

## CARGO DOOR - MAINTENANCE PRACTICES

### 1. General

- A. The cargo door, located on left side of fuselage just aft of leftwing, consists of an upper and lower section. When opened, upper section swings upward and lower section swings forward. The upper section of cargo door incorporates a conventional outside door handle with a key-operated lock, a pushbutton type exterior door release, and a conventional interior door handle. Two gas spring cylinders are utilized to lift door to the full open position.

### 2. Upper Cargo Door Removal/Installation

- A. Remove Upper Cargo Door (Refer to Figure 201).

- (1) Remove cotter pin and pin securing pullstrap to door.
- (2) Remove screws securing trim plate on upper door jamb and remove trim plate.
- (3) Remove upholstery trim around upper door jamb.
- (4) Remove safety clips (18A) from both ends of gas springs (14) and remove gas springs from ballstuds (18B).

**NOTE:** If gas spring cylinders are to be replaced with new parts, the replaced parts must be disposed of in accordance with Gas Spring Cylinder Disposal.

- (5) Remove screws (3) attaching upper cargo door hinge (4) to fuselage above door jamb.

- B. Install Upper Cargo Door (Refer to Figure 201).

- (1) Align holes in upper door hinge (4) with holes in fuselage above door jamb and install screws (3).
- (2) Place ends of gas spring cylinder (14) over ballstuds (18B) and install clips (18A).
- (3) Install trimplate on upper door jamb.
- (4) Install upholstery trim around upper door jamb.
- (5) Connect pullstrap to door using pin and cotter pin.
- (6) Make sure the door gap is correct. Refer to Cargo Door Gap Adjustment in this section.

### 3. Upper Cargo Door Latching Mechanism Removal/Installation

- A. Remove Upper Cargo Door Latching Mechanism (Refer to Figure 201).

- (1) Remove roll pin (42), inside handle (41) or boss (41A), and washer (43).
- (2) Remove door window trim molding.
- (3) Remove roll pin (21), handle (19) and washer (20).
- (4) Remove cotter pin (61), pin (54), and remove latch pin assembly (60).
- (5) Remove cotter pin (62) and pin (50) to remove pushrod (53).
- (6) Remove cotter pin (32) and pin (34) and remove latch pin (33).
- (7) Remove cotter pin (62) and pin (50) to remove pushrod (31).
- (8) Remove screw (22), nut (65), washer (66), and escutcheon (23).
- (9) Remove cotter pin (27), washer (28), lockpin (67), and guide (68).
- (10) Remove cotter pin (51), pin (29), washers (63), and spindle (44).
- (11) Remove bellcrank (52).

- B. Install Upper Cargo Door Latching Mechanism (Refer to Figure 201).

- (1) Insert spindle (44) through hole in support assembly (36) and install bellcrank (52) on spindle using pin (29) and cotter pin (51).
- (2) Install washers (63) on spindle (44), install escutcheon through hole in door and over spindle, then install screw (22) in aft hole.
- (3) Align holes in lock pin guide with holes in door and escutcheon and secure with screw (64), screw (22), washer (66), and nut (65).
- (4) Insert locking pin (67) into guide (68) and attach to door lock cam using washer (28) and cotter pin (27).
- (5) Install washer (20), handle (19) and secure with roll pin (21).
- (6) Install latch pin (33) and connect to pushrod (31) using pin (34) and cotter pin (32).
- (7) Connect pushrod (31) to bellcrank (52) using pin (50) and cotter pin (62).

- (8) Install latch pin assembly (60) and connect to pushrod (53) using pin (54) and cotter pin (61).
- (9) Connect pushrod (53) to bellcrank (52) using pin (50) and cotter pin (62).
- (10) Install door window trim molding.
- (11) Install washer (43) over spindle (44) and install handle (41) using roll pin (42).

**NOTE:** On airplanes 20800001 Thru 20800100 if the door lock on the cargo door does not operate properly, cam (74) may be modified.

#### 4. Upper Cargo Door Lock Assembly Removal/Installation

- A. Remove the Upper Cargo Door Lock Assembly (Refer to Figure 201).
  - (1) Unlock and open the door.
  - (2) Bend lockwasher tab away from the nut.
  - (3) Remove the two screws, lockwashers, cam (74), nut and lockwasher from the back of the lock assembly.
  - (4) Remove the key lock assembly (24) from the door.
- B. Install the Upper Cargo Door Lock Assembly (Refer to Figure 201).
  - (1) Position lock assembly (24) through opening in front of door.
  - (2) Assemble the lock as follows:
    - (a) Install lockwasher and nut on the lock assembly; tighten nut. To prevent nut from loosening, bend lockwasher tab against one flat of the nut.

**CAUTION:** Do not use too much Loctite 242 adhesive or it could get into the lock and ruin it.

  - (b) Put one drop of Loctite 242 on the two screws and install cam (78), lockwashers and screws on the lock assembly; tighten screws.
  - (3) Turn the key and lock to make sure that the cam (74) and pin (67) engages and disengages the latch.
  - (4) Operate door linkage from outside to ensure proper operation.
- C. For Key Lock Lubrication, refer to Chapter 12, Key Locks - Servicing - Servicing Key Lock Lubrication.

#### 5. Lower Cargo Door Removal/Installation

- A. Remove Lower Cargo Door (Refer to Figure 201).
  - (1) With upper and lower cargo doors open, support lower door.
  - (2) Remove cotter pins (2) and washers (3) from upper and lower hinge pins (7).
  - (3) Remove hinge pins (7) from upper and lower hinges (6).
- B. Install Lower Cargo Door (Refer to Figure 201).
  - (1) Align hinges on lower cargo door to hinges on fuselage.
  - (2) Install hinge pins (7) through hinges.
  - (3) Secure hinge pins with washers (3) and cotter pins (2).
  - (4) Make sure the door gap is correct. Refer to Cargo Door Gap Adjustment in this section.

