

MODEL R182 AND TR182 SERVICE MANUAL

SECTION 3

FUSELAGE

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3-1. FUSELAGE.

3-2. WINDSHIELD AND WINDOWS.

3-3. **DESCRIPTION.** The windshield and windows are single-piece acrylic plastic panels set in sealing strips and held by formed retaining strips secured to the fuselage with screws and rivets. H.B. Fuller, FS-4291 sealant (TMK01 Kit, Supply Division, Cessna Aircraft Company, P.O. Box 949, Wichita, KS 67201, 316/685-9111, Telex 417-489) used in conjunction with a felt seal is applied to all edges of windshield and windows with exception of wing root area. The wing root fairing has a heavy felt strip which completes the windshield sealing.

3-4. CLEANING AND WAXING. (Refer to Section 2.)

3-5. WINDSHIELD AND WINDOW INSTALLATION TECHNIQUES:

Special drills must be used when drilling holes in acrylic. Standard drills will cause the hole to be oversized, distorted, or excessively chipped.

Whenever possible, a coolant such as a plastic drilling wax should be used to lubricate the drill bit. Cessna recommends "Reliance" drill wax or Johnson No. 140 Stick Wax.

Drilled holes should be smooth with a finish of 125 rhr.

The feed and speed of the drill is critical. The following chart indicates drill speed for various thicknesses of acrylic.

Material Thickness	Drill Speed
1/16" to 3/16"	1500 to 4500 rpm
1/4" to 3/8"	1500 to 2000 rpm
7/16"	1000 to 1500 rpm
1/2"	500 to 1000
3/4"	500 to 800
1"	500 rpm

Specifications for the twist drill used to drill acrylics is as follows:

NOTES

Shallow holes - when hole depth to hole diameter ratio is less than 1.5 to 1, the drill shall have an included tip angle of 55 degrees to 60 degrees and a lip clearance angle of 15 degrees to 20 degrees.

Medium deep holes - when hole depth to hole diameter ratio is from 1.5 to 1 up to 3 to 1, the drill shall have an included tip angle of 60 degrees to 140 degrees and a lip clearance angle of 15 degrees to 20 degrees.

Deep holes - when hole depth to hole diameter ratio is greater than 3.0 to 1, the drill shall have an included tip angle of 140 degrees and a lip clearance of 12 degrees to 15 degrees.

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Parts which must have holes drilled shall be backed up with a drill fixture. Holes may be drilled through the part from one side. However, less chipping around holes will occur if holes are drilled by drilling the holes from both sides. This is accomplished by using a drill with an acrylic backup piece on the opposite side. Remove the drill from the hole and switch the backup plate and finish drilling from the opposite side.

- 3-6. **REPAIRS.** Replace extensively damaged transparent plastic, rather than repair whenever possible, since even a carefully patched part is not the equal of a new section, either optically or structurally. At the first sign of crack development, drill a small hole at the extreme end of the crack, as shown in figure 3-1. This serves to localize the cracks and to prevent further splitting by distributing the strain over a large area. If the cracks are small, stopping them with drilled holes will usually suffice until replacement or more permanent repair can be made. The following repairs are permissible; however, they are not to be located in the pilot's line of vision during landing or normal flight.
- a. **SURFACE PATCH.** If a surface patch is to be installed, trim away the damaged area and round all corners. Cut a piece of plastic of sufficient size to cover the damaged area, and extend at least 3/4-inch on each side of the crack or hole. Bevel the edges as shown in figure 3-1. If the section to be repaired is curved, shape the patch to the same contour by heating it in an oil bath at a temperature of 248° to 302° F., or it may be heated on a hot plate until soft. Boiling water should not be used for heating. Coat the patch evenly with plastic solvent adhesive, and place immediately over the hole. Maintain a uniform pressure of from 5 to 10 psi on the patch for a minimum of 3 hours. Allow the patch to dry 24 to 36 hours before sanding or polishing is attempted.
 - b. **PLUG PATCH.** In using inserted patches to repair holes in plastic structures, trim the holes to a perfect circle or oval, and bevel the edges slightly. Make the patch slightly thicker than the material being repaired, and similarly, bevel the edges. Install patches in accordance with procedures illustrated in figure 3-1. Heat the plug until soft, and press into the hole without cement, and allow to cool to make a perfect fit. Remove the plug, coat the edges with adhesive, and then reinsert the plug in the hole. Maintain a firm, light pressure until the cement has set, then sand or file the edges level with the surface; buff and polish.
- 3-7. **SCRATCHES.** Scratches on clear plastic surfaces can be removed by hand-sanding operations followed by buffing and polishing, if steps below are followed carefully.
- a. Wrap a piece of No. 320 (or finer) sandpaper or abrasive cloth around a rubber pad or wood block. Rub surface around scratch with a circular motion, keeping abrasive constantly wet with clean water to prevent scratching surface more. Use minimum pressure and cover an area large enough to prevent formation of "bull's-eyes" or other optical distortions.

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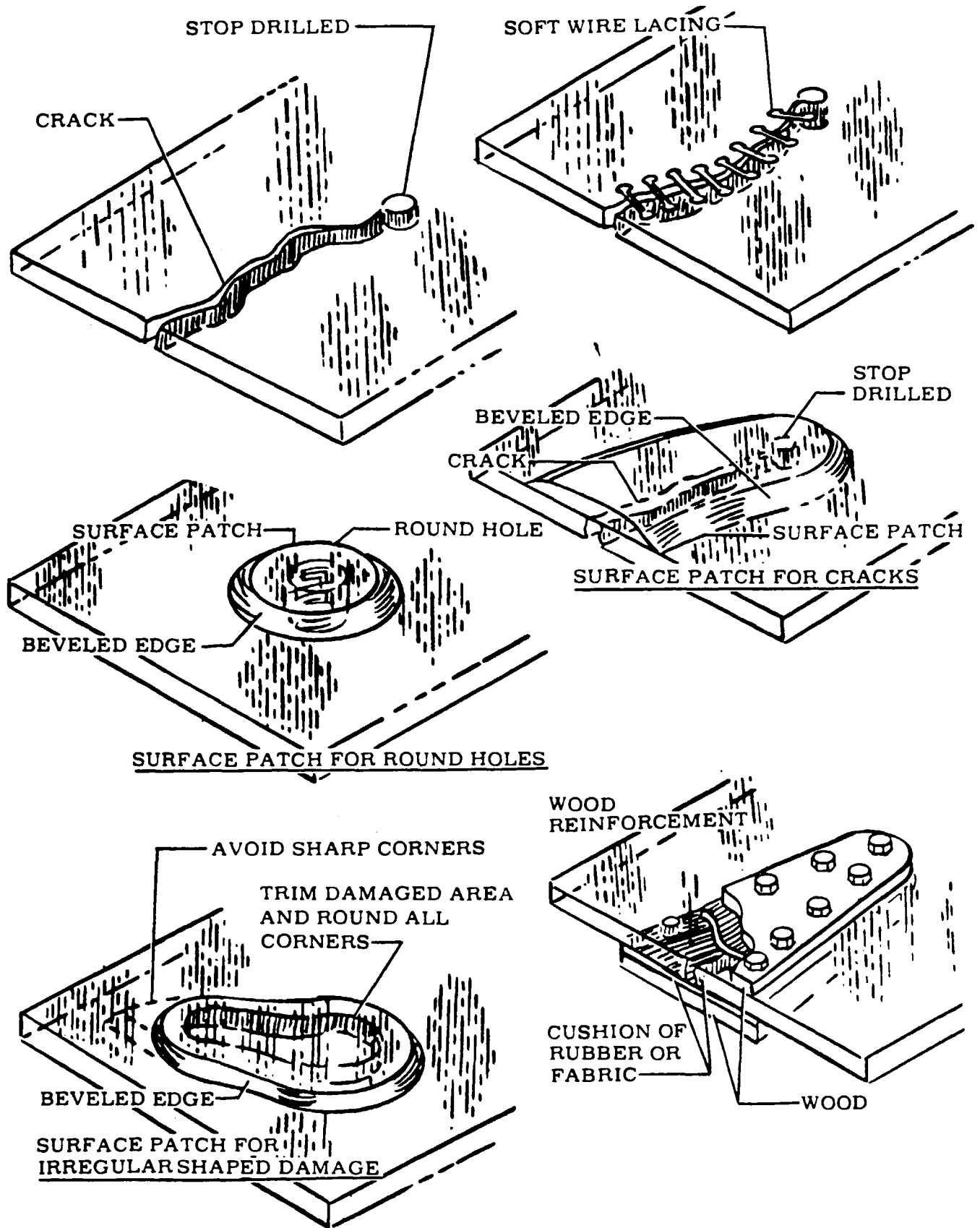


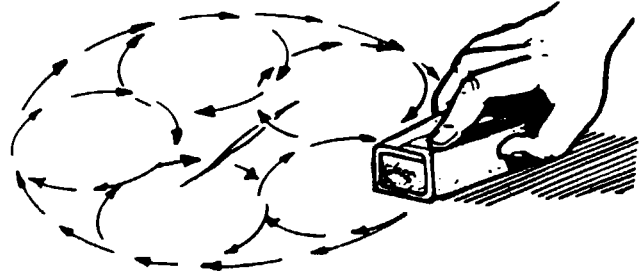
Figure 3-1. Repair of Windshield and Windows (Sheet 1 of 2)

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CORRECT

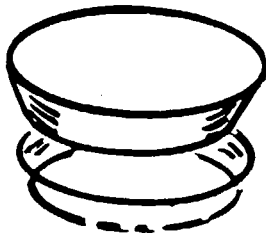


INCORRECT



SANDING REPAIR

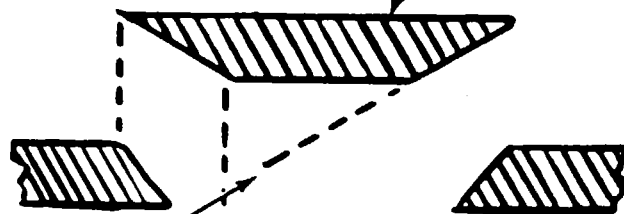
PATCHES



PATCH AND HOLE SHOULD BE TRIMMED WITH TAPERED EDGES.

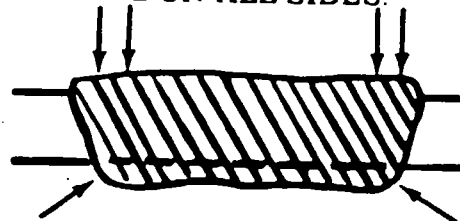
HEAT EDGES OF PATCH UNTIL SOFT AND FORCE IT INTO HOLE. HOLD IT IN PLACE UNTIL COOL AND HARD TO ASSURE PERFECT FIT. THEN REMOVE PATCH FOR CEMENTING BATH.

PATCH SHOULD BE THICKER



PATCH TAPERED ON SHARPER ANGLE THAN MATERIAL.

DURING CEMENTING, PRESSURE NEED BE APPLIED ONLY ON TOP SURFACE. TAPER ASSURES EQUAL PRESSURE ON ALL SIDES.



AFTER CEMENT HAS HARDENED. SAND OR FILE EDGES LEVEL WITH SURFACE.

Figure 3-1. Repair of Windshield and Windows (Sheet 2 of 2)

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CAUTION

Use fine grade abrasive, No. 320 grade or finer.

- b. Continue sanding operation, using progressively finer grade abrasives until scratches disappear.
- c. When scratches have been removed, wash area thoroughly with clean water to remove all gritty particles. The entire sanded area will be clouded with minute scratches which must be removed to restore transparency.
- d. Apply fresh tallow or buffing compound to a motor-driven buffing wheel. Hold wheel against plastic surface, moving it constantly over damaged area until cloudy appearance disappears. A 2000-foot-per-minute surface speed is recommended to prevent overheating and distortion. (Example: 750 rpm polishing machine with a 10 inch buffing bonnet.)

NOTE

A power buffing wheel will expedite polishing considerably, however, hand buffing is acceptable if complete enough to produce a quality end result.

- e. When buffing is finished, wash area thoroughly and dry with a soft flannel cloth. Allow surface to cool and inspect area to determine if full transparency has been restored. Apply a thin coat of hard wax and polish surface lightly with a clean flannel cloth.

NOTE

Rubbing plastic surface with a dry cloth will build up an electrostatic charge which attracts dirt particles and may eventually cause scratching of surface. After wax has hardened, dissipate this charge by rubbing surface with a slightly damp chamois. This will also remove dust particles which have collected while wax is hardening.

- f. Minute hairline scratches can often be removed by rubbing with commercial automobile body cleaner or fine-grade rubbing compound. Apply with a soft, clean, dry cloth or imitation chamois.

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3-8. CRACKS.

- a. When a crack appears, drill a hole at end of crack to prevent further spreading. Hole should be approximately 1/8 inch in diameter, depending on length of crack and thickness of material.
- b. Temporary repairs to flat surfaces can be accomplished by placing a thin strip of wood over each side of surface and inserting small bolts through the wood and plastic. A cushion of sheet rubber or aircraft fabric should be placed between wood and plastic on both sides.
- c. A temporary repair can be made on a curved surface by placing fabric patches over affected areas. Secure patches with aircraft dope, Specification No. MIL-D-5549; or lacquer, Specification No. MIL-L-7178. Lacquer thinner, Specification No. MIL-T-6094 can also be used to secure patch.
- d. A temporary repair can be made by drilling small holes along both sides of crack 1/4 to 1/8 inch apart and lacing edges together with soft wire. Small-stranded antenna wire makes a good temporary lacing material. This type of repair is used as a temporary measure ONLY, and as soon as facilities are available, panel should be replaced.

3-9. WINDSHIELD. (See figure 3-2.)

3-10. REMOVAL.

- a. Remove wing fairings.
- b. Remove air vent tubes.

NOTE

Remove and tape compass and outside air temperature gage clear of work area. Do not disconnect electrical wiring. (See Section 16.)

CAUTION

If windshield is to be reinstalled, be sure to protect windshield during removal.

- c. With two people sitting in the airplane placing their feet against the windshield, just above the centerline, press upward on windshield forcing it out of lower retainers.
- d. Clean sealer from inner sidewalls and bottom of retainers.

3-11. INSTALLATION.

- a. If windshield is to be reinstalled, clean off old sealer and felt, then install new felt around edges of windshield.
- b. If new windshield is to be installed, remove protective cover and clean, take care not to scratch windshield.
- c. Apply new felt to edges of windshield.
- d. Apply a strip of sealer (H.B. FULLER FS-4291) along the sides and bottom of felt.
- e. Position bottom edge of windshield into lower retainer.
- f. Using a piece of bent sheet metal (8 in. wide x length of top edge of windshield) placed under top edge of windshield into upper retainer using bent sheet metal in a shoe horn effect.
- g. Install air vent tubes.
- h. Install wing fairings.

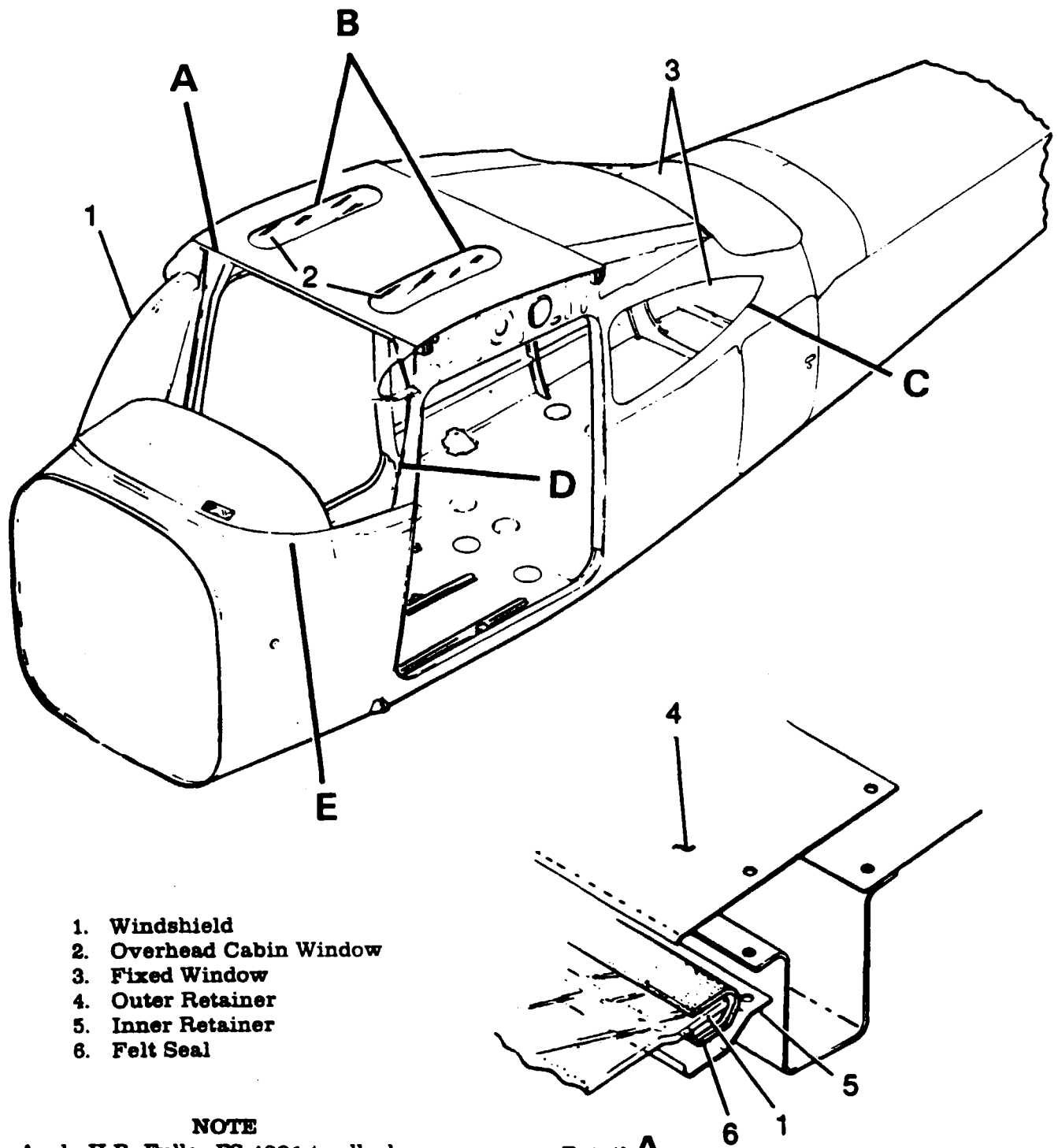
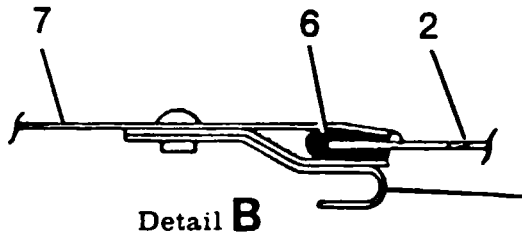
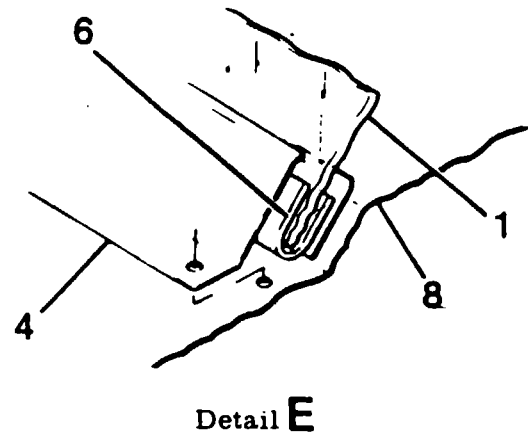
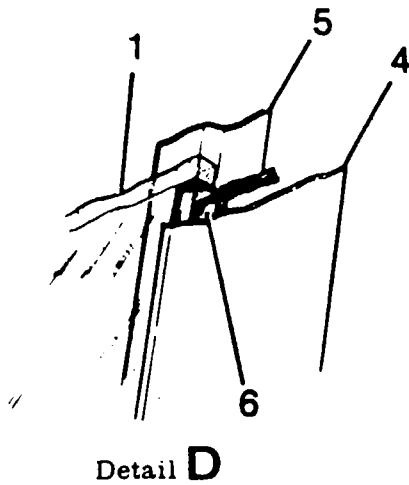
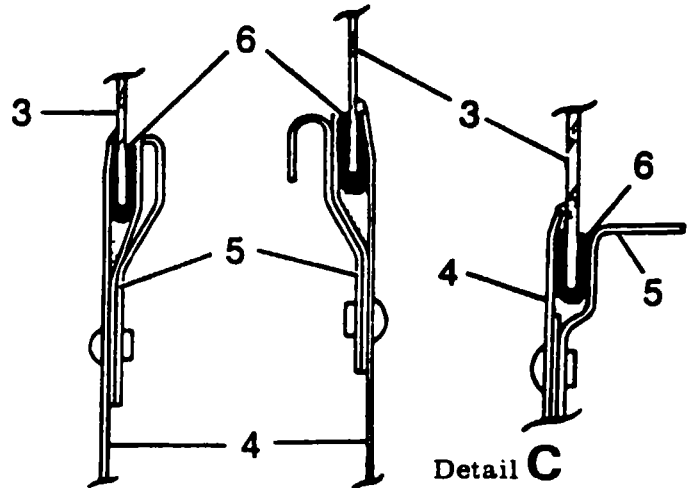


Figure 3-2. Windshield and Fixed Window Installation (Sheet 1 of 2)

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TYPICAL METHODS OF RETAINING FIXED WINDOWS



1. Windshield
2. Overhead Cabin Window
3. Fixed Window
4. Outer Retainer
5. Inner Retainer
6. Felt Seal
7. Cabin Top Skin
8. Fuselage Structure

Figure 3-2. Windshield and Fixed Window Installation (Sheet 2 of 2)

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3-12. WINDOWS.

