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NONDESTRUCTIVE TEST MANUAL

PART 4 - ULTRASONIC

SHEAR RIVETS OF THE YAW DAMPER SUMMING LEVER

1. Purpose

- A. Use this procedure to examine the shear rivets on the yaw damper summing lever. This procedure can find cracks that are approximately 50% through the BACR15FT5AD rivets. See Figure 1 for the inspection area.
- B. AMM 27-21-00 and FIM 27-21-00 refer to this procedure.

2. Equipment

NOTE: Refer to Part 1, 51-01-00, for data about equipment manufacturers.

A. General

- (1) Use equipment that can be calibrated on the reference standard as specified in Paragraph 4.
- (2) Refer to Part 1, 51-04-00 for data about ultrasonic inspection.

B. Instrument

- (1) Use an ultrasonic instrument that:
 - (a) Can do pulse echo inspection.
 - (b) Operates in a frequency range of 9 to 11 MHz.
- (2) The instrument that follows was used to help prepare this procedure.
 - (a) Masterscan 340; Sonatest, Inc

C. Transducer

- (1) Use a transducer that has these properties:
 - (a) Operates at 10 MHz.
 - (b) Puts a longitudinal wave in the structure.
 - (c) Has a top mounted connector.
 - (d) Has a 0.125 inch (3.18 mm) diameter.
- (2) The transducer that follows was used to help prepare this procedure.
 - (a) 389-002-109; KB-AEROTECH, GE Inspection Technologies, Inc

D. Reference Standard

- (1) Use a 1 inch (25.4 mm) thick aluminum block or plate.

3. Preparation for Inspection

- A. Get access to the yaw damper mechanism. Refer to Figure 1.
- B. Clean the inspection area where the transducer will touch the rivets.

4. Instrument Calibration

- A. Set the instrument frequency to 10 MHz or the nearest frequency range to 10 MHz.
- B. Put couplant on the surface of the reference standard.
- C. Put the transducer on the reference standard and get a back wall signal from the far side of the reference standard.
- D. Adjust the initial pulse signal to 0% of full screen width (FSW) and the back wall signal to 80% of FSW. See Figure 2, Detail 1.
- E. Adjust the instrument gain controls to put the maximum back wall signal at 80% of full screen height (FSH). See Figure 2, Detail 1.

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5. Inspection Procedure

- A. Calibrate the instrument as specified in Paragraph 4.
- B. Put couplant on the driven end of the rivets.
- C. Put the transducer tightly on the driven end of the rivet and monitor the screen display for crack type signals.
 - (1) Look for a back wall signal of the rivet to occur at approximately 75% of FSW as shown in Figure 2, Detail 2.
 - (a) To make sure that a signal is a back wall signal, do the steps that follow:
 - 1) Put couplant on a finger and put the finger on the end of the rivet that is opposite to the end that the transducer is on.
 - 2) Look at the screen display to see if the signal decreases when the finger is on the opposite end of the rivet.
 - NOTE: If the rivet is completely sheared, there will be no back wall signal.
 - (2) Look for signals that are 40% (or more) of FSH and between 20 and 60% of FSW. Refer to Figure 2, Detail 2.

6. Inspection Results

- NOTE: Make sure the transducer is put tightly on the rivet when you make an analysis of the inspection results.
- A. Screen displays that contain signals that are 40% or more of FSH and between 20 and 60% of FSW and the back wall signal at the same time are indications of a crack along the shank of the rivet. See Figure 2, Detail 2.
 - B. Signals that are 40% (or more) of FSH and between 20 and 60% of FSW with no back wall signal are indications of a completely sheared rivet.