#### 6. Lower Cargo Door Latching Mechanism Removal/Installation

- A. Remove Lower Cargo Door Latching Mechanism (Refer to Figure 201).
  - (1) Remove roll pin (40), handle (38), and washer (39).
  - (2) Remove two screws (41) and escutcheon (37).
  - (3) Remove lower cargo door upholstery panel.
  - (4) Disconnect pushrod assembly (25) by removing cotter pins (26), (22), and pins (43), (68) attaching pushrod (25) to bellcrank (28) and latch pin assembly (21).
  - (5) Remove latch pin assembly.
  - (6) Disconnect and remove pushrod assembly (65) by removing cotter pins and pins attaching pushrod to bellcrank (50) and bellcrank (67).
  - (7) Remove latch pin assembly (63).
- B. Install Lower Cargo Door Latching Mechanism (Refer to Figure 201).

- (1) Install latch pin assembly (63) and insert bellcrank (50) into slot in latch pin assembly.
- (2) Connect pushrod assembly (65) to bellcrank (50) using pin (51) and cotter pin (64).
- (3) Install latch pin assembly (21) and insert bellcrank (67) into slot in latch pin assembly.
- (4) Connect pushrod assembly (65) to bellcrank (67) using pin (46) and cotter pin (45).
- (5) Connect pushrod assembly (25) to latch pin assembly (21) and bellcrank (28) using pins (43), (68) and cotter pins (26), (22).
- (6) Install lower cargo door upholstery panel.
- (7) Install escutcheon (37) using two screws (41).
- (8) Install washer (39), handle (38) and secure with roll pin (40).

## 7. Upper and Lower Cargo Doors Adjustment/Test

### A. Cargo Door Gap Adjustment

**CAUTION: Do not adjust the bonded door flange or the airplane structure with force. The bonded areas and the structural components can be damaged.**

- (1) Determine the existing gap by fully closing and latching the cargo door.
 

**NOTE: The gap between the door and adjacent fuselage skin should be 0.06 inch, +0.03 or -0.00 inch (1.52 mm, +0.76 mm or -0.00 mm).**
- (2) If the door gap is incorrect, trim the door as needed to achieve the correct gap.
- (3) Close and latch the cargo door and recheck gap. Repeat the trim procedure as needed to obtain the correct gap.
- (4) After trimming the door, prime and paint to match surrounding area. Refer to Chapter 12, External-Cleaning/Painting.

### B. Adjust Upper and Lower Cargo Doors (Refer to Figure 201).

- (1) With door handles (41 and 19) in their locked position, adjust clevis ends of pushrods by loosening jamb nuts to obtain 0.91 inch, +0.10 or -0.10 inch from outer edge of door rails to ends of latch pins. After adjusting, tighten jamb nuts. Refer to Figure 202.
- (2) Adjust plunger (73) in outer end of handle (19) using slot screwdriver. To tighten, turn clockwise; to loosen, turn counterclockwise. Adjust plunger (73) until 10 pounds, +5 or -0 pounds of force, applied at 0.55 inch from end of handle (19), is required to disengage plunger (73) from catch plate (71).

## 8. Gas Spring Cylinder Disposal

**WARNING: When removed, depressurize gas spring as described in the following steps before discarding. Protective eye covering must be worn while performing these steps.**

### A. Dispose of Gas Spring Cylinder (Refer to Figure 203).

- (1) Place cylinder horizontally in bench vise and tighten vise.
- (2) Place several layers (4 layers minimum) of shop towels or rags over end of cylinder in vise.
- (3) Measure 1.50 inches in from fixed end of cylinder, and using a scratch awl or pointed center punch and hammer, drive awl or punch through the towels and into the cylinder until the gas begins to escape.
- (4) Hold towels and scratch awl in place until all gas has escaped (a few seconds). Then slowly remove scratch awl. Escaping oil will be absorbed by the towels.
- (5) While still holding towels over hole, push bright shaft completely into cylinder to purge remaining oil.
- (6) Remove gas spring from vise and discard.

