CT7-2E INCREMENTAL CHANGE Release Notification Date: 03/04/2021

MM 72-36-00
COMPRESSOR STATOR ASSEMBLY - REMOVAL AND INSTALLATION

DISCLAIMER

The Incremental Changes published by GE Aviation are considered Instructions for Continued Airworthiness. These Incremental Changes, along with the current Manual revision and published Temporary Revisions, constitute the latest Instructions for Continued Airworthiness.

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HIGHLIGHTS

HIGHLIGHT REFERENCE	DESCRIPTION OF CHANGE
tk72-36-00-400-801	Technical Change: Removed references to REPAIR 002.
tk72-36-00-400-801	Technical Change: Changed the WARNINGS throughout the pageblock to update to the latest format.
tk72-36-00-400-801	Technical Change: Changed the torque limits specified to assemble the compressor case fwd and aft flanges in paragraphs 3.B. and 3.C.
tk72-36-00-400-801	Technical Change: Added metric equivalents throughout the pageblock where applicable.

*** * * FOR CT7-2E1**

TASK 72-36-00-400-801

1. General Information.

   This section provides instruction to remove and install either the right-hand or the left-hand compressor case half. Before starting any of the following procedures, read ASSEMBLY AND DISASSEMBLY TECHNIQUES in Standard Practices Manual GEK 9250, 70-10-00.

2. Removal of Compressor Casing Half.

   CAUTION: DO NOT ATTEMPT TO REMOVE BOTH COMPRESSOR CASE HALVES AT THE SAME TIME. SEVERE DAMAGE TO MAIN LINE ENGINE BEARINGS AND COMPRESSOR ROTOR WILL RESULT.

   A. Preliminary Information.

      The following procedures apply when the right-hand or the left-hand compressor case is removed to gain access to compressor rotor blades that inspection has shown require repair.

      NOTE: * To gain access to the compressor rotor assembly, either the right-hand compressor case can be removed (paragraph 2.B.) or the left-hand compressor case can be removed (paragraph 2.C.).
      * It is preferred to remove the right-hand compressor case when repairing only the compressor rotor blades.
      * The left-hand compressor case should be removed only to adequately clean and repair stages 1

and 2 variable vanes, and stages 3 through 5 vane sectors.

B. Removal of the Right-Hand Compressor Case.

(1) Install the engine in the maintenance stand (72-00-00, SERVICING).

(2) Remove the following external components.

*Blue and green electrical cables (74-00-00)
*Fuel Metering Unit (FMU) (73-00-00)
*Ignition exciter assembly (74-00-00)
*Electronic Engine Control Unit (EECU) (74-00-00)
*Anti-icing IGV feed tube (75-00-00)
*Forward seal pressure tube (75-00-00)
*Mid C-sump scavenge tube (79-00-00)
*Engine starter - if installed (refer to applicable Aircraft Maintenance Manual).

(3) Remove bolts (1, 4, Figure 401) from the forward flange of the right-hand compressor case as follows:

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

(a) Apply penetrating oil on bolts and let the oil soak for a minimum of 10 minutes.

CAUTION: DO NOT EXCEED A BREAKAWAY TORQUE OF 150 LB IN. (16.9 N.m) ON ANY BOLT ON THE COMPRESSOR CASE-TO-MAIN FRAME FLANGE. OTHERWISE, BOLT MAY BREAK.

(b) Use a torque wrench, and remove the bolts from the forward flange of the right-hand case. Do not exceed 150 lb in. (16.9 N.m) breakaway torque.

(c) If breakaway torque of 150 lb in. (16.9 N.m) is reached and bolts do not loosen, do the following:

1 Using a hammer and small plastic drift, strike the head of the seized bolt.

2 Using a torque wrench, tighten bolts. Do not exceed 160 lb in. (18.1 N.m).

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

3 Apply penetrating oil to seized bolt. Let the oil soak for minimum of 10 minutes.

CAUTION: *DO NOT EXCEED 150 LB IN. (16.9 N.m) TORQUE WHEN LOOSENING BOLT.
*DO NOT EXCEED 160 LB IN. (18.1 N.m) TORQUE WHEN TIGHTENING BOLT.

4 Use a torque wrench, and apply a 150 lb in. (16.9 N.m) torque to loosen the bolt; then apply a 160 lb in. (18.1 N.m) torque to tighten the bolt.

5 Repeat paragraphs 2.B.(3)(c)1 through 2.B.(3)(c)4 until the bolt can be removed.

(d) If any bolt breaks, do the following:

1 The maximum repairable limit is two broken bolts on the circumference of the main frame flange, if the broken bolts are separated by one or more intact bolts. If the limits is exceeded, replace the cold section module (72-30-00, REMOVAL AND INSTALLATION).

2 If any broken bolt prevents removal of the right-hand case, contact the following for disposition, pending repair procedure:

Manager, CT7 Turboshaft Product Support Engineering
GE Aircraft Engines
1000 Western Ave.
Mail Zone 37402
Lynn, MA 01910 USA

3 If the broken bolt does not prevent the removal of the right-hand case, continue to remove the case half.

(e) Remove the anti-icing feed tube bracket assembly (2) and the ignition exciter bracket assembly (3).

(4) Remove the bolts (1, Figure 402, as applicable) from the aft flange of the right-hand compressor case as follows:

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

(a) Apply penetrating oil on bolts and let the oil soak for a minimum of 10 minutes.

CAUTION: DO NOT EXCEED A BREAKAWAY TORQUE OF 150 LB IN. (16.9 N.m) ON ANY BOLT ON THE COMPRESSOR CASE-TO-DIFFUSER CASE FLANGE. OTHERWISE, BOLT MAY BREAK.

(b) Use a torque wrench, and remove the bolts from the aft flange of the right-hand case. Do not exceed 150 lb in. (16.9 N.m) breakaway torque.

(c) If breakaway torque of 150 lb in. (16.9 N.m) is reached and bolts do not loosen, do the following:

1 Using a hammer and small plastic drift, strike the head of the seized bolt.

2 Using a torque wrench, tighten bolts. Do not exceed 160 lb in. (18.1 N.m).

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

3 Apply penetrating oil to seized bolt. Let the oil soak for minimum of 10 minutes.

CAUTION: *DO NOT EXCEED 150 LB IN. (16.9 N.m) TORQUE WHEN LOOSENING BOLT.
*DO NOT EXCEED 160 LB IN. (18.1 N.m) TORQUE WHEN TIGHTENING BOLT.

4 Use a torque wrench, and apply a 150 lb in. (16.9 N.m) torque to loosen the bolt;

then apply a 160 lb in. (18.1 N.m) torque to tighten the bolt.

5 Repeat paragraphs 2.B.(4)(c)1 through 2.B.(4)(c)4 until the bolt can be removed.

(d) If any bolt breaks, do the following:

1 The maximum repairable limit is two broken bolts on the circumference of the diffuser case flange, if the broken bolts are separated by one or more intact bolts. If the limit is exceeded, replace the cold section module (72-30-00, REMOVAL AND INSTALLATION).

2 If any broken bolt prevents removal of the right-hand case, contact the following for disposition, pending repair procedure:

Manager, CT7 Turboshaft Product Support Engineering
GE Aircraft Engines
1000 Western Ave.
Mail Zone 37402
Lynn, MA 01910 USA

3 If the broken bolt does not prevent the removal of the right-hand case, continue to remove the case half.

(e) Remove the clip supports (2, 3, 4, 5, Figure 402, as applicable).

CAUTION: EACH ACTUATING RING IS A MATCHED ASSEMBLY. THE BRIDGE ASSEMBLIES (CONSISTING OF ANTIROTATION PLATES, INNER SECTORS, AND PIN RETAINERS) HAVE BEEN LINE-DRILLED TO THE ACTUATING RINGS AND CANNOT BE INTERCHANGED WITH ONE ANOTHER OR WITH THOSE ON OTHER RINGS.

(5) Remove pin retainers, antirotation plates, and inner sectors from the vane actuating rings as follows:

(a) Remove 16 self-locking nuts (1, Figure 403, sheet 1) that secure the pin retainers (2) to the stages 1 and 2 vane actuating rings (6, 7). Remove the pin retainers.

(b) Mark the pin retainers TOP, BOTTOM, and STAGE NO., as applicable, so they will not become intermixed.

(c) Remove 24 pins (8) from the 6 and 12 o'clock positions on the actuating rings.

(d) Turn the stages 1 and 2 vane actuator levers (9, 10) to gain access to shearbolts (3), inner sectors (4), and antirotation plates (5).

(e) Remove shearbolts, inner sectors, and antirotation plates.

(f) Mark antirotation plates and inner sectors TOP, BOTTOM, AND STAGE NO., as applicable, so they will not become intermixed.

(6) Position inlet guide vane ring (as required) by moving actuating shaft for access to compressor splitline of compressor case.

(7) Remove bolts and locknuts from splitline of compressor case.

CAUTION: CARE MUST BE TAKEN WHEN TURNING THE COMPRESSOR ROTOR WITH THE RIGHT-HAND COMPRESSOR CASE HALF REMOVED. THE WEIGHT OF THE PT MODULE CAN CAUSE A SLIGHT BOWING OF THE ENGINE WHICH WILL BIND THE COMPRESSOR ROTOR. FORCING ROTOR TO TURN WILL CAUSE DAMAGE. LIFTING AFT END OF PT MODULE WILL FREE ROTOR AND ALLOW ROTATION.

(8) While a second technician applies slight pressure from right-to-left on aft edge of exhaust frame, slide right-hand compressor case (15, sheet 2) away from engine.

NOTE: * To gain access to the compressor rotor assembly, either the right-hand compressor case can be removed (paragraph 2.B.) or the left-hand compressor case can be removed (paragraph 2.C.).

* It is preferred to remove the right-hand compressor case when repairing only the compressor rotor blades.

* The left-hand compressor case should be removed only to adequately clean and repair stages 1 and 2 variable vanes, and stages 3 through 5 vane sectors.

C. Removal of the Left-Hand Compressor Case.

(1) Install the engine in the maintenance stand (72-00-00, SERVICING).

