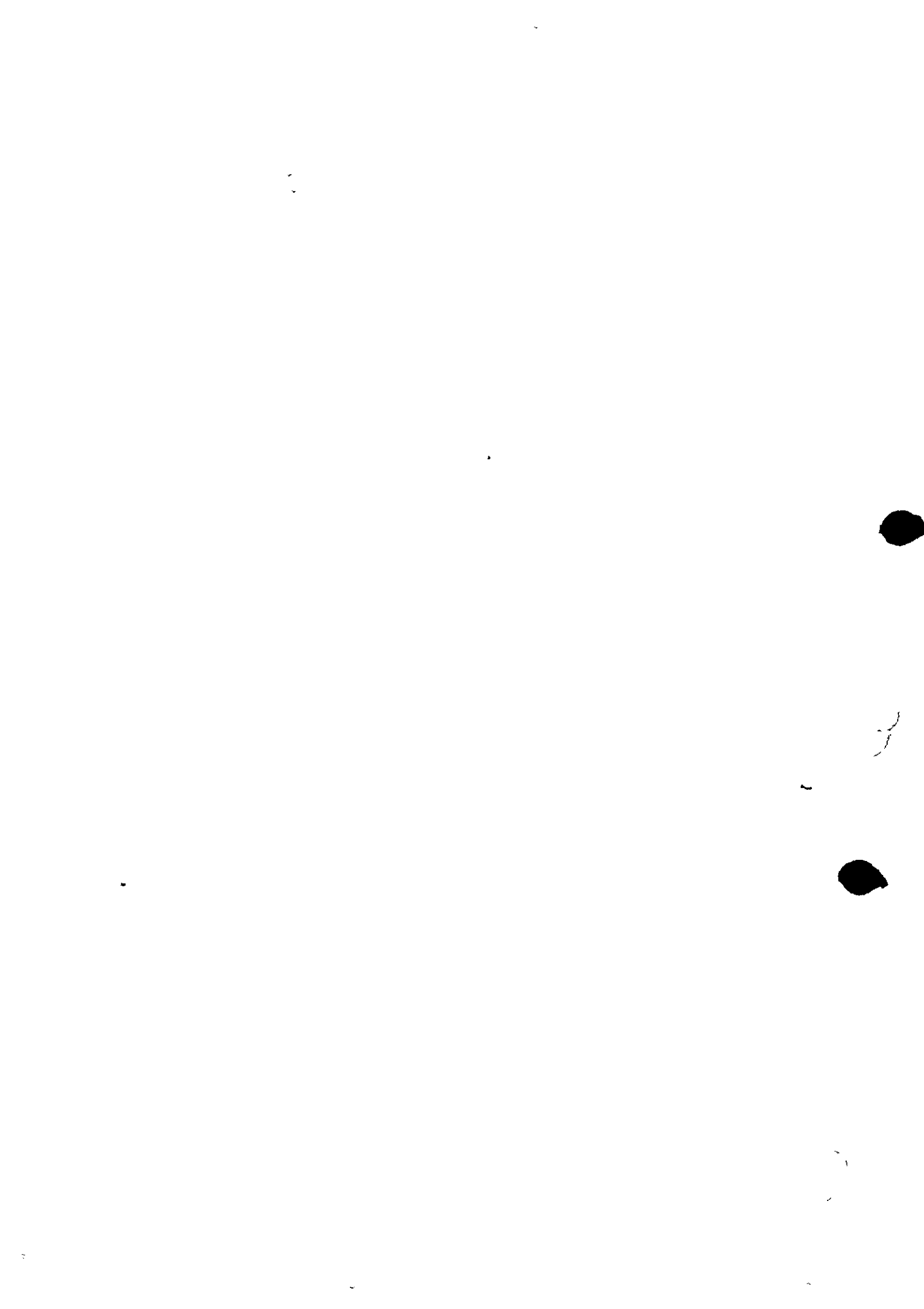


CHAPTER

54



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CHAPTER 54

NACELLES

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COWL PANELS (See 71-2 Subjects)

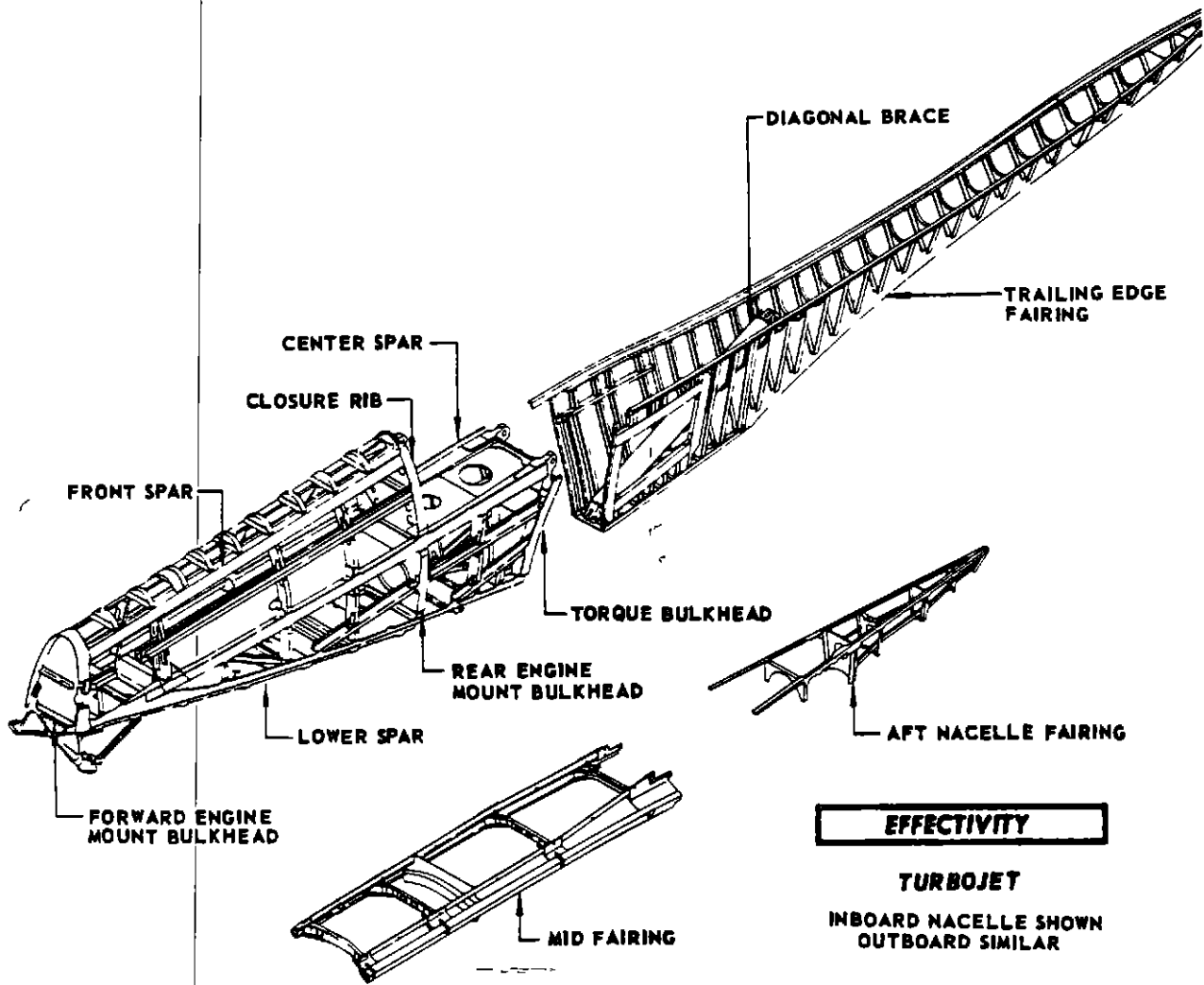
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NACELLE STRUTS - DESCRIPTION AND OPERATION

