopters 1252 and Subsequent

b. Loosen tail rotor driveshaft cover (16, figure 8-6). (Refer to paragraph 8-45.)

c. Remove tail rotor gearbox fairings (5, figure 8-6). (Refer to paragraph 8-53.)

d. Disconnect anti-collision light wiring (10, figure 8-6) at end of tailboom (11). Insulate and stow wires to prevent damage.

e. On helicopters 4 through 1163 remove bolts (1) and washers (2) that attach vertical fin (4) to the tailboom (11) fin supports and remove vertical fin.

f. On helicopters 1164 through 1251 remove nuts (15, figure 8-6, section A-A), radius washers (14), thin aluminum washers (13), and bolts (12) that attach vertical fin (4) to tailboom fin supports and remove vertical fin.

#### 8-55A. REMOVAL — VERTICAL FIN (Helicopters 1252 and Subsequent).

a. Ensure POS LT and ANTI-COLL LT switches are in the OFF position.

b. Loosen tail rotor driveshaft cover. (Refer to paragraph 8-45.)

c. Remove tail rotor gearbox fairings. (Refer to paragraph 8-53A.)

d. Disconnect anti-collision light wiring (4, figure 8-6B) at end of tailboom (8). Insulate and stow wires to prevent damage.

e. Remove nuts (7) and washers (6) that attach vertical fin (3) to fin supports (5). Push bolts (12) out of fin supports and remove vertical fin from tailboom (8).

#### 8-56. INSPECTION AND REPAIR — VERTICAL FIN.

a. Inspect vertical fin for cracks, dents, and distortion. (Refer to Section XIV for damage and repair limits.)

b. Inspect vertical fin supports (2, figure 8-5) on helicopters 4 through 1097 for cracks, corrosion, or other damage as follows:

(1) Remove paint in the area of fin attachment nutplates (four places).

(2) Inspect area of fin attachment using dye penetrant method (dyecheck, spotcheck) for cracks.

(3) If cracks are present in either vertical support (2, figure 8-5), replace supports.

(4) Inspect the four attachment holes for thread marks. Any marks must be removed. Remove NAS698A4 nut plates and dress out any marks. Clean up hole using a 0.2656 inch diameter straight reamer. Maximum diameter of hole after clean up cannot exceed 0.268 inch. If nut plate chafed into radius of support (2, figure 8-5) burnish chafe mark and dress edge of nut plate to provide clearance. Install nut plates.

(5) If no cracks are discovered in supports, apply a coat of zinc chromate primer (item 80) or corrosion protective compound (item 24).

#### 8-57. INSTALLATION — VERTICAL FIN (Helicopters 4 through 1251).

a. On helicopters 4 through 1163, position vertical fin (4, figure 8-6) on tailboom (11) and install four bolts (1) with two thin aluminum washers (2) on each bolt. Ensure bolts (1) are the correct length and torque 50 to 70 inch-pounds.

#### Note

Vertical fin attachment on helicopters 4 through 1097 is with nutplates on supports. On helicopters 1098 through 1251 vertical fin attachment is with nuts.

b. On helicopters 1164 and subsequent, position vertical fin (4, figure 8-6) on tailboom (11) and install four bolts (12) with two thin aluminum washers (13) under bolt heads. Position radius washer(s) (14) with radius side next to vertical fin support; a minimum of one radius washer (14) shall be used or a maximum of two washers for correct nut engagement. Install new nuts (15) and torque 50 to 70 inch-pounds (See figure 8-6, section A-A.)

c. Ensure POS LT and ANTI COLL LT switches are in the OFF position. Connect anti-collision light wiring (10) at aft end of tailboom (11).

d. Install tail rotor gearbox fairings (5). (Refer to paragraph 8-53C.)

e. Secure tail rotor driveshaft cover (16, figure 8-6). (Refer to paragraph 8-47.)

f. Perform a functional check of anti-collision light (3, figure 8-6) and tail light (7).

### 8-58. INSTALLATION — VERTICAL FIN (Helicopters 1252 and subsequent).

a. Position vertical fin (3, figure 8-6B) to fin supports (5) and install four bolts (12) with two thin aluminum washers (11) under head of each bolt. Position radius washer(s) (6) with radius side next to fin supports (5); a minimum of one radius washer (6) shall be used or a maximum of two washers for correct nut engagement. Install new nuts (7) and torque to 50 to 70 inch-pounds.

