

SUBJECT: LANDING GEAR SAFETY SWITCH OVERRIDE

MODELS AFFECTED: M20C 700055 thru 20-1233
 M20E 700035 thru 21-1180
 M20F 700038 thru 22-1441
 M20J 24-0001 thru 24-0237

TIME OF COMPLIANCE: At owner's discretion.

INTRODUCTION: There have been reports of being unable to retract the landing gear during cold temperature operation of the aircraft. This has been traced to the inability of the landing gear shock biscuits to return fully to size and actuate the landing gear safety (squat) switch. This problem can be alleviated by the installation of a panel mounted by-pass switch.

- INSTRUCTIONS:**
- (1) Place aircraft on jacks.
 - (2) Remove lower left upholstery panel to allow access to left wing wire harness plug. (Left front seat may be removed to facilitate access).
 - (3) Install by-pass switch assembly in panel per Figures II thru V. Connect ground wire #21WE36B22 to airframe ground. (Select figure applicable to your serial number aircraft.) Route and secure wires SB-M20-196-3, SB-M20-196-4, and SB-M20-196-5 with existing wire bundle forward to firewall and down to left wing plug.
 - (4) Locate wire ① (see Table I for wire, plug, and pin numbers for your aircraft). Cut 6 to 12 inches from plug and splice in wire SB-M20-196-3 using window splice supplied. (See Figure I).
 - (5) Locate wire ② (see Table II for wire, plug, and pin numbers for your aircraft). Splice in wire SB-M20-196-4 as in step (4). (See Figure 1).
 - (6) Locate wire ③ (see Table III for wire, plug and pin numbers for your aircraft). Splice in wire SB-M20-196-5 as in step (4). (See Figure 1).
 - (7) Conduct gear retraction check.
 - a. Normal gear retraction should not be affected by by-pass switch.
 - b. Loosen squat switch adjustment so that switch will not activate. In this condition, when gear switch is moved to the "Up" position, both gear lights and the by-pass switch should illuminate and the gear horn should sound but the gear will not retract. Pressing the by-pass switch should cause gear to retract. Hold in switch until gear reaches up limit (approx. 5-7 seconds). At this point release switch and pull "Gear Control" circuit breaker. This shuts off horn. Gear lights should now be normal and horn should operate when throttle is retarded. Extend gear by placing switch in "Down" position and resetting "Gear Control" circuit breaker. Readjust squat switch for proper operation per Mooney Service Manual.
 - (8) Add supplement to "Emergency" section of Owner's Manual, fill out and return enclosed Compliance Card. Make appropriate Log Book entry.

S.B. M20-196A-1 Kit:

M20C, 700055 thru 20-1185	800331-601 By-Pass Assembly	1 ea.
M20E, 700053 thru 21-1180	150080-349 Placard	1 ea.
M20F, 700038 thru 22-1243, 22-1247 thru 22-1305	32446 Window Splice	3 ea.
M20J, 24-0001 thru 24-0237	Owner's Manual Supplement	1 ea.

S.B. M20-196A-2 Kit:

M20C, 20-1186 thru 20-1233	800331-602 By-Pass Assembly	1 ea.
M20F, 22-1246, 22-1306 thru 22-1441	150080-349 Placard	1 ea.
	32446 Window Splice	3 ea.
	Owner's Manual Supplement	1 ea.

M20C - S/N 20-0010, 20-0042 thru 20-1185	}	Aircraft manufactured with one relay gear system.
M20E - S/N 21-0038, 21-0051 thru 21-1180		
M20F - S/N 22-0069 thru 22-1305, except 22-1192		

For those aircraft with a single relay system that have not been modified as per Service Instructions M20-34A or M20-34B, the following change needs to be followed:

Wire No. (SB-M20-196-5) and wire no. (SB-M20-196-3) are to be installed together at wire no. ①

