

**BEECHCRAFT  
DUKE 60 SERIES  
MAINTENANCE MANUAL**

**ELEVATOR AND TAB - MAINTENANCE  
PRACTICES**

**ELEVATOR REMOVAL**

- a. Remove the tail cone and the access plate on the side of the fuselage beneath the RH horizontal stabilizer.
- b. Loosen the elevator trim tab cables.
- c. Disconnect the trim tab cables from the trim tab actuator chain by removing the master link at each end of the chain.
- d. Disconnect the elevator push rods from the elevator torque tube fittings.
- e. Remove the bolt from the inboard end of the elevator torque tube.
- f. Remove the hinge bolts. Disconnect the elevator bonding cables and remove the elevator.

**ELEVATOR INSTALLATION**

- a. Connect the elevator bonding cables. Position the elevator on the stabilizer and install the hinge bolts, washers and nuts. Tighten and safety.
- b. Install the bolt in the inboard end of the elevator torque tubes. Torque the attaching bolts to 50-70 inch pounds.
- c. Attach the elevator push rods to the elevator torque tube fittings. Torque the attaching bolts to 20-25 inch-pounds.
- d. Position the elevator trim tab cables on the ends of the trim tab actuator chain and install the master links.
- e. Adjust the tension on the elevator trim tab cables as noted on the Elevator Rigging Illustration, Figure 201.

**NOTE**

Check the trim tab system for correct movement of the control surface with respect to the movement of the trim tab control. When the elevator tab control is moved toward the NOSE DOWN position, the tab should move UP.

- f. Connect the tail light wires and install the tail cone. Install the access plate on the side of the fuselage beneath the RH horizontal stabilizer.

**ELEVATOR CABLE REMOVAL**  
(Figure 201)

- a. Remove the tail cone and the access plate on the side of the fuselage beneath the RH horizontal stabilizer.
- b. Remove the pilot's and copilot's seat and the floorboards in the pilot's compartment.

- c. Remove the forward passenger seats and the floorboards between main and rear spar.
- d. Remove the access panel in the floorboard aft of the rear spar.
- e. Remove the cable retaining pins from the pulley brackets and the pressure seals from the rear pressure bulkhead.
- f. Disconnect the elevator cables, in the aft fuselage, at the turnbuckles and connect lead lines to the forward cables.
- g. Disconnect the cables at the forward bell crank. Identify both forward cables in relation to their attaching point on the bell crank. Remove the cables.
- h. Disconnect the cables at the aft bell crank. Identify both aft cables in relation to their attaching point on the bell crank arms. Remove the cables.

**ELEVATOR CABLE INSTALLATION**  
(Figure 201)

- a. Route the aft elevator cables forward and connect to the applicable bell crank arms as noted during cable removal.
- b. Route the forward elevator cables aft and connect to the bell crank as noted during cable removal.
- c. Install all cable retaining pins in all pulley brackets.
- d. Using PD680 solvent (15, Chart 207, 91-00-00), clean the cables for the length of travel through the pressure seals. Lubricate to one inch beyond the cleaned area with MIL-G-23827 grease (11, Chart 207, 91-00-00).
- e. Fill the pressure seals with MIL-G-23827 grease (11, Chart 207, 91-00-00). Install the seals.
- f. Connect the cables to the turnbuckles in the aft fuselage and rig the cable system.
- g. Install the aft floorboard access panel, the floorboards between the main and aft spar, and the forward seats.
- h. Install the floorboards in the pilot's compartment, and the pilot's and copilot's seats.
- i. Install the tail cone and the access plate beneath the RH horizontal stabilizer.