**b. Ensure POS LT and ANTI COLL LT switches are in the OFF position. Connect anticollision light wiring (4) at aft end of tailboom (8).**

c. Install tail rotor gear box fairings. (Refer to paragraph 8-53D.)

d. Secure tail rotor drive shaft cover. (Refer to paragraph 8-47.)

**e. Perform a functional check of anticollision light (1, figure 8-6B) and tail light.**

### 8-59. LANDING GEAR.

#### WARNING

No components shall be attached to landing gear assembly except as designated by manufacturer. To do otherwise may lead to premature failure of cross-tube.

8-60. DESCRIPTION. The landing gear assembly consists of two tubular aluminum alloy main skid tubes and two curved tubular aluminum alloy cross tubes. (See figure 8-7.) Airfoil type fairings are provided on the forward and aft cross tubes. The landing gear is attached to the fuselage structure with four strap assemblies and may be removed and installed with ease. Provisions are made on the skid tubes for installing ground handling wheels and tow rings are provided for towing. Each skid tube is provided with replaceable skid shoes. The skid shoes absorb the wear caused by normal ground contact of the helicopter.

### 8-61. REMOVAL — LANDING GEAR.

a. Remove screws and washers attaching cross tube fairings.

b. Hoist helicopter clear of ground. (Refer to Section I.)



Observe the following precautions while helicopter is on jacks:

1. Preparatory to removing landing gear, take up slack with hoist.
2. All personnel in the immediate area should exercise extreme caution not to bump or otherwise disturb the helicopter while it is being raised or supported on the jacks.
3. Personnel should not crawl into or onto the helicopter while it is being raised or supported on the jacks.
4. Rope off the area around the helicopter and prominently display warning signs to the effect that "THIS HELICOPTER IS ON JACKS".

c. Remove the nuts, washers, bolts and fitting assemblies at the four points where landing gear is attached to fuselage structure, and lower landing gear to ground.

d. Remove bolts, washers and strap assemblies from forward crosstube support fitting. Support the landing gear and remove bolts, washers, nuts and strap assemblies securing the aft crosstube. Lower landing gear to ground.

### 8-62. INSPECTION — LANDING GEAR.

**a. Inspect forward and aft crosstubes for permanent set.**

(1) Place helicopter on jacks and raise a sufficient amount to remove all weight from the skid tubes. (Refer to Section I.)

(2) Level the helicopter. (Refer to Section I.)

**(3) Measure the distance between the crosstube saddle strap assembly and divide that dimension to determine helicopter center line (butt line zero).**

#### Note

The allowable permanent set of the cross tubes with the weight of the helicopter removed for the standard gear is 1.0 inch per side. High gear with float pans or high gear with skid tubes is 2.0 inches per side.

**(4) Measure the crosstube permanent set, using a plumb bob, for the high gear with skid pans, from the centerline of the helicopter to the lowest point of the skid pan attachment plate. Measure the**

crosstube permanent set using a plumb bob, for the high gear and standard gear with tubular skids from the centerline of the helicopter to the centerline of the skid tubes. The dimensions of the crosstubes are to be within the following limits: (See figure 8-7, detail C.)

	NOMINAL	MAXIMUM
(a) High gear with skid pans	41.65 inches	43.70 inches
(b) High gear with tubular skid tubes	37.45 inches	39.45 inches
(c) Standard gear skid tubes	36.20 inches	37.20 inches

(5) Lower helicopter and remove jacks.

b. Refer to Section XIV for classification of damage, limits and repair.

c. Inspect skid shoes for wear or damage. Replace as required.

8-63. REPAIR – LANDING GEAR. (Refer to Section XIV.)

8-64. REPLACEMENT – SKID AND CROSS TUBES.

