



SUBJECT: M20TN ENGINE ISOLATOR MOUNT INSPECTION

MODELS/ SN M20TN - 31-0002 thru 31-0023 and 31-0025 thru 31-0127
AFFECTED:

TIME OF COMPLIANCE: **INITIAL INSPECTION WITHIN 10 FLIGHT HOURS / NEXT 100 HR INSPECTION**

INTRODUCTION: There has been a report from the field of improper clamp-up and distortion of the mount isolators, as well as extreme difficulty in the re-installation in general. Both the service manual and illustrated parts catalog incorrectly identified the mounting sequence (refer to Mooney Service Instruction M20-121) and will be updated at their next revision cycle to reflect this information. Because the exact history of this installation is unknown, an inspection is required for field M20TN's to verify engine installation.

INSTRUCTIONS: **Read entire procedures before beginning work.**

STEP 1 - Initial Inspection

- 1.1. Turn master switch - OFF.
- 1.2. Inspect area of cowl around propeller shaft for evidence of interference and/or movement of the propeller shaft against the cowling.
- 1.3. Remove top cowling, refer to MAC Service and Maintenance Manual.
- 1.4. Inspect top cowling around propeller shaft area and inside upper area for chaffing, scuffing or interference "witness marks".
- 1.5. If no problems are found. Replace and secure top cowling. Make Log Book entry that "Step 1 of Service Bulletin M20-316 was performed on (Date & TT). No engine Movement indicated. Return to Service". At next 100 Hr Inspection, perform **STEP 2** of this service bulletin.
- 1.6. If chaffing, scuffing or interference "witness marks" have been found - continue to next steps of this service bulletin.
- 1.7. Remove bottom cowling, refer to MAC Service and Maintenance Manual.
- 1.8. Check the bottom of all engine isolator halves (4 qty) for any movement or looseness. Determine cause of wear/witness marks. Clear the interference as required.
- 1.9. If no movement is present - torque all 4 bolts to 450-500 in. lbs. (refer to MAC Service and Maintenance Manual). Reinstall bottom and top cowl. Make Log Book entry that "Step 1 of Service Bulletin M20-316 performed on (Date & TT). Verified security of Isolator mounts. Cleared interference to cowl. Return to Service". At next 100 Hr Inspection, perform **STEP 2** of this service bulletin.
- 1.10. If movement has been determined, continue to next steps of this service bulletin.
- 1.11. Refer to **STEP 2** and remove each isolator (one at a time), verify correct and/or stack-up as shown in Figure SB M20-316-1 (Refer to MAC Service Instruction M20-121).

NOTE:

The arrangement of engine isolator mounts is extremely critical. Make certain they are arranged as shown in Figure SB M20-316-1.

STEP 2 - Annual Inspection and/or Replacing Engine Isolators:

- 2.1. Turn master switch - OFF.
- 2.2. Remove top and bottom cowling, refer to M20TN Service and Maintenance Manual.
- 2.3. Support the engine using an "A" Frame with chain hoist or hydraulic "Cherry Picker" and hook into the front and rear engine lifting hooks, refer to M20TN Service and Maintenance Manual.



- 2.4. Remove or disconnect any components that prevent lifting engine slightly to remove engine isolator mounts.
- 2.5. Remove all four (4) retaining bolts, washers, heat shields and lower isolators at all four locations. Keep heat shield and mounting hardware
- 2.6. Lift engine to allow removal of all four upper engine isolator mounts and hardware.
- 2.7. Inspect Heli-Coils in engine legs for any damage i.e., cross-threading. Replace legs as required.

NOTE:

The arrangement of engine isolator mounts is extremely critical. Make certain they are arranged as shown in Figure SB M20-316-1.

- 2.8. Use "dummy" bolts (NAS6607-15 or equivalent) and washers to secure each of the upper halves of isolator mounts. Ensure upper washer and heat shield are installed between isolator and engine motor mount castings (4 places). Tighten bolts to compress rubber mounts to approximate thickness shown in Figure SB M20-316-2.
- 2.9. Before lowering engine, lube all four mount cups with silicone lubricant to help facilitate alignment.
- 2.10. Slowly lower engine into motor mount cradle. Support weight of engine with lift until engine is properly placed in mount. When engine is first lowered, the isolator mounts will not rest squarely in the cups on the mount refer to Figure 2. Seat both rear mounts first, then front left & right mounts.
- 2.11. Use a large flat screwdriver to pry mounts into cups. This step requires a considerable amount of patience and "elbow grease" - refer to Figure SB M20-316-2.
- 2.12. Once top engine mounts are all seated in the cups, begin removing "dummy" bolts and washers. Start at right rear (RR), then left rear (LR), left front (LF), and right front (RF).

