

**THIS BULLETIN IS FAA APPROVED FOR ENGINEERING DESIGN**

SUBJECT: M20M, M20R and M20TN Lower Spar Cap Doubler Inspection

**MODELS/ SN
AFFECTED:** Mooney Aircraft M20M Bravo Serial Number 27-0222
Mooney Aircraft M20R Ovation Serial Numbers 29-0523 thru 29-0525
Mooney Aircraft M20TN Acclaim Serial Numbers 31-0140 and 31-0141

**TIME OF
COMPLIANCE:** **ONE-TIME INSPECTION WITHIN NEXT 200 FLIGHT HOURS**

INTRODUCTION: Mooney International Corporation has determined the possibility of improper installation of the lower doubler (spar cap) rivets during assembly. This will require a 1- Time inspection and repair (if found incorrect) for the affected aircraft. The inspection is to determine if improper riveting/technique may have been used during the manufacture of these components.

To facilitate aircraft inspection and possible repair in accordance with Mooney International Corporation SB M20-324, aircraft will be scheduled into the Mooney Factory Service Center over the next few weeks. Inspection in accordance with this Service Bulletin shall be performed at the Mooney Factory Service Center or by a Mooney special field service team.

This Service Bulletin is to provide instructions for inspecting the specific areas where this may be present to determine whether the correct procedure was used and to provide instructions on replacing the rivets and/or doubler if it is found to be incorrect. **The attached compliance card needs to be filled out and returned to Mooney International Corporation upon completion of this Service Bulletin M20-324.**

INSTRUCTIONS: Read entire procedures before beginning work.

STEP1 - PREPARING AIRCRAFT FOR INSPECTION:**NOTE:**

All work to be done in accordance with FAA AC43.13-2B.

- 1.1. Install wing jack points in tie down mounting holes outboard of each main landing gear. Install Nose Landing Gear jack point into receptacle (located under the cowling (at Fuselage Station -5.51) - Refer to applicable Service and Maintenance Manual.
- 1.2. Place jacks under LH/RH wing (1 on each side at hoist point) and lift airplane off ground.
- 1.3. Completely drain all fuel from tanks (See Section 28 of the applicable Service and Maintenance Manual). Fuel drains are installed at aft, inboard corners of each wing tank and on gascolator, the lowest point in the fuel system. Tank drains are recessed and spring loaded closed. Check the tank drain valves after each use to verify the O-ring is properly sealed when the spring loaded valve is closed.
- 1.4. **If Aircraft does not have TKS - Go to Step 2-1**
- 1.5. If Aircraft has TKS - Remove Interior - Refer to the applicable Service and Maintenance Manual for more detailed information removing seats, and Optional airbag restraints.
- 1.6. The pilot and co-pilot seats are removed by removing MS27039-0818 Screws, MS21042-8 Nuts and 140188-001 Bushings and 140339-001 Stops (bag and identify bushings for re-assembly) forward and aft; push seat forward to lift up front of seat structure, then aft to lift up rear rollers of seat structure.
- 1.7. Loosen pilot side upper interior panel and retaining screws, to allow lower panel removal.
- 1.8. Remove front and rear seats. Remove the two inspection plates under rear seat area.

Page 1 of 9

**THIS BULLETIN IS FAA APPROVED FOR ENGINEERING DESIGN**

- 1.9. Loosen co-pilot side upper interior panel retaining screws, to allow lower panel removal.
- 1.10. Remove co-pilot side lower interior panel and mounting screws, and lift up and out.
- 1.11. Remove rear seat to gain access to the rear seat pan (two inspection plates), drill out rivets and remove pan as required as shown in Figures SB M20-324-1.
- 1.12. Remove clevis pin on seat adjustment and remove the rear seat adjustment rods.
- 1.13. Drain TKS tanks from underneath aircraft, and disconnect line(s) as required, to remove LH tank, upper rubber gasket and bottom foam pad, refer to the AS&T TKS Installation guide.
- 1.14. Now you should have access to lower spar cap doubler hardware - **Proceed to Step 2**

STEP 2 - INSPECTING THE EXISTING SPAR CAP DOUBLER RIVET HOLES:**CAUTION:**

CARE WHEN REMOVING RIVETS FROM AIRCRAFT NOT TO ALLOW ANY FOREIGN OBJECT DEBRIS (FOD) TO ENTER FUEL TANK AREA. REMOVE ANY SHAVINGS OR DEBRIS FROM FUEL TANK AREA WITH A SUITABLE AIR VACUUM AND ACETONE WIPE SOLVENT.