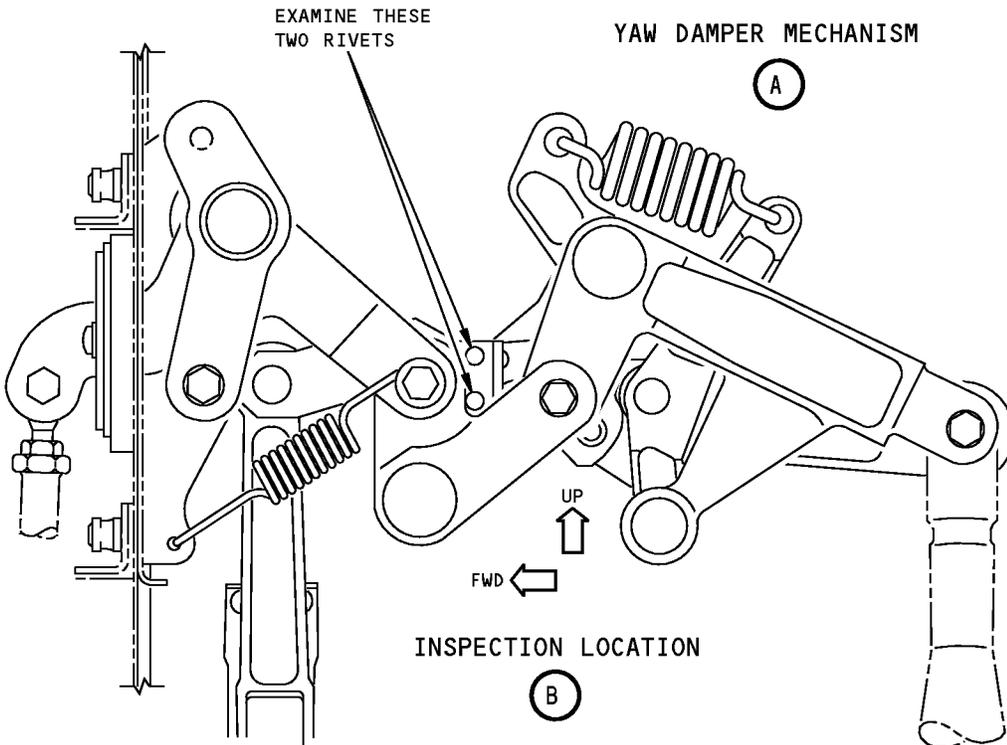
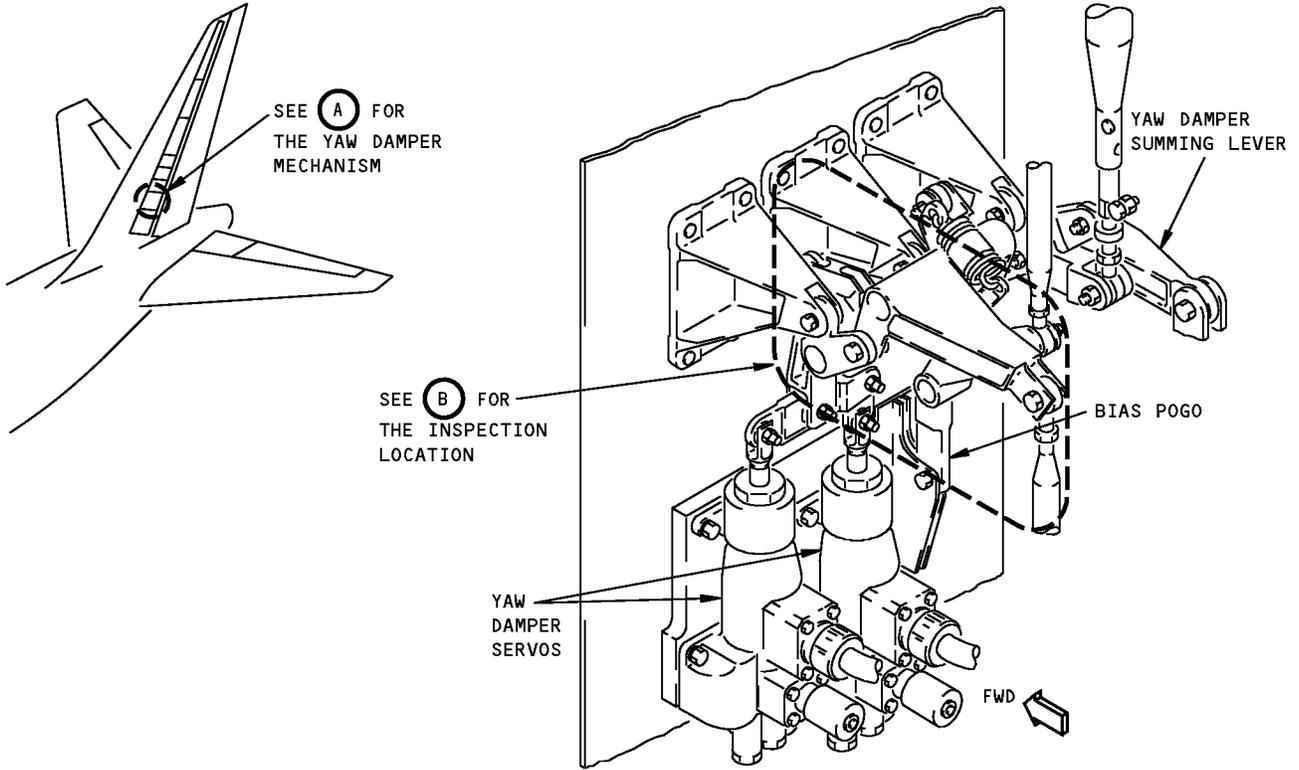