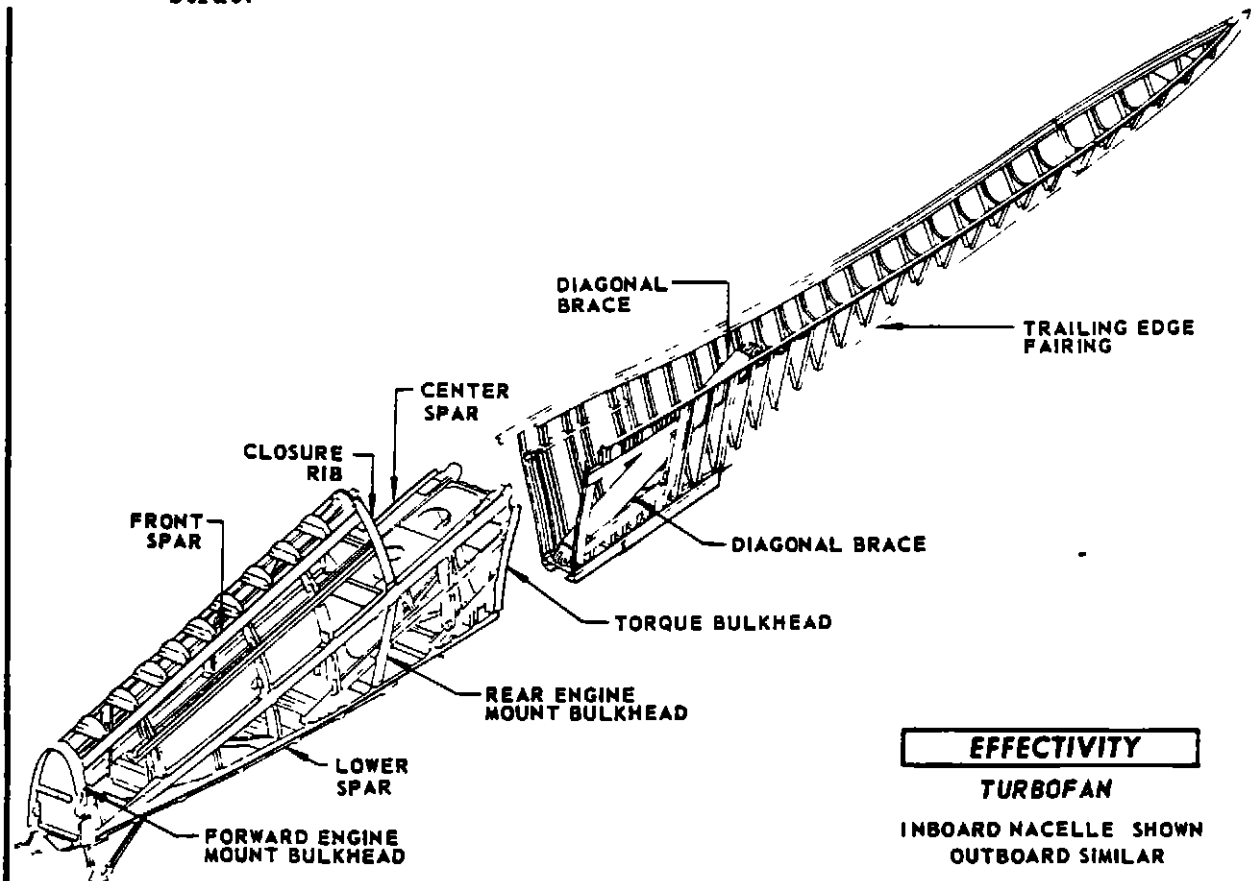
1. General

- A. The nacelle struts (figure 1) are the means by which the engines and nacelles are mounted forward of, and below, the wing. Their primary function is to transmit engine loads to the wing. The differences between the inboard strut and the outboard strut are limited.
- B. Primary structure in the struts comprises four longitudinal members, four vertical members and the skin panels (figures 2 and 3). The longitudinal members are the front, or upper, spar, the center spar, the lower spar and the tubular diagonal brace at the rear. The vertical



members are the torque bulkhead, at the aft end of the center and lower spar, the forward and aft engine mount bulkheads, and the closure rib at the aft end of the front, or upper spar. On turbojet airplanes a mid-fairing, which houses the hinges for the engine side cowl panels, is attached to the underside of the lower spar. On turbofan airplanes the cowl panel hinges are bolted directly to the underside of the lower spar. On all airplanes strut to wing attachment is made with four bolts, one at the aft end of the strut front spar, two at the aft end of the strut center spar, and one at the aft end of the tubular diagonal brace.

- C. Secondary structure includes the fairing around the wing leading edge and back over the wing upper surface, and the trailing edge fairing (figure 1) which fairs in the diagonal brace on the wing under surface. On turbojet airplanes an aft nacelle fairing is attached to the underside of the lower spar and the trailing edge fairing, above the engine thrust reverser. On turbofan airplanes this fairing is not a part of the nacelle as it is integral with the engine aft thrust reverser outer sleeve. On all airplanes the skin has several access panels which are easily detachable by means of quick disconnect fasteners and afford admittance to engine accessory systems located within the struts. Two of these panels in the center spar area are made of light gauge material and are designed to blow out in the event of a pressure build up within the strut.



Nacelle Strut Structure
 Figure 1 (Sheet 2)


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Inboard and Outboard Strut Skin Diagram.

Boeing pages 3 through 6 have been deleted.
 For SRM (Structural Repair Manual) references see Conversion Table below.

