# AILERON AND SPOILER SYSTEM - INSPECTION/CHECK

## 1. General

A. This section has the inspections and checks necessary to keep the aileron and spoiler system in a serviceable condition.

**TASK 27-10-00-720**

## 2. Spoiler System Functional Check

A. General

(1) This task gives the procedures to do a functional check of the spoiler system.

B. Special Tools

(1) Inclinometer

(2) Cable Tensiometer

C. Access

(1) Remove the applicable wing panels to get access to spoiler components, Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

(2) Open (unzip) the fabric headliner (passenger) or remove the hard shelled headliner (cargo) to get access to the spoiler components. Refer to Chapter 25, Cabin Upholstery - Maintenance Practices.

D. Do a functional check of the spoiler system.

(1) Do a check of the cable movement for binding and full travel.

(2) Examine the spoiler skins for loose rivets and cracks.

(3) Examine the hinges for corrosion, condition, and cracks.

(a) Examine the bearings and bonding jumpers for signs of damage or wear, unserviceable fasteners, and security of installation.

(4) Examine the bolts and nuts at both ends of pushrods for correct cotter pin installation.

**CAUTION: If the pushrod will not turn using hand force, remove the rod end attach bolt and examine for cause. Make sure that the rod ends are aligned to let the rod turn a small amount when installed (vertical plane of each rod end in-line with each other).**

(5) Examine the aileron/spoiler bellcrank tubes, bearings, pushrods, stop bolts, and brackets for corrosion, cracks, signs of damage, failed fasteners, security of installation, and correct safetying.

(6) Examine the attachment brackets on each spoiler for corrosion, condition, cracks, security, and correct attachment of the cable to the bracket.

E. Do a spoiler rigging check on the left and the right spoilers.

(1) With the flaps at the full up position, slowly turn the control wheel and examine for a minimum of 0.010 inch (0.254 mm) to a maximum of 0.030 inch (0.762 mm) clearance between spoiler trailing edge and the top surface of the flap at the minimum position. This will occur before the aileron reaches the full down position.

(2) With the aileron at the neutral position, install an inclinometer on left spoiler and adjust it to zero.

(3) Use the control wheel to raise the left spoiler to its full up position.

(a) The inclinometer must read 40 +5 or -5 degrees.

(4) With the aileron at the neutral position, install an inclinometer on the right spoiler and adjust it to zero.

(5) Use the control wheel to raise the right spoiler to its full up position.

(a) The inclinometer must read 40 +5 or -5 degrees.

**NOTE: If the system is found to be out of tolerance, perform all adjustments, Refer to Aileron and Spoiler - Maintenance Practice. Include aileron friction band check. Ensure all rigging pins are removed after this task is complete.**

F. Restore access.

(1) Install the applicable panels and covers that were removed to get access to the spoiler components on both wings. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

(2) Close (zip) the fabric headliner (passenger) or install the hard shelled headliner (cargo). Refer to chapter 25, Cabin Upholstery - Maintenance Practices.

**END OF TASK**
**TASK 27-10-00-721**

**3. Aileron System Functional Check**

A. General

(1) This task gives the procedures to do a functional check of the aileron system.

B. Special Tools

(1) Inclinometer

(2) Cable Tensiometer

(3) Spring scale measuring from 0 to 20 pounds

C. Access

(1) Remove panels 212FR, 226B, 231BL, 231CL, 251CL, 251DL, 252BR, 252FR, 501BB, 501CB, 501DB, 501EB, 503AB, 503BB, 503CB, 503DB, 503EB, 601BB, 601CB, 601DB, 601EB, 603AB, 603BB, 603CB, 603DB, 603EB, and 651AB to get access to the aileron components. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

(2) Open (unzip) the fabric headliner (passenger) or remove the hard shelled headliner (cargo) to get access to the aileron components. Refer to Chapter 25, Cabin Upholstery - Maintenance Practices.

D. Do a Functional Check of the Aileron System (Refer to Figure 601, Figure 602, Figure 603).

(1) Examine the aileron control and the aileron trim tab system cable movement for binding and full travel.

(2) Examine the aileron skins for corrosion, cracks, and loose rivets.

(3) Examine the aileron trim tab skins for corrosion, cracks, and loose rivets.

