



U.S. Department
of Transportation
**Federal Aviation
Administration**

Central Region
Wichita Aircraft Certification Office
1801 Airport Road, Room 100
Mid-Continent Airport
Wichita, Kansas 67209

JUL 11 1984

JUL 18 1984

Mr. John M. Frank, Jr.
Executive Director
American Bonanza Society
Post Office Box 12888
Wichita, Kansas 67277


Dear Mr. Frank:

This evidences approval of your Fluorescent Liquid-Penetrant Inspection Procedure, dated July 10, 1984, for inspection of steel trusses in Beech Models 35 and 35R airplanes in accordance with Airworthiness Directive (AD) 63-25-01. This approval is based on equivalency aspects that are described below.

On July 10, 1984, representatives of our Airframe Branch saw that inspection per your procedure resulted in unmistakable detection of a crack. The crack was in a sample section of a wing spar from a Beech Model E18S airplane Serial Number BA-109. This crack resembles those in Model 35 Series airplanes per AD 63-25-01. The basic procedure was thus established. Concurrently, access provisions in Beech Model 35 airplane Serial Number D-1219 were found to be as good for your fluorescent penetrant procedure as for the magnetic particle procedure required in AD 63-25-01.

This letter should be sent with a copy of the Fluorescent Liquid-Penetrant Inspection Procedure, dated July 10, 1984.

Sincerely,


Robert A. Gambrill, Jr., Manager
Wichita Aircraft Certification Office



Edward Warren: First American Alotl

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Beechcraft SERVICE BULLETIN

Published by the Customer Service Division

Model: 35 (35R)

No. 24

Issued: August 14, 1952
Revised: November 5, 1963

SUBJECT: INSTALLATION OF FORWARD TRUSS ASSEMBLY ACCESS DOORS AND INSPECTION OF FORWARD AND REAR WELDED STEEL TUBULAR TRUSS ASSEMBLIES FOR EVIDENCE OF CRACKS.

AIRCRAFT AFFECTED: Model 35 (35R) airplanes, Serials D-1 through D-1500.

REASON FOR CHANGE: To facilitate inspection of the forward truss assembly, to inspect for cracks in the forward and rear truss assemblies and correct any cracks detected, and to change the forward and rear truss assembly inspection requirements prescribed previously in this bulletin.

ACCOMPLISHMENT: As specified below under Inspection Requirements.

DESCRIPTION OF CHANGE: This revision to Model 35 (35R) Service Bulletin No. 24 changes the inspection requirements for the forward and rear truss assemblies and prescribes the installation of five access doors on the bottom of the fuselage skin below the forward truss assembly. This bulletin defines the current inspection requirements for the forward and rear truss assemblies and contains detailed procedures for installing the access doors, performing the forward and rear truss assembly inspections, and accomplishing authorized repairs, if necessary.

INSPECTION REQUIREMENTS

1. Forward Truss Assembly

a. If a magnetic particle inspection has been performed within the last 75 hours of airplane operation, both visual and magnetic particle inspections are to be performed not later than 100 hours from the time of the last magnetic particle inspection and each 100 hours thereafter, unless the rework described in 1. c or 1. e has been performed.

b. If a magnetic particle inspection has not been performed within the last 75 hours of airplane operation, both visual and magnetic particle inspections are to be performed within 25 flight hours after receipt of this bulletin and each 100 hours thereafter, unless the rework described in 1. c or 1. e has been performed.

c. If the original 35-410030 truss assembly has been replaced with the new heavier 35-410030-17 truss assembly, the visual and magnetic particle inspections need not be performed until 2000 hours after installation of the new truss assembly. Subsequent inspections shall be at 100-hour intervals. (The 35-410030-17 truss assembly may be identified by the part number affixed to

the upper tube near the right hand end. Also, all clips except the end stringer clips on the bottom tube are clamped instead of welded to the 35-410030-17 truss assembly).

d. The forward truss assembly access doors are to be installed at the next forward truss assembly visual and magnetic particle inspections.