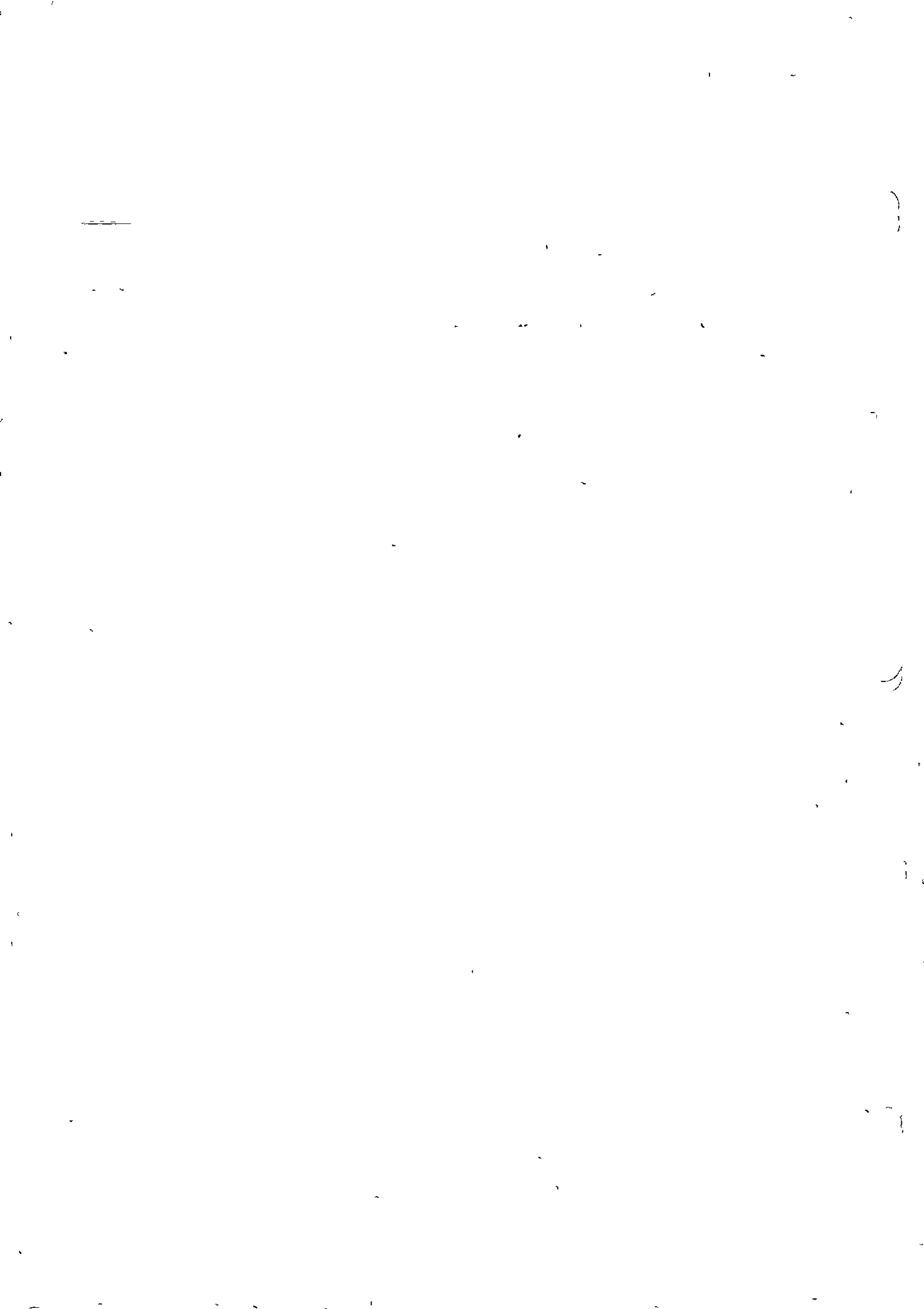
| PAGE No. | DATE | FIGURE No. / TITLE | REFERENCE S.R.M. |
|----------|----------|---|--|
| 3 | 15/11/61 | Figure 2 Inboard Strut Skin Diagram | 54-4-1 figure 1 (sheet 2 of 4) page 2 |
| 4 | 15/11/61 | Figure 3 Outboard Strut Skin Diagram | 54-4-1 figure 1 (sheet 1 of 4) page 1 |
| 5 | 15/8/66 | Figure 4 Inboard Strut Skin Diagram | 54-4-1 figure 2 (sheet 2 of 2) page 6 |
| 6 | 15/8/66 | Figure 5 Outboard Strut Skin Diagram | 54-4-1 figure 2 (sheet 1 of 2) page 5 |

Conversion Table

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 Page 3



NACELLE STRUTS - MAINTENANCE PRACTICES

1 Inspection/CHECK Nacelle Struts

A Access

- (1) Refer to Access Doors and Panels, Chapter 12

B Examine struts for the following

- (1) Cracks in the thrust link at forward engine mount on left side, wear and corrosion in thrust link terminal bolts and holes (5, figure 201), remove one bolt, cracks and loose or missing fasteners in aft end fitting on thrust link and strut lower spar in same area, cracks in forward engine mount bulkhead
 - (a) Install bolt and tighten to 1300 to 1500 pound-inches torque
 - (2) Cracks in rear engine mount support fitting between mount bulkhead on strut and mount on engine, cracks, corrosion, and wear in bolts and holes (6)
 - (a) Remove bolt on either side of the male fitting, and install bolt per 54-1-11, Engine Rear Mount Support, on Turbojet airplanes, and per 54-1-12, Engine Rear Mount Support, on Turbofan airplanes
- NOTE Establishment of correct clearances and torque is necessary
- (3) Cracks and loose or missing fasteners in skin and doublers around access openings
 - (4) Cracks and loose or missing fasteners in access opening and gap covers
 - (5) Cracks and loose or missing fasteners at ribs, bulkheads, and stiffeners on strut lower spar

(Pages 202 through 203 are DELETED)

INBOARD NACELLE STRUT

| INDEX No. | FITTING P/N | BUSHING P/N | BOLT P/N | DESIGN LIMITS | | WEAR LIMITS | | REWORK INSTRUCTIONS | | |
|--------------|---|---|-------------|------------------|---------------|-----------------------|-------------------------|---|------|------------------------------|
| | | | | MIN. DIAM. | MAX. DIAM. | MAX. WEAR DIAM. | MAX. DIAM. CLEAR. | STRUC. ϕ BEFORE BUSHING PLATING | MAT. | BUSHING INTER- FERENCE |
| 1 | WING FRONT SPAR 64-1027-87 -88 | 69-2860-37 | | | | | | | | See Drawing 1-5120 |
| | STRUT 65-2531-5 or 65-42128-2 (SB 2027) | 65-27303-3 | | .9064 | .9090 | .9110 | .0050 | | | |
| | | | 65-23413-19 | .9058 | .9064 | .9012 | | | | See Drawing 1-45527 |
| 2 | WING INB. FWD. DRAG 50-6884-3 -4 | INBD. LUG 69-2860-31 OUTBD. LUG 69-2860-57 | | | | | | | | See Drawing 1-5120 |
| | WING OUTBD. FWD. DRAG 50-6887-1 -2 | 69-2860-32 | | 1.1869 | 1.1897 | 1.1925 | .0060 | | | |
| | STRUT 65-2536 | NEANT | | | | | | 1.3497 | A | .0005-.0025 |
| | | | 65-23413-2 | 1.1853 | 1.1859 | 1.1809 | | | | See Drawing 1-45458 |
| 3 | WING AFT DRAG 5-72319-3013 -3014 | 69-2860-35 | | 1.0619 | 1.0647 | 1.0675 | .0060 | | | See Drawing 1-5120 |
| | DIAG. BRACE UPPER FITTING 65-2526-4 | 65-27303-8 | | | | | | | | |
| | | | 65-23413-18 | 1.0617 | 1.0623 | 1.0569 | | | | See Drawing 1-45525 |