(2) Remove the following external components:

* Green and blue electrical cables (74-00-00)
* Particle separator blower and inlet duct (72-60-00)
* Anti-icing bleed and start valve (75-00-00)
* Electronic engine control unit (EECU) (74-00-00)
* Fuel metering unit (FMU) (73-00-00)
* FMU manifold (73-00-00)
* Anti-icing bleed duct, anti-icing IGV duct, and anti-icing IGV feed tube (75-00-00)
* Oil manifold tube assembly (79-00-00)
* Mid C-sump scavenge tube (79-00-00)
* Actuating system linkage assembly (72-30-00).

(3) Remove bolts (1, 4, Figure 401) from the forward flange of the left-hand compressor case as follows:

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

(a) Apply penetrating oil on bolts and let the oil soak for a minimum of 10 minutes.

CAUTION: DO NOT EXCEED A BREAKAWAY TORQUE TO 150 LB IN. (16.9 N.m) ON ANY BOLT ON THE COMPRESSOR CASE-TO-INLET GUIDE VANE FLANGE. OTHERWISE, BOLT MAY BREAK.

(b) Use a torque wrench, and remove the bolts from the forward flange of the left-hand case. Do not exceed 150 lb in. (16.9 N.m) breakaway torque.

(c) If breakaway torque of 150 lb in. (16.9 N.m) is reached and bolts do not loosen, do the following:

1 Use a hammer and a small plastic drift, and hit the head of the seized bolt.

2 Use a torque wrench, and tighten the bolt. Do not exceed 160 lb in. (18.1 N.m).

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

3 Apply penetrating oil to the seized bolt. Let the oil soak for a minimum of 10 minutes.

CAUTION: *DO NOT EXCEED 150 LB IN. (16.9 N.m) TORQUE WHEN YOU LOOSEN THE BOLT.
*DO NOT EXCEED 160 LB IN. (18.1 N.m) TORQUE WHEN YOU TIGHTEN THE BOLT.

4 Use a torque wrench, and apply a 150 lb in. (16.9 N.m) torque to loosen the bolt; then apply a 160 lb in. (18.1 N.m) torque to tighten the bolt.

5 Repeat paragraphs 2.C.(3)(c)1 through 2.C.(3)(c)4 until you can remove the bolt.

(d) If any bolt breaks, do the following:

1 The maximum repairable limit is two broken bolts on each casing half circumference on the main frame flange, if the broken bolts are separated by one or more intact bolts. If the limit is exceeded, replace the cold section module (72-30-00, REMOVAL AND INSTALLATION).

2 If any broken bolt prevents removal of the right-hand case, contact the following for disposition, pending repair procedure:

Manager, CT7 Turboshaft Product Support Engineering
GE Aircraft Engines
1000 Western Ave.
Mail Zone 37402
Lynn, MA 01910 USA

3 If the broken bolt does not prevent the removal of the left-hand case, continue to remove the case half.

(e) Remove the anti-icing valve forward bracket (5, Figure 401) and the anti-icing feed tube bracket (6).

(4) Remove the bolts (1, Figure 402, as applicable) from the aft flange of the left-hand compressor case as follows:

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

(a) Apply penetrating oil on bolts and let the oil soak for a minimum of 10 minutes.

CAUTION: DO NOT EXCEED A BREAKAWAY TORQUE OF 150 LB IN. (16.9 N.m) ON ANY BOLT ON THE COMPRESSOR CASE-TO-DIFFUSER CASE FLANGE. OTHERWISE, BOLT MAY BREAK.

(b) Use a torque wrench, and remove the bolts from the aft flange of the left-hand case. Do not exceed 150 lb in. (16.9 N.m) breakaway torque.

(c) If breakaway torque of 150 lb in. (16.9 N.m) is reached and bolts do not loosen, do the following:

1 Using a hammer and small plastic drift, strike the head of the seized bolt.

2 Using a torque wrench, tighten bolt. Do not exceed 160 lb in. (18.1 N.m).

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

3 Apply penetrating oil to the seized bolt. Let the oil soak for a minimum of 10 minutes.

CAUTION: *DO NOT EXCEED 150 LB IN. (16.9 N.m) TORQUE WHEN YOU LOOSEN THE BOLT.
*DO NOT EXCEED 160 LB IN. (18.1 N.m) TORQUE WHEN YOU TIGHTEN THE BOLT.

4 Use a torque wrench, and apply a 150 lb in. (16.9 N.m) torque to loosen the bolt; then apply a 160 lb in. (18.1 N.m) torque to tighten the bolt.

5 Repeat paragraphs 2.C.(4)(c)1 through 2.C.(4)(c)4 until you can remove the bolt.

(d) If any bolt breaks, do the following:

1 The maximum repairable limit is two broken bolts on each casing half circumference on the diffuser case flange, if the broken bolts are separated by one or more intact bolts. If the limit is exceeded, replace the cold section module (72-30-00, REMOVAL AND INSTALLATION).

2 If any broken bolt prevents removal of the right-hand case, contact the following for disposition, pending repair procedure:

Manager, CT7 Turboshaft Product Support Engineering
GE Aircraft Engines
1000 Western Ave.
Mail Zone 37402
Lynn, MA 01910 USA

3 If the broken bolt does not prevent the removal of the left-hand case, continue to remove the case half.

(e) Remove the anti-icing valve aft bracket (6, Figure 402, as applicable).

CAUTION: EACH ACTUATING RING IS A MATCHED ASSEMBLY. THE BRIDGE ASSEMBLIES (CONSISTING OF ANTIROTATION PLATES, INNER SECTORS, AND PIN RETAINERS) HAVE BEEN LINE-DRILLED TO THE ACTUATING RINGS AND CANNOT BE INTERCHANGED WITH ONE ANOTHER OR WITH THOSE ON OTHER RINGS.

(5) Remove pin retainers, antirotation plates, and inner sectors from vane actuating rings as follows:

(a) Remove 16 self-locking nuts (1, Figure 403, sheet 1) that secure pin retainers (2) to stages 1 and 2 vane actuating rings (6, 7). Remove pin retainers.
(b) Mark pin retainers. TOP, BOTTOM, and STAGE NO., as applicable, so they will not become intermixed.
(c) Remove 24 pins (8) from 6 and 12 o'clock positions on actuating rings.
(d) Rotate stages 1 and 2 vane actuator levers (9, 10) to gain access to shearbolts (3), inner sectors (4), and antirotation plates (5).
(e) Remove shearbolts, inner sectors, and antirotation plates.
(f) Mark antirotation plates and inner sectors TOP, BOTTOM, and STAGE NO., as applicable, so they will not become intermixed.

(6) Position inlet guide vane ring (as required) by moving actuating shaft for access to compressor splitline of compressor case.
(7) Remove bolts and locknuts from splitline of compressor case.

CAUTION: CARE MUST BE TAKEN WHEN TURNING THE COMPRESSOR ROTOR WITH THE RIGHT-HAND COMPRESSOR CASE HALF REMOVED. THE WEIGHT OF THE PT MODULE CAN CAUSE A SLIGHT BOWING OF THE ENGINE WHICH WILL BIND THE COMPRESSOR ROTOR. FORCING ROTOR TO TURN WILL CAUSE DAMAGE. LIFTING AFT END OF PT MODULE WILL FREE ROTOR AND ALLOW ROTATION.

(8) While a second technician applies slight pressure from left-to-right on aft edge of exhaust frame, slide left-hand compressor case (15, Figure 404) away from engine.

CAUTION: * BE SURE THAT TWO COMPRESSOR CASING DUMMY BAR SUPPORTS 2C90112G01 ARE AVAILABLE BEFORE ATTEMPTING TO REMOVE BOTH COMPRESSOR CASE HALVES.
* THERE MUST BE TWO BAR SUPPORTS INSTALLED BETWEEN THE MAIN FRAME FLANGE AND THE DIFFUSER CASE FLANGE; OTHERWISE, COMPRESSOR ROTOR WILL BE DAMAGED.

NOTE: * To gain access to the compressor rotor assembly, either the right-hand compressor case can be removed (paragraph 2.B.) or the left-hand compressor case can be removed (paragraph 2.C.).
* It is preferred to remove (paragraph 2.A.) the right-hand compressor case when repairing only the compressor rotor blades.
* The right-hand and left-hand compressor cases should be removed only to allow cleaning of the compressor rotor assembly and compressor cases. Also, the removal of both cases allows the inspection and repair of stages 1 and 2 variable vanes, and stages 3 through 5 vane sectors.

D. Removal of right-Hand and Left-Hand Compressor Cases.
(1) Install engine in maintenance stand (72-00-00, SERVICING).
(2) Using instructions in paragraph 2.B., remove right-hand compressor case.
(3) Install compressor casing dummy bar support 2C90112G01 (1, Figure 404) between main frame flange (8) and diffuser case flange support (1) to flanges (3, 8) with four bolts (2).
(4) Using instructions in paragraph 2.C., remove left-hand compressor case.
(5) Install another compressor casing dummy bar support 2C90112G01 (1, Figure 404) between main frame flange (8) and diffuser case flange (3) at the 3 o'clock position (forward looking aft). Secure support (1) to flanges (3, 8) with four bolts (2).

