

MODIFICATION RECOMMENDED

5DX-84B

S E R V I C E N O T E

Supersedes:
5DX-84A

5DX Series 3 and Series 5000 Systems

N7269A = ALL

N7270A = ALL

N7271A = ALL

N7272A = ALL

Z-Axis Shoulder Bolt Screws Easily Broken

To Be Performed By: Agilent-Qualified Personnel or Customer

Parts Required:

P/N	Description	Qty.
0515-2801	Z-rail Screw	12
2190-0073	Z-rail Lock Washer	12

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:			
MODIFICATION RECOMMENDED			
ACTION CATEGORY: AGREEABLE TIME		STANDARDS LABOR: 2.0 Hours	
LOCATION CATEGORY: X CUSTOMER INSTALLABLE X ON-SITE		SERVICE INVENTORY: SEE TEXT	USED PARTS: SCRAP
AVAILABILITY: PRODUCT'S SUPPORT LIFE		NO CHARGE AVAILABLE UNTIL: ALWAYS	
AUTHOR: Joachim Low		PRODUCT LINE: 80	
ADDITIONAL INFORMATION: This service note should be performed when there is a need to change Z-axis related part. e.g Z-motor. Include Service Note number in the Activity of the Service Request. Time and Material billed back to Division.			

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Situation:

The Z-Axis Shoulder Bolt Kit (N7210-68705) from service note 5DX-84A contains shoulder bolt screws to enhance the rigidity of the stage rails. The shoulder bolt screws that hold the linear rail block were found to be easily broken due to mechanical forces that exist during Z-stage movement or over-tightening by the customer or service engineer. In addition, the presence of these shoulder bolt screws increased the difficulty of aligning the z-stage. These factors contribute to higher possibility of Z-axis misalignment and Z-motor failures.

Solution/Action:

The 3 vertically-aligned shoulder bolt screws on each linear rail block should be replaced with the Z-rail Screw (0515-2801) and Z-rail Lock Washer (2190-0073) that was implemented in service note 5DX-72. This screw and lock washer set is more reliable and durable.

The following procedure replaces the three vertically-aligned screws on the linear rail to that used in 5DX-72.

Removing Shoulder Bolt Screws:**Tools Required**

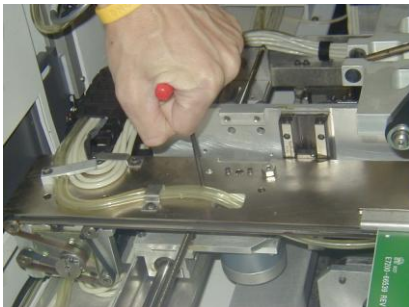
- C&A Panel
- 3mm hex key/T-handle
- 4mm hex key/T-handle
- 5/32" hex key/T-handle

1. Run **ismztest** from a command prompt to properly position the Z-axis Home stops.
2. Unload C&A Panel
3. Bottom-out the Z-axis conveyor rails by running the following:
axtest -h -z
4. Perform the 5DX System Shutdown procedure found in the System Administration Guide.
5. Carefully push both ends of each rail down against the stops at the same time.

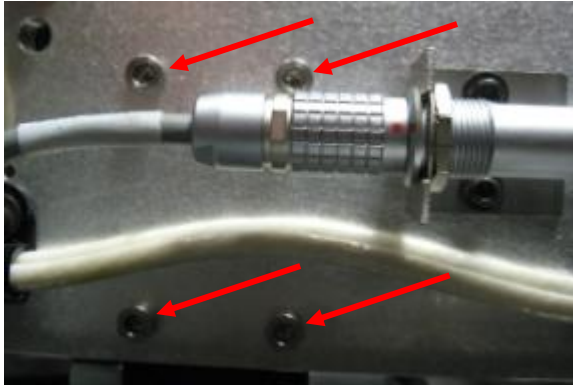
Note: It is very important to perform this procedure with the rails in the 'down' position.

6. Using a 5/32" Hex T-handle, loosen (3 or 4 turns of the screw) the four screws holding each Z-axis motor in place so the motors can float freely. This prevents loading on the motors that may bend their lead screws. See Figure 1. Perform this task on each of the four corners of the stage.

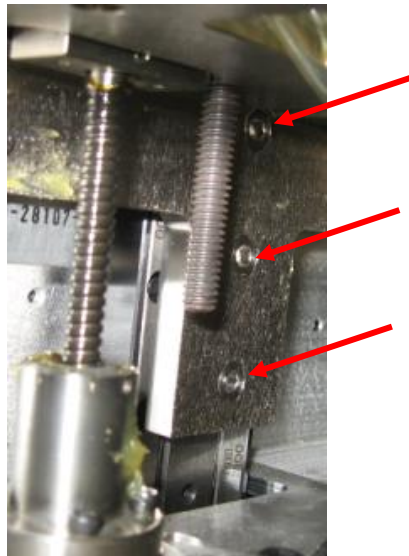
Figure 1: Loosening Z-motor



7. Loosen (3 or 4 turns of the screw and do not remove) 4 shoulder bolt screws that secure the linear rail block at all four corners of the stage using a 4mm Hex wrench. See Figures 2 and 3

Figure 2: Loosen 4 Shoulder Bolt Screws on Linear Rail**Installing Z-rail Screws and Lock Washers:**

8. Remove and discard the 3 vertically-aligned shoulder bolt screws on the linear rail block using 4mm Hex wrench. Replace them with the Z-rail Screw (0515-2801) and Z-rail Lock Washer (2190-0073) using 4mm Hex wrench. They should be set to 45 inch pounds if a torque wrench is available - else tighten these screws very tight. Perform this step on the 3 remaining linear rail blocks. See Figure 3.

Figure 3: Replacing vertically-aligned linear rail block shoulder bolt screws

Note: Do not add Loctite to the Z-rail screws as it can cause the linear rails to bind

9. Tighten back the 4 shoulder bolt screws mentioned in step 7. Repeat for 4 corners of the stage.
10. Tighten back the screws holding the Z-motor mentioned in step 6.
11. Run **ismztest** from the command prompt. Verify the Z rails are properly aligned.