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Figure 201 (Sheet 2 of 7)

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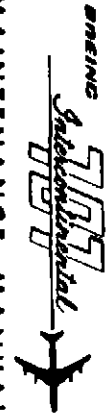
| INDEX N° | FITTING P/N | BUSHING P/N | BOLT P/N | DESIGN LIMITS | | WEAR LIMITS | | REWORK INSTRUCTIONS | | |
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| | | | | MIN. DIAM. | MAX. DIAM. | MAX. WEAR DIM. | MAX. DIAM. CLEAR. | STRUC. ϕ BEFORE BUSHING OR PLATING | MAT. | BUSHING INTER-FERENCE |
| 4 | DIAG. BRACE LOWER FITTING 65-2527-3 | 65-27303-21 | | .8735 | .8763 | .8787 | | .0045 | See Drawing 1-5120 | |
| | STRUT LOWER SPAR FITTING 65-2525-12 | 65-27303-11 -12 | | | | | | | | |
| | | | NAS-1114-68W | .8730 | .8740 | .8718 | | | | |
| 5 | FITTING NAC. (AFT) 65-2539-1 or -4 | | | .7486 | .7506 | .7530 | .0045 | .8706 | A | SHRUNK FIT .0005-.0025 |
| | THRUST LINK 65-2498 or -2 | | | | | | | | | |
| | FWD. ENGINE MOUNT FITTING 65-2530 or 65-2530-3 or 65-2530-6 | | | | | | | | | |
| | | | NAS-1112-210W | | | | | | | |
| 6 | ENGINE AFT MOUNT FITTING 65-2540-1 L.H. NAC. -2 R.H. | | | .4995 | .5005 | .5027 | .0045 | | | See Drawing 1-5649 |
| | REAR ENGINE MOUNT SUPPORT BRACKET 65-2505 or 65-2505-2 or 65-2505-3 | | | | | | | | | |
| | | | 66-1928 | | | | | | | |

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Nacelle Struts - Allowable Wear and Rework
Figure 201 (Sheet 3 of 7)

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| INDEX N° | FITTING P/N | BUSHING P/N | BOLT P/N | DESIGN LIMITS | | WEAR LIMITS | | REWORK INSTRUCTIONS | | |
|-------------|--|-------------------|-------------|------------------|---------------|-----------------------|-------------------------|--|---------|------------------------------|
| | | | | MIN. DIAM. | MAX. DIAM. | MIN. WEAR. DIM. | MAX. DIAM. CLEAR. | STRUC. ∅ BEFORE BUSHING PLATING | MAT. | BUSHING INTER- FERENCE |
| 1 | WING FRONT SPAR 50-8731-9 -10 | 69-2860-38 -39 | | .8440 | .8465 | .8485 | .0050 | See Drawing | 1-5120 | |
| | STRUT 65-13347-5 | 65-27303-1 | | | | | | | | |
| | | | 65-23413-9 | .8434 | .8440 | .8388 | | See Drawing | 1-45452 | |
| 2 | WING INBD. FWD. DRAG 50-8732-1 -2 | 69-2860-34 | | 1.1244 | 1.1272 | 1.1300 | .0060 | See Drawing | 1-5120 | |
| | WING OUTBD. FWD. DRAG 50-8733-1 -2 | 69-2860-33 | | | | | | | | |
| | STRUT 65-2534 | NEANT | | | | | | 1.2872 | A | .0005-.0025 |
| | | | 65-23413-1 | 1.1228 | 1.1234 | 1.1184 | | See Drawing | 1-45453 | |
| 3 | WING AFT DRAG FITTING 5-72316-3017 -3018 | 69-2860-36 | | 1.2498 | 1.2522 | 1.2550 | .0070 | See Drawing | 1-5120 | |
| | DIAG. BRACE UPPER FITTING 69-2018-2 | 65-27303-10 | | | | | | | | |
| | | | 65-23413-16 | 1.2492 | 1.2498 | 1.2444 | | See Drawing | 1-45451 | |

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| INDEX No. | FITTING P/N | BUSHING P/N | BOLT P/N | DESIGN LIMITS | | WEAR LIMITS | | REWORK INSTRUCTIONS | | | |
|-----------|---|--------------------|-------------------|---------------|------------|----------------|-------------------|---------------------------------|--------------------|---------------------------|--|
| | | | | MIN. DIAM. | MAX. DIAM. | MAX. WEAR DIM. | MAX. DIAM. CLEAR. | STRUC. Ø BEFORE BUSHING PLATING | MAT. | BUSHING INTER-FERRENCE. | |
| 4 | DIAG. BRACE LOWER FITTING 69-2019-2 | 65-27303-25 | | .8737 | .8763 | .8787 | | See Drawing 1-5120 | | | |
| | STRUT LOWER SPAR FITTING 65-2541-2 | 65-27303-19 -20 | | | | | .0050 | | | | |
| | | | NAS464F14- A89 | .8725 | .8737 | .8718 | | | | | |
| 5 | FITTING NAC. (AFT) 65-2539-2 or -5 | | | | | | | .8706 | A | SHRUNK FIT .0005-.0025 | |
| | THRUST LINK 65-2498 or -2 | | | .7486 | .7506 | .7530 | | | | | |
| | FWD. ENGINE MOUNT FITTING 65-2530 or 65-2530-3 or 65-2530-6 | | | | | | .0045 | | | | |
| | | | NAS464F12-21 | .7480 | .7490 | .7468 | | | | | |
| 6 | ENGINE AFT MOUNT FIT. NAC. 65-2540-3 L.H. -4 R.H. | | | | | | | See Drawing 1-5649 | | | |
| | REAR ENGINE MOUNT SUP- PORT BRACKET 65-2505 or 65-2505-2 or 65-2505-3 | | | .4995 | .5005 | .5027 | .0045 | | See Drawing 1-5437 | | |
| | | | 66-1928 | .4982 | .4991 | .4976 | | | | | |