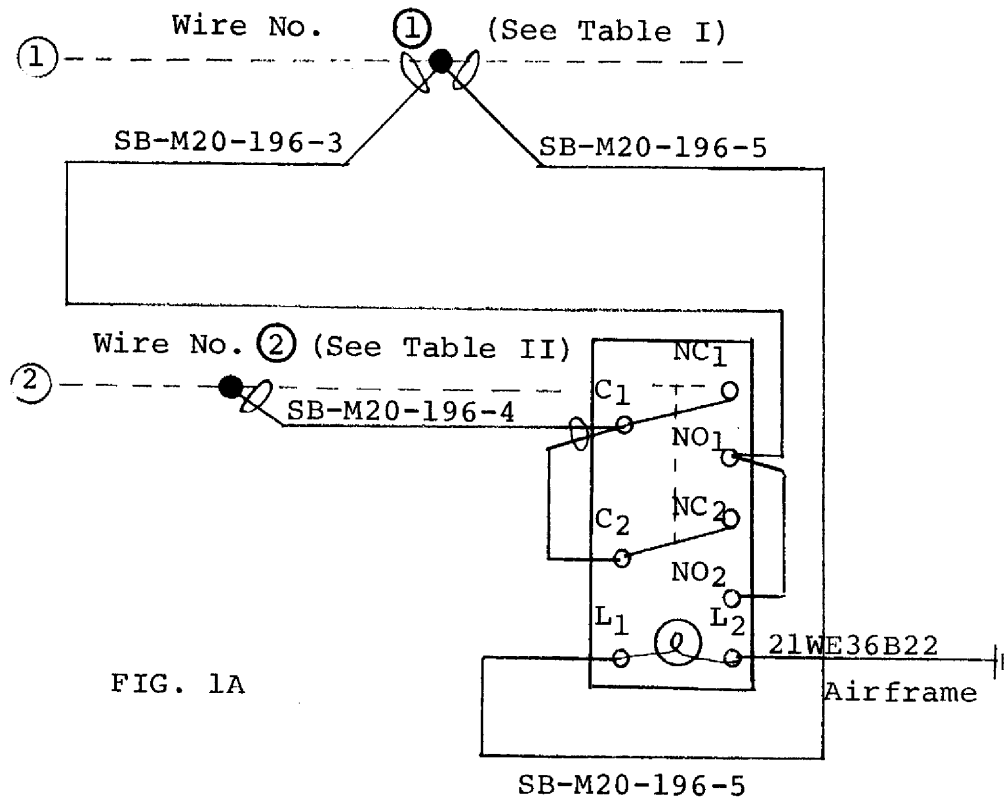


FIG. 1A

TABLE I

Wire No. 1	Pin No.	Plug No.		
20EG15C18	T	20PB08B	C	700055-20-0041
			E	700053-21-0050
			F	700038-22-0068
20EG45A16	T	20PB08B	C	20-0042-20-1146
			E	21-0051-21-1160
			F	22-0069-22-1178
21EG27A16	7	21PL04A	C	20-1147-20-1185
			E	21-1161-21-1180
			F	22-1179-22-1305
21EG10B16	H	21RC04B	C	20-1186 & on
			F	22-1306 & on
			J	24-0001 & on

