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Title: Sr. ASI
Division: ERA

Date:

Subject: ERA23LA202 - Summary of Exams - Hydraulic Pack

Contact: Mike Terrell (FAA), Bryan and Richard Cox (Cox Airparts)

The hydraulic power pack was shipped to Cox Airparts, who was the company that overhauled the unit. The company is owned and operated by Bryan Cox and his son Richard Cox. The pack was tested and partially disassembled by the Cox's under the supervision of FAA Inspector Mike Terrell.

After initial testing of the hydraulic pack, another inspection of the pack's check valve was done to examine the valve's O-rings and see if it was damaged and may have contributed to the hydraulic leak. Inspector Terrell videotaped both the hydraulic pack testing and the inspection of the check valve. Included on the video was Mr. Cox and his son describing how the hydraulic testing was being completed and the results of the testing, and check valve exam.

The following is a summary of the examinations:

Hydraulic Pack Bench Test Results (April 28, 2023): The results of the bench test revealed that the hydraulic power pack functioned normally when the gear was extended; however, it would not hold pressure when the gear was retracted because of a leak. According to Richard Cox, this leak was most likely due to a tear in the check valve's O-Ring when the gear collapsed.

Removal of the Check Valve and its O-Rings (June 1, 2023): When the check valve was removed to inspect the O-rings, it was anticipated that there would be a tear/rupture on the O-ring due to the leak observed when the pack was bench tested. According to Richard Cox, when a gear collapses, a back pressure of fluid gets forced back into the hydraulic pack's check valve and tears or ruptures the check valve's O-ring. This is

a common occurrence in gear collapse events. He said the tear will be in the direction of the how the fluid was pushed back into the valve.

When the O-ring was removed, a large tear in the direction of reverse fluid pressure was observed as expected; however, another smaller tear was observed in the middle of the O-ring. Bryan Cox said the tear was right in the middle of the O-ring and it could have been from fluid going either in or out of the valve. He said that without a magnifying glass, he could not determine the direction of the tear.