RESTRICTED

TECHNICAL ORDER
No. 01-70AB-3

HANDBOOK OF OVERHAUL INSTRUCTIONS

FOR THE

MODELS PT-13B, PT-17 AND PT-18 PRIMARY TRAINING AIRPLANES

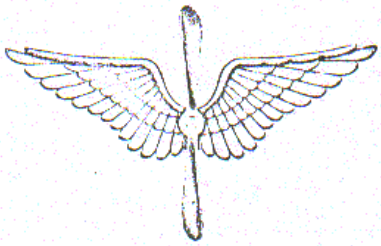
MANUFACTURED BY

STEARMAN AIRCRAFT
DIVISION OF BOEING AIRPLANE CO.

WICHITA, KANSAS

Contracts W535 AC-13244; AC-15923

Specification Type R-707 Model { PT-13B R-707-1 / PT-17 R-707-2 / PT-18 R-707-3



PUBLISHED BY AUTHORITY

OF

THE CHIEF OF THE AIR CORPS

BY

THE AIR SERVICE COMMAND

FIELD SERVICE SECTION

WRIGHT FIELD

DAYTON, OHIO

APRIL 1, 1940

REVISED 2-20-42

COPYFYER LITHOGRAPH CORP., CLEVELAND, OHIO
SEPTEMBER, 1942 - 4,000

Index of revision pages issued

Page	Latest Revised Date
3	2-20-42
4	9-5-40
5	2-20-42
6	2-20-42
8	9-5-40
12	2-20-42
12A	2-20-42
12B	2-20-42
12C	2-20-42
12D	2-20-42
12E	2-20-42
12F	2-20-42
14	9-5-40
15	9-5-40
17	9-5-40

NOTE: The symbol ∅ denotes that portion of a paragraph or page which has been revised. This symbol has not been used where the entire page has been revised.

INDEX

INDEX

ILLUSTRATIONS

75-3900 Installation - Electrical Equipment
75-3860 Installation - Instruments
75-3725 Installation - Furnishings
75-3200 Installation - Flight Controls
75-2700 Installation - Tail Wheel
75-1600 Installation - Empennage
75-2100 Fuselage Assembly - Complete - PT13B
A75N1-2100 Fuselage Assembly - Complete - PT17
A75J1-2100 Fuselage Assembly - Complete - PT18

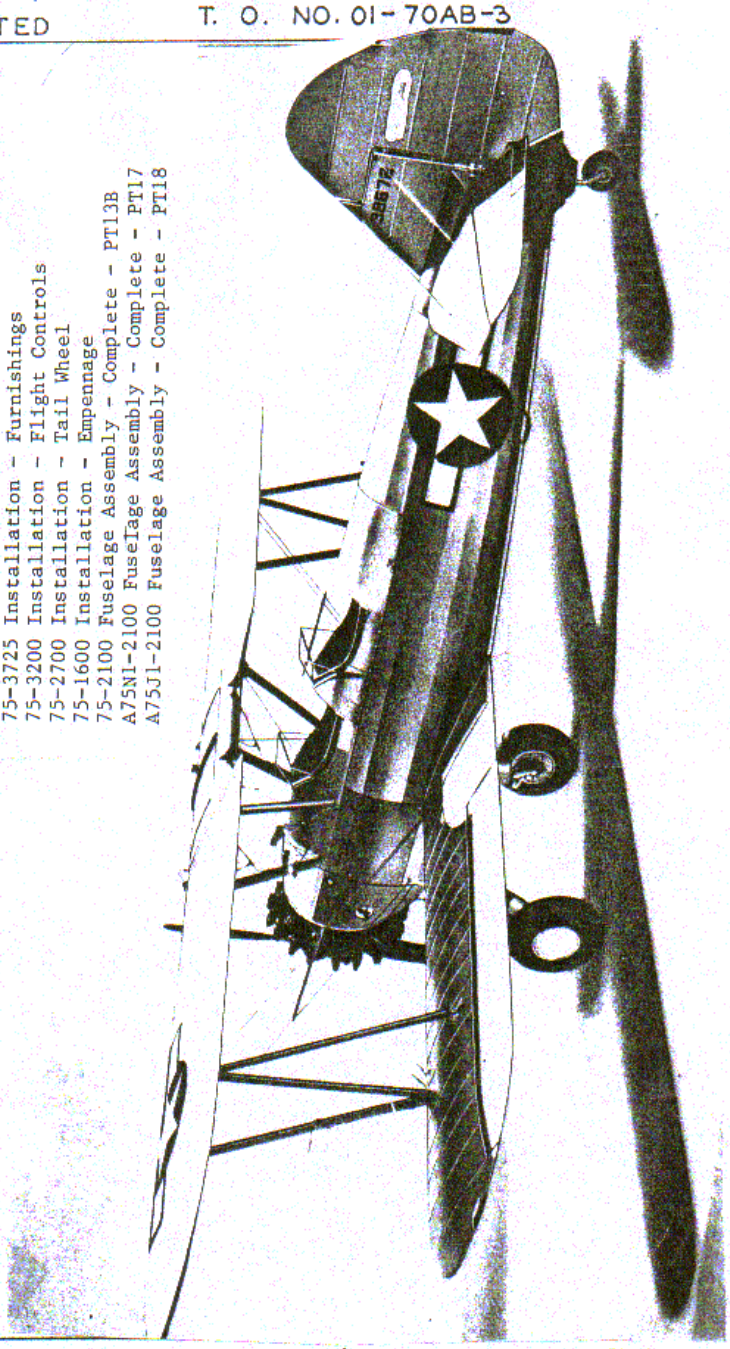


FIG. 1-3/4 LEFT REAR VIEW OF COMPLETE AIRPLANE

SECTION I

INTRODUCTION AND REFERENCE

1. This Technical Order is issued as the Overhaul Instructions for the Model PT-13B, PT-17 and PT-18 Primary Training Airplanes. It includes all necessary information for the major overhaul of these airplanes. Overhaul personnel will read and be familiar also with the information contained in T. O. Nos. 01-70AB-1 and 01-70AB-2 which is part of the complete overhaul instructions.

