

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

**SUBJECT: INSPECTION OF FUSELAGE TUBULAR STRUCTURE**

**MODELS**

**AFFECTED:** Part A only

All M20 Series aircraft manufactured prior to Jan. 1, 1976 excluding S/N's listed under Part B.

Part B only

M20C S/N 20-1186 thru 20-1258;  
M20F S/N 22-1246, 22-1306 thru 22-1438;  
M20J S/N 24-0001 thru 24-1607, 24-3000 thru 24-3017;  
M20K S/N 25-0001 thru 25-1093.  
(All "flush window" aircraft)

**TIME OF**

**COMPLIANCE:** Part A only At the next annual or 100 Hr. Inspection, whichever comes first, and annually thereafter.

Part B only For Part B effectivity aircraft in excess of 18 months from date of manufacture and annually thereafter.

**INTRODUCTION:** There have been reports of corrosion in the tubular fuselage structure, particularly on aircraft operated in sea coast areas. Attention is being called to this situation because corrosion present in these areas is not easily detected due to its location.

**NOTE: Revision B has been prepared to clarify criteria and procedures of earlier issues of this Service Bulletin. The changes are indicated by a vertical black line in the margin.**

**INSTRUCTIONS (PART A):**

1. Remove seats - front and rear.
2. Remove ABS vinyl kick panels located in forward lower pilot/copilot leg area.
3. Remove interior ABS vinyl side panels (window trim) and carpet side panels, LH and RH.
4. Remove carpeted spar closeout panel (fwd. face of main spar).
5. Remove duct tape from tubular structure in areas where required (wing root/fuselage mating area in particular) to enable thorough inspection of weld joints and bottom side of any tubular structure member.
6. The entire side of the aircraft (LH & RH) should now be open from the firewall, below instrument panel back to the baggage compartment bulkhead. Before continuing with step-by-step inspection per this S.B., conduct a general inspection of the following: (1) Inspect insulation for dampness, check areas under windows particularly, but inspect entire area for any dampness. (2) Inspect for signs of water leaks between side windows and aluminum skin. (3) Inspect for signs of corrosion on any part of tubular structure, ie., paint missing, rust scale, etc.  
If **NO VISIBLE SIGNS** of any of the above condition exist, proceed to Step 9 (Part A) and complete required maintenance action.  
If any one of the three conditions in Step 6 are found, proceed with complete inspection per Steps 7 through 10 for all Part A aircraft affected.
7. Proceed to step-by-step inspections as shown in Instructions Part B, Steps 7 through 20.
8. Reinstall old fiberglass insulation blankets if thoroughly dry or install new foam insulation per Steps 21 and 22 of Part B.
9. Proceed with instructions per Part B Steps 23 through 27.
10. Enter Compliance Note into Aircraft Log Book and return aircraft to service.

INSTRUCTIONS (**Part B**):

1. Remove seats - front and rear.
2. Remove ABS vinyl kick panels located in forward lower pilot/copilot leg area.
3. Remove interior ABS vinyl side panels (window trim) and carpet side panels, LH & RH.
4. Remove carpeted spar closeout panel (fwd. face of main spar).
5. Remove duct tape from tubular structure in areas where required to enable thorough inspection of weld joints and bottom side of any tubular structure member (wing root/fuselage mating area in particular).
6. Before continuing with step-by-step inspection, inspect the now opened area for general conditions: (1) Inspect fiberglass insulation for dampness, (2) Inspect for signs of water leaks between side windows and aluminum skin (the fiberglass insulation may need to be removed from the window /skin area being inspected), (3) Spray water over exterior surface of aircraft concentrating on areas where side windows and aluminum skin overlap. If water is observed to leak from outside to inside of any side window/skin lap area, see Steps 18 and 19 for detailed action recommended. (4) Visually inspect all tubular structure (ref. Figure S.B. M20-208-1) for signs of corrosion, i.e., paint flaking, paint missing, rust scale, etc. If NO VISIBLE SIGNS of any of the above 4 conditions are found, proceed to Step 23 and complete the maintenance action.  
If evidence of any one of the four conditions in Step 6 are found, complete all remaining maintenance action steps.
7. Remove all existing fiberglass insulation blankets now exposed on sides of cabin and discard if desired. Fiberglass blankets may be THOROUGHLY dried out and reinstalled if desired; however the new foam insulation is recommended. (Exclude: fire-wall, baggage area and overhead insulation).