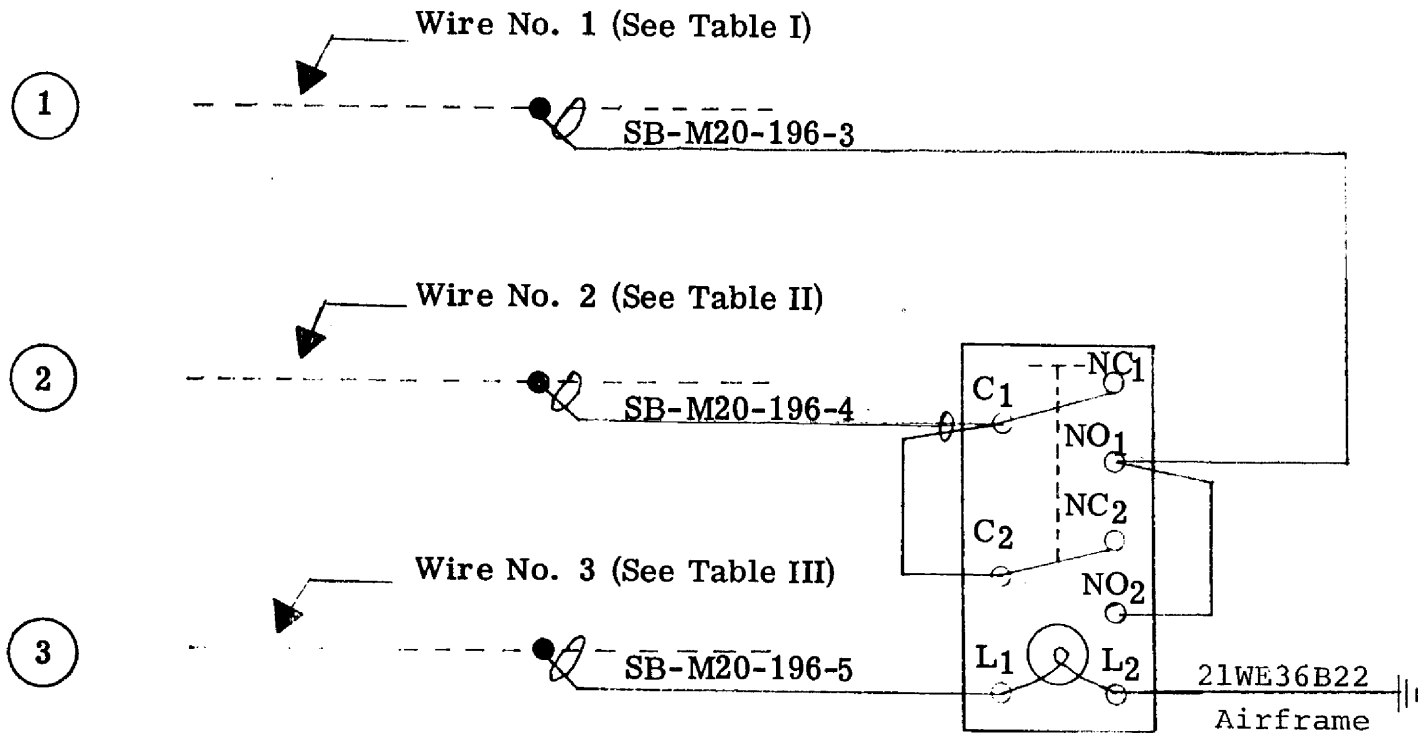
TABLE II

Wire No. 2	Pin No.	Plug No.		
20EG14B18	S	20PB08B	C	700055-20-0041
			E	700053-21-0050
			F	700038-22-0068
20EG38A16	S	20PB08B	C	20-0042-20-1146
			E	21-0051-21-1160
			F	22-0069-22-1178
21EG20A16	8	21PL04A	C	20-1147-20-1185
			E	21-1161-21-1180
			F	22-1179-22-1305
21EG07B16	K	21RC04B	C	20-1186 & on
			F	22-1306 & on
			J	24-0001 & on

TABLE III

Wire No. 3	Pin No.	Plug No.		
20WM19C18	U	20PB08B	C	700055-20-0041
			E	700053-21-0050
			F	700038-22-0068
20WM19C18	U	20PB08B	C	20-0042-20-1146
			E	21-0051-21-1160
			F	22-0069-22-1178
21WE30A20	6	21PL04A	C	20-1147-20-1185
			E	21-1161-21-1180
			F	22-1179-22-1305
21WE30B20	J	21RC04B	C	20-1186 & on
			F	22-1306 & on
			J	24-0001 & on