2. Reference has been made in this Handbook to the following Technical Orders which contain applicable data and instructions pertaining to the overhaul of the PT-13B, PT-17 and PT-18 Airplanes.

T. O. No.	
01-1-1	Cleaning of Aeronautical Equipment
01-1-3	Airplane Finishes
01-1-7	Long-Time Storage of Airplanes
01-1-12	Inspection of Airfoils
01-1-26	Replacement of Frayed Control Cables
01-1-58	Tightening of Radial Engine Mount Bolts & Replacement of Rubber Vibration Absorbers
01-1E-26	Repair & Cleaning of Fuel & Oil Tanks
01-1E-31	Annealing of Fuel, Oil & Water Lines
01-70AB-2	Service Instructions PT-13B
02-1-33	Stamping of Overhauls & Flying Time - Engines & Superchargers
02-15AA-2	Service Instructions, R-680-3, -5, -7, & -11 Engines (PT-13B)
02-15AA-3	Service Instructions, R-680-3, -5, -7, & -11 Engines (PT-13B)
02-30AA-2	Service Instructions, R-755-3, -5, & -7 Engines (PT-18)
02-30AA-3	Overhaul Instructions, R-755-3, -5, & -7 Engines (PT-18)
02-40AA-2	Service Instructions, R-670-3 & -5 Engines (PT-17)
02-40AA-3	Overhaul Instructions, R-670-3, & -5 Engines (PT-17)
03-1-2	Safety Belts
03-10-13	Operation & Inspection of Fuel Cock Controls
03-20-1	List of Propellers for Service Airplanes
03-50A-1	Starters & Starter Motors (Eclipse)
03-25A-1	Inspection & Lubrication of Anti-Friction Bearings
03-25C-2	Streamline Wheel & Brake Assemblies (Bendix)
03-25E-1	Air-Oil Shock Absorber Struts
03-45-1	Fire Extinguishers - Installation & Inspection - One Qt. Pump Type
03-45B-1	Fire Extinguishers, Type A-2
04-5-1	Issue & Inspection - Shock Absorber Cord
04-10-2	Inspection of Aircraft Tires
05-1-9	Aircraft Clocks, Types A-6, A-7, A-8 & A-9
05-5C-1	Tachometers, Chronometric, Types C-2 & C-7
05-10-2	Service and Overhaul Instructions - Airspeed Indicators

T. O. No.	
05-15-2	Service and Overhaul Instructions - Magnetic Compasses
05-20-2	Bank & Turn Indicators (Pioneer)
05-20-10	Altimeters, Types C-6, C-7, C-8, C-10 & C-11
05-20-26	Rate of Climb Indicators, Type A-6 (Kollsman)
05-50-1	Airspeed Tubes - Pitot Static & Power Venturi Tubes
05-75-1	Engine Gage Units, Types B-1, B-2 & B-7.
06-1-2	Fluids for Hydraulic Equipment
06-10-3	Prevention of Thread Seizures
07-1-1	Aircraft Markings & Insignia
17-1-2	Pressure Type Portable Cleaner
23-5-2	Welding of Steel Tubular Structures
23-5-3	Welding, Machining, & Forming Corrosion Resistant Steels & Inconal
23-15-1	Repair & Manufacturing Practices, Aluminum Alloys
29-1-3	Cleaning, Inspection & Lubrication of Anti-Friction Bearings.

SECTION II

GENERAL INSTRUCTIONS

1. Heat Treated Parts.

Instructions for the heat treating and annealing of aluminum materials are contained in Specification 98-10026. All aluminum alloy tubing is annealed after forming. Information on heat treatment of steels and steel alloys is contained in Specification 98-10025. The following is a list of heat treated parts:

FITTING NUMBER	NAME	MATERIAL	H.T.	METHOD OF REPAIR
75-1120	Plate Assy-U.F. Root	57-152-6	62000	Replace Bushings
75-1121	Plate Assy-U.R. Root	57-152-6	62000	Replace Bushings
75-1164	Fitting-U.F. Strut	57-153-D	65000	Replace Bushings
75-1166	Fitting-U.R. Strut	57-153-D	65000	Replace Bushings
75-1220	Plate Assy-L.F. Root	57-152-6	62000	Replace Bushings
75-1221	Plate Assy-L.R. Root	57-152-6	62000	Replace Bushings
75-1239	Bracket-Ail. Root Hinge	57-153-D	55000	Replace Ball Brg.
75-1240	Bracket-Ail. Hinge	57-153-D	55000	Replace Ball Brg.
75-1242	Bracket-Ail. Bellcrank	11309	40000	Replace Bushings
75-1244	Bracket-Ail. Idler	11309	40000	Replace Ball Brg.
75-1278	Fitting-L.F. Strut	57-153-D	65000	Replace Bushings
75-1280	Fitting-L.R. Strut	57-153-D	65000	Replace Bushings
75-1319	Plate-C.S.F. Root F.	57-152-6	62000	Replace Bushings
75-1320	Plate-C.S.F. Root	57-152-6	62000	Replace Bushings
75-1321	Plate-C.S.R. Root F.	57-152-6	62000	Replace Bushings
75-1322	Plate-C.S.R. Root	57-152-6	62000	Replace Bushings
75-1370	Fitting-C.S.F. Strut	57-153-D	65000	Replace Bushings
75-1372	Fitting-C.S.R. Strut	57-153-D	65000	Replace Bushings
75-1417	Horn-Aileron	57-152-6	62000	Replace Bushings
75-1419	Hinge Support-Aileron	57-152-6	62000	Replace Bushings
75-1501	Strut Assy-Front Interplane	57-152-6 (Fitting)	62000	Replace Bushings
75-1502	Strut Assy-Diagonal Interplane	57-152-6 (Fitting)	62000	Replace Bushings
75-1503	Strut Assy-Rear Interplane	57-152-6 (Fitting)	62000	Replace Bushings
75-1510	Strut Assy-Center Section Front	57-152-6 (Fitting)	62000	Replace Bushings
75-1511	Strut Assy-Center Section Rear	57-152-6 (Fitting)	62000	Replace Bushings

