

SYNRAD Technical Bulletin

025

Technical Issue: Setting the Fast Acting Safety Interlock (FASI) Function on a Fenix Flyer Laser Marker

Date: 15 September 2011

Models Affected: All Fenix Flyer Laser Markers

Description:

This document describes how to access the FH Flyer marking head inside a Fenix Flyer Laser Marker for the purpose of enabling or disabling the Fast Acting Safety Interlock (FASI) function.

Required tools

The following tools are required to perform this procedure:

- 5/64" Allen hex wrench
- 9/64" Allen hex wrench
- 5/32" Allen hex wrench
- #2 Phillips screwdriver

Disassemble the Fenix Flyer housing

- 1 Position the Fenix Flyer marker as shown in Figure 1 and remove the eight pan-head Phillips screws fastening the main cover to the chassis.

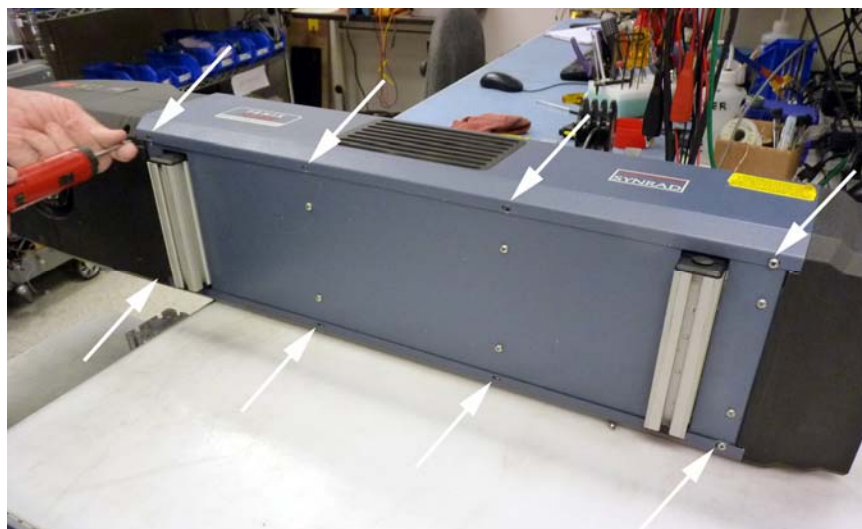


Figure 1 Remove cover fasteners

- 2 Position the Fenix Flyer back on it's feet so that the cover may be tilted up and removed.
- 3 Pull one side of the cover away from the chassis by pulling from the lower front and lower rear edges (Figure 2). Continue to lift the cover away from the chassis while tilting it towards the other side of the laser chassis. Lift the cover clear of the chassis and set it aside.



Figure 2 Remove Fenix Flyer cover

4 Figure 3 identifies the upper and lower clamshells that contain the Flyer marking head.



Figure 3 Upper and lower clamshells

5 Remove the six Allen head bolts (Figure 4) holding the upper clamshell to the lower clamshell.

Note: Figure 4 shows the unit on its side for clarity. The Fenix Flyer chassis should be on its feet when you disassemble the unit.

