Measuring the MCU Jackscrew Nut Backlash

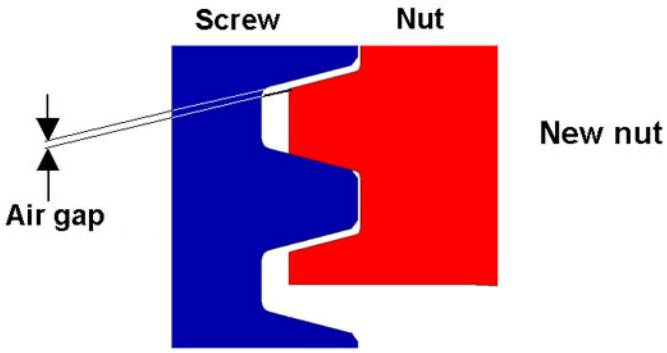
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Products

Trendsetter VLF Autoloader Multi-Cassette Unit

Background

Due to a recent mechanical failure of the Multi-Cassette Unit (MCU) fork assembly in the field, all MCUs in the field must be inspected to quantify the level of wear of the brass jackscrew nut used in the MCU jackscrew assembly. The inspection will also determine if the nut needs to be replaced by measuring the backlash or air gap between the jackscrew and the nut.



Solution

Follow the procedures outlined below and record the results in the table at the end of this document.

Time required This procedure should take approximately one half hour to complete.

Parts required

Part Number	Part Name	Quantity
512-00352A	Field service test kit (Includes wooden blocks, hammer, a piece of aluminum bar stock 1/4 x 2 x 20 in, a dial indicator with magnetic base and adjustable arm, and a jackscrew nut assembly (intended for Magnus VLF MCUs only).	1

Note: The field service test kit must be returned to local stock after completion of the test procedure. If the jackscrew nut needs to be replaced, order nut assembly 50-2137A. The nut assembly included in the test kit is for Magnus VLF MCUs only.

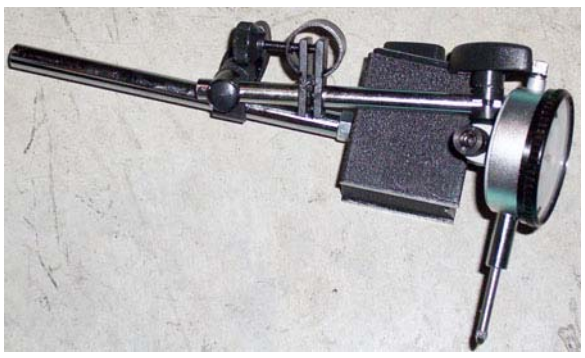
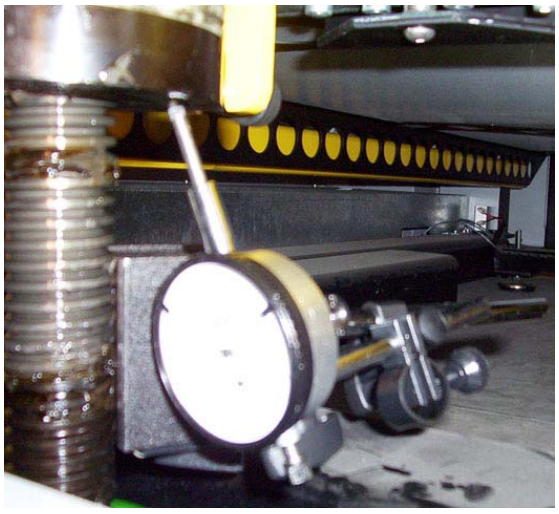
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Test Procedure

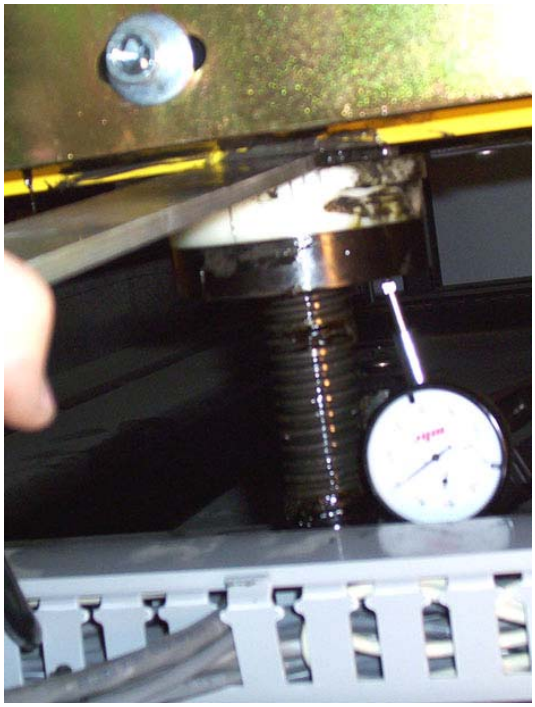
1. With the rear service access doors of MCU closed, move the forks to the cassette 1 position.
   In service shell, type `>>cass moveto 1`
2. Open the rear doors of the MCU and confirm that the forks are in the cassette 1 position (close to the bottom of the MCU).
3. Turn the safety interlock override key switch to the **Interlock Override** position.
4. Using the MCU manual jog panel, raise the forks only as high as needed to place the two wooden blocks under the bottom fork—one on each side. The blocks should go between the yellow forks and the black bottom beam.