## 9. Gas Spring/Upper Door Test Procedure

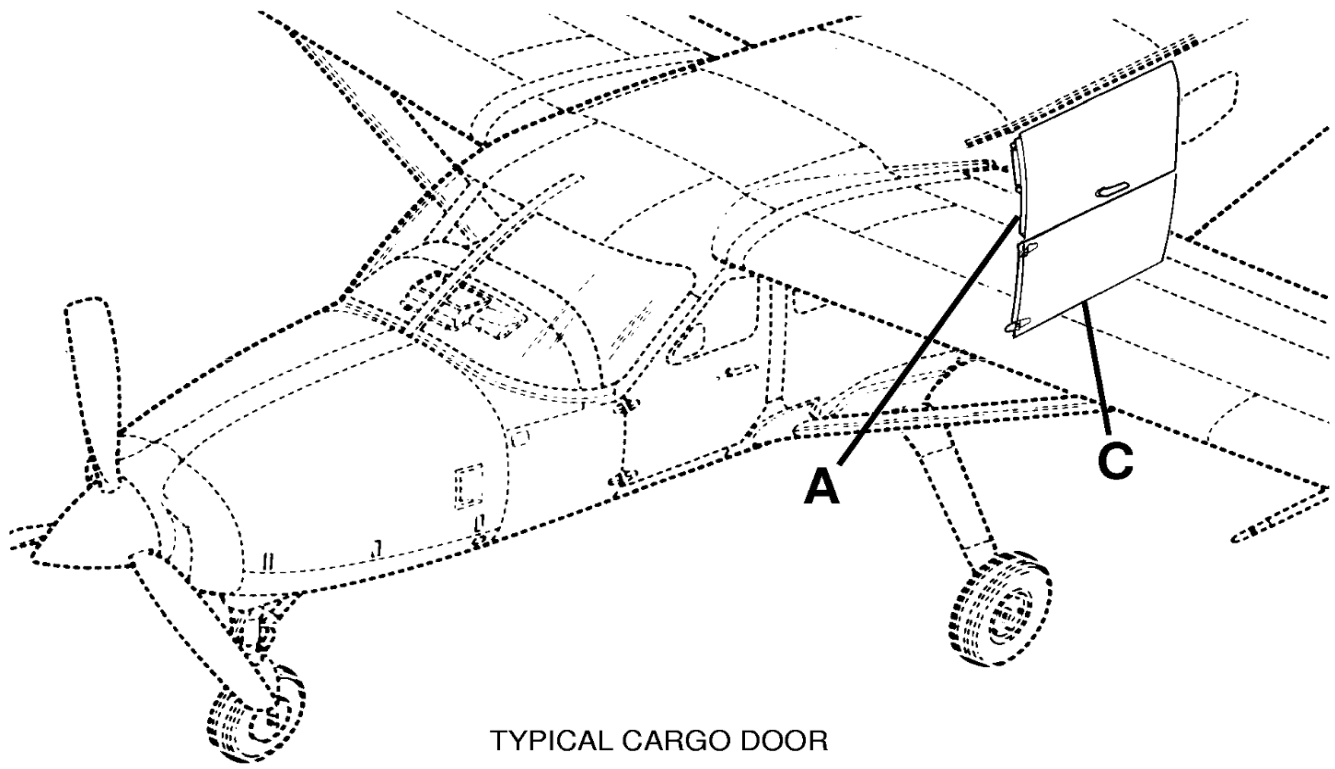
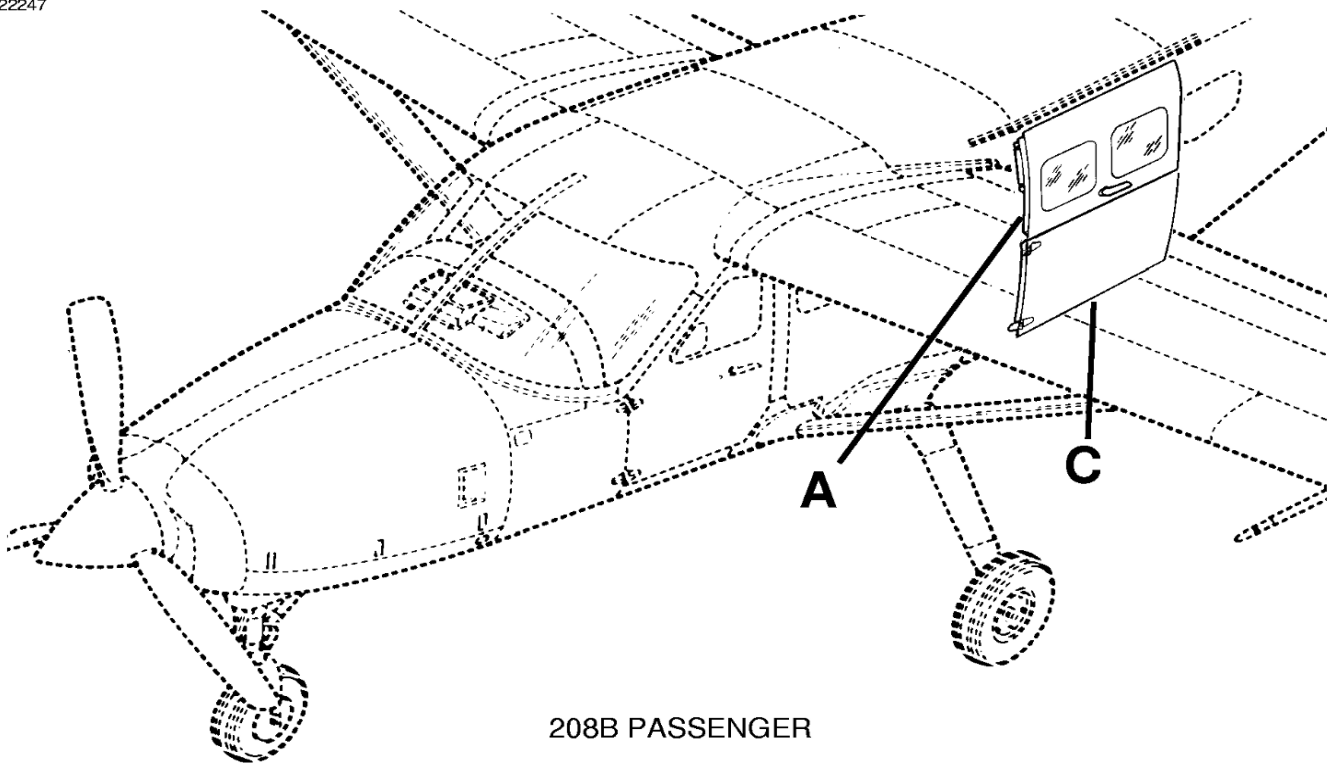
A. When gas spring operation problems are suspected on upper cargo door, the following test procedure should be used. The forces are measured with a spring ambient temperature of 68°F, +2 or -2°F, with piston rod extending downwards.