(4) Examine the aileron trim tab stop blocks (right wing) for corrosion, condition, and security of installation.

(5) Examine the aileron trim tab control and indicator for corrosion, condition, and security of installation.

(6) Examine the balance weights for looseness and the supporting structure for corrosion, cracks, and failed fasteners.

(7) Examine the aileron hinges, hinge bolts, hinge bearings, attach fittings, horn, and bonding jumper for corrosion, cracks, signs of damage, wear, failed fasteners, security, and correct safeftying.

(8) Examine the bellcracks in both wings and above headliner and the bearings, push rods, stop bolts, and brackets, for corrosion, cracks, signs of damage, failed fasteners, security of installation, and correct safetying.

(9) Examine the aileron and aileron trim cable runs for correct routing, fraying, and twisting.

(a) Make sure there is no interference with the adjacent structure, equipment, wiring, plumbing, and other controls.

(10) Move a cloth along the full length of the cables to examine for broken wires.

(a) If snags are found or you think that there are broken wires, refer to Chapter 20, Control Cable Wire Breakage and Corrosion Limitations - Maintenance Practices.

(11) Examine the turnbuckles for correct thread exposure.

(a) Make sure that the turnbuckle locking clips are installed correctly. Refer to Chapter 20, Safetying - Maintenance Practices.

(12) Examine the swage fittings reference marks for an indication of cable slippage inside of the fitting.

(a) Examine the fittings for corrosion, distortion, cracks, and broken wires at the fittings.

(13) Examine the pulleys, attach brackets, and guard pins for condition, wear, corrosion, and security.

(a) You must turn the pulleys to make sure there freedom of movement and to make sure there is even wear of the pulleys.

(b) If discrepancies are found with the brackets, examine the structure where the brackets are attached for hidden damage.

(14) Examine the aileron trim tab actuators for corrosion, damage, and security.

(15) Examine the aileron trim tab actuator mounting structures for corrosion, damage, cracks, and security of installation.

(16) Examine the aileron trim tab actuator pushrods and attaching hardware for corrosion, condition, damage, wear, and security of installation.

(17) Examine the chains for corrosion, tension, and correct alignment.

(18) Examine the aileron trim control wheel bearings for wear.

(19) Examine the control wheel for condition and security of installation.

(20) Examine the control column for corrosion, signs of damage, failed fasteners, and security of installation.

(21) Examine all welds in the column tube and the torque tube for corrosion and cracks.

(22) Examine both torque tube support arms for corrosion, condition, and security of the attach bearings.

(23) Examine the support arm attach structure for corrosion, condition, cracks, and correct safety of the attach bolts.

(24) Examine the cable guards for corrosion, condition, and security on both column quadrants.

(25) Examine for sufficient clearance of all components and structure at the full aft and the full forward positions.

(26) Make sure that the chain is correctly centered and aligned on the sprocket.

(a) The chain guard posts must be correctly installed and attached with safety wire.

(27) Make sure that the chain is correctly attached to the cable assembly and turnbuckle terminal with the chain connecting links.

E. Examine the Cable Travel and Tensions (Refer to Figure 601, Figure 602, Figure 603).

(1) Use the cable tensiometer to measure the Aileron Wing cable tension.

(a) Make sure that the cable tension is 40 pounds, +5 or -5 pounds (178 N, +22 or -22 N) at 70°F (21°C).

(2) Use the cable tensiometer to measure the Aileron Fuselage cable tension.

(a) Make sure that the cable tension is 20 pounds, +5 or -5 pounds (89 N, +22 or -22 N) at 70°F (21°C).

(3) Set the control wheels to put the ailerons in the neutral position.

(a) Make sure that the ailerons are streamlined with the inboard trailing edge of the aileron aligned with the outboard trailing edge of the flap.

(4) Attach an inclinometer on the left aileron and set it to zero degrees.

(5) Examine the cable tensions and adjust if necessary.

(a) For the aileron control cables, refer to Ailerons and Control Column - Maintenance Practices.

(b) For the aileron trim cables, refer to Aileron Trim System - Maintenance Practices.

(c) For airplanes equipped with 400B and 400B IFCS autopilot type AF-550A and IF-550A, refer to Aileron and Spoiler System - Adjustment/Test.

