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THIS BULLETIN IS FAA APPROVED FOR ENGINEERING DESIGN

SERVICE BULLETIN M20-283A

Date:3-30-04

- SUBJECT:** EXHAUST DEFLECTION SHIELD, FIREWALL
- MODELS/ S/N AFFECTED:** MOONEY M20M, (MOONEY TLS – MOONEY BRAVO)
S/N 27-0001 THRU 27-0321 EXHAUST DEFLECTION SHIELD MODIFICATION.
SN 27-0001 THRU 27-TBA FOR V-BAND CLAMP REMOVAL & REPLACEMENT.
- TIME OF COMPLIANCE:** AT NEXT SCHEDULED MAINTENANCE ACTION, BUT WITHIN THE NEXT 10 FLIGHT HOURS
REVISION A IS ISSUED TO ADD NEW V-BAND TAIL PIPE CLAMP TO SB.
- INTRODUCTION:** There has been a report of the nut on the V-band clamp, which holds the tailpipe to the turbocharger exhaust turbine housing, loosening and allowing hot exhaust gas into the engine compartment.
The existing V-band clamp, listed in the report, may have been removed and re-installed several times due to various maintenance actions. The existing V-band clamp may not have been replaced with a new one of the same configuration during any of the previous maintenance actions. **However, due to a new configuration of V-band clamp from Textron-Lycoming, it is mandatory that the new configuration V-band clamp be installed when this modification is accomplished on any of the above Serial Numbered aircraft and for any future maintenance action on the Tail Pipe for all M20M models.**
The Mooney M20M Service and Maintenance Manual, #151, Chapter 5, and Chapter 78 will have a statement added for recommended replacement of the Tailpipe V-band clamp after two (2) documented removals in addition to the current information recommending all V-band clamp's be replaced at Engine Overhaul or as On Condition inspections dictate.
- INSTRUCTIONS:**
- PART I – EXHAUST DEFLECTOR SHIELD INSTALLATION**
1. Remove upper and lower cowling from aircraft to gain access to forward firewall area to add the deflector shields. The forward belly panel will require removal for access to the forward, lower belly area aft of the firewall.
 2. Gain access to the Left Hand, Footwell area.
 3. Remove the existing Radiant Heat Shield, 600182-501 (A) and bracket located on the Footwell, above the area where the top of the 600505-001 Heat Shield, Deflector (in this kit) will be located and attached.
 4. The modification/installation can be accomplished without removing the Tailpipe and/or possibly the bypass pipes, but it will be much easier to accomplish this modification if these components are carefully removed and re-installed after this modification has been completed.
- NOTE:** Replace the existing Tailpipe V-band clamp, with a new configuration V-band clamp, P/N NH1009399-10 (Aeroquip) or 40D23255-340M (Textron-Lycoming). This new configuration must be used in the re-installation of the Tailpipe. The other two V-band clamps used to connect the by-pass pipes have not had a history of becoming loose or failing.
5. After access has been obtained to the LH Footwell assembly, temporarily remove the two existing screws from the lower area of the footwell to temporarily attach the upper mounting holes of the new 600505-001 Heat Shield, Deflector to use as a pattern to drill the three (3) additional center holes.
 6. Temporarily remove four (4) existing screws along the bottom of the firewall to be used to attach the bottom row of holes of 600505-001 Heat Shield, Deflector.
 7. Place 600505-001 Heat Shield, Deflector over the location where it will be mounted (Reference Figure SB M20-283-1). Loosely, connect the Heat Shield, Deflector with the two outside, upper screws.
 8. Carefully inspect alignment of Heat Shield, Deflector with all existing holes, upper and lower. When satisfied with alignment of all existing holes, move to Step 9
 9. Match drill three (3) pilot holes from upper, center holes of the Heat Shield,

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Deflector, between the two (2) already existing attaching holes in the lower portion of the footwell (Reference Figure SB M20-1).