**ELEVATOR CONTROL SYSTEM RIGGING**  
(Figure 201)

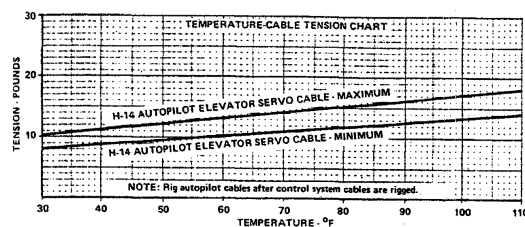
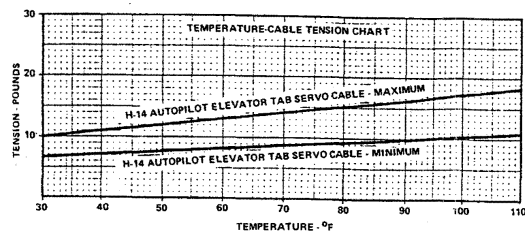
**WARNING**

When replacing or installing control cables, bell cranks and other control system components, observe the color coding on all parts. DO NOT connect coded parts of one color to coded parts of a different color.

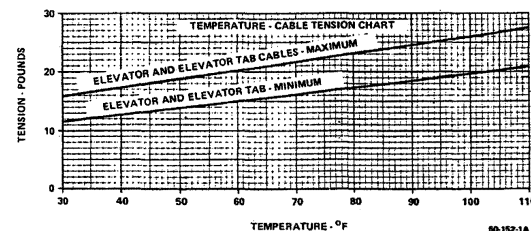
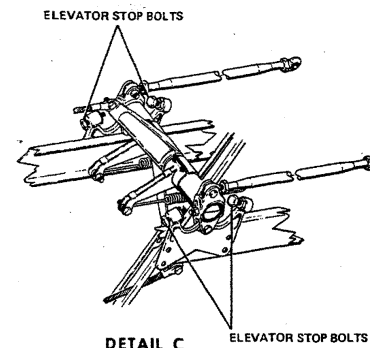
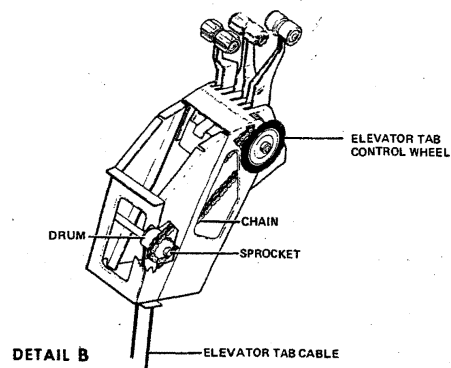
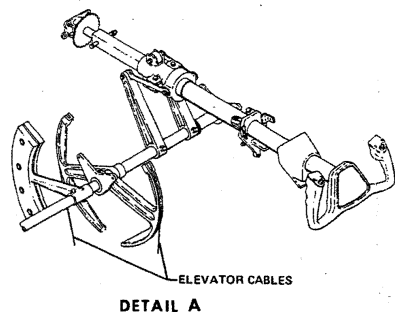
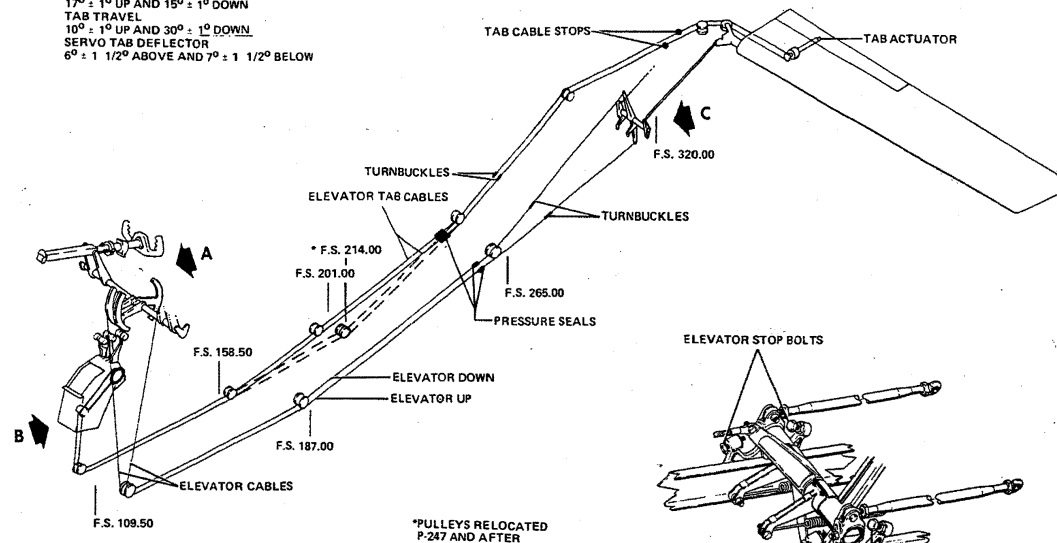
**NOTE**