e. After installation of Beech Aircraft Corporation Kit No. 35-694, which provides for the installation of a built-up aluminum forward truss assembly, the visual and magnetic particle inspections prescribed in this bulletin need not be performed on the forward truss assembly.

f. If cracks are found in the 35-410030 welded steel truss assembly and repairs are made in accordance with this bulletin, subsequent inspections shall be at 100-hour intervals.

g. If inspection of the 35-410030 truss assembly reveals cracks that cannot be repaired, the truss assembly must be replaced with either the 35-410030-17 truss assembly of item 1. c or the built-up aluminum truss assembly of item 1. e.

2. Rear Truss Assembly

a. The period between magnetic particle inspections is 1000 hours of airplane operation unless cracks are found. (Refer to 2. c.)

b. In lieu of magnetic particle inspection, visual inspection with a three-power magnifying glass and adequate lighting can be used for crack inspection; however, the inspection periods are each 500 hours if no cracks are found. It is recommended that if crack indications are found by the visual method the area be magnafluxed prior to weld repair to make certain the indication is not false.

c. If cracks are found and repairs are made in accordance with this bulletin, inspection of the truss as-

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1. Surface Preparation - All surfaces of a workpiece must be thoroughly cleaned with naphtha or methyl ethyl ketone (1 or 2, Chart 201, 91-00-00) and completely dried before they are subjected to liquid-penetrant inspection.

2. Penetration - After the workpiece has been cleaned, liquid penetrant is applied by aerosol spray or a brush to form a film of penetrant over the surface being inspected. This film should remain on the workpiece long enough to allow maximum penetration of the penetrant into any surface openings that are present. For applications described in this manual, a minimum of 30 minutes dwell time at a minimum temperature of 60°F is required.

3. Removal of Excess Penetrant - Optimum removal of the excess penetrant is accomplished by wiping off as much of the penetrant as possible with a clean cloth slightly dampened with the penetrant system cleaner; and finally, wipe with a dry paper towel or clean cloth.

4. Development - The developing agent is applied by aerosol spray to form a film over the surface to be inspected. The developer acts as a blotter to assist the natural seepage of the penetrant out of any surface openings and to spread it at the edges to greatly magnify the apparent width of the crack. The developer also provides a uniform background to assist interpretation. Caution should be used in the application of the developer to provide the optimum coating thickness. If the coating thickness is too thin the penetrant will not be spread and a crack or other discontinuity will not be as easily detected. If the developer coating thickness is too thick the penetrant might not bleed through the coating.

5. Inspection - After being sufficiently developed, the surface is visually examined for indications of penetrant bleedout from surface openings. This examination must be performed under suitably darkened conditions for the penetrant to fluoresce during exposure to ultraviolet light. A model ZB-25 (P/N Magnaflux Corporation) or equivalent ultraviolet (black) light meeting the following minimum requirements must be used for this inspection: 1) 100-watt mercury vapor 2) 3600 to 4200 angstrom wave length 3) 125 foot-candles at 15 inches from the surface to be inspected.

6. Post Inspection Cleaning - After completion of the fluorescent liquid-penetrant inspection, the inspection areas are to be thoroughly cleaned to remove the developer coating and any remaining traces of penetrant.

Note

All components of the penetrant inspection system must be from the same manufacturer and be designed to be used together. For instance, it is not permissible to use a penetrant from one manufacturer and a cleaner/remover from another manufacturer to inspect the same workpiece.

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63-25-01 **BEECH:** Amdt. 652 Part 507 Federal Register December 5, 1963. Applies to Model 35 Aircraft Serial Numbers D-1 through D-1500, Model 35R Aircraft Serial Numbers D-XXR1 and up (35R Aircraft are Remanufactured Model 35 Aircraft and Retain the Original Serial Number in Addition to the Appropriate 35R Serial Number), and Model Super V Conversions of the Standard Beech Models 35, A35, or B35 Serial Numbers SV-XXX-D-1 through SV-XXX-D-1500.