3-13. **MOVABLE.** (Refer to figure 3-3.) A movable window, hinged at the top, is installed in the left cabin door and may also be installed in the right cabin door as optional equipment. A rubber seal is cemented to the inside of the window frame using EC-880 adhesive (3-M Company) or equivalent.

3-14. REMOVAL AND INSTALLATION.

- a. Disconnect window stop.
- b. Remove pins from window hinges (2 and 3).
- c. Reverse preceding steps for reinstallation. To remove frame from plastic panel, drill out blind rivets at frame splice. When replacing plastic panel in frame, ensure sealing strip and an adequate coating of Presstite No. 579.6 sealing compound is used around all edges of panel.

3-15. **WRAP-AROUND REAR.** The rear window is a one-piece acrylic plastic panel set in sealing strips and held in place by retaining strips.

3-16. REMOVAL AND INSTALLATION.

- a. Remove upholstery as necessary to expose retainer strips inside cabin.
- b. Drill out rivets as necessary to remove retainers on both sides and lower edge of window.
- c. Remove window by starting at aft edge and pulling window into cabin area.
- d. Reverse preceding steps for reinstallation. Apply sealing strips and an adequate coating of sealing compound to prevent leaks. When installing a new window, check fit, use care not to crack panel and file or grind away excess plastic.

3-17. **OVERHEAD.** (See figure 3-2.) Overhead cabin windows, located in the cabin top, may be installed. These windows are one-piece acrylic plastic panels set in sealing strips and held in place by retaining strips.

3-18. REMOVAL AND INSTALLATION.

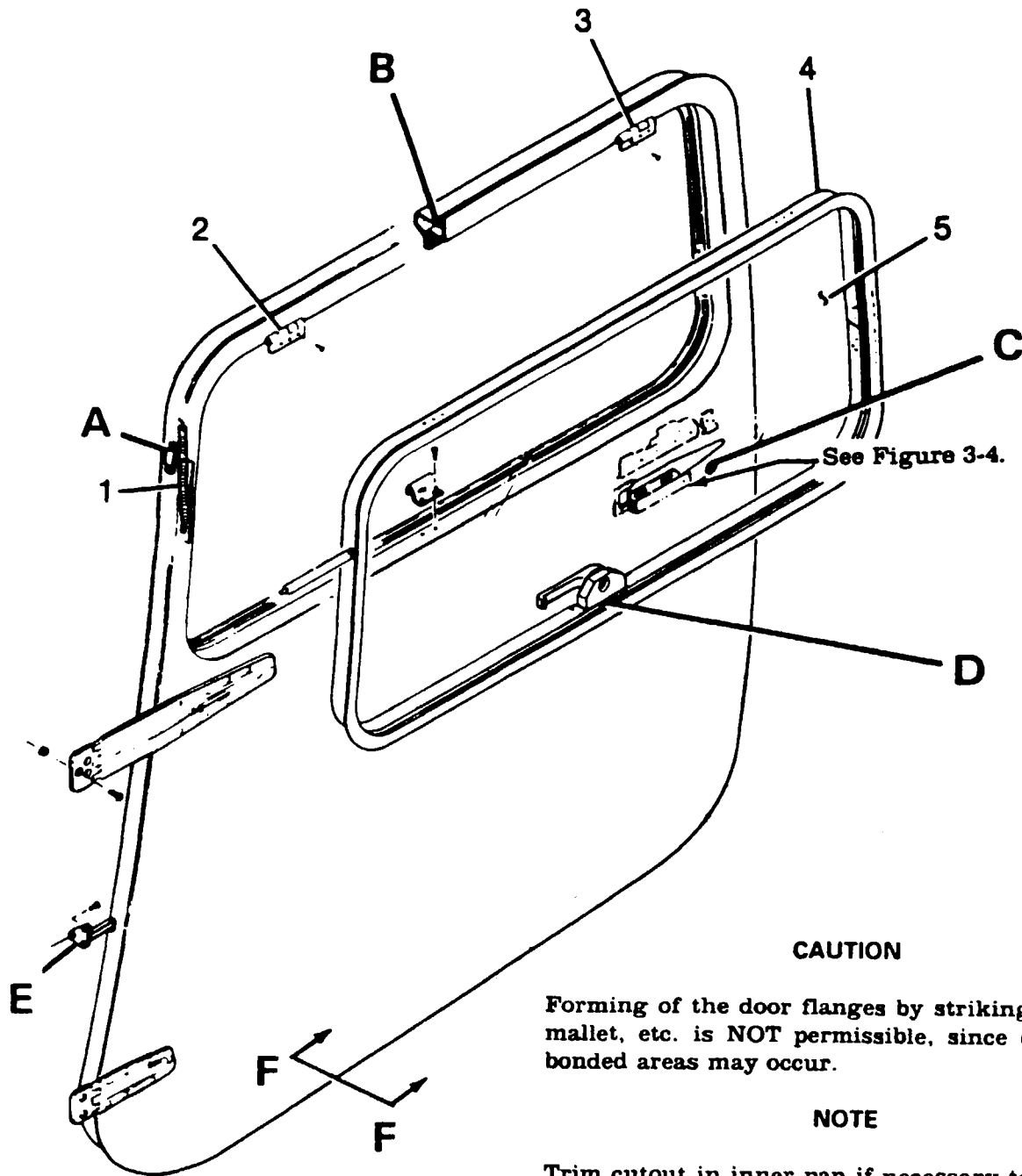
- a. Remove headliner and trim panels.
- b. Drill out rivets as necessary to remove retainer strips.
- c. Reverse preceding steps for reinstallation. Apply felt strip and sealing compound to all edges of window to prevent leaks. Check fit and carefully file or grind away excess plastic. Use care not to crack plastic when installing.

3-19. **FIXED.** (See figure 3-2.) Fixed windows, mounted in sealing strips and sealing compound, are held in place by various retainer strips. To replace side windows, remove upholstery and trim panels as necessary and drill out rivets securing retainers. Apply felt strip and sealing compound to all edges of window to prevent leaks. Check fit and file or grind away excess plastic. Use care not to crack plastic when installing.

3-20. CABIN DOORS. (See figure 3-3.)

3-21. **REMOVAL AND INSTALLATION.** Removal of cabin doors is accomplished either by removing screws which attach hinges or stops, or by removing hinge pins, attaching hinges and door stops. If permanent hinge pins are removed, they may be replaced with clevis pins, secured with cotter pins, or new hinge pins may be installed by inserting pin through both hinge halves, and chucking a rivet set in a hand drill, hold one end of pin and form a head on opposite end. Reverse pin and repeat process. When fitting a new door that is not bonded, some trimming of door skin at edges, and some reforming with a soft mallet may be necessary to achieve a good fit. Re-forming of bonded door flange by striking with a soft mallet, etc. is NOT permissible, due to possible damage to bonded areas.

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CAUTION

Forming of the door flanges by striking with soft mallet, etc. is NOT permissible, since damage to bonded areas may occur.

NOTE

Trim cutout in inner pan if necessary to maintain .10-inch minimum clearance with door stop arm.

Spray cabin door and window seals with MS-122 (Miller-Stephenson Chem Corp) or equivalent. Do not overspray; confine to seals.

Lubricate surface of spring (21) in contact with spacers (15) with hi-and lo-temp. grease (MIL-G-21164C).

After tightening screw (14), spacers (15) should turn freely.

1. Spring
2. Forward Window Hinge
3. Aft Window Hinge
4. Window Frame
5. Window

Figure 3-3. Cabin Door (Sheet 1 of 2)

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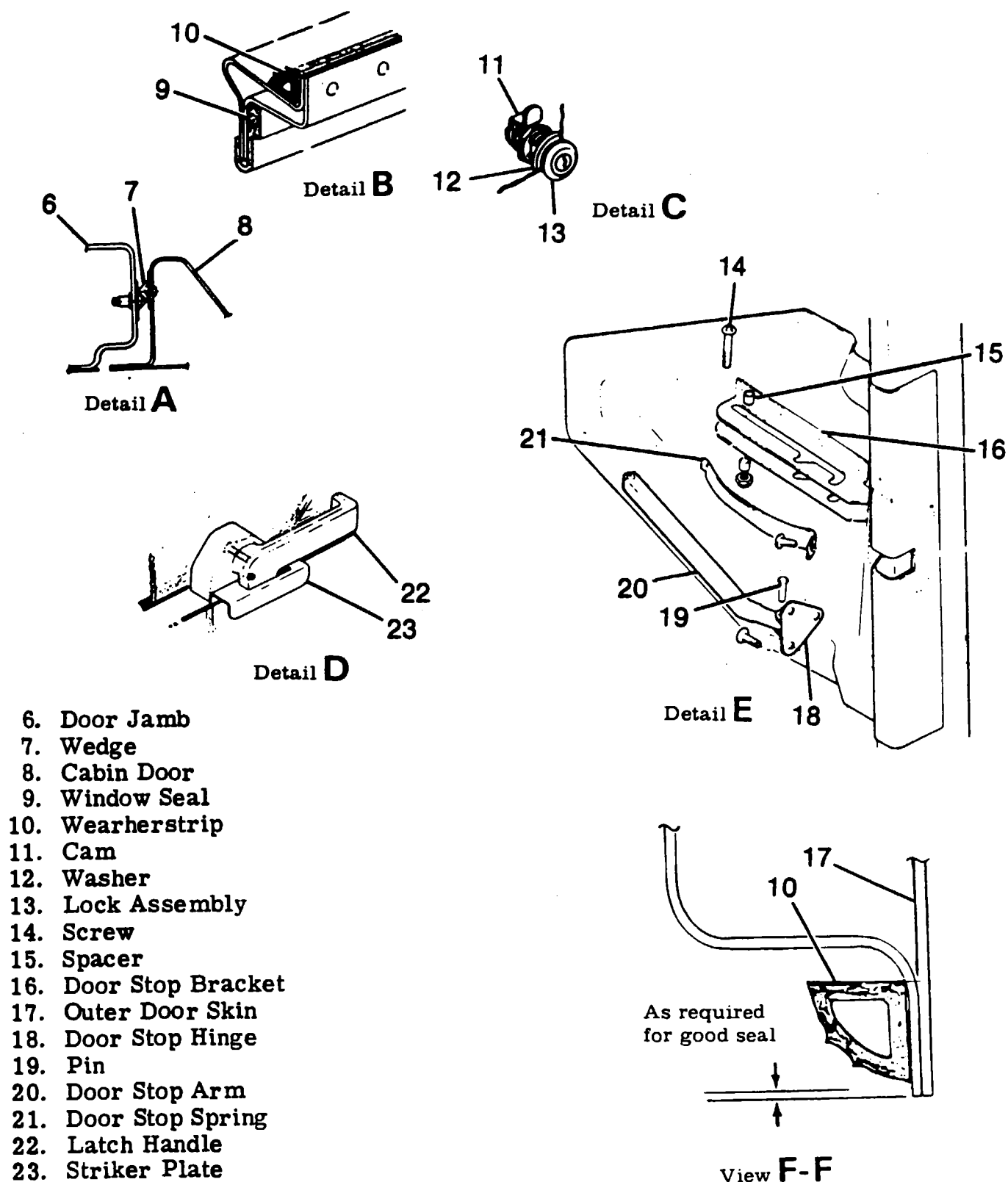


Figure 3-3. Cabin Door (Sheet 2 of 2)

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- 3-22. **CABIN DOOR WEATHERSTRIP.** A hollow fluted-type, rubber weatherstrip is cemented around all edges of the cabin door. When replacing weatherstrip, ensure that contact surfaces are clean and dry. Cut new weatherstrip to length using old weatherstrip as a guide. Cut small notch in butt ends of new weatherstrip to allow for drainage. Position weatherstrip with notch at door low point and apply a thin, even coat of EC-1300L adhesive (3-M Company) or equivalent to both surfaces. Allow to dry until tacky before pressing into place on door. Do not stretch weatherstrip around door corners.
- 3-23. **WEDGES.** Thru 1980 Models, wedges are installed at the upper forward edge of the door to aid in preventing air leaks at this point. Several attaching holes are located in the wedges. Holes giving best results should be selected.
- 3-24. **DOOR LATCHES.** (Thru 1980 Models.) See figure 3-4.)
- 3-25. **DESCRIPTION.** The cabin door latch is a push-pull bolt type, utilizing a rotary clutch for positive bolt engagement. As the door is closed, teeth on underside of bolt engage gear teeth on clutch. The clutch gear rotates in one direction only and holds door until handle is moved to LOCK position, driving bolt into slot.
- 3-26. **ADJUSTMENT.** Vertical adjustment of the rotary clutch is afforded by slotted holes which ensure sufficient gear-to-bolt engagement and proper alignment. The extension or retraction of the bolt, item (15) is controlled by adjusting mounting bolts in the slotted holes. Loosen screws sufficiently to move latch base forward on the door to retract bolt, and aft to extend bolt.

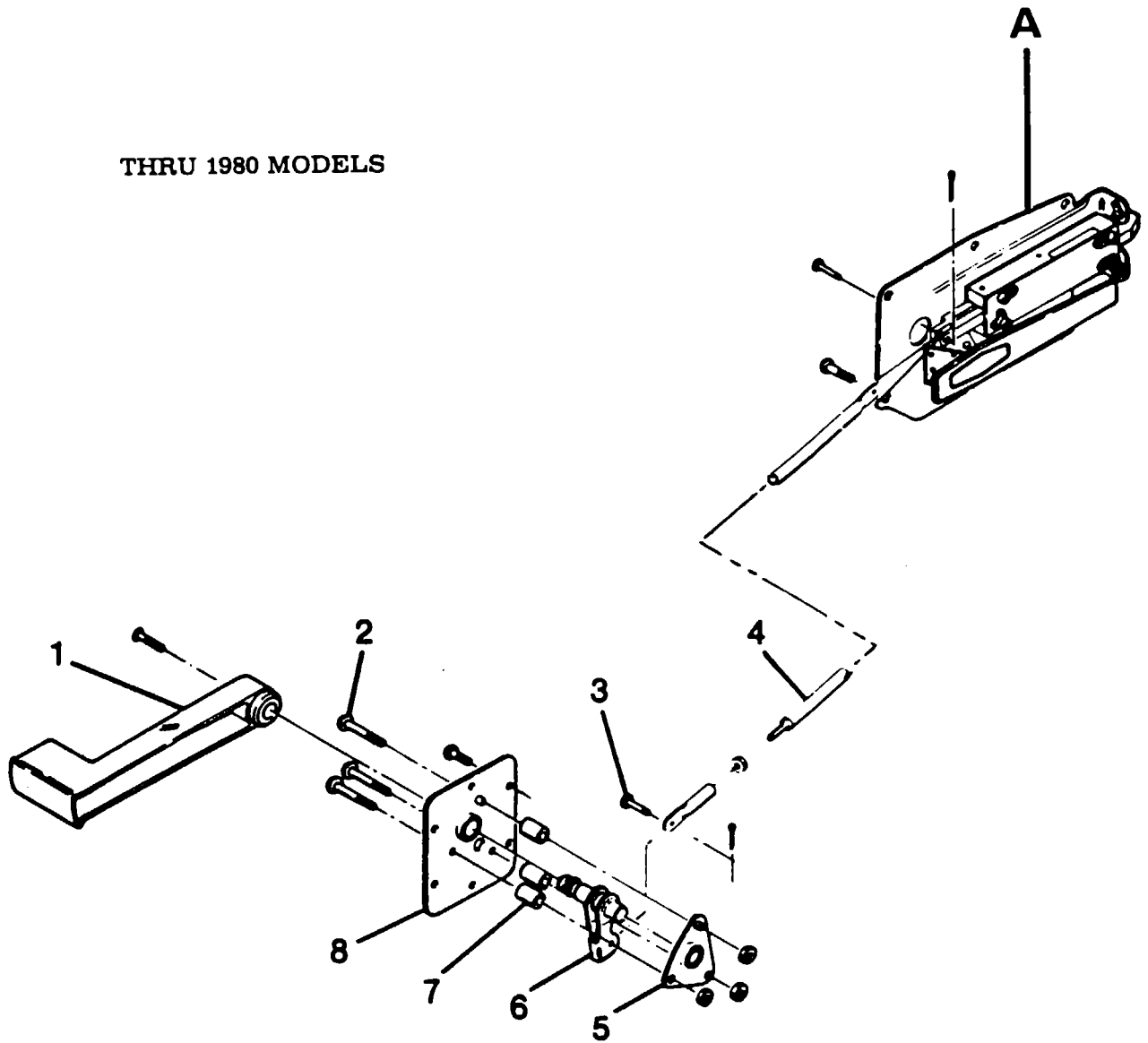
CAUTION

Close door carefully after adjustment and check clearance between bolt and door jamb and clutch engagement.

