

MOONEY AIRCRAFT CORPORATION  
LOUIS SCHREINER FIELD  
KERRVILLE, TEXAS 78028

FAA APPROVED

AIRPLANE FLIGHT MANUAL SUPPLEMENT

FOR

MOONEY AIRCRAFT MODELS  
M20J, M20K, M20M, M20R, M20S

WITH  
STAND-BY VACUUM PUMP SYSTEM

(ELECTRIC MOTOR DRIVEN VACUUM PUMP)

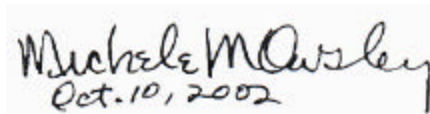
MODEL NO. \_\_\_\_\_

REG. NO. \_\_\_\_\_

SERIAL NO. \_\_\_\_\_

This Supplement must be attached to the applicable FAA Approved Pilot's Operating Handbook and Airplane Flight Manual (POH/AFM) when the Stand-by Vacuum Pump System is installed in accordance with Mooney Drawing number 860060 (M20J/M20K), 860063 (M20M, [None Installed under this Drawing]/ M20R [29-0090 thru 29-TBA]/M20S) [30-0001 thru 30-TBA], 940155 (Retrofit) (M20M [27-0001 thru 27-TBA]/M20R [29-0001 thru 29-0089]). The information contained herein supplements or supersedes the basic manual only in those areas listed. For limitation, procedures and performance information not contained in this supplement, consult the basic Airplane Flight Manual.

FAA APPROVED:



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## LOG OF REVISIONS

Rev. No.	Revised Pages	Description of Revision	FAA Approved	Date
G	Title Page, Page 1	Revised Effectivities and Drawing Numbers for M20M & M20R		10-10-02

The revised portions of affected pages are indicated by vertical black lines in the margin.

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## SECTION I - GENERAL

The standby dry air vacuum pump installation is designed to provide an alternate vacuum source for the attitude gyro and directional gyro instruments in the event of a malfunction in the primary engine driven vacuum pump system. The standby vacuum pump is driven by a DC electric motor, and the combination pump/motor assembly is mounted on the radio racks behind the aft cabin bulkhead in the tailcone. The standby pump can be operated at any time by activating a circuit breaker/rocker switch labeled STBY VAC ON mounted on the lower instrument subpanel in front of the pilot.\* A separate panel mounted amber annunciator labeled STBY VAC ON and a vacuum gauge are provided for monitoring proper operation of the standby system. The vacuum gauge will indicate vacuum, in inches of mercury, for both the engine driven pump when operating normally and for the standby vacuum pump system.

\*M20J- S/N 24-0001 thru 24-3153 only

M20K- S/N 25-0001 thru 25-1224 only (excludes S/N 25-1196)

## SECTION II - LIMITATIONS

This supplement advises that use of the standby vacuum pump system may impose a limit on the installed equipment in operation.

### NOTE

**Weather radar will be inoperative with only the standby vacuum pump system in operation.**

1. The maximum allowable continuous current drain for all optional electrical equipment in alternator equipped aircraft is 39.0 amperes, day flight, and 32.0 amperes, night flight (14V); 46.0 amps day and 36.0 amps night (28V).

### CAUTION

**If operation of optional electrical equipment exceeds these ratings, this equipment must be selected OFF to prevent exceeding the maximum allowed alternator load.**

2. The standby vacuum motor will require 15 amps at Sea Level and 11 amps at 15,000 ft. (14V); 8 amps - S/L and 6 amps - 15,000 ft. (28V). This amperage reduction is basically linear as altitude increases.

### \*\* CAUTION

**When standby vacuum pump system is activated, the ammeter should be monitored for a current discharge indication. If a discharge is observed turn off any non-essential electrical equipment until a discharge indication no longer exists on the ammeter.**

\*\* S/Ns M20J - 24-0001 thru 24-2999, 24-3154 thru 24-TBA

S/Ns M20K - 25-0001 thru 25-0999, 25-1225 thru 25-TBA (includes S/N 25-1196)

### 3. PLACARDS REQUIRED

**CAUTION - When STBY VAC is ON - LOW VAC light inop.**

Located adjacent to annunciator panel.

## SECTION III - EMERGENCY PROCEDURES

Any time that the RED LOW VAC annunciator flashes, indicating the engine driven vacuum pump is providing insufficient vacuum for the gyro instruments, the standby vacuum pump system should be operated in the following manner:

