TO: ALL HOLDERS OF AILERON/ELEVATOR AUTOPILOT ACTUATOR LEVER ASSEMBLY OVERHAUL MANUAL, 27-09-05

REVISION NO. 5, DATED MAR 1/99

HIGHLIGHTS

| DESCRIPTION OF CHANGE | TOPICS AFFECTED | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | D&O | D/Assy | Cleaning | Insp/Chk | Repair | Assy | F/C | Test | T/Shooting | S/Tools | Storage | IPL | L/Overhaul |
| Added rivet 66-26121-3 as an option for top assemblies 69-70991-3, -4 and 69-71002-3, -4 | | | | | | | | | | | | X | |

# AILERON/ELEVATOR AUTOPILOT ACTUATOR LEVER ASSEMBLY

# 27-09-05

BOEING P/N 69-70991-3 THRU -12
69-71002-3 THRU -12

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

| BOEING SERVICE BULLETIN | BOEING TEMPORARY REVISION | OTHER DIRECTIVES | DATE DIRECTIVE INCORPORATED INTO TEXT |
|---|---|---|---|
| | | PRR 32900-1 | Sep 5/84 |
| | | PRR 34656 | Mar 5/91 |

LIST OF EFFECTIVE PAGES

* Indicates pages revised, added or deleted in latest revision
F Indicates foldout pages - print one side only

| | PAGE | DATE | PAGE | DATE | PAGE | DATE |
|---|---|---|---|---|---|---|
| | 27-09-05 | | | | | |
| | T-1 | Mar 5/91 | | | | |
| | T-2 | BLANK | | | | |
| * | LEP-1 | Mar 1/99 | | | | |
| | LEP-2 | BLANK | | | | |
| | T/C-1 | Sep 5/84 | | | | |
| | T/C-2 | BLANK | | | | |
| | 1 | Sep 5/86 | | | | |
| | 2 | Sep 5/86 | | | | |
| | 3 | Jun 1/95 | | | | |
| | 4 | Jun 1/95 | | | | |
| | 5 | BLANK | | | | |
| | 6 | Sep 5/86 | | | | |
| * | 7 | Mar 1/99 | | | | |
| | 8 | Mar 5/91 | | | | |

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*[1] Refer to REPAIR section.

*[2] Special instructions not required. Use standard industry practices.

*[3] Refer to TESTING section.

BOEING COMMERCIAL JET

# OVERHAUL MANUAL

## AILERON/ELEVATOR AUTOPILOT ACTUATOR LEVER ASSEMBLY

1. Description and Operation

   A. The aileron/elevator autopilot actuator lever assembly consists of two arms mounted on a fitting with two shear rivets. The lever assemblies are attached to the autopilot actuators and the control rods which actuate the aileron and actuator PCU's. A control column force of approximately 100 lbs will shear the rivets in the lever assembly in the event of autopilot actuator binding.

   B. Leading particulars (approximate)

      (1) Length -- 6 inches

      (2) Width -- 1 inch (69-70991 Series)
          -- 3 inches (69-71002 Series)

      (3) Thickness -- 1 inch

2. Check

   A. Magnetic particle check fitting (25, Fig. 2) per 20-20-01.

   B. Penetrant check arms (20) per 20-20-02.

3. Repair

   A. Repair minor defects in accordance with standard industry practices.

   B. Refinish

      NOTE: Refer to 20-30-02 for stripping of protective finishes and to 20-41-01 for explanation of Boeing finish codes.

      (1) Spacer (10) -- Anodize and apply 1 coat of BMS 10-11, type 1 primer (F-18.04) all over. Material: Al alloy

      (2) Fitting (25) -- Passivate (F-17.09) all over. Material: 15-5PH or 17-4PH CRES, 150-170 ksi.

      (3) Lever assemblies -- Chemical treat and apply 1 coat of primer BMS 10-11, type 1 (F-18.05 on 69-70991-3 thru -6 and 69-71002-3 thru -6 assemblies; F-18.01 on 69-70991-7, -8 and 69-71002-7, -8 assemblies) on machined surfaces only. Omit primer in 0.250 inch dia hole(s).

C. Replacement

(1) Rivets (15) replacement

NOTE: The following procedures provide instructions to replace the shear-out rivets (15) one at a time. If arms (20) and fitting (25) are separated, apply a thin coat of grease, MIL-G-23827 to faying surfaces prior to rivets (15) installation.

(a) Remove upset head of rivet (15).

(b) Remove rivet shank from fitting (25) and examine rivet hole for wear. Check that rivet hole diameter is 0.158-0.159 inch. Check that rivet hole edges are still sharp.

(c) Align the rivet hole in arms (20) and fitting (25) and securely clamp the arms and fitting.