- 3-27. **INDEXING INSIDE HANDLE.** (Thru 1980 Models.) (See figure 3-4.) When inside door handle is removed, reinstall in relation to position of bolt (15) which is spring-loaded to CLOSE position. Index inside handle in accordance with the following procedures.
- Temporarily install handle (1) on shaft assembly (6) approximately vertical.
 - Move handle (1) back and forth until handle centers in spring-loaded position.
 - Without rotating shaft assembly (6), remove handle and install door upholstery panel with door handle OPEN-CLOSE placard in place.
 - Ensure CLOSE index is at top.
 - Install handle (1) to align with CLOSE index on placard.
 - Ensure bolt (15) clears doorpost and teeth engage clutch gear when handle (1) is in CLOSE position. The inside door handle fits into the arm rest when it is moved to the locked position. Install the handle on the serrated shaft so that the forward end of the handle is 8° 15' above the centerline of the handle shaft when in the locked position. A small amount of adjustment can be accomplished by loosening the shaft mounting bolts, and moving screw (2) in the slot to raise or lower the forward end of the handle.
- 3-28. **DOOR LATCHES.** (Beginning with 1981 Models.) (See figure 3-5.)
- 3-29. **DESCRIPTION.** The cabin door latch consists of a two-piece nylon latch base, exterior handle, spring-loaded latch bolt/pull-bar assembly, and a spring-loaded catch/trigger pin assembly. The interior handle base plate assembly is directly connected to the cabin door latch by means of an adjustable push rod assembly. This push rod assembly has two clamps attached, 180° apart on the main rod. These clamps are used to operate a cable assembly that drives a cable pin from the upper aft end of the cabin door into the aft upper door sill. When

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THRU 1980 MODELS



1. Inside Handle
2. Handle Adjusting Screw
3. Pin
4. Push Rod
5. Bearing Assembly
6. Shaft Assembly
7. Spacer
8. Plate Assembly

Figure 3-4. Door Latch and Rotary Clutch Components (Sheet 1 of 2)

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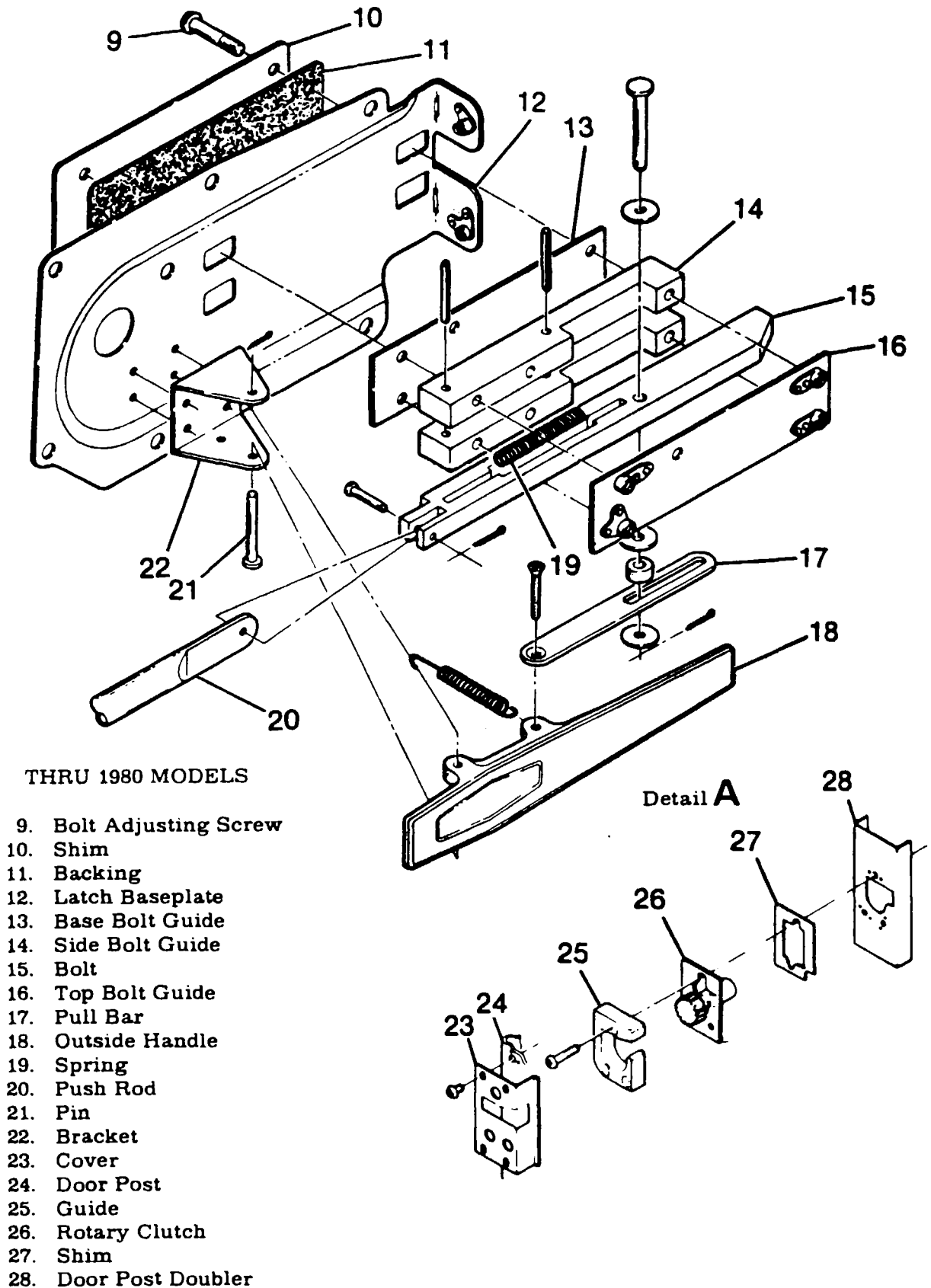


Figure 3-4. Door Latch and Rotary Clutch Components (Sheet 2 of 2)

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the cabin door is open, the door latch exterior handle should be extended (out), held in this position by means of the spring-loaded latch catch engaged with the latch bolt through the beveled hole in the bolt. The push rod assembly will be moved forward, and the attached cable assembly will be retracted from the upper door will with the cable pin recessed in the pin guide, located in the upper aft corner of the door. The interior handle, being directly connected by means of the push rod, will be moved aft approximately 15° aft of the vertical position. Closing the cabin door drives the trigger pin over the nylon actuator attached to the cover plate, located on the rear doorpost. As the trigger pin is driven forward, it disengages the latch catch from the latch bolt. The extended extension springs, attached to the latch handle and bolt/pull bar assembly, compress, pulling the latch handle in, and driving the latch bolt over the latch striker, located on the rear doorpost. Pushing the exterior handle flush with the fuselage skin. The push rod assembly, attached to the latch bolt/pull bar assembly, moves aft, which also drive the cable pin from the pin guide in the door into the upper aft door sill receptacle. The interior door handle has now moved from approximately 15° aft of vertical to approximately 45° forward of vertical. Pushing the interior handle to the horizontal position, flush with the arm rest, will overcenter the door latch, securing the door for flight. The cabin door latch assembly also incorporates a locking arm and locking pin, used with a key lock to secure the aircraft after use. With the cabin door closed, and the exterior latch handle flush, actuating the key lock drives the locking pin into the exterior latch handle, locking the aircraft. It is important to note that since the cabin door latch assembly and the interior handle face plate assembly are directly connected by the push rod assembly, that any amount of force applied to the outside handle is subsequently applied to the inside handle. If the push rod assembly is not properly adjusted, it is possible to lock one's self out of the aircraft by applying too much force to the exterior handle when closing the cabin door. Therefore, it is important to adhere to all of the rigging and adjustment specifications pertaining to the preload forces of the interior door handle. Refer to the rigging and adjusting procedures in the following paragraphs.

- 3-30. **INSTALLATION, RIGGING AND ADJUSTMENT PROCEDURES.** (Beginning with 1981 Models.) See figure 3-5.)
- 3-31. **INSTALLATION OF LOCK ASSEMBLY ON LATCH ASSEMBLY.** (Beginning with 1981 Models.) (See figure 3-5.)
- a. Assemble locking arm (2) with pin assembly (5).
 - b. Place pin (5) in 1/8-inch hole of base assembly (22).
 - c. Align .099-inch hole of locking arm (2) with .094-inch hole in base assembly (22), and install pin (3).
 - d. Assemble cam assembly (24) to locking arm (2). Cam should be on latch side of locking arm (2).
 - e. Use washers (25) between cam (24) and locking arm (2), and install cotter pin on clevis bolt.
- 3-32. **INSTALLATION OF LATCH ASSEMBLY.** (Beginning with 1981 Models.) (See figure 3-5.)

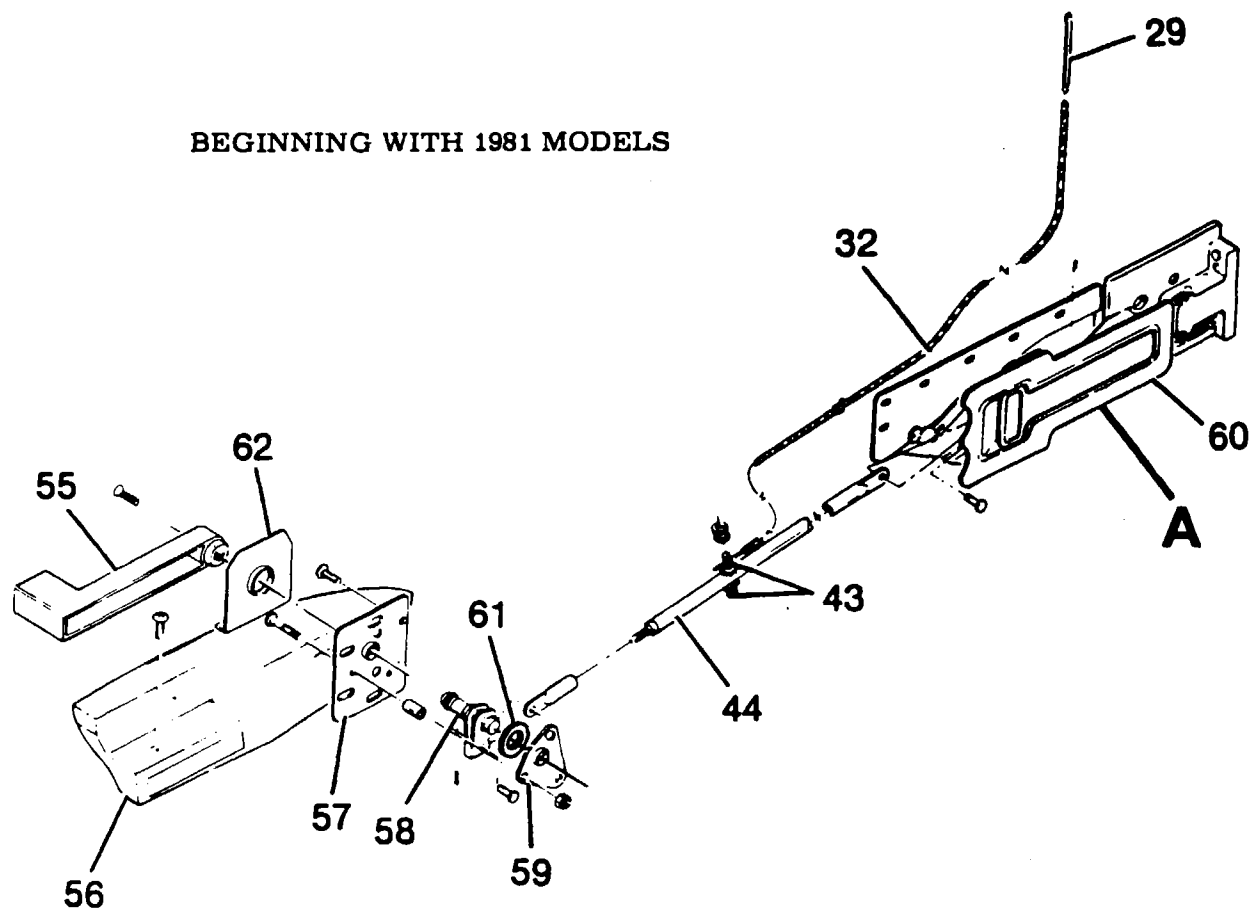
NOTE

Install with latch in CLOSED position.

- a. Install latch assembly between door pan and door skin.
- b. Cable assembly (32) should be forward of latch base plate (45), and inboard of latch base cup.
- c. Extend latch handle through cutout in door skin. This will pull latch bolt back far enough to allow latch to fall into place.

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BEGINNING WITH 1981 MODELS

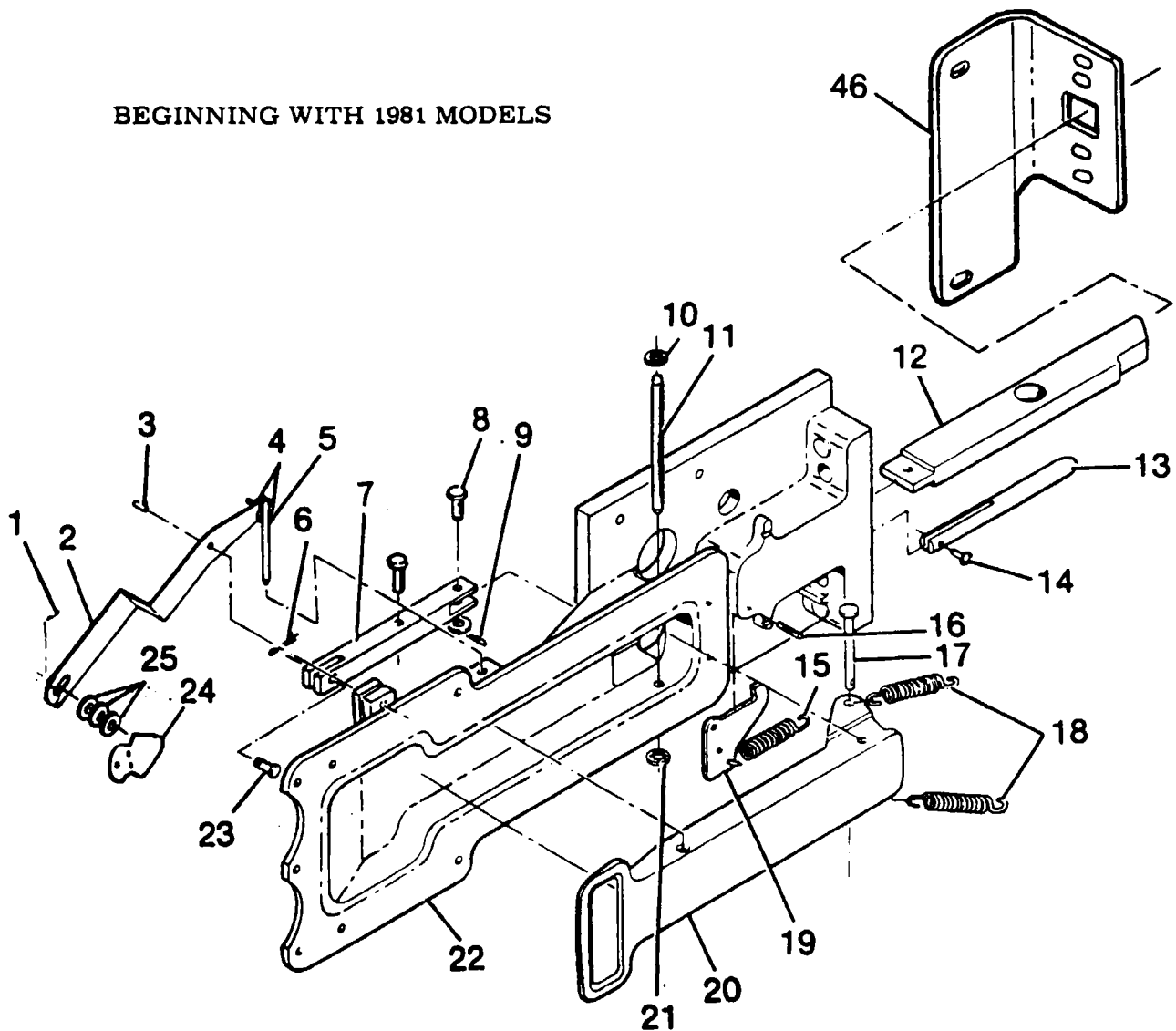


- 29. Pin
- 32. Cable Assembly
- 43. Clamp
- 44. Push Rod Assembly
- 55. Inside Handle
- 56. Arm Rest
- 57. Support
- 58. Shaft Assembly
- 59. Plate Assembly
- 60. Door Latch Assembly
- 61. Shim
- 62. Escutcheon

Figure 3-5. Cabin Door Latch Installation (Sheet 1 of 3)

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BEGINNING WITH 1981 MODELS



- | | |
|-----------------|-------------------------|
| 1. Cotter Pin | 14. Rivet |
| 2. Locking Arm | 15. Spring |
| 3. Pin | 16. Pin |
| 4. Washer | 17. Pin |
| 5. Pin | 18. Spring |
| 6. Cotter Pin | 19. Catch |
| 7. Pull Bar | 20. Outside Handle |
| 8. Pin | 21. Lock Washer |
| 9. Cotter Pin | 22. Latch Base Assembly |
| 10. Lock Washer | 23. Pin |
| 11. Pin | 24. Cam Assembly |
| 12. Bolt | 25. Washers |
| 13. Push Rod | 46. Latch Cover |

Figure 3-5. Cabin Door Latch Installation (Sheet 2 of 3)

MODEL R182 AND TR182 SERVICE MANUAL

- | | | |
|------------------------------|-------------------------|-------------------------|
| 24. Cam Assembly | 42. Cover Assembly | 48. #1212150-1 Shim |
| 26. Plug Button | 43. Clamp | 49. Doorpost Jamb |
| 27. Door Structure | 44. Push Rod Assembly | 50. Striker Plate Cover |
| 28. Pin Guide | 45. Base Plate Assembly | 51. Channel |
| 29. Pin | 47. Actuator | 52. Striker Plate |
| 30. 0.875-Inch Access Hole | | 53. #1212147-1 Shim |
| 31. Self-Locking Clip-On Nut | | 54. Channel |
| 32. Cable Assembly | | |
| 33. Clamp | | |
| 34. S1450-2A4-062 Washer | | |
| 35. Screw | | |
| 36. Screw | | |
| 37. Washer | | |
| 38. Nut | | |
| 39. Door Skin | | |
| 40. Casing | | |
| 41. Tumblers | | |