NOTE:

Keep bolt and washer centered in the cup to prevent binding and stripping of threads.

- 2.13. Correctly position each heat shield in place per figure 1, index drain holes at lowest point of installation & index cutouts parallel to sides of engine mount. Make sure heat shields are oriented to prevent chaffing or interference on engine mount or engine components.
- 2.14. Install both retaining bolts, washers and torque to specification - refer to Figure SB M20-316-1.
- 2.15. Reinstall top and bottom cowling, refer to MAC Service and Maintenance Manual.
- 2.16. Complete log book entry.

NOTE:

Fill out compliance card completely - List any chaffing or "witness marks" if detected and send by MAIL or FAX to Mooney Aviation Company as indicated on the attached Compliance Card (see Figure M20-316-3) - For any reason you are having trouble with installation as demonstrated in this Service Bulletin, Please contact Mooney Technical Support at 830-896-6000 or email support@mooney.com for more information.

- 2.17. Return aircraft to service.
- 2.18. Procedure complete.

WARRANTY: Mooney Aviation Company, Inc. will warrant labor hours when corrective action is done in accordance with procedures of this Service Bulletin for aircraft currently covered under the Mooney Aviation Company, Inc. factory warranty program.

REFERENCE DATA: 1. MAC M20TN Maintenance Manual
2. MAC M20TN Illustrated Parts Catalog
3. MAC Service Instruction M20-121