- (1) Obtain direct reading sensitive scale.
- (2) Remove pneumatic extender from airplane.
- (3) Grasp extender by cylinder in a vertical position with piston rod end down, and place on sensitive scale.
- (4) Compress device fully four or five times with piston rod end down. (This lubricates seals and piston.)
- (5) Compress approximately 1.5 inch and relax pressure slightly to allow piston rod to extend slowly until it is approximately 0.20 inch from full extension. Hold steady and read pressure.

- (6) An acceptable extender will read between 42 and 52 pounds on scale.

Figure 201 : Sheet 1 : Upper and Lower Cargo Door Installation

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Figure 201 : Sheet 2 : Upper and Lower Cargo Door Installation

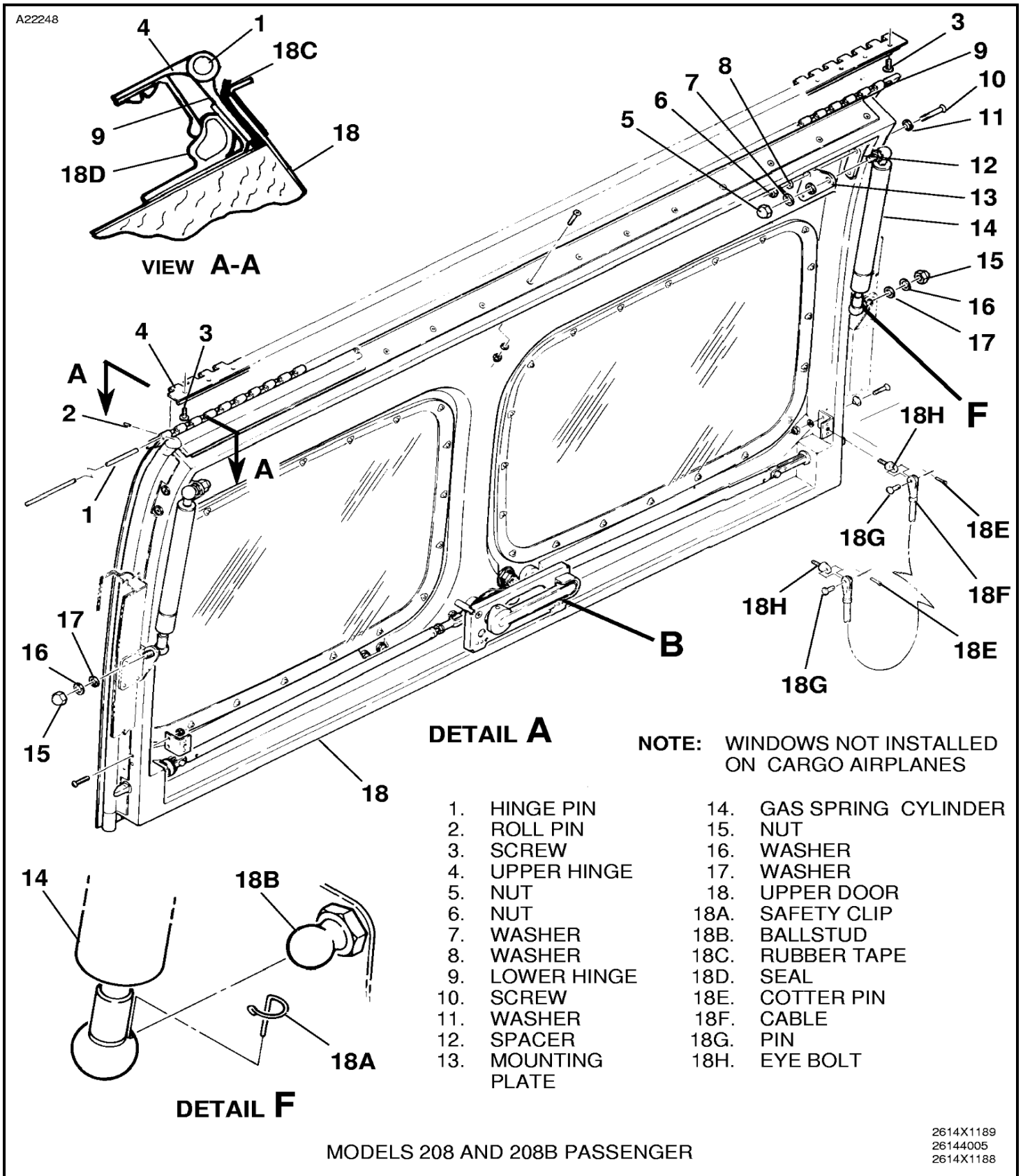
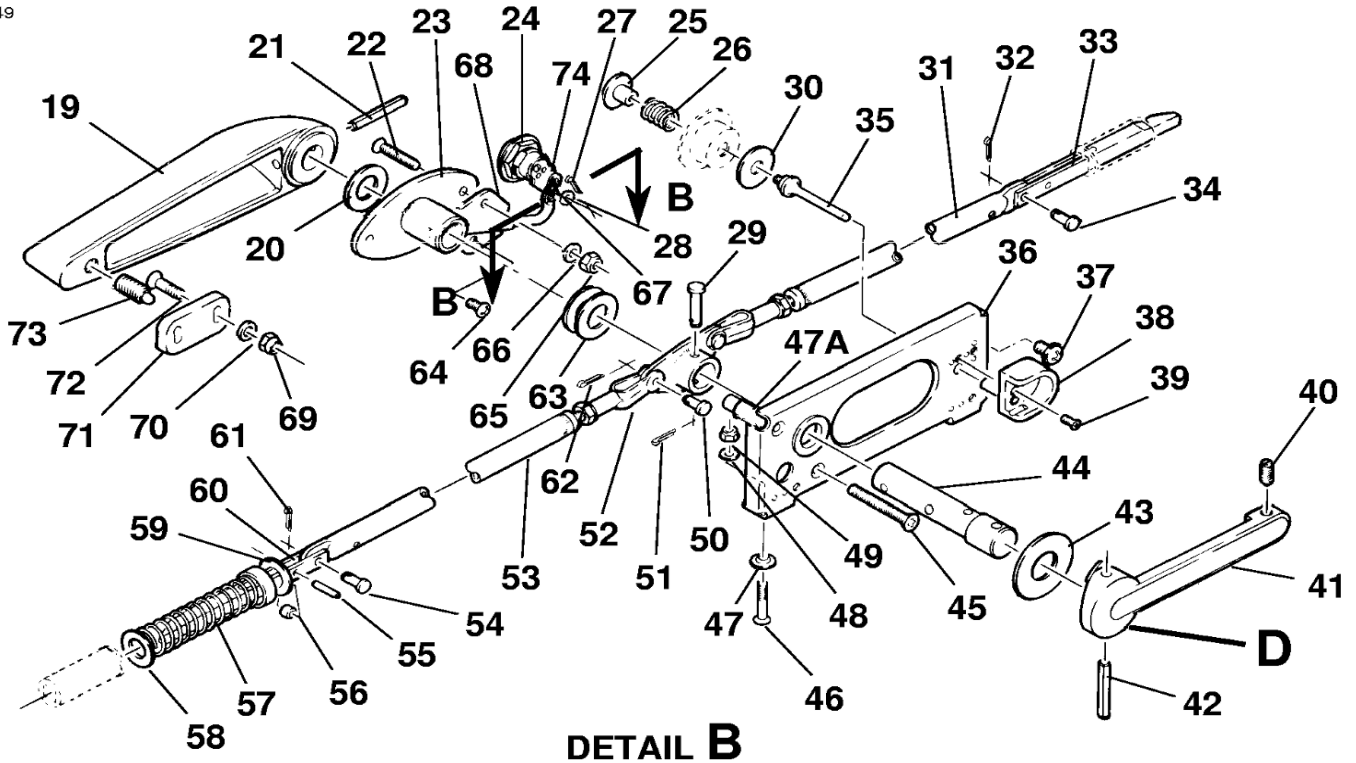
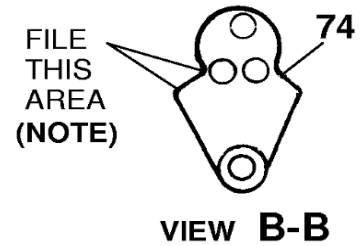


