



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

SERVICE NO. 1375C BULLETIN

PIPER CONSIDERS COMPLIANCE MANDATORY

Date: May 12, 2023

(S)

Service Bulletin (SB) 1375C supersedes SB 1375, SB 1375A, and SB 1375B in their entirety. If any of the four factory original screws in the upper flange were replaced with oversize fasteners as part of compliance with SB1375A, contact Piper for disposition. Aircraft that have complied with SB 1375B are in compliance with SB 1375C.

WARNING: SB 1375A SPECIFIED INCORRECT REPLACEMENT SCREWS FOR THE UPPER FLANGE. ACCORDINGLY, IF ANY OF THE FOUR FACTORY ORIGINAL SCREWS IN THE UPPER FLANGE WERE REPLACED WITH OVERSIZE FASTENERS AS PART OF COMPLIANCE WITH SB1375A, THE AIRCRAFT MAY NO LONGER BE AIRWORTHY, CONTACT PIPER FOR DISPOSITION.

SUBJECT:

**PERIODIC REPLACEMENT OF MAIN LANDING
GEAR ATTACHMENT HARDWARE**

REASON FOR REVISION:

SB 1375C revises the instructions for clarity and corrections. |

MODELS AFFECTED:

PA-28-140 Cherokee 140

PA-28-150/-160 Cherokee 150/160
PA-28-180 Cherokee 180

PA-28-235 Cherokee 235

PA-28-236 Dakota
PA-28-151 Warrior
PA-28-161 Cadet
PA-28-161 Warrior II
PA-28-161 Warrior III
PA-28-180 Archer
PA-28-181 Archer II

PA-28-181 Archer III

PA-28-181 Piper Pilot 100i
PA-28-201T Turbo Dakota
PA-32-260 Cherokee Six 260

SERIAL NUMBERS AFFECTED:

28-20001 thru 28-26946,
28-7125001 thru 28-7725290

28-03, 28-1 thru 28-4377, and 28-1760A

28-03, 28-671 thru 28-5859,
28-7105001 thru 28-7205318

28-10001 thru 28-11378,
28-7110001 thru 28-7710089, 28E-11

28-7911001 thru 28-8611008, 2811001 thru 2811050

28-7415001 thru 28-7715314

2841001 thru 2841365

28-7716001 thru 28-8616057, 2816001 thru 2816109

2816110 thru 2816119, 2842001 and up

28-E13, 28-7305001 thru 28-7505260

28-7690001 thru 28-8690056, 28-8690061,
28-8690062, 2890001 thru 2890205

2890206 thru 2890231, 2843001 thru 2843999,
2881001 and up

28020001 and up

28-7921001 thru 28-7921095

32-03, 32-04, 32-1 thru 32-1297,
32-7100001 thru 32-7800008

ATA/JASC: 3210

(OVER)

MODELS AFFECTED (continued):

PA-32-300 Cherokee Six 300

PA-32-301 Saratoga

PA-32-301T Turbo Saratoga

PA-32-301FT Piper 6X

PA-32-301XTC Piper 6XT

SERIAL NUMBERS AFFECTED (continued):32-15, 32-21, 32-40000 thru 32-40974,
32-7140001 thru 32-794029032-8006002 thru 32-8606023, 3206001 thru 3206019,
3206042 thru 3206044, 3206047,
3206050 thru 3206055, 3206060

32-8024001 thru 32-8424002

3232001 thru 3232074

3255001 thru 3255051

COMPLIANCE TIME:

For affected aircraft which have accrued 2,000 hours time in service (TIS) or seven (7) calendar years TIS, initial compliance is to coincide with the next regularly scheduled maintenance event, but not to exceed the next 100 hours TIS.

Thereafter, compliance shall be at a recurring interval of 2,000 operating hours TIS or 7 calendar years TIS, whichever occurs first.

APPROVAL:

The engineering aspects of this service document have been shown to comply with the applicable Federal Aviation Regulations and are FAA approved.

PURPOSE:

A review of service history reveals that for the affected aircraft, the landing gear mounting hardware is subject to metal fatigue, hole wear and corrosion. Failure of this hardware could result in a landing gear collapse. Hole wear may cause fretting fatigue cracking.

This service bulletin provides instructions for the recurring replacement of this hardware and bolt hole inspection.

