

## BEECH 18 INSPECTION PROCEDURES

This document applies to all Beech 18 series airplanes including military counterparts and other counterparts approved by Supplemental Type Certificates (STC's), regardless of the category or categories of airworthiness certification.

COMPLIANCE: Required as indicated. To prevent possible failure of wing structure, accomplish the following for the left and for the right sides of each affected airplane.

- A. Prior to the next flight after August 21, 1980, all Beech 18 series airplanes were required to incorporate kits to reinforce the wing spars using an approved STC. Eligible strap installations are SA643CE with SA1206CE, SA832SW with SA895SW, SA1581SW with SA1582SW, SA2000WE, SA962EA, SA814SO, SA1533WE with SA2737WE, SA1192WE with SA3229WE, SA3009WE, SA3010WE, SA3021WE, and any future STC approved for this purpose.
- B. Conduct repetitive inspections of the wing structure and strap components at times which do not exceed intervals 1,500\* Flight Hours or 60 months, whichever occurs first, since the last inspection. If the last inspections occurred during compliance of AD 75-27-09 R2, no additional inspections are required until the next interval time as stated; i.e., within 1,500 Flight Hours or 60 months of the last inspection. Inspections may be done concurrently for detection of cracks and corrosion, at inspection wing station locations listed in Table 1 and shown schematically in Figure 3.

All wing stations listed in Table 1 must be inspected within 1,500 flight hours for cracks and corrosion. All wing stations listed in Table 2 must be inspected within 60 months of the last inspection. If 1,500 flight hours occurs since all wing stations in Table 1 were inspected, then inspections of all wing stations in Table 1 are required. If no more than 60 months has occurred since all wing stations in Table 1 or Table 2 were inspected, then only the inspections of all wing stations in Table 2 are required.

\*Upon operator's request, FAA Maintenance Inspector may extend this interval (or the interval specified below) by not more than 100 hours to permit compliance at an inspection period established for the operator.

1. Temporarily remove the spar reinforcement kit and inspect strap components for corrosion, fretting, cracking, and other defects in accordance with the applicable STC holder's instructions, if the STC holder is no longer in existence or supporting the STC, as listed, contact The Twin Beech 18 Society, a Division of the Staggarwing Museum Foundation, Inc., P.O. Box 550, Tullahoma, TN 37388:

<b>STC HOLDER</b>	<b>PREVIOUS STC HOLDER NAME (as noted in AD 75-27-09 R2)</b>	<b>STC NUMBERS</b>	<b>APPLICABLE AIRCRAFT SPECIFICATION NOS.</b>	<b>INSTRUCTIONS</b>
Vintage Aircraft 7432 C.E. Dixon Street, Stockton, CA 95206	Aerospace Products, Inc.	SA3009WE, SA1192WE with SA 3229WE SA3010WE with SA3021WE	A-765 A-765 A-765 A-757 A-2-582	Number 1869, dated May 1980
Aviation Fabricators, 805 N Fourth Street, Clinton, MO 64735	Airline Training, Inc.	SA814SO	A-684, A-757, A-765	Section 7, Document 7312, dated August 1974
Avidesign 375 Durley Avenue, Camarillo, CA 93010	Canadian Aerocon, Ltd	SA962WE (Note: This STC is the only one listed that is approved for floats)	630, 710, A-2-582, A-684, A-757, A- 765	Maintenance Manual Supplement, dated July 1973
Sierra Industries, Inc., 122 Howard Langford Drive, Uvalde, TX 78801	The Dee Howard Company	SA832SW, SA895SW SA1581SW with SA1582SW	A-765 A-765 A-2-582 A-2-582	Rev. A, Service Bulletin SB 18-2, dated July 1980
Southwestern Aero Exchange, Inc., 18502 E 108 <sup>th</sup> Street N, Owasso, OK 74055	Hamilton Aviation	SA2000WE	A-757, A-765	Document D4-74. dated July 1974
Mr. Ray M. Jourdan, 11001E. 59 <sup>th</sup> Street, Raytown, MO 64133	Jourdan Aircraft	SA643CE with SA1206CE	A-2-582, A-757, A-765	Service Bulletin SB 18-1, dated July 1980
The Twin Beech 18 Society – A Division of Staggerwing Museum Foundation, Inc., P.O. Box 550, Tullahoma, TN 37388	The Dee Howard Company  Aerospace Products, Inc.	SA1533WE with SA2737WE  SA3010WE with SA3021WE	A-765 A-765  A-757 A-2-582	Rev. A, Service Bulletin SB 18-2, dated July 1980

2. Inspect the front spar of the wing center section and outer wing panel at sites and by methods specified below.

**TABLE 1**

<b>Wing Station (WS)</b>	<b>Site*</b>	<b>Method**</b>	<b>Reference Figures</b>
12 and 20	Exterior portion of lower spar tube in center section for corrosion	Visual, X-ray	Figure 1 (Sheet 1) Figure 3 Figure 4 (Sheet 2)
12 and 20	Interior portion of lower spar tube in center section for internal corrosion	X-ray	Figure 1 (Sheet 1) Figure 3 Figure 4 (Sheet 2)
32	Tips of welds at wing splice plate, fore and aft surfaces of tube	Visual, X-ray and either magnetic particle or penetrant	Figure 1 (Sheet 1) Figure 3 Figure 4 (Sheets 3 & 4)
43 to 45	Tip of weld around cluster upper surface of the lower spar tube	Visual and either magnetic particle or penetrant	Figure 1 (Sheet 1) Figure 3 Figure 4 (Sheet 5)
46	Outboard ends of the fishmouth splice in lower spar tube, upper and lower surface of the lower spar tube	Visual, X-ray and either magnetic particle or penetrant	Figure 1 (Sheet 1) Figure 3 Figure 4 (Sheet 5)
57, 64, 73, and 81	Tips of welds at gussets on the upper surface of the lower spar tube	Visual, X-ray and either magnetic particle or penetrant	Figure 1 (Sheet 1) Figure 3 Figure 4 (Sheets 6 & 9)
60 and 62	Tips of welds as shown in Figure 4 (Sheet 7 and 8)	X-ray	Figure 1 (Sheet 1) Figure 3 Figure 4 (Sheets 7 & 8)
61	Lower surface of lower spar tube below tube cluster, as seen from wheel well	Visual and either magnetic particle or penetrant	Figure 1 (Sheet 1) Figure 3
90	Tips of welds at clevis tangs on the lower spar tube, upper and lower surface	Visual, X-ray and either magnetic particle or penetrant	Figure 1 (Sheet 1) Figure 3 Figure 4 (Sheet 12)
90U	Interior of the upper spar tube at clevis tangs for internal corrosion	X-ray	Figure 1 (Sheet 1) Figure 3 Figure 4 (Sheet 11)
102	Tips of welds as shown in Figure 4 (Sheet 11) and Figure 1 (Sheet 1)	X-ray	Figure 3 Figure 5 (Sheets 1 & 2)
111	Tips of welds as shown in Figure 4 (Sheet 11) and Figure 1 (Sheet 1)	X-ray	Figure 3 Figure 5 (Sheets 3 & 4)

**NOTES:** \*90U is in upper spar tube of center section. All other sites are in lower spar tube. WS 57 and 64 need not be separately X-rayed if these sites are shown by WS 60 and 62 radiographs. Refer to figures of this document for more detailed information.

\*\* A tube (not isotope) source is required for X-raying unless otherwise requested and authorized under paragraph F, below

**TABLE 2**

<b>Wing Station (WS)</b>	<b>Site*</b>	<b>Method**</b>	<b>Reference Figures</b>
12	Lower surface of lower spar tube below tube cluster, look for internal corrosion	X-ray from bottom up	Figure 3
20	Lower surface of lower spar tube below tube cluster, look for internal corrosion	X-ray from bottom up	Figure 3
32	Tips of welds at wing splice plate, fore and aft surfaces of tube, look for internal corrosion	X-ray from bottom up	Figure 3
46	Upper and lower surface of the lower spar tube, look for internal corrosion	X-ray from bottom up	Figure 3
57 and 64	Upper surface of the lower spar tube, look for internal corrosion	X-ray from bottom up	Figure 3 film location per WS 57 and 64
60, 61 and 62	If films at WS 57 and 64 show internal corrosion, then conduct upper X-ray shots required per Figure 3	X-ray	Figure 3
90U	Interior of the upper spar tube at clevis tangs, look for internal corrosion	X-ray	Figure 3

3. With the spar tube reinforcement straps temporarily removed, temporarily remove inspection access covers and other equipment as necessary to eliminate interference with required inspections. To perform the inspections in Table 1, drain or verify the inboard fuel tanks are below ½ of full fuel loading prior to X-ray of WS 60 and 62 sites. The inspections required by Table 2 can be performed without the draining of any fuel.
4. Temporarily or permanently install metallic tape, wire or “hose” clamps squarely around the spar tube (existing clamps, etc., may be used) as necessary to provide two X-ray beam alignment indicators near WS 32, 73, and 81 sites, and near WS

57 and 64 sites if the latter are to be separately X-rayed. Each indicator must be no more than one inch from the nearest inspection site, no more than two inches from the companion indicator, and perceptible in the related radiograph.

5. Taking only one radiograph at a time, accomplish X-ray inspection in accordance with ASTM E1742 and the following instructions:
  - (a) Use ASTM E1742 approved penetrameters of sizes specified by figures of this document except at WS 90U and 60/62 sites where no penetrameter is required. Secure penetrameters to source-side surface of the spar tube, except film-side placement is permitted at WS 102 and 111 sites if access does not allow source-side placement.
  - (b) At each site, use GAF 800, DuPont NDT-65, Kodak AA, or equivalent film, sandwiched between lead screens of 0.005-inch thickness. Additionally, at WS 60, 62, and 111 sites, use a second film in multi-film technique that provides film speed ratio of Kodak M/Kodak AA. With each film pack, use small identification symbols for at least the site (e.g., LWS 81, RWS 90U, LWS 60A, etc.), date, and airplane registration number. Position each film pack close to the site, using figures of this document for guidance.

**NOTE:** It is advisable to secure a “back-up” lead plate of 0.12-inch thickness at all sites, especially where film is beneath the spar tube.

- (c) Ascertain that the X-ray source is secured against the upper wing skin for WS 60 and 62 sites and approximately 36 inches from the film at all other sites, at chordwise and spanwise angles specified by Figure 3 of this document.
- (d) Ascertain that neither the airplane nor the source will be moved by wind or other influences, and expose the film so as to obtain 1.5 to 2.8 radiographic density near inspection sites specified in Figures 4 and 5 of this document. Use the same kinds of film and exposure time for WS 62 sites as for WS 60 sites.
- (e) Retake any radiograph which evidences unsharpness, missed or obscured site, improper density, improper beam alignment, or in which at least two penetrameter holes are not perceptible.

**NOTE:** Beam alignment indicators are either structural features such as top and bottom tangs, or indicators specially installed such as hose clamps and metallic tape.

6. Using a low power magnifying device, examine each radiograph under viewing conditions that show penetrameter holes. Look for evidence of corrosion pitting and transverse cracking in unwelded spar tube material. Pay particular attention to unwelded spar tube material adjacent to features such as screw holes, corrosion pits, and tips and edges of welds. Submit a report to maintenance facility accomplishing the requirements of this document showing the location of each indication of cracking and corrosion pitting in spar tube material. Use FAA Advisory Circular AC 43-4A, “Corrosion Control for Aircraft” as a guide for classification of corrosion.
7. Either magnetic particle or penetrant may be used at certain wing station locations being inspected at specified in Table 1 and Table 2. However, whenever practical

wet fluorescent magnetic particle inspections are to be used at the wing stations where magnetic particle or penetrant are specified in these tables.

After sites are thoroughly cleaned of any oil, grease, exhaust residues, or other surface contamination, inspect by visual and ASTM E1444 magnetic particle methods, using materials and procedures as specified below. Inspect for cracking, external corrosion pitting, and holes through spar tubes. Pay particular attention to locations specified by the X-ray report. Guidance may be found in FAA Advisory Circular AC 43.13-1B, "Acceptable Methods, Techniques, and Practices – Aircraft Inspection and Repair."

- (a) Conduct visual inspection using a flashlight or other illumination and low power magnifying device.
- (b) Conduct a wet fluorescent magnetic particle inspection in accordance with ASTM E1444. Utilize the procedures presented in the magnetic particle section of the "Nondestructive Inspection (NDI) Evaluation Checklist" that can be obtained by request from the FAA or from the following Internet Website:

<http://www.faa.gov/aircraft/repair/become/media/NDTCKLIST.doc>

- 8. Keep all radiographs at an accessible location apart from the airplane as long as the airplane is in service.
- C. Corrosion damage must be classified as light, moderate, or severe in accordance with definitions in FAA Advisory Circular AC 43-4A, "Corrosion Control for Aircraft". To prevent the recurrence of corrosion, treat the internal spar using Lear Chemical Corp. ACF-50 (MIL-C-81309) corrosion treatment, or equivalent, per ACF-50 Procedure Methods Manual. Consult a qualified structures Designated Engineering Representative (DER) for acceptance/approval of areas found to have corrosion.
  - D. Obtain (unless previously done) and follow the cognizant (aircraft or strap, as appropriate) manufacturer's or qualified structures DER's instructions for repair and/or continued service of each defect that is found during inspections required by this document. If continued service with corroded wing structure has been previously authorized, field comparison of old and new radiographs must show that no subsequent deterioration has occurred, or remaining strength must be re-evaluated by the aircraft manufacturer or a qualified DER. Contact RAC Customer Support for old radiographs.

