



Piper Aircraft, Inc.  
2926 Piper Drive  
Vero Beach, FL, U.S.A. 32960

# SERVICE NO. 1345 BULLETIN

## PIPER CONSIDERS COMPLIANCE MANDATORY

Date: March 27, 2020

(S)

**SUBJECT:**

**MAIN WING SPAR INSPECTION**

**MODELS AFFECTED:**

PA-28R-180 Arrow  
  
PA-28R-200 Arrow  
  
PA-28R-200 Arrow II  
PA-28R-201 Arrow III  
  
PA-28R-201T Turbo Arrow III  
  
PA-28RT-201 Arrow IV  
PA-28RT-201T Turbo Arrow IV

**SERIAL NUMBERS AFFECTED:**

28R-30002 through 28R-31270;  
28R-7130001 through 28R-7130013  
  
28R-35001 through 28R-35820;  
28R-7135001 through 28R-7135229  
  
28R-7235001 through 28R-7635545  
  
28R-7737002 through 28R-7837317;  
2837001 through 2837061; 2844001 and up  
  
28R-7703001 through 28R-7803374;  
2803001 through 2803012  
  
28R-7918001 through 28R-8218026  
  
28R-7931001 through 28R-8631005;  
2831001 through 2831038

**COMPLIANCE TIME:**

Upon reaching 5,000 hours time in service (TIS), compliance is to coincide with the next regularly scheduled maintenance event, but not to exceed the next 100 hours TIS. At the operator's discretion, the compliance time may be extended to no more than one calendar year from the date of this publication.

**APPROVAL:**

The engineering aspects of the eddy current inspection method (shown on pages 2 and 3 of this document) have been shown to comply with the applicable Federal Aviation Regulations and are FAA approved.

**PURPOSE:**

This service bulletin mandates a one-time inspection of the affected aircraft for cracks at specific bolt hole locations in the main wing spars, followed by reporting the findings to Piper, regardless of the results.

**INSPECTION METHOD:****Eddy Current  
Inspection Method**

The standard, SAE ARP4402, "Eddy Current Inspection of Open Fastener Holes in Aluminum Aircraft Structure," should be used when performing the applicable inspections under Instructions, below.

**NOTE:** Prior to inspection, wipe the surfaces clean using a soft cloth dampened with isopropyl alcohol or mineral spirits.

**Personnel Qualifications:**

Personnel that perform eddy current inspections shall be qualified in accordance with NAS 410 Level II or Level III.

Eddy current bolt hole inspections shall be performed in accordance with SAE ARP4402 or a written procedure specific to the aircraft being inspected and approved by the FAA.

**Equipment:**

- Equipment used shall provide impedance plane diagrams.
- Probes may be either absolute or differential coil configurations.
- For manual bolt hole probing: use probe collars at an increment of every 1/64 inch to ensure the uniform depth of rotation and to aid in reducing liftoff effects.
- Automated scanning systems may be used.
- Bolt hole probes shall match as closely as possible, but not exceed, the bolt hole diameter. Split core probes may be expanded to a maximum of 0.050 inch beyond the probe's nominal diameter (based on the probe manufacturer's recommendation). The fill factor shall be 80 percent minimum.
- Holes being inspected shall be no larger than 10 percent of the expanded bolt hole diameter.
- A right angle (90-degree) surface probe may be used for further detail indication, if needed.

**Reference Standard:**

- Any reference standard used shall be of the same conductivity 2024 T-3 within  $\pm 15$  percent IACs. It shall have electrical discharge machining (EDM) notches for simulating defects as calibration references.
- The surface finish shall be 63 RHR or better.
- The reference standard shall have a corner notch size of 0.030 x 0.030 inch (screen set at minimum of three divisions vertical with a phase signal of between 45 and 120 degrees separation from the horizontal liftoff).
- Frequency used shall be between 100 and 500 kHz.
- The calibration shall be checked in the beginning and end and every 30 minutes of inspections.