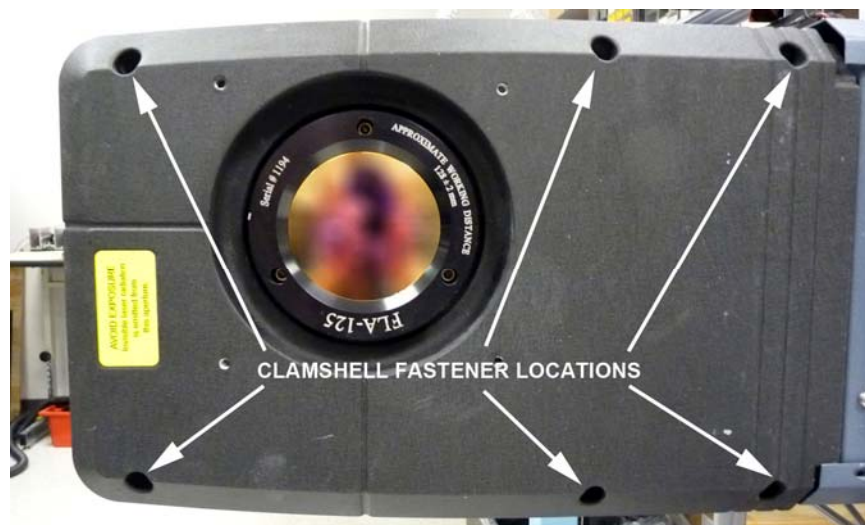


Figure 4 Upper clamshell fastener locations

- 6 Carefully tilt the upper clamshell up from the front (Figure 5) and disconnect the two cables from the clamshell circuit boards. There is a two-wire connection at the front on one side and a ribbon cable connection at the rear on the other side. Set the upper clamshell aside.

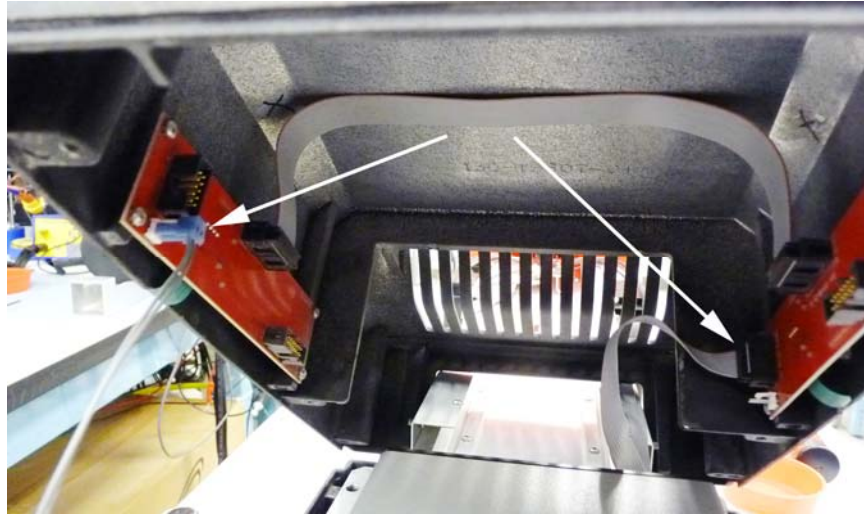


Figure 5 Upper clamshell cable connections

- 7 Remove the Phillips screws and split washers holding the lower clamshell to the laser chassis (Figure 6). There is one fastener on each side. Be sure to support the lower clamshell to prevent it from falling.

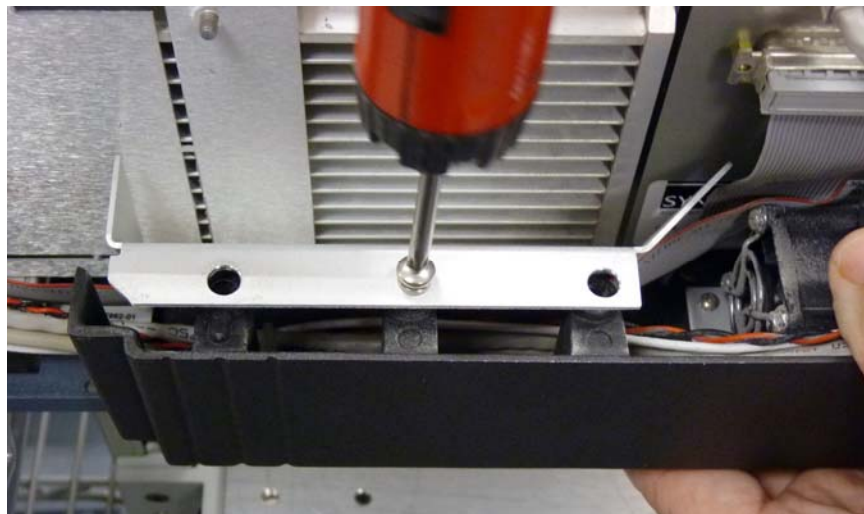


Figure 6 Lower clamshell fastener locations

- 8 Once the lower clamshell is loose, carefully disconnect the fan power connector shown in Figure 7.



Figure 7 Fan power connector location

Access the Flyer configuration switches

- 1 Remove the two 5/64" button head Allen screws from the top of the Flyer head on the connector side (Figure 8).