INSPECTION METHOD:

Follow the Instructions for the implementation of the inspection methods described here. This section describes the methodology for eddy current inspections.

**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 and/or fluorescent penetrant inspections shall be qualified in accordance with NAS 410 (or equivalent standards that are listed in FAA Advisory Circular (AC) 65-31B) as qualified Level II or Level III nondestructive inspection personnel.

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 lift-off 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-T3 within ± 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 lift-off).
- Frequency used shall be between 100 and 500 kHz.
- The calibration shall be checked at the beginning and end and every 30 minutes of inspections.

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 may mean that the spar does not meet type design requirements and must be reported to Piper Aircraft for disposition; fluorescent penetrant inspection is to be accomplished on relevant indications as part of the evaluation).

It is possible for non-crack damage, such as fay gaps, thread marks, gouges, or edge chips in the spar bolt hole to return a flaw indication similar to that of a crack. Multiple indications or broad indications may be associated with fay gaps or swarf within these fay gaps and may not be representative of cracks.

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, should be cleaned per 'Cleaning Surface Imperfections', below, and inspected again. If an indication is still observed, contact to Piper Aircraft, Inc. for disposition. See contact information below.

Cleaning Surface Imperfections:

Surface imperfections (blemishes, drag marks or scratches) in the hole bore can be locally cleaned – deburred, smoothed, and polished – using a medium (brown colored) or fine (rust colored) rubberized abrasive, either a point or cylinder, on a 1/16-inch mandrel in a rotary tool:

- Cratex Q8M or Q8F – 1 x 9/32 bullet point
- Cratex Q6M or Q6F – 7/8 x 1/4 cylinder

The best results are obtained between 7,500 and 15,000 RPM, using light work pressure. To procure Cratex points, call 800-800-4077 or visit www.cratex.com.

To Contact Piper:

Any non-crack damage that is discovered as a result of inspections should be reported to Piper Aircraft Inc., at 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 Standard Time)**.

INSTRUCTIONS:

- NOTES:**
- Temporary removal of some interior components and/or access panels may be required in order to accomplish the instructions described in this service letter.
 - Prior to inspection, wipe surfaces clean using a soft cloth dampened with isopropyl alcohol, mineral spirits, naphtha, or other suitable cleaning agent compatible with cured paints and primers.
 - Refer to the appropriate section of the applicable Airplane Maintenance Manual or Service Manual for the procedures to jack the airplane and for model-specific instructions for the removal and installation of the main landing gear.
 - These instructions apply to both the left and right sides of the aircraft.

The main landing gear (MLG) is attached to the aircraft with threaded fasteners that pass through mounting flanges on the strut cylinder and the upper and lower flanges of the main wing spar, as depicted in the illustration below. On some of the affected aircraft, additional threaded fasteners pass through the web of the main wing spar.

1. Place the aircraft on jacks.
2. Remove the fairing from around the strut cylinder housing and the access plate located on the bottom of the wing and to the rear of the housing by removing attaching screws.
3. Remove the MLG and discard all of the threaded fastener stack ups (which includes screws, bolts, nuts, and washers) that attach the MLG to the main wing spar. (See Figure 1.)
4. Bolt Hole Inspection

NOTE: Unless stated otherwise, all dimensions are in inches.

- a. Measure the bolt holes in the main wing spar that are common to the MLG cylinder (four holes through the lower spar flange, four holes through the upper spar flange and two through the spar web). Compare measured holes sizes against the acceptable maximum hole sizes shown in Table 1.
 - If all bolt holes do not exceed the values shown in Table 1, then no oversize repair bolts are required. Proceed to Step 5.
 - If one or more bolt holes exceed the values shown in Table 1, replacement of the factory original hardware with a 1/64 or 1/32 oversize repair bolt is required. Proceed to Step b.

NOTE: If bolts have signs of damage, they must be replaced and an eddy current inspection performed on the corresponding bolt holes in the spar. A qualified NDT level II inspector is required to perform this inspection to ensure the spar does not have crack indications.

- b. For each bolt hole exceeding the acceptable hole size shown in Table 1, determine if the use of an oversize bolt is permissible. See Table 2 for permissible oversize bolt and reworked hole sizes.

NOTE: Where specified below, the thickness of the spar web and the width and thickness of the spar flange shall be measured with tools capable of accuracy to +/- 0.0005 inches.