1. STBY VAC switch - ON.
2. Flashing LOW VAC annunciator - Verify EXTINGUISHED.

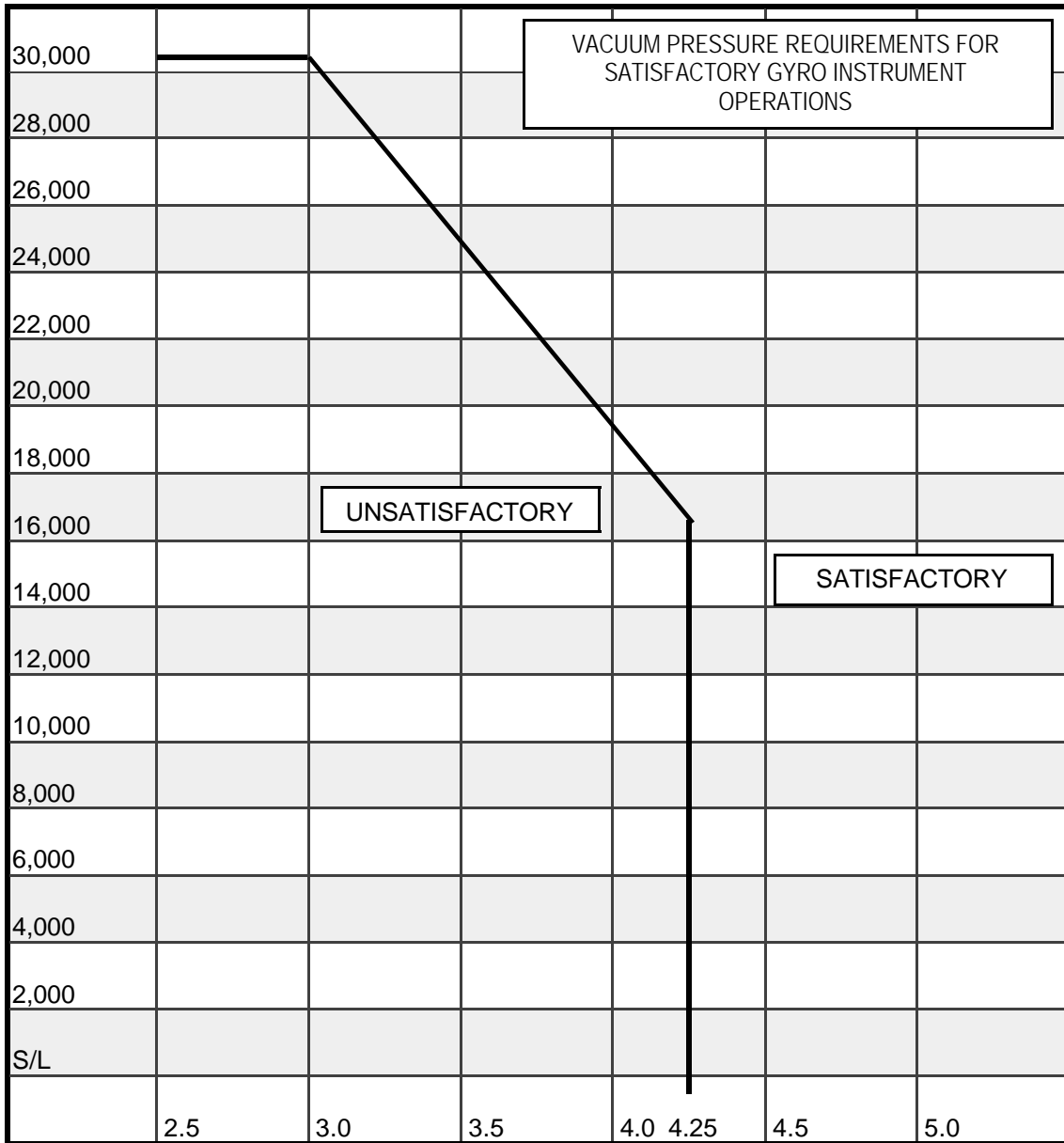
SECTION III - EMERGENCY PROCEDURES (cont.)

3. STBY VAC ON annunciator - ILLUMINATED.
4. All non-essential electrical equipment - OFF.
5. Vacuum Gauge - Monitor for proper standby vacuum pump operation.

**NOTE**

Minimum vacuum required for satisfactory gyro instrument operation is a function of aircraft pressure altitude. Use the graph below (page 4) to verify adequate standby vacuum pump output for the particular operating altitude.

6. Continue flight and upon landing inspect engine driven vacuum pump system for cause of malfunction.



**SECTION IV - NORMAL PROCEDURES**

Before Starting Check

The following pre-engine start check should be performed on the standby vacuum system before each flight where use of standby system may be desired.

1. Master Switch - ON
2. LOW VAC Annunciator light - FLASHING
3. STBY VAC Switch - ON
4. Flashing LOW VAC Annunciator light - EXTINGUISHED
5. STBY VAC ON Annunciator light - ILLUMINATED
6. Vacuum Gauge - Monitor for proper standby vacuum pump operation
7. STBY VAC Switch - OFF
8. Continue with remainder of Before Starting Checklist.

**SECTION V**

No Change.

**SECTION VI - WEIGHT AND BALANCE**

Refer to revised empty weight and center of gravity data for effect on loading instructions.

**SECTION VII - SYSTEMS DESCRIPTION**

Standby Vacuum Pump System

The standby vacuum system consist of an electric motor driven dry air vacuum pump mounted in the radio racks behind the aft cabin bulkhead. System plumbing for this pump is routed along the left-hand side of the aircraft to a manifold /check valve/regulator assembly mounted on the cabin side of the firewall. The manifold/check valve/regulator assembly provides both isolation and interconnect functions between the main engine driven and the standby electrically driven vacuum pumps. A circuit breaker/rocker switch labeled STBY VAC is provided for activation of the standby pump. When activated, operation of the standby vacuum pump is verified by the illumination of annunciator light labeled STBY VAC ON. Standby pump output is monitored by a panel mounted vacuum gauge.

Operationally, a malfunction in the normal engine driven vacuum pump system is noted by the flashing RED LOW VAC annunciator light located in the center annunciator panel. This annunciator light will flash whenever engine driven vacuum drops below 4.25 +/- .2 inches of mercury. Activating the circuit breaker/rocker switch labeled STBY VAC to the ON position will supply electrical power to the electric motor driving the Standby Vacuum Pump and electrically extinguish the RED flashing LOW VAC annunciator light.

Verification of proper standby vacuum system operation is determined by the illumination of the AMBER STBY VAC ON annunciator and monitoring the panel mounted vacuum gauge for adequate standby vacuum pump output.

The standby vacuum pump system can be used whenever a malfunction is suspected in the primary engine driven vacuum pump system. Should a short occur in the standby electrical system, the combination switch/circuit breaker will automatically trip to the OFF position.

SECTIONS VIII thru X

No Change.