BEECHCRAFT recommends the use of the elevator travel gage shown in SPECIAL TOOLS in Chapter 12-20-00.

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ELEVATOR TRAVEL  
17° ± 1° UP AND 15° ± 1° DOWN  
TAB TRAVEL  
10° ± 1° UP AND 30° ± 1° DOWN  
SERVO TAB DEFLECTOR  
6° ± 1 1/2° ABOVE AND 7° ± 1 1/2° BELOW



**Rigging the Elevator Control System  
Figure 201**

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**RUDDER AND TAB - MAINTENANCE  
PRACTICES**

**RUDDER REMOVAL**

- a. Remove the tail cone and the access plate on the side of the fuselage beneath the RH horizontal stabilizer.
- b. Detach the tail cone, disconnect the tail navigation light wire, and remove the tail cone.
- c. Disconnect the rudder tab cables at the turnbuckles. Remove the tab cable retainer pins and fairlead.
- d. Remove the four bolts securing the rudder torque tube and tab pulley bracket to the rudder bell crank.
- e. Remove the upper and lower hinge bolts and remove the rudder.

**RUDDER INSTALLATION**

- a. Align the holes in the rudder and stabilizer hinges and install the attaching bolts.
- b. Secure the tab pulley bracket and rudder torque tube to the rudder bell crank with the four attaching bolts. Torque the bolts to 50-70 inch-pounds.
- c. Connect the rudder tab cables at the turnbuckles and install the cable retainer pins and fairlead.
- d. Check the travel of the tab and the rudder tab indicator to ensure that the tab and indicator agree.
- e. Connect the tail light wires and install the tail cone. Reinstall the access plate beneath the RH horizontal stabilizer.

**RUDDER CABLE REMOVAL**

(Figure 201)

- a. Remove the tail cone and the access plate on the side of the fuselage beneath the RH horizontal stabilizer.
- b. Remove the pilot's and copilot's seat and the floorboards in the pilot's compartment.
- c. Remove the forward passenger seats and the floorboards between the main and rear spar.
- d. Remove the access panel in the floorboard aft of the rear spar.
- e. Remove the cable retaining pins from the pulley brackets and the pressure seals from the rear pressure bulkhead.
- f. Disconnect the rudder cables, in the aft fuselage, at the turnbuckles and connect lead lines to the forward cables.
- g. Disconnect the forward cables at the bell crank and remove the cables through the pilot's compartment.
- h. Disconnect the aft cables at the rudder bell crank and remove the cables.

**RUDDER CABLE INSTALLATION**

- a. Route the aft rudder cables forward in the tail section and connect to the rudder bell crank.

