

SUBJECT: Mooney Aircraft Corporation, M20R Models with Air Conditioning System Installed, to provide retrofit instructions to reduce the Carbon Monoxide (CO) within the cabin area of the aircraft during operation of the Air Conditioning System.

MODELS/S/N AFFECTED: M20R, S/N's: 29-0033, 29-0062, 29-0088, 29-0090, 29-0092, 29-0096, 29-0098, 29-0109, 29-0117, 29-0119, 29-0130, 29-0132, 29-0133, 29-0134, 29-0139, 29-0142, 29-0143, 29-0144, 29-0149, 29-0154, 29-0155, 29-0156, 29-0159, 29-0161, 29-0162, 29-0164, 29-0171, 29-0180 & any other S/N's which have MAC Air Conditioning System installed but not specified above.

TIME OF COMPLIANCE: Prior to next flight when Air Conditioning System is to be utilized.

INTRODUCTION: It was found that the M20R model aircraft with the factory Air Conditioning System installed and operating during ground, takeoff and climb operations may produce Carbon Monoxide (CO) levels that were in excess of F. A. R. allowables. Special Letter 98-3 & 3A were issued to advise the field of the situation and provide a placard to restrict operation. Special Letter 98-3B provided retrofit instructions and kit that would allow full use of the Air Conditioning System during all aircraft operations. This Service Bulletin is prepared (basically a duplicate of SL 98-3B) at FAA request to support a proposed Airworthiness Directive (AD). If retrofit has been accomplished in accordance with SL98-3B the intent of the AD has been accomplished.

The retrofit is a two-fold procedure:

- 1) the condenser fan & motor are replaced to reverse the air flow in the tailcone.
- 2) to provide more positive sealing of bulkheads and skins between the tailcone and the cabin to reduce the pressure differential.

INSTRUCTIONS:

1.0 CONDENSER FAN & MOTOR REPLACEMENT

NOTE

IT IS UNNECESSARY TO LOOSEN OR REMOVE ANY AIR CONDITIONING SYSTEM HOSES OR FITTINGS TO ACCOMPLISH THIS RETROFIT.

- 1.1. Access to the condenser unit is obtained through the right hand & left hand side tailcone access doors.
- 1.2. Remove Air Conditioning System air duct by removing two bolts & washers from each side of the bottom and top of duct assembly. Remove air duct from tailcone. Maneuver the duct to clear hoses, batteries and avionics components. NOTE: Batteries may be removed if desired to provide more room in work area.
- 1.3. Remove all ty-raps from airconditioning system hoses and electrical wiring so hoses are free when condenser is being rotated in step 1.6 below. Observe location of ty-raps for final security.
- 1.4. Master Switch -OFF, Air Cond. circuit breaker - PULLED. Disconnect electrical connection from condenser fan motor from right hand side access door.
- 1.5. Loosen and remove condenser mounting hardware (seven) bolts & washers from bottom of condenser mounting shelf. Easy access to mounting hardware is provided through tailcone right hand access door.
- 1.6. Carefully rotate condenser unit so access to the fan motor assembly is provided.

CAUTION

DO NOT BEND OR CRIMP ANY TUBING OR FITTINGS ON AIR CONDITIONING HOSES.

- 1.7. Remove right hand side hardware from existing fan motor assembly mounting bracket which attaches motor/bracket to condenser assembly through right side access door. Remove mounting bracket hardware from left side through left side access door. Retain all hardware to re-install new fan motor assembly.
- 1.8. Remove fan motor assembly from tailcone, condenser area and move to work bench for steps 9 through 13.
- 1.9. Remove the self-locking nut and washer from motor shaft of existing fan motor assembly by holding fan and loosening nut. Retain this nut and washer for use on replacing fan motor assembly.
- 1.10. Remove motor mounting bracket from existing fan motor assembly. Install this mounting bracket on new fan motor matching mounting holes.

NOTE

Remove existing data plate (self adhesive type), P/N 1134650-2, from fan motor attachment bracket. Replace with new data plate, 1134650-4, included in retrofit kit. This re-identifies the condenser assembly part number to show that the new fan motor assembly has been installed as part of the Enviro System condenser assembly unit.

- 1.11. Install new fan on new fan motor shaft. Apply Loctite to set-screw threads. Use a 1/8 inch Allen wrench to tighten set-screw (through hole in fan flange) against flat on fan motor shaft.
- 1.12. Install washer and self-locking nut on to new fan motor shaft. Tighten self-locking nut against fan flange until snug. NOTE: Fan may require repositioning on motor shaft after self-locking nut and washer are tightened against fan assembly.