**NOTE:** In the context used above, old radiographs are legacy radiographs (X-rays) from previous inspection(s) of the subject aircraft's wing structure.

- E. Alternative methods of compliance with this document must be approved by the Manager, Wichita Aircraft Certification Office, 1801 Airport Road, Room 100, Wichita, Kansas 67209, telephone (316) 946-4100, FAX 316-946-4107.
- F. Non-Destructive Inspections (NDI) must be accomplished by a Non-Destructive Inspection (NDI) inspector qualified and certified in the radiographic (X-ray) and Magnetic Particle methods of inspection to a Level II or Level III in accordance with the AIA Specification NAS-410 (MIL-STD-410) for the NDI inspections covered in this document. Operators outside of the United States must use equivalent specifications.

- G. The authorized person performing any X-ray inspection required by this document shall, in addition to the information required by FAR 43.9 and 91.417, list the date of the letter of authorization under which he performed said inspection in the aircraft maintenance records specified in FAR 91.417(a)(2). The inspection may not be delegated to an inspector who is not qualified to Level II or Level III. This requirement applies to contract maintenance as specified in 14 CFR 145.217.
- H. In addition to the requirements presented in Paragraphs A through G above, corrosion damage that is classified as light or airplanes with VOLPAR tri-gear and conventional gear require inspections and corrosion treatment of the interior of the lower spar tube in accordance with the following sub-paragraphs:

**(a) VOLPAR (TRI-GEAR) AIRCRAFT – STCs SA111WE AND SA4-1531**

(These two STCs are issued to Cameron & Stahl, Inc. STC Holder's address is Aerospace Products, 5523 Satsuma Avenue, North Hollywood, CA 91601.)

Remove two AN3-17A bolts from the lower elliptical spar tube and the 299-2 drag strut at the point just inboard of the outer wing attach fitting. (See Figure 8)

Inspect the bolts for indications of corrosion and pitting and the edge of the bolt hole through the elliptical spar tube for indications of moisture and/or corrosion.

Remove the drive screw from the elliptical spar tube at a point just outboard of the side of the fuselage. Blow warm air (max 300°F) through the elliptical spar tube by introducing the air at the bolt hole in the spar tube in one nacelle and out at the other nacelle.

Seal all remaining bolts and attach points with Pro Seal Compound 890, or equivalent.

To prevent the recurrence of corrosion, treat the internal spar using Lear Chemical Corp. ACF-50 (MIL-C-81309) corrosion treatment, or equivalent per ACF-50 Procedure Methods Manual.

Replace all bolts and nuts removed and seal with Pro Seal 890 sealing compound per view Figures 6 and 7. Remove waste material from -277 tube.

**NOTE:** Pro Seal Compound 890 is available from Coast Pro Seal Company, Compton, California 90221. An equivalent sealer to Pro Seal 890 may be used.

**NOTE:** All reference in Section H was made concerning the left side of the aircraft spar truss. The inspection also applies to the right side spar truss assembly.

**(b) CONVENTIONAL GEAR AIRCRAFT**

THE FOLLOWING PROCEDURES ARE AN ALTERNATE METHOD TO PARAGRAPH H. (a). WHEN REMOVAL OF THE DRIVE SCREW AT THE ELLIPTICAL SPAR TUBE CANNOT BE ACCOMPLISHED.

**NOTE:** Aircraft with conventional landing gear spar tube access can be gained through the existing Linoil drain holes. These holes can be

enlarged to a maximum diameter of 5/32". In the upper spars, the drain holes are located in the upper surface. Where holes are not accessible, new holes of no larger than 5/32" can be drilled in the lower surface at each end of the center section upper spar tube. The hole must be at least 1/2" away from the end of a gusset or end of a wing attach forging weld.

Access to the outer panel lower spar tube can be obtained by first marking a 1/2" hole in the skin centered under the spar tube, near the inboard and outboard ends (Approx. WS 102 and 177), and then drilling the (5/32" max) holes in the spar tube.

After the treatment processes are completed, these holes must be closed by installing a blind rivet, drive screw, or tapping the hole to accept a AN525-10R6 or equivalent screw. The blind rivet or drive screw must be sealed using Pro Seal Compound 890 or equivalent. The holes in the skin can be closed using a 1/2 flush plug (metal or synthetic material).

Since removal of the drive screw at the elliptical spar tube cannot be accomplished to determine if the spar is free from entrapped moisture, the following procedure will be adhered to:

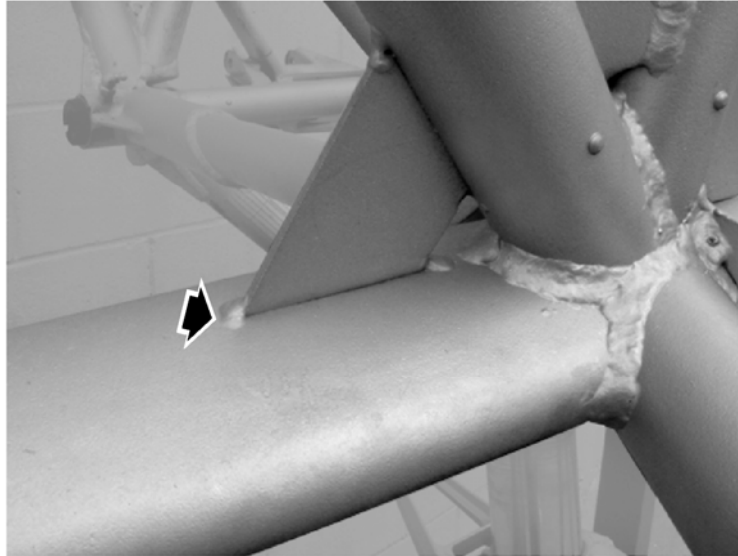
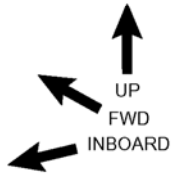
1. Blow warm air (max 300°F) for a period of 30 minutes through each tube with an air nozzle applied at the upper bolt hole or linoil drain hole.
2. Treat the internal spar using Lear chemical Corp. ACF-50 (MIL-C-81309) corrosion treatment, or equivalent, per ACF-50 Procedure Methods Manual.

Close and seal the access hole as stated in the above NOTE.



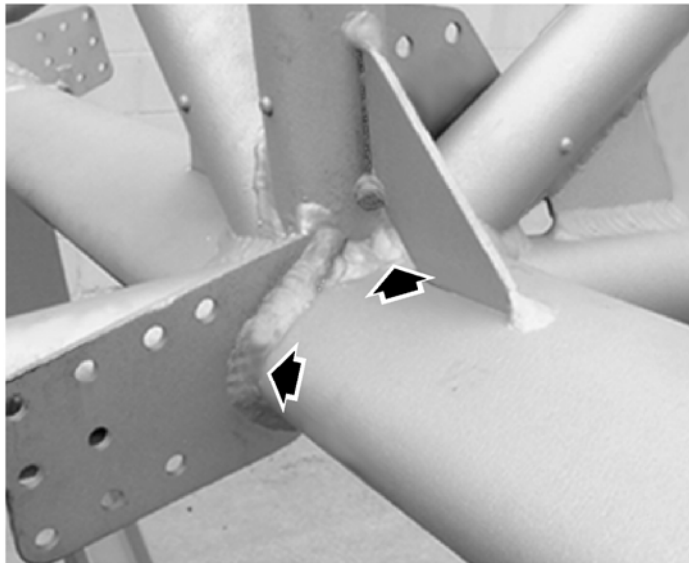
**Figure 1 (Sheet 1) – Locator View (Left Wing Spar Truss Shown, Right Typical)**

TYPICAL GUSSETED WELD JOINT. ARROW INDICATES AREA OF SUSCEPTIBLE CRACKING AT TIP OF THE GUSSET WELD

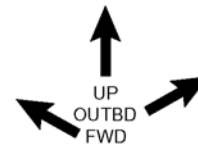


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**Detail A - Typical Gusseted Joint**



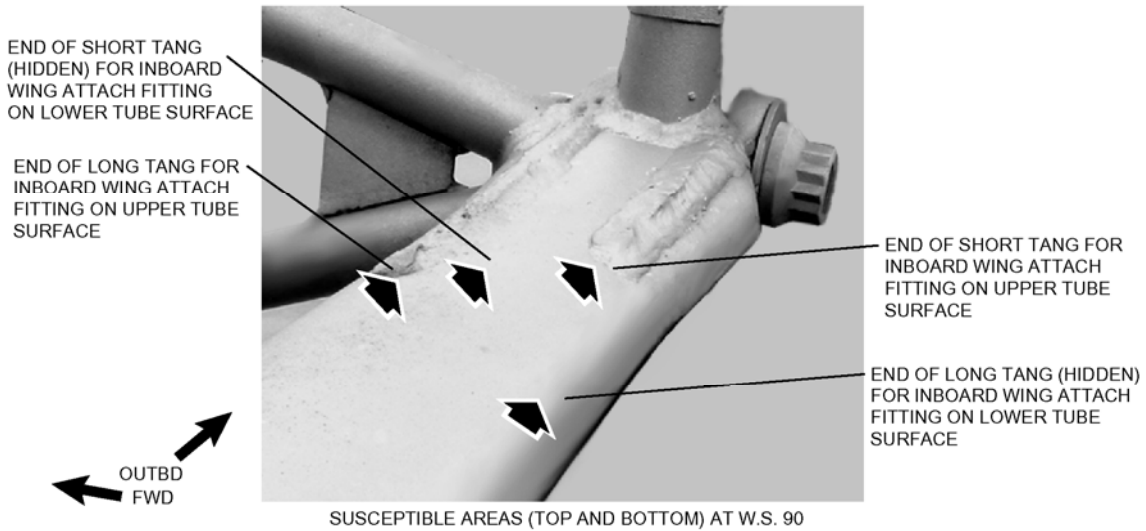
VIEW OF CLUSTER WELD JOINT. ARROW INDICATES AREA OF SUSCEPTIBLE CRACK.



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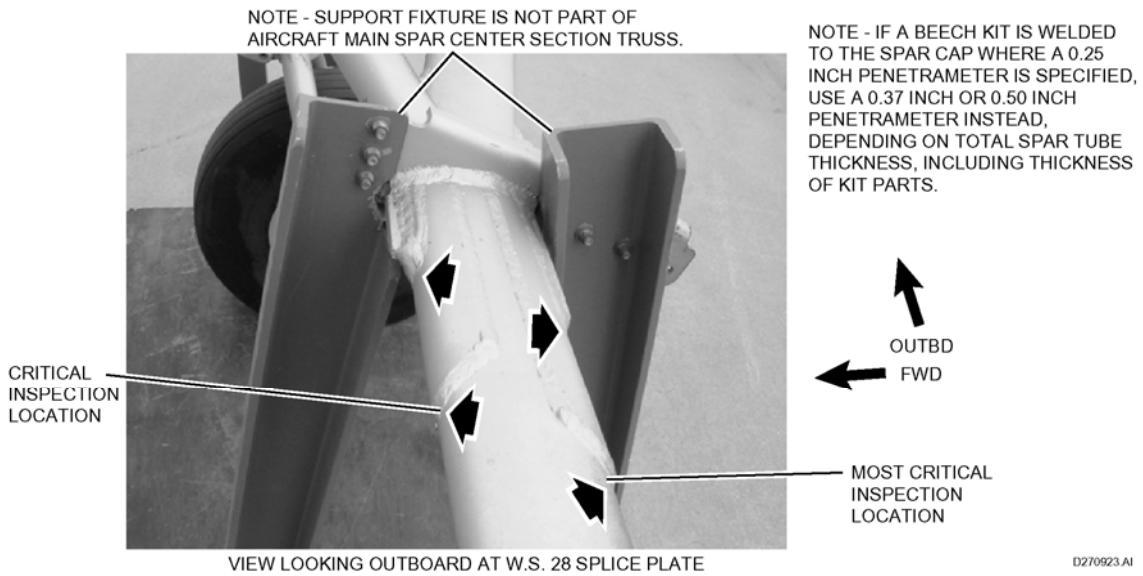
**Detail B - Typical Cluster (Plain) Joint**