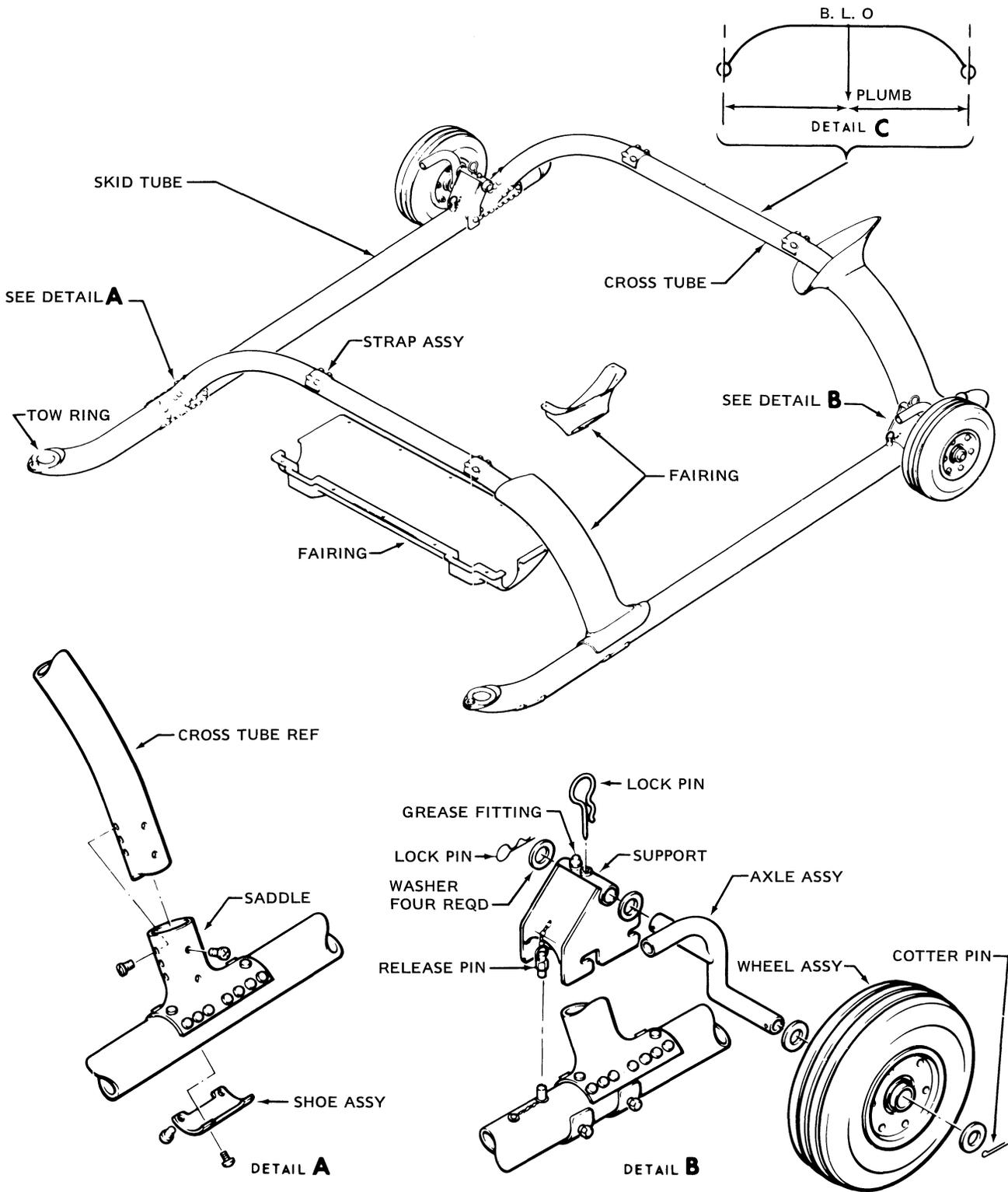
a. Hoist helicopter to clear skid tube.

b. Remove landing gear fairing. Remove landing gear.

c. Remove screws attaching skid tube saddles to forward and aft cross tubes. Remove skid tube or cross tube, as applicable. (See figure 8-7, detail A.)

**Note**

If damaged, rivets attaching strap assembly may be replaced by clamp as an alternate installation. See figure 8-8.