FITTING NUMBER	NAME	MATERIAL	H.T.	METHOD OF REPAIR
75-1825	Horn Assy-Elev. Cont.	57-153-D	65000	Replace Ball Brgs.
75-2106	Fitting-Rear L.G. Fuselage	10083	90000	(1) Drill 1/16 larger & install 1/16 oversize bolt. (2) Drill 1/8 larger install bushing and use orig. size bolt.
75-2112	Fitting-Engine Mt. Attachment	57-107-19B	90000 ø	Drill & tap oversize See Par. 4.c., Sec. IV, T.O. 01-70AB-2 ø
75-2118	Fitting-Rear Wing Attachment	57-136-8C	90000	Drill 1/8 oversize Add bushing.
75-2123	Fitting Assy-T.W. Attachment	57-136-8C	90000	Drill 1/8 oversize Add bushing.
75-2148	Lug-Wing & Flying Wire Fuse.	57-107-19B	90000	Drill 1/8 oversize Add bushing in hinge bolt hole only.
75-2150	Fitting-Strut and Wire P.O.	57-107-19B	90000	Drill 1/8 oversize & install bushing strut att. hole only.
75-2152	Fitting-Strut and Wire P. Fuse.	57-107-19B	90000 ø	Drill 1/8 oversize. See Par. 4.c., Sec. IV, T.O. 01-70AB-2 ø For strut att. hole drill 1/8 oversize and add bushing.
75-2156	Fitting-F. L.G. Fuse.	57-107-19B	90000	1 oversize bolt.
75-2161	Fitting-Fuse. Rud.Ped.	57-107-19B	90000	Replace Ball Brgs.
75-2619	Knuckle-Bolted Type Sponson	57-107-19B	180000	1 oversize bolt for fuse. & shock abs. Replace bushings for cross tubes.
75-2623	Arm-Torque-Bolted Type Sponson	57-107-19B	150000	1 oversize bolt for fuse. f'tg. Replace bushing for cross tubes.
75-2624	Tube-Bolted Type Spon.	57-107-19B	180000	Replace bushings.
75-2703	Housing-T.W. Post	11309-A	40000	Replace bushings.
75-2702	Shock Abs.-T.W.			" Oilite " . " " " .
75-2704	Frame Assy-T.W. Trunnion	57-180-2 (Tube)	90000	Replace Oilite bushings.
75-2715	Block-T.W. Shock Abs. Univ.	57-107-19B	125000	Replace Oilite and 4130 bushings.
75-2901	Support-Eng. Controls	QQ-A-353	55000	Replace bushings.
75-2902	Support-Carb. Air Cont.	QQ-A-353	55000	Replace bushings.
75-2905	Bellcrank-Eng. Cont.	QQ-A-353	55000	Replace bushings & ball bearings.

2. Finish Specification - General

At overhaul, the cleaning of the airplane, application of protective coatings, finishes and colors will conform to T.O. No's 01-1-1, 01-1-3 and 07-1-1 and Specification 3-100. The finish data listed hereafter are those followed by the manufacturer in the original construction of the airplane.

a. Wings. - All aluminum alloy parts, except as noted below, were anodized and all steel parts cadmium plated, after which the finish was as follows:

(1) Interior metal parts:

(a) 1 coat zinc chromate primer.

(b) 1 coat aluminized zinc chromate primer (4 oz. 300 mesh to the gallon).

(2) Exterior metal parts:

(a) 1 coat zinc chromate primer.

(b) 2 coats pigmented lacquer (color in accordance with Specification 98-24113.

(3) Wood parts: 3 coats varnish - Specification TT-V-121a.

(4) Parts in contact with doped surfaces: 1 coat dope proof paint - Specification 3-107, except wing leading and trailing edges, ailerons, and tail surfaces, which are painted with aluminized zinc chromate primer and fuselage fairing which is not painted.

(5) Fabric surfaces:

(a) 3 coats brushed semi-pigmented dope - Specification 3-159.

(b) 3 coats sprayed semi-pigmented dope - Specification 3-159.

(c) 1 coat sprayed semi-pigmented dope - Specification 3-159 thinned 25%.

(6) Threaded Parts: Machine screws were lubricated as prescribed in T.O. No. 06-10-3.

(7) Complete detail finishes were in accordance with Stearman Specification No. 75-8526, Finish ASF-2.

b. Empennage. - The finish for the empennage was the same as that for the wings with the exception of the insignia colors applied to the rudder in accordance with Air Corps Specification 98-24102, Insignia - Aircraft.

c. Fuselage. - All aluminum alloy parts were anodized and all steel parts detachable from the fuselage welded assembly were cadmium plated. The remainder of the finish was applied as follows:

(1) Fuselage frame:

(a) 1 coat zinc chromate primer.

(b) 2 coats aluminized lacquer, Specification 3-158, Class A.

(2) Inside of cowling:

(a) 1 coat zinc chromate primer.

(b) 1 coat aluminized lacquer.

(3) Outside of cowling:

(a) 1 coat zinc chromate primer.

(b) 2 coats lacquer, Specification 3-158, pigmented in accordance with Specification 98-24113.

d. Engine Section. - Finish for the engine section was the same as that called for under Paragraph c. above, "Fuselage", except that the interior of the engine cowling and both surfaces of the firewall did not receive any finish. Engine mount attaching studs were lubricated as prescribed in T.O. No. 06-10-3.

e. Landing Gear. - Finish for the entire landing gear was the same as that for the fuselage frame.