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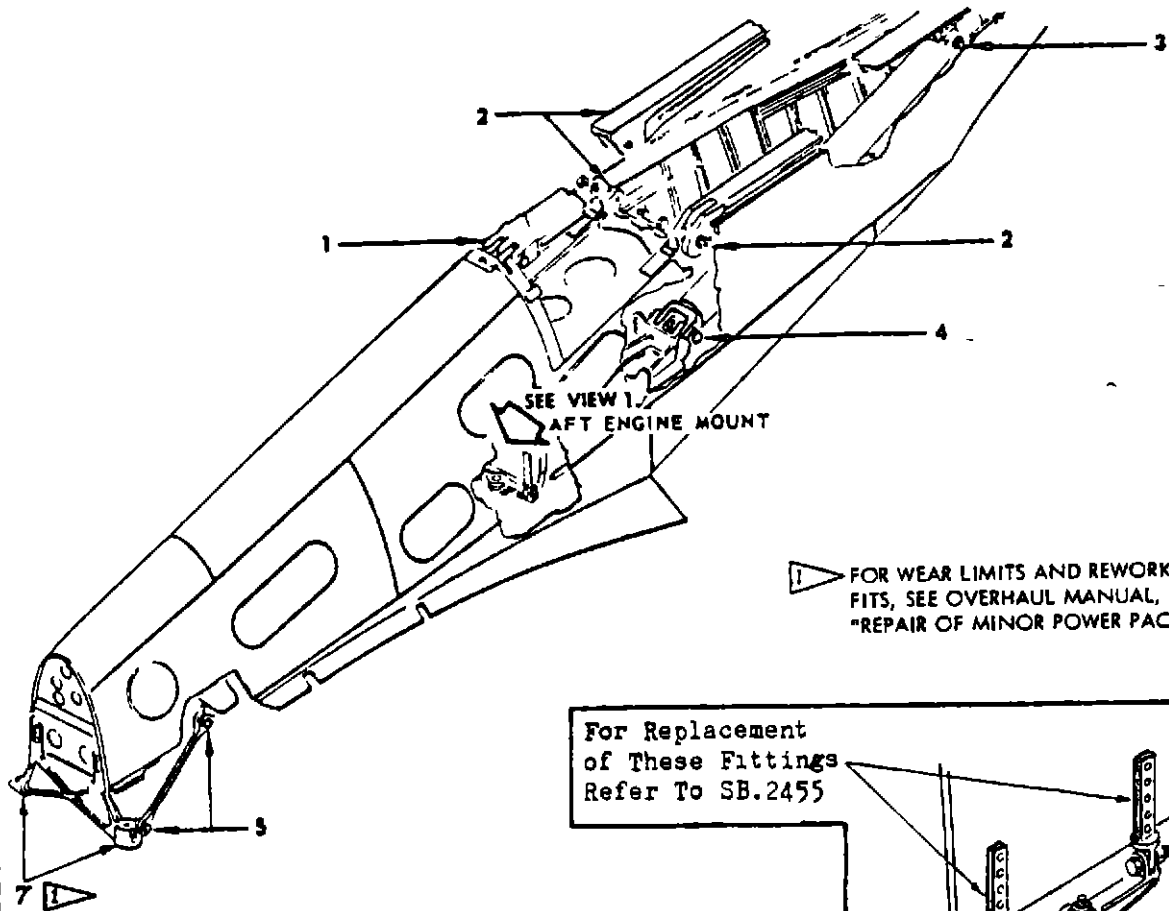
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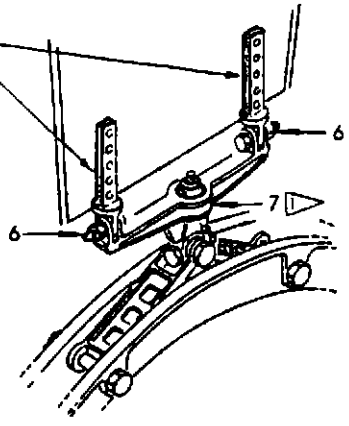
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▲ FOR WEAR LIMITS AND REWORK OF THESE FITS, SEE OVERHAUL MANUAL, CHAPTER 71, "REPAIR OF MINOR POWER PACK COMPONENTS"

For Replacement of These Fittings Refer To SB.2455



AFT ENGINE MOUNT
VIEW 1

LEGEND (SEE TABLE ON SHEETS 7, 8, 9 AND 10)

- ▲ 17-4PH STAINLESS STEEL BUSHING CAD PLATE O.D. REAM ID TO SIZE AFTER INSTALLATION.
- REF : DOCUMENT D6-1498.

NOTE . Coat all attachment pins, bolts and reamed holes (item 1 to 5) prior to each installation or reinstallation, with corrosion preventive Aeroshell Compound n°2 per MIL-C-16173 type II.

WARNING: For fittings where material has already been removed any place for corrosion clean up, T.Eg.CEL should be advised whenever oversizing of a bolt hole following tables hereafter has to be accomplished, even if within allowable limits specified in those tables

T.Eg CEL SB 2455

Nacelle Struts - Allowable Wear and Rework
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INBOARD WACELLE STRUT.

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Macelle Struts - Allowable Wear and Rework
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|----------|---|----------------------------------|------------------------------|---------------|------------|-----------------|-------------------|---------------------------------|------|-----------------------|
| | | | | MIN. DIAM. | MAX. DIAM. | MAX. WEAR DIAM. | MAX. DIAM. CLEAR. | STRUC. Ø BEFORE BUSHING PLATING | MAT. | BUSHING INTER-FERENCE |
| 1 | WING FRONT SPAR 64-1027-89 or-90 -101 or-102 | 69-2860-49 69-2860-60 | | .9382 | .9410 | .9430 | | See Drawing 1-5120 Sht2 | | |
| | STRUT 65-42128-1 | 65-27303-5 | | | | | .0055 | 1.0610 | A | .001-.0025 |
| | | | 65-23413-10 -23 | .9364 | .9378 | .9324 | | | | |
| 2 | WING INBD. FWD. DRAG 50-6884-33or-34 -45or-46 | 69-2860-59 -51 69-42475-10 | | | | | | See Drawing 1-5120 Sht2 | | |
| | WING OUTB. FWD. DRAG 50-6887-9or-10 -1or-2 | 69-2860-50 69-42475-9 -15 | | 1.2189 | 1.2217 | 1.2245 | | | | |
| | STRUTS 65-2536-4or-5 -9or-10 | NEANT 65-27303-27 | | | | | .0060 | 1.3217 | A | .001-.0025 |
| | | | 65-23413-3 or-4 -29 or-30 | 1.2171 | 1.2185 | 1.2151 | | | B | |
| 3 | WING AFT DRAG 5-72319-3013 -3014 | 65-2860-35 | | | | | | See Drawing 1-5120 Sht1 | | |
| | DIAG. BRACE UPPER FITT 65-2526-1 | 65-27303-8 | | 1.0619 | 1.0647 | 1.0675 | | | | |
| | | | 65-23413-12 | 1.0601 | 1.0615 | 1.0597 | .0060 | | | |