10. After the three (3) upper, center holes have been pilot drilled; remove the Heat Shield, Deflector. Enlarge the holes for AN530-6R6 screws (# 27 or # 28 or 9/64 in. drill bit) and deburr the holes.
11. Use A224-6Z, Speed Nuts on the aft side of the footwell assembly to attach the three new AN530-6R6 Screws and AN960-6L Washers. (All new hardware is included in the kit identified by this SB. Only three Screws, Washers, and Speed Nuts are required for this modification)
12. Install 600505-001 Heat Shield, Deflector in place from footwell to bottom of firewall with existing and new hardware.
13. Install the Radiant Heat Shield, 600182-501 (B), included in kit, onto the footwell at the same location the 600182-501 (A) was installed.
14. Re-install the exhaust By-Pass pipes, Tailpipe and V-band clamps, (either new or existing, depending on the service record of each). Position exhaust pipes and clamp securely with the correct V-band clamps.
Torque Exhaust pipe V-band clamps as follows:
 - 1) Initial torque – 40 lb.-in. Tap clamp lightly around circumference w/ non-metallic hammer to equalize band tension
 - 2) Re-torque to 60 lb.-in. Tap band lightly around circumference to equalize band tension.
 - 3) Re-torque to a final value of 55 –65 lb.-in.
 Safety wire all V-band clamps properly.
15. Verify all electrical wiring in the area is still connected correctly and will not chafe against the new Heat Shield, Deflector or any portion of the components either moved or added.

PART II – HYDRAULIC BRAKE FLUID POLY LINE MODIFICATION

16. Gain access to area aft of Firewall, below cabin floorboard, where hydraulic fluid from reservoir is routed via a poly line up through the floorboard to Brake Master Cylinders in Cabin. [Refer to Figure SB M20-283-3]
17. To shut off the supply of brake fluid from the reservoir to the Master Cylinders, it is recommended that the poly line be cut and clamped shut, midway between Fuselage Station 19.12 bulkhead [See Fig. SB M20-283-3] and the Firewall. This will allow sufficient length for the poly line to be cut again to attach to the new bulkhead fittings for the new aluminum line and the shortened poly line.
18. Disconnect poly-line fitting and both braided hoses, leading to Master Cylinders, from AN825-3D 'Tee' behind Firewall. The AN825-3D Tee and this portion of the poly line & poly fittings will not be re-used. Loosen MS21919DG7 Clamp to remove the braided hose from 'Tee'.
19. Position new AN824-3D Tee into position and re-attach both braided hoses to Tee, do not tighten fittings yet. Loosely secure this connection with the existing MS21919DG7 Clamp and hardware to bottom side of floorboard.
20. Connect 850109-097 Aluminum Tube Assembly to the AN824-3D Tee.
NOTE: The bend in 850109-097 Tube Assembly is nearest to the Tee [Fwd position] and pointed toward floorboard for proper orientation.
21. Route –097 Tube Assembly straight aft [keep straight with Butt-Line of aircraft] towards Fuselage Station 19.12 Bulkhead.
22. Attach AN816-3D Nipple to the aft end of 850109–097 Tube Assy. fitting.
23. Loosely attach new MS21919DG3 Clamp over –097 Tube. Use new hardware to attach clamp to Support, P/N 340295-007.
24. When –097 Tube Assy. is positioned and clear of bulkhead, fasten Support, P/N 340295-007 to floorboard forward of Fuselage Station 19.12 bulkhead with Avex pop rivets (2 places) [Reference Figure SB M20-283-3].
25. When –097 Tube Assembly is properly clamped to 340295-007 Support, with new MS21919DG3 Clamp and hardware, measure the extraneous length of the poly-line tube to be cut off to allow a non-kinked connection to the nipple. Cut to proper length and slide the new Poly connector fitting, B-400-7-2, over the end of

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the -099 poly tube so it will connect to the nipple.

26. Tighten nipple on -097 aluminum line and connect the B-400-7-2 connector to the nipple securely. Make sure poly-line will not interfere with movement of any control tubes, bellcranks, or other components that will be moving during normal operation of the aircraft.
27. Return to the AN824-3D Tee at the forward end of -097 aluminum tube assembly and tighten all connections of all fittings.
28. Tighten the existing MS21919DG7 Clamp [at forward position] around braided hose to original floorboard mounting position.
29. Refer to Figure SB M20-283-3 to locate floorboard Support, P/N 340049-011, which is located between the firewall and Fuselage Station 19.12. With 850109-097 aluminum line assembly and all fittings at both ends properly torqued, locate new MS21919DG3 Clamp and mounting hardware so that hole for securing clamp is positioned in relative center of the 340049-011 hat section support member.
30. Drill a #2 hole (.221 dia.) through support hat section.
31. Install A8-75 Riv-Nut into hole of Support, 340049-011.
32. Secure MS21919DG3 Clamp with attaching hardware to Riv-Nut, A8-75.
33. Verify all fittings and connections are secure and properly torqued.
34. After inspection sign off, re-install the forward belly panel and the upper and lower cowling.
35. Complete Logbook entries.
36. Return aircraft to service.