- 2.1. Remove upper and lower wing access panels as shown in Figures SB M20-324-2 and M20-324-3.
- 2.2. With the aircraft on jacks, the landing gear can now be raised slightly to remove inner gear door assembly.
- 2.3. Drill rivets to remove inner main landing gear door(s) and stiffener assembly, keep safe for reassembly.
- 2.4. Remove lower wing root fairings by drilling rivets out and any remove any aluminum tape as shown in Figures SB M20-324-2 and M20-324-3.
- 2.5. The next steps will be completed in 2 sequence steps, to keep components stationary and prevent misalignment of the assembled parts.
- 2.6. **Sequence #1** - mark every other rivet with a visible marker. Remove rivets, and any tank seal-er from around and undercut rivet heads by drilling. Use a drill of the same size as the diameter of the rivet. Drilling must be exactly centered and to the base of the head only. After drilling, break off the head with a beveled pin punch and carefully drive out the shank, to Wing Station 59.25 (both sides), as shown in Figures SB M20-324-3, SB M20-324-4 and M20-324-5.
- 2.7. Inspect for any chipping or damage around hole(s) as shown in Figure SB M20-324-7.
- 2.8. After 1st sequence Inspection of holes (Wing area) is completed, verify fit of larger rivets are a #5 MS20426AD5 and the smaller rivet is a #4 MS20426AD4 as shown on Mooney Drawing 220000 and in Figure SB M20-324-5. If rivet size is larger than specified - Please contact Mooney Customer Support at support@mooney.com for further action.
- 2.9. After 1st sequence Inspection of holes is completed (in seat pan area), verify fit of rivets are #5 MS20470AD5 as shown on Mooney Drawing 210000 and in Figure SB M20-324-5. If rivet size is larger than specified - Please contact Mooney Customer Support for further action.
- 2.10. If damage is found around the hole, it is acceptable to use 1 size up alternate rivet and appropriate drill bit and/or countersink bit to clean-up hole as shown in Figure SB M20-324-5 and M20-324-7. If 1 size larger hole or countersink will not clean-up damaged area, Please contact Mooney Customer Support at support@mooney.com for further action.



THIS BULLETIN IS FAA APPROVED FOR ENGINEERING DESIGN

NOTE:**Countersink depth and diameter no greater than standard limit for MS20426 100 degree manufactured head refer to Figure SB M20-324-7.**

- 2.11. Install new rivets in the 1st sequence of inspected holes, by applying CS3204 B2 around shank, carefully install, allowing sealant to exude under head of rivets as shown in Figure SB M20-324-8. All riveting to be done in accordance with FAA AC43.13-2B or later approved revision. Make sure all FOD is removed from repaired area.
- 2.12. Install new rivets in the 1st sequence of (Seat Pan area) in the inspected holes as required.
- 2.13. 1st sequence should now be completed - move on to 2nd sequence.
- 2.14. **Sequence #2** - mark every other rivet with a visible marker. Remove rivets, undercut rivet heads by drilling. Use a drill of the same size as the diameter of the rivet. Drilling must be exactly centered and to the base of the head only. After drilling, break off the head with a beveled pin punch and carefully drive out the shank, as in 1st sequence out to Wing Station 59.25 (both sides), as shown in Figures SB M20-324-3, SB M20-324-4 and M20-324-5.
- 2.15. Inspect for any chipping or damage around hole as shown in Figure SB M20-324-4.
- 2.16. After 2nd sequence Inspection of holes is completed (in wing area), verify fit of larger rivets are a #5 MS20426AD5 and the smaller rivet is a #4 MS20426AD4 as shown on Mooney Drawing #220000 and in Figure SB M20-324-5. If rivet size is larger than specified - Please contact Mooney Customer Support at support@mooney.com for further action.
- 2.17. After 2nd sequence Inspection of holes (Seat Pan area) is completed, verify fit of rivets are #5 MS20470AD5 as shown on Mooney Drawing 210000 and in Figure SB M20-324-5. If rivet size is larger than specified - Please contact Mooney Customer Support at support@mooney.com for further action.
- 2.18. If damage is found around the hole, it is acceptable to use 1 size up alternate rivet and appropriate drill bit and/or countersink bit to clean-up hole as shown in Figure SB M20-324-5 and M20-324-7. If 1 size larger hole or countersink will not clean-up damaged area, Please contact Mooney Customer Support for further action.

NOTE:**Countersink depth and diameter no greater than standard limit for MS20426 100 degree manufactured head refer to Figure SB M20-324-7.**

- 2.19. Install new rivets in the 2nd sequence of inspected holes, by applying CS3204 B2 around shank, carefully install allowing sealant to exude under head of rivets as shown in Figure SB M20-324-8. All riveting to be done in accordance with FAA AC43.13-2B or later approved revision. Make sure all FOD is removed from repaired area.
- 2.20. Install new rivets in the 2nd sequence of (Seat Pan area) inspected holes as required.

CAUTION:**CLEAN ANY FOD - REMOVE ANY SHAVINGS OR DEBRIS FROM FUEL TANK AREA WITH A SUITABLE AIR VACUUM AND ACETONE WIPE SOLVENT.**

- 2.21. After both sequence inspection and installation of rivets are completed, reseal any damaged sealant (corners) with new CS3204 B ½ R (rapid) and all rivets with CS3204 A2 sealant. Top coat entire bay with CS3300 red coat as specified in Mooney Spec 20 "Section 12 - Sealing of Integral Fuel Tanks" and per Section 28 of the applicable Service and Maintenance manual.
- 2.22. After wing tank are is sealed, check for FOD again. Install wing access panels, by applying a new application of CS3330 B2 sealant, and wing walk area with CS3204 B2 (all panels will require removal of old tank sealant and application of new tank sealant when installing) as specified in Mooney Spec 20 "Section 12 - Sealing of Integral Fuel Tanks" and per Section 28 of the applicable Service and Maintenance manual.
- 2.23. Re-install inner main gear door(s) and stiffener assembly refer to applicable Service and Maintenance manual.