- b. Route the forward rudder cables aft from the pilot's compartment and connect the cables to the bell crank.
- c. Install all cable retaining pins in the pulley brackets.
- d. Using PD680 solvent (15, Chart 207, 91-00-00), clean the cables for the length of travel through the pressure seals. Lubricate to one inch beyond the cleaned area with MIL-G-23827 grease (11, Chart 207, 91-00-00).
- e. Fill the pressure seals with MIL-G-23827 grease (11, Chart 207, 91-00-00). Install the seals.
- f. Connect the cables to the turnbuckles in the aft fuselage and rig the cable system.
- g. Install the aft floorboard access panel, the floorboards between the main and aft spar, and the forward seats.
- h. Install the floorboards in the pilot's compartment, and the pilot's and copilot's seat.
- i. Install the tail cone and the access plate beneath the RH horizontal stabilizer.

**RUDDER CONTROL SYSTEM RIGGING**

(Figure 201)

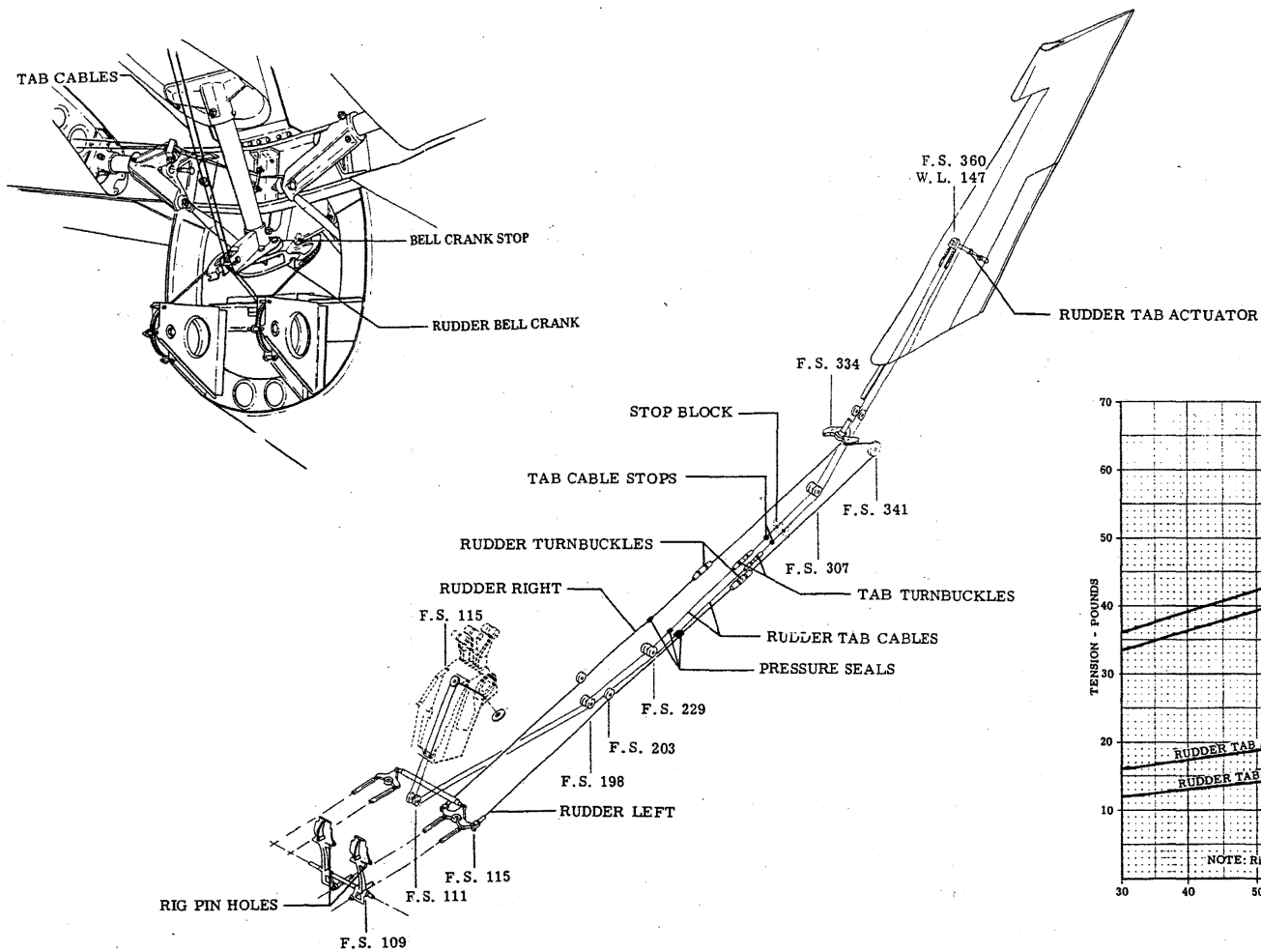
- a. Remove the tail cone, the access plate on the side of the fuselage beneath the RH horizontal stabilizer, and the access panel in the aft floorboard.
- b. Release the rudder pedal adjusting levers and place all pedals in the aft position.
- c. Insert a 7/16-inch diameter rig pin through the upper arm of the pilot's rudder pedals to rig neutral on the rudder pedals. This will also bring the copilot's rudder pedals to the same adjustment as the pilot's pedals.
- d. Place the rudder and rudder bell crank in the neutral position.
- e. Rig the rudder cables to the proper tension as determined by reference to the Temperature-Cable Tension Chart. Safety wire the turnbuckles.
- f. Remove the rig pin from the rudder pedals and adjust the stops for the rudder bell crank until the rudder has a travel of 33 to 35 degrees right and 28 to 30 degrees left from the centerline of the horizontal stabilizer in response to the corresponding movement of the rudder pedals.