**Figure 1 (Sheet 2) – Typical Joints**



D270968.AI

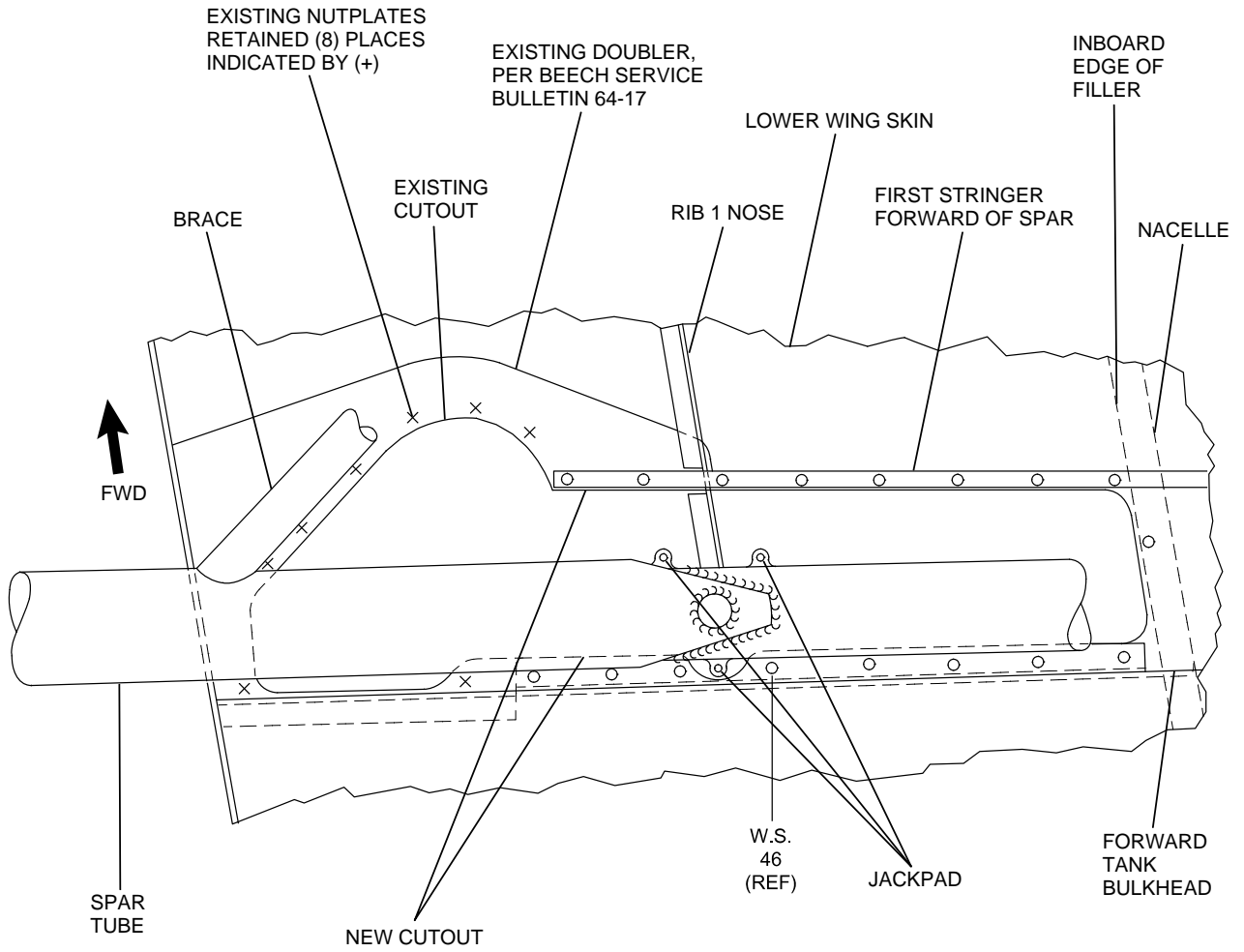
### Detail C –Typical Wing Fitting Weldment



D270923.AI

### Detail D - W.S. 32 Critical Inspection Areas of Reinforcement Plates

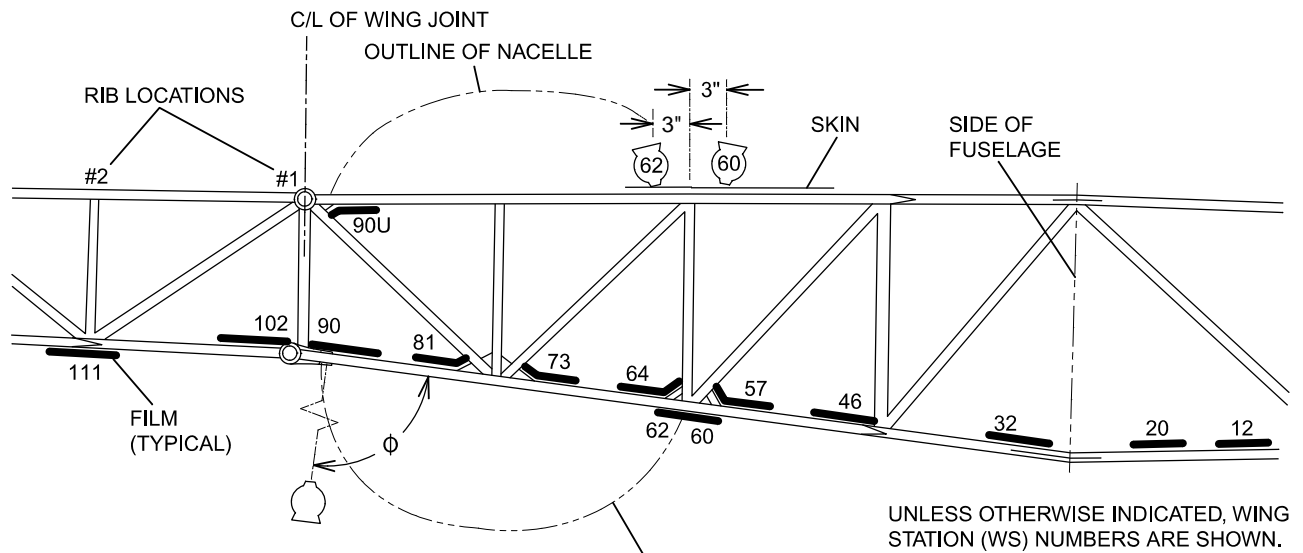
Figure 1 (Sheet 3) – Typical Wing Fitting and Reinforcement Plate Weldment



VIEW LOOKING DOWN ON LOWER WINGSKIN AND SPAR TUBE

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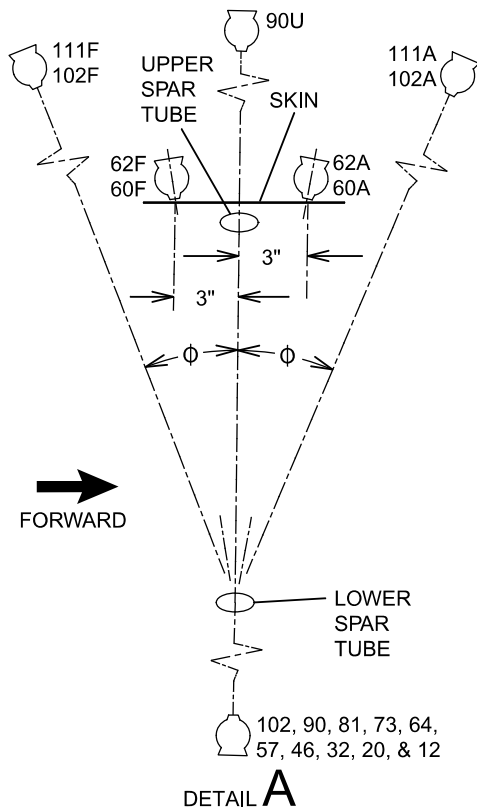
**Figure 2 – W.S. 46 Orientation Detail**



UNLESS OTHERWISE INDICATED, WING STATION (WS) NUMBERS ARE SHOWN.

APPROXIMATELY 36" FILM-TO-SOURCE DISTANCE EXCEPT AS SHOWN AT 62 & 60

OUTLINE OF NACELLE



THE CHORDWISE AIMING ANGLE,  $\phi$ , IS BETWEEN PLANE OF SPAR AND X-RAY BEAM CENTERLINE. POSITION TAIL OF AIRPLANE AND/OR USE FIXTURE (AND CHECK WITH PROTRACTOR OR FLASHLIGHT) TO KEEP ANGLE  $\phi$  AT:

NOMINAL OF 0° (NO ABSOLUTE LIMIT) FOR WS 12, 20, 32, 46, 57, 64, 73, 81, 90, & 102. WS 102 MAY BE TAKEN WITH SOURCE EITHER ABOVE OR BELOW THE LOWER SPAR TUBE. WS 57 & 64 NEED NOT BE TAKEN SEPARATELY IF PLAINLY SHOWN BY WS 60 & 62 FILMS.

BETWEEN 20° AND 45° FOR FORWARD AND AFT SHOTS OF WS 111 & (OPTIONALLY) 102.

AS DRAWN FOR FORWARD & AFT SHOTS OF 60 & 62.

THE SPANWISE AIMING ANGLE,  $\phi$ , IS BETWEEN THE SPAR TUBE AND X-RAY BEAM CENTERLINE, AS SHOWN. POSITION AIRPLANE MAIN WHEEL AND/OR USE FIXTURE TO KEEP ANGLE  $\phi$  AT:

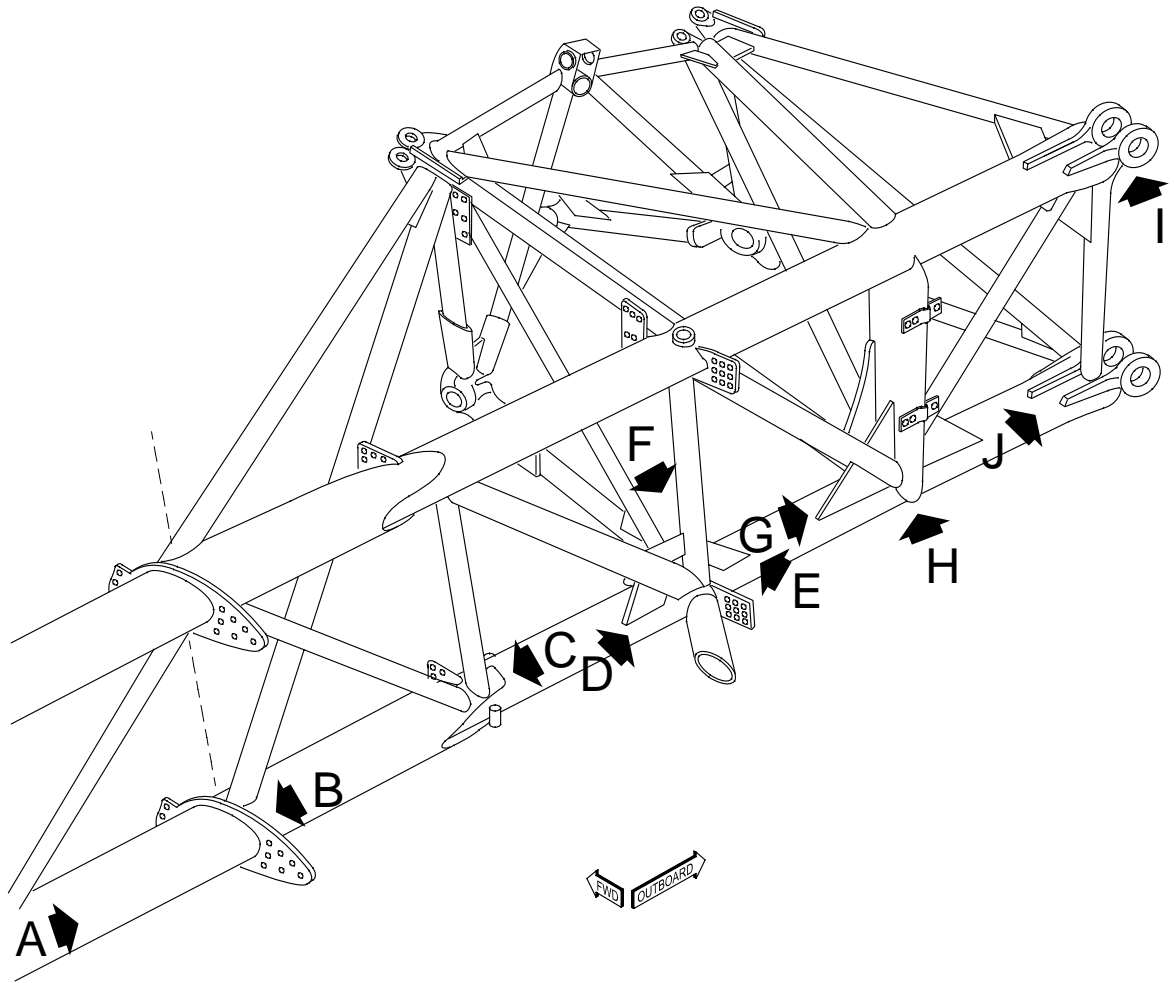
BETWEEN 80° AND 95° FOR WS 32, 46, 57, 64, 73, 81, 90, 102, AND 111.