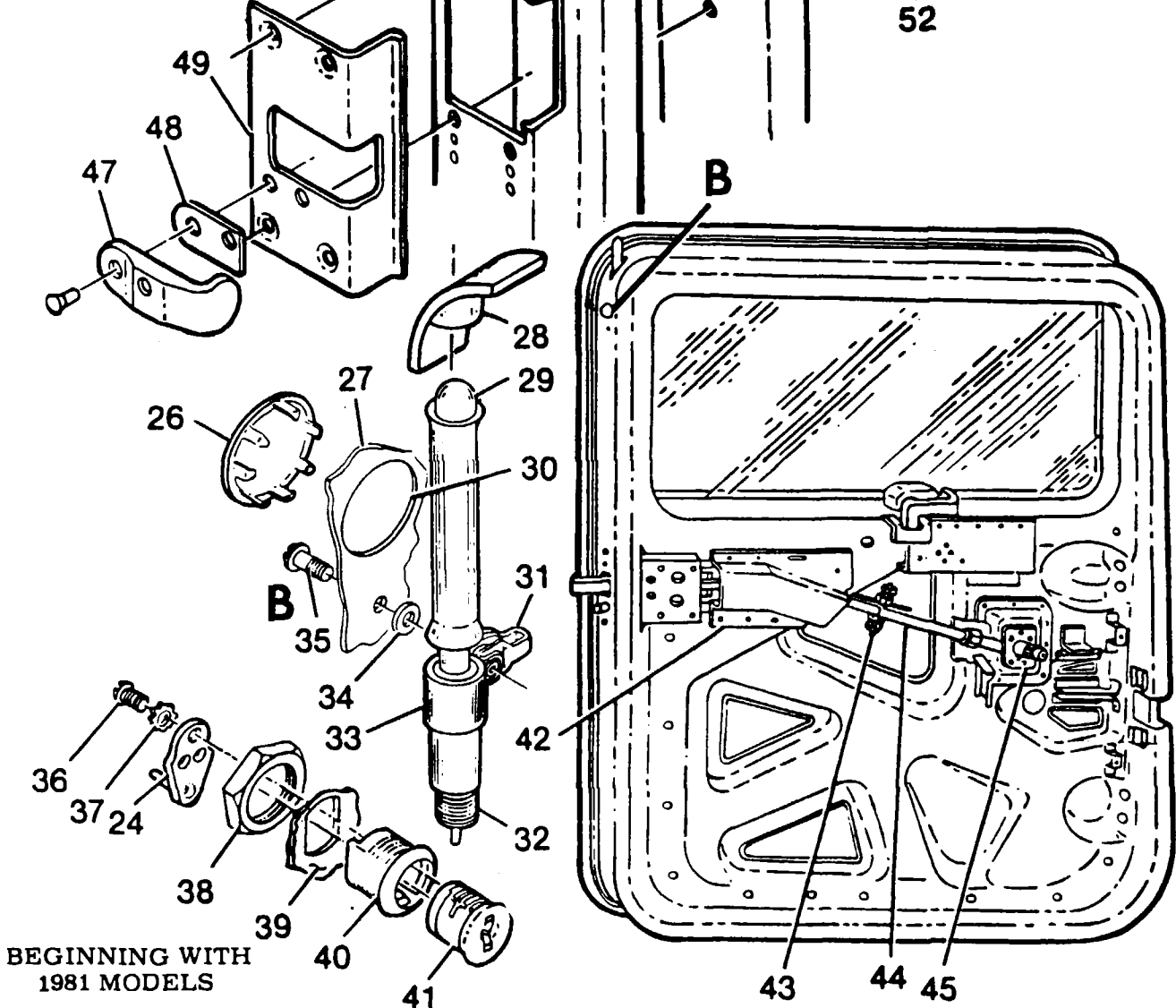


Figure 3-5. Cabin Door Latch Installation (Sheet 3 of 3)

MODEL R182 AND TR182 SERVICE MANUAL

- d. Push latch assembly aft so that bolt (12) and push rod (13) extend through their respective holes.
- e. Trip push rod (13) so that bolt (12) is fully extended and handle (20) is flush.
- f. Secure latch to door pan with four NAS220-5 screws through base assembly (22) and two AN525-10R6 screws through aft flange of door pan.
- g. Drill eleven .128-inch holes to align with latch base (22).

NOTE

Do not oversize holes in the latch base and do not rivet base to skin at this time.

3-33. INSTALLING CABLE ASSEMBLY. (Beginning with 1981 Models.) (See figure 3-5.)

NOTE

Remove cover assembly (42).

- a. On pin end of cable assembly (32), attach clamp (33) and nut (31), one-inch from end of casing, as shown in Detail B.
- b. Insert pin end of cable between door pan and door skin at aft end of door. Push pin end of cable to top of door.
- c. Remove plug button (26) and align pin on cable with pin guide (28), and insert pin through guide. Access is gained through .875-inch hole (30).
- d. Align clamp on cable casing with hole located one-inch below .875-inch hole (30), and install screw.
- e. Check operation of cable. If sluggish operation of cable is encountered, add S-1450-24A-062 washers (34) to clip-on nut (31) to facilitate smoother cable operation.

NOTE

Washers are to be bonded to clip-on nut with 579.6 sealer (Inmont Corp., St. Louis, Missouri), or equivalent.

3-34. RIGGING CABLE ASSEMBLY. (Beginning with 1981 Models.) (See figure 3-5.)

NOTE

Make sure door latch is in OPEN position before proceeding.

- a. Cut casing of cable assembly approximately two inches from clamp (43) on push rod assembly (44).
- b. Insert core of cable through clamp (43).
- c. Pull core through clamp so that pin (29) extends approximately 1/8-inch from door pan contour.
- d. Cut core approximately one-inch forward of push rod clamp (43).
- e. Secure two nuts to push rod clamp.
- f. Operate latch several times to ensure latch works freely. If latch binds up and will not work freely, remove cable core from clamp (43) and operate latch. If latch operates easily without cable attachment, check cable for possible adjustments to facilitate ease of operation.
- g. After cable operates freely, install cover assembly (42) and recheck cable for operation.

MODEL R182 AND TR182 SERVICE MANUAL

- 3-35. RIGGING INSIDE DOOR HANDLE. (Beginning with 1981 Models.) (See figure 3-5.)
- With latch secured to door pan, attach push rod assembly (44) to pull bar (7), and secure with pin (8). Do not install cotter pin (9).
 - Ensure that latch is in CLOSED position.
 - By removing pin (8) that connects push rod to latch base assembly, rotate rod in or out (180°) for adjustment. Adjust rod so that it takes a load of 6 pounds to 12 pounds at the end of the inner handle to move it from closed position to overcenter position.

NOTE

Rod must be attached to latch assembly before rigging can be accomplished.

- For fine adjustment for overcentering latch assembly, proceed as follows:

NOTE

Cabin door latch must be in OPEN position. Latch must operate smoothly and freely.

- Adjust striker plate (52) forward by installing 1212147-1 shims (53) as required so that there is a minimal clearance between bolt (12) and striker (52).

NOTE

This adjustment will ensure that when the door is opened from the outside, the bolt will engage the latch catch, and the exterior handle will stay open until the door is closed again.

NOTE

If cabin door is located too far forward such that the door latch will not operate, this will not allow latch assembly push rod (13) to ride up on actuator (47) and trigger the latch bolt (12), install 1212150-1 shims (48) as required beneath actuator (47), located on cover assembly (50).

- Close the cabin door from inside the aircraft. When latch is overcentered, the exterior handle should pull flush. If it does not pull flush, the connecting push rod from the door latch to the inside handle assembly should be adjusted "out" (lengthened).

NOTE

When making this adjustment on the overcentering of the latch, it may be noticed that there is a sharp, loud canning noise when the inside handle is pushed down. It is preferred that the outside door handle be flush, even if the canning noise is noticeable.

- When adjusting push rod (44), it may need only be adjusted 1/2 turn. To accomplish this, base plate (45) should be removed.

MODEL R182 AND TR182 SERVICE MANUAL

4. To make 1/2 turn adjustment, remove smaller end of push rod (44) and turn it over (180°). Then reinstall base plate assembly.
5. When closing cabin door from the outside, by using a large, sharp force on the outside handle, it is possible to overcenter the inside handle, thus locking one's self out. To prevent this from occurring when adjusting the push rod in step "4", adjust the push rod so there is sufficient force (6 to 12 pounds) against the inside handle to prevent it from overcentering when closing the door from the outside.
6. Do not file, grind or sand any portion of the bolt.
7. Recheck clamps that secure cable. There must not be any slippage between cable casing and clamp.
8. After overcenter adjustment has been made, install cotter pin (9) in clevis pin (8).
- e. Rivet latch base (22) to door skin with MS20426A4-3 rivets.
- f. Attach lock assembly casing (40) to door skin (39) with nut (38) provided.
- g. Install tumblers (40) and attach cam (24) to tumblers with screw and lock washer provided (36) and (37).

NOTE

After installing cam (24), seal over head of screw (36) and washer (37) with RTV-102 (white) or RTV-103 (black) silicone rubber sealant (General Electric, Waterford, N. Y.).

- h. Operate lock several times to assure that all parts function properly.

NOTE

Steps "f" and "h" apply to left-hand doors only.

3-36. BAGGAGE DOOR. (See figure 3-6.)

3-37. REMOVAL AND INSTALLATION.

- a. Disconnect door-stop chain (5).
- b. Remove inside door handle if installed.
- c. Remove screws securing upholstery panel and remove panel.
- d. Remove bolts securing door to hinges or remove clevis pins securing hinges to brackets.
- e. Reverse preceding steps for reinstallation.

3-38. SEATS. (See figure 3-7.)

3-39. DESCRIPTION. The seating arrangements consist of two individually adjustable four-way or six-way front seats for the pilot and copilot, and a split-backed fixed seat for the rear passengers. An auxiliary seat, if installed, is located at the aft cabin bulkhead behind the rear seat.

3-40. REMOVAL AND INSTALLATION.

- a. Remove seat stops from rails. (See figure 3-7, sheet 8.)
- b. Disengage seat belts by slipping buckle ends through seat belt retainer.
- c. With vertical adjust seats installed, remove cabin vent/carpet retainer.
- d. Crank vertical adjust seats to their maximum height.
- e. Slide seats forward to disengage front rollers from seat rails.
- f. Slide seats aft to disengage rear rollers from seat rails.
- g. Lift seat out.
- h. Reverse preceding steps for installation. Ensure all seat stops are properly installed.

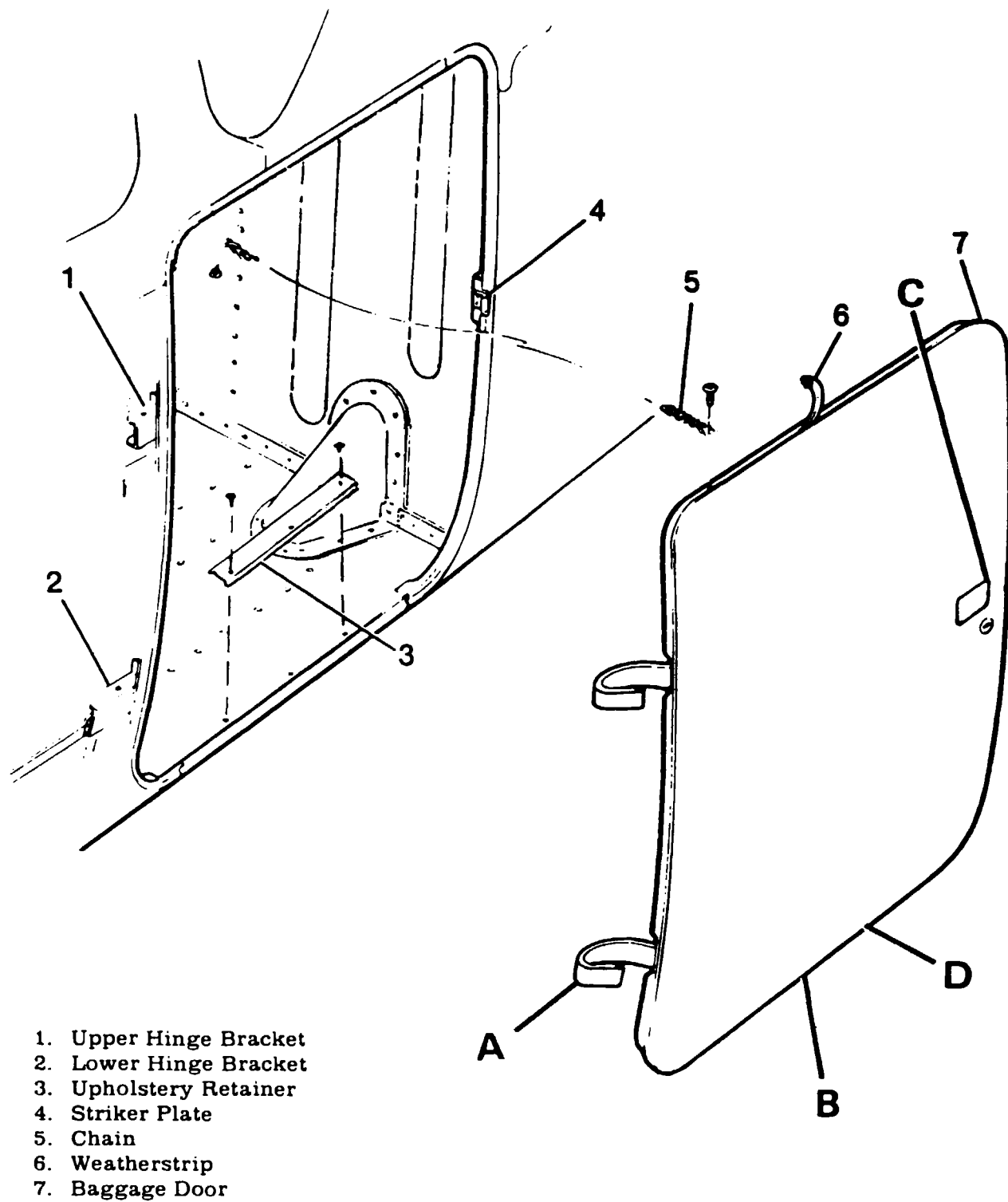
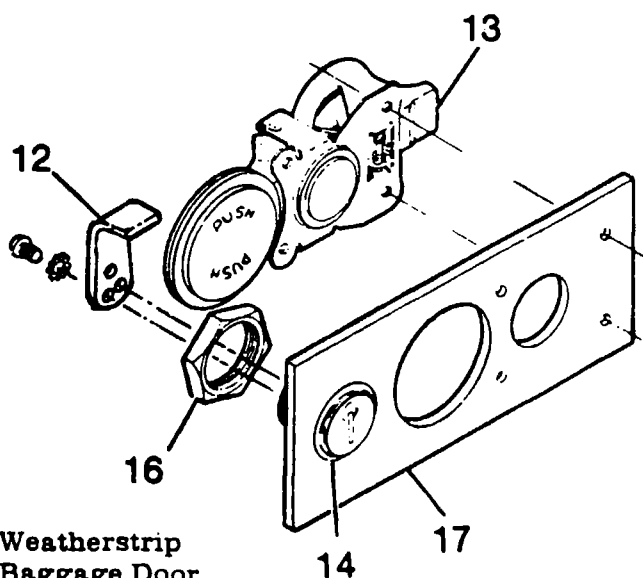
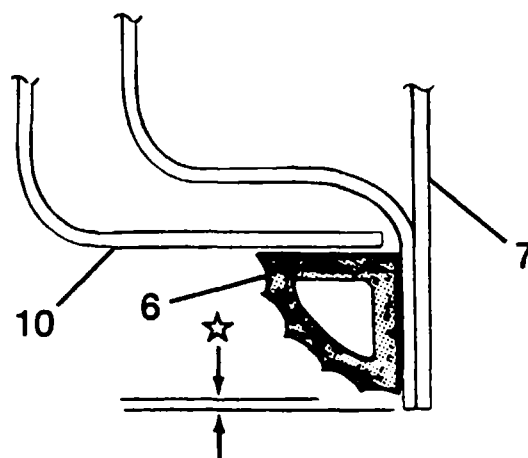
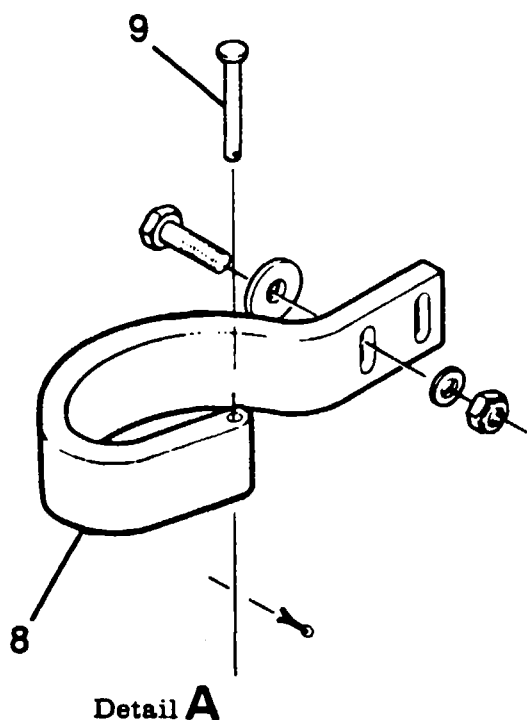


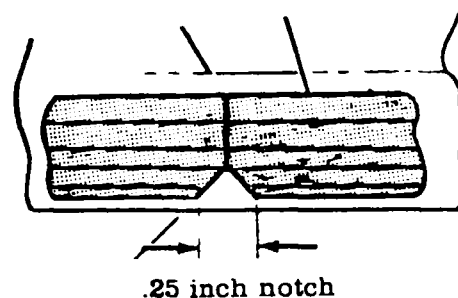
Figure 3-6. Baggage Door Installation (Sheet 1 of 2)

MODEL R182 AND TR182 SERVICE MANUAL

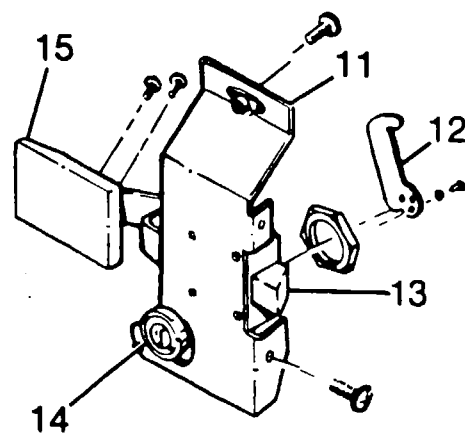


- 6. Weatherstrip
- 7. Baggage Door
- 8. Hinge
- 9. Clevis Pin
- 10. Trim Panel
- 11. Support Assembly
- 12. Cam
- 13. Latch Assembly
- 14. Lock Assembly
- 15. Latch Handle
- 16. Nut
- 17. Mounting Pad

R18201358 & ON
FR18200056 & ON



Detail C



R18200001 THRU R18201357
FR18200001 THRU FR18200055

Figure 3-6. Baggage Door Installation (Sheet 2 of 2)

MODEL R182 AND TR182 SERVICE MANUAL

WARNING

It is extremely important that the pilot's seat stops are installed, since acceleration and deceleration could possibly permit seat to become disengaged from the seat rails and create a hazardous situation, especially during takeoff and landing.