NOTE: The following parts when fabricated from aluminum coated aluminum alloy were not anodized:

(a) Fuselage fairing.
(b) Ailerons - except hinge and horn brackets.
(c) Wing and tail surface leading and trailing edge covers.

SECTION III

DISMANTLING, CLEANING AND INSPECTION

1. General.

The work outlined in this section consists of preparing the airplane for overhaul. The inspections accomplished should be as complete as possible at this stage of disassembly. Major sub-assemblies which cannot be inspected should be marked "Repairable" and routed to the sub-assembly group, for repair and assembly as outlined in Section IV.

2. Dismantling.

a. General. - General instructions for removing major assemblies are given in Section IV, T.O. 01-70AB-2 as follows:

(1) Wings - Paragraph 2. (Disassembly can be accomplished by reversing the installation procedure).

(2) Empennage - Paragraph 3. (Disassembly can be accomplished by reversing the installation procedure).

(3) Landing Gear - Paragraph 6.

(4) Tail Wheel - Paragraph 7.

(5) Engines - Paragraph 8.

(6) Fuel Tanks - Paragraph 13.

b. Precautions. - The cautions and warnings contained in T.O. 01-70AB-2 will be observed.

3. Cleaning.

Before any overhaul operations are performed, the airplane should be cleaned. Air Corps requirements and materials for the cleaning of aeronautical equipment are contained in T.O. 01-1-1. Operation instructions for the Air Corps Pressure Type Portable Cleaner are given in T.O. 17-1-2.

4. Inspection - General.

As soon as possible after cleaning, the entire airplane should be checked for corrosion. At the same time, a general check for breaks and cracks can be made.

SECTION IV

DISASSEMBLY, INSPECTION, REPAIR & ASSEMBLY

1. General

a. This section contains the general instructions for restoring this airplane to, as near as possible, its condition when new, such work being the normal function of the Air Depots.

b. The major portion of the disassembly and assembly instructions are contained in the Handbook of Service Instructions, T. O. No. 01-70AB-2. For reference purposes, the paragraph sequence used in this section is the same as that used in Section IV of T. O. No. 01-70AB-2.

c. For instructions covering welding of steel structures see T. O. No. 23-5-2. Air Corps repair and manufacturing practices for aluminum alloys are contained in T. O. No. 23-15-1. Instructions for welding, machining and forming corrosion resistant steel and Inconel, are contained in T. O. No. 23-5-3.

2. Wings

a. General. - (1) Remove fabric covering and check all fittings, spars and ribs for cracks.

(2) Tighten drag wires.

(3) Inspect leading edge covering for loose nails, etc.

(4) Replace hinge bearings if required.

(5) Replacements should be inspected per T. O. 01-1-12.

(6) For assembly instructions, see T. O. No. 01-70AB-2.

b. Repair of Wing Spars and Ribs. - (1) The following instructions on the repair of wing spars and wing ribs by splicing should be considered only when such action is absolutely warranted and there can be no question concerning the skill of the repairmen to make a satisfactory spliced spar. The wing spars on the PT-13 series, PT-17 and PT-18 airplanes are of simple construction and it is considered that replacement of an entire wing spar will be the most logical and economical method in the long run. If splicing is attempted, instructions provided in Table I and Figures 2, 3, 4 and 5 should be closely adhered to.

(2) The wing spars on the PT-13 series, PT-17 and PT-18 airplanes may be of the following type construction:

(a) Rectangular * Cross Section (Unrouted):

1. Solid board
2. Laminated board (2 pieces)

*This cross section is actually trapezoidal but for all practical purposes may be considered rectangular.

(b) Externally Routed Cross Section ("I" spar):

1. Solid board
2. Laminated board (2 pieces)

(3) There are two methods recommended for the splicing of Wing Spars on the PT-13 series, PT-17 and PT-18 airplanes. They apply to the unrouted and the routed spars of solid or laminated board. Refer to Figures 2 and 3. Important limitations which apply to both methods are contained in Table I and must be adhered to exactly as they apply to the method adopted. Table I contains the part number of the spars, the thickness of the various spars, the thickness at routed sections if spars are routed, the length of splice permitted and the stations on spars where splices must be located. Repaired spars which do not conform to Table I and Figures 2 and 3 cannot be retained in service.

(4) It should be noted that when spars are spliced, the reinforcing plates called for will necessitate reworking the wing ribs at the section where the spar fits through the wing rib. Practically all wing ribs are fabricated so that the spar fits through two vertical members. The distance between these vertical members in the ribs which are located within the spliced area must be increased to accommodate the additional thickness of the spar. This may serve to affect the load carrying characteristics of the rib, but not seriously. It is considered that the work involved in reworking the ribs will be the most bothersome part of the job.

(5) Repair of Wooden Wing Rib. (Refer to Figure 4, which is self explanatory.)

(6) Splicing of Rib at Spar. (Refer to Figure 5, which is self explanatory.)

3. Empennage

a. Remove fabric covering and check fittings for cracks.

b. Check ribs for contour.

c. Check leading edge cover for scratches, dents and loose rivets.

d. Replace hinge bearings if required.

e. Empennage replacement should be inspected per T. O. No. 01-1-12.