**NOTE: DO NOT REMOVE FOAM INSULATION AT SUBSEQUENT INSPECTION PERIODS UNLESS DAMAGED OR AS REQUIRED TO TAKE CORRECTIVE ACTION.**

8. Visually inspect tubes and weld joints for signs of corrosion or moisture (ref. Fig. S.B. M20-208-1 for tubes to be inspected). Special attention should be directed to areas where the insulation was in direct contact with tubular structure members.
9. Use an awl, screwdriver or sharp punch to probe suspect tubes at points of insulation contact, and/or on bottom and lower ends of vertical structure, (where water most likely would be located, if present) to determine if tube wall has corroded from the inside. Probe along the entire length of horizontal tubes and around the circumference of any vertical or angled tube at lower end. Repair or replace any tube where internal corrosion is found. Refer to AC 43.13.1 (\*) for recommended testing and repair for welded tubes.

**NOTE: ULTRASONIC TEST EQUIPMENT IS RECOMMENDED TO CHECK TUBE WALL THICKNESS IF IT IS SUSPECTED OF HAVING ANY INTERIOR CORROSION. REF. FIG. SB-M20-208-2 FOR TUBE O.D. AND WALL THICKNESS: TUBE P/N MUST BE IDENTIFIED USING APPROPRIATE MOONEY ILLUSTRATED PARTS CATALOG.**

10. If a tube has exterior surface corrosion that cannot be polished smooth with "00 steel wool" or cannot be polished out within 10% of wall thickness in localized areas with the corrosion cumulative length not to exceed 10% of the total length of the tube, and the cumulative corrosion not to exceed 25% of the circumference of this 10% of the tube length. Refer to Figure S.B. M20-208-2 for table of Part Numbers vs. Outside Tube Diameter (O.D.) and minimum wall thickness for replacement tubes.
11. Any replaced or repaired tubes that have screw holes in it for attaching bracket, etc. should have a moisture displacing fluid, i.e., LPS-1, sprayed into hole or holes to displace any moisture and coat the interior walls after all welding has been completed.
12. If a tube is replaced or repaired that later has to be drilled for P.K. screws to attach brackets, it is recommended that each P.K. screw be coated with PR1422-B2 or equivalent sealant prior to installation.

**NOTE: (\*) equates to latest revision.**

## Instructions (Part B) con't.

13. Remove rear seat bottom trim panels (if installed) to gain access to aluminum seat bottom skin. Remove forward, outboard, taped-on covers, left and right, to expose access holes in aluminum seat bottom skin. This should allow access to the tension bolts connecting wing and fuselage.

14. Cut safety wire that holds tension bolts. AN7H-17A, located at (A) Figure S.B. M20-208-1.

15. Remove tension bolts from fitting/spar attach point, LH side - then RH side. Carefully pass a small pencil magnet on a long flexible shaft up through threaded portion of tension fitting and into tube interior at least 12 - 15 inches, withdraw magnet and observe if any metal (rust flakes) adhere to the magnet. Bright metal, indicating no corrosion, should be on the magnet along with rust flakes (if any). Repeat this process until rust flakes are removed. When all metal (if any) is pulled from the tube, spray moisture displacement fluid, ie., LPS-1, through tension fitting into the interior of the tube, both sides of the aircraft.

16. Reinstall tension bolt, AN7H-17A, torque to 450 - 500 inch pounds per AC 43-13.1(\*) Chapter 5, Section I, paragraph 227, e, (2) - (5) and safety each bolt as it was before removal.

17. Repair any corroded tubular structure area per AC 43-13.1(\*). Reference Figure S.B. M20-208-2 for tube part numbers vs. outside diameters and wall thickness required for the various locations. Identify the tubes from the appropriate Mooney Illustrated Parts Catalog figures.

18. Remove side windows per appropriate Mooney Service and Maintenance Manual.

19. Thoroughly clean all old sealant from acrylic windows, structural contact areas and aluminum skin contact areas. Use anhydrous isopropyl alcohol or denatured ethyl alcohol to clean acrylic windows and MEK to clean aluminum areas. Care should be taken to keep MEK from painted areas. Wipe wet MEK from surface before it dries with a dry cloth, otherwise any contaminants will be redistributed over the area. Allow 5 to 10 minutes before sealant application.

Reinstall side windows per appropriate Mooney Service and Maintenance Manual. Apply a uniform thickness of PR1403-G-B2 sealant to the skin, window area and retainers where window overlaps skin and retainers. Sufficient sealant should be used to cause sealant to extrude from all edges of window/skin lap, both inside and outside, (approx. 5 (3.5 oz.) tubes for 4 windows). Allow sealant to cure, then trim excess from outside window area with non-metallic sharpened tool. Refer to fuel tank section of appropriate Mooney Service and Maintenance Manual for sealant mixing and cure times.