Figure 201 : Sheet 3 : Upper and Lower Cargo Door Installation

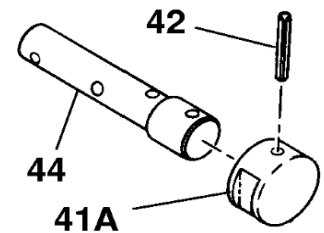
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**DETAIL B**



**NOTE:** USE CAUTION TO MAINTAIN HOLE EDGE DISTANCE



**DETAIL D**

- |                      |                |                |
|----------------------|----------------|----------------|
| 19. HANDLE           | 42. ROLL PIN   | 65. NUT        |
| 20. WASHER           | 43. WASHER     | 66. WASHER     |
| 21. ROLL PIN         | 44. SPINDLE    | 67. LOCK PIN   |
| 22. SCREW            | 45. SCREW      | 68. GUIDE      |
| 23. ESCUTCHEON       | 46. SCREW      | 69. UPPER DOOR |
| 24. KEY LOCK         | 47. WASHER     | 70. WASHER     |
| 25. BUTTON           | 47A. COLLAR    | 71. CATCH      |
| 26. SPRING           | 48. WASHER     | 72. SCREW      |
| 27. COTTER PIN       | 49. NUT        | 73. PLUNGER    |
| 28. WASHER           | 50. PIN        | 74. CAM        |
| 29. PIN              | 51. COTTER PIN |                |
| 30. WASHER           | 52. BELLCRANK  |                |
| 31. PUSHROD          | 53. PUSHROD    |                |
| 32. COTTER PIN       | 54. PIN        |                |
| 33. LATCH PIN        | 55. ROLL PIN   |                |
| 34. PIN              | 56. SPACER     |                |
| 35. PIN              | 57. SPRING     |                |
| 36. SUPPORT ASSEMBLY | 58. WASHER     |                |
| 37. SCREW            | 59. WASHER     |                |
| 38. LOCKPLATE        | 60. LATCH PIN  |                |
| 39. SCREW            | 61. COTTER PIN |                |
| 40. PLUNGER          | 62. COTTER PIN |                |
| 41. HANDLE           | 63. WASHER     |                |
| 41A. BOSS            | 64. SCREW      |                |