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|-----------|--|--------------------|--------------|---------------|------------|-----------------|-------------------|---------------------------------|------|-----------------------|
| | | | | MIN. DIAM. | MAX. DIAM. | MAX. WEAR DIAM. | MAX. DIAM. CLEAR. | STRUC. Ø BEFORE BUSHING PLATING | MAT. | BUSHING INTER-FERENCE |
| 4 | DIAG. BRACE LOWER FITT. 65-2527-1 | 65-27303-21 | | | | | | | | |
| | STRUT LOWER SPAR FITT. 65-13348-3 | 65-27303-11 -12 | | .8735 | .8763 | .8787 | | | | |
| | | | NAS 1114-68W | .8730 | .8740 | .8718 | | | | |
| 5 | FITT. NAC (AFT) 65-11760-3 | | | | | | | .8706 | A | .001 .0025 |
| | THRUST LINK 65-2498-2 | | | .7486 | .7506 | .7530 | .0045 | | | See Drawing 1-6407 |
| | FWD. ENG. MOUNT FITT. 65-10693-2 | | | | | | | | | See Drawing 1-6405 |
| | | | NAS 1112-21W | .7480 | .7490 | .7468 | | | | |
| 6 | ENGINE AFT MOUNT FITT. 65-11602 65-11602-7 after appli. SB2455 | | | .4995 | .5005 | .5025 | | .6205 | A | .001 .0025 |
| | REAR ENG. MOUNT SUPPORT BRACKET 65-11633-4 | | | | | | .0040 | | | See Drawing 1-6404 |
| | | | 66-1928-1 | .4982 | .4991 | .4962 | | | | |
| | | | | | | | | | | |

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|-----------|---|---|------------------------------------|---------------|------------|-----------------|-------------------|-----------------------------------|--------|-----------------------|---------------|-----|------------|
| | | | | MIN. DIAM. | MAX. DIAM. | MAX. WEAR DIAM. | MAX. DIAM. CLEAR. | STRUC. Ø BEFORE BUSHING PLATING | MAT. | BUSHING INTER-FERENCE | | | |
| 1 | WING FRONT SPAR 50-8731-1 or -2 50-8731-21 or -22 | 69-2860-38or-39 69-2860-63or-39 | | .8438 | .8465 | .8485 | .0055 | See Drawing 1-5120 Sht 1 and 2 | | | | | |
| | STRUT 65-13347-3 | 65-27303-1 | | | | | | | | | | | |
| | | | 65-23413-11 -24 | .8419 | .8434 | .8388 | | | | | | | |
| 2 | WING INBD. FWD. DRAG 50-8732-7 or -8 -13 or -14 | 69-2860-53 69-42475-6 | | 1.1564 | 1.1592 | 1.1620 | .0060 | See Drawing 1-5120 Sht 2 | | | | | |
| | WING OUTB. FWD. DRAG 50-8733-9 or -10 -17 or -18 | 69-2860-52 69-42475-5 69-42475-18 | | | | | | | | | | | |
| | STRUTS 65-2534-4 or -5 -7 or -8 | NEANT 65-27303-26 | | | | | | | | | 1.2592 [B] | [A] | .001-.0025 |
| | | | 65-23413-5or-6 65-23413-31or-32 | | | | | | 1.1546 | 1.1560 | 1.1510 | | |
| 3 | WING AFT DRAG 5-72316-3005 or -3006 | 69-2860-36 | | 1.2494 | 1.2522 | 1.2560 | .0062 | See Drawing 1-5120 Sht 1 | | | | | |
| | DIAG. BRACE UPPER FITT. 69-2018-1 | 65-27303-10 | | | | | | | | | | | |
| | | | 65-23413-20 | | | | | | 1.2476 | 1.2490 | 1.2436 | | |

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| INDEX N° | FITTING P/N | BUSHING P/N | BOLT P/N | DESIGN LIMITS | | WEAR LIMITS | | REWORK INSTRUCTIONS | | | |
|-------------|--|----------------|-------------|------------------|---------------|-----------------------|-------------------------|--|-------|------------------------------|--------------------|
| | | | | MIN. DIAM. | MAX. DIAM. | MAX. WEAR DIAM. | MAX. DIAM. CLEAR. | STRUC. Ø BEFORE BUSHING PLATING | MAT. | BUSHING INTER- FERENCE | |
| 4 | DIAG. BRACE LOWER FITT. 65-13761-1 | 65-27303-22 | | .9990 | 1.0018 | 1.0042 | | | | See Drawing 1-5120 Sht 2 | |
| | STRUT LOWER SPAR FITT. 65-13349-1 | | | | | | | | | | 65-27303-13 -14 |
| | | | | NAS1116-90W | .9980 | .9990 | .9968 | | | | |
| 5 | FITTING NACELLE (AFT) 65-11760-4 | | | .7486 | .7506 | .7530 | | | .8706 | A | .001 .0025 |
| | THRUST LINK 65-2498-2 | | | | | | | | | | |
| | FWD ENGINE MOUNT FITT. 65-10693-2 | | | | | | | | | See Drawing 1-6405 | |
| | | | NAS1112-21W | .7480 | .7490 | .7468 | | | | | |
| 6 | ENGINE AFT MOUNT FITT. 65-11602-8 | | | .1995 | .5005 | .5018 | | | .6205 | A | .001 .0025 |
| | REAR ENG. MOUNT SUPPORT BRACKET 65-11633-4 | | | | | | | | | | |
| | | | 66-1928-1 | .4982 | .4991 | .4976 | | | | | |
| | | | | | | | | | | | |

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- (6) Cracks and loose or missing fasteners in center spar fitting at attachment to wing; cracks in center spar and torque bulkhead in same area; cracks and loose or missing fasteners in center spar at ribs, bulkheads, and stiffeners; cracks, corrosion and wear of bolts and holes at center spar joint with forward drag support on wing (2, figure 201); cracks and loose or missing fasteners in forward drag support fitting and wing skin in same area.

(a) Remove bolts, noting carefully the shimming, if any, at outside (bolt head side) of male fitting.

(b) Install bolts, keeping shimming same as prior to bolt removal, and tighten nuts to 400 to 500 pound-inches torque.

NOTE: Prior to installation, clean bolts and holes with solvent and coat with Aeroshell Compound No. 2 per MIL-C-16173 Type II.

- (7) Cracks and loose or missing fasteners in front spar fitting at attachment to wing; cracks in front spar and closure bulkhead in same area; cracks and loose or missing fasteners in front spar at ribs, bulkheads, and stiffeners; cracks, corrosion and wear of bolts and holes at front spar joint with upper surface support on wing (1); cracks and loose or missing fasteners in upper surface support and wing skin in same area.

NOTE: On later airplanes, an inspection hole with a plug is provided in the strut skin to allow examination of the upper surface of the front spar fitting.

(a) Install bolt with a thin enough washer that clamp-up loads will not be applied to clevis arms when nut is torqued 400 to 500 pound-inches (nut should bottom against bolt shoulder and not on washer).

NOTE: Prior to installation, clean bolts and holes with solvent and coat with Aeroshell Compound No. 2 per MIL-C-16173 Type II.