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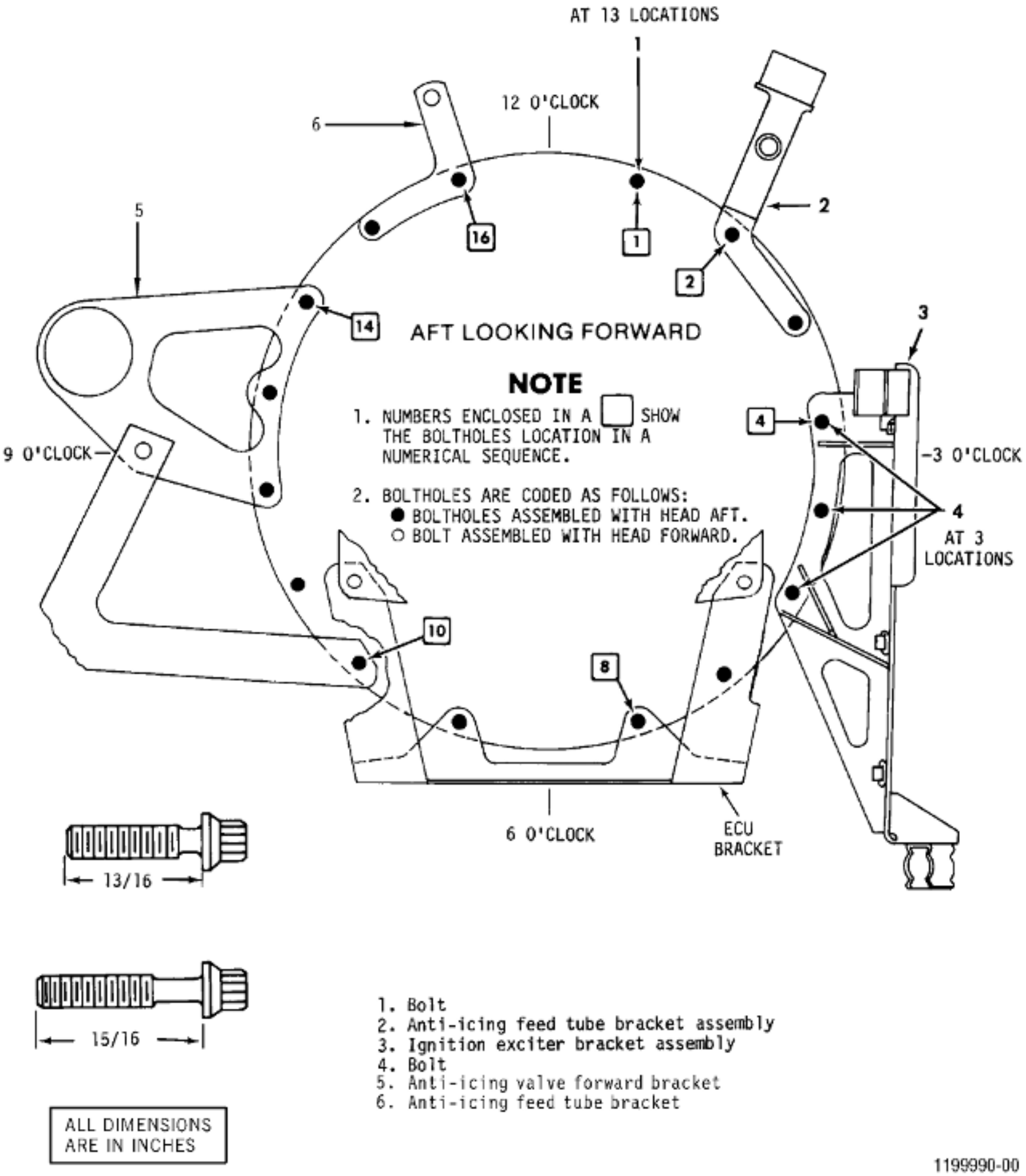

Figure 401 Main Frame-to-Compressor Case - Bolting Diagram

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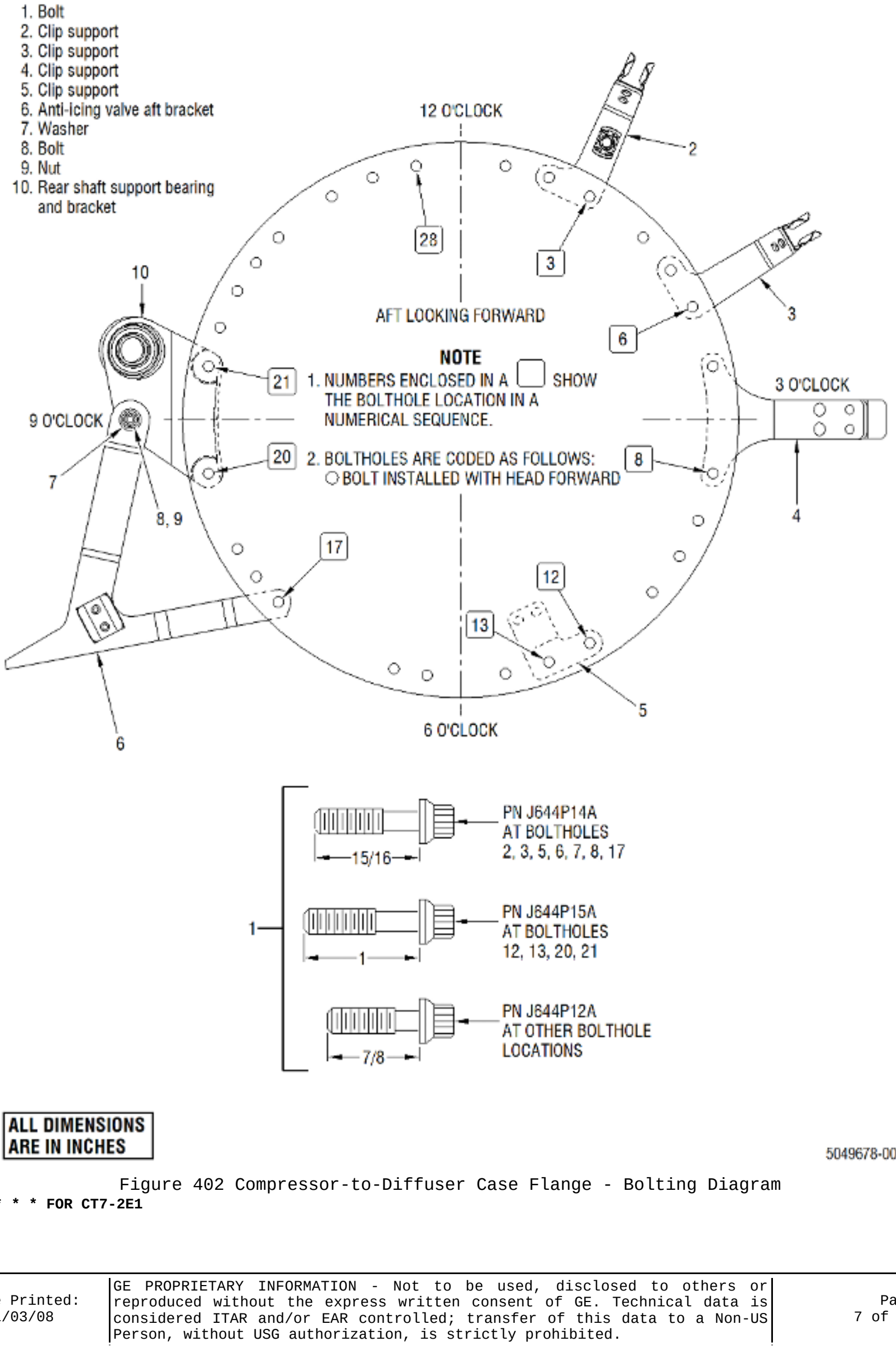

Figure 402 Compressor-to-Diffuser Case Flange - Bolting Diagram

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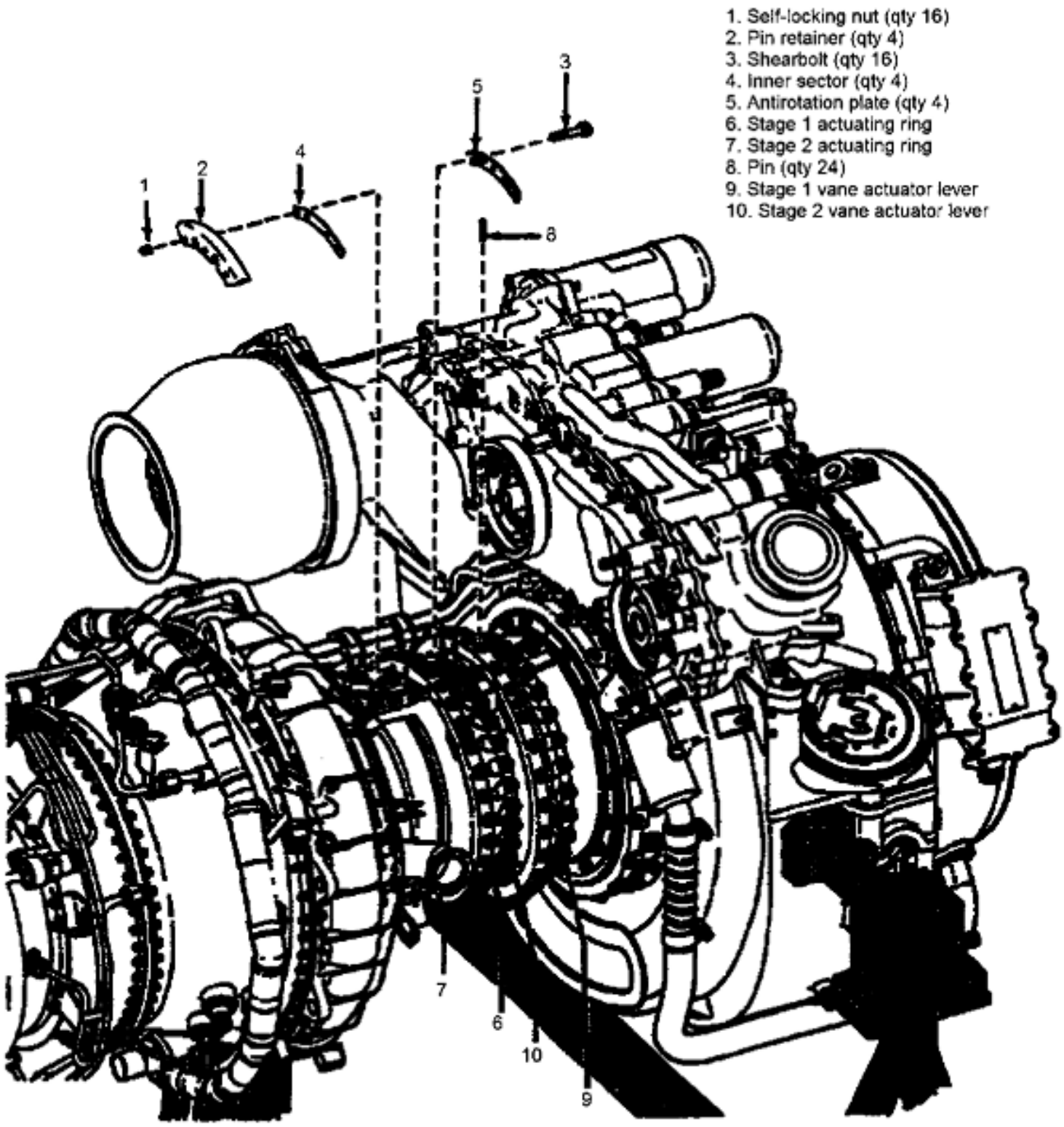