NOMINALLY 90° (NO ABSOLUTE LIMIT) FOR WS 90U

AS DRAWN FOR WS 60 & 62.

D270954.AI

**Figure 3 Radiograph Film (X-Ray) Locations and Source Orientation/Aiming Angles**



VIEW OF RIGHT WING SPAR CROSS SECTION  
 (V15C0-V15S910) (LEFT-OFFSET)

D270955.A1

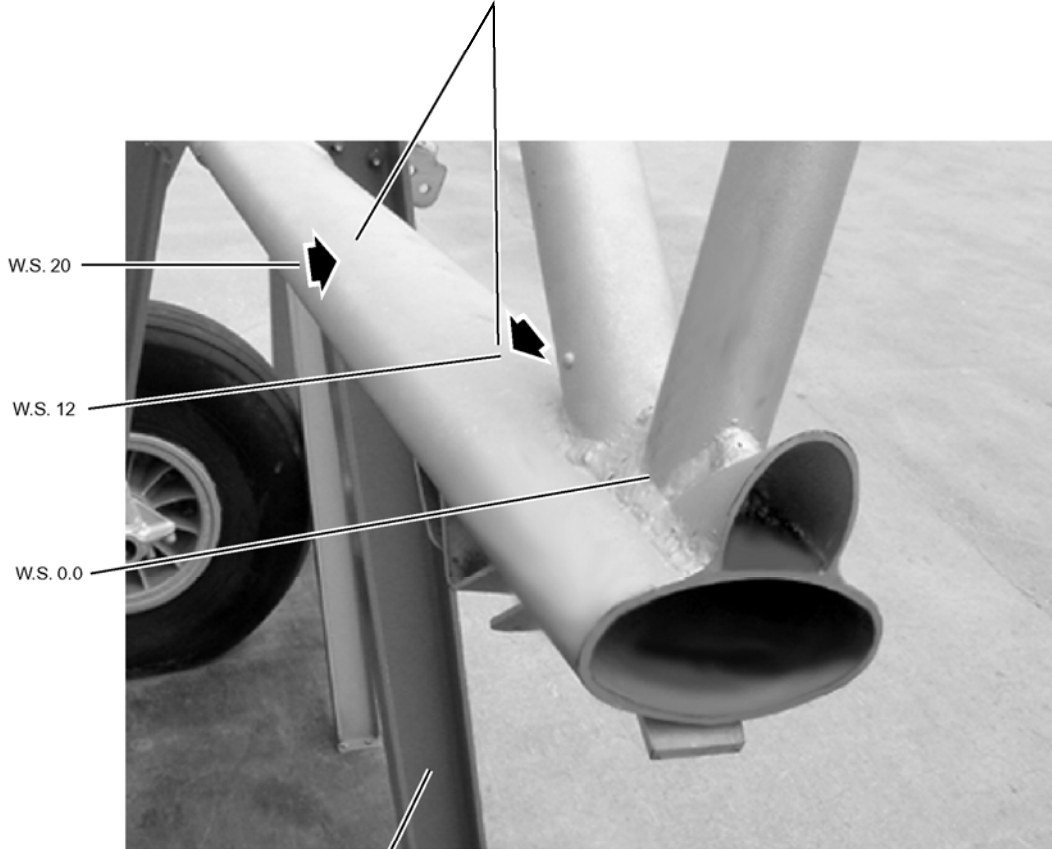
**Locator View (Right Wing Spar Truss Shown, Left Typical)  
 For Figure 4 (Sheets 2 through 12)**

**Figure 4 (Sheet 1) – Locator View**

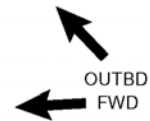
NOTE - FOR ORIENTATION PURPOSES, INSTALL METALLIC TAPE, WIRE OR HOSE CLAMPS SQUARELY AROUND THE SPAR TUBE TO PROVIDE BEAM ALIGNMENT INDICATORS. EACH INDICATOR SHALL BE ONE INCH FROM THE NEAREST INSPECTION SITE AND TWO INCHES FROM ANY COMPANION INDICATOR.

NOTE - TO DETERMINE W.S. 20 AND W.S. 12 LOCATIONS, MEASURE FROM A KNOWN WING STATION LOCATION SUCH AS THE CENTERLINE OF THE W.S. 44 VERTICAL SPAR TUBE.

INSPECT FOR CORROSION OF THE LOWER SPAR TUBE AT W.S. 12 AND W.S. 20. INSPECT FOR INTERNAL CORROSION USING X-RAY (RADIOGRAPHIC) INSPECTION METHOD.



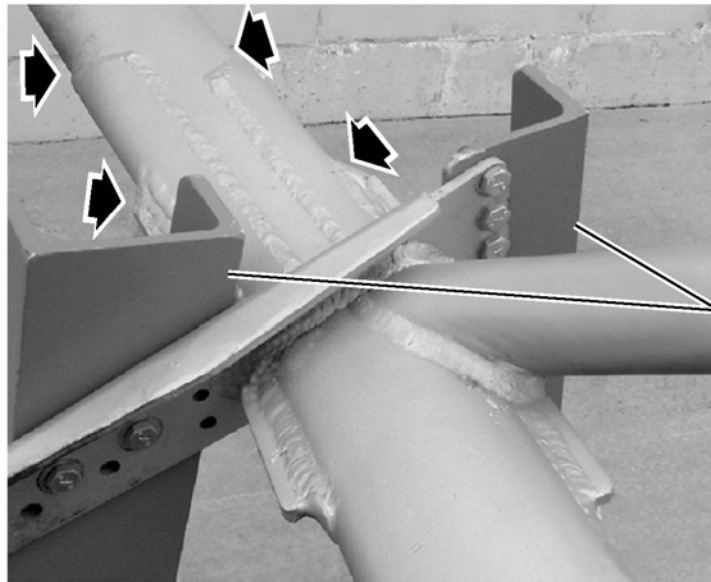
NOTE - SUPPORT FIXTURE IS NOT PART OF AIRCRAFT MAIN SPAR CENTER SECTION TRUSS.



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### Detail A – Lower Spar Tube Corrosion Inspection at W.S. 12 and W.S. 20

Figure 4 (Sheet 2) – W.S. 12 and W.S. 20 Inspection Locations



VIEW WITH BEECH REINFORCEMENT INSTALLED

NOTE - THE W.S. 32 INSPECTION LOCATION NORMALLY USES A 0.25 INCH PENETRAMETER. IF A BEECH KIT IS WELDED TO THE SPAR CAP, USE A 0.37 INCH OR 0.50 INCH PENETRAMETER INSTEAD, DEPENDING ON TOTAL SPAR TUBE THICKNESS, INCLUDING THICKNESS OF REINFORCEMENT PLATES.

NOTE - SUPPORT FIXTURE IS NOT PART OF AIRCRAFT MAIN SPAR CENTER SECTION TRUSS.

INBOARD ↖

FWD →

VIEW LOOKING INBOARD AND FORWARD AT W.S. 32 INSPECTION LOCATION

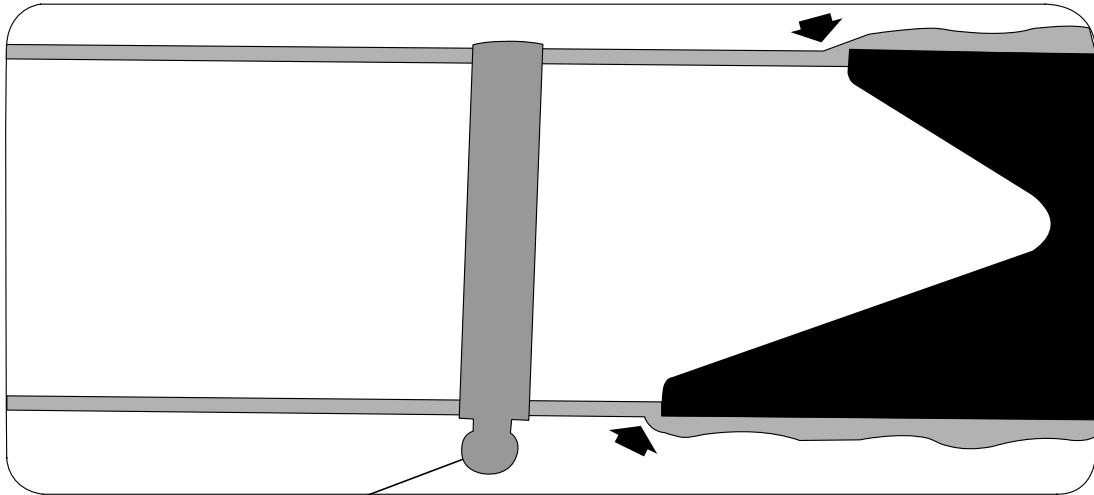
D270932 AI

**Detail B – W.S. 28 Splice Plate and W.S. 32 Inspection Locations**

**Figure 4 (Sheet 3) – W.S. 28 Splice Plate and W.S. 32 Inspection Locations**



NOTE-POSTIVE IMAGE OF RADIOGRAPH IMAGE (XRAY)

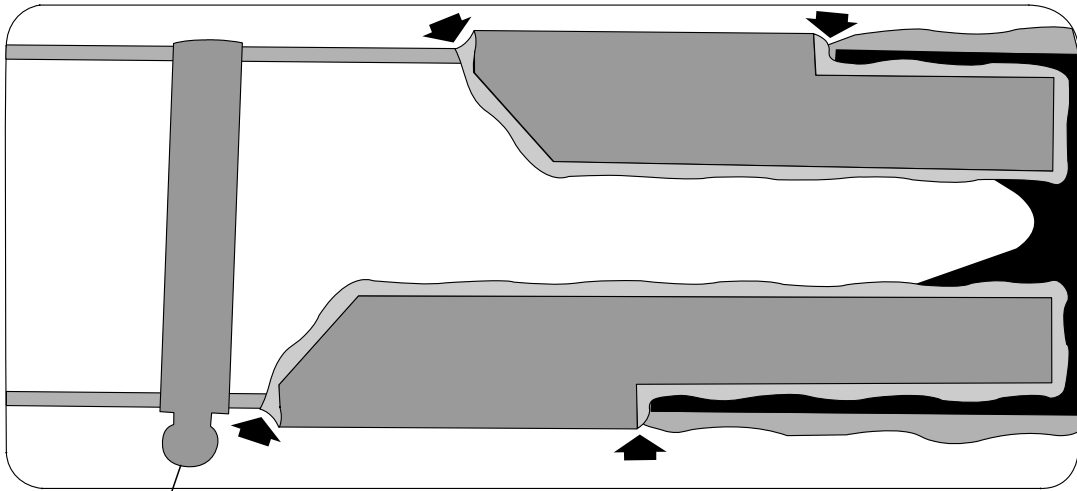


CLAMP FOR ALIGNMENT ORIENTATION

D270959.AI

**Radiograph Images for W.S. 32 Spar Tube with Non-reinforced Splice Plate**

NOTE-POSTIVE IMAGE OF RADIOGRAPH IMAGE (XRAY)