CAUTION

BENCH TEST FAN ROTATION (BY HAND) AFTER SELF-LOCKING NUT AND WASHER ARE TIGHTENED ON MOTOR SHAFT. THERE SHOULD BE NO FAN -- MOTOR HOUSING INTERFERENCE WHEN FAN IS ROTATED BY HAND ON BENCH.

- 1.13. Cut electrical wiring from old fan motor assembly approximately 6-8 inches away from plug. Splice old plug wires to new motor wires using aerospace style splices and application tool available at the shop performing the retrofit. Use standard, aircraft, electrical procedures to assure proper connections and safe operation. Wiring colors on new fan motor assembly should be same as old fan motor wiring colors.
- 1.14. When new fan motor assembly has been determined ready for proper operation, re-install, using original hardware for mounting fan motor bracket to condenser assembly. Access from both sides may be required as when removed.
- 1.15. When fan motor is secure, re-position condenser unit to its proper location and re-install the seven sets of hardware to secure it to mounting shelf.
- 1.16. Connect fan motor assembly electrical connection plug to airframe plug. Re-install aircraft batteries if removed earlier. Verify fan motor operates by turning Air Conditioning System switch ON in cockpit. Turn switch OFF after verification of operation.
- 1.17. Secure all airconditioning system hoses, tubes and electrical wiring with ty-raps.
- 1.18. Re-position and install airconditioning system duct (now an exhaust duct) with four bolts & washers. Verify condenser air is being exhausted through duct by turning Air Conditioning System switch ON and observing air flow.

INSTRUCTIONS (con't.)

**2.0 BAGGAGE COMPARTMENT BULKHEAD/SKIN SEALING BETWEEN TAILCONE AND CABIN
(REFERENCE FIGURE SB M20-269-1 FOR SEALING RECOMMENDATIONS)**

- 2.1. Gain access through the left hand tailcone access door for baggage compartment bulkhead sealing. Use 3M, #425, Aluminum tape (4" wide) to seal all holes, corners, edges and wiring and hose pass through areas on baggage compartment bulkhead. Seal the left, outside corner of the hat rack bottom shelf while at this left hand access door.
- 2.2. Gain access through the right hand tailcone access door for hat rack bulkhead and the right, outside corner of the hat rack bottom shelf. Apply #425 Aluminum tape over all holes, corners, edges, of rear hat rack bulkhead and over wiring and hose/tube pass through areas on bottom of hat rack.

NOTE:

The sealing of all holes between tailcone and cabin is recommended, but all areas may not be able to be sealed effectively without removing interior paneling. If it is desired, at owners expense, the removal of the rear & side baggage compartment interior panels can be done to seal the baggage compartment bulkhead and side skin floorboard inside the cabin area as well.

- 2.3. Verify all applicable components are correctly positioned and installed inside tailcone and re-install tailcone access doors.
- 2.4. If installed per SL98-3 or SL98-3A, remove either the placard, P/N 150080-4137 placed on Air Conditioning System switch on Instrument Panel, or the ty-rap from the Air Conditioning System Circuit Breaker and push C/B in for normal operation.
- 2.5. Complete Logbook entry and return aircraft to service.

WARRANTY: Mooney Aircraft Corporation will allow 1.5 hours to remove and replace the condenser fan motor assembly and an additional 1.0 hour to seal baggage compartment bulkhead and hat rack edges and bulkhead on aircraft S/N's listed on page 1 of this SB. Credit will be issued subsequent to receipt of the removed condenser fan motor assembly and warranty paper work by MAC ServiceParts Department.

REFERENCE DATA: Special Letter 98-3, -3A, & 3B

PARTS LIST: Retrofit Kit P/N -- SB M20-269-1

1.	.	.	1250185-1	.	.	.	MOTOR, CONDENSER, FAN (ENVIRO-SYST.)	1
2.	.	.	1134170-3	.	.	.	FAN, CONDENSER (ENVIRO-SYST.)	1
3.	.	.	1134650-4	.	.	.	PLATE, IDENTIFICATION (ENVIRO-SYST.)	1
4.	.	.	#425	.	.	.	ALUMINUM TAPE (3M)	25 FT

**FIGURES/
TABLES:** SEE FIGURE SB M20-269-1 ON FOLLOWING PAGE

FIGURE SB M20-269 -1 - RECOMMENDED ALUMINUM TAPE SEALING LOCATIONS