Figure 403 (Sheet 1) Right-Hand Compressor Case - Removal and Installation

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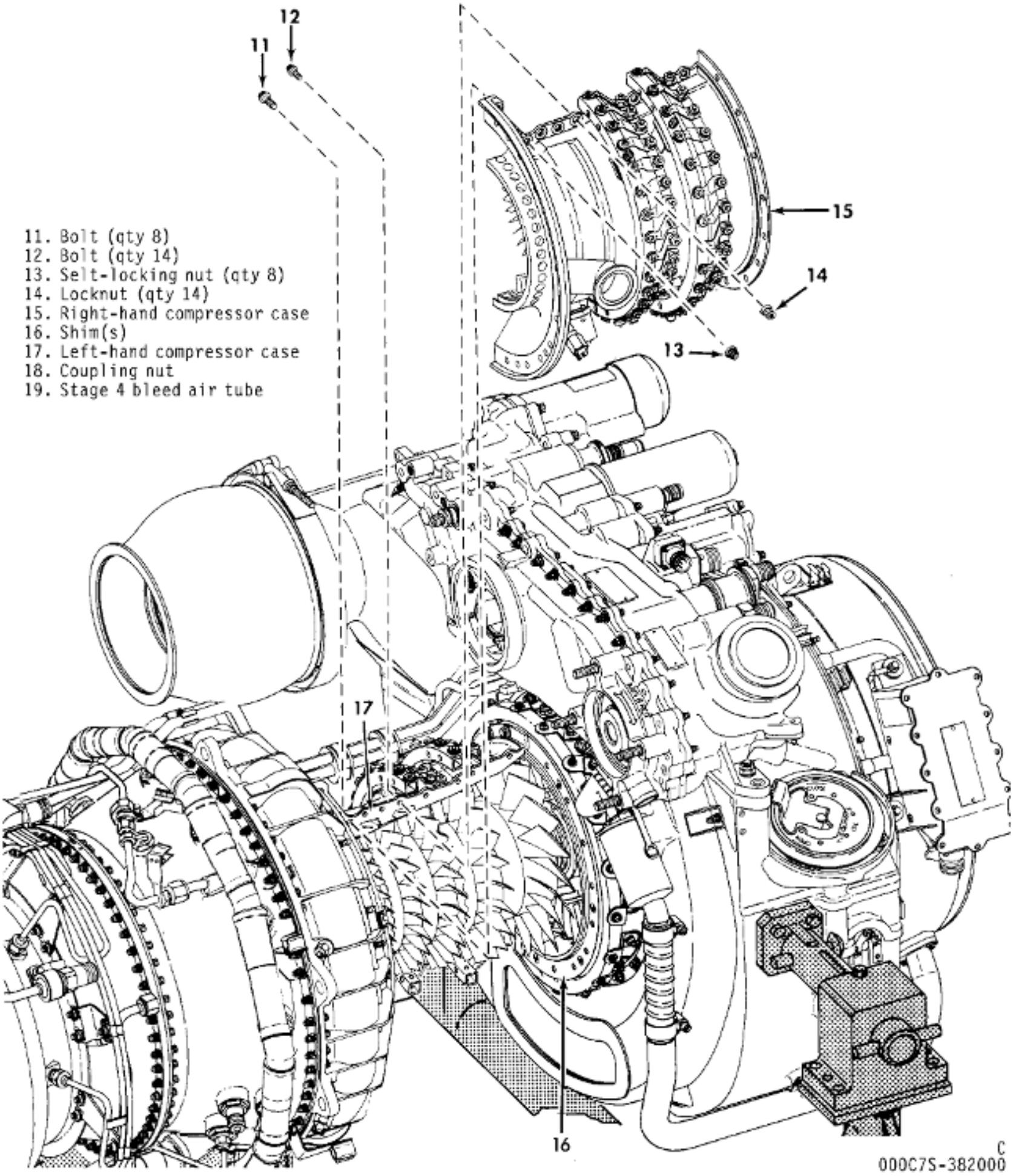

Figure 403 (Sheet 2) Right-Hand Compressor Case - Removal and Installation

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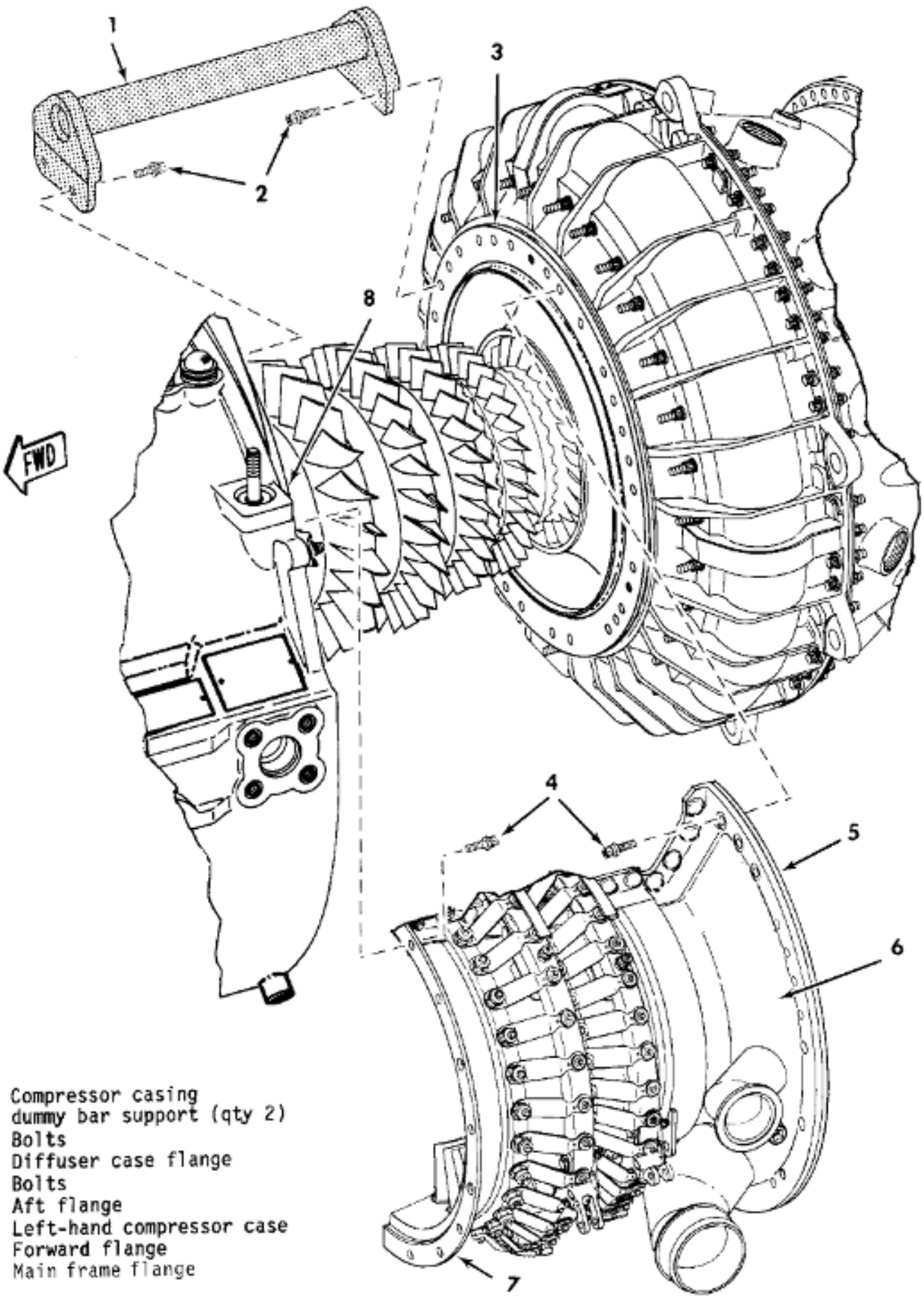

Figure 404 Left-Hand Compressor Case - Removal and Installation

3. Installation of Compressor Casing Half.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

A. Installation of Seal Strips.

If replacement is required, install seal strips as follows:

(1) Clean seal strip grooves (Figure 405) on flanges of both case halves, using a paper towel soaked with acetone or isopropyl alcohol.

(2) If necessary, trim length of seal strips so that there is a 0.040-0.080 inch (1.02-2.03 mm) gap at both ends of seal when it is installed in groove.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS)

FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

(3) Apply a thin coat of RTV-162 or RTV-3145 silicone rubber adhesive/sealant to grooves and install seal strips. Remove excess sealant with a paper towel soaked in acetone or isopropyl alcohol.

B. Installation of Right-Hand Compressor Case.

(1) Deleted.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

(2) Apply petrolatum or beeswax to main frame flange side of shim (16, Figure 403, sheet 2) to secure shim in place while installing right-hand compressor case (15).

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

(3) Using lubricating oil, lubricate the right-hand case (15) forward flange and shim (16).

(4) Be sure to check compressor section for FOD before installing right-hand case (15).

(5) While a second technician applies slight pressure from right-to-left on aft edge of exhaust frame, position right-hand case (15) onto engine. Seat the 12 o'clock splitline of compressor case first. Rotate case downward while checking that shim(s) (16), between forward flange of compressor case and aft flange of main frame, remain in place. If shim(s) (16) is damaged, do the following:

(a) Remove right-hand case (15) and place it on a bench.

CAUTION: CARE MUST BE TAKEN NOT TO CUT THE UNDAMAGED SHIM(S) (16) WHEN REMOVING THE DAMAGED SHIM.

(b) Cut the damaged shim (16) at the 12 o'clock position. Remove damaged shim.

(c) Place the damaged portion of shim (16) over a new shim of equal thickness. Cut new shim to match the damaged shim.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

(d) Apply petrolatum or beeswax to IGV case flange side of shim (16) to secure new shim in place.

(e) Reinstall right-hand case (15).

(6) Deleted.