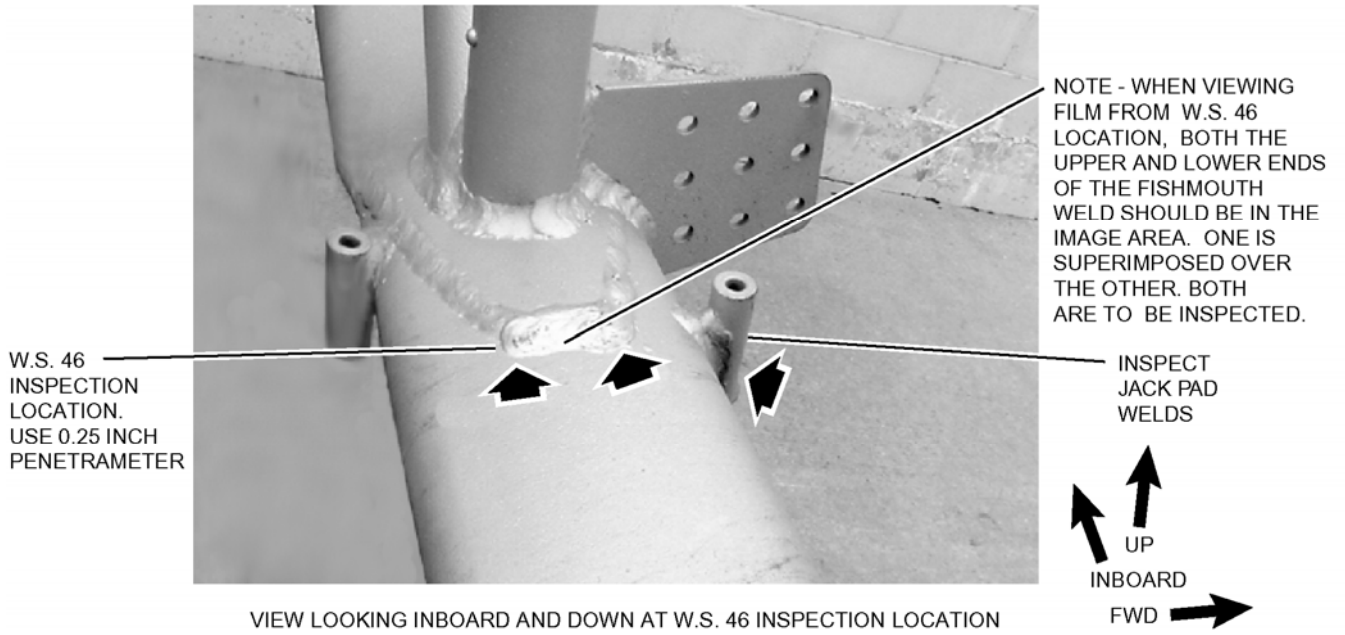


CLAMP FOR ALIGNMENT ORIENTATION

D270965.AI

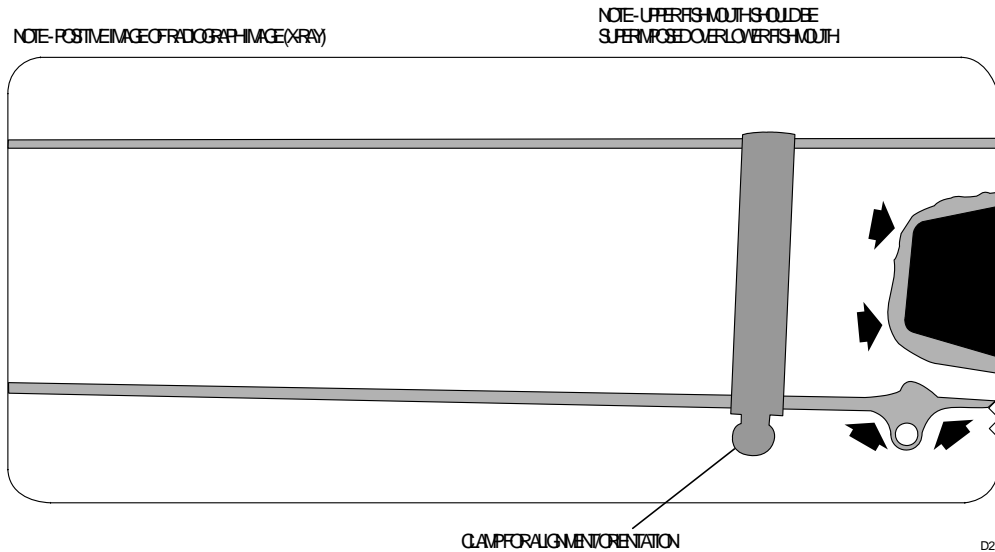
**Radiograph Images for W.S. 32 Spar Tube with Reinforced Splice Plate**

**Figure 4 (Sheet 4) – Typical Radiographic Images at W.S. 32 (Detail B)**



D270931.AI

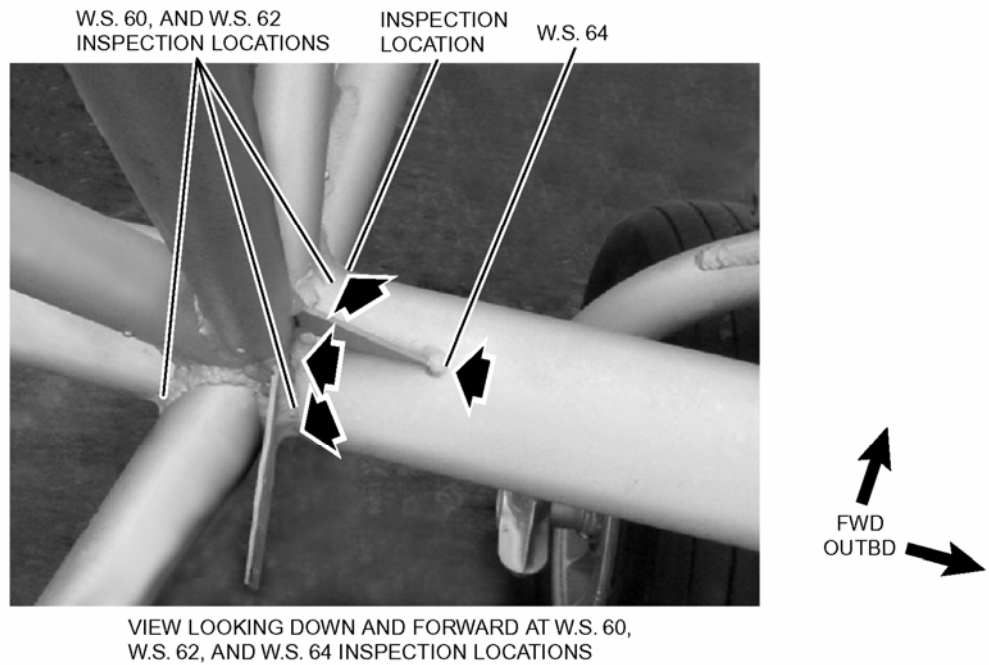
### Detail C – W.S. 46 Inspection Location



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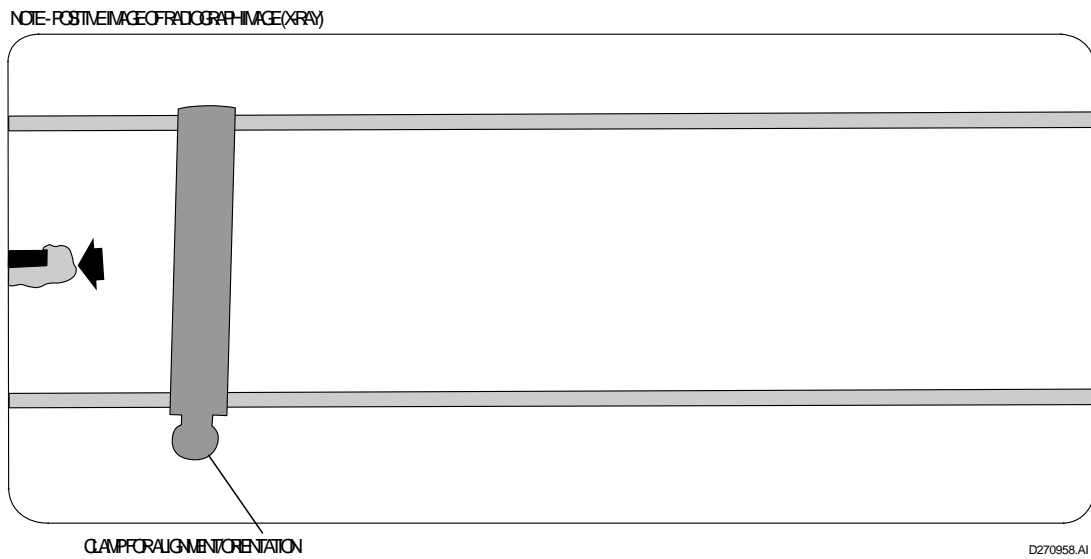
### Typical Radiographic Image for W.S. 46

Figure 4 (Sheet 5) – W.S. 46 Jack Pad Weldment and Fishmouth Weldment Inspection Location and Typical Radiographic Image



D270941.AI

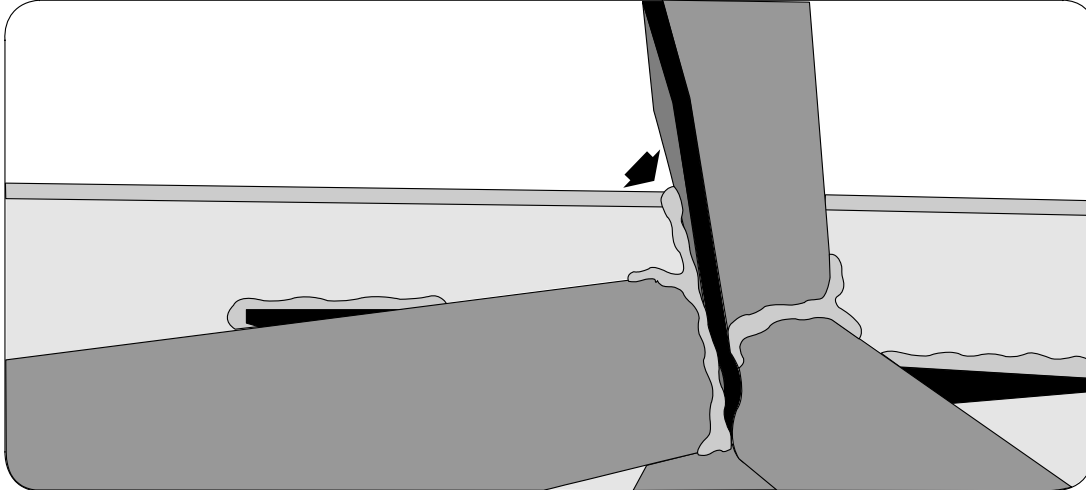
**Detail E – W.S. 64 Gusset Weld Inspection Location  
(Detail D at W.S. 57 is Opposite and Typical)**



**Typical Radiographic Image for W.S. 64  
(Detail D at W.S. 57 is Opposite and Typical)**

**Figure 4 (Sheet 6) – Gusset Weld Inspection Locations at W.S. 57 and W.S. 64**

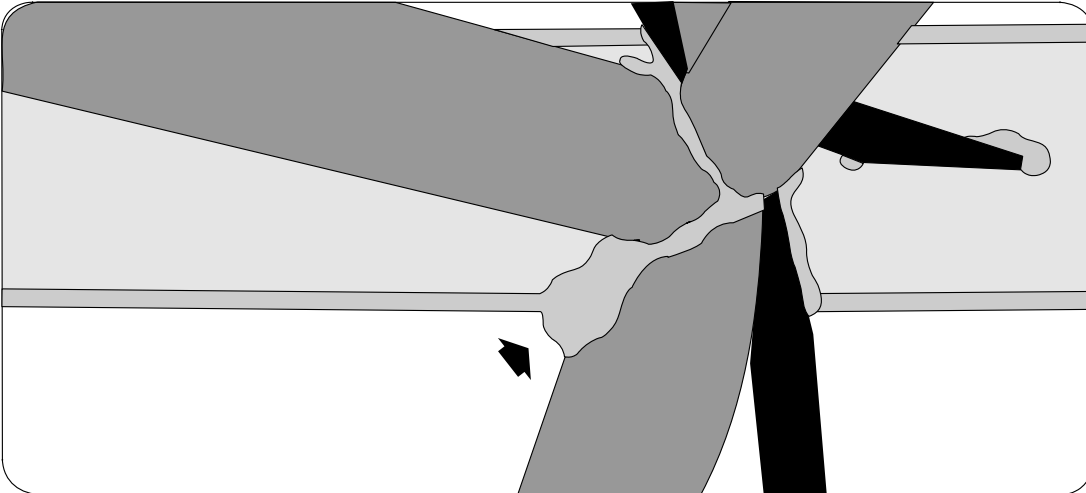
NOTE- POSITIVE IMAGE OF RADIOGRAPHIC IMAGE (XRAY)



D270960.AI

**Forward, Inboard View of W.S. 60 Cluster Weld Inspection Location**

NOTE- POSITIVE IMAGE OF RADIOGRAPHIC IMAGE (XRAY)