FIGURE I



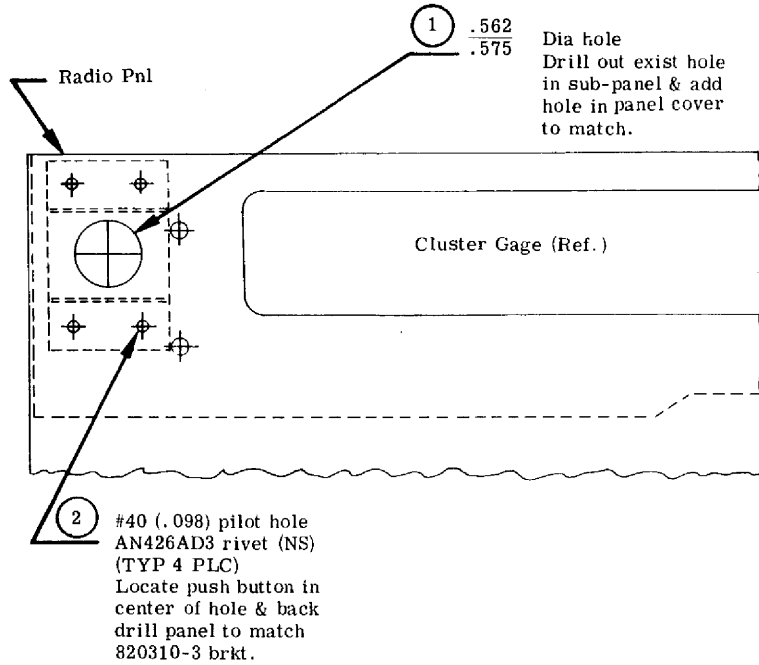


FIGURE II

M20C - 700055 thru 20-1146
M20E - 700053 thru 21-1160
M20F - 700038 thru 22-1178

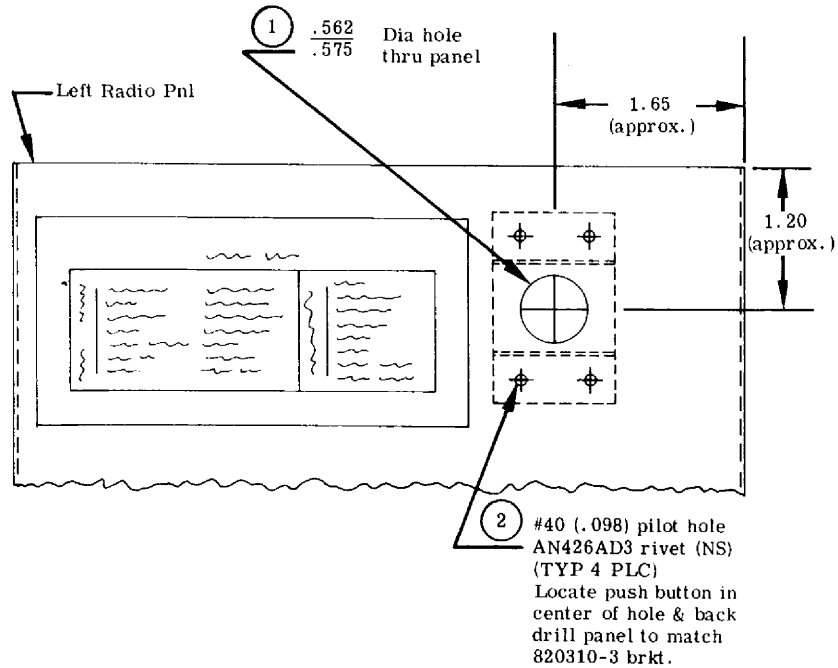


FIGURE III

M20C - 20-1147 thru 20-1185
M20E - 21-1161 thru 21-1180
M20F - 22-1179 thru 22-1305 (except 22-1246)