MODELS 208, 208B, 208 CARGOMASTER,  
AND 208B SUPER CARGOMASTER

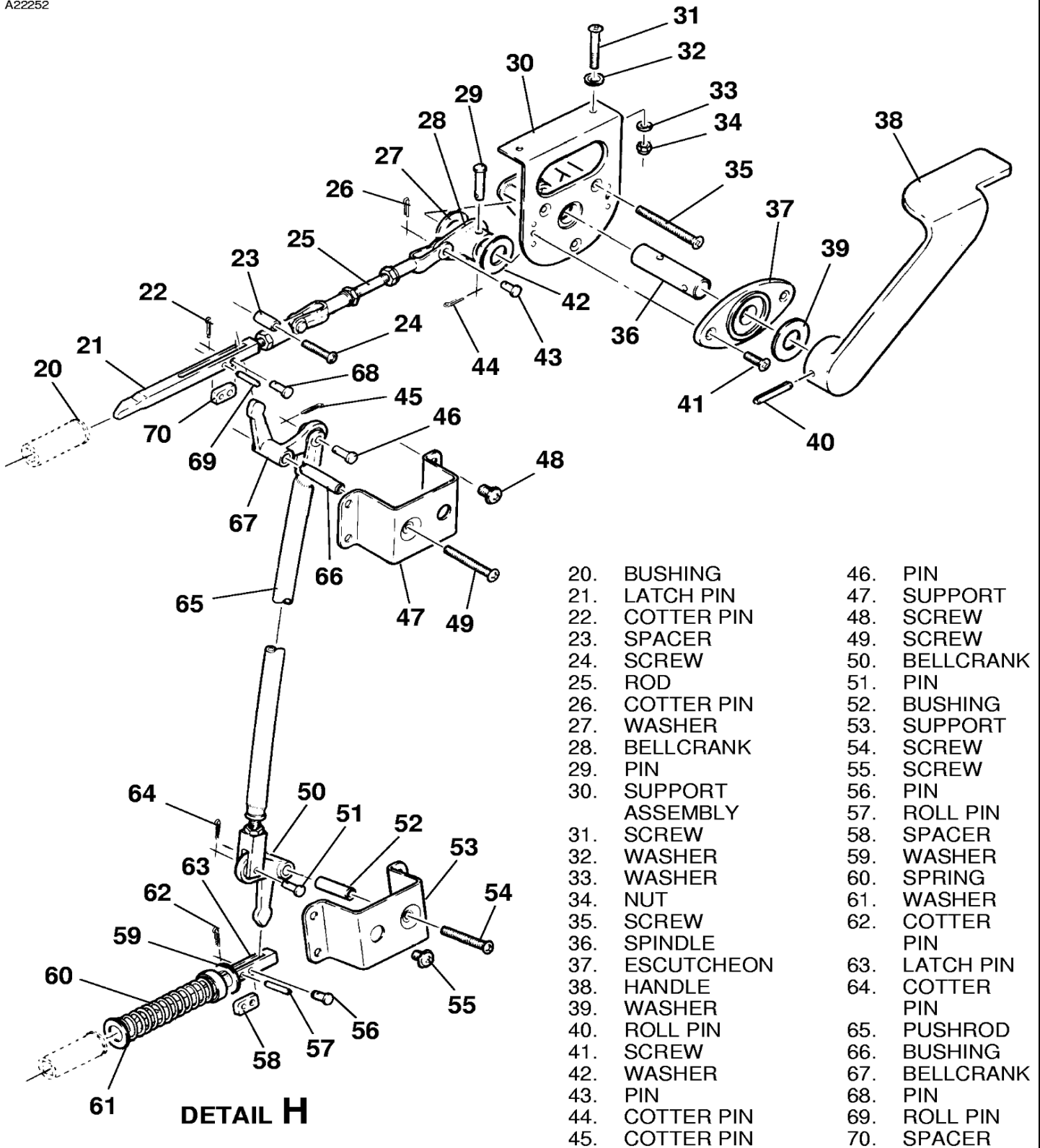
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Figure 201 : Sheet 5 : Upper and Lower Cargo Door Installation

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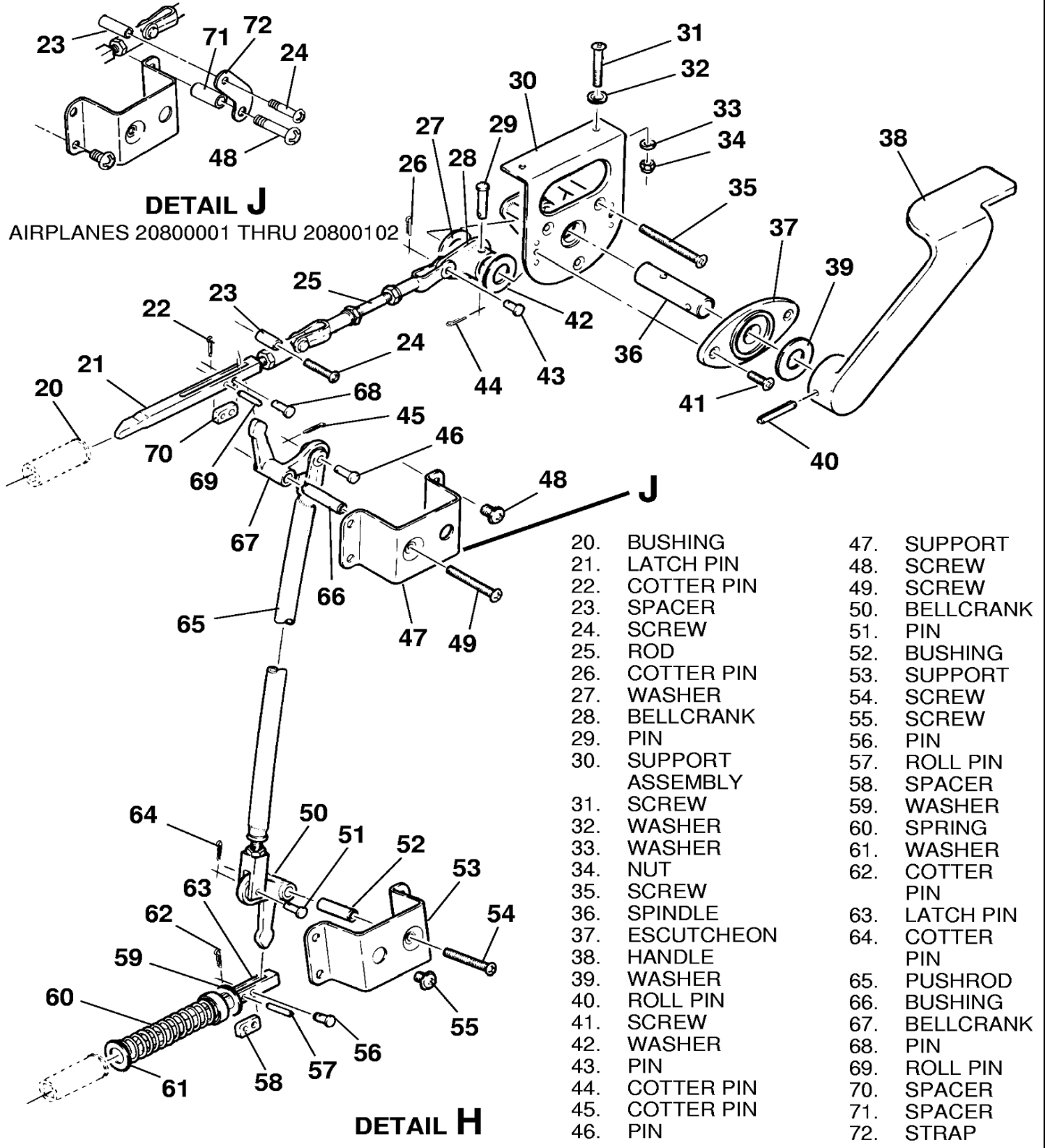
**DETAIL H**