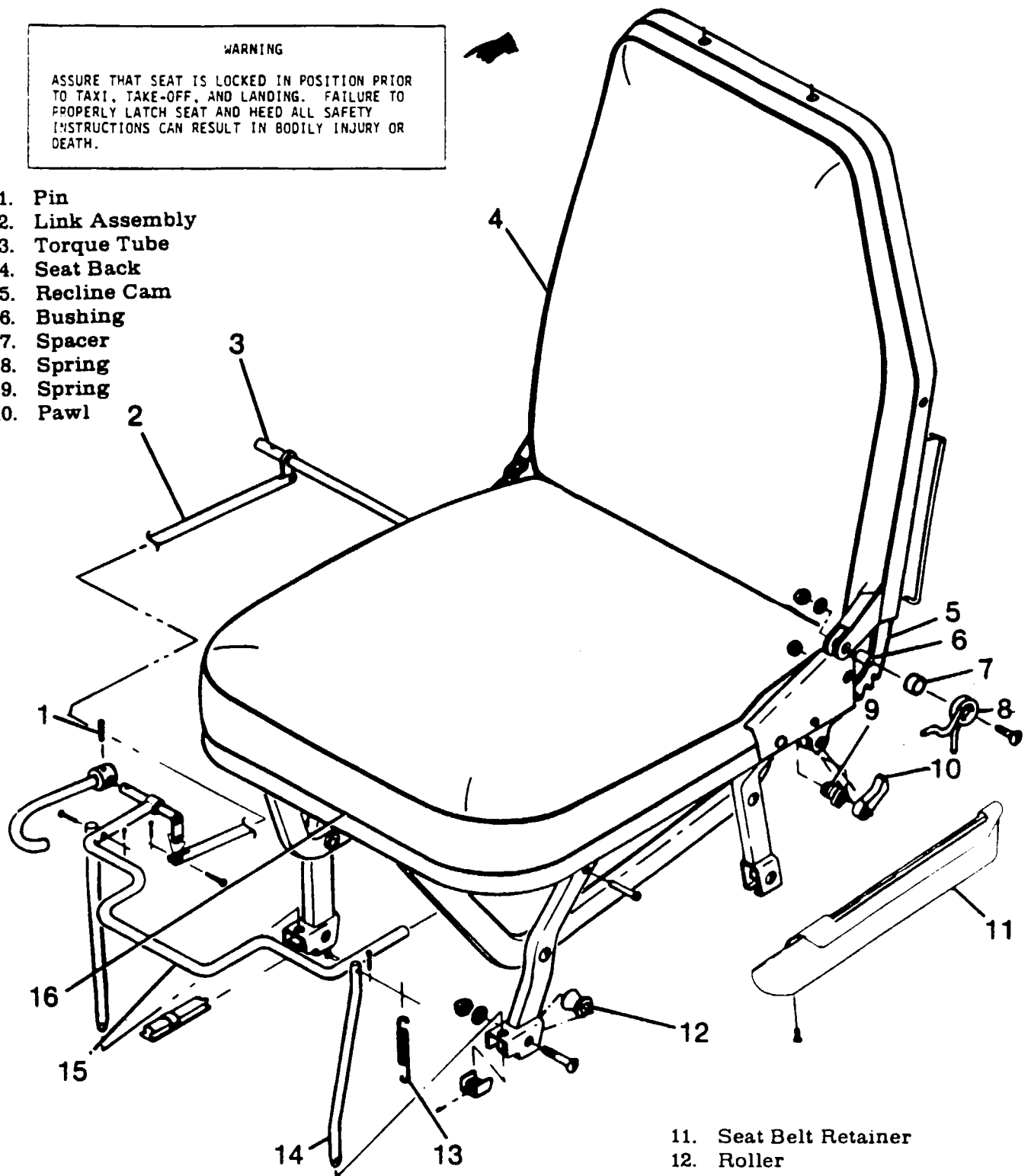
- 3-41. **MECHANICAL LOCK CONTROL ASSEMBLY.** (See figure 3-7, sheets 2 and 5.)
- 3-42. **DESCRIPTION.** A mechanical lock control assembly is installed on pilot and copilot seats and on the rear seat assembly beginning with R18201314 and FR18200064. The front seat lock control is longer than the rear seat lock control. The lock control assembly facilitates seat lock control. The lock control assembly facilitates seat reclining adjustment. When the control is activated, an internal spring is released, enabling the occupant to recline the seat to the desired angle. When the control is released, the internal spring expands, locking the seat in the desired reclined position. When the control is reactivated, the seat returns to the original vertical position.
- 3-43. **ADJUSTMENT.** (See figure 3-7, sheet 2 and 5.) Rotate adjusting nut (2) to adjust control wire (4) output stroke after seat is installed.
- 3-44. **REAR PASSENGERS' SEAT.**
- 3-45. **DESCRIPTION.** The rear passengers' seat consists of a fixed, one-piece seat bottom with infinitely adjustable seat backs.
- 3-46. **REMOVAL AND INSTALLATION.**
 - a. Remove bolts securing seat to cabin structure.
 - b. Lift seat out.
 - c. Reverse preceding steps for installation.
- 3-47. **AUXILIARY SEAT.** (See figure 3-7, sheet 7.)
- 3-48. **DESCRIPTION.** The auxiliary seat consists of a fixed, one-piece seat bottom and a fixed, one-piece seat back. The seat is secured to brackets mounted in the floorboard.
- 3-49. **CAM REPLACEMENT.** Be certain that replacement part conforms to dimensions shown in figure 3-8 before installing. Cam replacement consists of the following procedures:
 - a. Remove seat from aircraft.
 - b. Remove plastic upholstery panels from aft side of seat back, loosen upholstery retaining rings and material as necessary to expose rivets retaining old cam assembly.
 - c. Drill out existing rivets, and insert new cam assembly. Position seat back so pawl engages first cam slot as illustrated.
 - d. Position cam so each slot bottom aligns with the 2.50" radius as illustrated.
 - e. Clamp securely in this position and check travel of cam. Pawl must contact bottom of each cam slot. Using existing holes in seat frame, drill through new cam and secure with MS20470AD6 rivets.
 - f. Reinstall upholstery, upholstery panels, and seat.
- 3-50. **REPAIR.** Replacement of defective parts is recommended in repair of seats. However, a cracked framework may be welded, provided the crack is not in an area of stress concentration (close to a hinge or bearing point). The square-type framework is 6061 aluminum, heat-

MODEL R182 AND TR182 SERVICE MANUAL

WARNING

ASSURE THAT SEAT IS LOCKED IN POSITION PRIOR TO TAXI, TAKE-OFF, AND LANDING. FAILURE TO PROPERLY LATCH SEAT AND HEED ALL SAFETY INSTRUCTIONS CAN RESULT IN BODILY INJURY OR DEATH.

1. Pin
2. Link Assembly
3. Torque Tube
4. Seat Back
5. Recline Cam
6. Bushing
7. Spacer
8. Spring
9. Spring
10. Pawl



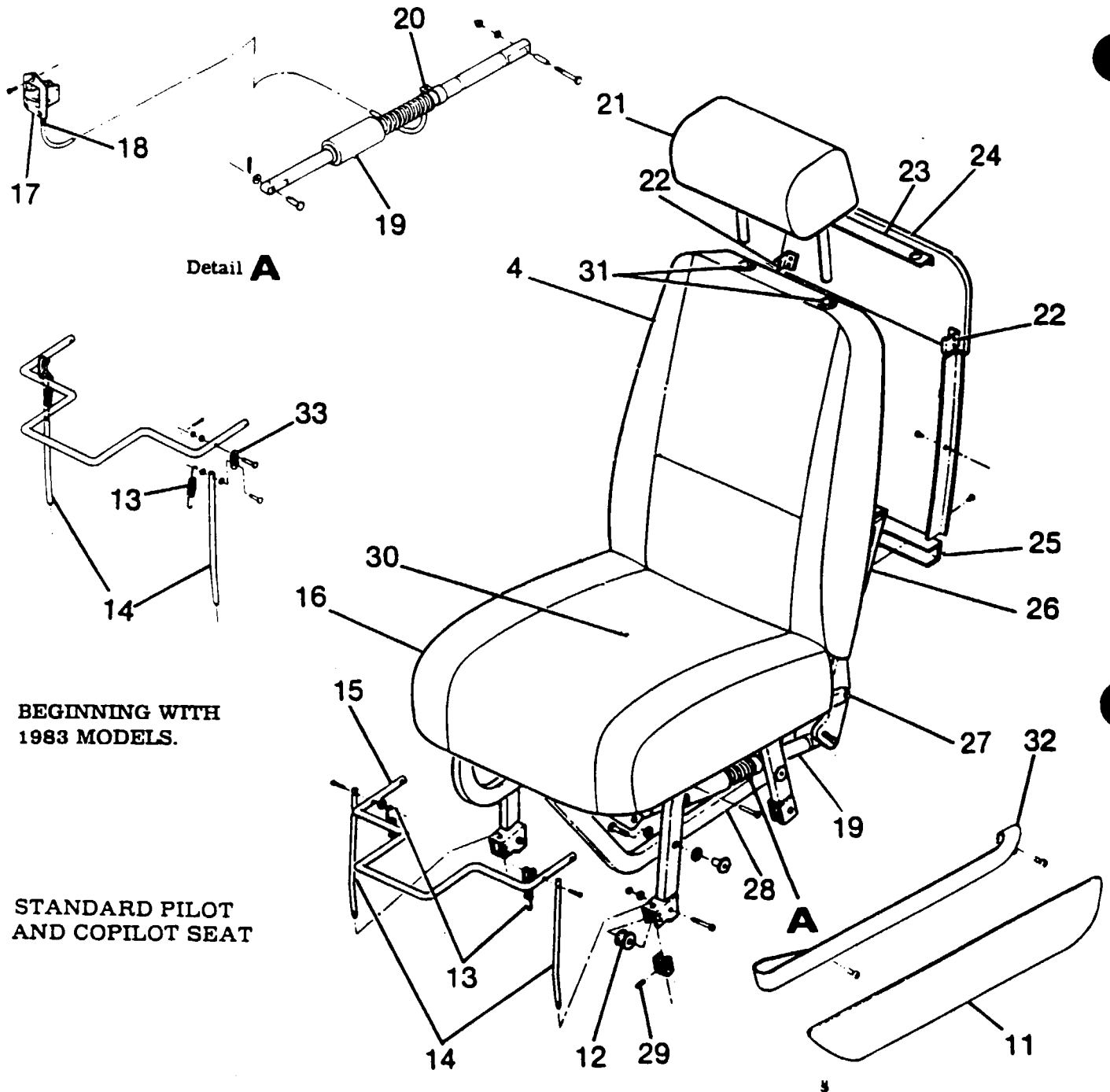
STANDARD PILOT AND COPILOT SEAT

R18200001 thru R18201313
FR1820001 thru FR18200045
TR18200534 thru TR18201313

11. Seat Belt Retainer
12. Roller
13. Spring
14. Adjustment Pin
15. Fore/Aft Adjustment Handle
16. Seat Bottom

Figure 3-7. Seat Installation (Sheet 1 of 8)

MODEL R182 AND TR182 SERVICE MANUAL

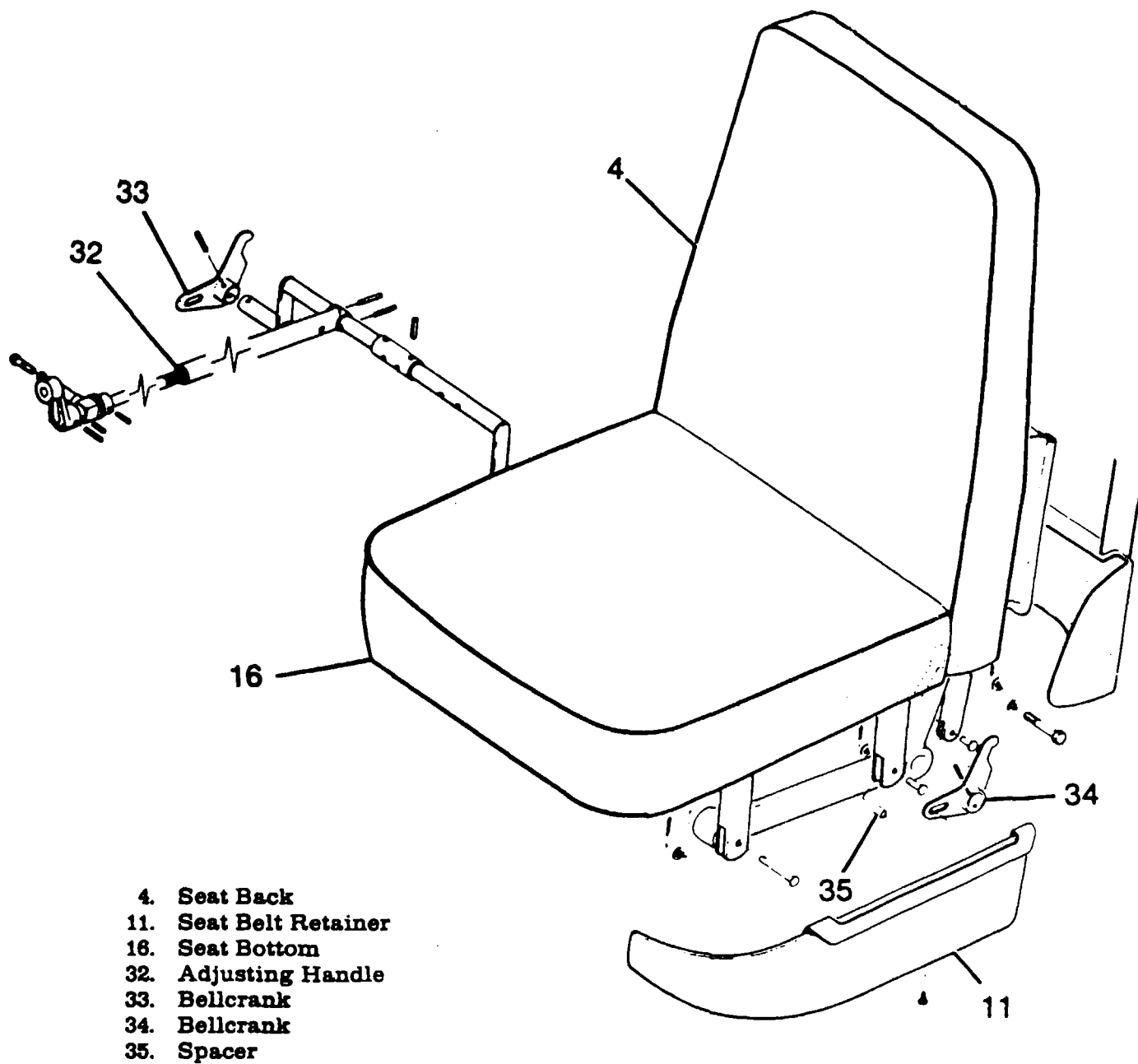


- 4. Seat Back
- 11. Seat Belt Retainer Trim
- 12. Roller
- 13. Spring
- 14. Adjustment Pin
- 15. Fore-and-Aft Adjustment Handle
- 16. Seat Bottom
- 17. Mechanical Control
- 18. Adjusting Nut
- 19. Mechanical Lock
- 20. Control Wire

- 21. Head Rest
- 22. Bracket
- 23. Bracket
- 24. Former
- 25. Seat Back Trim
- 26. Seat Back Pocket

- 27. Bolt
- 28. Seat Frame
- 29. Roll Pin
- 30. Cushion
- 31. Grommet
- 32. Seat Belt Retainer
- 33. Link

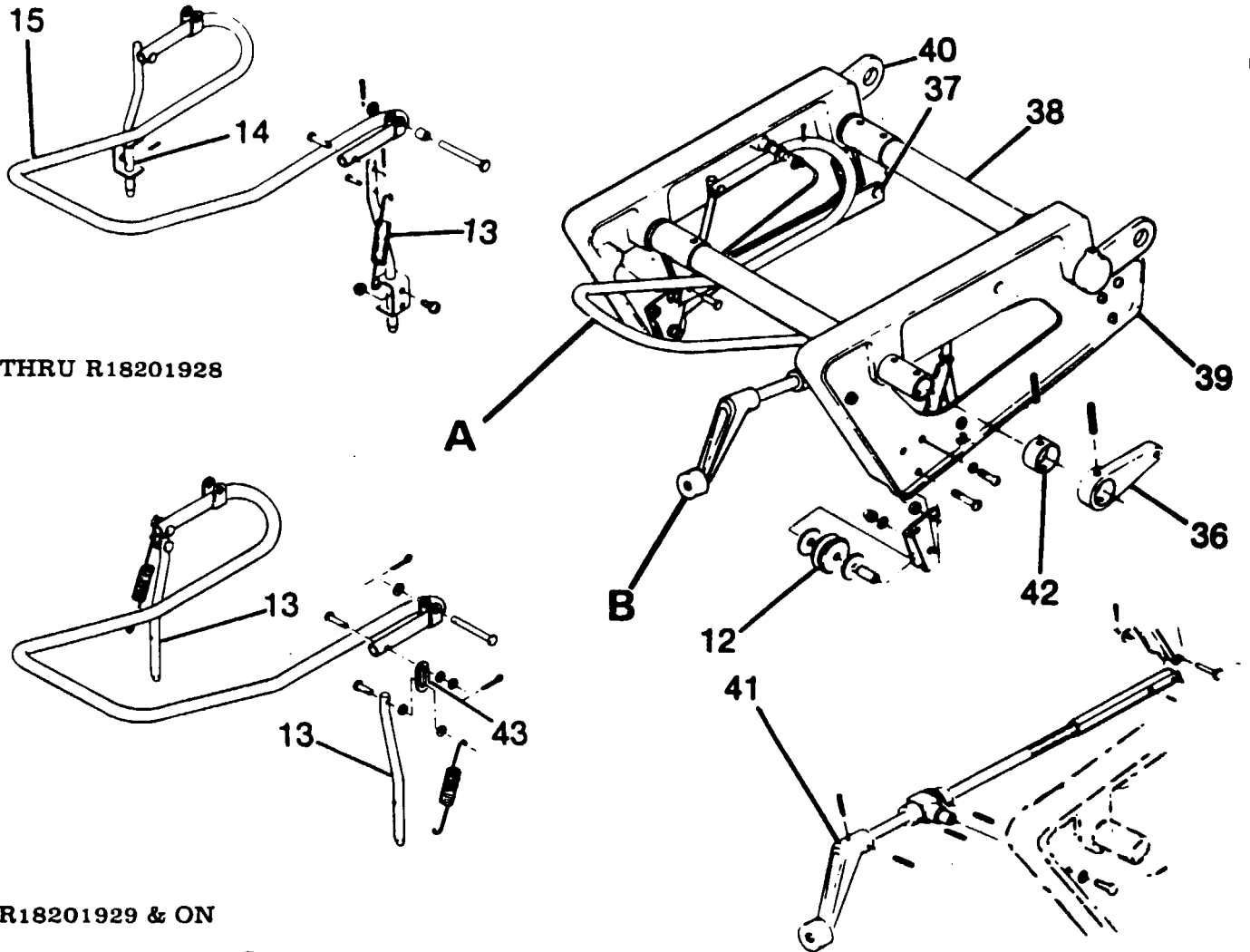
Figure 3-7. Seat Installation (Sheet 2 of 8)



INFINITE ADJUST FRONT SEAT

Figure 3-7. Seat Installation (Sheet 3 of 8)

MODEL R182 AND TR182 SERVICE MANUAL



THRU R18201928

R18201929 & ON

Detail **A**

Detail **B**

- 12. Roller
- 13. Spring
- 14. Adjustment Pin
- 15. Fore-and-Aft Adjustment Handle
- 36. Bellcrank
- 37. Channel
- 38. Torque Tube
- 39. Seat Structure
- 40. Bellcrank
- 41. Vertical Adjustment Handle
- 42. Collar
- 43. Link

NOTE

Beginning with TR182, R18200889 and FR18200035, bellcrank (36) with extended boss is used. Collar (42) is deleted (typical 2 places).

