**Horizontal Stabilizer – Inspection**

* 1. **General Notes**
     1. This task is to calculate the freeplay of the horizontal stabilizer. The freeplay of the horizontal stabilizer is the total of the freeplay of the stabilizer jackscrew and the hinge mechanism.
     2. This task involves the use of multiple shot bags applied in the area of the front spar of the horizontal stabilizer. One set of shot bags weighing a total of 600 ± 20 pounds is required for the hinge bearing measurements. Two sets of shot bags weighing a total of 500 ± 20 pounds per set (total 1000 ± 40 pounds) is required for the jackscrew measurement. The procedure described herein uses shot bags weighing 25 ± 1 pounds each.
        1. For hinge bearing measurements, use of bags of alternate capacity is acceptable so long as the intended weight, placement and distribution of the bags achieve an even distribution of weights such that the total weight is centered 72 ± 2 inches outboard of LE STA 198.23 shown in Figure 1, View C.
        2. For jackscrew measurements, use of bags of alternate capacity is acceptable so long as the intended weight is achieved and the placement is confined within the location shown in Figure 1, View E.
        3. When placing the weight, protect the upper surface of the horizontal stabilizer with a sheet of soft padding as needed to ensure damage is not caused by weights.
  2. **References**

**Reference Title**

27-41-81-000-801 Stabilizer Ball Nut and Jackscrew Gearbox Removal (P/B 401)

27-41-31-000-802 Horizontal Stabilizer Center Section Hinge Pin Removal (P/B 401)

* 1. **Tools/Equipment**

**Reference Description**

STD-1200 Sandbag

STD-1238 Indicator – Dial

STD-1279 Mount-Device, Mounting, Holds the Dial Indicator

* 1. **Location Zones**

**Zone Area**

311 Area Aft of Pressure Bulkhead – Left

312 Area Aft of Pressure Bulkhead – Right

330 Subzone – Left Horizontal Stabilizer and Elevator

340 Subzone – Right Horizontal Stabilizer and Elevator

* 1. **Access Panels**

**Number Name/Location**

311BL Stabilizer Trim Access Door

* 1. **Work Instructions**

1. **Prepare for the Check**

(a) On the stabilizer trim actuator, do this task:

1) Open this access panel:

**Number Name/Location**

311BL Stabilizer Trim Access Door

2) Set the stabilizer to 4 units of trim.

1. **Horizontal Stabilizer Inspection**
   * 1. Do a check of the freeplay for the hinge bearing of the stabilizer center section (Figure 1):
        1. Measure the freeplay of the left hinge bearing (D1):
           1. Attach a dial indicator, STD-1238, with a mount, STD-1279, to the left side of the fuselage at the Body Station 1156 Pivot Bulkhead.

Make sure that the plunger of the dial indicator, STD-1238, pushes against the stabilizer lower surface common to the 186A3002 Retainer at a minimum dial travel of 0.13 in.  (see Figure 1, sheet 4 of 5 for the location)

* + - * 1. Set the dial indicator, STD-1238, to zero.
        2. Gently place 24 shot bags, sandbag, STD-1200 (Sandbag Store item #GR25BK-A shot bag, 12 inch by 12 inch, 25 ±1 lb.) or equivalent, atop the right stabilizer front spar and the centerline of shot bags should be 1-4 inches AFT of the AFT edge of the clad aluminum leading edge bullnose (Figure 1).

The front spar is parallel to and approximately 1 inch aft of the edge of the clad aluminum leading edge bullnose.

Distribute the shot bags uniformly within the region shown in Figure 1.

The shot bags should be stacked two deep.

* + - * 1. Record the magnitude of the extension of the plunger of the dial indicator, STD-1238, reading as “D1”.
        2. Slowly remove the shot bags from the right stabilizer.
        3. Remove the dial indicator, STD-1238, and mount, STD-1279, from the left side of the fuselage.
      1. Measure the freeplay of the right hinge bearing (D2):
         1. Attach a dial indicator, STD-1238, with a mount, STD-1279, to the right side of the fuselage at the Body Station 1156 Pivot Bulkhead.