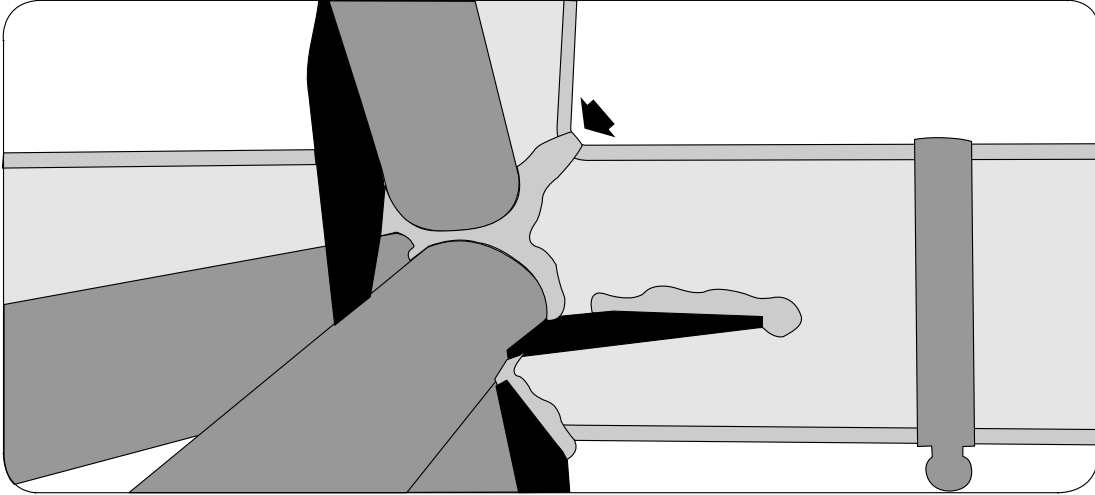


D270962.AI

**Aft, Inboard View of W.S. 60 Cluster Weld Inspection Location**

**Figure 4 (Sheet 7) – Typical Radiographic Image for Cluster Weld Inspection Locations at W.S. 60 (Detail F)**

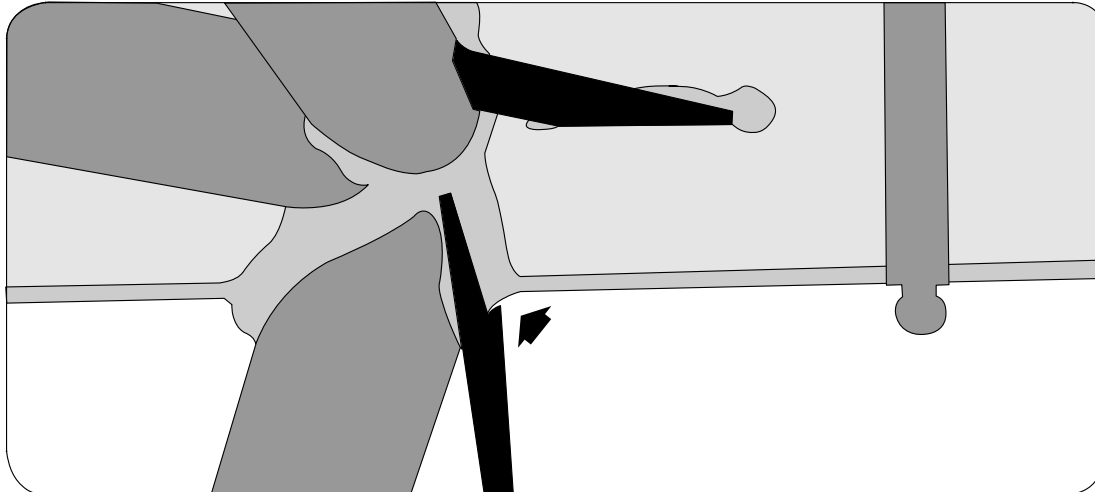
NOTE- POSITIVE IMAGE OF RADIOGRAPH IMAGE (XRAY)



D270961.AI

**Forward, Outboard View of W.S. 62 Cluster Weld Inspection Location**

NOTE- POSITIVE IMAGE OF RADIOGRAPH IMAGE (XRAY)



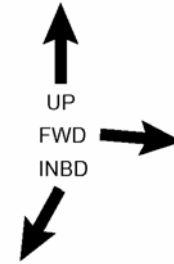
D270963.AI

**Aft, Outboard View of W.S. 62 Cluster Weld Inspection Location**

**Figure 4 (Sheet 8) – Typical Radiographic Image for Cluster Weld Inspection Locations at W.S. 62 (Detail F)**



NOTE - IF A BEECH REINFORCEMENT KIT IS INSTALLED AT W.S. 81, USE A 0.50 INCH PENETRAMEETER IN LIEU OF THE 0.25 INCH PENETRAMEETER THAT IS NORMALLY USED IF A KIT IS NOT INSTALLED.

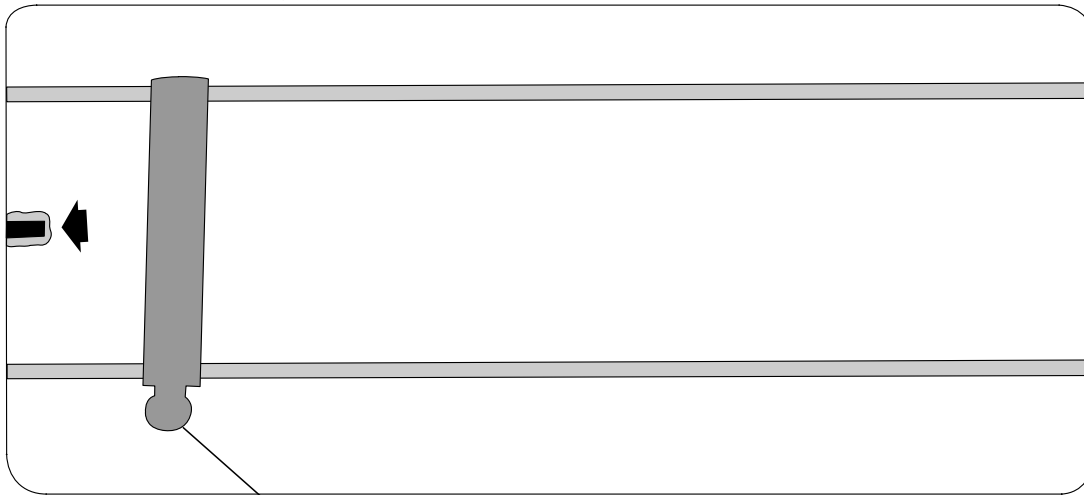


VIEW LOOKING OUTBOARD AT W.S. 73 INSPECTION LOCATION

D270928.AI

**Detail G – Gusset Weld Inspection Location at W.S. 73**

NOTE- POSITIVE IMAGE OF RADIOGRAPH IMAGE (XRAY)

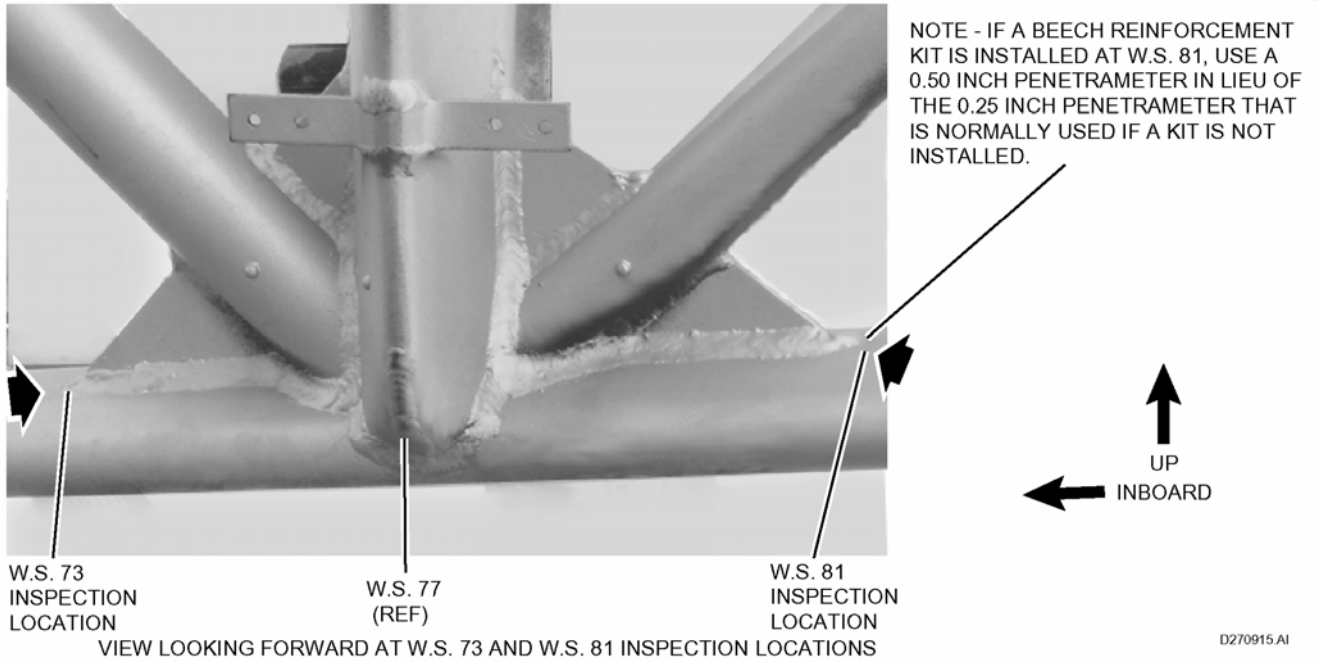


CLAMP FOR ALIGNMENT ORIENTATION

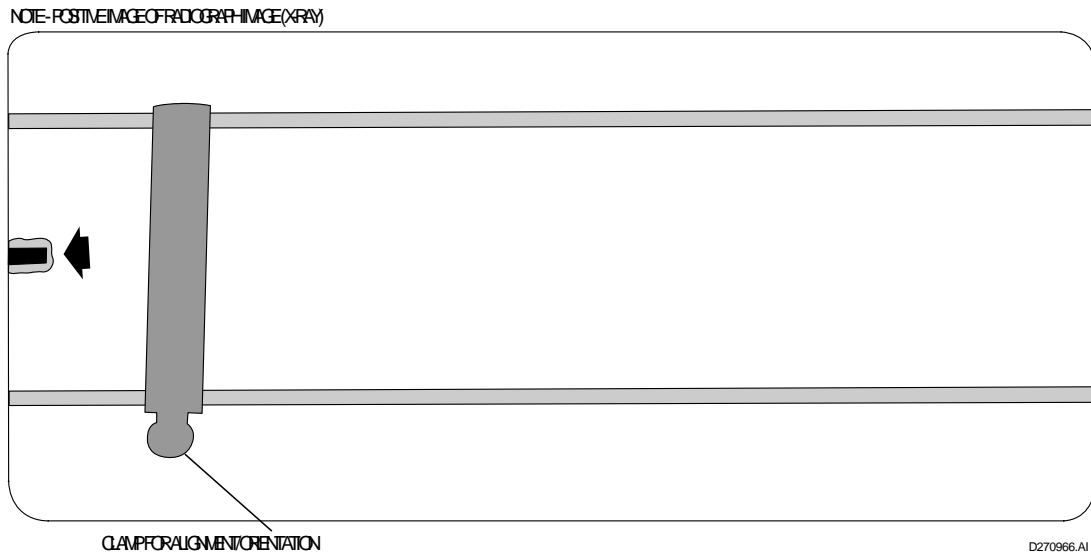
D270966.AI

**Typical Radiographic Image for Gusset Weld Inspection Location at W.S. 73**

**Figure 4 (Sheet 9) – Gusset Weld Inspection Location for W.S. 73**



**Detail H - Gusset Weld Inspection Locations at W.S. 73 and W.S. 81**



**Typical Radiographic Image for Gusset Weld Inspection Location at W.S. 81**

**Figure 4 (Sheet 10) - Slide Tube Cluster Inspection Locations at W.S. 73 and W.S. 81**

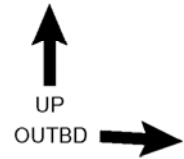


NOTE - STATIC DISPLAY SUPPORT  
FIXTURE IS NOT PART OF THE  
TRUSS STRUCTURE.

LINOIL PLUG LOCATION  
(INSPECT IF PERCEPTIBLE)

NOTE - THE LOWER, FORWARD SHORT  
TANG OF THE INBOARD WING ATTACH  
FITTING IS HIDDEN IN THIS VIEW.