**Equipment Guidelines:**

The following is a list of equipment capable of performing the inspections described in this service bulletin. The following optional inspection equipment has been shown to be adequate to conduct this procedure and is provided as an example only. Other equipment meeting the requirements under the heading "Equipment" may be used.

**NOTE:** Other manufacturers offer equivalents to what is listed here (including GE, Hocking, Rohman, Uniwest, VM, and Zetec).

- NORTEC 500D or 600D Series Portable Eddy Current Flaw Detector – Olympus
- Bolt hole probe, 0.375 in. with 0.062 inch shielded coil – Olympus
- A bolt hole probe must first be used to inspect the bolt holes; an Olympus right angle (90-degree) surface probe with 0.062 inch shielded coil may be used for a more detailed inspection, if needed.
- For the calibration standard (NIST traceable) for bolt holes and surface, use the Air Force General Purpose Eddy Current Standard with the following criteria:
  - Bolt hole: 0.030 x 0.030 inch corner notch, 0.030 inch radial notch
  - Surface: 2024-T3: 0.008, 0.020, and 0.040 inch depth EDM notches
  - Frequency 300 KHz, EDM notch set at five (5) divisions screen height

**Acceptance:**

Relevant crack or crack-like indications with amplitudes equal to or greater than 50 percent of the reference level signal shall be rejected and documented (i.e., such an amplitude reading means that the spar does not meet type design requirements and must be replaced).

The subject bolt holes, as viewed from beneath the wing, penetrate the lower surface of the wing box, the lower flanges of the spar extrusions, and the web doublers on the upper surface of the lower spar flange. The pass-fail criteria of this inspection is only applicable to a crack in the spar extrusion. Damage in other "layers" should be reported to Piper Aircraft for disposition.

It is possible for non-crack damage, such as thread marks, gouges, or edge chips in the spar bolt hole to return a flaw indication similar to that of a crack. If an indication is observed, the hole should be carefully inspected for non-crack damage to eliminate the possibility of a false crack indication. Any non-crack damage, including elongated holes, should be reported to Piper for disposition.

Contact Piper Customer Service at [CustomerService@piper.com](mailto:CustomerService@piper.com) or (+1) 772-299-2141. Piper's normal business hours are Monday through Friday, 7:30 a.m. to 4:30 p.m. (Eastern).

**INSTRUCTIONS:**

**WARNING: FLIGHT WITH KNOWN CRACKS IN THE AIRCRAFT STRUCTURE IS NOT PERMITTED.**

**NOTE:** Temporary removal of interior components, fairings and/or access panels may be required in order to accomplish the instructions contained in this service bulletin.

**NOTE:** Refer to the applicable Piper Airplane Maintenance Manual (AMM) for model specific details. Refer to the applicable Piper Airplane Parts Catalog (IPC) for the type and size of replacement hardware.