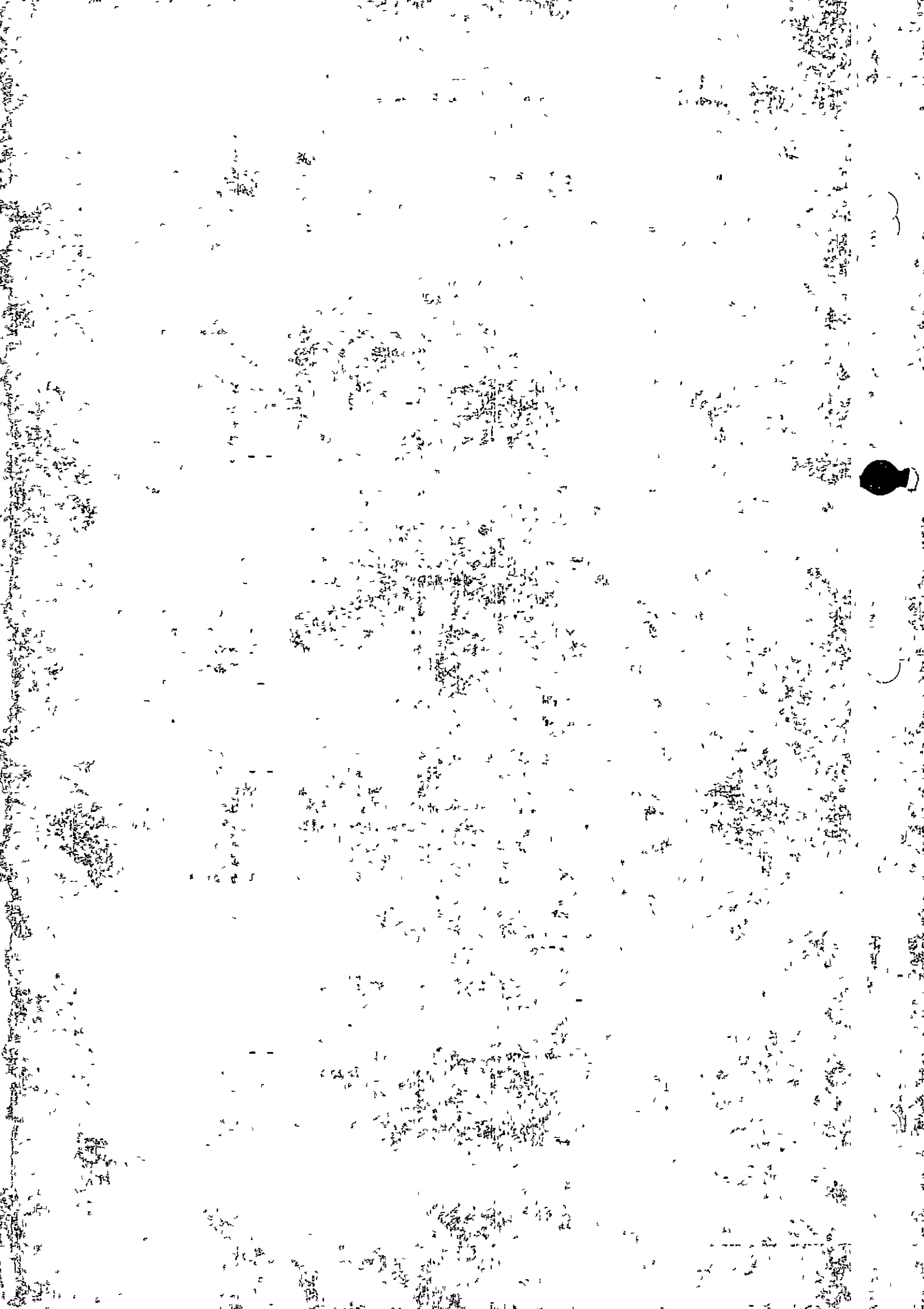
- (8) Cracks, loose or missing fasteners, and corrosion in diagonal brace, and terminal fittings, and lower spar attachment fitting; cracks and loose or missing fasteners in lower spar and torque bulkhead in area of diagonal brace; cracks, corrosion and wear of terminal bolts and holes for diagonal brace (3 and 4); cracks and loose or missing fasteners in aft drag support fitting and wing skin in same area.

(a) Install bolts at forward end of diagonal brace and tighten nut to 600 to 700 pound-inches torque.

(b) Install bolt at aft end of diagonal brace and tighten nut to 800 to 1000 pound-inches torque.

NOTE: Prior to installation, clean bolts and holes with solvent and coat with Aeroshell Compound No. 2 per MIL-C-16173 Type II.

- (9) Cracks, loose or missing fasteners and corrosion in fairings at hinge fittings, hinge spacers and guide pins; cracks and loose or missing fasteners in trailing edge and aft nacelle fairings.





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NACELLE STRUTS - REMOVAL/INSTALLATION

1. Equipment and Materials
 - A. Leading Edge Flap Actuator Lock Assembly - F70144, or equivalent
 - B. Crane, capable of lifting 1000 pounds
 - C. Overhead Mechanical Equipment, Strut Installation Sling, Inboard and Outboard Power Pod - F70334
 - D. Sand bags
 - E. Grease - MIL-G-23827
2. Prepare for Removal (Fig. 401)
 - A. Remove engine (Ref Chapter 71, Power Plant - Removal/Installation).
 - B. Check that external electrical power is disconnected and that airplane is grounded.
 - C. Check that engine start levers are in CUTOFF position.
 - D. Check that utility hydraulic supply system is depressurized.
 - E. Check that applicable engine fuel shutoff valve is closed and electrical plug is disconnected from valve.
 - F. Check that fuel supply line to engine is drained. If installed, check that water injection line is drained.
 - G. Install leading edge flap actuator locks on actuators adjacent to strut.
 - H. Remove strut trailing edge fairing.
 - I. Remove gap covers.
 - J. Remove all strut access panels.
 - K. Remove sealing as necessary while accomplishing following steps to disconnect engine equipment and strut attachment bolts.
 - L. Disconnect and cap or plug the following engine equipment as applicable
 - (1) Anti-icing ducting in strut midspar and wing leading edge area just forward of wing front spar.
 - (2) Pneumatic ducting in strut midspar and wing leading edge area just forward of wing front spar.
 - (3) Fire extinguisher flex hose lines in area of strut midspar and torque bulkhead.
 - (4) Hydraulic lines from wing to strut and, if applicable, drain lines.
 - (5) Fuel supply line tubing as necessary for easy lowering of strut away from wing leading edge.
 - (6) Water injection line, if installed.
 - M. Relieve tension of cable installed between thrust reverser control drum and engine control drum. Disconnect thrust reverser control cables and engine control cables from the respective control drums. Tag cables and identify for proper installation (Ref Chapter 76, Engine Controls).