**NOTE**

With the rudder and steering system fully installed, properly rigged, and the nose wheel extended and off the ground, the force required for full right rudder deflection should not exceed 25 pounds as measured at the pivot point of each rudder pedal. The force required for full left rudder deflection, measured at the rudder pedal pivot point, should not exceed 23 pounds.

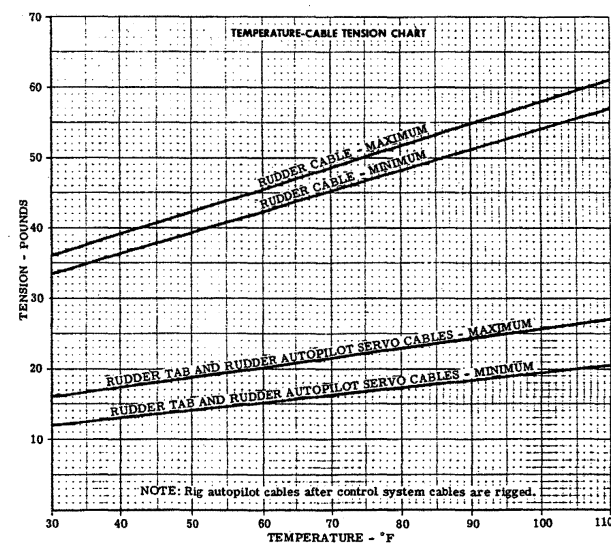
- g. Install the tail cone, the access plate beneath the

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RUDDER TRAVEL  
33° TO 35° RIGHT  
28° TO 30° LEFT

RUDDER TAB TRAVEL  
19° TO 21° RIGHT  
19° TO 21° LEFT



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Rigging the Rudder Control System  
Figure 201

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**AILERON AND TAB - MAINTENANCE  
PRACTICES**

**AILERON REMOVAL**

- a. Disconnect the aileron tab push rod.
- b. Support the aileron and remove the two attaching screws from the top and bottom of each hinge bracket.
- c. Pull the aileron straight away from the wing to avoid damage to the attaching areas.
- d. Remove the screws attaching the bonding cables to the aileron.

**AILERON INSTALLATION**

- a. Attach the bonding cables to the aileron.
- b. Place the aileron in position on the hinge brackets. Be sure the hinge bracket is in the proper place between the aileron skin and the reinforcing structure.
- c. Install the upper and lower hinge bracket screws.
- d. Connect the aileron tab push rod.