**NOTE:** These instructions apply to both the left and right wings.

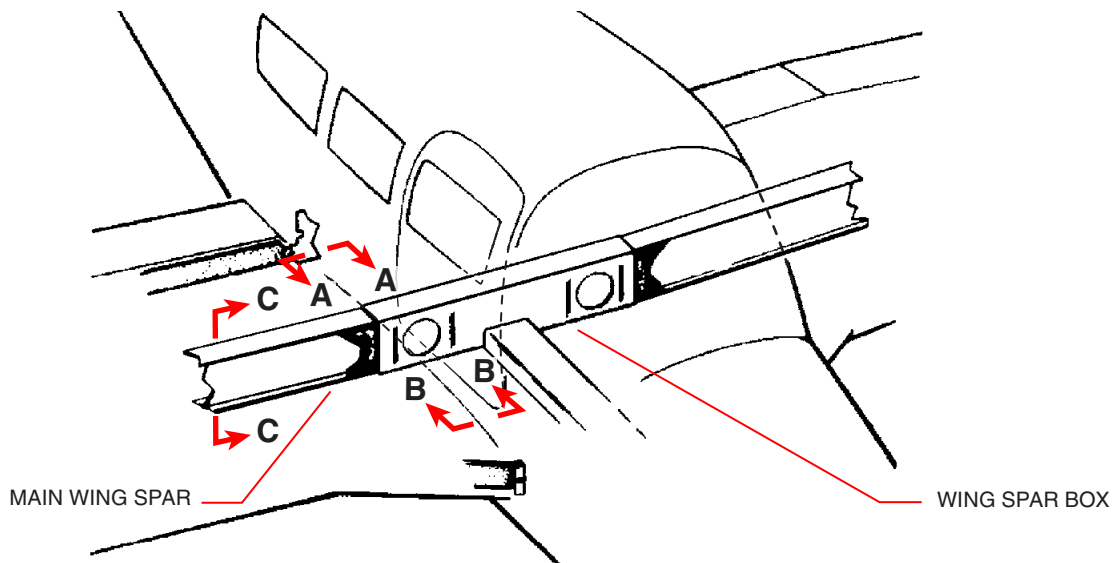
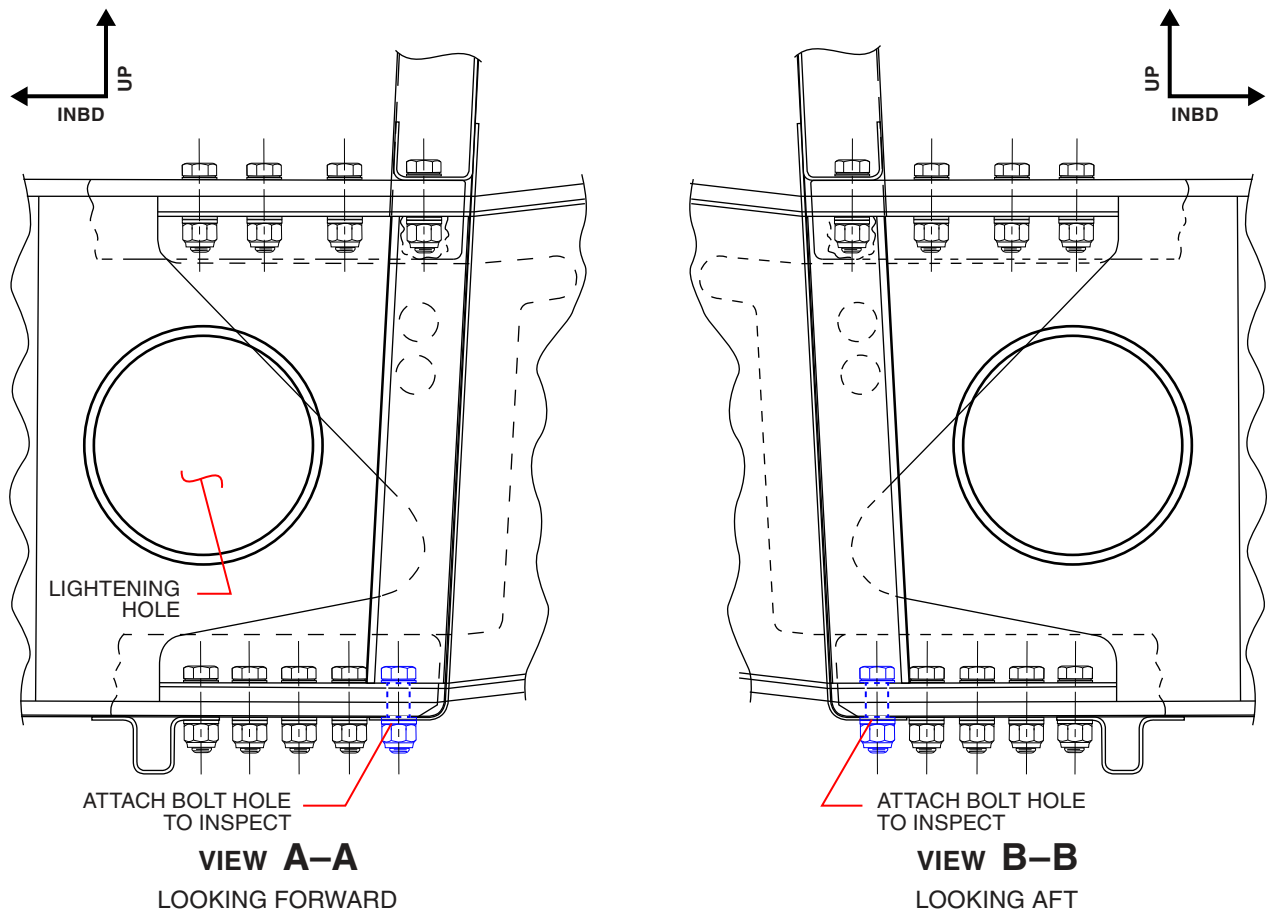
1. Locate the two (2) outermost main spar attach bolts, as shown in Figure 1, installed on the lower cap of the left and right main spar, on the forward and aft sides of the spar web.