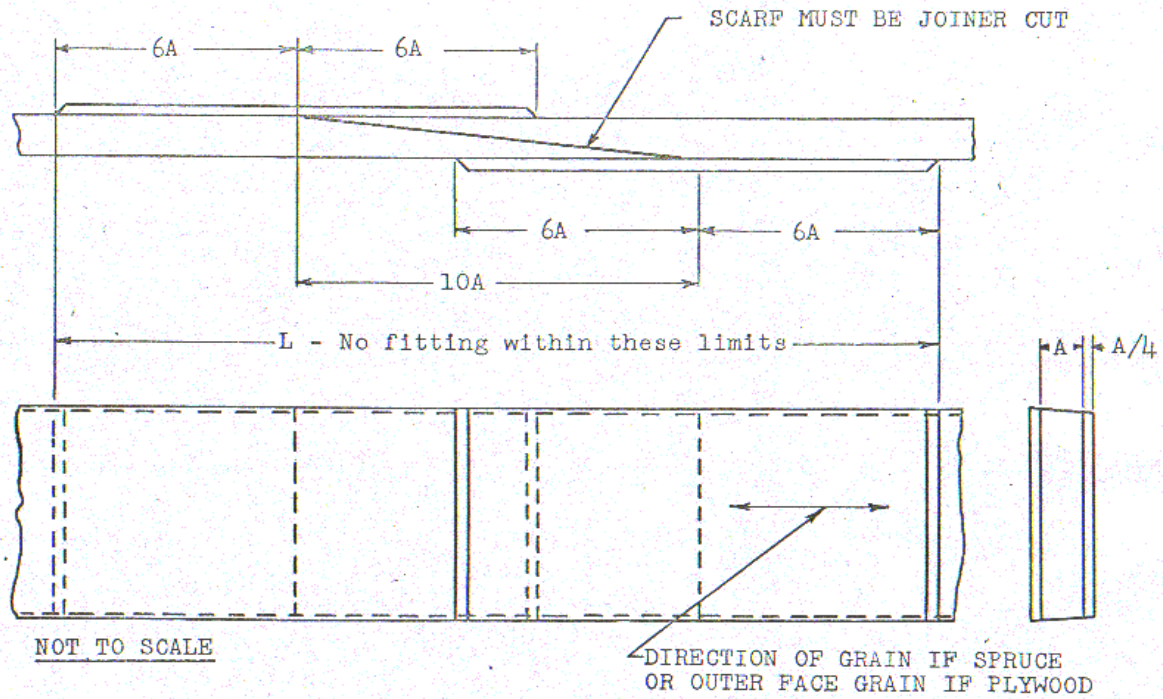
f. For assembly instructions, see T. O. No. 01-70AB-2.

Spar	Part No.	A Inches	B Inches	L Inches	S
Upper front	75-1103	7/8	1/2	19 1/4 unrouted 15 1/2 routed	35 - 60 3/4 64 3/4 - 83 1/2 (unrouted spar only) 100 1/2 - 122 1/2
Upper rear	75-1104	13/16	7/16	17 7/8 unrouted 14 1/8 routed	36 - 62 66 - 83 (unrouted spar only) 99 - 122 1/4
Lower front	75-1203	1 1/16	11/16	23 3/8 unrouted 19 5/8 routed	40 1/4 - 71 1/4 75 1/2 - 101 1/4 115 1/4 - 143 1/4
Lower rear	75-1204	13/16	7/16	17 7/8 unrouted 14 1/8 routed	44 1/4 - 71 1/4 87 1/4 - 105 1/4 113 1/4 - 138 1/4

LEGEND

A - Thickness of Spar
B - Thickness of Spar at Routed Section, if routed
L - Length of Splice, within which no fittings are permitted. Routed and unrouted spar splice lengths as noted.
S - Stations on spar, measured from root end in inches, as noted on tabulated drawings, between which splice must be located. One splice only may be located in each of these sections and not more than two splices per spar. This applies to both routed and unrouted spars unless noted.

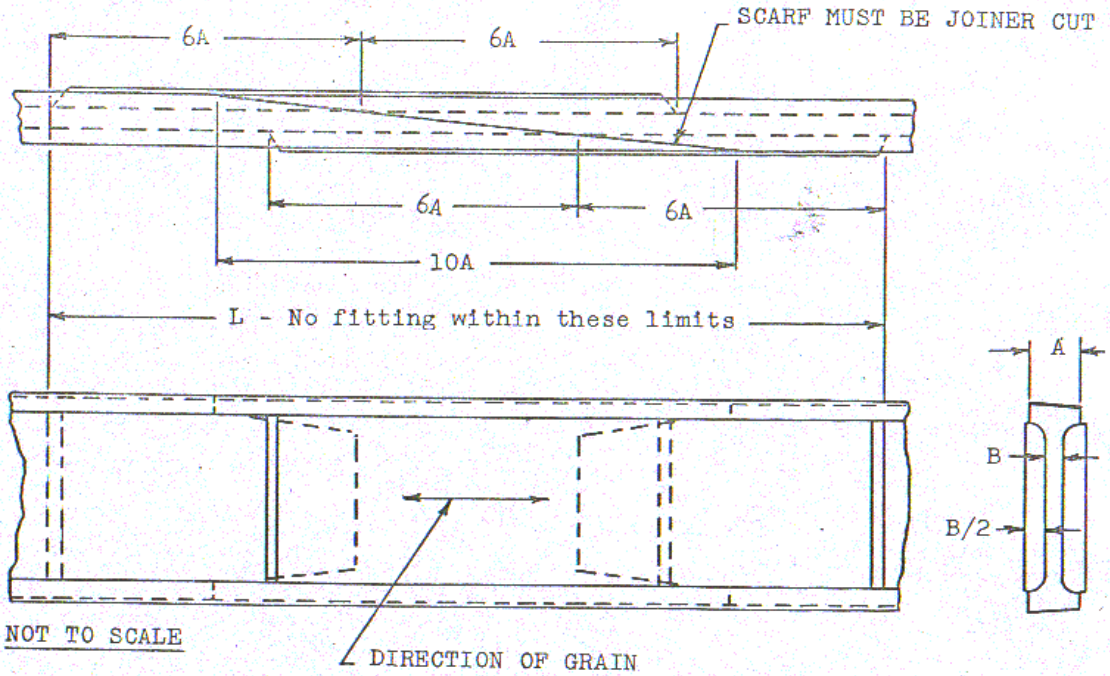
TABLE I - LIMITATIONS ON SPLICING OF WING SPARS



REINFORCING PLATES TO BE SPRUCE SPECIFICATION 82-2 OR PLYWOOD SPECIFICATION AN-NN-P-511 AND SHALL BE GLUED ONLY. USE CASEIN GLUE SPECIFICATION 3-152 IN ACCORDANCE WITH T. O. 07-25-1. APPLY APPROXIMATELY 150 P.S.I. PRESSURE TO GLUED JOINT.