WARRANTY:

Mooney Airplane Company, Inc. will warrant labor and parts (see kit list) required for the installation of subject exhaust deflector on aircraft S/N's 27-0317 thru 27-0321, when done in accordance with procedures of this Service Bulletin. Mandatory compliance to Special Letter 90-6 and/or AD 91-03-15 is required. Any removal or re torque of the Tailpipe V-band clamp shall be documented by a Log Book entry.

REFERENCE DATA:

MAC SL 90-6 (AD 91-03-15) (Compliance is required)

PARTS LIST:

Mooney Airplane Company, Inc. Parts Kit: M20-283-1

Item	P/N	Description	Qty.
1.	600505-001	HEAT SHIELD, Exhaust Gas DEFLECTOR	1
2.	AN530-6R6	SCREWS	5
3.	AN960-6L	WASHERS	5
4.	A224-6Z	SPEED NUTS	5
5.	600182-501 (B)	HEAT SHIELD, RADIANT	1
6.	850109-097	TUBE ASSEMBLY	1
7.	AN816-3D	NIPPLE	1
8.	B-400-7-2	CONNECTOR, POLY	1
9.	MS21919DG3	CLAMP	2
10.	MS35206-245	SCREW	1
11.	MS35333-38	WASHER	1
12.	A8-75	RIV-NUT	1
13.	AN3-4A	BOLT	1
14.	AN960-10L	WASHER	1
15.	AN363-1032	NUT	1
16.	340295-007	SUPPORT	1
17.	AN824-3D	TEE	1
18.	40D23255-340M	CLAMP, V-BAND, TAIL PIPE	1