**WARNING: DO NOT DRIVE OUT SPAR TO FUSELAGE ATTACH BOLTS. TAKE EXTREME CARE NOT TO DAMAGE BOLT HOLES.**

2. Carefully remove the two (2) wing spar attach bolts. Discard the bolts and nuts. Retain or replace the washers, depending on condition.
3. Inspect the inner surface of each bolt hole using the eddy current inspection method described above. Figure 1 provides cross sections of the main wing spar showing the bolt holes to be inspected.
4. Fill out the inspection [feedback form \(link\)](#), regardless of the findings.
  - If no cracks are found, return the form to Piper within 10 business days. Proceed to Step 6.
  - If any cracks are found, return the form to Piper within 24 hours (or one business day). Proceed to Step 5.
5. Prior to further flight, replace the wing, spar or spar section, as applicable, with a serviceable unit that has been shown to be free of cracks when subjected to the inspections specified in this service bulletin.

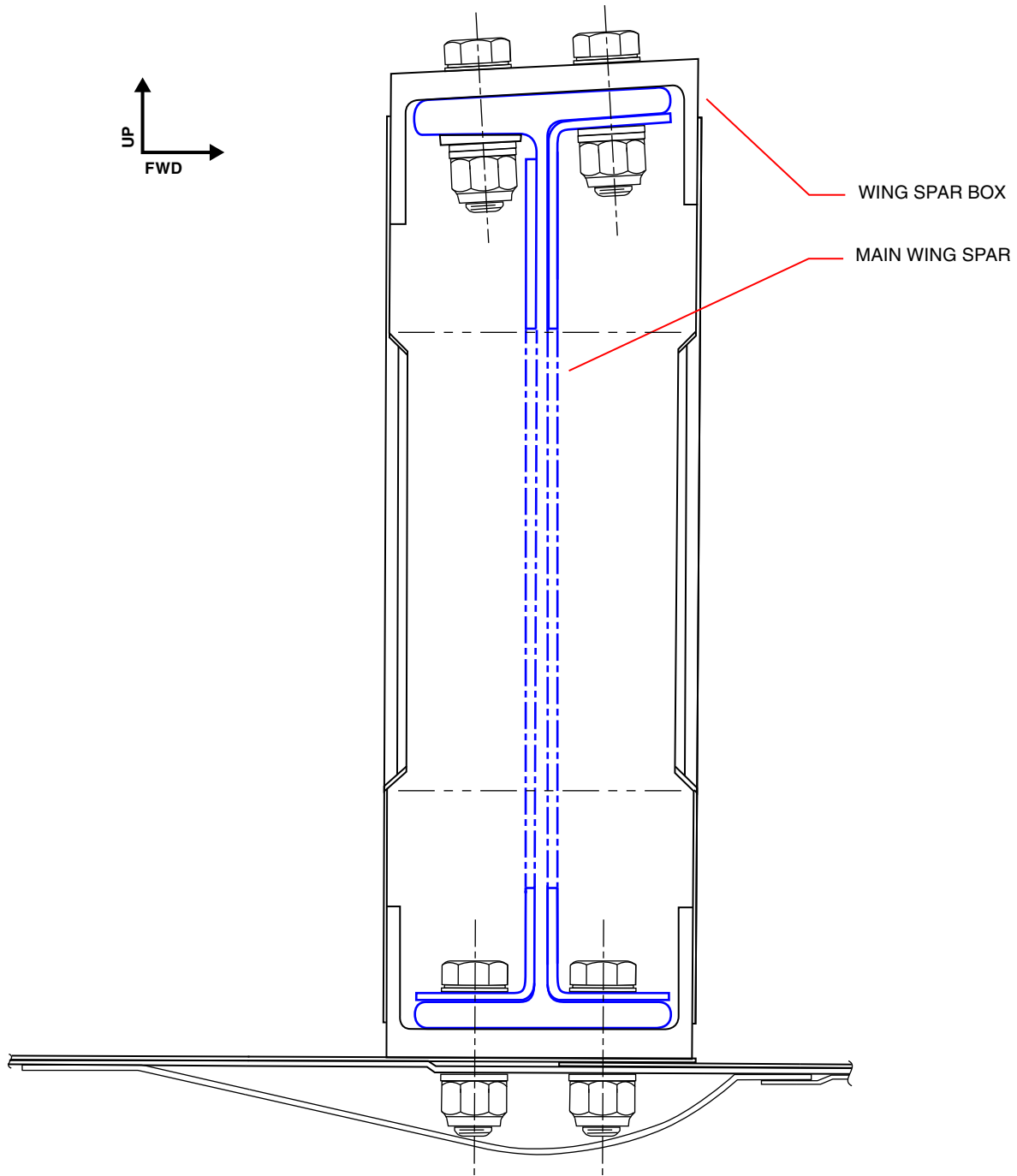
**NOTE:** To report to Piper within 24 hours any cracks that have been discovered, contact Piper Customer Service at CustomerService@piper.com. Piper's normal business hours are Monday through Friday, 7:30 a.m. to 4:30 p.m. (Eastern).

6. Install new bolts and nuts per the applicable Piper IPC. Existing washers in good condition may be reused. Torque the nuts according to the applicable Piper AMM.