(7) Position inlet guide vane ring, as required, by moving actuating shaft for access to compressor splitline bolts and nuts.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

(8) Lubricate the threads of bolts (3, 4, Figure 406) with antiseize compound Braycote 655 and secure the flanges of compressor case splitline with the following:

*14 bolts (4)
*14 locknuts (1)
*8 bolts (3)
*8 self-locking nuts (2).

(9) Torque the nuts as specified in Figure 406.

CAUTION: EACH ACTUATING RING IS A MATCHED ASSEMBLY. THE BRIDGE ASSEMBLIES (CONSISTING OF ANTIROTATION PLATES, INNER SECTORS, AND PIN RETAINERS) HAVE BEEN LINE-DRILLED TO THE ACTUATING RINGS AND CANNOT BE INTERCHANGED WITH ONE ANOTHER OR WITH THOSE ON OTHER RINGS.

(10) Install antirotation plates, inner sectors, and pin retainers on stage 1 actuating rings as follows:

(a) Be sure antirotation plates, inner sectors, and pin retainers are installed at positions for which they were marked.

(b) Position antirotation plates (5, Figure 403, sheet 1) over bushings on forward side of stage 1 actuating ring (6) at 12 o'clock position.

(c) Position inner sector (4) over bushings on aft side of actuating ring.

(d) Install two shearbolts (3) through two innermost holes, so that heads fit into hex recesses in antirotation plate (5).

(e) Install two self-locking nuts (1) onto shearbolts. Torque nuts to 16 to 19 lb in. (1.8 to 2.1 N.m).

(f) Install two shearbolts (3) through two outermost holes, so that heads fit into hex recesses in antirotation plate (5).

(g) Position stage 1 and stage 2 actuator levers (9 and 10) over bushings on actuating rings and install pins (8).

CAUTION: DO NOT OVERTORQUE SELF-LOCKING NUTS (1). OTHERWISE, ACTUATING RING WILL BE DAMAGED.

(h) Slide pin retainers (2) over ends of outermost bolts and install self-locking nuts (1). Torque nuts to 16 to 19 lb in. (1.8 to 2.1 N.m).

(i) Repeat paragraphs 3.B.(10)(b) through 3.B.(10)(h) at 6 o'clock position.

(11) Refer to paragraph 3.B.(10) and install antirotation plates (5), inner sectors (4), and pin retainers (2) on stage 2 actuating ring (7).

(12) Be sure that actuating rings (6, 7) move freely.

(13) Secure the forward flange of right-hand compressor case as follows:

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

CAUTION: DO NOT RUN A TAP ALL THE WAY THROUGH THE CHANNEL NUTS; OTHERWISE, SELF-LOCKING FEATURE WILL BE LOST.

(a) Before you install bolts (1, 4, Figure 401), lubricate the threads of bolts with antiseize compound Braycote 655; then chase the first few threads of each channel nut with a 0.190-32 UNJF-3A tap.

(b) Install two bolts (1) and anti-icing feed tube bracket assembly (2) in boltholes 2 and 3.

(c) Install three bolts (4) and ignition exciter bracket assembly (3) in boltholes 4, 5, and 6.

(d) Install remaining bolts in remaining boltholes.

(e) Torque all bolts to 83 to 87 lb in. (9.4 to 9.8 N.m).

(14) Secure the aft flange of right-hand compressor case as follows:

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

CAUTION: DO NOT RUN A TAP ALL THE WAY THROUGH THE CHANNEL NUTS; OTHERWISE, SELF-LOCKING FEATURE WILL BE LOST.

(a) Before you install bolts (1, Figure 402, as applicable), lubricate the threads of bolts with antiseize compound Braycote 655; then chase the first few threads of each channel nut with a 0.190-32 UNJF-3A tap.

(b) Install two bolts PN J644P14A (1) and clip support (2) in boltholes 2 and 3.

(c) Install two bolts PN J644P14A (1) and clip support (3) in boltholes 5 and 6.

(d) Install two bolts PN J644P14A (1) and clip support (4) in boltholes 7 and 8.

(e) Install two bolts PN J644P15A (1) and clip support (5) in boltholes 12 and 13.

(f) Install bolts PN J644P12A (1) in remaining boltholes.

(g) Torque all bolts to 290 to 295 lb in. (32.8 to 33.3 N.m).

(15) Install the following external components:

* Mid C-sump scavenge tube (79-00-00)
* Forward seal pressure tube (75-00-00)
* Anti-icing IGV feed tube (75-00-00)
* EECU (74-00-00)
* Ignition exciter assembly (74-00-00)
* FMU (73-00-00)
* Blue and green electrical cables (74-00-00)
* Engine starter, if removed (refer to applicable Aircraft Maintenance Manual).

C. Installation of Left-Hand Compressor Case.

(1) Deleted.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

(2) Apply petrolatum or beeswax to main frame flange side of shim to secure shim in place while installing left-hand compressor case (6, Figure 404).

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

(3) Using lubricating oil, lubricate the forward flange (7) and shim (installed on main frame flange (8)).

(4) Be sure to check compressor section for FOD before installing left-hand case (6).

(5) While a second technician applies slight pressure from left-to-right on aft edge of exhaust frame, position left-hand case (6) onto engine. Seat the 12 o'clock splitline of compressor case first. Rotate case downward while checking the shim(s), between forward flange of compressor case and aft flange of main frame, remain in place. If shim(s) is damaged, do the following:

(a) Remove left-hand case (6) and place it on a bench.

CAUTION: CARE MUST BE TAKEN NOT TO CUT THE UNDAMAGED SHIM(S) WHEN REMOVING THE DAMAGED SHIM.

(b) Cut the damaged shim at the 12 o'clock position. Remove damaged shim.

(c) Place the damaged portion of shim over a new shim of equal thickness. Cut new shim to match the damaged shim.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

(d) Apply petrolatum or beeswax to main frame side of shim to secure new shim in place.

(e) Reinstall left-hand case (6).

(6) Deleted.

(7) Position inlet guide vane ring, as required, by moving actuating shaft for access to compressor splitline bolts and nuts.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

(8) Lubricate the threads of bolts (3, 4, Figure 406) with antiseize compound Braycote 655 and secure the flanges of compressor case splitline with the following:

* 14 bolts (4)
* 14 locknuts (1)
* 8 bolts (3)
* 8 self-locking nuts (2).

(9) Torque the nuts as specified in Figure 406.

CAUTION: EACH ACTUATING RING IS A MATCHED ASSEMBLY. THE BRIDGE ASSEMBLIES (CONSISTING OF ANTIROTATION PLATES, INNER SECTORS, AND PIN RETAINERS) HAVE BEEN LINE-DRILLED TO THE ACTUATING RINGS AND CANNOT BE INTERCHANGED WITH ONE ANOTHER OR WITH THOSE ON OTHER RINGS.

(10) Install antirotation plates, inner sectors, and pin retainers on stage 1 actuating rings as follows:

(a) Be sure antirotation plates, inner sectors, and pin retainers are installed at positions for which they were marked.

(b) Position antirotation plates (5, Figure 403, sheet 1) over bushings on forward side of stage 1 actuating ring (6) at 12 o'clock position.

(c) Position inner sector (4) over bushings on aft side of actuating ring.

(d) Install two shearbolts (3) through two innermost holes, so that heads fit into hex recesses in antirotation plate (5).

(e) Install two self-locking nuts (1) onto shearbolts. Torque nuts to 16 to 19 lb in. (1.8 to 2.1 N.m).

(f) Install two shearbolts (3) through two outermost holes, so that heads fit into hex recesses in antirotation plate (5).

(g) Position stage 1 and stage 2 actuator levers (9 and 10) over bushings on actuating rings and install pins (8).

CAUTION: DO NOT OVERTORQUE SELF-LOCKING NUTS (1). OTHERWISE, ACTUATING RING WILL BE DAMAGED.

(h) Slide pin retainers (2) over ends of outermost bolts and install self-locking nuts (1). Torque nuts to 16 to 19 lb in. (1.8 to 2.1 N.m).

(i) Repeat paragraphs 3.C.(10)(b) through 3.C.(10)(h) at 6 o'clock position.

(11) Refer to paragraph 3.C.(10) and install antirotation plates (5), inner sectors (4), and pin retainers (2) on stage 2 actuating ring (7).

(12) Be sure that actuating rings (6, 7) move freely.

(13) Secure forward flange of left-hand compressor case as follows:

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

CAUTION: DO NOT RUN A TAP ALL THE WAY THROUGH THE CHANNEL NUTS; OTHERWISE, SELF-LOCKING FEATURE WILL BE LOST.

(a) Before you install bolts (1, 4, Figure 401), lubricate the threads of bolts with antiseize compound Braycote 655; then chase the first few threads of each channel nut with a 0.190-32 UNJF-3A tap.

(b) Install two bolts (1) and anti-icing feed tube bracket (6) in boltholes 15 and 16.

(c) Install three bolts (4) and anti-icing valve forward bracket (5) in boltholes 12, 13, and 14.

(d) Install remaining bolts in remaining boltholes.

(e) Torque all bolts to 83 to 87 lb in. (9.4 to 9.8 N.m).

(14) Secure aft flange of left-hand compressor case as follows:

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

CAUTION: DO NOT RUN TAP ALL THE WAY THROUGH CHANNEL NUTS; OTHERWISE, SELF-LOCKING FEATURE WILL BE LOST.

(a) Before you install bolts (1, Figure 402, as applicable), lubricate the threads of bolts with antiseize compound Braycote 655; then chase the first few threads of each channel nut with a 0.190-32 UNJF-3A tap.

(b) Install anti-icing valve aft bracket (6) and rear shaft support bearing and bracket (10) using bolt PN J644P14A in bolthole 17 and bolt PN J644P15A in boltholes 20 and 21.

(c) Install bolts PN J644P12A in remaining boltholes.

(d) Torque all bolts to 290 to 295 lb in. (32.8 to 33.3 N.m).

(15) Install the following external components:

* Actuating system linkage assembly (72-30-00)
* Mid C-sump scavenge tube (79-00-00)
* Oil manifold tube assembly (79-00-00)
* Anti-icing bleed duct, anti-icing IGV duct, and anti-icing IGV feed tube (75-00-00)
* Fuel metering unit (FMU) (73-00-00)
* FMU manifold (73-00-00)
* Electronic engine control unit (EECU) (74-00-00)
* Anti-icing bleed and start valve (75-00-00)
* Particle separator blower and inlet duct (72-60-00)
* Green and blue electrical cables (74-00-00).