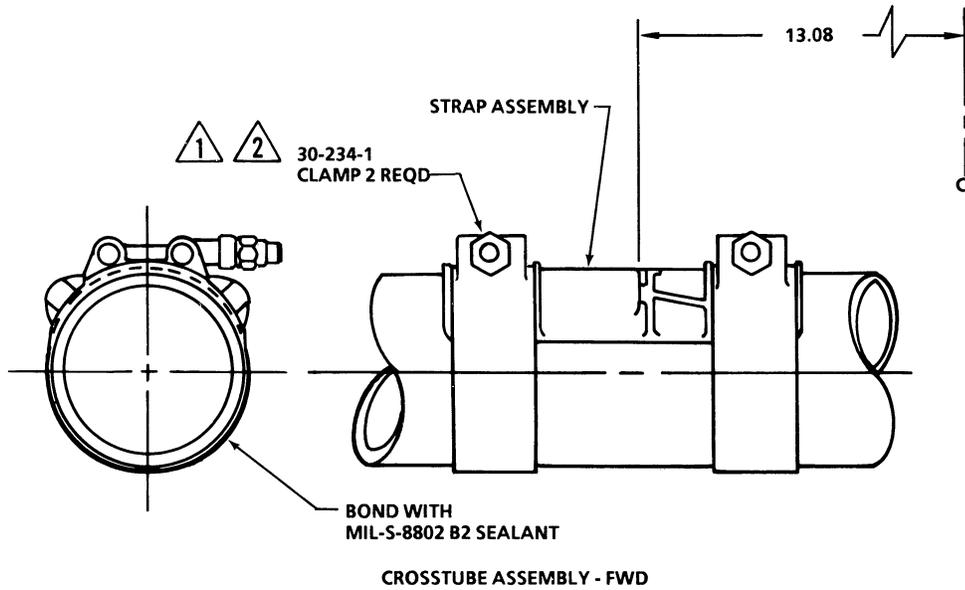
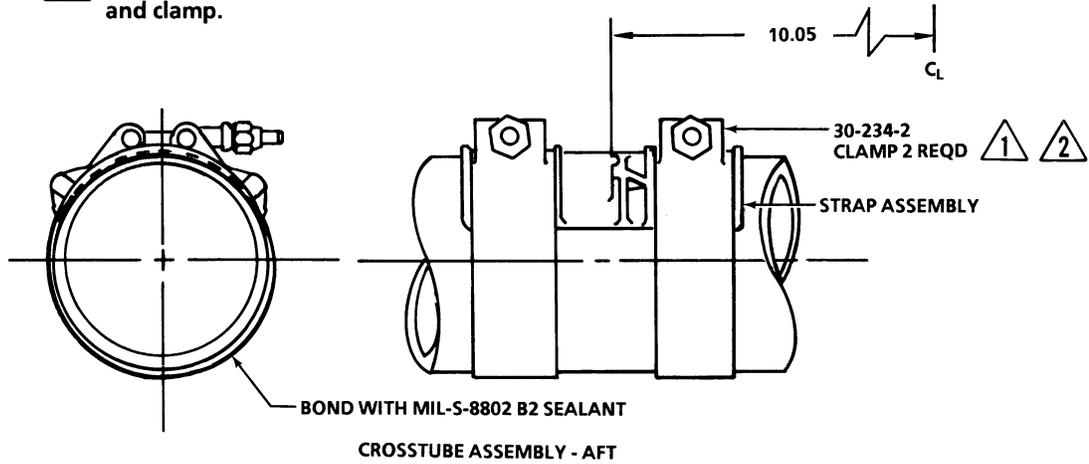


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Figure 8-7. Landing Gear Assembly

NOTES

- 1 Torque clamps 60 to 80 inch-pounds within 30 minutes of bonding with sealant, MIL-S-8802, Class B - 2
- 2 After 15 minutes re-check clamp torque. Apply sealant bead around strap assembly and clamp.



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Figure 8-8. Crosstube Strap — Alternate Installation

d. Install cross tube end into skid gear saddle until the top fore and aft holes are aligned.

**Note**

If the fit between the cross tube and skid gear is excessively tight, partial removal of the zinc chromate prime on the cross tube may be required.

