SUBJECT: M20TN ENGINE ISOLATOR MOUNT INSPECTION

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

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 cowl.
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.


**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**

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

**DATA:**

**PARTS LIST:** - Not Applicable
MOONEY AVIATION COMPANY, INC.

SERVICE BULLETIN

THIS BULLETIN IS FAA APPROVED FOR ENGINEERING DESIGN

SERVICE BULLETIN M20-316
Date: November 15, 2012

AIRCRAFT
RIGHT HAND SIDE

AIRCRAFT
LEFT HAND SIDE

ENG

M20TN

S/N 31-0001 THRU 31-0023 AND 31-0025 THRU 31-0137

GENERAL NOTES:
1. TORQUE RANGE OF NAS6807-(XX) BOLT TO BE 450-500 IN.-LB.
2. INSTALLATION OF SHIELDS:
INDEX DRAIN HOLES AT LOWEST POINT OF INSTALLATION & INDEX FOUR CUTOUTS PARALLEL TO FOUR SIDES OF ENGINE MOUNT.
3. J-2218-61 WASHER MAY BE USED AS ALT FOR 600364-7 WASHER. 600364-7 WASHER MAY BE USED AS ALT FOR J-2218-61 WASHER.
4. INSTALLATION OF SHIELDS:
INDEX DRAIN HOLES AT LOWEST POINT OF INSTALLATION & INDEX CUTOUTS UP AND TOWARD INSIDE OF ENGINE MOUNT.

Figure SB M20-316-1 - ENGINE MOUNT AND HARDWARE INSTALLATION
TIGHTEN "DUMMY" BOLTS (NAS6607-15 OR EQUIVALENT) TO COMPRESS RUBBER MOUNTS

APPLY LUBE TO MOUNTS

SCREWDRIVER OR PRY BAR

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