

Note No.	SVC-FSB-0050
Release Date	11/20/2017
Contact	ngceoservice@ngc.com

Iklwa II and Patara II Shutter Assembly Repair Procedure

Purpose

This service bulletin describes the process for repairing a shutter assembly that binds while attempting to open and close due to incorrect hardware or incorrect arm alignment.

Scope

This service bulletin applies to shutter assemblies in Iklwa II and Patara II lasers manufactured prior to July 11, 2017.

Responsibilities

The NG CEO Technical Service Department is responsible for the content of this service bulletin.

Safety Requirements



CAUTION. Ensure the laser is turned off and unplugged from the electrical source prior to performing this operation.

Tools and Equipment

- 3/32" Hex Driver
- 5/64" Hex Driver
- 9/64" Hex Driver
- 3/16" Nut Driver
- Diagonal Cutter
- Gloves
- Small Cable Tie

Procedure

1. Remove Laser Cover

- 1.1. Move the laser to a clean area.

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- 1.2. Wipe off the outside of the laser.
- 1.3. Put on powder free gloves.
- 1.4. Ensure power is turned off to the laser and unplug laser from power source.
- 1.5. Using a 3/32" hex driver, loosen the mounting hardware holding the laser cover to the laser housing.
- 1.6. Remove the cover.

2. Determine Failure Mechanism and Repair

Shutter assemblies shipped in lasers prior to May 2017 may encounter interference between screws protruding through the disk and the solenoid when the shutter is in the open position. See **Figures 1** and **2** below.

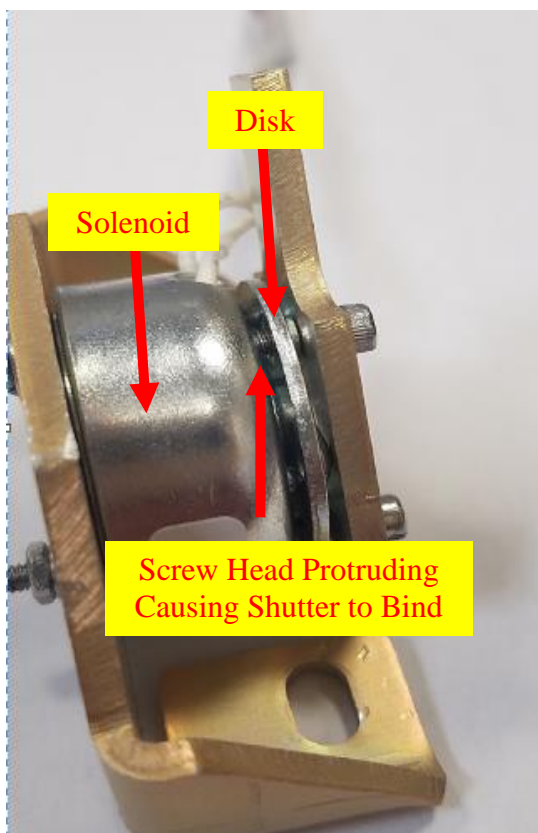


Figure 1: Protruding Screw



Figure 2: Protruding Screw – Close Up

- 2.1. Ensure that none of the three mounting screw ends are visible between the solenoid body and the thin disk, as seen in **Figures 1** and **2** above.

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- 2.2. Using gloved hands, place a finger atop the shutter arm, rotating clockwise while pushing the arm toward the solenoid as if trying to open the shutter. Feel for any binding that may occur.
- 2.3. Inspect the hardware used to mount the arm to the solenoid. Verify that each of the three mounting screws has both a lock and a flat washer. See **Figure 3**.

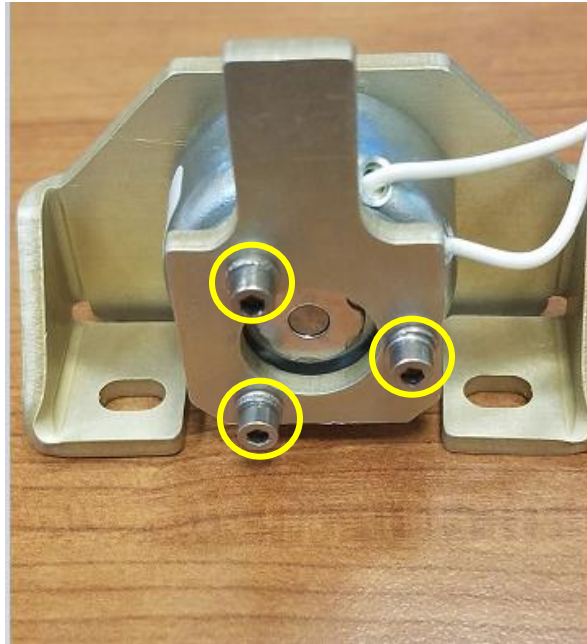


Figure 3: Inspect Mounting Hardware

- 2.4. If the screw ends are visible between the disk and the solenoid, if any binding is observed when manually opening the shutter, or there is missing hardware on the screws, cut the cable tie shown below and disconnect the 4-pin connector. Remove the shutter assembly from the laser. Remove the three sets of mounting hardware holding the arm into place. Ensure the screws are 1/4" long. Verify there is a lock and flat washer on each screw and re-attach arm with the mounting hardware. Re-install the shutter assembly back into the laser. Connect the 4-pin connector. Using a cable tie, tie the wire to the bench.