SOLID SPARS MAY BE REPLACED WITH LAMINATED ONES OR VICE VERSA, PROVIDED THE MATERIAL IS OF THE SAME HIGH QUALITY.

FIG. 2 - SPLICING SOLID OR LAMINATED SPARS (UNROUTED)

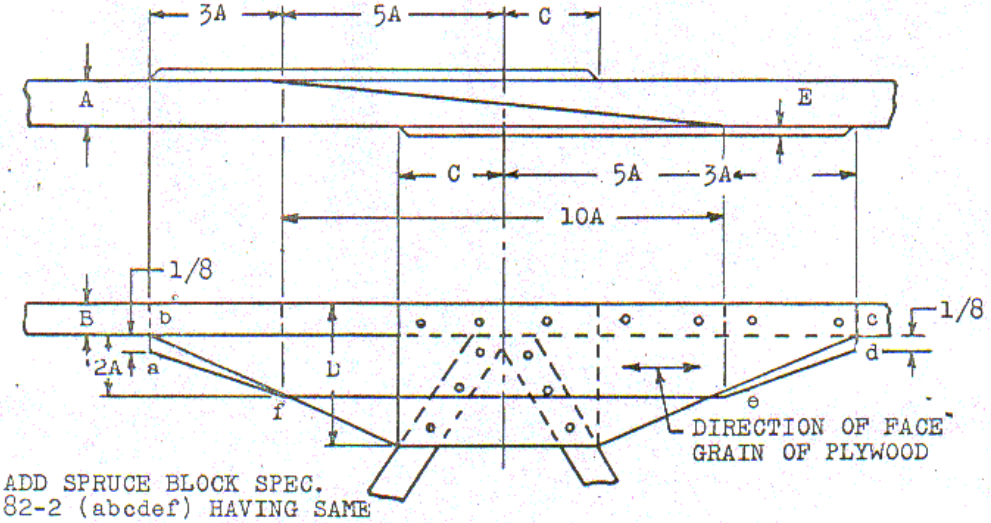


REINFORCING PLATES TO BE SPRUCE SPECIFICATION 82-2 AND SHALL BE GLUED ONLY. USE CASEIN GLUE SPECIFICATION 3-152 IN ACCORDANCE WITH T. O. 07-25-1. APPLY APPROXIMATELY 150 P.S.I. PRESSURE TO GLUED JOINT.

SOLID SPARS MAY BE REPLACED WITH LAMINATED ONES OR VICE VERSA PROVIDED THE MATERIAL IS OF THE SAME HIGH QUALITY.

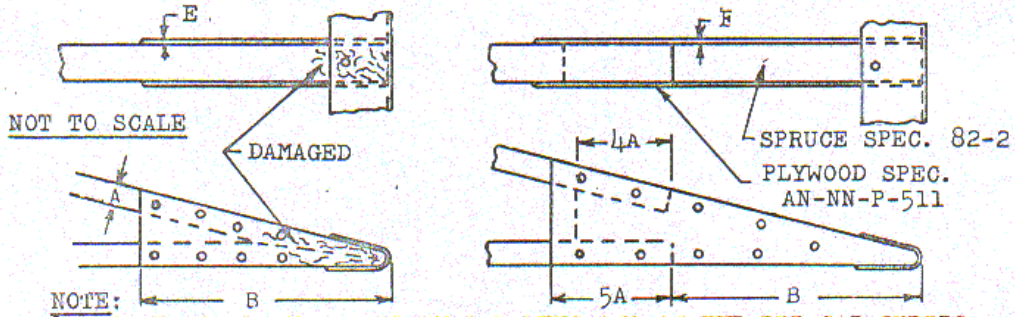
FIG. 3 - SOLID OR LAMINATED EXTERNALLY ROUTED SPARS

AT A JOINT OR BETWEEN JOINTS.



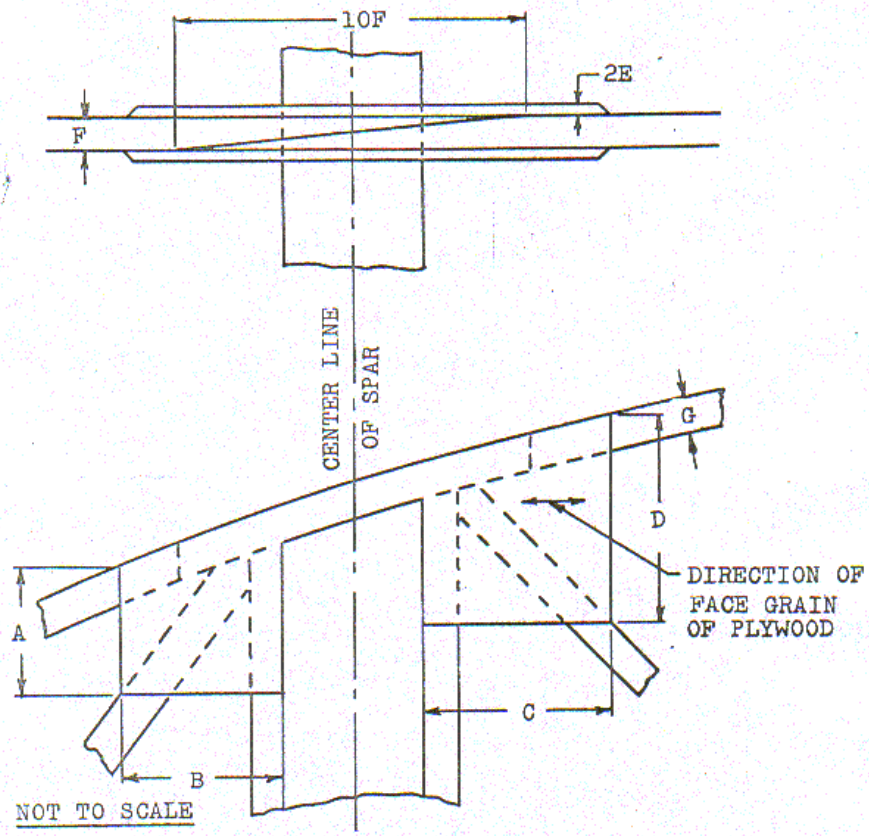
ADD SPRUCE BLOCK SPEC. 82-2 (abcdef) HAVING SAME WIDTH AS CAPSTRIP WHEN SPLICE IS MADE BETWEEN JOINTS. SIDE PLATES NEED ONLY EXTEND TO LOWER EDGE OF THE SPRUCE BLOCK IN THIS CASE.