Make every effort to align bolt holes by tapping skid tube with mallet and/or pulling or spreading (pushing) the top of the cross tubes. Bolts should install without cutting threads in the saddles.

e. Install the top fore and aft bolts, but do not tighten, so that movement is allowed for alignment of the remaining holes. Push and/or pull the top of the cross tubes to obtain the best alignment of the remaining holes.

f. In the event it is impossible to align all of the holes, position the assemblies in the most advantageous position. Those skid gear saddle holes which do not align may be elongated (use rat-tail file) to provide for bolt installation. Maximum elongation permitted is 0.090 inch. Hole diameter after rework shall not exceed 0.408 inches.

g. Repeat subparagraphs c. through f. on opposite side if applicable.

h. Install landing gear if cross tubes were replaced. (Refer to paragraph 8-65.)

i. Install landing gear fairing.

j. Lower helicopter and secure hoist.

**8-65. INSTALLATION – LANDING GEAR.**

a. Position the landing gear under the fuselage attachment points, align the landing gear strap assemblies with the fuselage and lower the helicopter onto the landing gear. Do not remove hoisting equipment. Install the four strap assemblies. The forward straps require bolts and washers and the aft straps require bolts, washers and nuts. Tighten bolts.

b. Inspect landing gear installation for security and remove hoisting equipment.

c. Install cross tube fairing.

**8-66. REMOVAL – SKID SHOES.**

a. Hoist or jack helicopter clear of ground. (Refer to Section I.)

b. Remove screws and washers attaching shoe to skid tube. (See figure 8-7, detail A.)

**8-67. INSPECTION AND REPAIR – SKID SHOES.**

a. Inspect skid shoes for wear or damage.

b. Refer to Section XIV for repair.

**8-68. INSTALLATION – SKID SHOES.**

a. Align holes in shoe assembly with holes in skid tube and install screws and washers.

b. Lower helicopter.

**8-69. GROUND HANDLING WHEELS.**

8-70. DESCRIPTION. Hand operated ground handling wheels are mounted on each skid tube near the helicopter center of gravity to facilitate helicopter handling or movement. The wheels are retracted and extended manually and are removable. Two, 6 ply, 3.50 x 6, nylon tires and tubes are used on the wheel assemblies. (See figure 8-7.)

**WARNING**

Maintain wide stance balance, holding the lifting lever firmly while raising or lowering the handling wheels.

**8-71. REMOVAL – GROUND HANDLING WHEELS.**

a. Retract wheels and lock in up position.

b. Remove quick release pin from skid tube.

c. Slide wheel and support assembly forward.

d. Install plug in release pin hole, if provided.

**Note**

The lock pin must be removed from wheel support assembly before wheels can be retracted or extended. Install lock pin in support to lock wheel in desired position. (See figure 8-7, detail B.)

**8-72. SERVICING – GROUND HANDLING WHEELS.**

a. Lubricate axle per instructions in Section I.

b. Inflate tires to 75 to 80 psi.

## 8-73. REMOVAL – WHEEL ASSEMBLY.

- a. Remove cotter pin and washer from axle. Remove wheel.
- b. Remove lock pin and washer from inboard end of axle to remove axle.

## 8-74. INSTALLATION – WHEEL ASSEMBLY.

- a. Install washer on axle and install wheel.
- b. Install washer next to wheel and install cotter pin.

## 8-75. INSTALLATION – GROUND HANDLING WHEELS.

- a. Position the support assembly over skid tube with the wheels outboard. Align forward slot of support over the forward mount bolt and slide the support aft engaging the aft mount bolt.
- b. Insert quick release pin in skid tube forward of the support assembly. Check security of pin.

## 8-76. TAIL SKID MOUNTING.

## 8-77. INSPECTION AND REPAIR – TAIL SKID MOUNTING.

- a. To preclude possible loss of the tail skid retaining pin, determine if there is play between tail skid and mounting.
- b. In the event there is movement of the skid and/or wear of the roll pin hole, the following can be accomplished:
  - (1) Looseness of the tail skid may be eliminated by installing the skid into the fitting with sealant (item 7, table 1-1).

**Note**

There is no requirement to enlarge the retainer hole to the next size. It is acceptable to install a 1/4 inch screw in the worn hole.

- (2) Should the roll pin hole be worn to a degree where loss of the pin is eminent, the pin can be replaced with a number four MS screw and a self locking nut.
- c. Refer to Section XIV for repair of tail skid and mounting.