Figure 8 Side fasteners for Flyer cover

- 2 Refer to Figure 9 and remove the two 9/64" Allen capscrews holding the cover to the baseplate of the Flyer head.



Figure 9 Lower fasteners for Flyer cover

- 3 Lift and tilt the Flyer cover up from the connector side of the scan head (Figure 10). Carefully remove the cover and set it aside.



Figure 10 Remove Flyer cover

- 4 Locate the DIP switch bank SW1 on the upper circuit board in the Flyer head. Switch 1 on SW1 controls the FASI function.

To **enable** FASI, set Switch 1 to the ON position

To **disable** FASI, set Switch 1 to the OFF position

Important Note: Do not move any other switches on switch bank SW1 or SW2. Except for Switch 1 on SW1, all other switches must remain at their default settings.

Note: Figure 11 show the FASI switch, Switch 1, in the Off position.

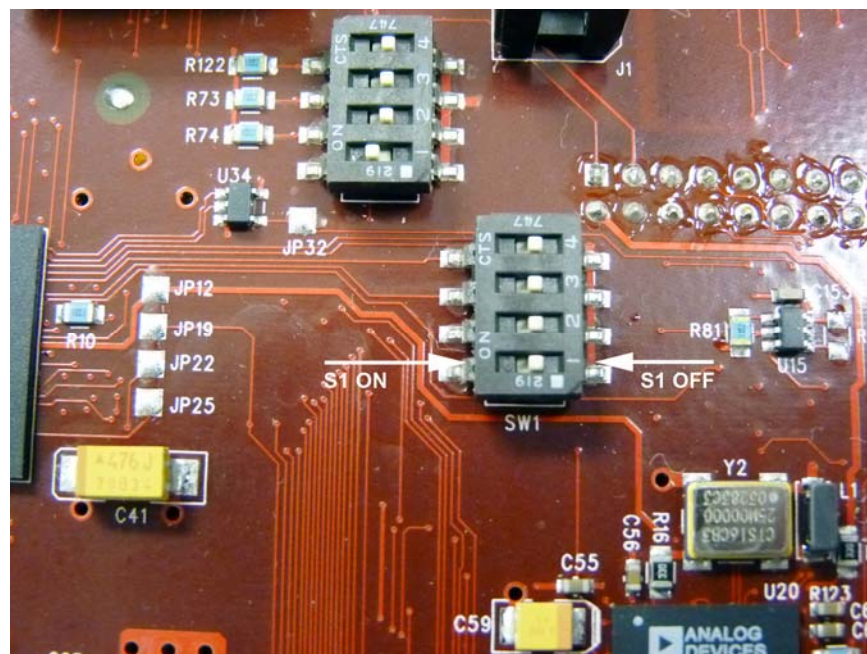


Figure 11 FASI switch location

Reassemble the Fenix Flyer housing

Reassemble the Fenix Flyer marker by reversing this procedure. During reassembly, the following steps deserve extra attention as described below:

Note 1 When replacing the Flyer cover, be careful to avoid pinching the Y-axis galvanometer wires. The best way to prevent damage to the wires is to position the bottom flange of the cover under the wires as shown in Figure 12, then rotate the cover onto the head.