PARTS LIST: - Not Applicable

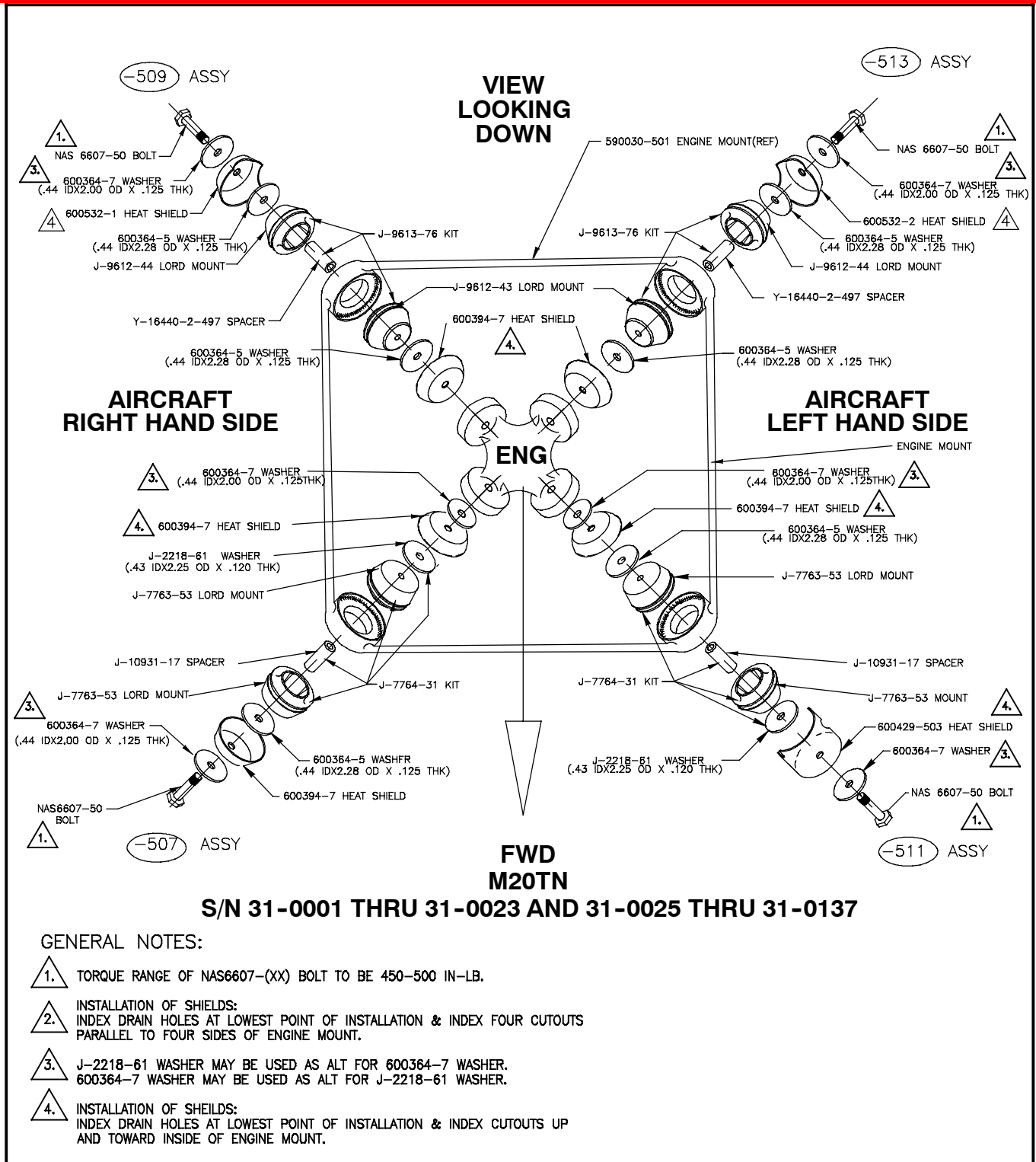


Figure SB M20-316-1 - ENGINE MOUNT AND HARDWARE INSTALLATION



TIGHTEN "DUMMY" BOLTS (NAS6607-15 OR EQUIVALENT) TO COMPRESS RUBBER MOUNTS



**ISOLATOR MOUNT SEATED
REMOVE - "DUMMY" BOLTS**

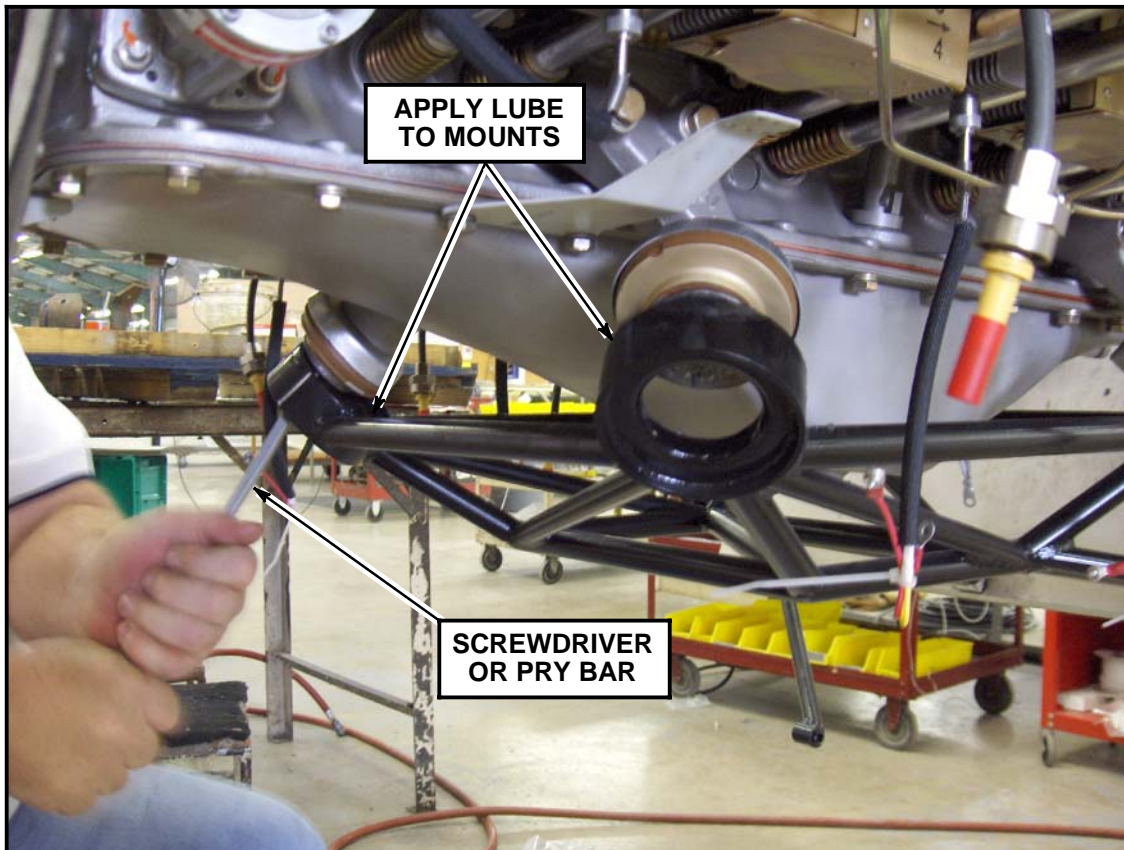


Figure SB M20-316-2 - INSTALL ENGINE ISOLATOR MOUNTS AND HARDWARE



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

SEND TO:
Mooney Aviation Company
165 Al Mooney Road North
Kerrville, TX 78028
FAX 830-257-4635 OR email support@mooney.com

Figure SB M20-316-3 - Compliance Card