(6) Operate the system through its full range of travel.

(a) Make sure that all of the components that move do not hit, touch, or catch on structural components or other system components.

(7) Turn the control wheel so that the stop bolt touches the right bellcrank.

(a) Make sure that the inclinometer shows 25 +4 or -0 degrees up travel on the left aileron.

(8) Turn the control wheel so that the stop bolt touches the left bellcrank.

(a) Make sure that the inclinometer shows 16 +1 or -0 degrees down travel on the left aileron.

(9) Remove the inclinometer from the left aileron.

(10) Repeat steps E.(1) through (7) for the right aileron.

(11) Put the right aileron trim tab in the streamline position.

(a) Refer to Aileron Trim System - Maintenance Practices if rigging is necessary.

(12) Install an inclinometer on the right aileron trim tab and set it to zero degrees.

(13) Put the right aileron trim tab in the full up position.

(a) Make sure that the inclinometer shows 15 +2 or -2 degrees.

(14) Put right aileron trim tab in the full down position.

(a) Make sure that the inclinometer shows 15 +2 or -2 degrees.

(15) Remove the inclinometer from right aileron trim tab.

(16) Do a friction band check. Refer to Ailerons and Control Column - Maintenance Practices.

F. Restore Access

(1) Install panels 212FR, 226B, 231BL, 231CL, 251CL, 251DL, 252BR, 252FR, 501BB, 501CB, 501DB, 501EB, 503AB, 503BB, 503CB, 503DB, 503EB, 601BB, 601CB, 601DB, 601EB, 603AB, 603BB, 603CB, 603DB, 603EB, and 651AB. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

(2) Close (zip) the fabric headliner (passenger) or install the hard shelled headliner (cargo). Refer to Chapter 25, Cabin Upholstery - Maintenance Practices.

**END OF TASK**

Figure 601 : Sheet 1 : Temperature Effect on Cable Tension - 208/208B Roll Servo Cables (1/16" 7*7 CRES)

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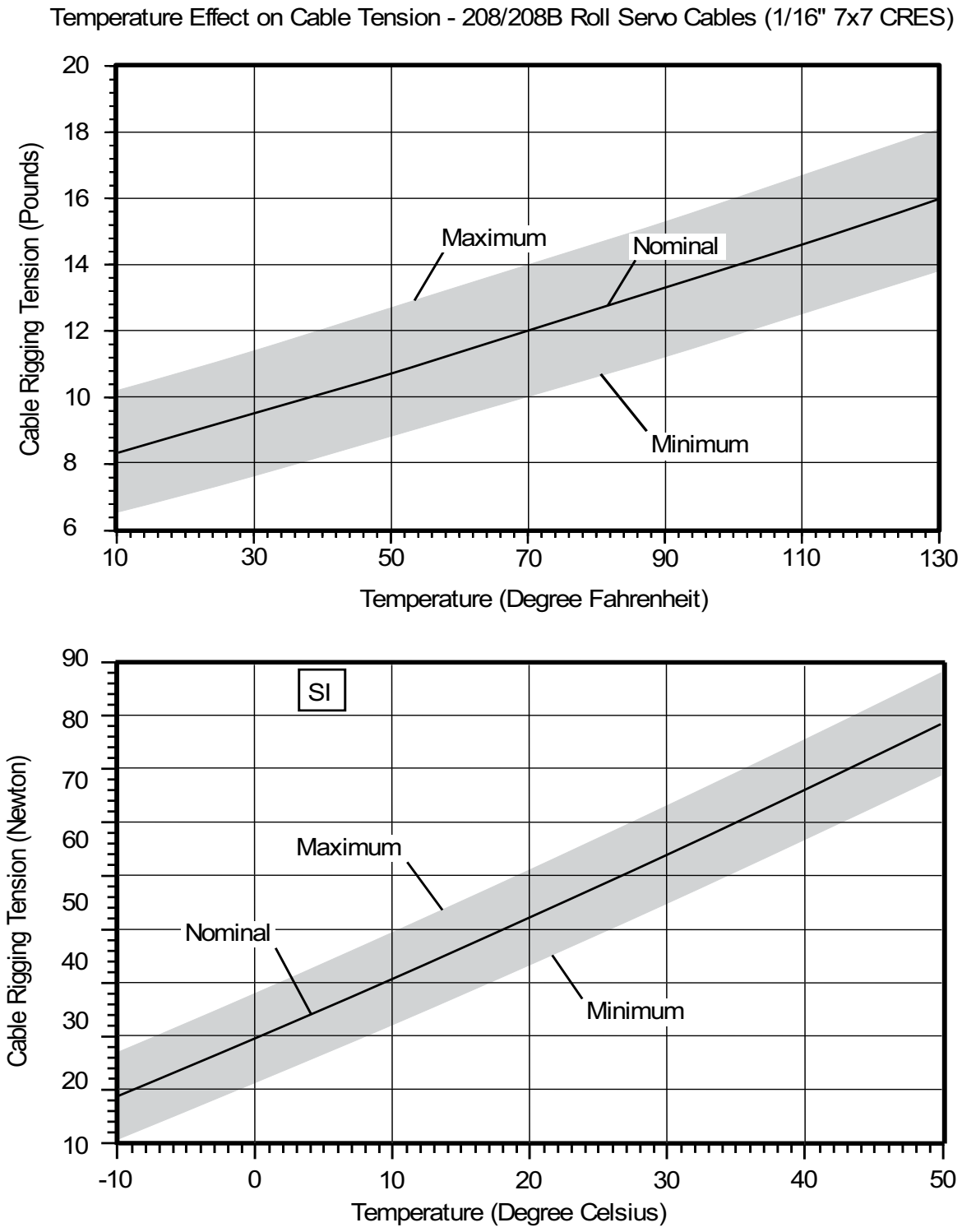

