

# NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering  
Materials Laboratory Division  
Washington, D.C. 20594



August 2, 2022

MATERIALS LABORATORY FACTUAL REPORT

Report No. 22-054

## A. ACCIDENT INFORMATION

Place : Amherstdale, West Virginia  
Date : June 22, 2022  
Vehicle : Bell UH-1F, N98F  
NTSB No. : ERA22FA279  
Investigator : Lynn Spencer, AS-ERA

## B. COMPONENTS EXAMINED

Tail rotor hub assembly, pitch change links, and crosshead assembly.

## C. DETAILS OF THE EXAMINATION

An overall view of the submitted components is shown in figure 1. The blade grips are shown arbitrarily labeled A and B for reference in this report. The pitch change link for grip A was separated at the pitch horn, and the associated attachment hardware was missing. The pitch change link for grip B had been disassembled from the crosshead assembly, and the associated attachment hardware is shown in figure 1. Six shims associated with the hub assembly installation were also included as shown.

A view of the outboard side of the crosshead assembly is shown in figure 2. The clevis at the grip B end of the crosshead assembly was bent laterally. A closer view of the pitch change link attachment at the grip A end of the crosshead assembly is shown at the left in figure 2. Anti-chafing washers were observed installed on either side of the pitch change link end fitting. The washers appeared worn, and material was missing from the outer diameter of the washers as shown in figure 2. No anti-chafing washers were included with the submitted hardware for the attachment at the B end of the crosshead assembly.

The inboard side of the bushing in the pitch horn on grip A was deformed as shown in figure 3. The inboard face where it had contacted the pitch change link was deformed on one side consistent with heavy contact with the pitch change link bearing inner race. The inner bore of the bushing was also elongated consistent with heavy contact with the shank of the attachment bolt.

Matthew R. Fox, Ph.D.  
National Resource Specialist - Materials

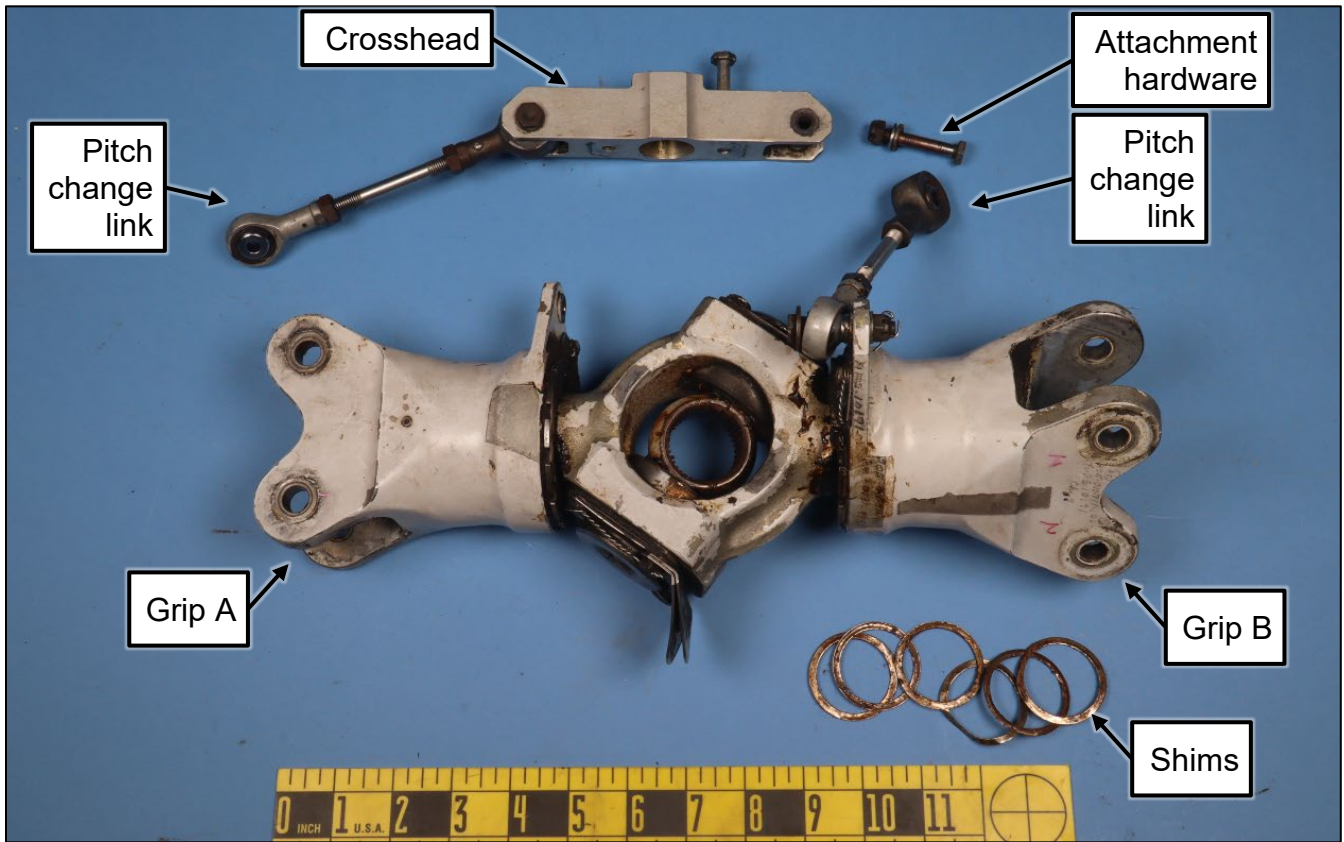


Figure 1. Submitted tail rotor hub assembly, pitch change links, and crosshead assembly as received.

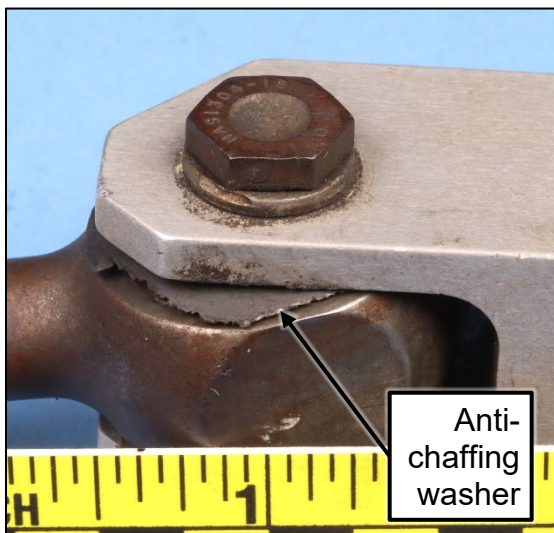


Figure 2. Crosshead assembly with attached grip A pitch change link (above) and closer view of the attached link (left image) showing the installed anti-chaffing washer.



Figure 3. Close view of the bushing in the pitch horn on grip A.