CAUTION: DO NOT APPLY PRIMER IN HOLES FOR RIVET (15) OR TO RIVETS (15).

(d) Insert new rivet (15) in the rivet hole and install a 0.040-0.046 inch diameter pin thru the rivet inspection hole.

NOTE: Only rivet with 0.1575-0.1585 inch shank diameter should be used.

(e) Install rivet by squeezing.

NOTE: Minimum driven button diameter to be 0.185 inch.

(f) Remove pin and check that rivet inspection hole is 0.040-0.046 inch diameter. Ream hole as required.

(g) Replace the other rivet as required by repeating steps (a) thru (f).

(h) Check lever assembly per Testing/Troubleshooting.

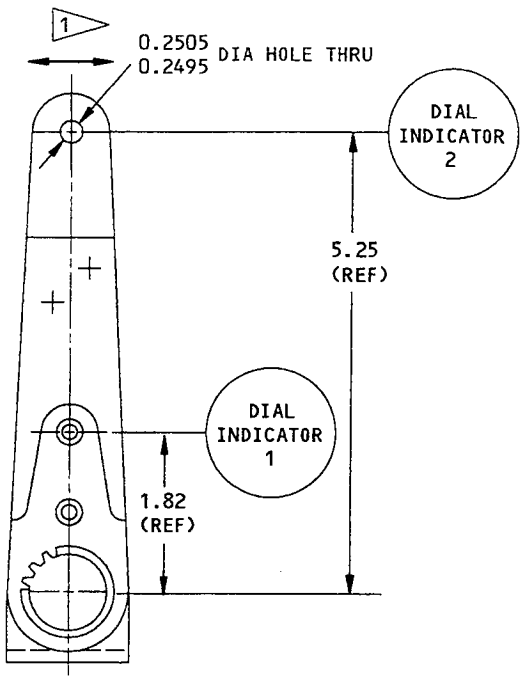
(2) Marker (30) -- Replace per 20-50-05 and seal edges with top coating type 41 (Ref 20-50-13).

4. Testing/Troubleshooting

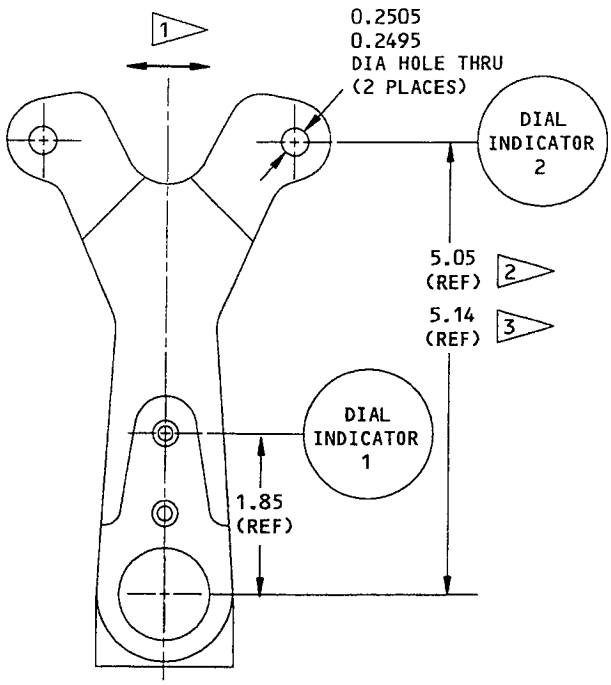
A. Test (Fig. 1)

(1) Clamp lever assembly at fitting (25) such that rotational load may be applied to the lever assembly.

(2) Insert a 0.2485-0.2495 inch diameter pin thru 0.250 inch diameter bolt hole in lever assembly. Apply a 95-105 lb. force to the pin perpendicular to the centerline of the lever assembly alternately in each direction for three complete cycles.




69-70991-3 THRU -12




69-71002-3,-5,-7,-9,-11 SHOWN
69-71002-4,-6,-8,-10,-12 SIMILAR

| DIAL INDICATOR NO. 1 READING | | DIAL INDICATOR NO. 2 |
|---|---|---|
| LOWER VALUE | UPPER VALUE | MAXIMUM ALLOWABLE READING |
| 0.0 | 0.00009 | 0.001 |
| 0.0001 | 0.00019 | 0.0013 |
| 0.0002 | 0.00029 | 0.0016 |
| 0.0003 | 0.00039 | 0.0019 |
| 0.0004 | 0.00049 | 0.0022 |
| 0.0005 | 0.00059 | 0.0024 |
| 0.0006 | 0.00069 | 0.0027 |
| 0.0007 | 0.00079 | 0.003 |
| 0.0008 | 0.00089 | 0.0033 |
| 0.0009 | 0.00099 | 0.0036 |
| 0.001 | 0.00109 | 0.0039 |
| 0.0011 | 0.00119 | 0.0042 |
| 0.0012 | — | 0.0045 |

DIAL INDICATOR READINGS
TABLE I

1 DIRECTIONS OF LOAD APPLICATION
2 65-71002-3,-5,-7,-9,-11
3 65-71002-4,-6,-8,-10,-12

Load Application Diagram
Figure 1

E90745

(3) Apply a 95-105 lb force in clockwise direction and then reduce the force to zero.