FIGURE/TABLES: See Figure SB M20-283-1, -2, & -3 on next pages

INSTL. OF 600505-001 HEAT SHIELD, DEFLECTOR

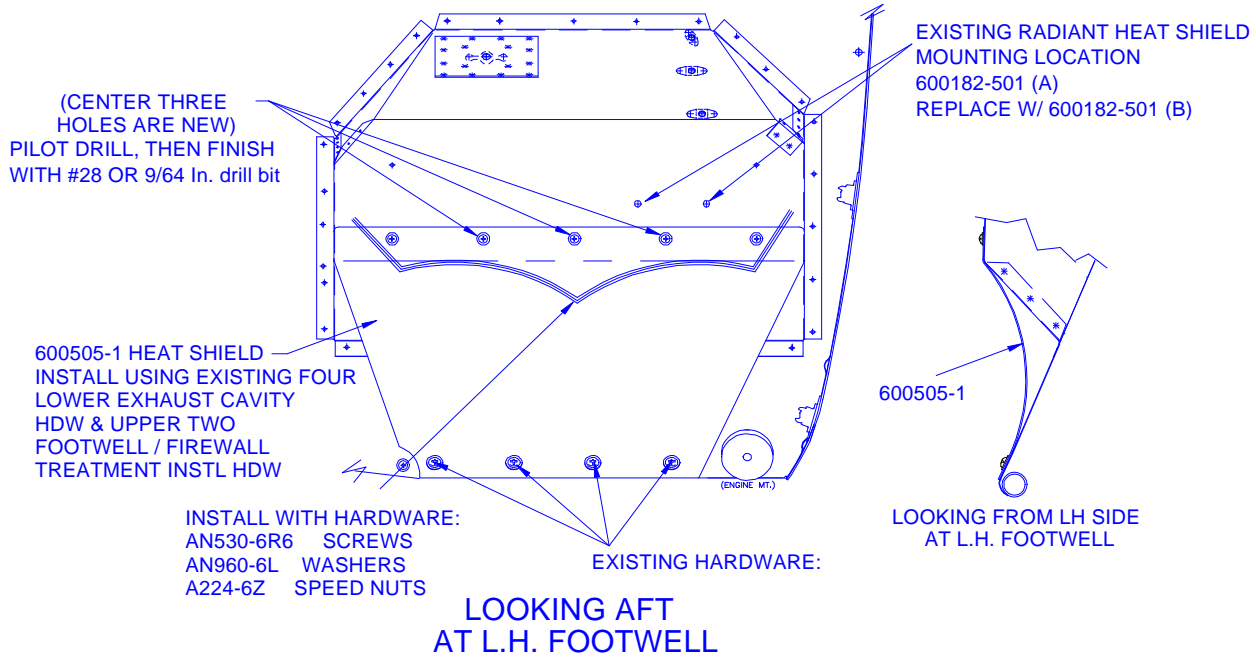


FIGURE SB M20-283-1



FIGURE SB M20-283-2

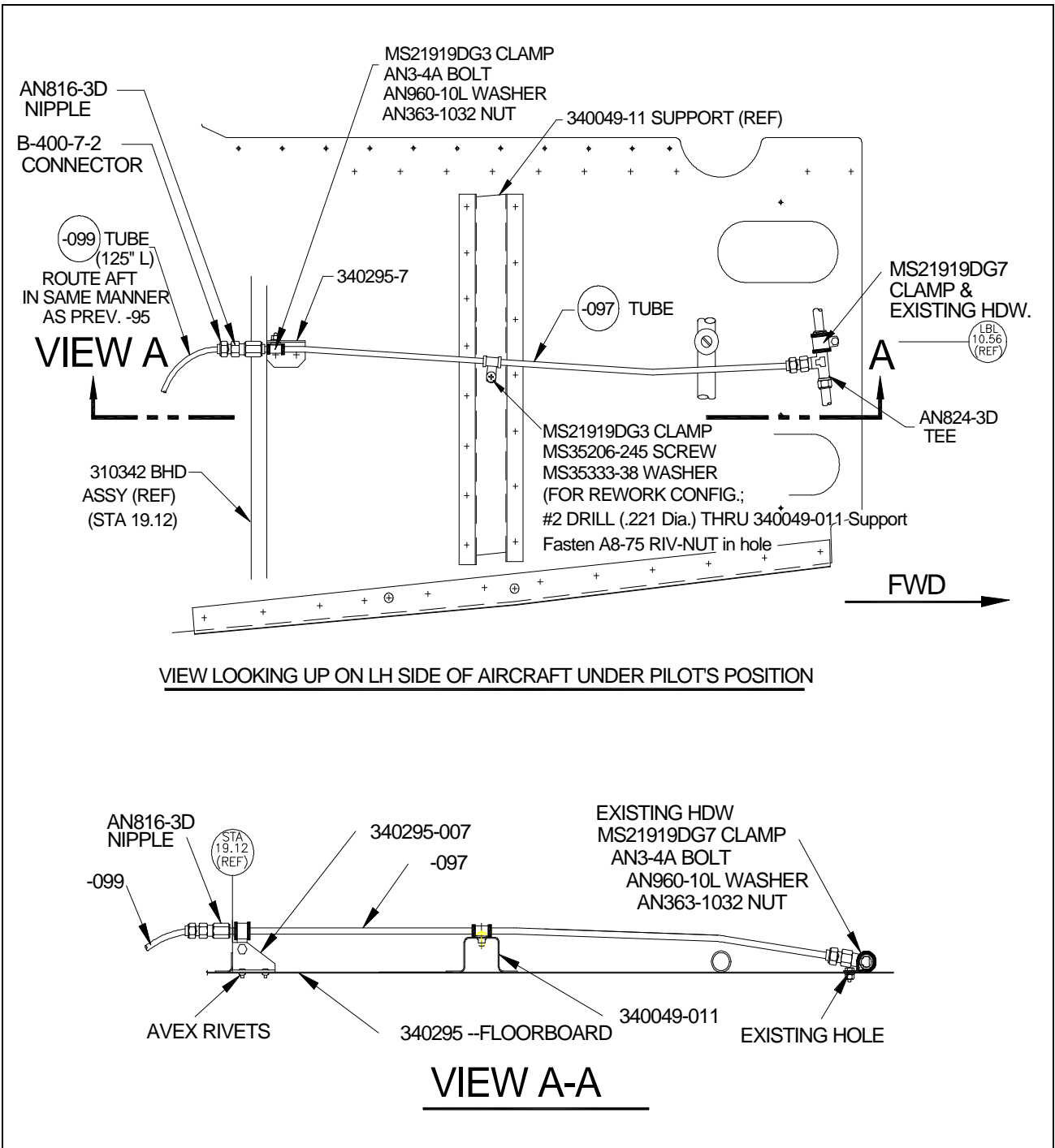


FIGURE SB M20-283 - 3