**AILERON CONTROL CABLE REMOVAL**  
(Figure 201)

- a. Remove the pilot's and copilot's seat, and the floorboards in the pilot's compartment.
- b. Remove the forward passenger seats and the floorboards between the main and rear spar.
- c. Remove the access plates, as necessary to gain access to the aileron cables and pulley brackets, on the lower trailing edge of the wings.
- d. Remove all necessary cable retaining pins from the cable pulley brackets. Remove the pressure seals on each side of the fuselage.
- e. Disconnect the forward aileron cables from the chain and cable assembly at the turnbuckles at the control column. Install lead lines to both aileron cables.
- f. Paint one tooth of the control column sprocket and the corresponding link of the chain and cable assembly to insure proper alignment at installation.
- g. Disconnect the forward aileron cables and the forward outboard wing cable at the turnbuckles in each wing. Identify and remove both forward cables.
- h. Disconnect the balance cable at the turnbuckle in each wing. Connect a lead line to one end of the cable and remove the cable.
- i. Disconnect the forward outboard, and the aft outboard cables at the bell crank in each wing. Identify and remove the cables.

**AILERON CONTROL CABLE INSTALLATION**

- a. Connect the forward outboard, and the aft outboard cables to the bell crank in each wing. Route the cables inboard.
- b. Route the balance cable through one wing, the

fuselage, then through the opposite wing. Connect the balance cable and the aft outboard cables to the turnbuckles in each wing.

c. Route one end of the aileron cables outboard in each wing, and the other end forward to the control column. Connect the cables to the turnbuckles at the forward outboard cable in each wing.

d. Position the chain and cable assembly on the control column sprocket. Ensure that painted link and the corresponding painted tooth are aligned.

e. Connect the chain and cable assembly to both aileron cables at the turnbuckles at the control column.

f. Install all retaining pins in the pulley brackets.

g. Using PD680 solvent (15, Chart 207, 91-00-00), clean the cables for the length of travel through the pressure seals. Lubricate to one inch beyond the cleaned area with MIL-G-23827 grease (11, Chart 207, 91-00-00).

h. Fill the pressure seals with MIL-G-23827 grease (11, Chart 207, 91-00-00). Install the seals.

i. Rig the aileron control system.

j. Install the access plates on the lower trailing edge of the wings.

k. Install the floorboards and the forward passenger seats.

l. Install the floorboards and the pilot's and copilot's seats.

**AILERON CONTROL SYSTEM RIGGING**  
(Figure 201)

a. The contour of the aileron must align with the contour of the wing within 1/16 inch (.0625 inch) on either or both sides.

b. Aileron and connecting linkage may have a maximum of 1/16 inch lost motion. Check for lost motion at the midpoint of the aileron trailing edge with the bell crank stationary.

c. The aileron is in neutral when its outboard trailing edge aligns with the trailing edge of the wing tip and its inboard end is parallel with the outboard end of the flap. A horizontal misalignment of plus or minus 3/16 inch is allowed between trailing edges of the aileron and wing tip. With the bell crank parallel to the wing rib, set the aileron in neutral by adjusting the length of the push-pull tube. Loosen the locknuts on both ends and turn the tube to shorten or lengthen.