Figure 602 : Sheet 1 : Temperature Effect on Cable Tension - 208/208B Aileron Wing Cables (1/8" 7*19 CRES)

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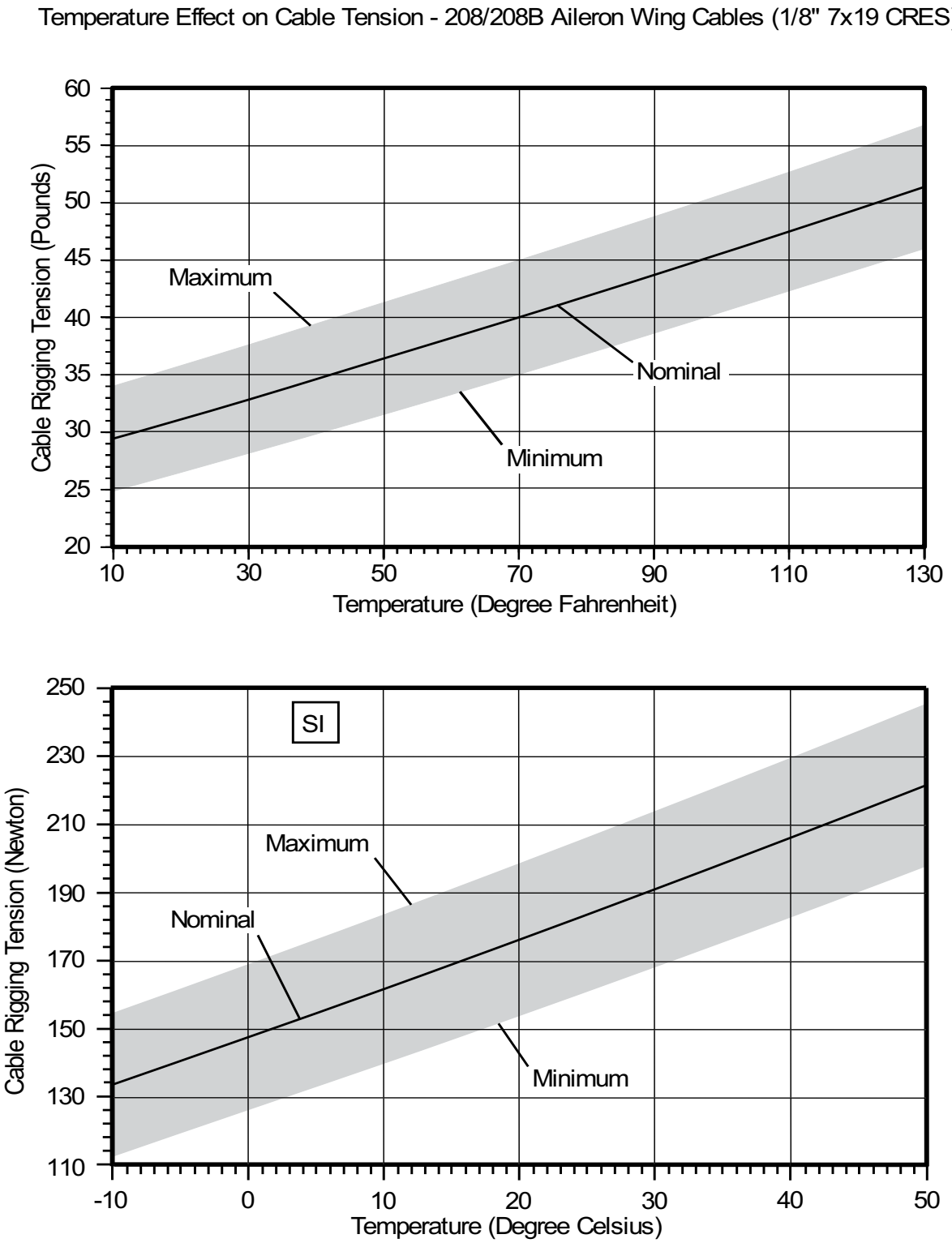