D. Installation of Right-Hand and Left-Hand Compressor Cases.

(1) Install the right-hand compressor case as follows:

(a) Remove four bolts (2, Figure 404) securing compressor casing dummy bar support (1) from the left-hand side between main frame flange (8) and diffuser case flange (3). Remove support (1).

(b) Using instructions in paragraph 3.B., install right-hand compressor case.

(2) Install left-hand compressor case as follows:

(a) Remove four bolts (2, Figure 404) securing compressor casing dummy bar support (1) from the right-hand side between main frame flange (8) and diffuser case flange (3). Remove support (1).

(b) Using instructions in paragraph 3.C., install left-hand compressor case.

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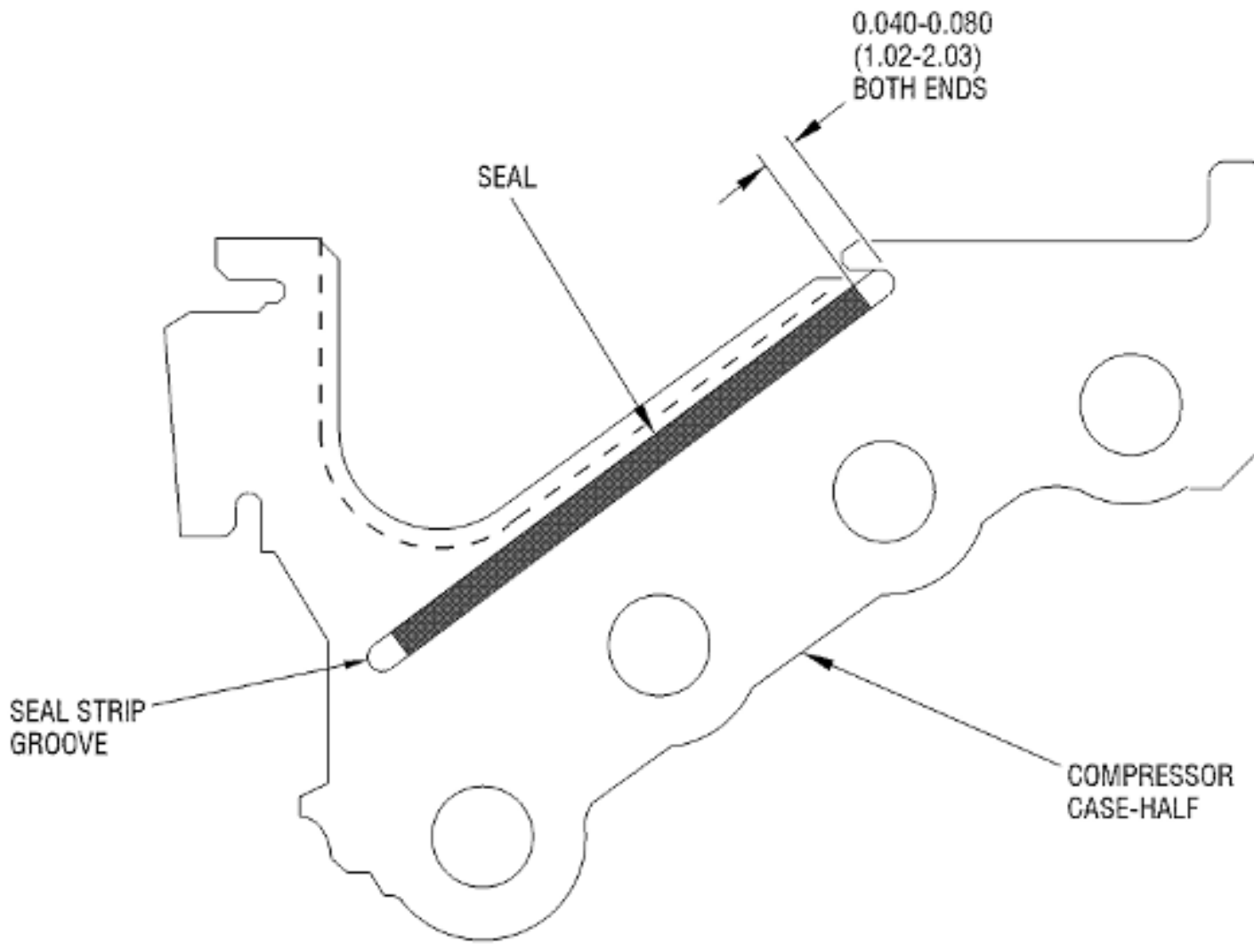

Figure 405 Seal Strip Groove in Stator Case Splitline Flange

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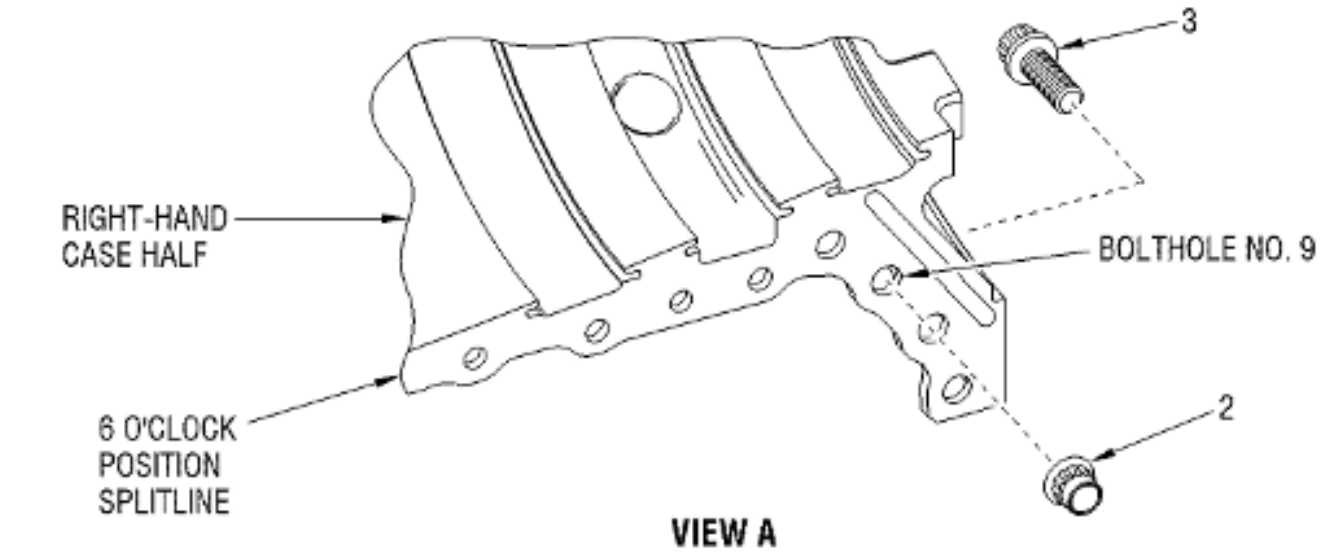

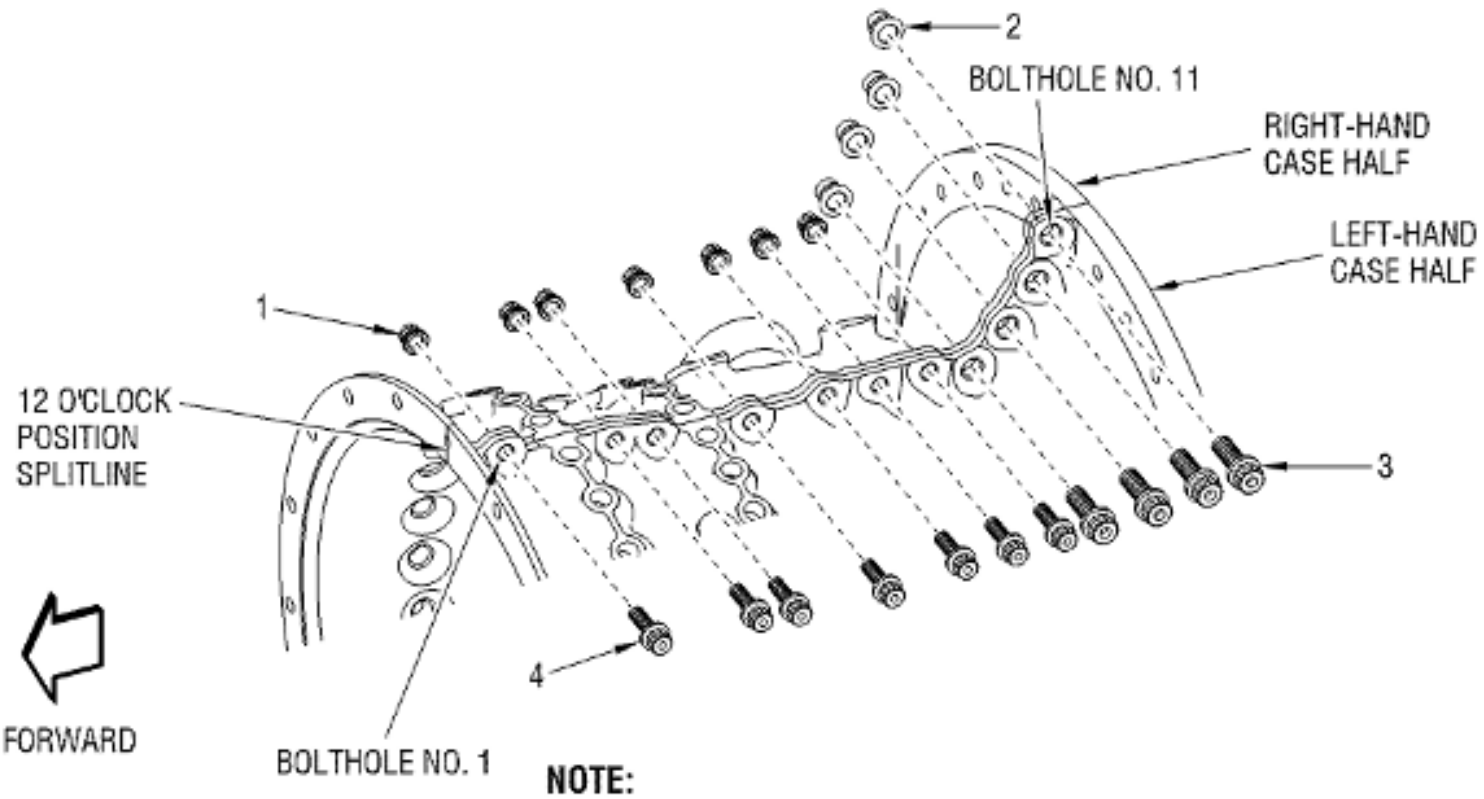

LEGEND:
1. LOCKNUT (QTY 14)
2. SELF-LOCKING NUT (QTY 8)
3. SHOULDER BOLT (QTY 8)
4. SHOULDER BOLT (QTY 14)

NOTE:
CROSS-TORQUE NUTS ALTERNATELY ON BOTH FLANGES TO VALUES GIVEN AND IN SEQUENCE SHOWN. FOR EXAMPLE: TOP SIDE NUT 1; BOTTOM SIDE NUT 1; TOP SIDE NUT 7; BOTTOM SIDE NUT 7; TOP SIDE NUT 11; BOTTOM SIDE NUT 11; ETC.