Compliance required within 25 hours' time in service after the effective date of this amendment unless already accomplished within the last 75 hours' time in service and thereafter within 100 hours' time in service from the last inspection.

Inspections required by AD 62-02-01 have not been adequate to detect all fatigue cracks in the steel center section front trusses prior to failure. To preclude these failures, modify the fuselage and inspect the front and rear steel trusses in accordance with (a) and (b).

In order to gain access to the front and rear trusses, remove the front seat bottom, rear seat, front and rear spar forward partitions, and all floorboards adjacent to the front and rear spars. Also, disconnect the air duct on the right side of the forward spar and remove any other adjacent installations as found necessary for access.

(a) Front truss and fuselage.

Modify the fuselage in accordance with (a)(1) prior to inspecting. Inspect in accordance with (a)(2) within the next 25 hours' time in service unless the aircraft has been so inspected within the last 75 hours' time in service and thereafter within 100 hours' time in service and thereafter within 100 hours' time in service from the last inspection.

(1) Cut two 3 1/2 inch diameter inspection openings in the fuselage skin just under the forward centersection steel truss at right and left butt stations 16.50 inches, in accordance with Beech Service Bulletin 35-24, as revised November 5, 1963, or FAA approved equivalent.

(NOTE: In addition to these two openings, any or all of the three inside inspection openings defined in Service Bulletin 35-24 may be incorporated at the owner's option.)

(2) Inspect the front truss for cracks, using the magnetic particle inspection procedures outlined in Beech Service Bulletin 35-24 as revised November 5, 1963, or FAA approved equivalent.

(3) Cracked trusses shall be replaced or repaired in accordance with Beech Service Bulletin 35-24, as revised November 5, 1963, before further flight. After accomplishment of these repairs the inspection specified in paragraph (2) shall be continued.

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(b) Rear truss.

Inspect in accordance with either (1) or (2).

(1) Visual inspection. Within 500 hours' time in service since the last visual inspection, performed in accordance with Beech Service Bulletin 35-24 as revised December 1961, and continually thereafter within 500 hours' time in service from the last inspection, conduct a thorough visual inspection for cracks with adequate lighting, a 3-power magnifying glass, and missor.

(2) Magnetic particle inspection. Within 1,000 hours' time in service since the last magnetic particle inspection performed in accordance with Beech Service Bulletin 35-24 as revised December 1961, and continually thereafter within 1,000 hours' time in service from the last inspection, inspect for cracks using the magnetic particle inspection procedures outlined in Beech Service Bulletin 35-24 as revised November 5, 1963, or FAA approved equivalent.

(3) Cracked trusses shall be replaced or repaired in accordance with Beech Service Bulletin 35-24 as revised November 5, 1963, before further flight. If the truss is repaired, the next inspection shall be within 100 hours' time in service after the repairs were accomplished. (Any cracks that may develop because of the localized heating during repair should be detectable by this time.) Following this inspection, subsequent inspections shall be at 500 or 1,000 hours' time in service, in accordance with (1) or (2), depending on whether a visual or a magnetic particle inspection was performed.

(c) If the front truss is replaced with a new heavier steel truss (Beech P/N 35-410030-17), the requirements specified in (a) shall become applicable 2,000 hours' time in service after installation of this truss.

NOTE: Model 35 airplanes whose steel carry-through trusses have been modified in accordance with an STC that prescribes inspection intervals that differ from those prescribed in this AD, shall be inspected in accordance with the inspection intervals of the STC.

(d) If the front truss is replaced with a new aluminum truss installed in accordance with Beech Kit No. 35-694, the requirements specified in (a) are not applicable.

(e) An appropriate entry in the airplane log shall be made showing whether the front, rear or both truss(es) were inspected and the type of inspection on the rear truss.

This supersedes AD 62-02-01.
This directive effective December 10, 1963.
Revised April 24, 1964.
Revised February 16, 1965.
Revised January 19, 1967.

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