7. Make a logbook entry documenting compliance with this service bulletin.



**WARNING:** Do not drive bolts into or out of the main spar attaching bolt holes (see Views A-A and B-B). Be careful to avoid damaging the bolt holes while removing and replacing the bolts.

**Figure 1, Sheet 1 of 2**  
Typical Main Wing Spar Attach Bolts and Spar Cross Section (Right Wing Shown)



**VIEW C-C**

WING SPAR CROSS SECTION  
SHOWN AS INSTALLED IN WING SPAR BOX

**Figure 1, Sheet 2 of 2**

Typical Main Wing Spar Attach Bolts and Spar Cross Section (Right Wing Shown)

**MATERIAL REQUIRED:** On condition, up to four (4) each, wing spar attach bolts, nuts and washers, as provided in the applicable Piper IPC, per aircraft

**AVAILABILITY OF PARTS:** Your Piper Approved Service Center

**EFFECTIVITY DATE:** This service bulletin is effective upon receipt.

**SUMMARY:** Please contact your Piper Approved Service Center to make arrangements for compliance with this service bulletin in accordance with the compliance time indicated.

**NOTE:** Please notify the factory of any address/ownership corrections. Changes should include aircraft model, serial number, and current owner's name and address.

Corrections and/or changes should be directed to:

PIPER AIRCRAFT, INC.  
Att'n: Customer Service  
2926 Piper Drive  
Vero Beach, FL 32960  
or:  
CustomerService@piper.com  
Please include in subject line: "Aircraft ownership update"