THIS BULLETIN IS FAA APPROVED FOR ENGINEERING DESIGN

- 2.24. Install wing root fairings and aluminum tape as required refer to applicable Service and Maintenance manual.
- 2.25. Fill fuel tanks to check for fuel leaks per Section 28 of the applicable Service and Maintenance manual.
- 2.26. **If Aircraft does not have TKS - Go to Step 2-31**
- 2.27. If TKS Aircraft - Re-Install TKS tank, bottom foam pad, upper rubber gasket, and re-connect any lines that were disconnected, refer to Section 30 of the applicable Service and Maintenance manual and AS&T TKS Installation guide.
- 2.28. Fill both TKS tanks and check for leaks at tank and all connections, refer to Section 30 of the applicable Service and Maintenance manual and AS&T Installation Guide.
- 2.29. Re-Install seat pan, refer to Section 30 of the applicable Service and Maintenance manual.
- 2.30. Re-Install rear and front seats as required, refer to Section 25 of the applicable Service and Maintenance manual.
- 2.31. When all operations are found to be satisfactory according to applicable M20 Mooney Service and Maintenance Manual, enter compliance note into the log book and return aircraft to service.

NOTE:

Fill out compliance card and send by MAIL, FAX or EMAIL to Mooney International Corporation as indicated on the attached Compliance Card (see to Figure M20-324-9).

- 2.32. Procedure complete.

WARRANTY: APPROXIMATELY 48 LABOR HOURS
Mooney International Corporation will perform the necessary inspection and any required component repair at the Mooney Factory Service Center when schedules are established between aircraft owners and Mooney International Corporation. For a Mooney special field inspection, contact Mooney's Factory Support at support@mooney.com

REFERENCE DATA:
1. Applicable Mooney Service and Maintenance Manual
2. Contact: support@mooney.com for further action.
3. AS&T TKS Installation guide

PARTS LIST: Refer to Mooney Service Parts Department for part procurement.

Parts Kit P/N: Service Bulletin Kit M20-324-001 - Doubler Rivet Replacement - CALL for Oversize Rivets

<u>Item</u>	<u>P/N</u>	<u>Description</u>	<u>Qty</u>
1.	MS20426AD4	RIVET (WING AREA)	40
1A.	NAS1097AD5	RIVET (WING AREA) (if oversize is required)	10
2.	MS20426AD5	RIVET (WING AREA)	40
2A.	NAS1097AD6	RIVET (WING AREA) (if oversize is required)	10
3.	MS20470AD5	RIVET (WING AREA)	25
3A.	MS20470AD6	RIVET (WING AREA) (if oversize is required)	10
4.	CS3204 B1/2R	SEALER, FUEL TANK	AR
5.	CS3204 B2	SEALER, FUEL TANK	AR
6.	CS3204 A2	SEALER, FUEL TANK	AR
7.	CS3600	TOPCOAT, FUEL TANK	AR
8.	CS3330 B2	SEALER, FUEL TANK	AR
9.	1691- 0410	RIVET, AVEX (SEAT PAN)	50
10.	210000	MOONEY ENGINEERING DRAWING (Ref Copy)	1
11.	220000	MOONEY ENGINEERING DRAWING (Ref Copy)	1
12.	Mooney Spec 20	Mooney Spec 20 (Section 12) (Ref Copy)	1