Make sure that the plunger of the dial indicator, STD-1238, pushes against the stabilizer lower surface common to the 186A3002 Retainer at a minimum dial travel of 0.13 in.  (see Figure 1, sheet 4 of 5 for the location)

* + - * 1. Set the dial indicator, STD-1238, to zero.
        2. Gently place 24 shot bags, sandbag, STD-1200 (Sandbag Store item #GR25BK-A shot bag, 12 inch by 12 inch, 25 ±1 lb.) or equivalent, atop the left stabilizer front spar and the centerline of shot bags should be 1-4 inches AFT of the AFT edge of the clad aluminum leading edge bullnose (Figure 1).

The front spar is parallel to and approximately 1 inch aft of the edge of the clad aluminum leading edge bullnose.

Distribute the shot bags uniformly within the region shown in Figure 1.

The shot bags should be stacked two deep.

* + - * 1. Record the magnitude of the extension of the plunger of the dial indicator, STD-1238, reading as “D2”.
        2. Slowly remove the shot bags from the left stabilizer.
        3. Remove the dial indicator, STD-1238, and mount, STD-1279, from the right side of the fuselage.

2. Do a check of the freeplay for the stabilizer jackscrew (D3) (Figure 1).

* + - 1. Make sure that the stabilizer is at 4 units of trim.
      2. Attach dial indicator, STD-1238, with a mount, STD-1279, to the Body Station 1088 bulkhead structure.
         1. Make sure that the plunger of the dial indicator, STD-1238, pushes up vertically against the Texas Star Structure at a minimum dial travel of 0.13 in. (see Figure 1, sheet 2 of 5 for the location)
      3. Set the dial indicator, STD-1238, to zero.
      4. Gently place 40 shot bags (20 on each side), sandbag, STD -1200 (Sandbag Store item #GR25BK-A shot bag, 12 inch by 12 inch, 25 ±1 lb.) or equivalent, atop the left and right stabilizer per Figure 1.
         1. The front spar is parallel to and approximately 1 inch aft of the edge of the clad aluminum leading edge bullnose.
         2. Distribute the shot bags uniformly within the regions shown in Figure 1.
         3. On each side, stack the shot bags in five levels, with four shot bags on each level.
         4. Ensure that the stack as a whole is carefully centered within 1 inch of the FWD edge of the UPPER Skin.
      5. Record the magnitude of the contraction of the plunger of the dial indicator, STD-1238, reading as “D3”.
      6. Slowly remove the shot bags from the left and right stabilizers.
      7. Remove the dial indicator, STD-1238, and mount, STD-1279, from the Body Station 1088 bulkhead structure.

1. Calculate the total freeplay of the horizontal stabilizer (which is referred to as “H”):
   * + 1. Use the values D1, D2, and D3 to calculate H:

H = 1.25 × D3 + [(D1 +D2)/2]

1. Do a check of the D1, D2, D3, and H Values:

(a) If the “D1" value is more than 0.066 in., then replace the left hinge bearing,

per Horizontal Stabilizer Center Section Hinge Pin Removal, TASK 27-41-31-000-802.

(b) If the "D2" value is more than 0.066 in., then replace the right hinge bearing, per Horizontal Stabilizer Center Section Hinge Pin Removal, TASK 27-41-31-000-802.

(c) If the "D3" value is more than 0.056 in., then repair the stabilizer jackscrew, per Stabilizer Ball Nut and Jackscrew Gearbox Removal, TASK 27-41-81-000-801.

(d) If the "H" value is more than 0.078 in., then repair one or more of the following as necessary:

1) The left and right hinge bearings per Horizontal Stabilizer Center Section Hinge

Pin Removal, TASK 27-41-31-000-802.

2) The Stabilizer Jackscrew per Stabilizer Ball Nut and Jackscrew Gearbox Removal, TASK 27-41-81-000-801.

* 1. **Put the Airplane Back to Its Usual Condition**
     1. Remove the dial indicator, STD-1238.
     2. Remove the mount, STD-1279.
     3. Close this access panel:

**Number Name/Location**

311BL Stabilizer Trim Access Door.

**--------- END OF TASK---------**