INFINITE ADJUST FRONT SEAT DETAILS

Figure 3-7. Seat Installation (Sheet 4 of 8)

MODEL R182 AND TR182 SERVICE MANUAL

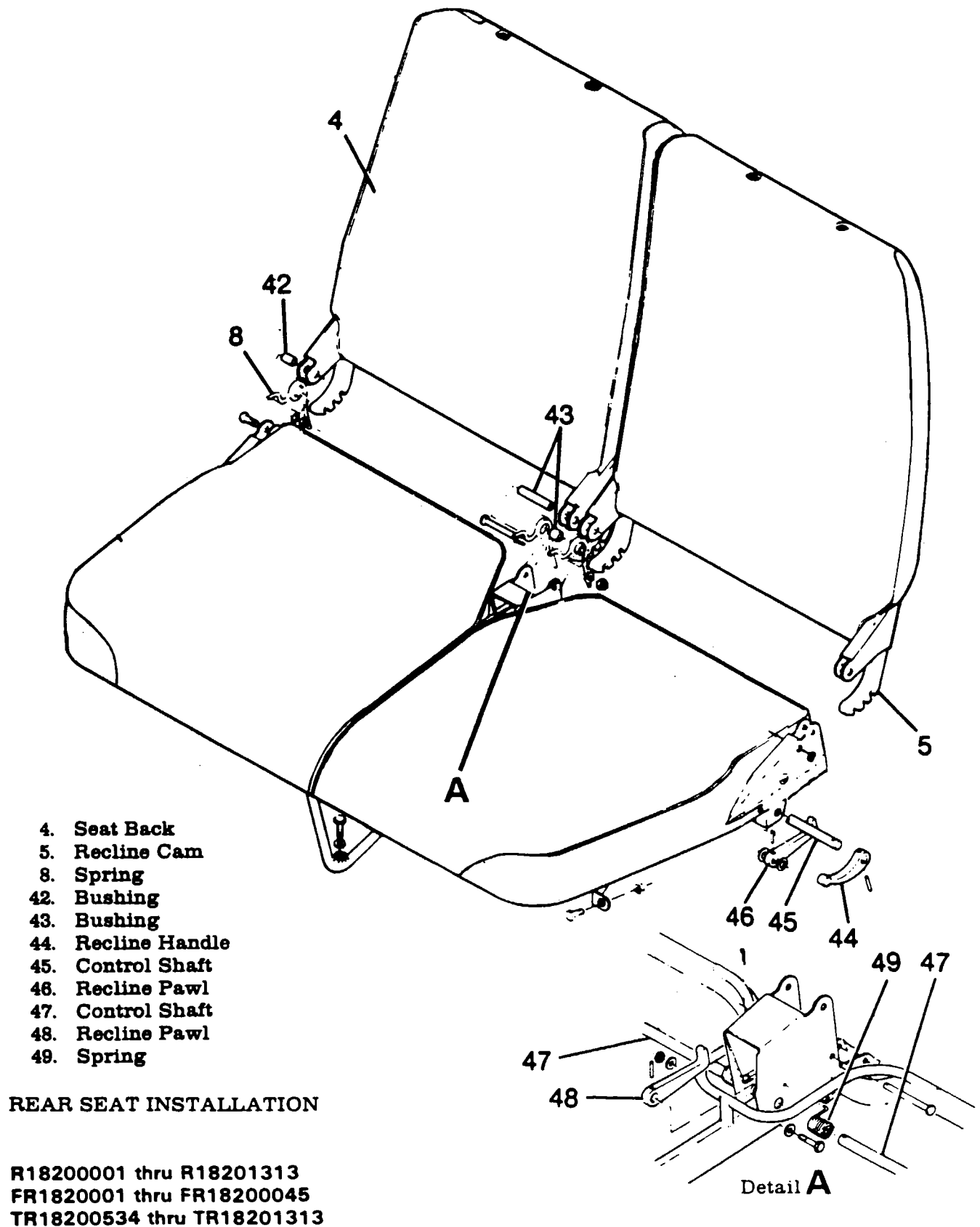
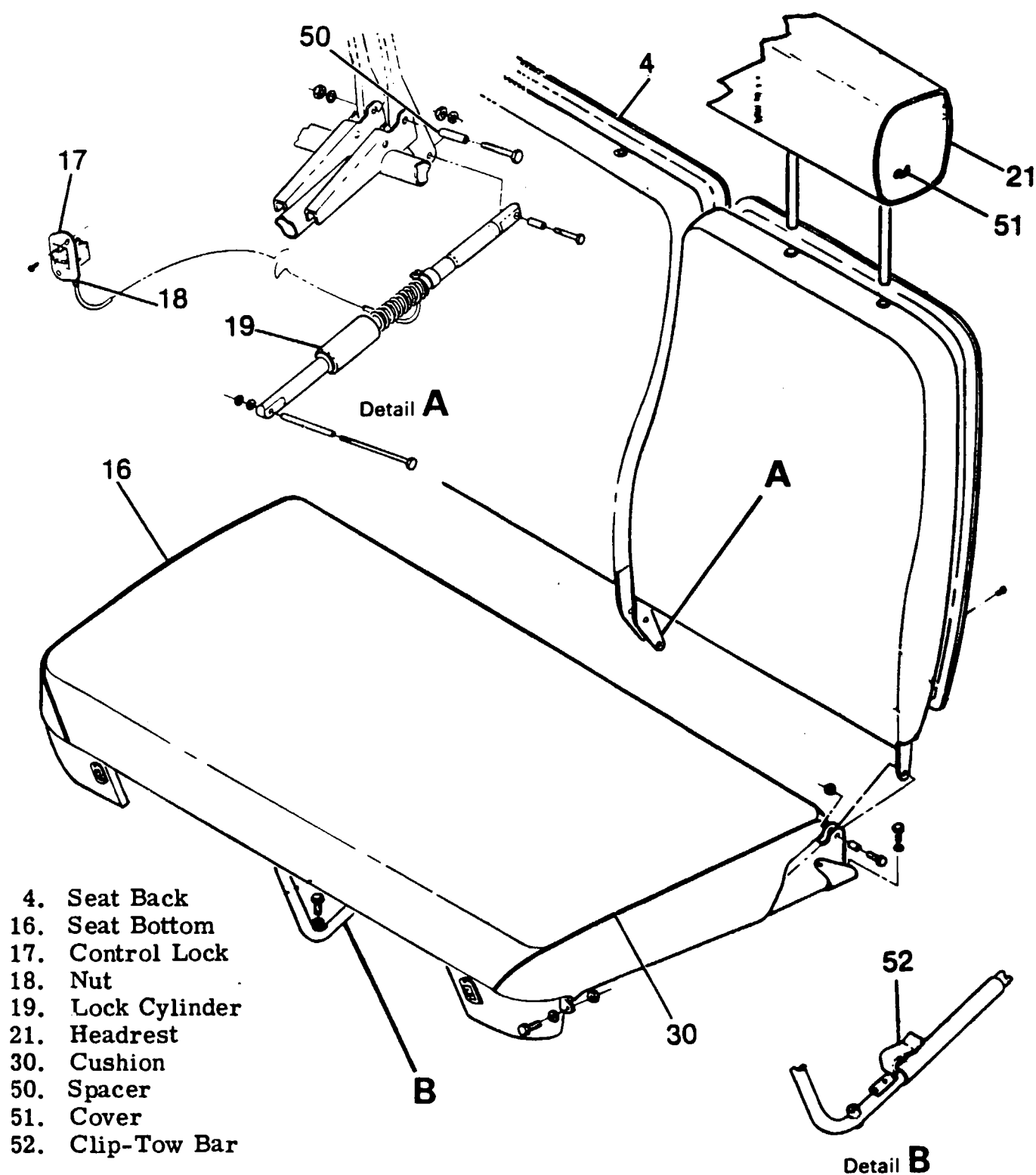


Figure 3-7. Seat Installation (Sheet 5 of 8)

MODEL R182 AND TR182 SERVICE MANUAL

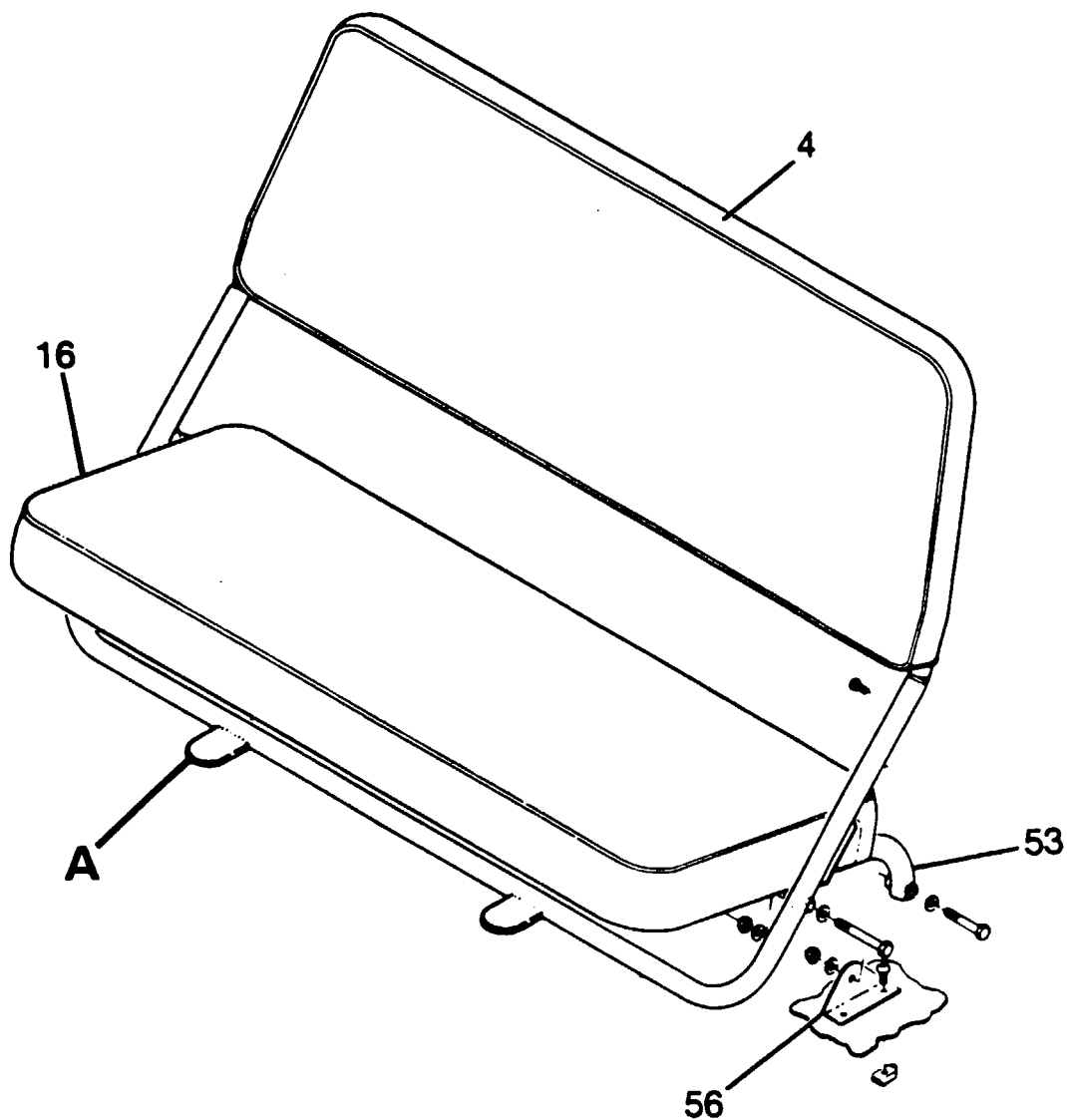


REAR SEAT INSTALLATION

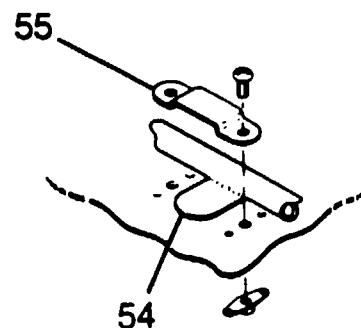
BEGINNING WITH 1982 MODELS

BEGINNING WITH R18201314
& FR18200046

Figure 3-7. Seat Installation (Sheet 6 of 8)



- 4. Seat Back
- 16. Seat Bottom
- 53. Seat Bottom Structure
- 54. Tab
- 55. Retainer
- 56. Bracket



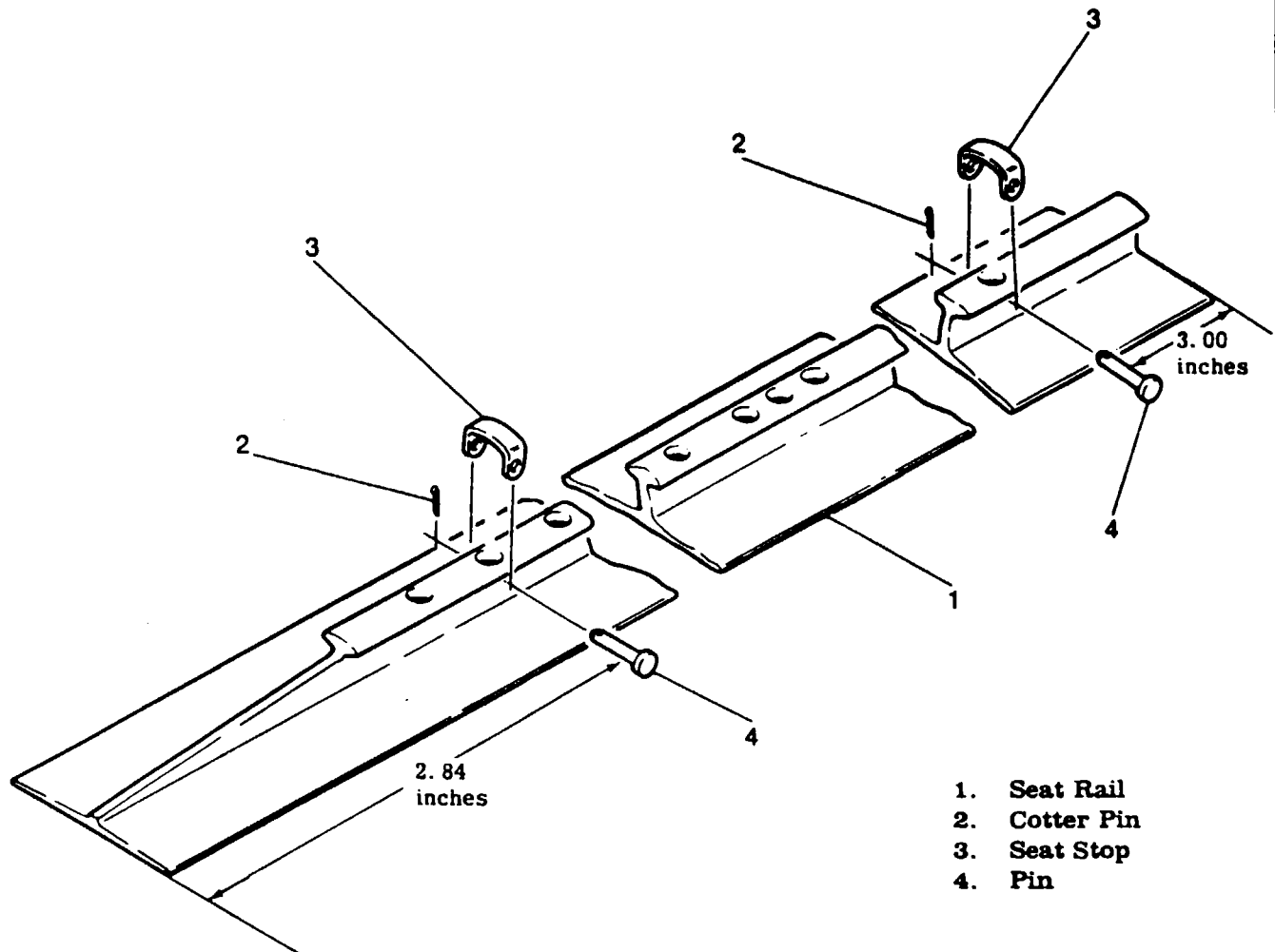
AUXILIARY SEAT INSTALLATION

Detail **A**

Figure 3-7. Seat Installation (Sheet 7 of 8)

SEAT STOP INSTALLATION FOR MODEL R182 & TR182

NOTE
INSTALL SEAT STOPS IN FORWARD AND
AFT HOLES OF INBOARD SEAT RAILS



WARNING

IT IS EXTREMELY IMPORTANT THAT PILOT'S SEAT STOPS ARE INSTALLED, SINCE ACCELERATION, AND DECELERATION COULD POSSIBLY PERMIT SEAT TO BECOME DISENGAGED FROM SEAT RAILS AND CREATE A HAZARDOUS SITUATION, ESPECIALLY DURING TAKEOFF AND LANDING.

Figure 3-7. Seat Installation (Sheet 8 of 8)

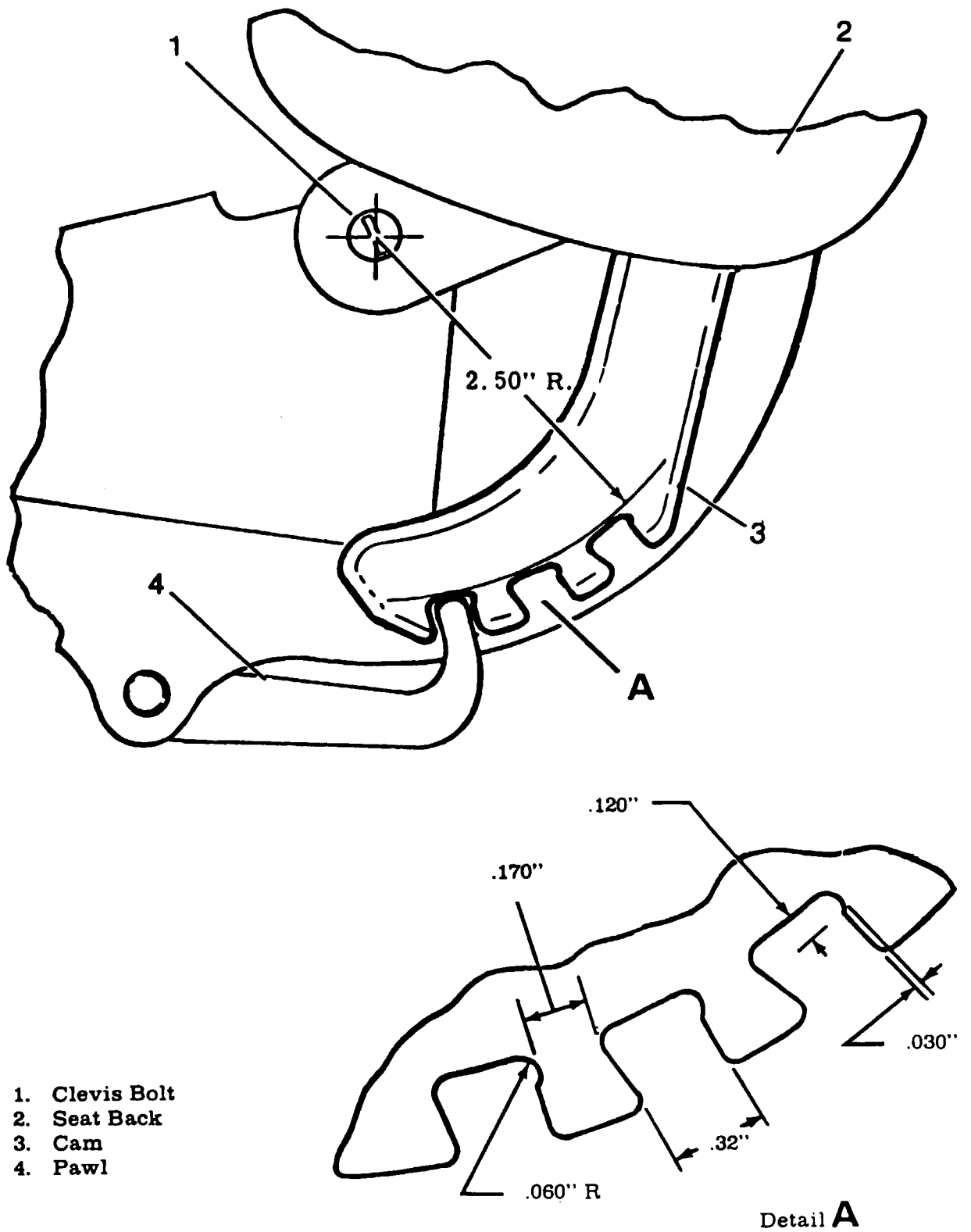


Figure 3-8. Seat Back Cam Replacement

MODEL R182 AND TR182 SERVICE MANUAL

treated to a T-6 condition. Use a heliarc weld on these seats, as torch welds will destroy heat-treatment of frame structure. Figure 3-8 outlines instructions for replacing defective cams on reclining seat backs.

