

RUDDER SYSTEM - INSPECTION/CHECK

1. General

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

TASK 27-20-00-720

2. Rudder System Functional Check (Standard Rudder Installation)

A. General

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

B. Special Tools

- (1) Cable Tensiometer
- (2) Rudder Travel Protractor
- (3) Nose Wheel Turning Bar

C. Access

- (1) Remove the applicable floor panels to get access to the rudder control system. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.
- (2) Remove the tail stinger from the airplane to get access to the rudder stop bolts. Refer to Tail Stinger - Maintenance Practices.

D. Do a Functional Check of the Rudder System (Standard Rudder Installation) (Refer to Figure 601 and Figure 602).

- (1) Examine all cable runs for correct routing, fraying, and twisting.
 - (a) Look for interference with the adjacent structure, equipment, wiring, plumbing, and other controls.
- (2) Examine the cable movement for binding and full range of travel.
- (3) Examine the swage fitting reference marks for signs of cable slippage inside of the fitting.
 - (a) Examine the fitting for corrosion, distortion, cracks, and broken wires at the fitting.
- (4) Examine the turnbuckles for correct thread engagement.
 - (a) Make sure that the turnbuckle locking clips are installed. Refer to Chapter 20, Safetying - Maintenance Practices.
- (5) Move a cloth along the full length of the cable 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.
- (6) Examine the cable attach holes in the rudder torque tube arm for excessive wear.
- (7) Examine the rudder torque tube, bellcrank, and lower hinge area for corrosion and condition.
- (8) Examine the rudder stop bolts for condition, corrosion, and security.
- (9) Examine the rudder hinge, hinge bearing, rudder pedals, and bonding jumper, for correct installation, corrosion, signs of damage, and unserviceable fasteners.
- (10) Examine the rudder skins for cracks, loose rivets, and corrosion.
- (11) Examine the balance weight for looseness and the supporting structure for damage.

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

- (1) Examine the cable tension in the tailcone area .

NOTE: Cable tensions must be measured at least one foot from any pulley or cable turnbuckle.

 - (a) The tension must be 30 pounds + 5 or -5 pounds (133.45 N + 22.24 or - 22.24 N).
- (2) If necessary, do the Rudder System Rigging. Refer to Rudder - Maintenance Practices.
- (3) Install the rudder travel protector.
- (4) Put the rudder trim system in the neutral position.
- (5) 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.
- (6) With the nose wheel turning bar, turn the nose wheel left until the rudder stop block contacts the bolt.

(a) The rudder travel on the protractor must be $25^\circ \pm 2^\circ / -2^\circ$ degrees.

- (7) With the nose wheel turning bar, turn the nose wheel right until the rudder stop block contacts the bolt.

(a) The rudder travel on the protractor must be $25^\circ \pm 2^\circ / -2^\circ$ degrees.

- (8) Turn the nose wheel to center and make sure that the rudder pedals and the rudder are centered.

(a) If the rudder pedals and the rudder are not centered, make sure that the nose gear steering rigging is correct. Refer to Chapter 32, Nose Gear Steering - Maintenance Practices.

- (9) Remove the rudder travel protractor.

F. Restore access.

- (1) Install the tail stinger. Refer to Tail Stinger - Maintenance Practices.

- (2) Install the floor panels. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

END OF TASK

TASK 27-20-00-721

3. Rudder System Functional Check (Float Kit Installation)

A. General

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

B. Special Tools

- (1) Cable Tensiometer
(2) Rudder Travel Protractor

C. Access

- (1) Remove the applicable floor panels to get access to the rudder control system. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.
(2) Remove the tail stinger from the airplane to get access to the rudder stop bolts. Refer to Tail Stinger - Maintenance Practices.

D. Do a Functional Check of the Rudder System (Refer to Figure 601 and Figure 602).

- (1) Examine all cable runs for correct routing, fraying, and twisting.
(a) Look for interference with the adjacent structure, equipment, wiring, plumbing, and other controls.
(2) Examine the cable movement for binding and full range of travel.
(3) Examine the swage fitting reference marks for signs of cable slippage inside of the fitting.
(a) Examine the fitting for corrosion, distortion, cracks, and broken wires at the fitting.
(4) Examine the turnbuckles for correct thread engagement.
(a) Make sure that the turnbuckle locking clips are installed. Refer to Chapter 20, Safelying - Maintenance Practices.
(5) Move a cloth along the full length of the cable to examine for broken wires.
(a) If snags are found or you think that there are broken wires, Refer to Chapter 20, Control Cable and Corrosion Limitations - Maintenance Practices.
(6) Examine the cable attach holes in the rudder torque tube arm for excessive wear.
(7) Examine the rudder torque tube, bellcrank, and lower hinge area for corrosion and condition.
(8) Examine the rudder stop bolts for condition, corrosion, and security.
(9) Examine the rudder hinge, hinge bearing, rudder pedals, and bonding jumper, for correct installation, corrosion, signs of damage, and unserviceable fasteners.
(10) Examine the rudder skins for cracks, loose rivets, and corrosion.
(11) Examine the balance weight for looseness and the supporting structure for damage.

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

- (1) Examine the cable tension in the tailcone area.

NOTE: Cable tensions must be measured at least one foot from any pulley or cable turnbuckle.

- (a) The tension must be 30 pounds + 5 or -5 pounds (133.45 N + 22.24 or - 22.24 N).

- (2) If necessary, do the Rudder System Rigging. Refer to Rudder - Maintenance Practices.
- (3) Install the rudder travel protector.
- (4) Put the rudder trim system in the neutral position.
- (5) 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.
- (6) Move the rudder left until the rudder stop block contacts the stop bolt.
 - (a) The rudder travel on the protractor must be from $23^\circ + 2^\circ / -0^\circ$ degrees.
- (7) Move the rudder right until the rudder stop block contacts the stop bolt.
 - (a) The rudder travel on the protractor must be from $23^\circ + 2^\circ / -0^\circ$ degrees.
- (8) Remove the rudder travel protractor.
- F. Restore access.
 - (1) Install the tail stinger. Refer to Tail Stinger - Maintenance Practices.
 - (2) Install the floor panels. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

END OF TASK**TASK 27-20-00-640****4. Rudder Bar Bearings and Rudder Pedals Lubrication**

- A. General
 - (1) This task gives the procedures to do a lubrication of the rudder bar bearings and rudder pedals.
- B. Special Tools
 - (1) For Airplanes 20800001 and On and 208B0001 thru 208B4999, use MIL-L-7870 or equivalent.
 - (2) For Airplanes 208B5000 and On, use MIL-PRF-23827 or equivalent.
- C. Access.
 - (1) For Airplanes 20800001 and On and 208B0001 thru 208B4999, remove or loosen the top bearing blocks one at a time to get sufficient access to friction surface.
- D. Do a Lubrication of the Rudder Bar Attach Bearings and Rudder Pedals.
 - (1) For Airplanes 20800001 and On and 208B0001 thru 208B4999, clean and lubricate the rudder bar attach bearings and all accessible component pivot points on the rudder bar.
 - (2) For Airplanes 208B5000 and On, clean the grease Zerk fittings and lubricate through the fittings until lubricant is visible. Wipe off any excess lubricant with a clean cloth.
- E. Restore Access.
 - (1) For Airplanes 20800001 and On and 208B0001 thru 208B4999, install or tighten the bearing blocks.

END OF TASK