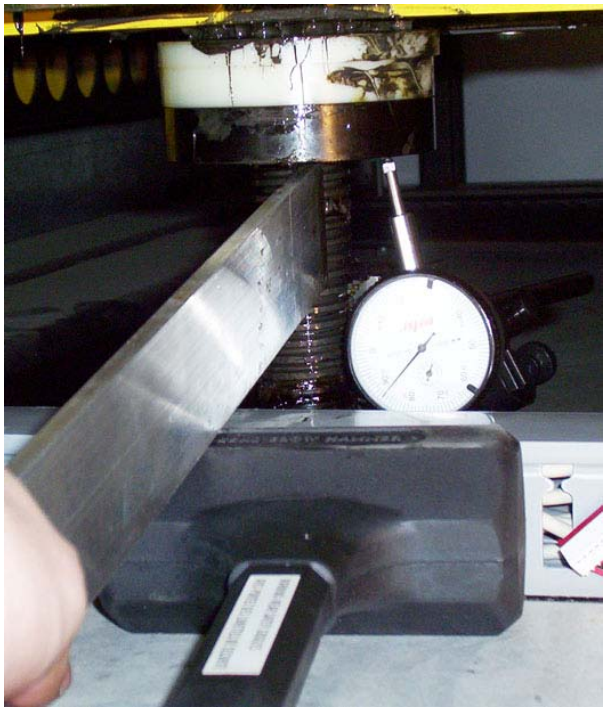



5. Lower the forks until the weight of the forks rests on the wooden blocks. Continue to drive the nut downwards until the nut separates from the forks by more than ¼" (so you can fit the aluminum bar between them).
6. Remove any grease buildup from the bottom of the jackscrew nut.
7. Install the magnetic dial gauge onto the shaft. Adjust the arm so that the dial indicator's sensing rod touches the bottom surface of the nut. Ensure that the dial indicator face can be read, that the indicator's sensing rod is relatively vertical (as close as is possible), and that the indicator is not near the end of its range of travel. Ensure that all arm joints are tight.

8. Insert the end of the aluminum bar between the yellow fork and the plastic washers and push upward with your arm, causing a downward prying force to the nut (shown below in the left photo). This ensures that the nut is fully seated on the top surface of the shaft threads. Zero the gage by turning its face plate.





9. Using the aluminum bar as a lever with a piece of scrap as the fulcrum (or use the head of the hammer included in the kit), pry upward on the nut close to the threads on the same side as the gauge is installed. Feel for the "jump" as the nut seats on the bottom surface of the shaft threads (shown above in the right photo). Record the reading on the dial gauge—this is the backlash reading or air gap.
   Note: Because the dial turns backwards, read the small inside red numbers on the gauge.
10. Take three to five measurements and send the results of each measurement to Vancouver product development – see Report Results section below.
    Note: Pry the jackscrew nut downwards and reset the dial before taking each measurement.
11. When your measurements are complete, remove the dial indicator and base.
12. Using the jog panel, raise the forks until you can remove the wooden blocks. Remove the wooden blocks.

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Interpretation of Results

Measurement (thousandth's of inches)	Interpretation
0 to 6	Error in measurement – the dial is not touching the nut, is loose, or the nut has not been tapped down.
7 to 12	Like new, unworn nut. Excellent condition.
13 to 30	Nut is worn, but does not need to be replaced yet.
31 to 40	Nut is worn and needs to be replaced. Order replacement parts and replace the nut within 30 days.
> 40	Nut is worn to unsafe levels. Order replacement parts and replace the nut immediately. Leave the forks on the blocks, and do not operate the MCU until the nut is replaced. Use proper lock-out procedures to prevent the MCU from being used.

Report Results

Fill out this form and send the results to Aleksander Lemanowicz, Peter Hawes, and Calvin Cummings as soon as possible.

Customer:				
Trendsetter VLF serial number:			**MCU serial number:**	
Installation date:			**Testing date:**	
Measurement (thousandth's of inches)				
1:	2:	3:	4:	5:

See also	Magnus VLF MCU Fork Hazard (761-00027A)
Technical contact	Al Edge Marek Zgrych
Date submitted	27 Mar 2006
Last updated	28 Mar 2006