

**AILERON-RUDDER INTERCONNECT SYSTEM:  
PART I, MODIFYING BUNGEE CLEVIS ENDS  
PART II, RIGGING BUNGEE CABLES AND SPRINGS**

**MODELS AFFECTED:** 23 (Prior to M-471)

**PART I:** On Musketeers (serial M-471 and after), a simple method has been devised to prevent the ball ends of the interconnect cables from becoming dislocated by the slack that occurs in one of the two sets of cables when the airplane is turned. Upon the actuation of bungee cables without this modification, the tension exerted upon the aileron and rudder cables may be altered enough because of the dislocated ball end to result in a wing heavy or cocked rudder condition during flight of the airplane. However, if the clevis fork is crimped, the ball end is locked in place so that it cannot slip free from the hole in the end of the clevis fork. Therefore, to assure proper operation of the control surfaces, the following modification of the bungee clevis ends is recommended for Musketeers prior to serial M-471:

1. Remove the center floorboard and carpet from between the front seats.

**NOTE**

Care must be used to prevent damage to the tab control wheel when the floorboard is removed.

2. Remove the attaching screws from the center floor panel sufficiently for the panel to be lifted to permit access to the aft end of the interconnection springs.
3. Remove the safety wire that ties together each pair of clevis forks at the point where they are attached to each of the interconnection springs.
4. Using a pair of pliers, crimp the open end of each clevis fork sufficiently to prevent the ball end of the cable from slipping free from the hole in the closed end of the clevis fork.

**CAUTION**

Take precautions to avoid damaging the clevis fork by scratching or otherwise marring its surface while crimping the open end with the pliers.

5. Reinstall the safety wire securing each pair of clevis forks together.

6. Reinstall the floor panel, floorboard, and carpeting.

**PART II:** Because of the care with which rigging was accomplished at the factory when the airplane was manufactured, the interconnection system between the rudder and aileron of your Musketeer seldom requires adjustment. If, however, it becomes necessary to disconnect the aileron-rudder interconnection system, it is crucial to both aircraft performance and flight safety that the system be rerigged properly. It is through the action of the interconnection between the aileron and rudder control cables that the high degree of positive control necessary for maneuverability of the Musketeer at low speeds is acquired. The following procedure is recommended to assure proper rigging of the interconnecting aileron and rudder cables: (Reference Model 23 Owner's Manual for additional information).

1. Prior to making any adjustments in the rigging, check the rudder pedals for evidence of binding caused by overtightening of the brake pedal hinge bolts.
2. Check the aileron cable sprocket bearings for indications of binding caused by inadequate lubrication.
3. Check the aileron chain at the control column for correct tension. With the aileron in neutral, the chain should have a total movement (including deflection in either direction) of from 1/2 to 3/4 inch when 4 pounds of force is exerted against the chain.
4. If none of the conditions described in the preceding steps exist to account for malfunctioning of the interconnections system, insert rig pins in the aileron and rudder control.
5. Rig both ailerons to fair with the flap when in the neutral position. The ailerons should never be rigged to the wing tip.
6. While looking forward from the aft end of the empennage, check to ascertain that the rudder is rigged so that the trailing edge is two degrees to the right of center with the rig pin in place.
7. Taking care to avoid moving the tab assembly, loosen the center floorboard forward and aft of the tab handle in order to gain access to the bungee cables and spring of the interconnect system.
8. With the rig pins installed in place, slide the clamps on the bungee cables, which connect the rudder and

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aileron cables, until the bungee spring measures 5 1/2 inches long when measured from spring eye to spring eye. Make sure that all four bungee cables are adjusted for equal tension.

9. Ascertain that the aileron cables are adjusted so that the tension immediately aft of the bungee clamp attach point is  $20 \pm 2$  pounds.

10. Check to make sure that the rudder cables are adjusted to a tension of  $15 \pm 2$  pounds, when measured at a point immediately aft of the bungee clamp attach point.

11. After removing the aileron rig pin, twist the control wheel in the clockwise and counterclockwise directions. When released, the wheel should snap back to the neutral horizontal position. If the control wheel fails to

do this, adjust the bungee cables in increments of 1/16 inch until the wheel snaps into the neutral positions when released from either direction.

12. Reinstall the aileron rig pin and remove the rig pin from the rudder torque shaft, then depress and release the rudder pedals one at a time. If either of the rudder pedals does not spring back to the neutral position upon release, adjust the bungee cable in increments of 1/16 inch until the pedals do so. Remove the aileron rig pin.

13. Test fly the airplane. If either wing is heavy, lift the flap on the light wing by shortening the turnbuckle at the flap root end.

14. Bend the rudder tab until directional stability is obtained. A similar correction can be made to aileron trim by bending the trim tab in the desired direction.