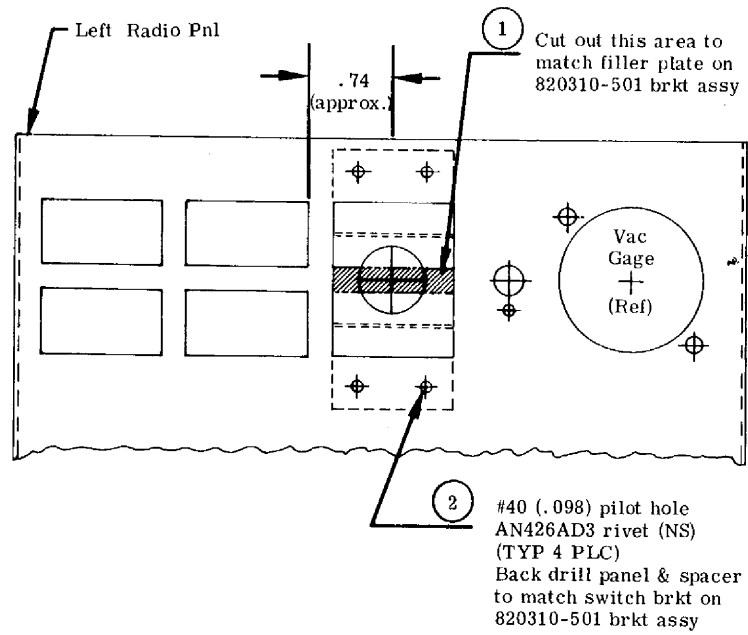


FIGURE IV

M20C - 20-1186 thru 20-1233
M20F - 22-1246, 22-1306 thru 22-1441

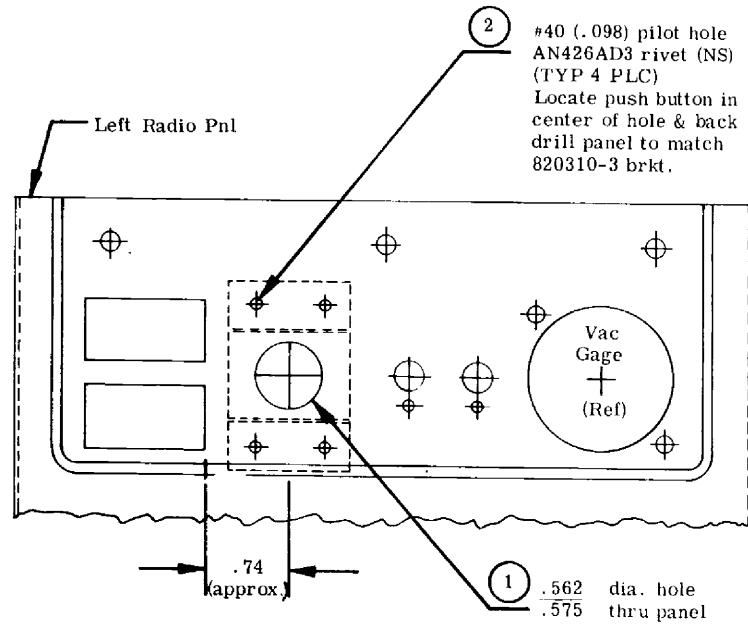


FIGURE V

M20J - 24-0001 thru 24-0237

MOONEY AIRCRAFT CORPORATION
PILOT'S OPERATING HANDBOOK AND FAA APPROVED
AIRPLANE FLIGHT MANUAL SUPPLEMENT
FOR THE
LANDING GEAR RETRACTION OVERRIDE SYSTEM

GENERAL

This document is to be attached to the Pilot's Operating Handbook (M20J Models prior to S/N 24-0238) or to the Operator's Manual (M20C, E and F Models) when the airplane has been modified in accordance with Mooney Service Bulletin SB-20-186.

When the airplane has been modified in accordance with the Service Bulletin the landing gear safety system override allows the pilot to electrically retract the landing gear should a malfunction occur at the squat switch.

LIMITATIONS

No change.

EMERGENCY PROCEDURES

In the event that the gear fails to retract when the landing gear control switch is placed in the "UP" position due to the failure of the squat switch to activate after take off, the following procedure should be used as an alternate means to allow retraction:

- (1) If the squat switch fails to actuate, as evidenced by illumination of the "GR SAFETY BY PASS" switch, both gear annunciator lights, and the activation of the gear warning horn, depress "GR SAFETY BY PASS" switch and hold until gear is fully retracted. This is evidenced by both the "in transit and gear down" annunciator lights not being illuminated.
- (2) Pull "GEAR CONT." circuit breaker to shut off gear horn. (Note: This does not affect normal operation of the horn, but must be reset prior to normal extension of the landing gear).

FAA APPROVED
Date: 3-29-77

Page 1 of 2

MOONEY AIRCRAFT CORPORATION

- (3) To extend gear, reset the "GEAR CONT." circuit breaker and then place the gear control switch in the "DOWN" position.
- (4) Check "SQUAT" safety switch to determine nature of malfunction as soon as practical.

NORMAL PROCEDURES

No change.

PERFORMANCE

No change.

FAA APPROVED

for

D. S. Castle

Don P. Watson, Chief
Engineering & Mfg. Branch
Federal Aviation Administration
Southwest Region, Fort Worth, TX

Date

3-29-77

Page 2 of 2

Airplane Flight Manual Supplement Models M20C, E, F, J