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N. Disconnect Electrical connectors. Tag for identification as necessary. Pull wiring bundles at aft end of strut, out through strut and place on top of wing.

O. Remove the row of screws attaching upper leg of aft midspar seal angle to wing front spar.

NOTE. Screws are covered with sealant.

P. Install strut installation sling on strut, support sling with crane.

Q. Apply lift with crane to support weight of strut.

CAUTION: DO NOT APPLY MORE LIFT THAN THAT NECESSARY TO SUPPORT WEIGHT OF STRUT OR STRUCTURAL DAMAGE MAY RESULT.

3. Remove Nacelle Strut (Fig. 401)

A. Remove diagonal brace nuts, washers, and bolts. Remove diagonal brace.

B. Remove strut front spar nut, washer, and bolt.

C. Remove strut midspar nuts, washers, and bolts.

NOTE. Carefully record the shimming, if any at outside (bolt head side) of male fitting.

D. Remove strut and lower onto dolly. Lower front end first.

CAUTION. TAKE CARE TO AVOID DAMAGE TO DUCTS, TUBING, AND LINES. USE SAND BAGS OR SUITABLE PROTECTION UNDER ENGINE MOUNT FITTINGS.

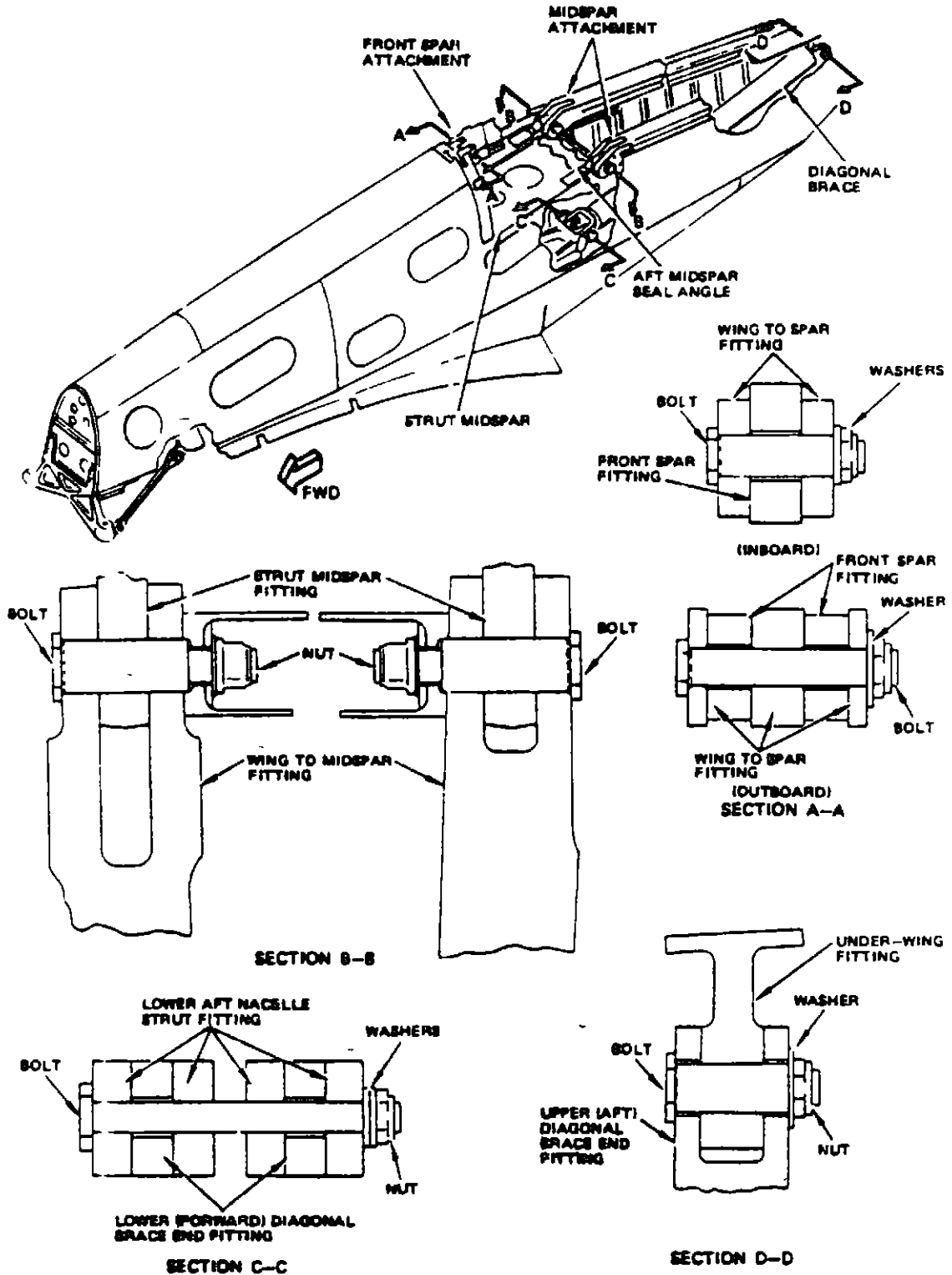
4. Prepare for Installation (Fig. 401).

A. Check that electrical power is disconnected and that airplane is grounded.

B. Check that engine start levers are in CUTOFF position.

C. Check that utility hydraulic supply system is depressurized.

D. Check that applicable engine fuel shutoff valve is closed and electrical plug is disconnected from valve.



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- E. Install leading edge flap actuator locks on actuators adjacent to strut.
 - F. Check for wear at installation points (Ref 54-1-0, Maintenance Practices).
5. Install Nacelle Strut (Fig. 401)
- A. Hoist strut into position for installation. Do not apply more lift than necessary to position strut.

CAUTION TAKE CARE TO AVOID DAMAGE TO DUCTS, TUBING, AND LINES.
 - B. Apply grease to midspar bolts and install bolts with washers and nuts. Use identical shimming, if any, recorded during removal. Bolt heads must point toward exterior of strut. Tighten nuts 400 to 500 pound-inches.
 - C. Apply grease to front spar bolts and install bolts with washers and nuts. Tighten nuts 400 to 500 pound-inches.
 - D. Position diagonal brace. Apply grease to diagonal brace bolts and install bolt, washer, and nut at forward and aft end of brace. Tighten nuts as follows:
 - (1) Tighten nut at forward end of diagonal brace 600 to 700 pound-inches at inboard and outboard struts.
 - (2) Tighten nut at aft end of diagonal brace 800 to 1000 pound-inches at inboard and outboard struts.
6. Restore Airplane to Normal (Fig. 401)
- A. Install the row of screws attaching upper leg of aft midspar seal angle to wing front spar.
 - B. Pull wiring bundles into strut. Connect electrical connectors. Remove tags.
 - C. Connect thrust reverser control cables and engine control cables with respective control drums. Tighten cable installed between thrust reverser control drum and engine control drum. Remove tags (Ref Chapter 76, Engine Controls).