

Title: Sigma Trac II Encoder Cleaning and Leveling Procedure (Heidenhain Option)

Product(s): Sigma Trac II

Doc. No. TN.ST2.03

Overview

This technical note instructs the user on the proper procedure for cleaning and leveling the linear encoder on Sigma Trac II linear stages equipped with the optional Heidenhain optical linear encoder.

Applicable Product

This procedure applies to all Sigma Trac II stages using the optional Heidenhain encoder with part numbers matching ST2F-□□□□□□□□-□2□□ or ST2F-□□□□□□□□-□9□□. This procedure may also apply to custom Sigma Trac II stages that use the Heidenhain optical linear encoder.

Equipment Needed

- Heidenhain 0.15mm shim
- 1.80 Nm torque screwdriver with 2.5mm hex bit
- 6mm hex key or bit screwdriver
- Lens cleaning wipes (denatured alcohol)
- Lint-free long handled cleaning swabs
- Long (6" min.) T-handle hex key (6mm hex for A1 carriage, 8mm hex for A2 & A3 carriages)
- Loctite 243 or equivalent (blue, workable)
- Heidenhain PWT 101 encoder signal tester

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Process

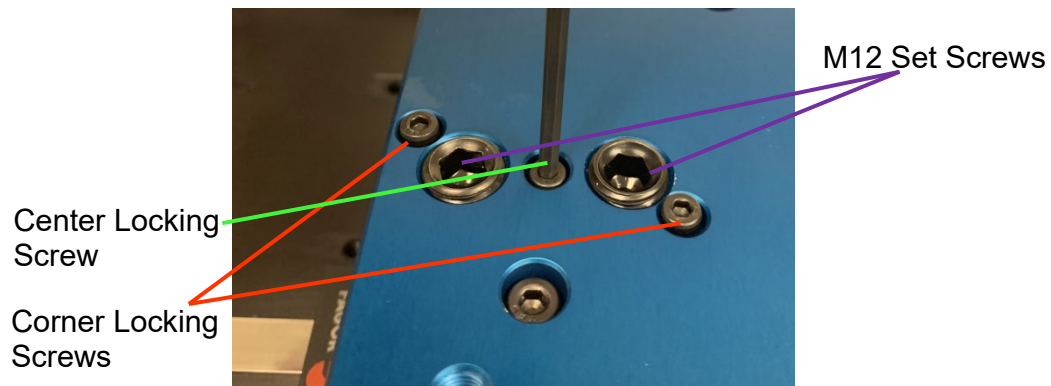


Figure 1: Name convention for encoder fastening screws

Readhead Cleaning

- Loosen M12 set screws with 6 mm hex key until screws extend 3 threads above top of carriage.
- Tighten Center & Corner Locking Screws with 2.5 mm hex bit screwdriver or hex key to raise readhead fully.
- Use cleaning swabs and/or lens cleaning wipes to clean both encoder readhead and encoder scale tape. The underside of the encoder readhead is shown in Figure 2.

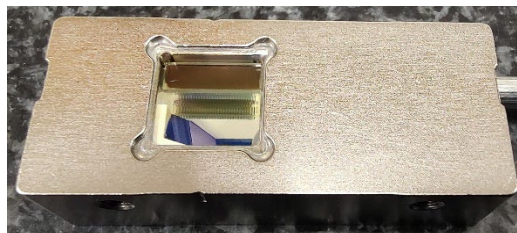


Figure 2 Underside of encoder readhead

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□ **Aligning and Leveling Readhead**

- ▣ Clean the Heidenhain 0.15mm shim.
- ▣ Place Heidenhain 0.15mm shim between the readhead and scale, ensuring that the shim is fully resting on scale tape holder extrusion and under the entire readhead, as shown in Figure 3.



Figure 3: Shim placement between readhead and scale

- ▣ Completely unscrew corner locking screws.
- ▣ Refasten the corner locking screws $\frac{1}{4}$ to $\frac{1}{2}$ turn to keep the readhead from shifting.
- ▣ Unscrew center locking screw until the readhead is touching the shim.
- ▣ With a long T-handle hex key or equivalent, hold readhead mounting block flush with carriage. Continue holding until instructed to remove the T-handle hex key or equivalent later in this procedure. Proper placement of the hex key is shown in Figure 4.



Figure 4: Placement of the T-handle hex key or equivalent

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- ❑ Lightly screw in both M12 set screws until they touch the encoder mounting block. Finger tighten both set screws not more than 5 degrees.
 - ❑ Remove only the center locking screw and add Loctite to the screw.
 - ❑ While continuing to hold mounting block flush with carriage, tighten the center locking screw to 1.8 Nm.
 - ❑ Remove one corner locking screw and add Loctite to the screw. While continuing to hold mounting block flush with carriage, tighten the corner locking screw to 1.8 Nm. Repeat for the other corner locking screw.
 - ❑ Remove the long T-handle hex key or equivalent from the holding position.
 - ❑ With a light push, move the carriage off the shim while holding shim down with a finger.
- NOTE: If the carriage is pulling the shim with it, stop and repeat the procedure using less torque to tighten M12 set screws. Failure to do so could damage the readhead and scale.**
- ❑ Clean scale tape of any dust, oil, or fingerprints.
 - ❑ Verify the encoder is level by connecting the encoder readhead to the Heidenhain PWT 101 encoder signal tester and move the carriage through full range of movement.