THIS BULLETIN IS FAA APPROVED FOR ENGINEERING DESIGN

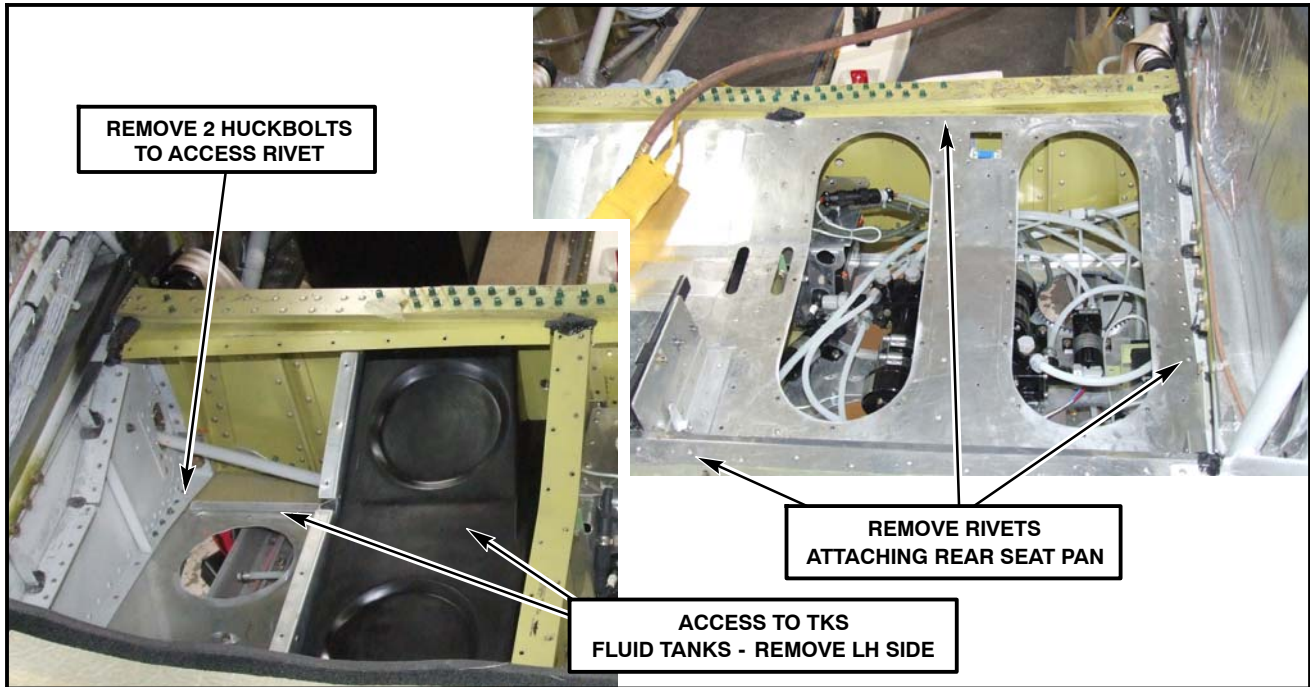


Figure SB M20-324-1 - REAR SEAT PAN - TKS INSTALLED AIRCRAFT

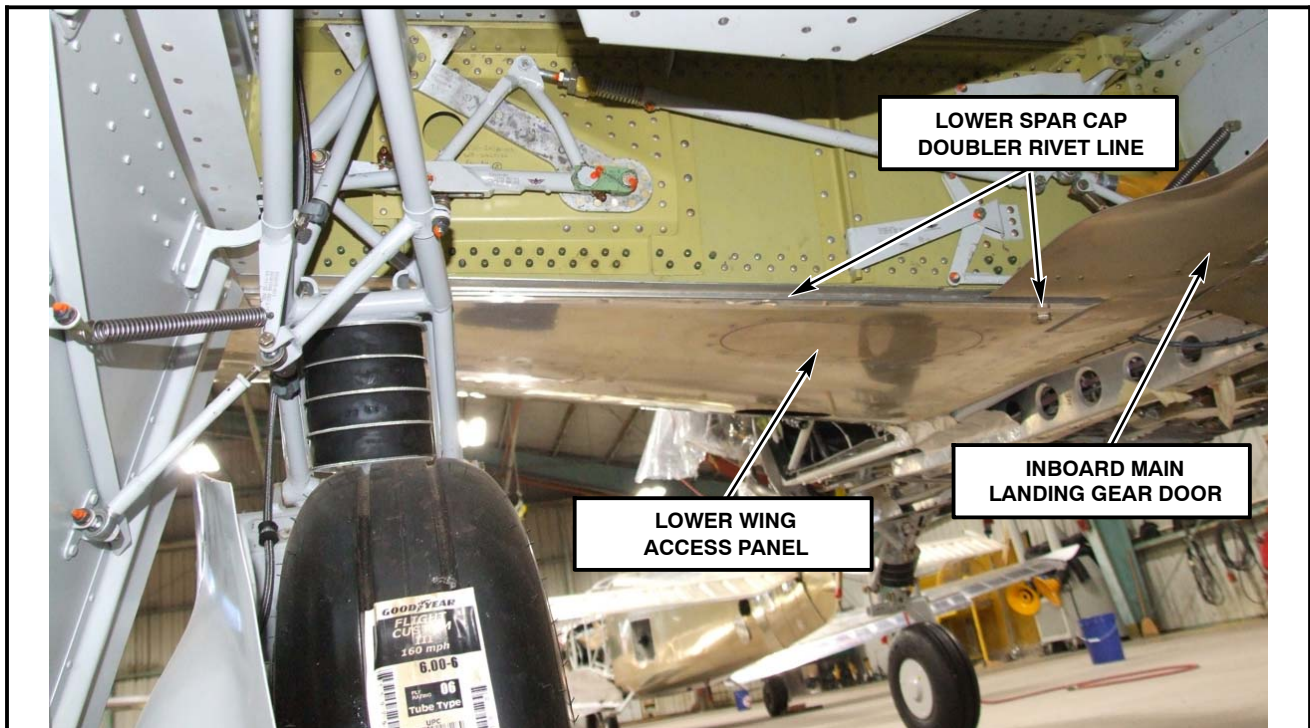


Figure SB M20-324-2 - LOWER SPAR CAP RIVET LINE - BOTTOM OF WING



THIS BULLETIN IS FAA APPROVED FOR ENGINEERING DESIGN

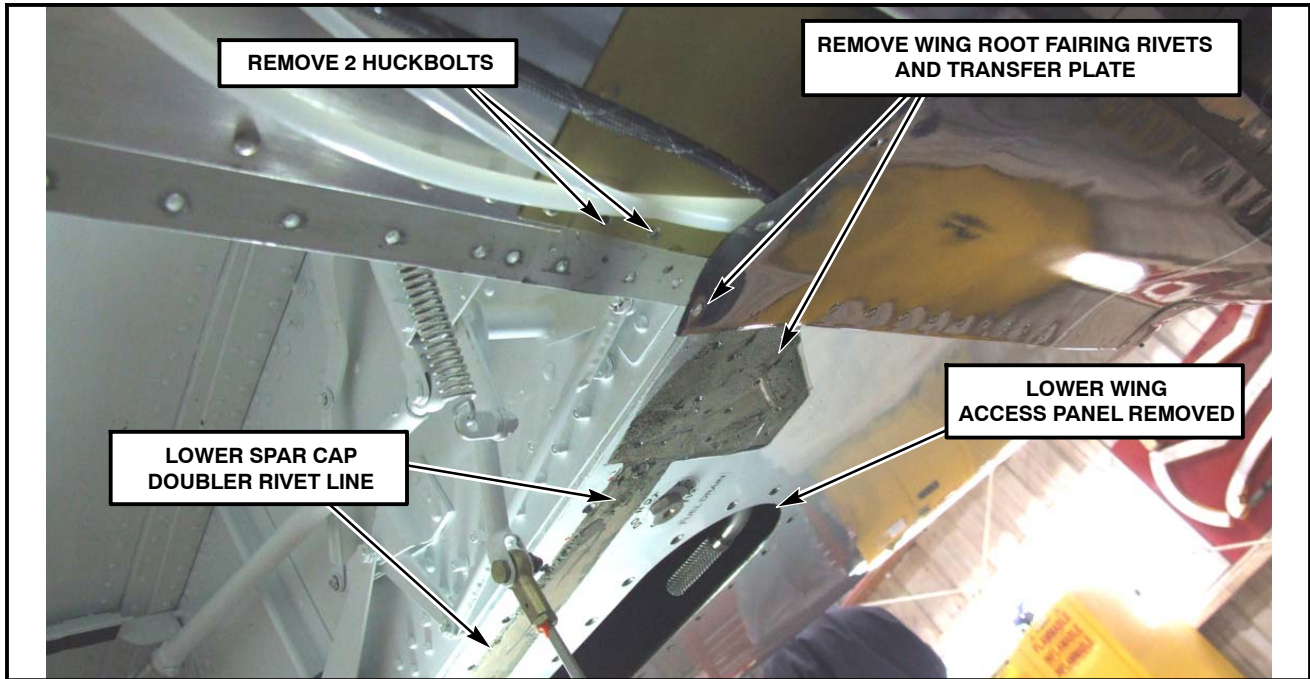