NOTE - INSPECT FOR CORROSION ONLY



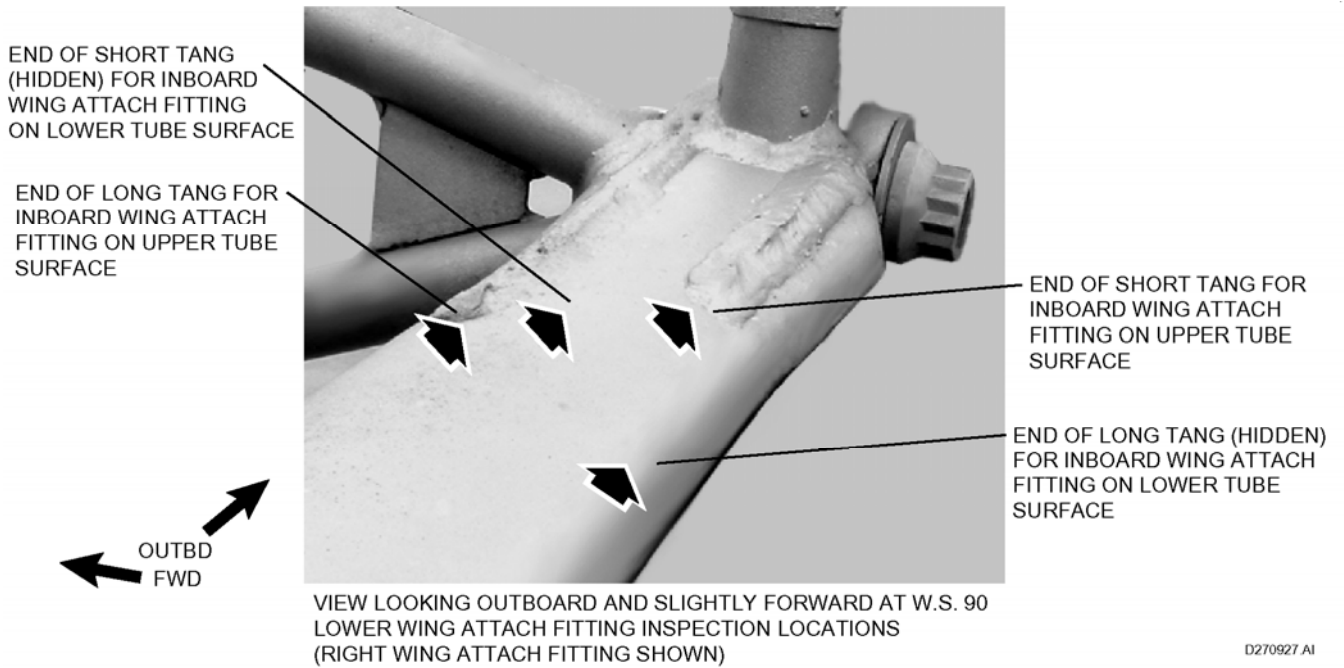
VIEW LOOKING FORWARD AND SLIGHTLY DOWN AT W.S. 90 UPPER INSPECTION LOCATION  
(RIGHT WING ATTACH FITTING SHOWN)

D270922 AI

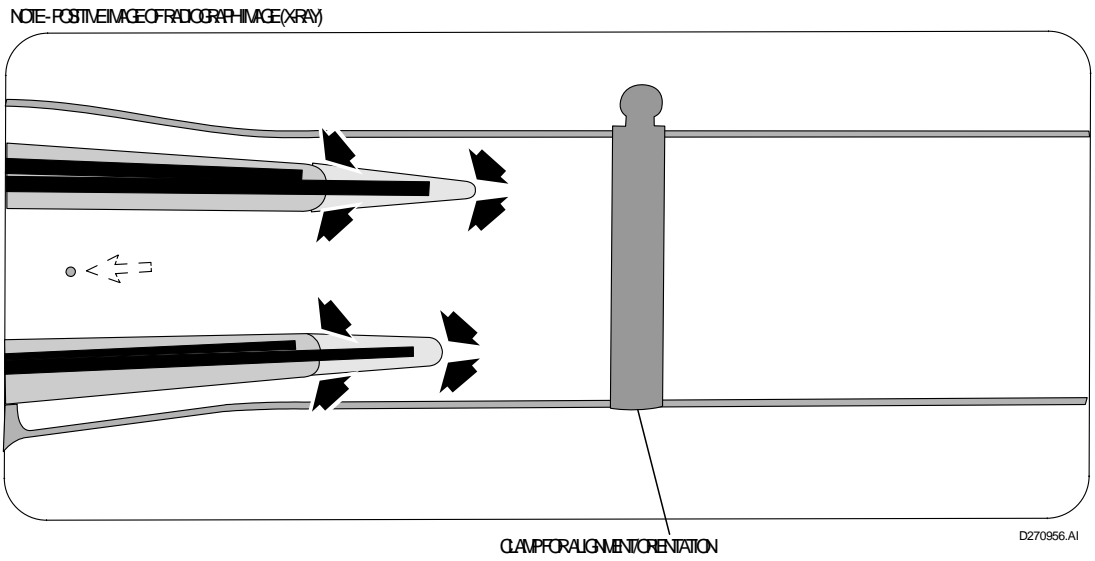
### **Detail I – Upper Inboard Wing Fitting**

**Figure 4 (Sheet 11) – W.S. 90 Upper Wing Inboard Fitting  
Corrosion Inspection Locations**





**Detail J - Lower Wing Fitting Inspection Locations at W.S. 90**

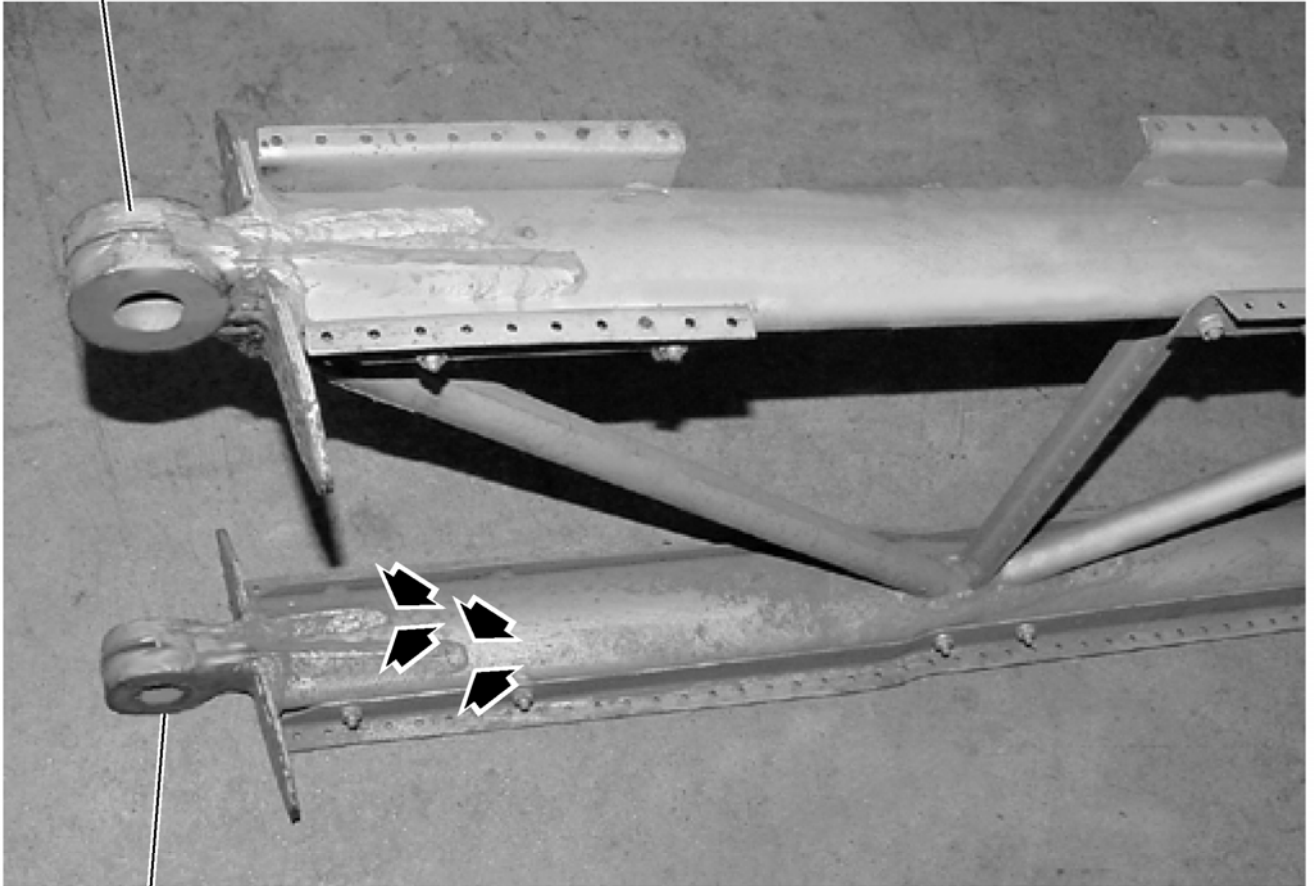


**Typical Radiographic Image for Lower W.S. 90 Inspection Location**

**Figure 4 (Sheet 12) – W.S. 90 Lower Inboard Wing Fitting Inspection Locations**

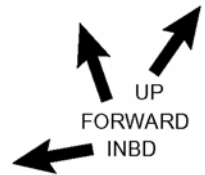
NOTE - W.S. 102 LOWER INSPECTION LOCATION DEPICTS A SHORT TANG WELDED TO THE LOWER, FORWARD LOCATION OF THE WING SPAR TRUSS TUBE, A LONG TANG IS SHOWN WELDED TO THE LOWER, AFT LOCATION OF THE OUTER WING SPAR TRUSS TUBE. WHEN VIEWING THE RADIOGRAPHS FOR THESE LOCATIONS, KEEP IN MIND THAT ON THE LOWER PORTION OF THE TUBE, THE LONG TANG IS WELDED AT THE LOWER, FORWARD LOCATION, WHILE THE SHORT TANG IS WELDED TO THE LOWER, AFT LOCATION. WHEN INSPECTING THE RADIOGRAPHS (X-RAY IMAGE NEGATIVES), LONG TANGS WILL BE SUPERIMPOSED OVER THE SHORT TANGS. PAY PARTICULAR ATTENTION TO THE ENDS OF EACH LONG TANG AND A LOCATION APPROXIMATELY ONE INCH INBOARD, WHICH IS THE END OF THE SHORT TANGS. CRACKING MAY PROPOGATE FROM THE ENDS OF ANY OF THESE WELD LOCATIONS. W.S. 102 UPPER LOCATION DOES NOT REQUIRE INSPECTION.

UPPER OUTBOARD  
ATTACH FITTING



LOWER OUTBOARD  
ATTACH FITTING

W.S. 102 WING ATTACH FITTINGS  
(RIGHT WING LOCATION SHOWN)

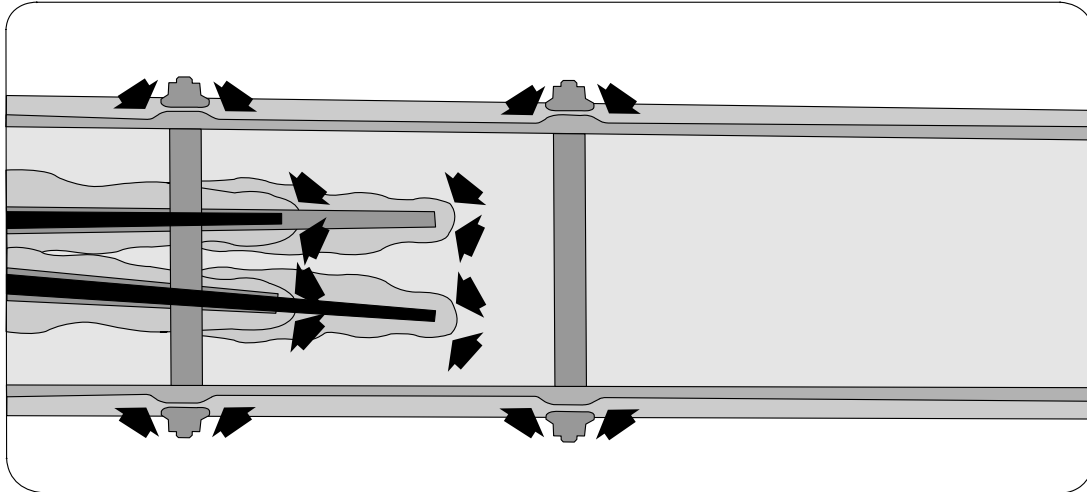


D270949 AI

**Lower Outboard Wing Fitting Inspection Locations at W.S. 102**

**Figure 5 (Sheet 1) – W.S. 102 Lower Outboard Wing Fitting and Through-Bolt Inspection Locations**

NOTE- POSITIVE IMAGE OF RADIOGRAPHIC IMAGE (X-RAY)



D270964.AI

### Typical Radiographic Image for Lower W.S. 102 Inspection Location

**NOTE:** Figure 3 shows a forward and aft X-ray image of W.S. 102. If the areas of interest can be adequately shown by a single perpendicular X-ray image, as illustrated above, that single X-ray image is acceptable.

**Figure 5 (Sheet 2) – W.S. 102 Lower Outboard Wing Fitting and Through-Bolt Inspection Locations**

NOTE - WHEN VIEWING W.S. 111 LOCATION, TWO ENDS OF THE FISHMOUTH WELD SHOULD BE IN THE IMAGE AREA, THE UPPER AND LOWER FISHMOUTH. BOTH SHOULD BE INSPECTED.  
NOTE - IF A BEECH KIT IS WELDED TO THE SPAR CAP WHERE A 0.25 INCH PENETRAMETER IS SPECIFIED, USE A 0.37 INCH PENETRAMETER INSTEAD.  
NOTE - BOTH SIDES OF WELDS AT BOTH FORWARD AND AFT ENDS OF THROUGH BOLTS ARE INSPECTED.