- 3-51. **CABIN UPHOLSTERY.** Due to the wide selection of fabrics, styles and colors, it is impossible to depict each particular type of upholstery. The following paragraphs describe general procedures which will serve as a guide in removal and replacement of upholstery. Major work if possible, should be done by an experienced mechanic. If the work must be done by a mechanic unfamiliar with upholstery practices, the mechanic should make careful notes during removal of each item to facilitate replacement later.

NOTE

Repair kits are available for the repair of cracks in ABS, PBC, PVCP, graphite and fiberglass material. (Cessna Supply Division, P.O. Box 949, Wichita, KS 67201, 316/685-9111, Telex 417-489.)

- 3-52. **MATERIALS AND TOOLS.** Materials and tools will vary with the job. Scissors for trimming upholstery to size and a dull-bladed putty knife for wedging material beneath retainer strips are the only tools required for most trim work. Use industrial rubber cement to hold soundproofing mats and fabric edges in place. Refer to Section 18 for thermo-plastic repairs.
- 3-53. **SOUNDPROOFING.** The aircraft is insulated with spun glass mat-type insulation and a sound proofing compound applied to inner surfaces of skin in most areas of cabin and baggage compartment. All soundproofing material should be replaced in its original position any time it is removed.
- 3-54. **CABIN HEADLINER.** (See figure 3-9.)

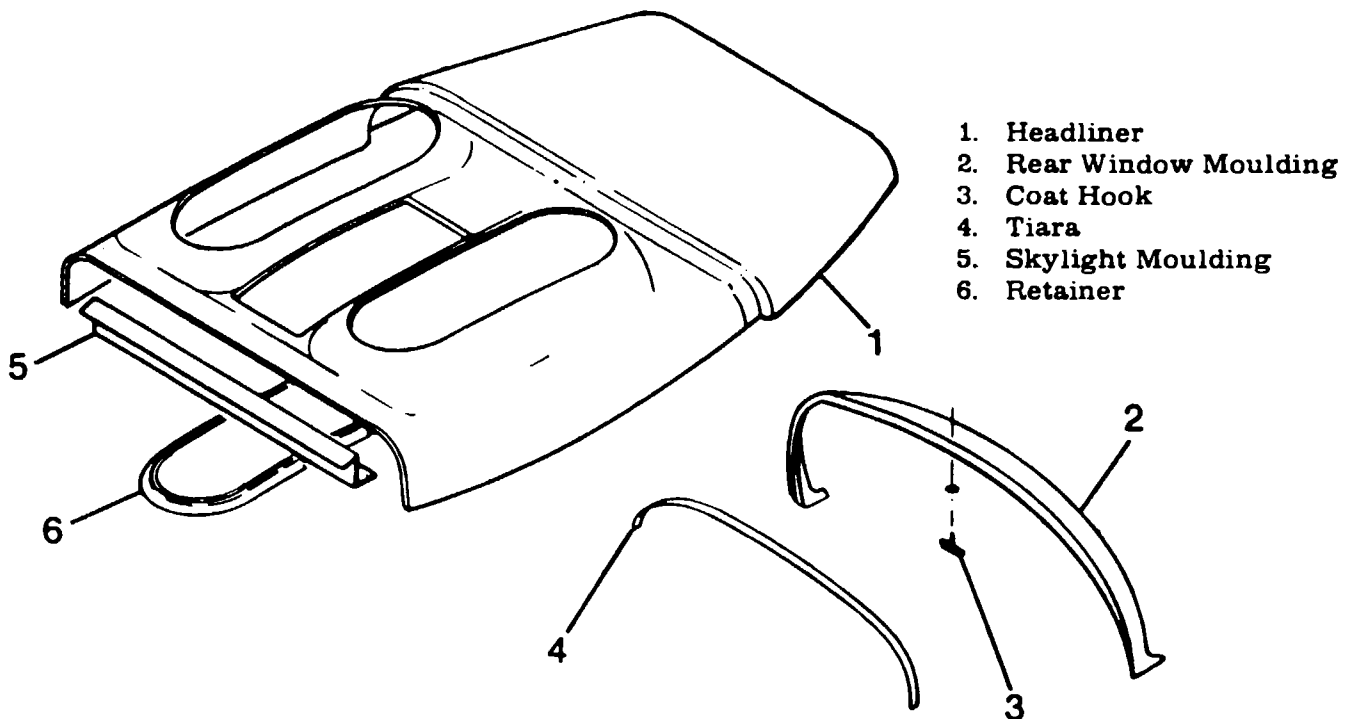


Figure 3-9. Cabin Headliner Installation

MODEL R182 AND TR182 SERVICE MANUAL

3-55. REMOVAL AND INSTALLATION.

- a. Remove sun visors, all inside finish strips and plates, overhead console, upper doorpost shields and any other visible retainers securing headliner.
- b. Remove molding from fixed windows.
- c. Remove screws securing headliner and carefully take down headliner.
- d. Remove spun glass soundproofing panels above headliner.

NOTE

The lightweight soundproofing panels are held in place with industrial rubber cement.

- e. Reverse preceding steps for reinstallation. Before installation, check all items concealed by headliner for security. Use wide cloth tape to secure loose wires to fuselage and to seal openings in wing roots.

3-56. **UPHOLSTERY SIDE PANELS.** Removal of upholstery side panels is accomplished by removing seats for access. Remove screws, retaining strips, arm rests and ash trays as required to free panels. Automotive type spring clips attach most door panels. A dull putty knife makes an excellent tool for prying clips loose. When installing side panels, do not over-tighten screws. Larger screws may be used in enlarged holes as long as area behind hole is checked for electrical wiring, fuel lines and other components which might be damaged by using a longer screw.

3-57. **CARPETING.** Some cabin area and baggage compartment carpeting is held in place by rubber cement, small sheet metal screws and retaining strips, some carpeting is secured by Velcro fasteners for quick-removal and inspection. When fitting a new carpet, use the old one as a pattern for trimming.

3-58. SAFETY PROVISIONS.

3-59. **CARGO TIE-DOWNS.** Cargo tie-down eyebolts are used to retain baggage. Tie-downs are illustrated in figure 3-10. A baggage net can be used in conjunction with the tie-downs, as straps can hold luggage secured in baggage area. The eyebolt and nutplate can be located at various points.

3-60. **SAFETY BELTS.** Safety belts should be replaced if frayed or cut, latches are defective or stitching is broken. Attaching parts should be replaced if worn excessively or defective. The front seat safety belts are attached to brackets bolted to the cabin floor, and the center seat safety belts are attached to the seats themselves. The auxiliary seat is provided with only one safety belt, which is snapped into clips bolted to the aircraft structure. See figure 3-11. A seat belt shortener kit is available for aircraft serials R18200001 thru R18201798. (See SK172-76.)

3-61. **SHOULDER HARNESS.** An individual shoulder harness may be installed for each seat except the auxiliary seat. The pilot and copilot harnesses are bolted to the upper rear doorposts, and the center seat harnesses are bolted to the aft cabin structure. Component parts should be replaced as outlined in paragraph 3-60. An inertia reel type harness may be installed as optional equipment for the pilot and copilot seats. See figure 3-11

3-62. **REAR VIEW MIRROR.** A rear view mirror may be installed on the cowl deck above instrument panel. Figure 3-13 shows details for rear view mirror installation thru serial R18200583.

3-63. **SEAT RAIL INSPECTION.** A special inspection of seat rails should be conducted each 50 hours. See figure 3-14 for inspection procedures.

MODEL R182 AND TR182 SERVICE MANUAL

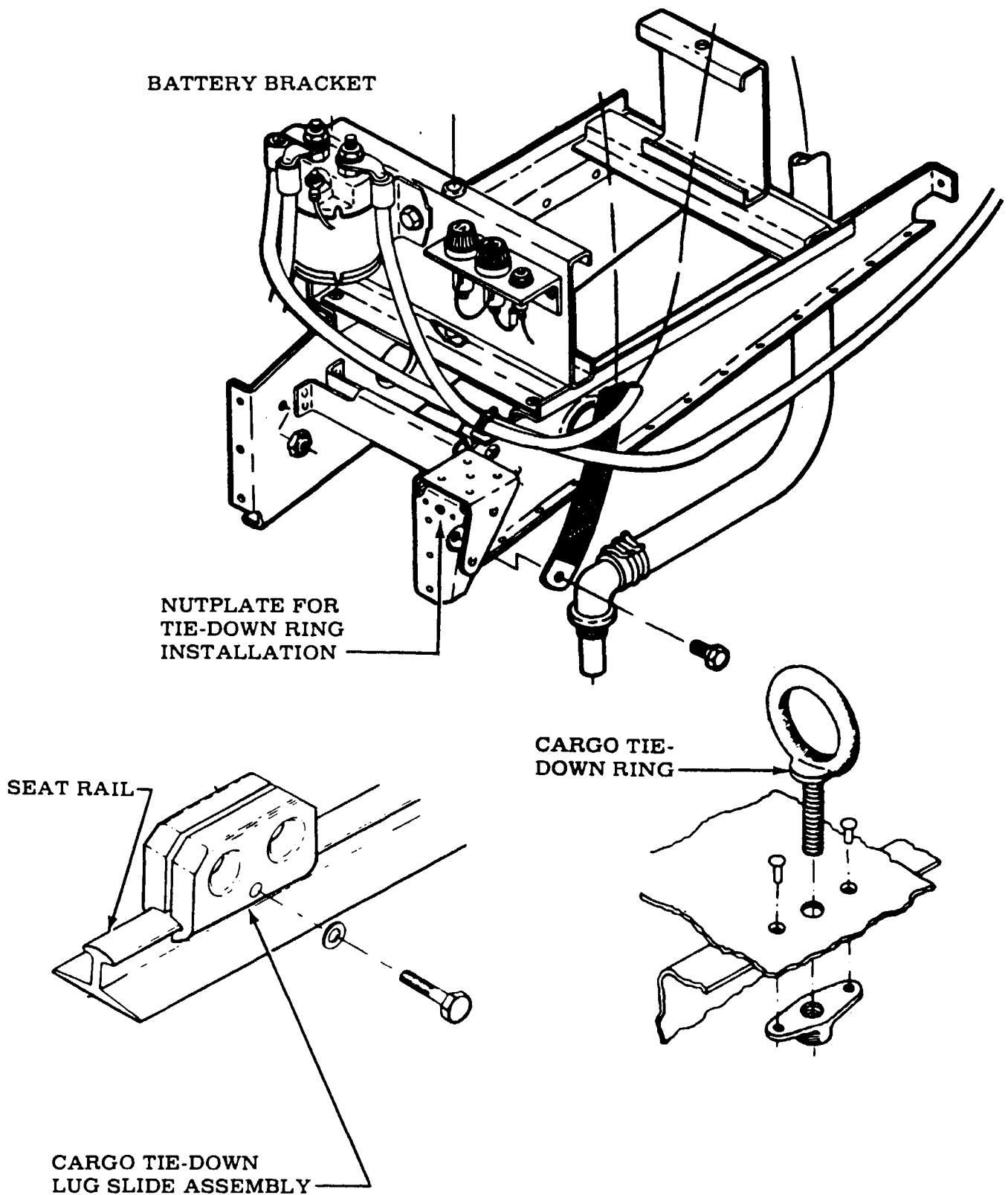
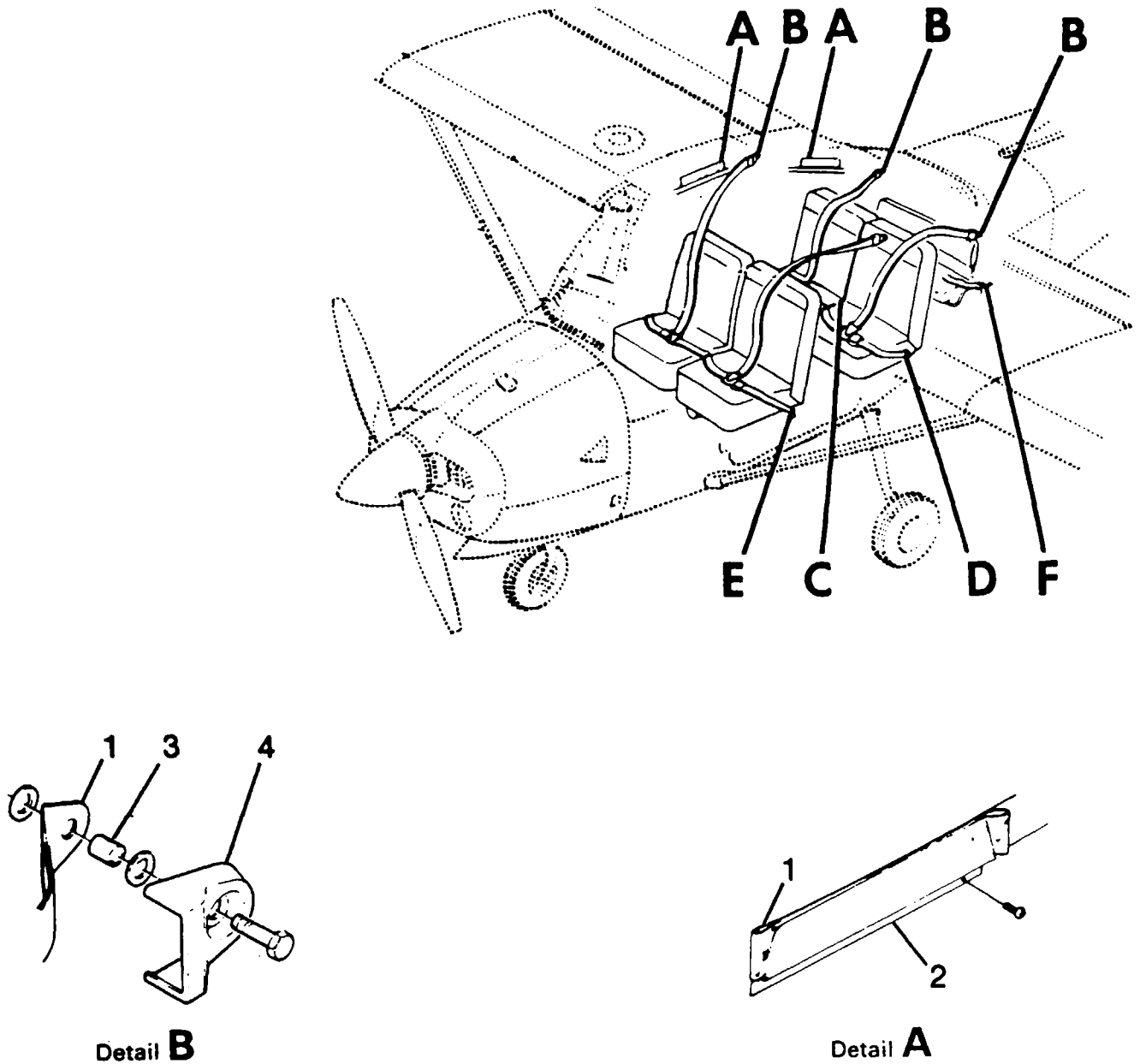


Figure 3-10. Cargo Tie-Downs

MODEL R182 AND TR182 SERVICE MANUAL



1. Shoulder Harness
2. Shoulder Harness Stowage Tray
3. Spacer
4. Shoulder Harness Fitting Cover

Figure 3-11. Seat Belts and Shoulder Harness Installation (Sheet 1 of 4)

MODEL R182 AND TR182 SERVICE MANUAL

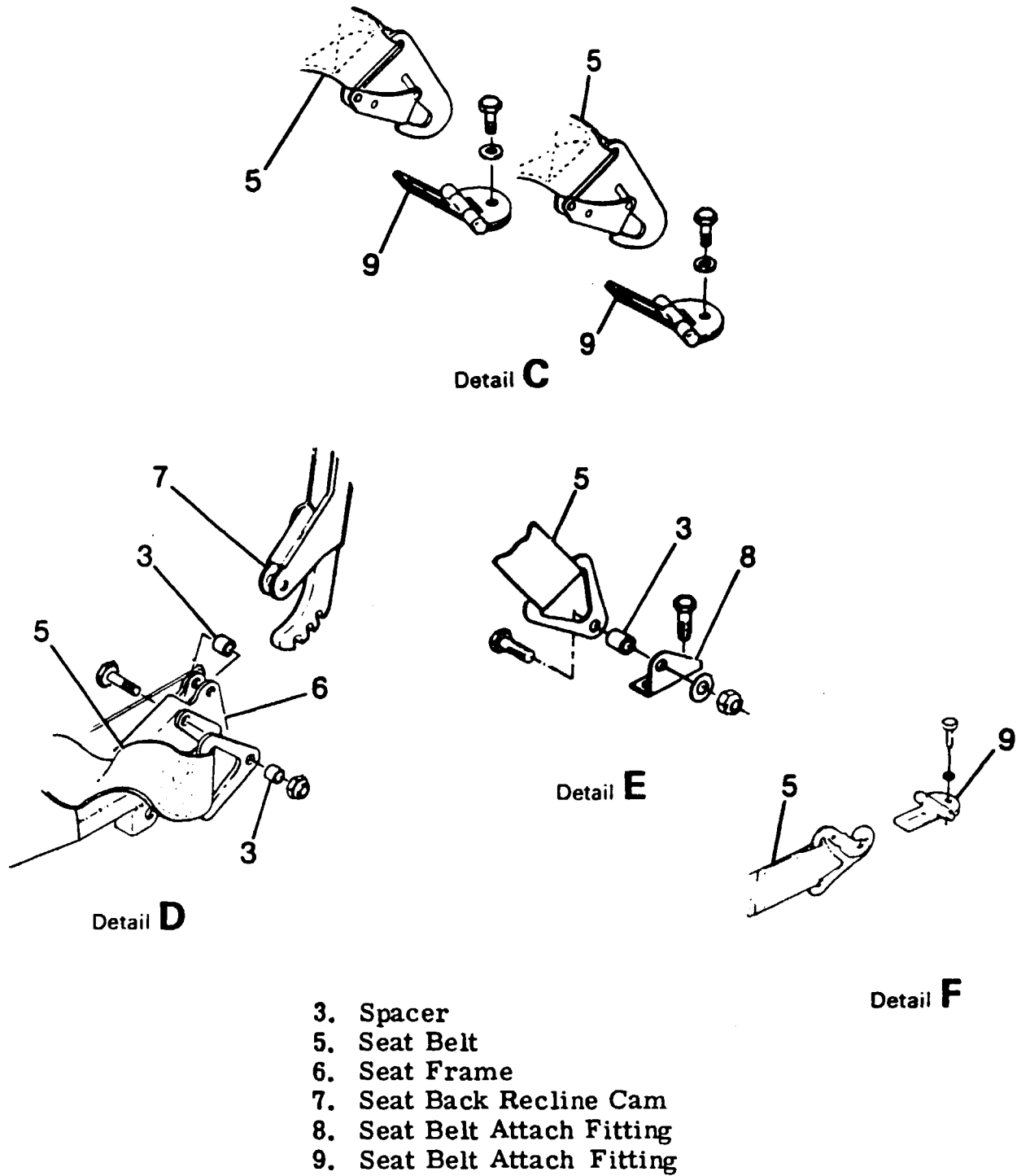


Figure 3-11. Seat Belts and Shoulder Harness Installation (Sheet 2 of 4)