20. Inspect forward bottom cap stripes on main spar under carpet where floorboard and spar meet (at rear passenger's footrest area) for corrosion caused by any moisture retained by the carpet. Repair as needed if corrosion is detected, Reference AC 43-13.1 (\*).

21. The new foam insulation material is available as precut pieces to be applied to proper locations on the aircraft. (See location view pages supplied with parts kit for foam insulation). Identify each trimmed/fitted piece prior to removing protective backing and applying to aircraft skin.

**NOTE: THE AREA BETWEEN THE FUSELAGE TUBULAR STRUCTURE AND THE WING ROOT RIB THAT CONTAINS FUEL QUANTITY SENDER AND FUEL OUT FITTING FROM FUEL TANK DOES NOT REQUIRE FOAM INSULATION.**

22. Bond new foam insulation to proper locations on skin. When locating insulation pieces, they should not come in contact with tubular steel structure. Allow approximately 1/4 inch clearance around all tubular structure if possible.

23. If any forward Wemac air valves are attached to interior panels, remove the Wemacs from panels and seal Wemac air valves against aluminum pan with PR1422-B2 prior to installation of interior side panels. Trim holes in panels as needed to fit over Wemac.

24. Retape all areas where duct tape was removed for inspection.

25. Verify all repaired areas are properly secured and painted before installing interior panels. Epoxy primer is recommended for all areas to be repainted.

26. Reinstall all interior side and seat trim panels, carpeting, seats, etc.

27. Enter Compliance Note into Aircraft Log Book and return aircraft to service.

WARRANTY:

Mooney Aircraft Corporation will allow up to 10.0 hours labor and provide the parts as needed for repair of aircraft under warranty at date of Rev. A of Service Bulletin and accomplished within 1 year of issue date of Rev. A.

REFERENCE  
DATA:

N/A

PARTS LIST: KIT P/N: S.B. 208A-1

P/N	DESCRIPTION	QTY
170018-901	INSULATION, FOAM, LH	1 set
170018-902	INSULATION, FOAM, RH	1 set

(Material P/N S404,  
Specialty Composite Corp.)

FIGURE/TABLES: SEE PAGES 5 & 6 FOR TUBE IDENTIFICATION & INSPECTION AREAS.

TUBE P/N	MODEL	O.D.	WALL THK.	TUBE P/N	MODEL	O.D.	WALL THK.
340117-035	J/K	5/8	.083	340155-007	J/K	7/8	.058
340117-085	68/76	1/2	.028	340155-009	J/K	3/4	.058
340117-086	68/76	1/2	.028	340155-011	J/K	3/4	.058
340117-087	68/76	1/2	.028	340155-021	J/K	1.0	.035
340117-088	68/76	1/2	.028	340155-029	J/K	7/8	.058
340117-089	68/76	1/2	.035	340155-030	J/K	7/8	.058
340117-090	68/76	1/2	.035	340155-031	68/76	1.0	.063
340117-093	68/76	3/4	.035	340155-032	68/76	1.0	.063
340117-095	68/76	1.0	.035	340155-035	68-86	7/8	.035
340117-097	J/K	7/8	.035	340155-051	J/K	5/8	.035
340117-099	68/76	7/8	.035	340155-052	J/K	5/8	.035
340117-101	68/76	7/8	.035	340155-053	J/K	5/8	.035
340117-102	68/76	7/8	.035	340155-054	J/K	5/8	.035
340117-103	68/76	3/8	.058	340155-061	J/K	3/4	.035
340117-107	68/76	1.0	.058	340155-063	J/K	5/8	.035
340117-108	68/76	1.0	.058	340155-064	J/K	5/8	.035
340117-113	68/76	3/4	.058	340155-069	J/K	3/4	.035
340117-115	J/K	7/8	.058	340155-077	J/K	1.0	.049
340117-117	J/K	1-1/8	.035	340155-135	J/K	7/8	.049
340117-119	68/79	7/8	.035	340155-173	J/K	1-1/8	.035
340117-121	J/K	5/8	.058	340155-175	J/K	5/8	.058
340117-123	J/K	1/2	.035	340155-176	J/K	5/8	.058
340117-125	J/K	3/4	.058	340155-179	J/K	3/4	.058
340117-135	J/K	1/2	.120	340155-189	J/K	3/4	.035
340117-141	J/K	3/4	.035	340155-193	J/K	3/4	.058
340117-145	J/K	3/4	.058	340155-195	J/K	3/4	.028
340117-157	J/K	3/4	.028	340155-215	J/K	7/8	.035
				340155-216	J/K	7/8	.035
				340155-219	J/K	1/2	.065
340008-001	68/76	3/4	.035	340155-067	J/K	1/2	.035
340008-501	J/K	3/4	.058				
340031-007	68-86	5/8	.058				
340031-008	68-86	5/8	.058				
340031-009	68-86	5/8	.058				

NOTE: ALL TUBING IS CHROME MOLY 4130, COND. N.