TORQUING SEQUENCE BY BOLTHOLE NUMBER											
HOLE NO.	1	7	11	2	3	4	5	6	8	9	10
TORQUE lb in. (N.m)	70-75 (7.9-8.5)	70-75 (7.9-8.5)	145-150 (16.4-16.9)	70-75 (7.9-8.5)	70-75 (7.9-8.5)	70-75 (7.9-8.5)	70-75 (7.9-8.5)	70-75 (7.9-8.5)	145-150 (16.4-16.9)	145-150 (16.4-16.9)	145-150 (16.4-16.9)

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Figure 406 Compressor Case Splitline Flange - Torquing Sequence

4. Disassembly of Compressor Stator Assembly.

CAUTION: THE COMPRESSOR CASE HALVES ARE MATCHED PARTS. BE SURE THE SERIAL NUMBER ON EACH PART IS THE SAME.

A. Place right-hand case half (21, Figure 407) and left-hand case half (22), aft end down, on bench.

B. Remove 32 stage 1 compressor variable vanes (1) as follows:
   (1) Remove six headless straight pins (9) from ends of right-hand ring half (10).
   (2) Remove six pins (9) from ends of left-hand ring half (18).

   NOTE: No. 1 vane is the first vane to the right of the word TOP on right-hand case half (21).

(3) Using white indelible ink, number aft side of stage 1 compressor variable vanes (1), in CCW sequence 1 through 32 (forward looking aft), starting with No. 1 vane.
(4) Straighten tab on keywasher (7).
(5) Hold vane (1) and remove self-locking nut (8).
(6) Remove and discard keywasher (7).
(7) Remove vane actuator lever (6) and washer (5). Discard washer (5).
(8) Using a mallet and a plastic drift, lightly tap vane spindle and remove vane (1) and sleeve bushing (2). Discard sleeve bushing (2).
(9) Using instructions in paragraphs 4.B.(4) through 4.B.(8), remove remaining 31 vanes (1).
(10) Remove right-hand ring half (10) and left-hand ring half (18).

C. Remove 34 stage 2 compressor variable vanes (19) as follows:
(1) Remove six pins (16) from ends of stage 2 right-hand ring half (11).
(2) Remove six headless straight pins (16) from ends of stage 2 left-hand ring half (17).

NOTE: No. 1 vane is the first vane to the right of the word TOP on right-hand case half (21).

(3) Using white indelible ink, number aft side of stage 2 compressor variable vanes (19), in CCW sequence 1 through 34 (forward looking aft), starting with No. 1 vane.
(4) Straighten tab on keywasher (14).
(5) Hold vane (19) and remove self-locking nut (15).
(6) Remove and discard keywasher (14).
(7) Remove vane actuator lever (13) and washer (12). Discard washer (12).
(8) Using a mallet and a plastic drift, lightly tap vane spindle and remove vane (19) and sleeve bushing (20). Discard sleeve bushing (20).
(9) Using instructions in paragraphs 4.C.(4) through 4.C.(8), remove remaining 33 vanes (19).
(10) Remove right-hand ring half (11) and left-hand ring half (17).

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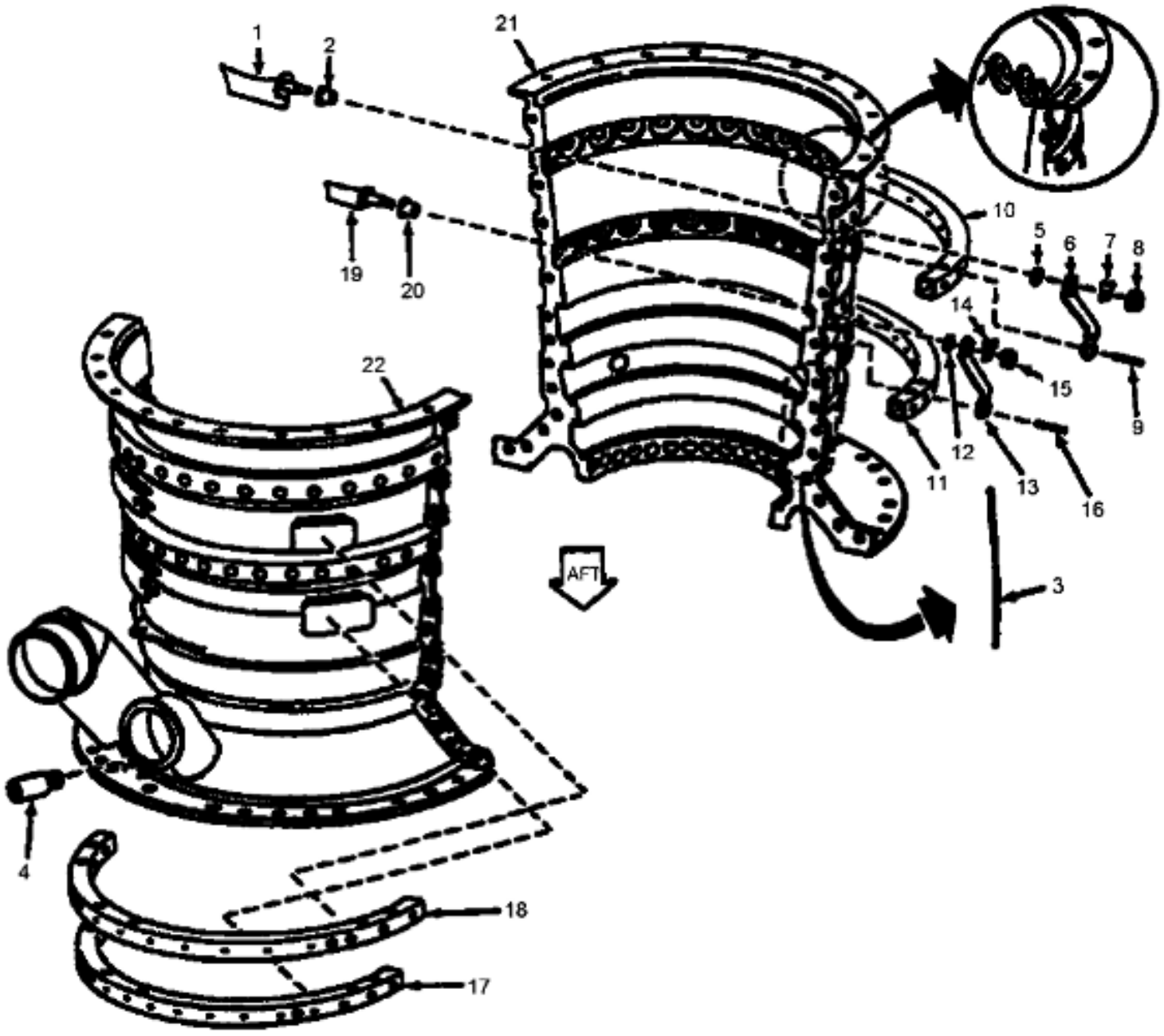

1. Stage 1 compressor variable vane
2. Sleeve bushing
3. Antirotation key
4. Borescope plug
5. Washer
6. Vane actuator lever
7. Keywasher
8. Self-locking nut
9. Headless straight pin
10. Right-hand ring half (stage 1)
11. Right-hand ring half (stage 2)
12. Washer
13. Vane actuator lever
14. Keywasher
15. Self-locking nut
16. Headless straight pin
17. Left-hand ring half (stage 2)
18. Left-hand ring half (stage 1)
19. Stage 2 compressor variable vane
20. Sleeve bushing
21. Right-hand case half
22. Left-hand case half

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Figure 407 Compressor Stator Assembly - Disassembly and Assembly

5. Assembly of Compressor Stator Assembly.

A. Install stage 2 compressor variable vanes (19, Figure 407) into left- and right-hand case halves (22, 21) as follows:

(1) Position right-hand case half (21) and left-hand case half (22) aft end down on bench.

(2) Install 34 sleeve bushings (20) onto spindle of stage 2 variable vanes (19).

NOTE: *No. 1 vane hole is the first hole to the right of the word TOP on right-hand case half (21).

*Aft faces of vanes (19) are marked 1 through 34.

(3) With trailing edge (thin edge) facing aft, install vanes (19) marked No. 1, 2, and 3 into their respective holes on right-hand case half (3).

(4) Install vanes marked No. 15, 16, and 17 into their respective holes, as described in paragraph 5.A.(3).

(5) With trailing edge (thin edge) facing aft, install vanes (19) marked No. 18, 19, and 20 into their respective holes on left-hand case half (22).

(6) Install vanes marked No. 32, 33, and 34 into their respective holes, as described in paragraph 5.A.(5).

(7) Secure one of the installed vanes (5, Figure 408) to right-hand compressor case half (6) as

follows:

(a) Install washer (4), vane actuator lever (3), and keywasher (2) on vane spindle (7).

(b) Install keywasher (2) so that flats of lever (3) and keywasher (2) are aligned.