(4) Mount two dial indicators at locations shown in Fig. 1. The probe of dial indicator 1 shall contact fitting (25) at the dimension shown. The probe of dial indicator 2 shall contact arm (20) or the inserted 0.2485-0.2495 diameter pin at the dimension shown.

(5) Set both dial indicators to zero.

(6) Apply a 95-105 lb force in a counterclockwise direction and then reduce the force to zero.

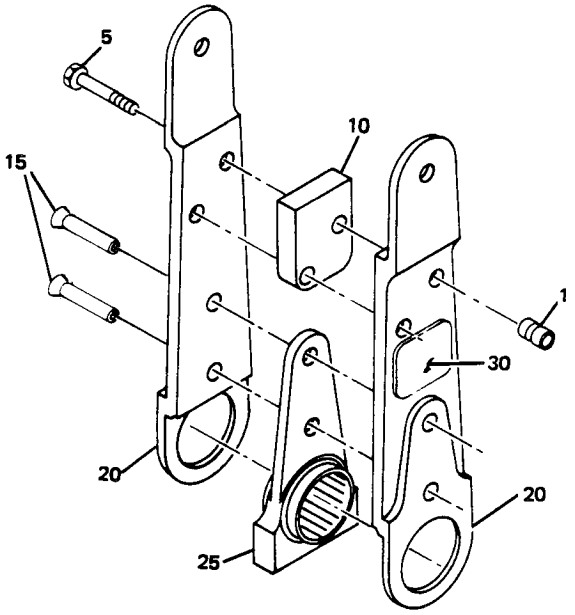
(7) Record the readings from the dial indicators.

(8) Go to table 1 and find the range of values for the reading from dial indicator 1. Find the row in which the reading from dial indicator 1 is between the lower and upper value. Moving across the same row, find the maximum allowable reading for dial indicator 2. The reading from dial indicator 2 may not exceed the maximum allowable value shown on the table.

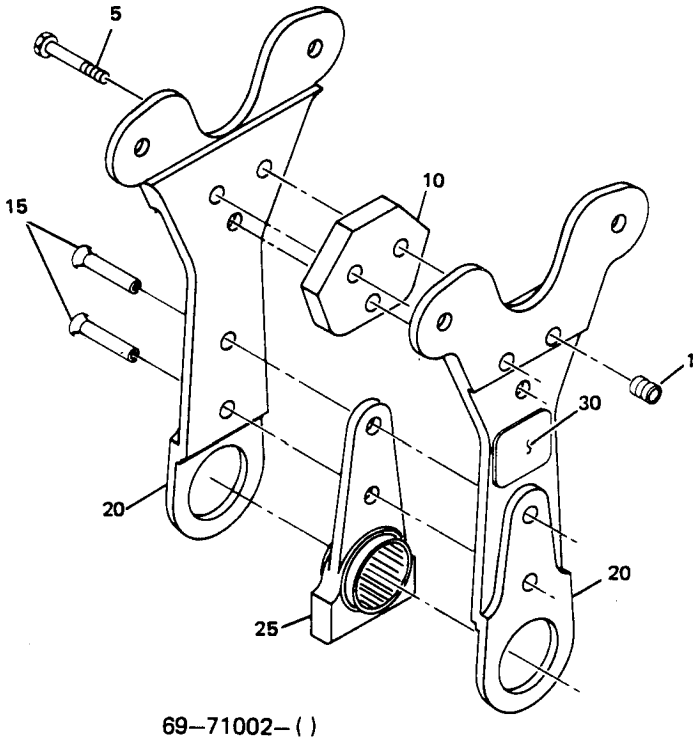
(9) Check that a 0.0375-0.0395 inch diameter pin can be freely inserted thru each rivet inspection hole.