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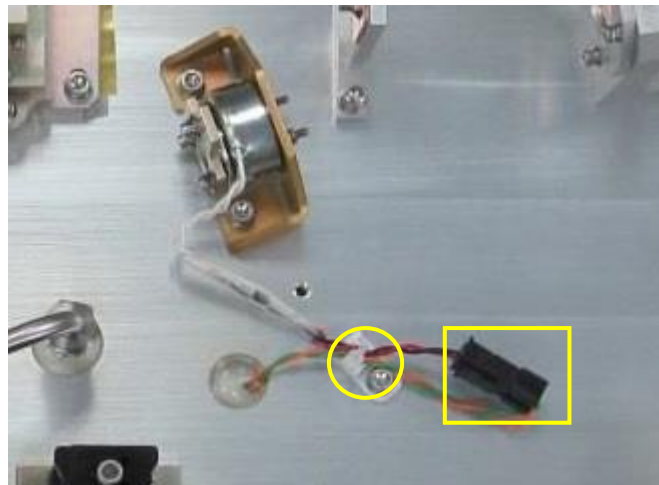


Figure 4: Inspect Mounting Hardware

- 2.5. Shutter assemblies shipped in lasers prior to July 2017 may encounter interference between the bottom of the arm and the laser bench. See **Figures 5-7** below.

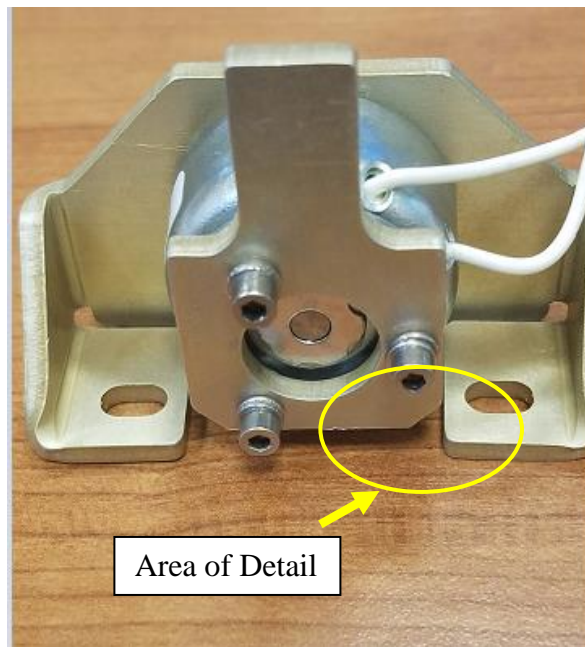


Figure 5: Area of Detail

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Figure 6: No Gap Causing Interference

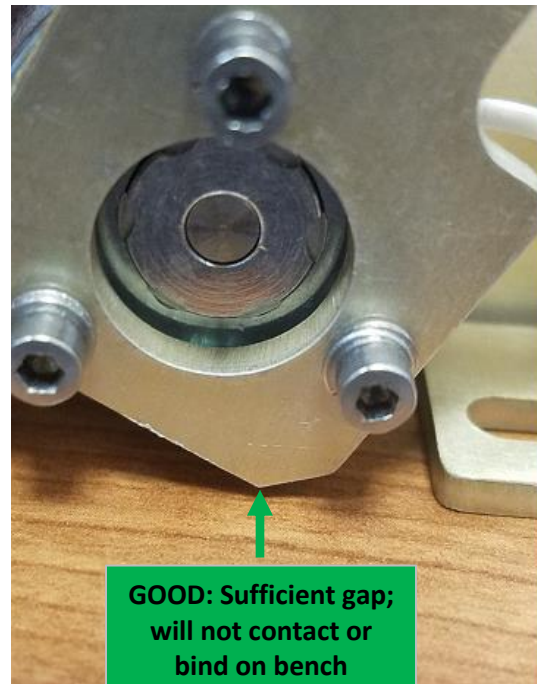


Figure 7: Has Gap – No Interference

2.6. There are a couple of options to repair this.

- a. Remove the shutter assembly from the laser.
- b. Using a 3/16" nut driver, loosen the nuts holding the solenoid to the mount. These nuts are located on the back side of the mount. If possible, slide the solenoid up in the mount and tighten the nuts. Test to see if the bottom of the arm is still binding to the bench.



Figure 8: Rear of Shutter Assembly

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- c. Remove the hardware holding the arm in place. File or grind material off of the bottom and corner of the arm. Reattach arm to solenoid with proper hardware.
- d. Reinstall the shutter assembly back into the laser. Connect the 4-pin connector. Using a cable tie, secure the wire to the bench. Test to see if the bottom of the arm is still binding to the bench.

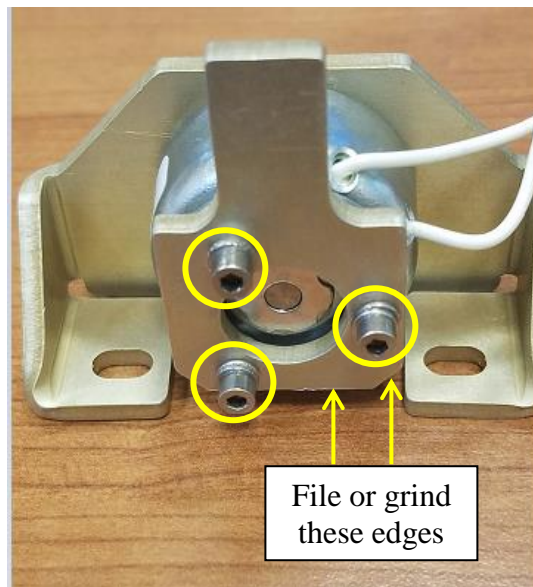


Figure 9: Remove Shutter Arm and File or Grind Bottom Edge and Corner

3. Inspect Laser and Replace Cover

- 3.1. Once there is no binding with the shutter, clean the inside of the laser of any debris.
- 3.2. Replace the cover and tighten all of the mounting hardware.
- 3.3. Return the laser to normal operation.