- 1) For oversize holes in the spar web, measure the local thickness of the spar web near the affected bolt hole.
 - If the web thickness measures 0.0908 or greater, a 1/64 or 1/32 oversize bolt is permissible.
 - 2) For oversize holes in the spar flange, measure the local thickness of the spar flange near the affected screw hole.
 - If the flange thickness measures 0.2713 or greater, a 1/64 or 1/32 oversize repair bolt is permissible.
- If the spar flange thickness measures less than 0.2713, it may still be possible to address the discrepant condition with an oversize repair bolt. The following method requires an accurate measurement of the width of the spar flange; to gain access, the temporary removal of rivets common to the spar and the lower wing skin may be required.

Use the following formula:

$$D = W - (0.5942 \div T)$$

D = Maximum permissible reworked hole size, as calculated.

W = Measured width of the flange near the affected hole.

T = Measured thickness of the flange near the affected hole.

- If D does not exceed 0.2664, a 1/64 oversize repair bolt is permissible.
- If D does not exceed 0.2820, a 1/32 oversize repair bolt is permissible.

Example: W = 2.4930, T = 0.2675

$$D = 2.4930 - (0.5942 \div 0.2675)$$

$$D = 2.4930 - 2.2213$$

$$D = 0.2717$$

In the example above, D = 0.2717. Since D exceeds 0.2664, a 1/64 oversize repair bolt is not permissible; but, since D does not exceed 0.2820, a 1/32 oversize repair bolt is permissible.

- c. To ensure a good fit between the repair bolt and oversized bolt hole, it is permissible (but not required) to ream the bolt hole within the minimum and maximum tolerances defined in Table 2. Refer to AC 43-13-1B for clean reaming procedures.

If a bolt hole cannot be cleaned up to within the specified tolerances or the local thickness of the spar where the bolt hole is located is insufficient, an alternative repair is required, which is outside the scope of this service bulletin.

5. Procure replacement installation hardware including oversize repair bolts and mating washers as required. Refer to the appropriate Airplane Parts Catalog (APC) and Table 2 for part numbers.
6. Reinstall the MLG, access plate, and fairing. Torque all 1/4 inch bolts to 65–100 in·lb.
7. Remove the airplane from jacks.
8. Make a logbook entry documenting compliance with this service bulletin.