Figure 603 : Sheet 1 : Temperature Effect on Cable Tension - 208/208B Aileron Fuselage Cables (1/8" 7*19 CRES)

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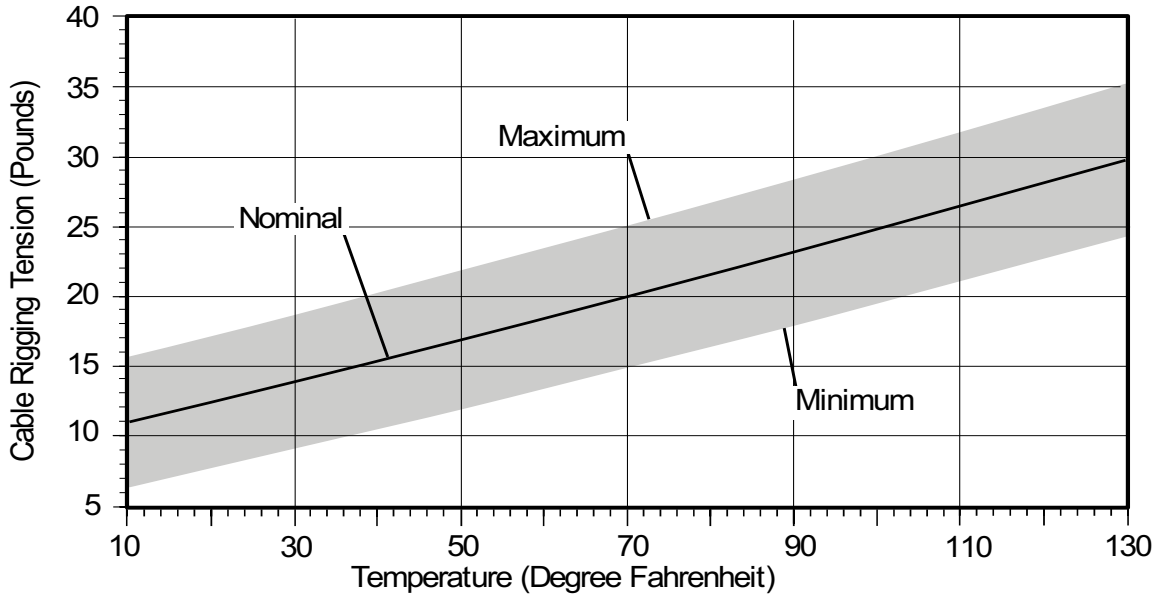
Temperature Effect on Cable Tension - 208/208B Aileron Fuselage Ca bles (1/8" 7*19 CRES)




Temperature Effect on Cable Tension - 208/208B Aileron Fuselage Ca bles (1/16" 7x7 CRES)