Figure SB M20-324-3 - LOWER SPAR CAP RIVET LINE - BOTTOM OF WING

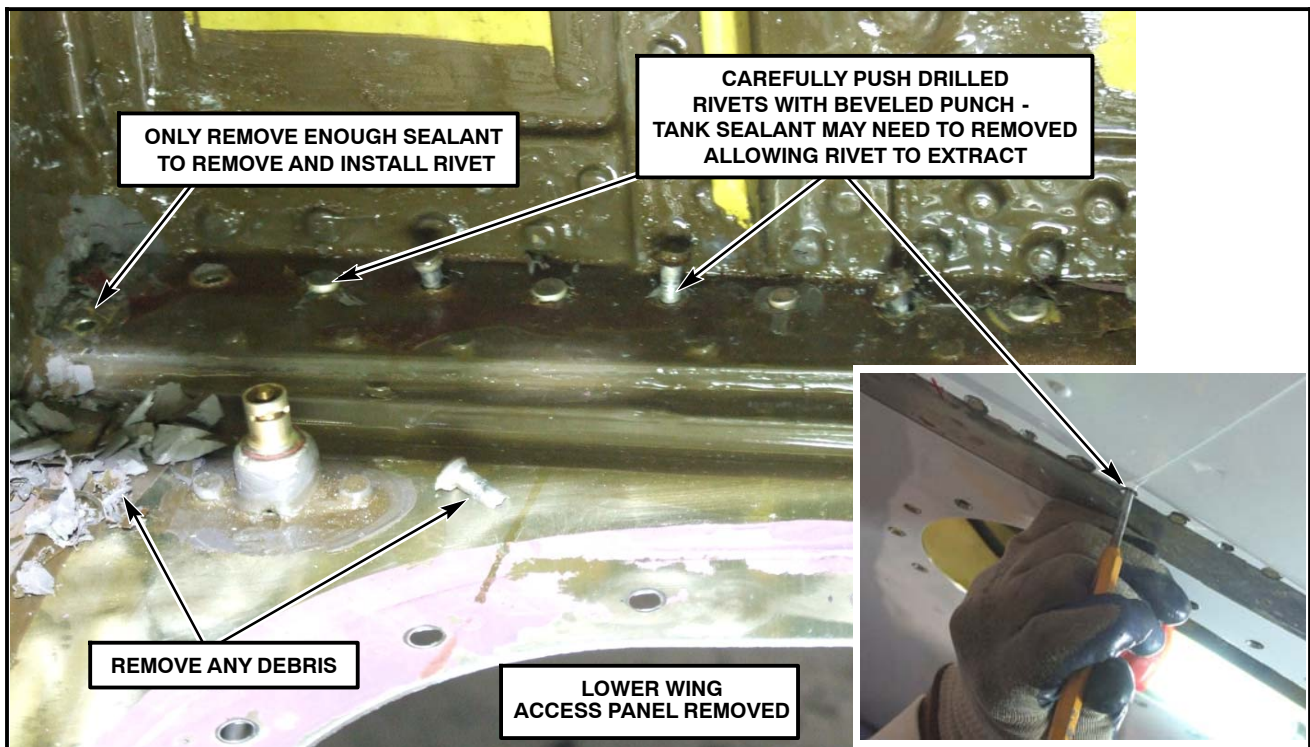


Figure SB M20-324-4 - LOWER SPAR CAP RIVET LINE - INSIDE WING TANK AREA



THIS BULLETIN IS FAA APPROVED FOR ENGINEERING DESIGN

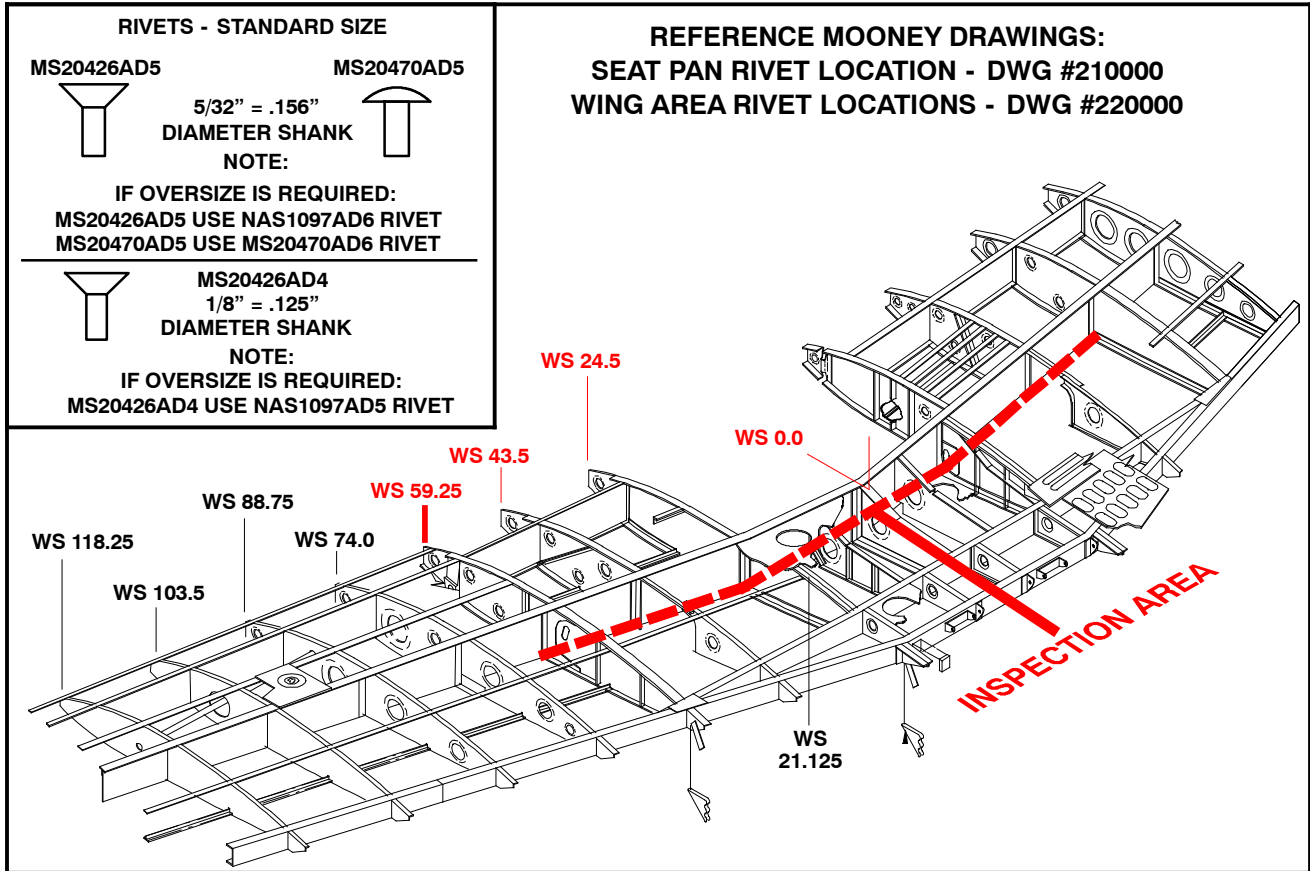


Figure SB M20-324-5 - LOWER SPAR CAP RIVET LINE AND RIVET IDENTIFICATION