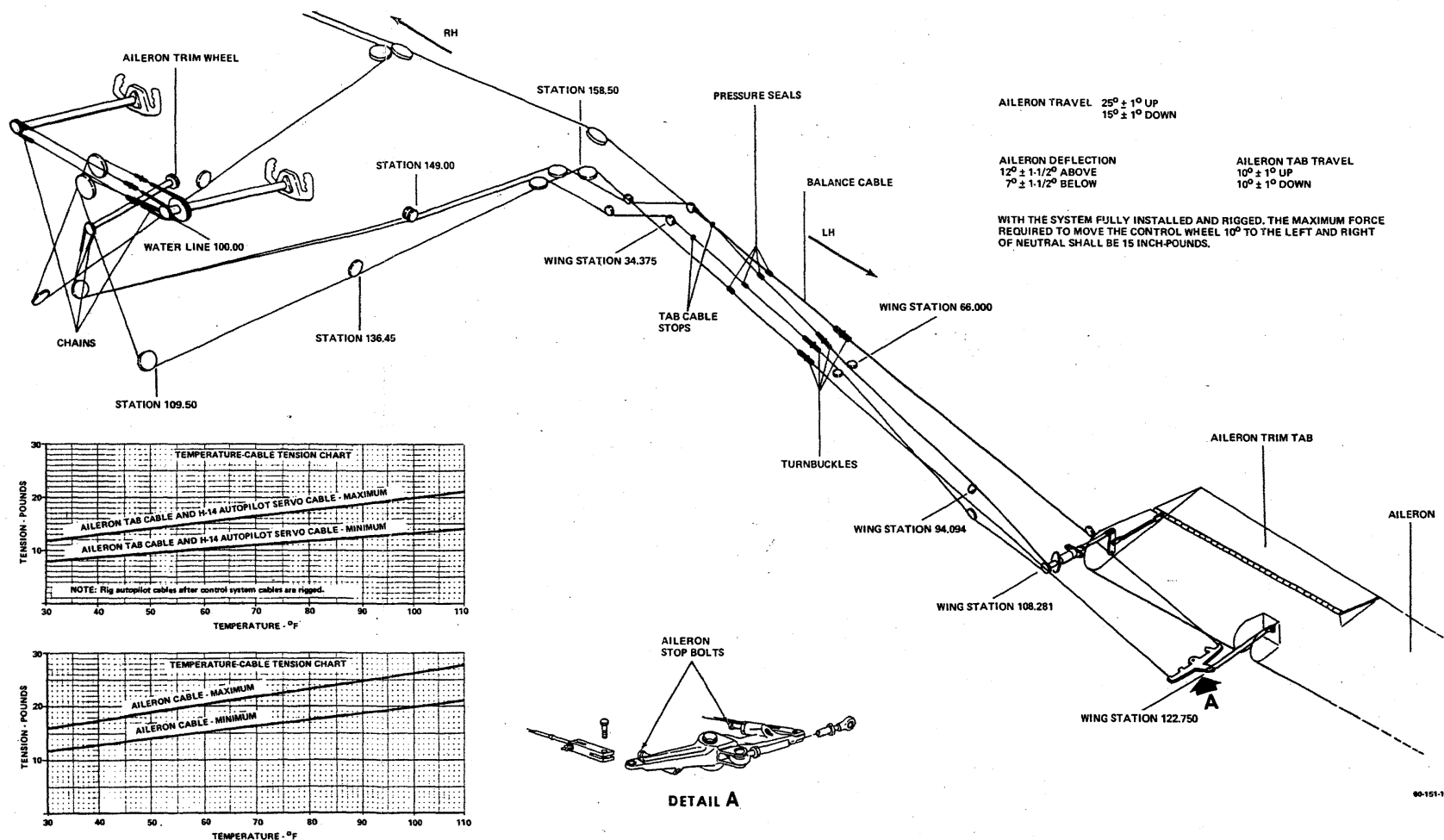
d. Securely tighten the locknuts on all rod ends. Rig cable tension and adjust travel as noted on Aileron Rigging Illustration.

e. With the aileron system fully rigged, the maximum force required to move the control wheel 10 degrees to the left and right of neutral should not exceed 15 inch-pounds.

**AILERON TRIM TAB CABLE REMOVAL**  
(Figure 201)

- a. Remove the pilot's seat and the left floorboard.
- b. Remove the lower forward upholstery panel on the

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**Rigging the Aileron Control System  
Figure 201**