MODEL R182 AND TR182 SERVICE MANUAL

1978 THRU 1982 MODELS

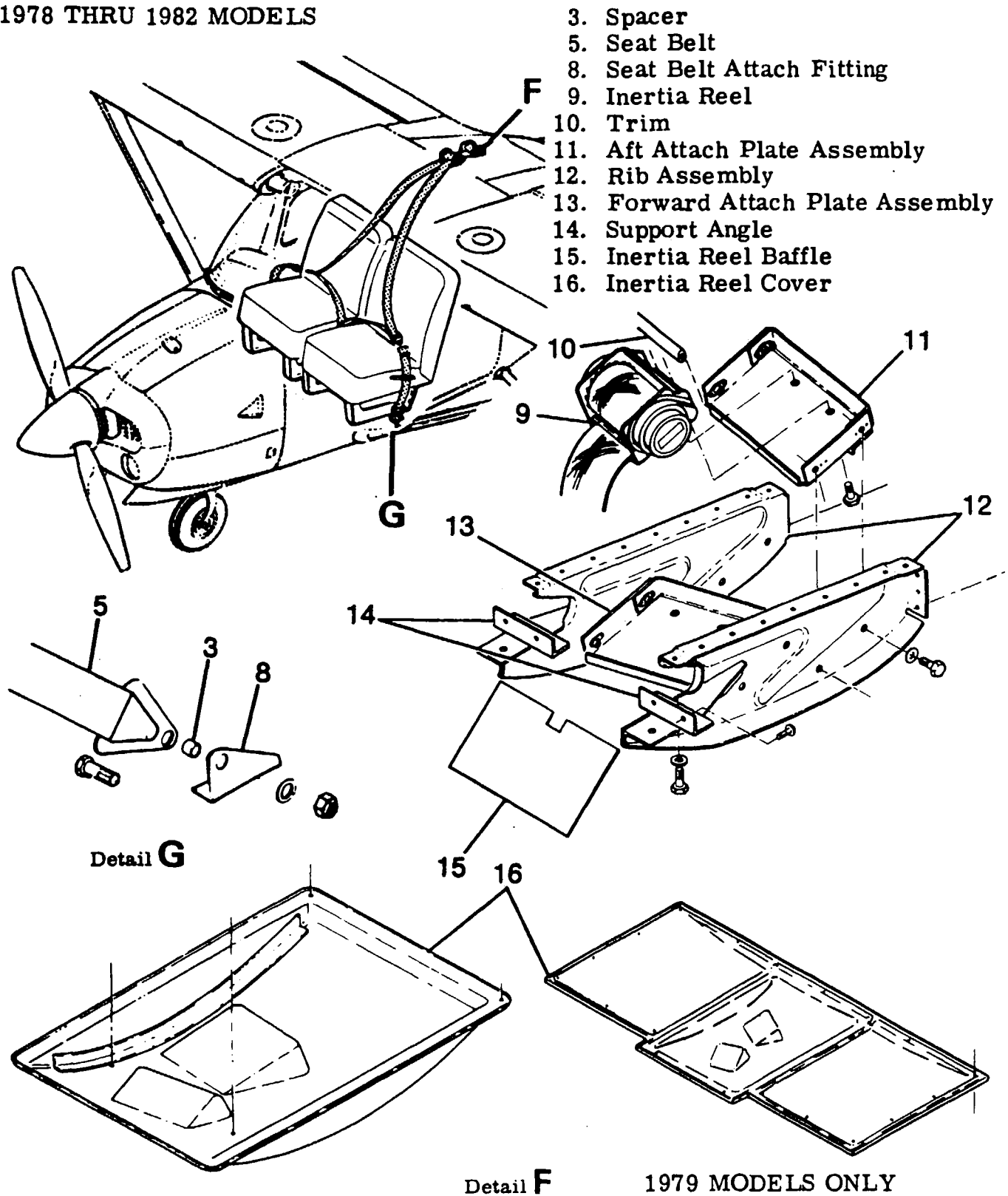
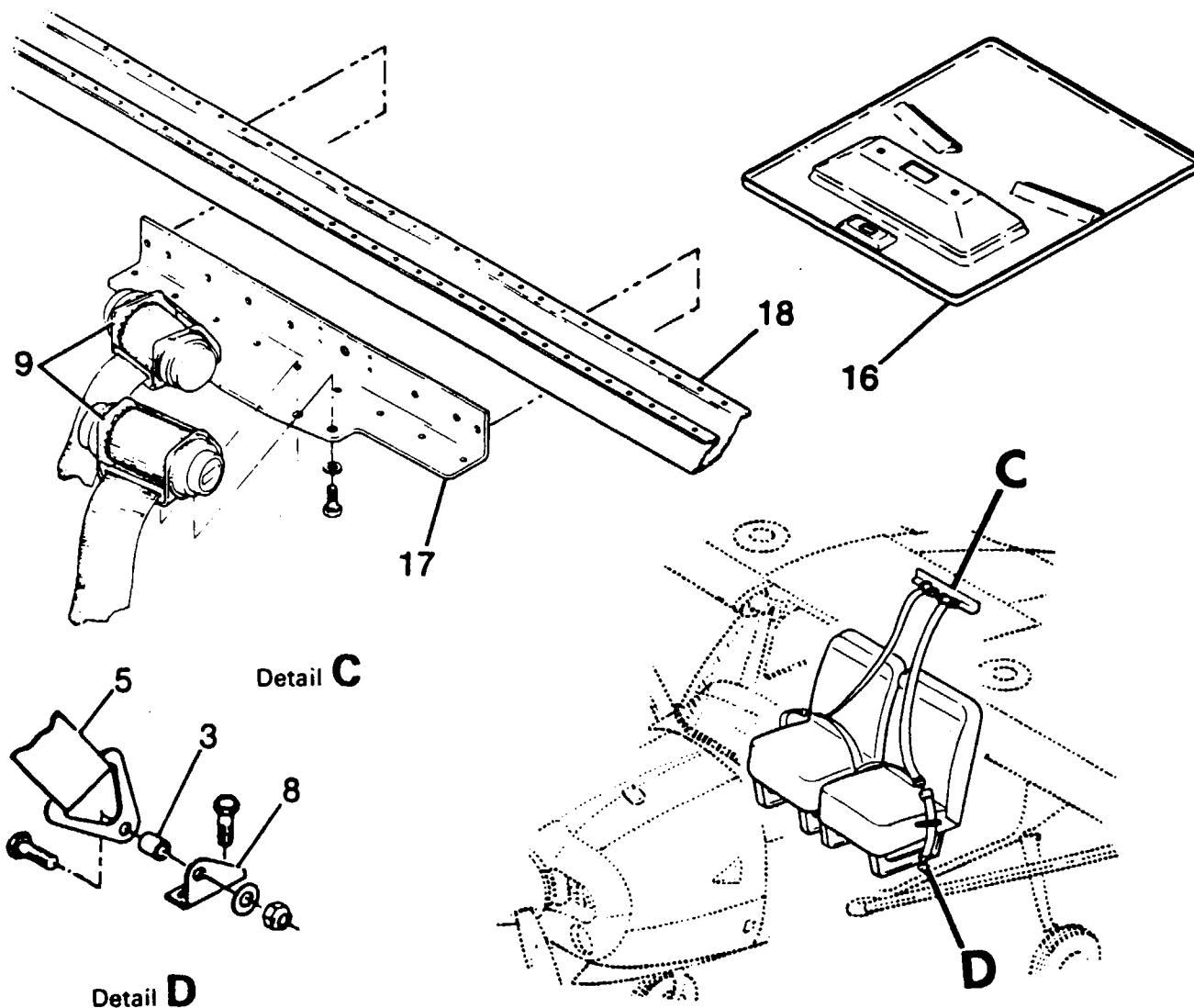


Figure 3-11. Seat Belts and Shoulder Harness Installation (Sheet 3 of 4)

MODEL R182 AND TR182 SERVICE MANUAL

BEGINNING WITH 1983 MODELS



- 3. Spacer
- 5. Seat Belt
- 8. Seat Belt Attach Fitting
- 9. Inertia Reel
- 16. Inertia Reel Cover
- 17. Inertia Reel Support
- 18. Spar

Figure 3-11. Seat Belts and Shoulder Harness Installation (Sheet 4 of 4)

MODEL R182 AND TR182 SERVICE MANUAL

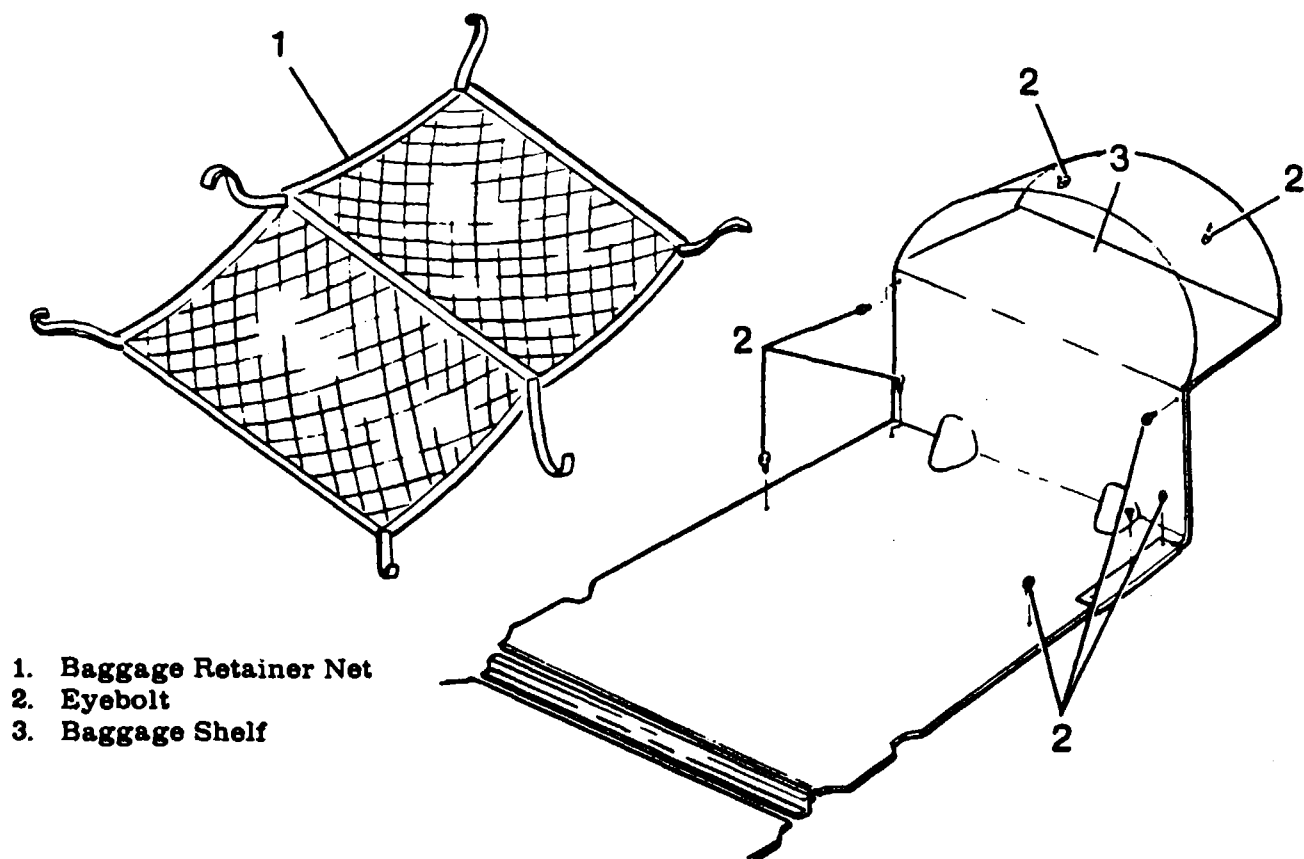


Figure 3-12. Baggage Net and Eyebolt Installation

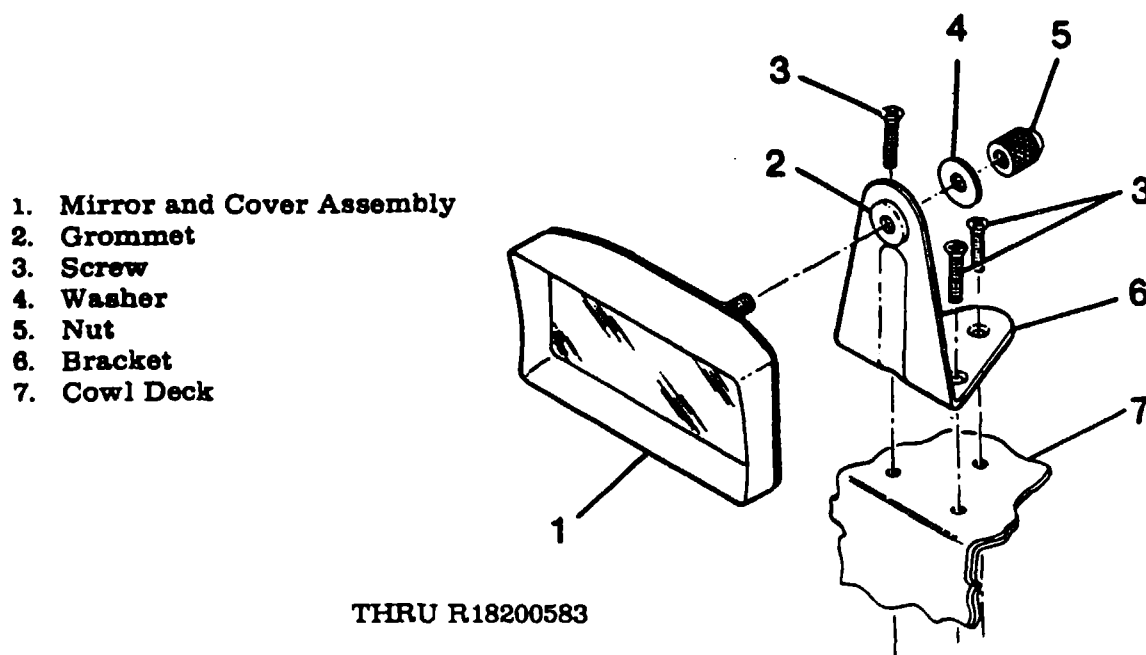
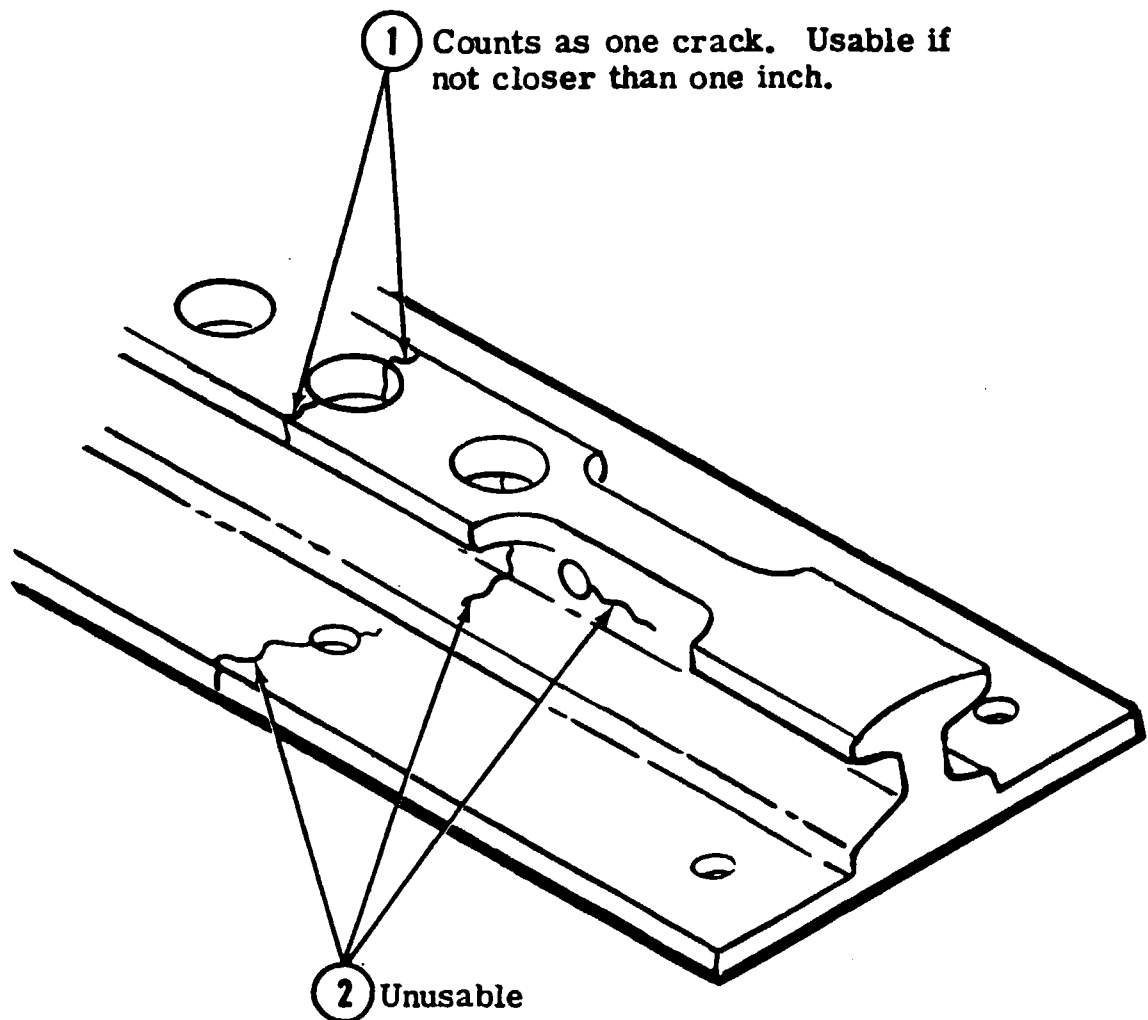


Figure 3-13. Rear View Mirror Installation

MODEL R182 AND TR182 SERVICE MANUAL



REPLACE SEAT RAIL WHEN:

- Any portion of web or lower flange is cracked (index 2).
- Any crack in crown of rail is in any direction other than right angle to length of rail.
- Number of cracks in any one rail exceeds four, or any two cracks (index 1) are closer than one inch.

NOTE

Use of seat rail cargo tie-downs is nor permissible on seat rail with cracks.

Figure 3-14. Seat Rail Inspection