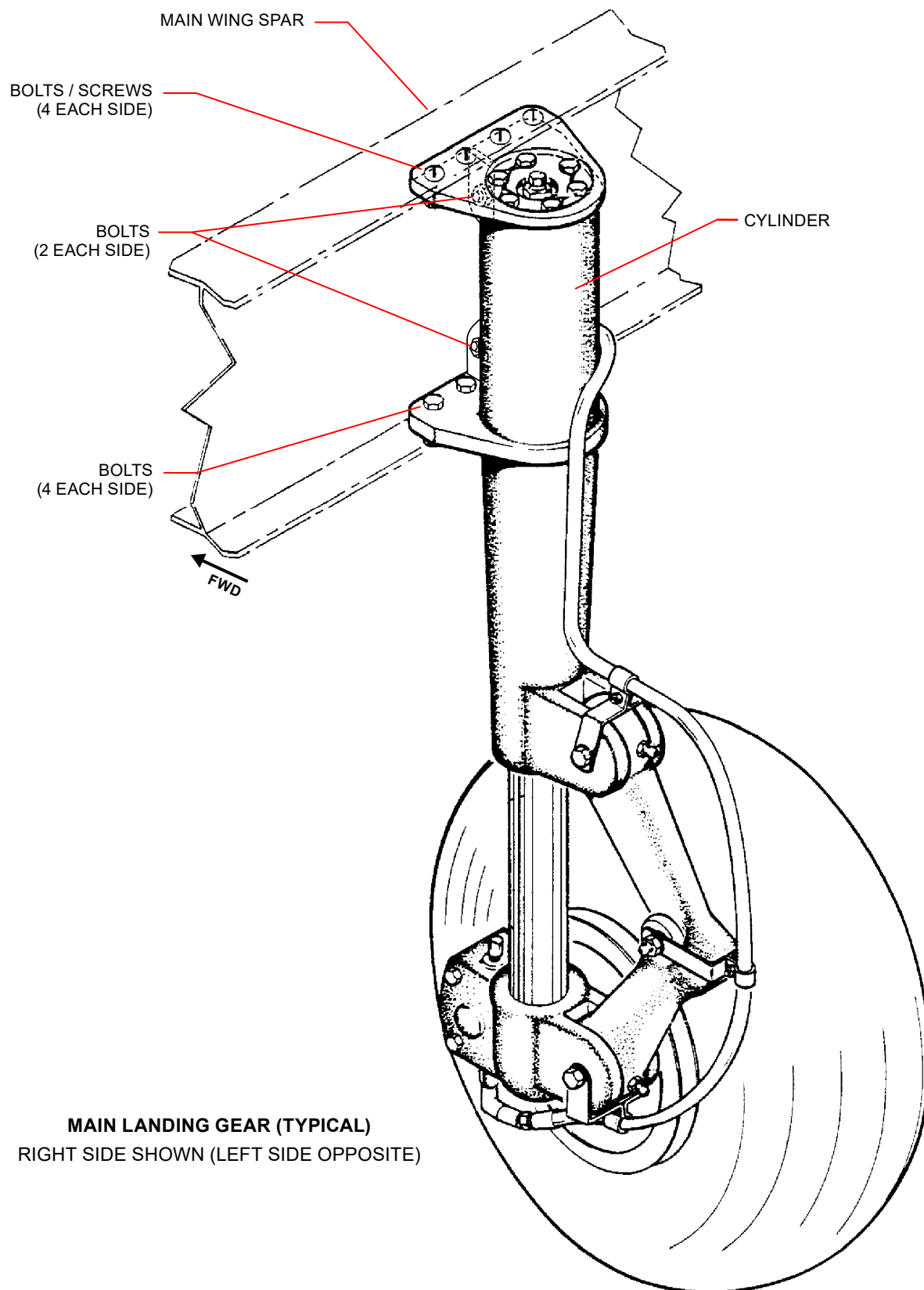


Figure 1
Main Landing Gear – Mounting Hardware

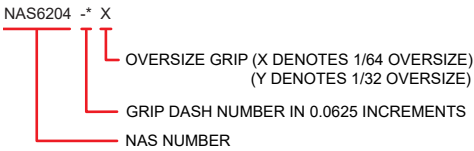
TABLE 1
ORIGINAL DESIGN MAXIMUM BOLT HOLE SIZES WITH ORIGINAL BOLTS

NOMINAL ORIGINAL BOLT SIZE	MAXIMUM ALLOWABLE BOLT HOLE SIZE
1/4	0.2510

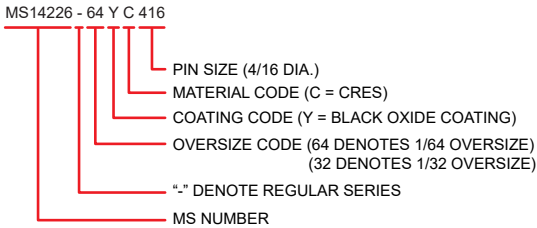
TABLE 2
OVERSIZED REPAIR PART NUMBERS
AND BOLT HOLE TOLERANCES

NOMINAL ORIGINAL BOLT SIZE	REPAIR BOLT SIZE	REPAIR BOLT ⁽¹⁾	MATING WASHER ⁽²⁾ (UNDER BOLT HEAD)	MINIMUM BOLT HOLE SIZE	MAXIMUM BOLT HOLE SIZE
1/4	1/64 Oversize Shank	NAS6204-*X	MS14226-64YC416	0.2654	0.2664
	1/32 Oversize Shank	NAS6204-*Y	MS14226-32YC416	0.2810	0.2820

(1) Repair Bolt Example:



(2) Mating Washer Example:



MATERIAL REQUIRED:

Per aircraft:

- Twenty (20) bolts/screws each, per the applicable Piper APC and/or Table 2
- As required, washers and nuts, per the applicable Piper APC and/or Table 2

AVAILABILITY OF PARTS:

Procure locally and/or at your Piper Approved Service Center –
Find your local service center at <https://www.piper.com/>

EFFECTIVITY DATE:

This service bulletin is effective on May 23 2023.

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.

Attn: Customer Service

2926 Piper Drive

Vero Beach, FL 32960

or:

CustomerService@piper.com

Please include in subject line: "Aircraft ownership update"