FIGURE S.B. M20-208-1

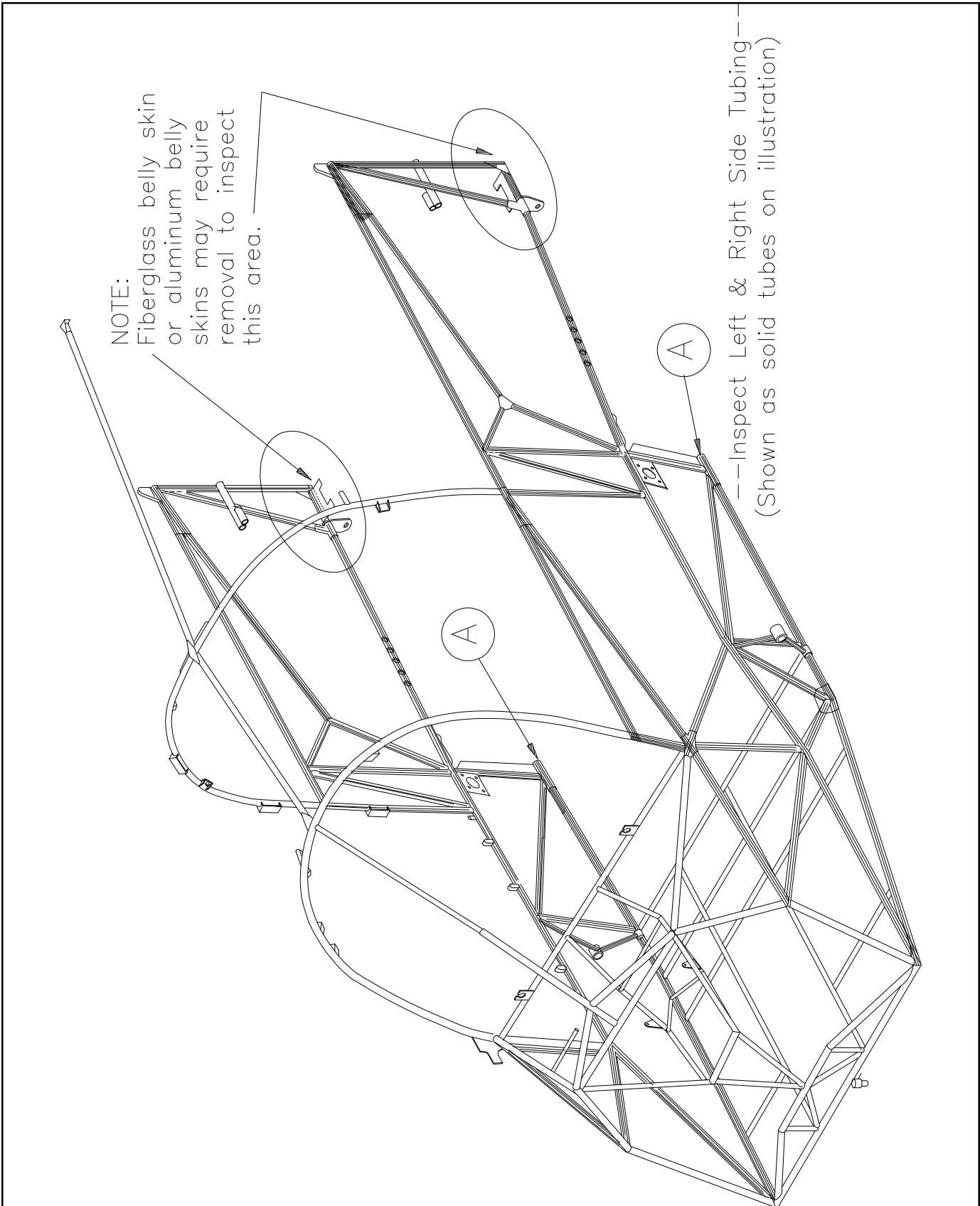


FIGURE S.B. M20-208-2