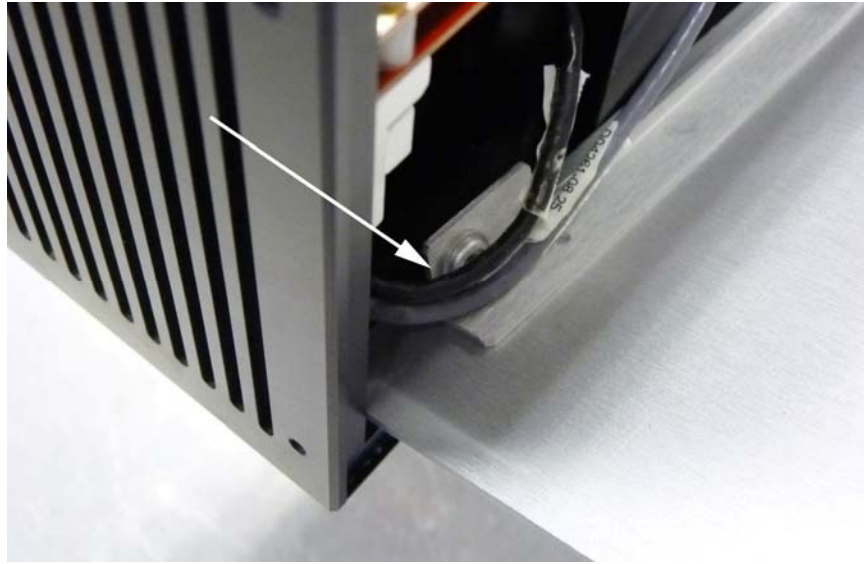


Figure 12 Galvanometer wire positioning

Note 2 When replacing the lower clamshell, Figure 13, carefully route the Parts Handling ribbon cable between the fan and the Flyer head. Reconnect the fan wires and route them along with the bundle of wires between the fan and the inside of the clamshell.

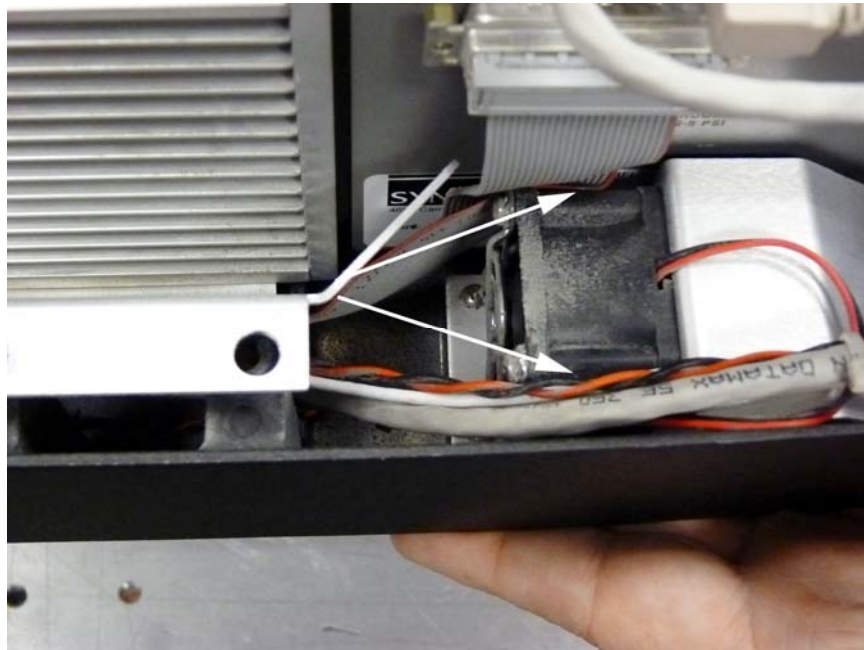


Figure 13 Ribbon connector and wire bundle positioning

Note 3 When replacing the upper clamshell, route the ribbon cable to the inside of the clamshell's cutout to avoid pinching the cable (see Figure 14).



Figure 14 Ribbon cable positioning

Note 4 Push the two-wire cable up inside the upper clamshell when lowering it into place as shown in Figure 15.



Figure 15 Two-wire cable positioning

Note 5 When replacing the cover, verify the center of the fan guards are aligned with the center of the fans (Figure 16) with the Fenix Flyer logo at the front of the chassis. The cover is not symmetrical, so if installed incorrectly, the fan guards will be offset from the fans.



Figure 16 Fenix Flyer main cover orientation

Note 6 It is normal to see a gap between the upper clamshell and the main cover (see Figure 17) because the clamshell edges are tapered to facilitate the casting process.