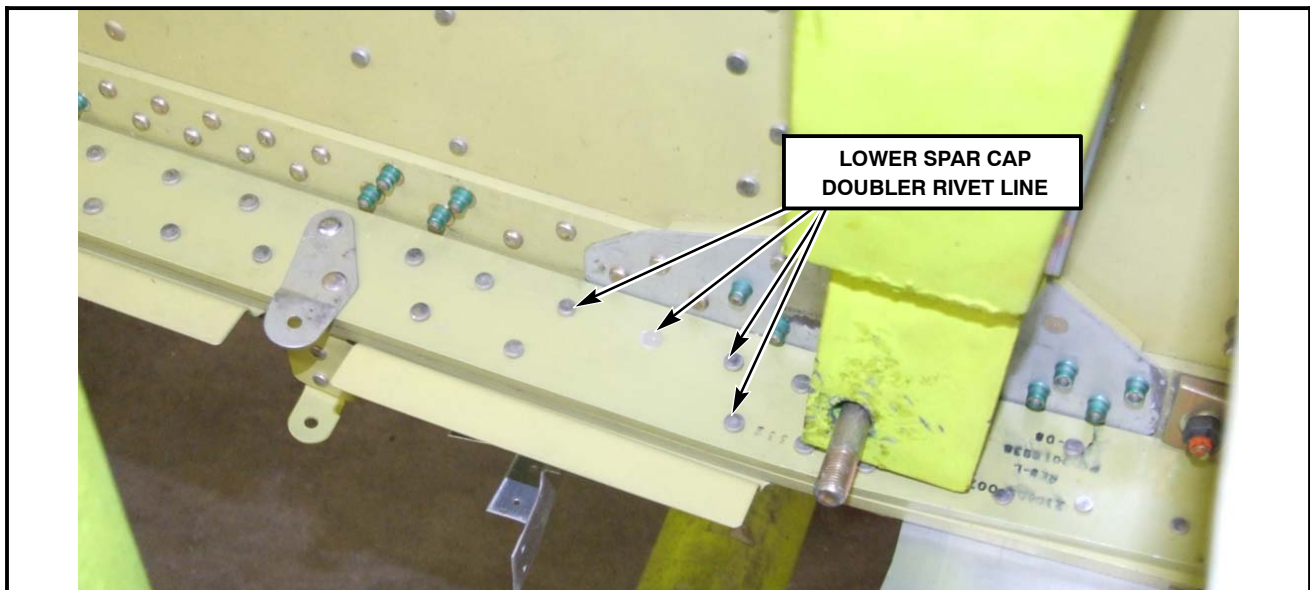


Figure SB M20-324-6 - LOWER SPAR CAP RIVET LINE - LOWER SEAT PAN



THIS BULLETIN IS FAA APPROVED FOR ENGINEERING DESIGN

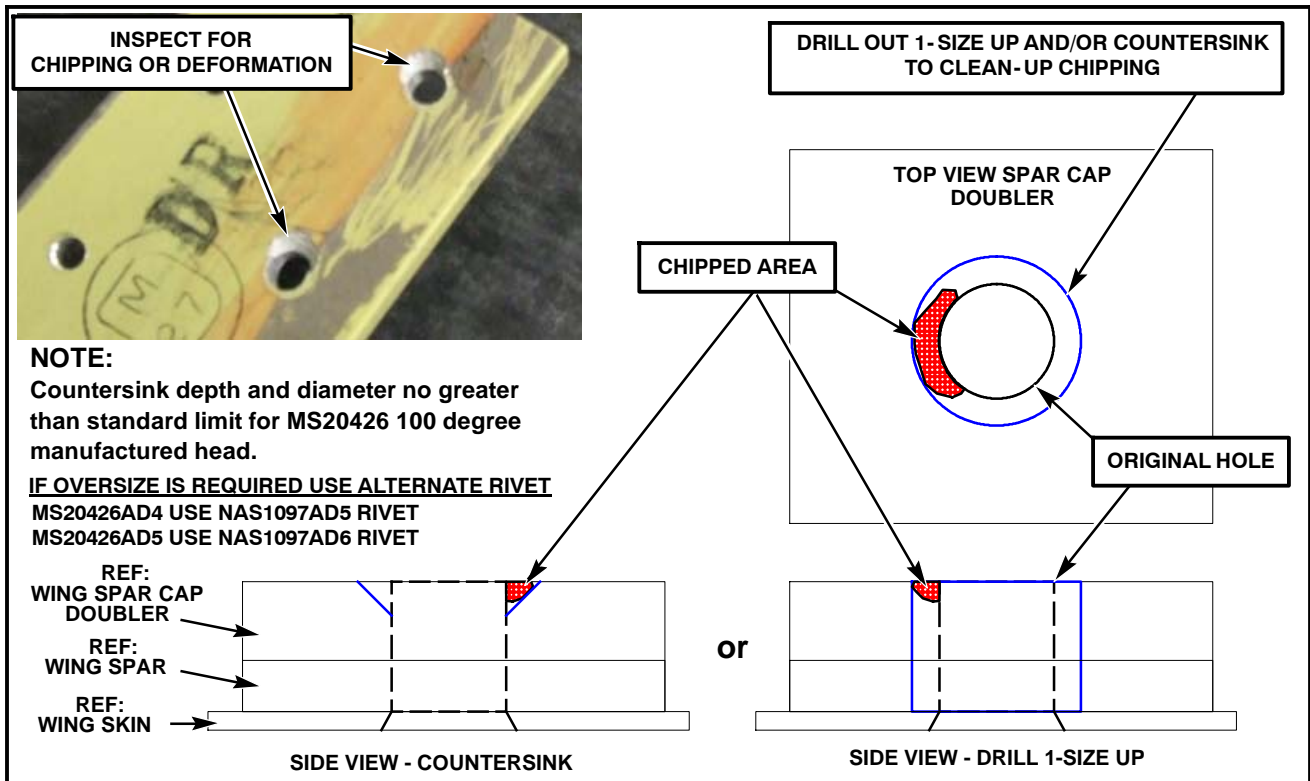


Figure SB M20-324-7 - RIVET HOLE INSPECTION

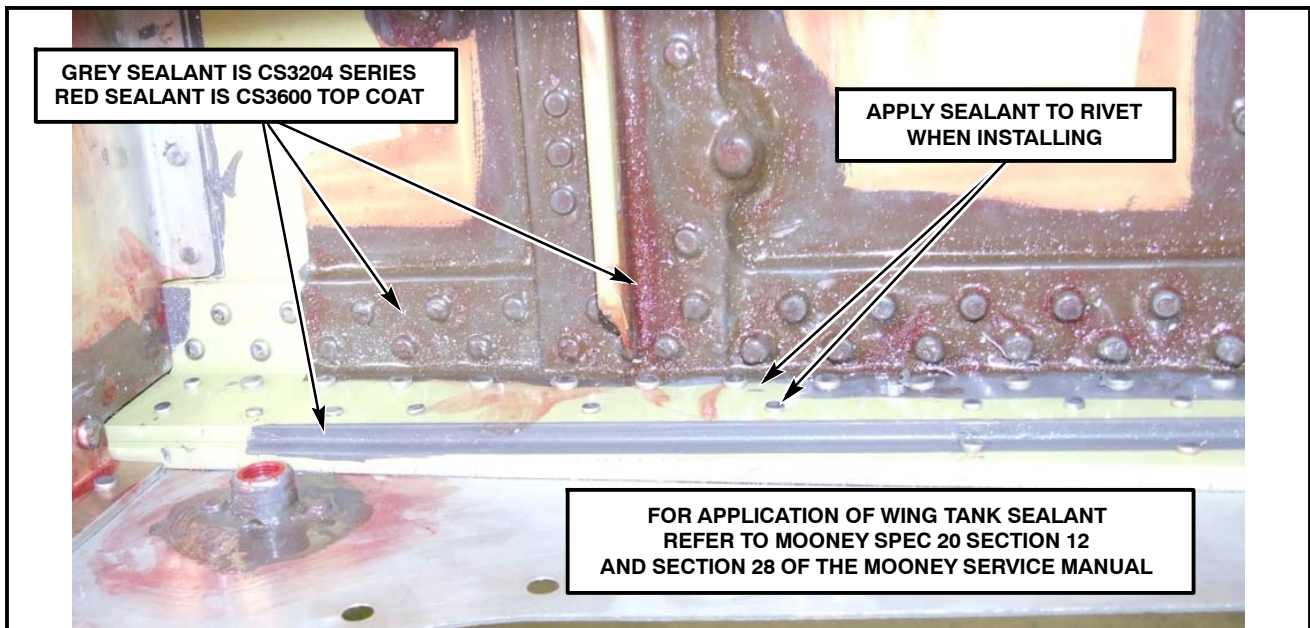


Figure SB M20-324-8 - RIVET AND PANEL SEALANT



THIS BULLETIN IS FAA APPROVED FOR ENGINEERING DESIGN

MOONEY INTERNATIONAL CORPORATION
KERRVILLE, TEXAS 78028 - FAX 830-257-4635

SERVICE (BULLETIN) (INSTRUCTION) NO. _____ HAS BEEN COMPLIED
WITH ON AIRCRAFT MODEL _____ SERIAL NUMBER _____

Tach. Time: _____ N-Number _____ (Reg. No.)
Owner: _____ Date of Compliance: _____
Complied By: _____

Inspection Report: _____

Form 07-0001

PLACE STAMP HERE

MOONEY INTERNATIONAL CORPORATION
ATT'N: TECHNICAL SUPPORT
165 Al Mooney Road, North
Kerrville, Texas 78028

SEND TO: Mooney International Corporation
165 Al Mooney Road North
Kerrville, TX 78028
FAX: (830) 257-4635 or EMAIL support@mooney.com

Figure SB M20-324-9 - Compliance Card