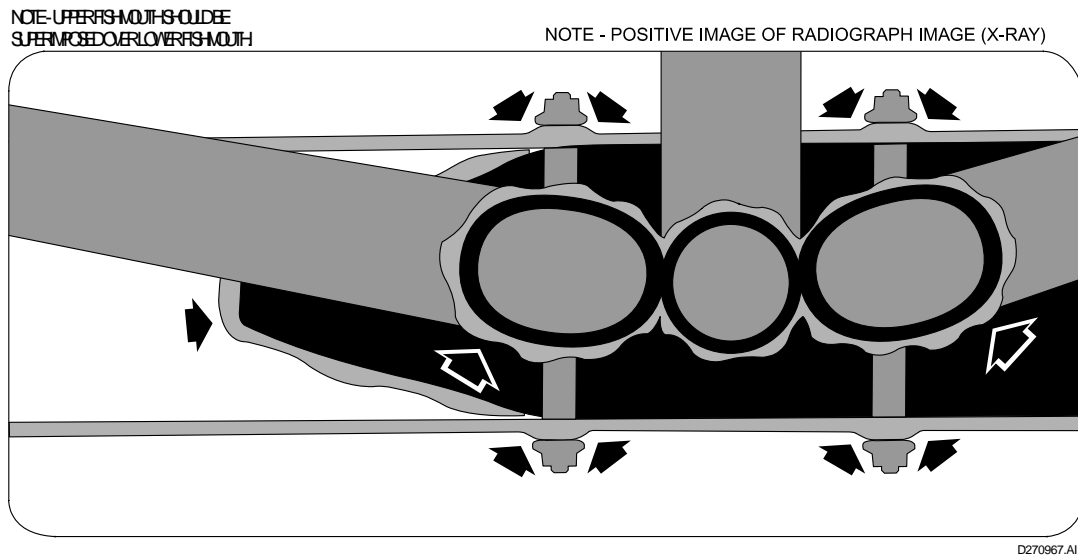
END OF FISHMOUTH  
WELD AT W.S. 111



VIEW LOOKING DOWN ON W.S. 111 INSPECTION LOCATIONS  
(RH WING LOCATION SHOWN)



**Figure 5 (Sheet 3) – W.S. 111 (Forward and Aft) Fishmouth Weld and Through-Bolt Inspection Locations**



**NOTE: W.S. 111 must be X-rayed from both forward and aft angles as shown by Figure 3.**

**Figure 5 (Sheet 4) – Radiographic Image of W.S. 111 (Forward and Aft) Fishmouth Weld and Through-Bolt Inspection Locations**

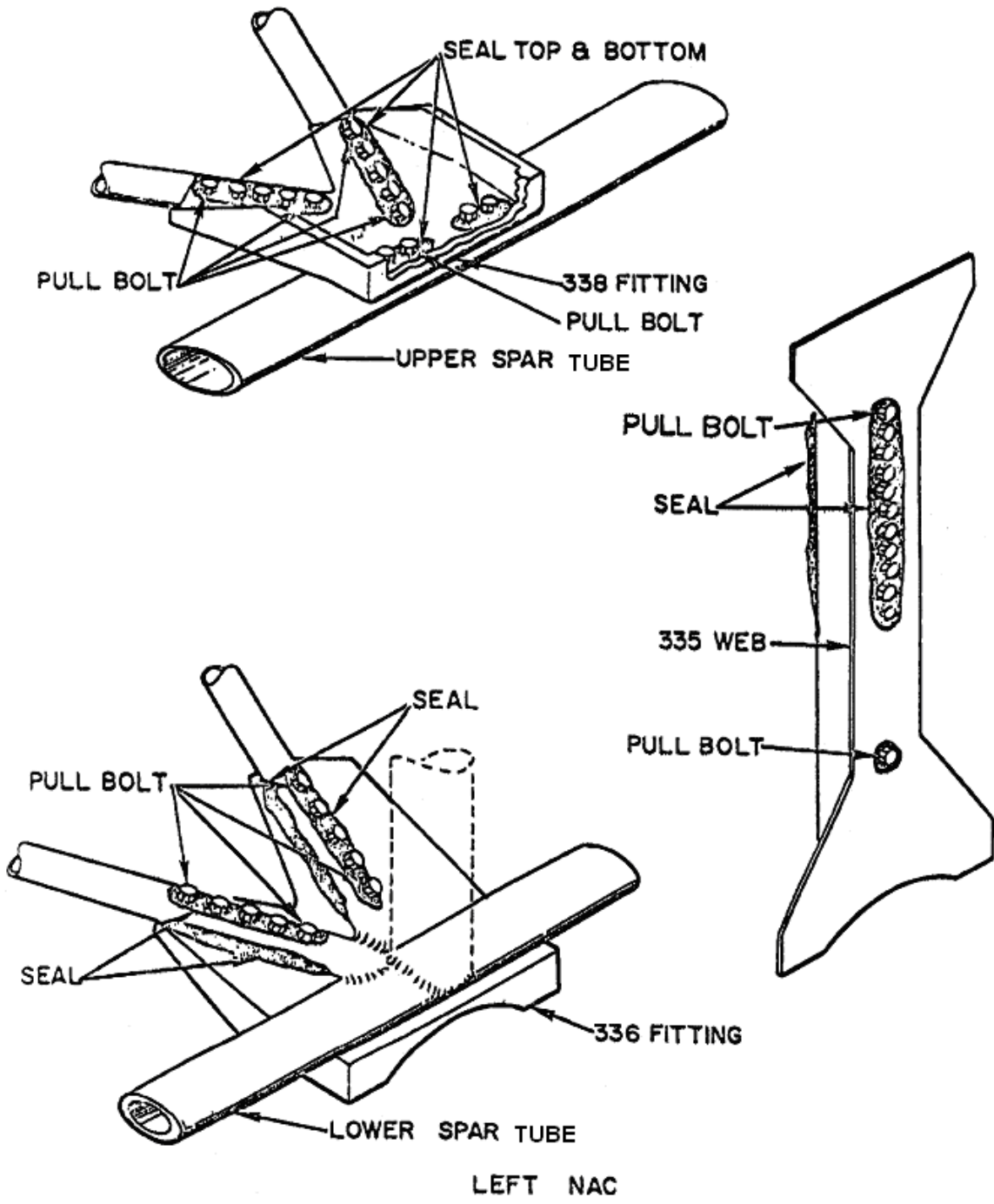


Figure 6 – Attach point of the Volpar truss to Beech spar truss assembly (W.S. 77)

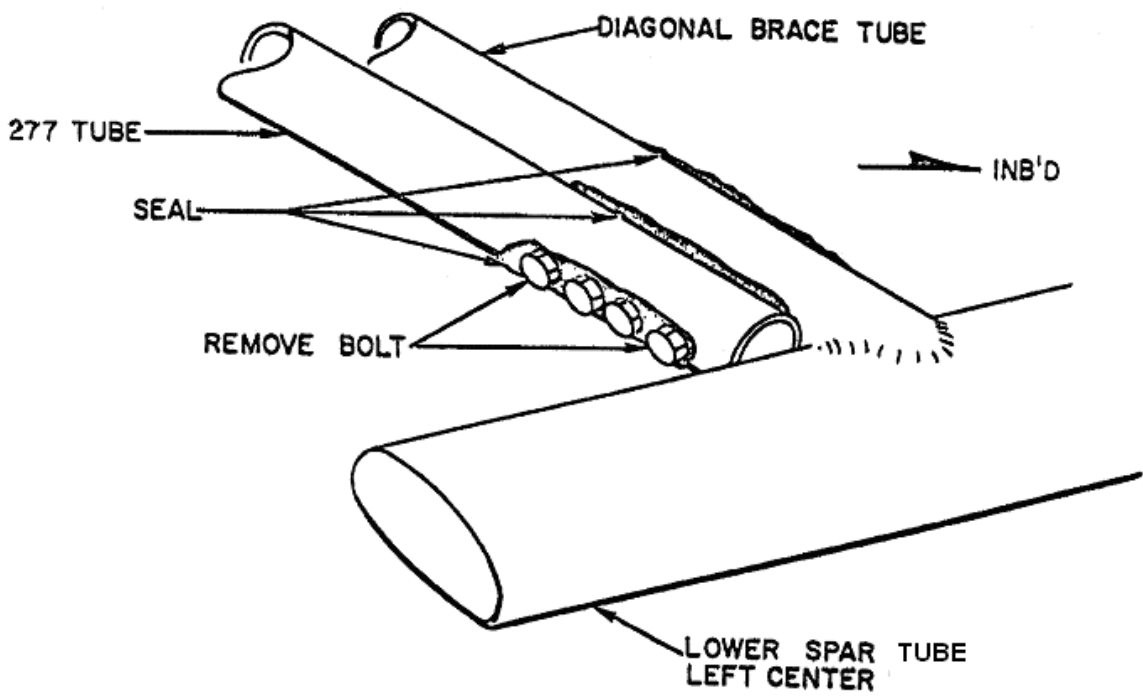


Figure 7 – Attach point of the Volpar truss to Beech spar truss assembly (W.S. 32)

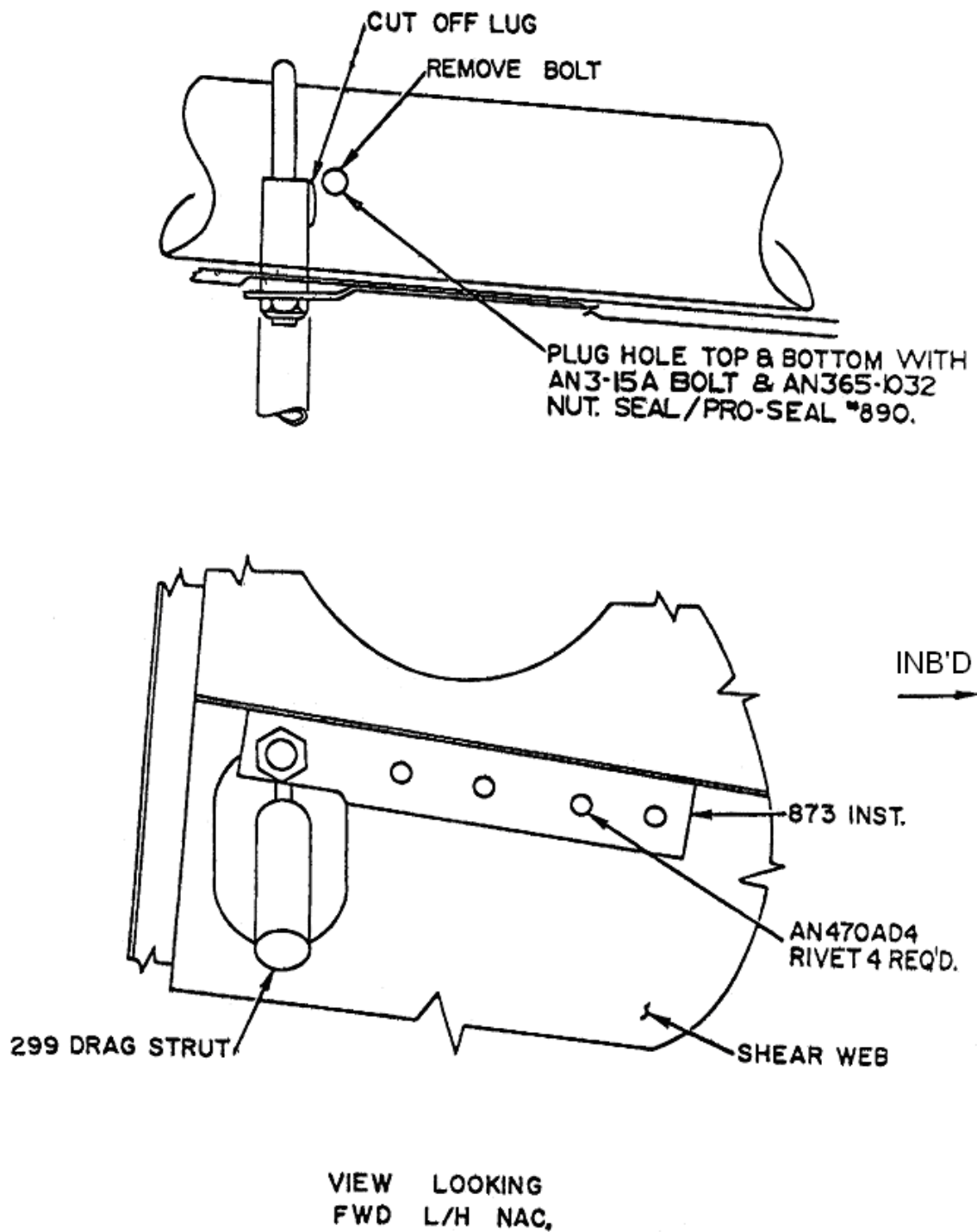


Figure 8 – Lower elliptical spar tube and 299-2 drag strut (W.S. 92)