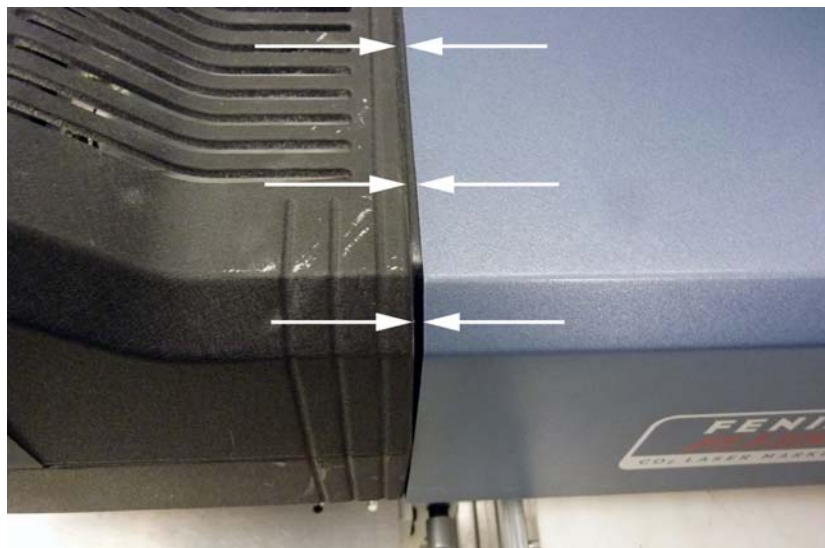


Figure 17 Fenix Flyer main cover orientation

Configure WinMark Pro and automation wiring

- 1 After reassembly is complete, power up the unit and connect to WinMark Pro. In WinMark under Tools / General Settings..., click the “Flyer” tab and scroll down until the *FASI Enable* property appears (Figure 18). This property reads the current state of the FASI switch setting. If you **enabled** FASI, the *FASI Enable* property value will read “Yes”; if you **disabled** FASI, it will be “No”.

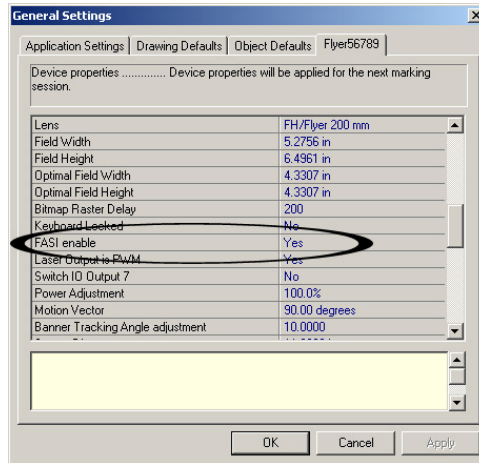


Figure 18 FASI Enable property display

- 2 Open your mark files and configure WinMark Pro’s *Wait Digital Before Piece* automation command to wait for a “Set” state on input *IN3* before marking begins (see Figure 19). This step synchronizes marking operations with the FASI safety feature.

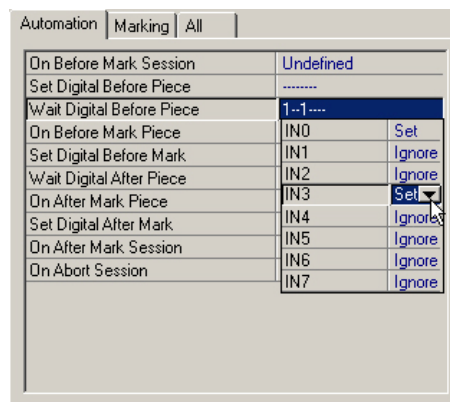


Figure 19 FASI configuration on Automation tab

In most automation schemes, *IN0* (in the Wait Digital Before Piece automation stage) is used as the ‘start mark’ signal. When *IN3* is also set, lasing will not occur until both *IN0* **and** *IN3* are set (active).



Note: When *INO* is “Set” in the Wait Digital Before Piece automation stage as the ‘start mark’ signal, you should be sure to “Clear” *INO* in the Wait Digital After Piece automation stage.

- 3** To begin lasing with FASI enabled, apply a 5–24 VDC signal to Fenix Flyer input *IN3*. See the Technical Reference chapter in the *Fenix Flyer CO2 Laser Marker Operator’s Manual* for details about wiring marking head I/O connections.

When FASI is enabled, *IN3* **must** be active before Fenix Flyer sends PWM Command signals to the laser. If the FASI feature is enabled but *IN3* is inactive (no current flow), then no marking will occur. In FASI mode, even manual firing of the laser using the *Test Mark* pushbutton requires an active input signal on *IN3*.

For further information contact SYNRAD at 1.800.796.7231; outside the U.S., dial +1.425.349.3500 or fax us at +1.425.349.3667.