B. If excessive play or rivet deformation is found, remove and replace rivet per Repair par. C(1).

5. ILLUSTRATED PARTS LIST




69–70991–( )




69–71002–( )

Aileron/Elevator Autopilot Lever Assembly
Figure 2

| FIG. & ITEM NO. | PART NO. | AIRLINE PART NUMBER | NOMENCLATURE 1 2 3 4 5 6 7 | USE CODE | QTY PER ASSY |
|---|---|---|---|---|---|
| 2- | | | | | |
| | 69-70991-3 | | LEVER ASSY, AIL AUTOPILOT ACTUATOR | A | RF |
| | 69-70991-4 | | LEVER ASSY, ELEV AUTOPILOT ACTUATOR | B | RF |
| | 69-70991-5 | | LEVER ASSY, AIL AUTOPILOT ACTUATOR | C | RF |
| | 69-70991-6 | | LEVER ASSY, ELEV AUTOPILOT ACTUATOR | D | RF |
| | 69-70991-7 | | LEVER ASSY, AIL AUTOPILOT ACTUATOR | I | RF |
| | 69-70991-8 | | LEVER ASSY, ELEV AUTOPILOT ACTUATOR | J | RF |
| | 69-71002-3 | | LEVER ASSY, AIL AUTOPILOT ACTUATOR | E | RF |
| | 69-71002-4 | | LEVER ASSY, ELEV AUTOPILOT ACTUATOR | F | RF |
| | 69-71002-5 | | LEVER ASSY, AIL AUTOPILOT ACTUATOR | G | RF |
| | 69-71002-6 | | LEVER ASSY, ELEV AUTOPILOT ACTUATOR | H | RF |
| | 69-71002-7 | | LEVER ASSY, AIL AUTOPILOT ACTUATOR | K | RF |
| | 69-71002-8 | | LEVER ASSY, ELEV AUTOPILOT ACTUATOR | L | RF |
| | 69-70991-9 | | LEVER ASSY, AIL AUTOPILOT ACTUATOR | M | RF |
| | 69-70991-10 | | LEVER ASSY, ELEV AUTOPILOT ACTUATOR | N | RF |
| | 69-70991-11 | | LEVER ASSY, AIL AUTOPILOT ACTUATOR | O | RF |
| | 69-70991-12 | | LEVER ASSY, ELEV AUTOPILOT ACTUATOR | P | RF |
| | 69-71002-9 | | LEVER ASSY, AIL AUTOPILOT ACTUATOR | Q | RF |
| | 69-71002-10 | | LEVER ASSY, ELEV AUTOPILOT ACTUATOR | R | RF |
| | 69-71002-11 | | LEVER ASSY, AIL AUTOPILOT ACTUATOR | S | RF |
| | 69-71002-12 | | LEVER ASSY, ELEV AUTOPILOT ACTUATOR | T | RF |
| 1 | NAS1080-05 | | . COLLAR | A-DIJ M-P | 2 |
| 1 | NAS1080-05 | | . COLLAR | E-HKL Q-T | 3 |
| 5 | BACB30DX5-9 | | . BOLT | A-DIJ M-P | 2 |
| 5 | BACB30DX5-9 | | . BOLT | E-HKL Q-T | 3 |
| 10 | 66-26127-2 | | . SPACER | A-DIJ M-P | 1 |
| 10 | 66-26127-1 | | . SPACER | E-HKL Q-T | 1 |
| 15 | 66-26121-2 | | . RIVET | ABEF | 2 |
| 15 | 66-26121-3 | | . RIVET (OPT) | ABEF | 1 |
| 15 | 66-26121-3 | | . RIVET | CDG-T | 2 |
| 20 | 65C19772-3 | | . ARM | A-DIJ M-P | 2 |
| 20 | 65C19773-4 | | . ARM | EGKQS | 2 |
| 20 | 65C19773-5 | | . ARM | FHLRT | 2 |
| 25 | 65C19771-2 | | . FITTING | ACO | 1 |
| 25 | 65C19771-4 | | . FITTING | BDP | 1 |
| 25 | 65C19771-1 | | . FITTING | FHT | 1 |
| 25 | 65C19771-3 | | . FITTING | EGS | 1 |
| 25 | 65C19771-6 | | . FITTING | IM | 1 |
| 25 | 65C19771-8 | | . FITTING | JN | 1 |

| FIG. & ITEM NO. | PART NO. | AIRLINE PART NUMBER | NOMENCLATURE 1 2 3 4 5 6 7 | USE CODE | QTY PER ASSY |
|---|---|---|---|---|---|
| 2- | | | | | |
| 25 | 65C19771-7 | | . FITTING | KQ | 1 |
| 25 | 65C19771-5 | | . FITTING | LR | 1 |
| 30 | BAC27DCT285 | | . MARKER | ABEF | 1 |
| 30 | BAC27DCT0366 | | . MARKER | CDG-L | 1 |
| 30 | BAC27DCT0490 | | . MARKER | M-T | 1 |
| 30 | BAC27DCT0491 | | . MARKER | M-T | 1 |