AIRPLANES 20800001 THRU 20800107

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Figure 201 : Sheet 6 : Upper and Lower Cargo Door Installation

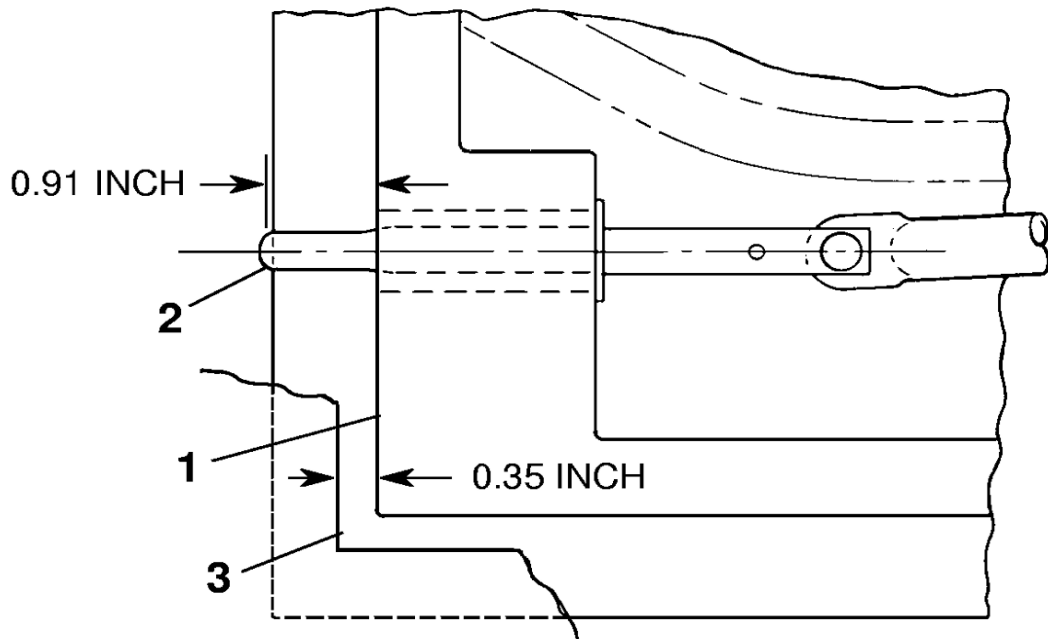
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Figure 202 : Sheet 1 : Upper and Lower Cargo Doors Adjustment

