



(This Service Bulletin is FAA D.O. Authorization SW-1 Approved)

SUBJECT: RETROFIT OF NEW RETRACTING LINKS AND RESULTING
LANDING GEAR RIGGING CHANGE

MODELS AFFECTED: M20B - all aircraft
M20C - S/N 1852, 1940 thru 670124
M20D - all aircraft that have been converted to
retractable gear.
M20E - S/N 101 thru 670020
M20F - S/N 660001 thru 670362

TIME OF COMPLIANCE: At Owner's Discretion

INTRODUCTION: A reduction in the force required to place the manual gear retraction lever in the gear down and locked position can be realized by replacing the main gear and nose gear retracting links with new links that allow more overcenter travel of the retracting link and truss assemblies. As a result of the increased overcenter travel, the preload on the retracting link and truss assemblies can be reduced and therefore the pilot effort required to lock the gear down will be reduced.

SPARE PARTS REPLACEMENT:

Effective on the date of this Service Bulletin all main gear and nose gear retracting links sent out from Spare Parts to be used on the aircrafts listed above will be of the new design. A placard that indicates the new gear rigging data associated with the new links will be attached to each link. It will be the responsibility of the owner to insure that the proper gear rigging values, as called out on the placards, are obtained when installing the new links. Caution must be taken to insure that the lower gear rigging value be used only on aircraft that have the new links installed and that these links have the required placard with the lower rigging data specified. The new links must be installed in both main gears at the same time.

The new links will also be used for spare parts replacement on all existing and future electric gear aircraft covered by this Service Bulletin. On electric gear aircraft the main gear rigging values are the same as the new values used for manual gear aircraft while the rigging of the nose gear is the same as in the past. (.060 inch deflection of the nose gear retraction bungees).

INSTRUCTIONS:

Replace Retracting Link - Nose Gear.

1. Place aircraft on jacks.
2. Remove nose gear retracting link (P/N 530003-5, -7, or -9) by removing bolts at each end of link. On aircraft M20B, S/N 1701-1800 replace retracting truss P/N 5062 basic with 540002-20.
3. Install new nose gear retracting link (P/N 530003-11 or -13) and secure bolts.

Replace Retracting Link - Main Gear.

NOTE: The following steps for removal and replacement of the main gear retracting links apply to the following serial number aircraft only:

M20C-2742, 2807 -3466, 670001 & on
 M20D-252 & on
 M20E-400, 470-1308, 670001 & on
 M20F-660001 & on

On all M20 series aircraft covered by this Service Bulletin (prior to the above S/N's) the main gear must be removed from the wing before the main gear retracting link can be removed and replaced. Refer to the section on removal of landing gear in applicable Service & Maintenance Manual.

1. Disconnect main gear doors.

NOTE: Steps 2 thru 10 apply to both right and left main gear and should be performed one gear at a time.

2. Remove bolt attaching link to retracting truss and replace 5256-1 & -2 with 520006-1 & -2 on aircraft S/N 1701-1800.
3. Remove nut from bolt attaching link to gear.
4. Remove four bolts from rear attachment bracket and slide gear and bracket outboard and upward into outboard corner of wheel well.
5. With rear attach point of gear held in corner of wheel well retract gear about 15° or until bolt attaching retracting link to gear can be removed.
6. Remove bolt and retracting link (P/N 510011-7).
7. While gear is held in same position install new retracting link (P/N 510011-11 or -13) by inserting bolt through gear leg and link.
8. Slide rear attach point of gear and rear attach bracket back into place and install the four attaching bolts.
9. Install bolt attaching retracting link to retracting truss.

Replace Retracting Link - Main Gear.

10. Secure all hardware.

NOTE: Steps 4 through 8 will require two people to perform, one to hold gear in proper position and one to remove and install bolt through gear and link. Caution must be taken to keep forward attach point of gear from slipping out of its bearing while rear attach point is disconnected. If forward attach point does slip out then the retracting spring must be removed before the gear can be reinstalled. (Refer to Service & Maintenance Manual).

Check Gear Rigging.

1. Check rigging of preload on retracting link and truss assemblies for both main gears and nose gear. Readings to be taken on 10 inch nominal length torque wrench using rigging tools 010008 (8444) for main gear and 010011 (8442) for nose gear. Refer to Service & Maintenance Manual for proper use of rigging tools. Preload, as indicated on torque wrench, must be within following range:

Main Gear - 250 to 280 in.-lb.

Nose Gear - 100 to 130 in.-lb.

2. If preload does not fall into above range remove access panels under aircraft and adjust rod ends on main gear and nose gear retracting tubes to obtain proper preload. Refer to Service & Maintenance Manual for procedure.

NOTE: If gear is rigged to lower end of rigging range force required at retraction lever to lock gear down will be a minimum.

3. After gear has been rigged properly retract and extend the gear several times and check for any binding or extremely high operating forces.
4. Place gear in down and locked position and check preload on all gears. If rigging is correct secure all attaching hardware and install access panels under aircraft.
5. Reconnect main gear doors and check for proper rigging. Refer to Service & Maintenance Manual.
6. Install MS150002-1 grease fitting at each end of the new links, if applicable. (530003-13 nose gear link and 510011-13 main gear link have provisions for grease fittings, 530003-11 and 510011-11 links do not).
7. Lubricate grease fittings on retracting links, if installed, using MIL-G-7711 lubricant (general purpose aircraft grease).

Check Gear Rigging.

8. Place gear in down and locked position and remove aircraft from jacks.
9. Aircraft is ready for return to service.

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- ITEMS TO BE REMOVED:
1. 530003-5, -7, or -9 Retracting link, nose gear (one) and 5062 Retracting truss aircraft S/N 1701-1800.
 2. 510011-5 or -7 Retracting link, main gear (two) and 5256-1 & -2 Retracting truss aircraft S/N 1701-1800.

- ITEMS TO BE INSTALLED:
1. 530003-11 or -13 Retracting link, nose gear (one) and 540002-20 aircraft S/N 1701-1800.
 2. 510011-11 or -13 Retracting link, main gear (two), 520006-1 & -2 aircraft S/N 1701-1800, 914008 bushing (four), and 913025 bushing (four).

- *3. MS15002-1 Grease fitting (two per link)

*530003-13 and 510011-13 links have provisions for grease fittings.

This Service Bulletin Kit may be purchased from your local Mooney Dealer or Distributor. Direct factory orders will not be accepted.