AT TRAILING EDGE



NOTE:
1. A, B, C, D, E, = ORIGINAL DIMENSIONS OF THE RIB CAP STRIPS AND GUSSET PLATES AT THE SECTIONS IN QUESTION FOR BOTH DETAILS SHOWN HERE.
2. IN MAKING REPAIRS DETAILED HEREON REINFORCEMENT PLATES SHALL BE PLYWOOD SPEC. AN-NN-P-511 GLUED AND NAILED. NAIL HEADS SHALL NOT BE IMBEDDED IN THE PLYWOOD. USE CASEIN GLUE SPEC. 3-152 IN ACCORDANCE WITH T. O. 07-25-1. USE CEMENT COATED FLAT HEAD NAILS 301-20 - LENGTH TO BE DETERMINED ON ASSEMBLY.
3. IN ALL CASES DAMAGED WEB MEMBERS SHALL BE REPLACED ENTIRELY

FIG. 4 - WOODEN WING RIB REPAIRS



NOTE:

1. A, B, C, D, E, F, G, = ORIGINAL DIMENSIONS OF THE RIB CAP STRIPS AND GUSSET PLATES AT THE SECTIONS IN QUESTION.
2. REINFORCING PLATES SHALL BE PLYWOOD SPEC. AN-NN-P-511 GLUED AND NAILED. NAIL HEADS SHALL NOT BE IMBEDDED IN THE PLYWOOD. USE CASEIN GLUE SPEC. 3-152 IN ACCORDANCE WITH T. O. 07-25-1. USE CEMENT COATED FLAT HEAD NAILS 301-20 - LENGTH TO BE DETERMINED ON ASSEMBLY.
3. IN ALL CASES DAMAGED WEB MEMBERS SHALL BE REPLACED ENTIRELY.

FIG. 5 - RIB SPLICE AT SPAR

4. Fuselage and Engine Mount.

a. Inspection.

(1) Fuselage.

(a) Remove fabric covering and check all tube joints and fittings for cracks.

(b) Inspect Station #1 box tube for local failure.

(c) Inspect landing gear fitting for elongated holes.

(2) Engine Mount: All welds should be inspected for cracks and breaks.

b. Repair.

For repair instructions, see T. O. 01-70AB-2.

5. Cowling.

After cleaning, all cowling sheets should be carefully checked for breaks and cracks. For repair instructions, see T. O. 01-70AB-2.

6. Landing Gear.

a. Replace rubber sleeves and clips in master cylinders if required.

b. Inspect sponson for elongated holes.

c. Replace scissor bushings if necessary.

d. Each air-oil shock absorber strut should be disassembled, minutely checked and repacked. Refer to T. O. 03-25E-1, 01-70AB-2, and 06-1-2 for complete instructions.

e. Refer to T. O. No's 03-25C-1, 04-10-2, and 01-70AB-2 for removal and overhaul instructions covering wheels and brakes.

f. For assembly of complete landing gear, see T. O. 01-70AB-2.

7. Tail Wheel.

a. If required, replace oilless bushings.

b. Replace lower post bearing per Paragraph 7. c., Sec. IV, T. O. 01-70AB-2.

c. Anti-friction bearings should be removed and cleaned in accordance with T. O. 29-1-3.

d. The air-oil shock absorber struts should be disassembled, minutely inspected and repacked. Refer to T. O. Nos. 01-70AB-2 and 06-1-2.

e. Refer to T. O. Nos. 03-25A-1 and 04-10-2 for complete instructions covering wheels.

8. Engine Accessories.

ø a. Disassembly and overhaul instructions for engines are given in T. O. Nos. 02-15AA-3, 02-30AA-3, and 02-40AA-3. See also T. O. 02-1-33 on the Stamping of Engines Overhaul and Flying Time. ø

b. Rebush air box valve shaft bearings in the carburetor air intake system.

c. Replace rubber grommet in air stack.

d. Inspect screens.

ø e. Disassemble and repair the hand starter, Eclipse Type B-11 for the Models PT-13B and PT-17, and Eclipse Type B-9 for the Model PT-18, in accordance with T. O. 03-5CA-1. ø

f. The rubber vibration absorbers between the engine and engine mount should be inspected, and if necessary, replaced. See T. O. 01-1-58.

9. Engine and Propeller Controls.

a. The push-pull rods should be thoroughly checked for cracks and breaks.

b. Anti-friction bearings should be cleaned and lubricated as outlined in T. O. 29-1-3.

c. Replace rod ends, bushings and fairleads, if required.

10. Propeller and Hub.

ø a. Refer to T. O. 03-20-1 for list of propellers for service airplanes. The propeller and hub should be overhauled in accordance with the propeller handbook. ø

b. For procedure in case of engine roughness or vibration, see T. O. 01-70AB-2.