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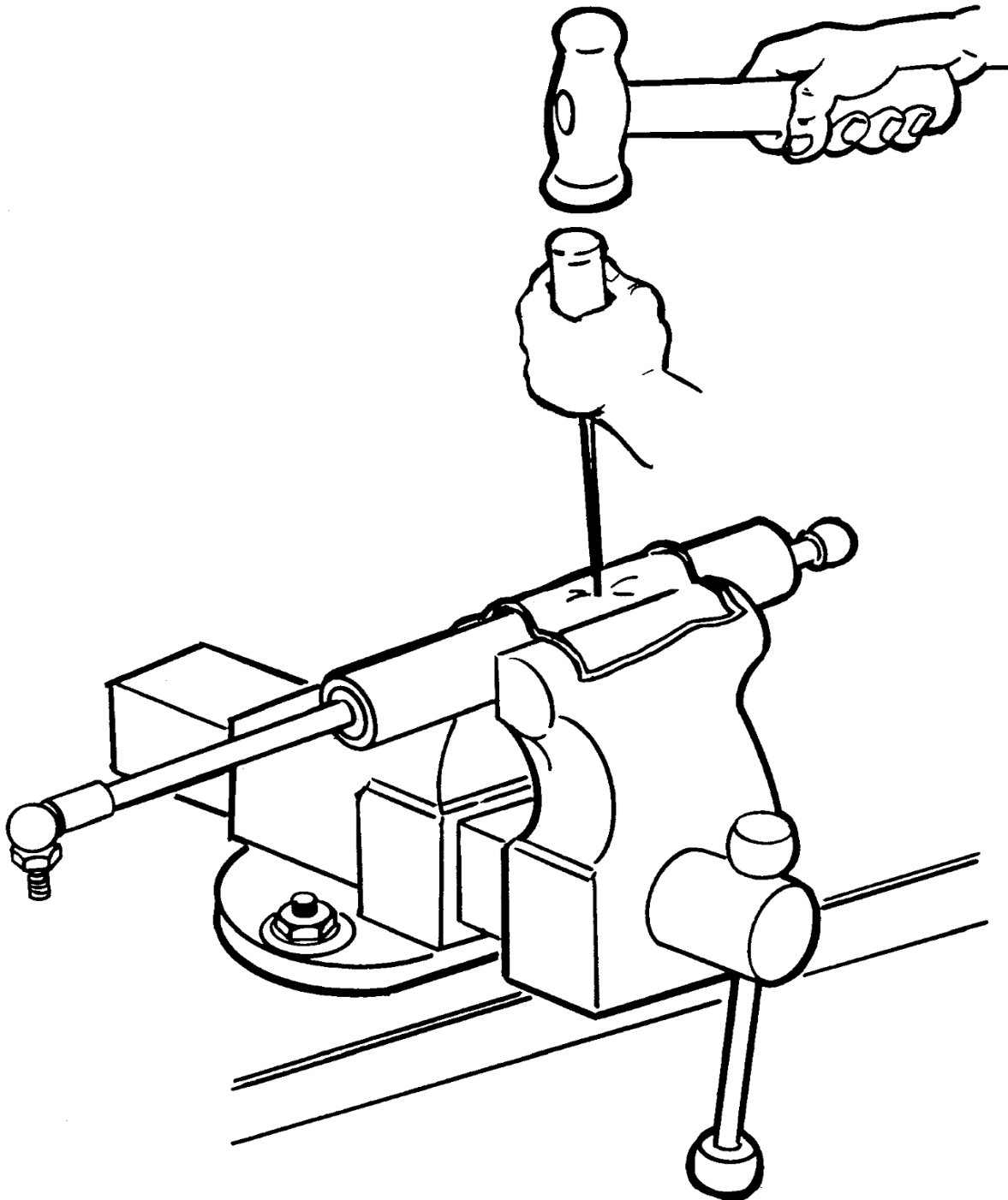


TYPICAL

1. OUTER DOOR RAIL
2. LATCH PIN
3. DOOR JAMB

Figure 203 : Sheet 1 : Gas Spring Cylinder Disposal

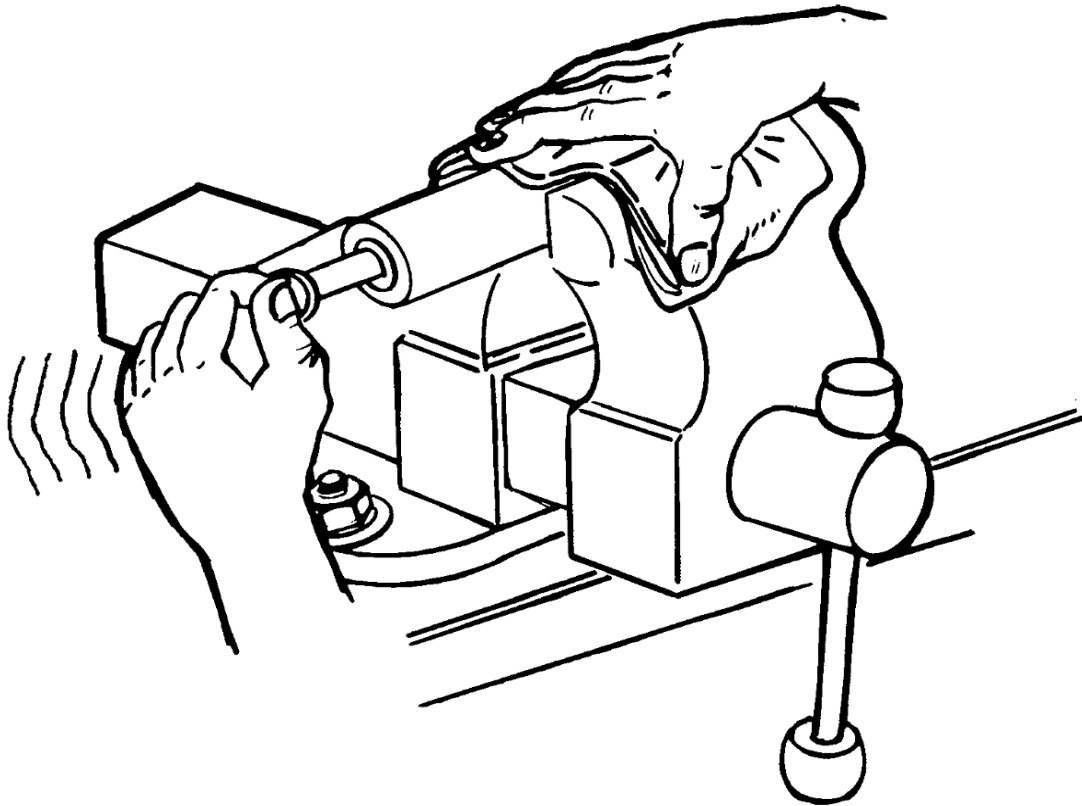
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Figure 203 : Sheet 2 : Gas Spring Cylinder Disposal

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