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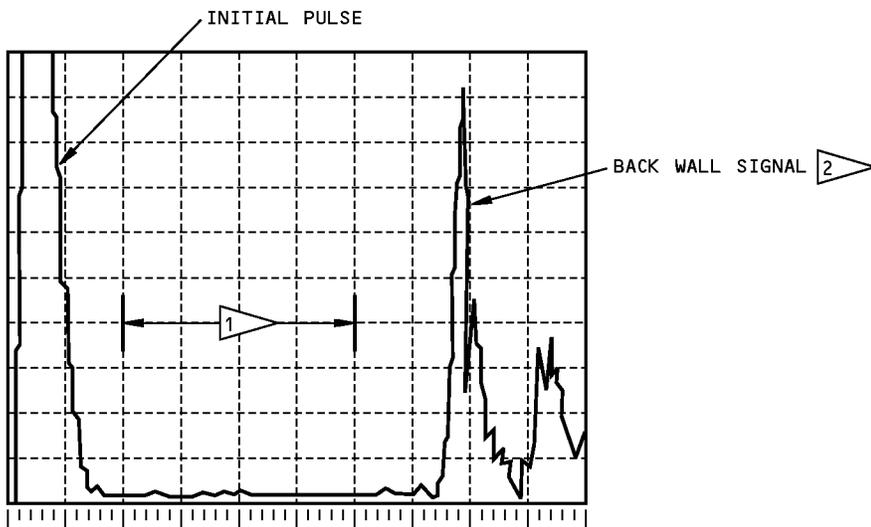
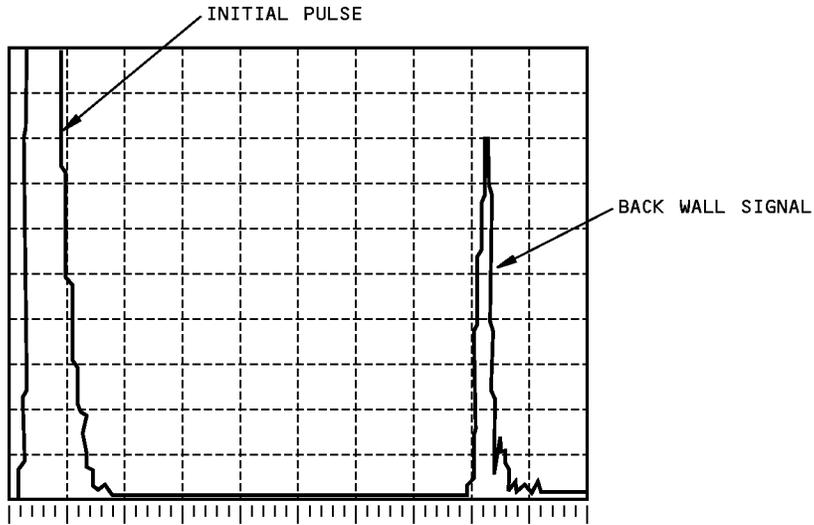


**Inspection Location
Figure 1**

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NOTES:

- 1 LOOK FOR SIGNALS IN THIS AREA THAT ARE 40% OR MORE OF FULL SCREEN HEIGHT.
- 2 THE HEIGHT OF THE BACK WALL SIGNAL WILL CHANGE.

**Example Screen Displays
Figure 2**



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