11. Fuel and Oil Systems.

a. The fuel and oil systems will be removed, cleaned, inspected, repaired and replaced. Upon removal of lines, they should be marked as to location in airplane.

b. Refer to T. O. 01-1E-31 for instructions on annealing of lines.

c. Air Corps instructions for the cleaning and repair of tanks are contained in T. O. 01-1E-26. Cracks and breaks in the tanks can be repaired in accordance with Specification 20013 and T. O. 23-15-1.

d. The tank straps should be checked for cracks and worn spots and replaced if damaged.

e. The felt pads should be replaced if appreciably worn or packed.

f. Install threaded fittings in fuel system as outlined in T. O. 06-10-3.

g. For instructions covering removal of fuel tank, see T. O. 01-70AB-2.

h. For instructions applicable to fuel cock controls, see T. O. 03-10-13.

12. Engine and Aeronautical Instruments.

a. General instrument repair instructions are contained in T. O. 05-1-1. The instruments should be removed from the airplane and inspected in accordance with their respective Technical Orders as follows:

Compass, Type B-16 - T. O. 05-15-2
Airspeed Indicator, Type C-7 - T. O. 05-10-2
Bank & Turn Indicator, Type A-5 - T. O. 05-20-2
Rate of Climb Indicator, Type A-6 - T. O. 05-20-26
Engine Gage Unit, Type B-2 - T. O. 05-40-5
NOTE: Fuel pressure dial is painted over.
Clock, Type A-9 - T. O. 05-1-9
Altimeter, Type C-11 - T. O. 05-20-10
Tachometer, Type C-7 - T. O. 05-50
Pitot Static Tube, Type B-6 - T. O. 05-50-1

b. For disassembly instructions, see T. O. 01-70A-2

NOTE: Type A-6 Rate of Climb Indicator manufactured by the Kollsman Instrument Company, due to its extreme length cannot be installed in the rear instrument panel. The Pioneer A-6 Climb Indicator will make a satisfactory installation in this position.

13. Surface Controls.

a. Cables should be removed, cleaned and inspected for fraying and corrosion. See T. O. 01-1-26.

b. Pulleys should be inspected for wear. Pulley bearings should be lubricated in accordance with T. O. 29-1-3.

c. All moving parts and brackets should be inspected for worn spots, cracks and breaks.

d. Bushings should be replaced if appreciably worn.

e. Fairleads should be checked for wear.

f. Adjust tab gear.

g. Beginning with Serial No. AC40-1582, the aileron control link, Stearman Part No. 75-3349, is equipped with a Norma-Hoffman removable felt sealed self-aligning ball bearing, Part No. KSF-4. At each overhaul, the seals should be removed, the bearing washed, repacked and the seals replaced. In case of emergency replacement if KSF-4 bearings are not available, use AN-200-KS4 temporarily.

h. Tensions of control cables are itemized in T. O. 01-70AB-2.

i. All parts will be wiped clean and lubricated where needed. See T. O. 01-70AB-2.

j. Assembly instructions are contained in T. O. 01-70AB-2.

14. Fire Extinguishers.

Refer to T. O. 03-45B-1 and 03-45-1 for complete instructions on fire extinguishers.

15. Fuselage Equipment.

a, For data applicable to the safety belt, see T. O. 03-1-2.

b. Inspect windshields for condition of frame and security of attachment. breaks or cracks in laminated scatterproof glass.

c. Inspect condition and functioning of surface control parking lock.

d. Inspect all shock absorber cord in accordance with T. O. 04-5-1.

16. Ignition System.

Inspect condition and functioning of ignition switch control levers and shafts.

SECTION V

FINAL ASSEMBLY

1. The instructions covering the installation of the various major sub-assemblies have been given in the Handbook of Service Instructions, T. O. No. 01-70AB-2.

SECTION VI

ADDITIONAL OVERHAUL & MAJOR REPAIR INSTRUCTIONS ISSUED BY THE AIR CORPS

SECTION VII

PREPARATION OF AIRPLANE FOR STORAGE

1. Complete instructions are contained in T. O. No. 01-1-7.

SECTION VIII

CRATING DATA

1. General.

To prepare the airplane for shipment, the following disassembly operations should be accomplished according to the instructions given under the various sections of this Handbook.

a. Domestic Shipment.- Shipment for domestic consignment is best accomplished by racking in box cars:

(1) Remove propeller and oil blades.

(2) Remove flying wires, upper wings, and interplane struts.

(3) Remove lower wings and landing wires. Clamp ailerons in place and remove inner aileron control tubes.

(4) Remove all tail surfaces.

(5) Remove wheels and tires.

(6) Install engine and cockpit covers.

(7) Tie down rear elevator control tube and pad at fuselage.

(8) Place fuselage in center of car supported at all three axles by properly braced wood blocks bolted through the car floor. Release all air from oleos.

(9) Install padded racks in the car on both sides of fuselage and rest wing panels on their leading edges properly braced and secured.

(10) Small assemblies including struts, wires, tires and wheels, propeller, and all attaching parts should be properly boxed or crated and secured to the floor.

(11) Tail surfaces should be racked separately.

b. Overseas Shipment:

(1) For overseas shipment the airplane should be properly crated in two shipping boxes conforming to Stearman Drawings 75-4524 and 75-4525. These boxes shall contain the following parts:

(a) Box 75-4524:

1. Fuselage only with engine and all covers installed - cowling racked on floor as required.

2. Complete landing gear.

3. Propeller.

4. Complete tail wheel unit.

(b) Box 75-4525:

1. All wing panels (five).

2. Interplane struts (six).

3. Cabane struts (four).

4. Full set of wires.

5. Complete set of tail surfaces.

(2) In addition to disassembly operations of Paragraph a., above, (1) to (8) inclusive, the following must be accomplished:

(a) Remove landing gear cowling.

(b) Remove landing gear.

(c) Remove fuel lines, center section, wires and struts.

(d) Remove tail wheel unit and cowl.

(e) Support fuselage from steel braces on box floor.

(f) Rack wings in proper box.

(g) Crate or properly box all other parts for disposal as required by (1) above.