(c) Install self-locking nut (1) on vane spindle (7).

CAUTION: * BEFORE TIGHTENING SELF-LOCKING NUT (1), BE SURE THAT KEYWASHER (2) AND VANE ACTUATOR LEVER (3) ARE CORRECTLY INSTALLED ON VANE SPINDLE (7).

* DO NOT OVER TIGHTEN THE SELF-LOCKING NUT (1).

NOTE: Vane (5) and vane actuator lever (3) must be held firmly each time that tightening is required.

(d) Tighten the self-locking nut (1) until there is no radial looseness between the vane (5) and the vane actuator lever (3). Do not over tighten the nut.

(e) Make sure that there is no radial looseness between the vane (5) and the vane actuator lever (3). If there is looseness, repeat paragraph 5.A.(7)(d).

(f) Be sure that vane (5) can be rotated and that vane does not bind on ID of compressor case half (6) when lever (3) is rotated. If vane binds, rotate vane several times between open and closed positions to scrape off flowpath coating.

(g) Use the procedure in paragraphs 5.A.(7)(a) through 5.A.(7)(f) and secure remaining five vanes (5).

(8) Using procedures in paragraph 5.A.(7), secure six installed vanes (5) to left-hand case half (6).

NOTE: Right-half and left-half ring halves are a matched assembly. Both ring halves are marked with serial numbers, stage number, and the word AFT.

(9) Install right-hand ring half (11, Figure 407) onto pads of right-hand case half (21).

(10) Align Uniballs of six vane actuator levers (13) with holes at ends of ring half (11).

(11) Insert six pins (16) through Uniballs on levers (13) and bushings of ring half (11).

(12) Install left-hand ring half (17) onto pads of left-hand case half (22).

(13) Align Uniballs of six vane actuator levers (13) with holes at ends of ring half (11).

(14) Insert six pins (16) through Uniballs on stage 2 vane levers (13) and bushings of ring half (11).

(15) Install vanes (19) No. 4 through No. 14 onto right-hand case half (21) and vanes No. 21 through No. 31 onto left-hand case half (22) as follows:

(a) With trailing edge (thin edge) facing aft, install vanes (19) in their respective holes.

(b) Secure vanes (paragraph 5.A.(7)).

(16) Rotate ring halves (11, 17) between open and closed positions, and check for freedom of movement. Light rubbing between vanes and compressor case is permitted.

NOTE: One tab of keywasher (2, Figure 408) must align with flat on self-locking nut (1).

(17) Bend tabs of keywashers (2) against flats of self-locking nuts (1). Be sure one tab of keywasher (2) aligns with flat on self-locking nut (1).

B. Install stage 1 compressor variable vanes (1, Figure 407) into left-hand and right-hand case halves (22, 21) as follows:

(1) Position right-hand case half (21) and left-hand case half (22) aft end down on bench.

(2) Install 32 sleeve bushings (2) onto spindles of 32 stage 1 variable vanes (1).

NOTE: * No. 1 vane hole is the first hole to the right of the word TOP on right-hand case half (21).

* Aft faces of vanes (1) are marked 1 through 32.

(3) With trailing edge (thin edge) facing aft, install vanes (1) marked No. 1, 2, and 3 into their respective holes on right-hand case half (21).

(4) Install vanes marked No. 14, 15, and 16 into their respective holes, as described in paragraph 5.B.(3).

(5) With trailing edge (thin edge) facing aft, install vanes (20) marked No. 17, 18, and 19 into their respective holes on left-hand case half (22).

(6) Install vanes marked No. 30, 31, and 32 into their respective holes, as described in paragraph 5.B.(5).

(7) Secure one of the installed vanes (5, Figure 408) to right-hand compressor case half (6) as follows:

(a) Install washer (4), vane actuator lever (3), and keywasher (2) on vane spindle (7).

(b) Install keywasher (2) so that flats of lever (3) and keywasher are aligned.

(c) Install self-locking nut (1) on vane spindle (7).

CAUTION: * BEFORE TIGHTENING SELF-LOCKING NUT (1), BE SURE THAT KEYWASHER (2) AND VANE ACTUATOR LEVER (3) ARE CORRECTLY INSTALLED ON VANE SPINDLE (7).

* DO NOT OVER TIGHTEN THE SELF-LOCKING NUT (1).

NOTE: Vane (5) and vane actuator lever (3) must be held firmly each time that tightening is required.

(d) Tighten the self-locking nut (1) until there is no radial looseness between the vane (5) and the vane actuator lever (3). Do not over tighten the nut.

(e) Make sure that there is no radial looseness between the vane (5) and the vane actuator lever (3). If there is looseness, repeat paragraph 5.B.(7)(d).

(f) Be sure that vane (5) can be rotated and that vane does not bind on ID of compressor case half (6) when lever (3) is rotated. If vane binds, rotate vane several times between open and closed positions to scrape off flowpath coating.

(g) Use the procedure in paragraph 5.B.(7)(a) through 5.B.(7)(f) and secure remaining five vanes (5).

(8) Using procedures in paragraph 5.B.(7), secure six installed vanes (5) to left-hand case half (6).

NOTE: Right-half and left-half ring halves are a matched assembly. Both ring halves are marked with serial numbers, stage number, and the word AFT.

(9) Install right-hand ring half (10, Figure 407) onto pads of right-hand case half (21).

(10) Align Uniballs of six vane actuator levers (6) with holes at ends of ring half (10).

(11) Insert six headless straight pins (9) through Uniballs of levers (6) and bushings of ring half (10).

(12) Install left-hand ring half (18) onto pads of left-hand case half (22).

(13) Align Uniballs of six vane actuator levers (6) with holes at ends of ring half (18).

(14) Insert six pins (9) through Uniballs of levers and bushing of ring half (18).

(15) Install vanes (1) No. 4 through No. 14 onto right-hand case half (21) and vanes No. 20 through No. 29 onto left-hand case half (22) as follows:

(a) With trailing edge (thin edge) facing aft, install vanes (1) in their respective holes.

(b) Secure vanes (1) (paragraph 5.B.(7).

(16) Rotate ring halves (10, 18) between open and closed positions, and check for freedom of movement. Light rubbing between vanes and compressor case is permitted.

NOTE: One tab of keywasher (2, Figure 408) must align with flat on self-locking nut (1).

(17) Bend tabs of keywashers (2) against flats of self-locking nuts (1). Be sure one tab of keywasher aligns with flat on self-locking nut (1).

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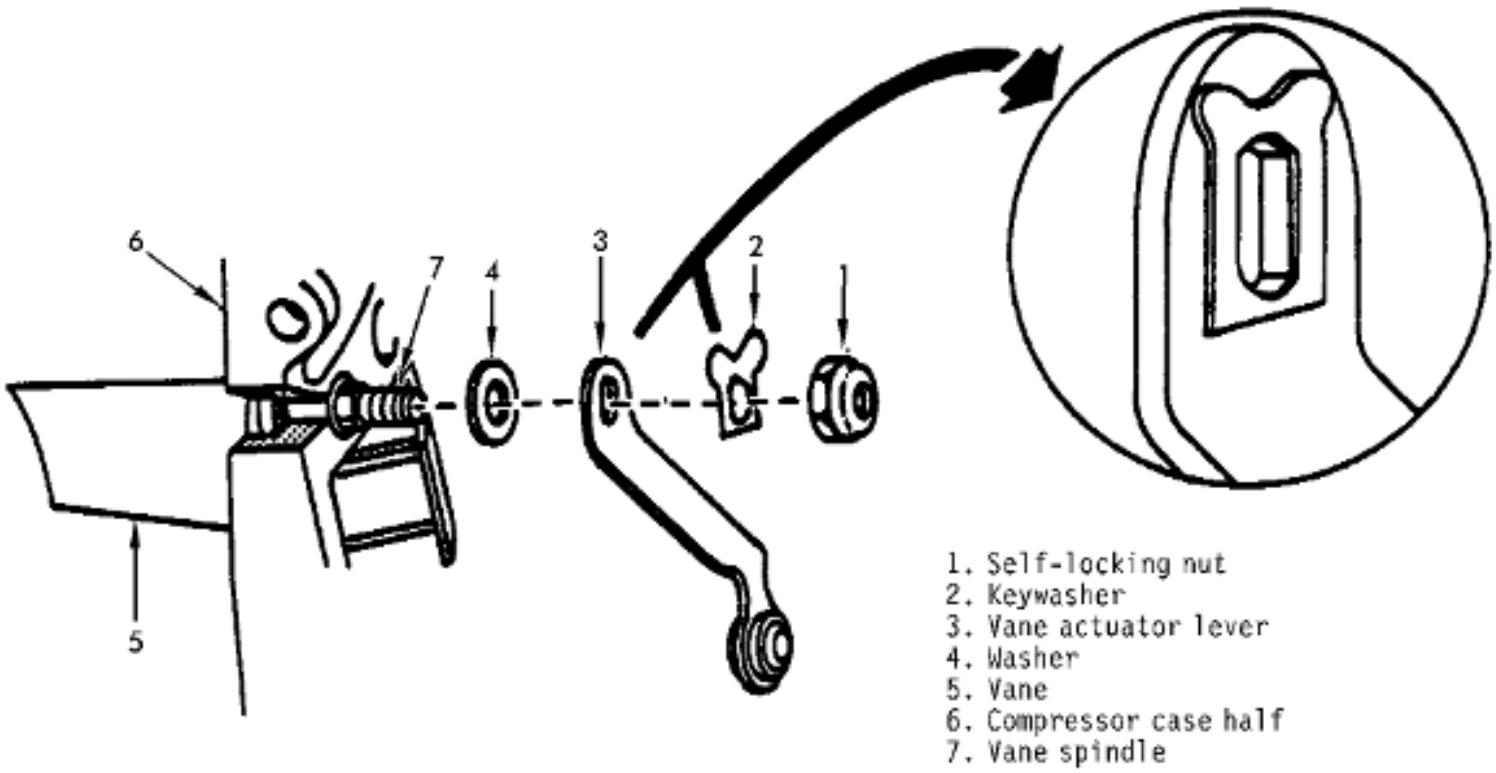

Figure 408 Vane Spindle, Vane Lever, and Keywasher - Alignment