

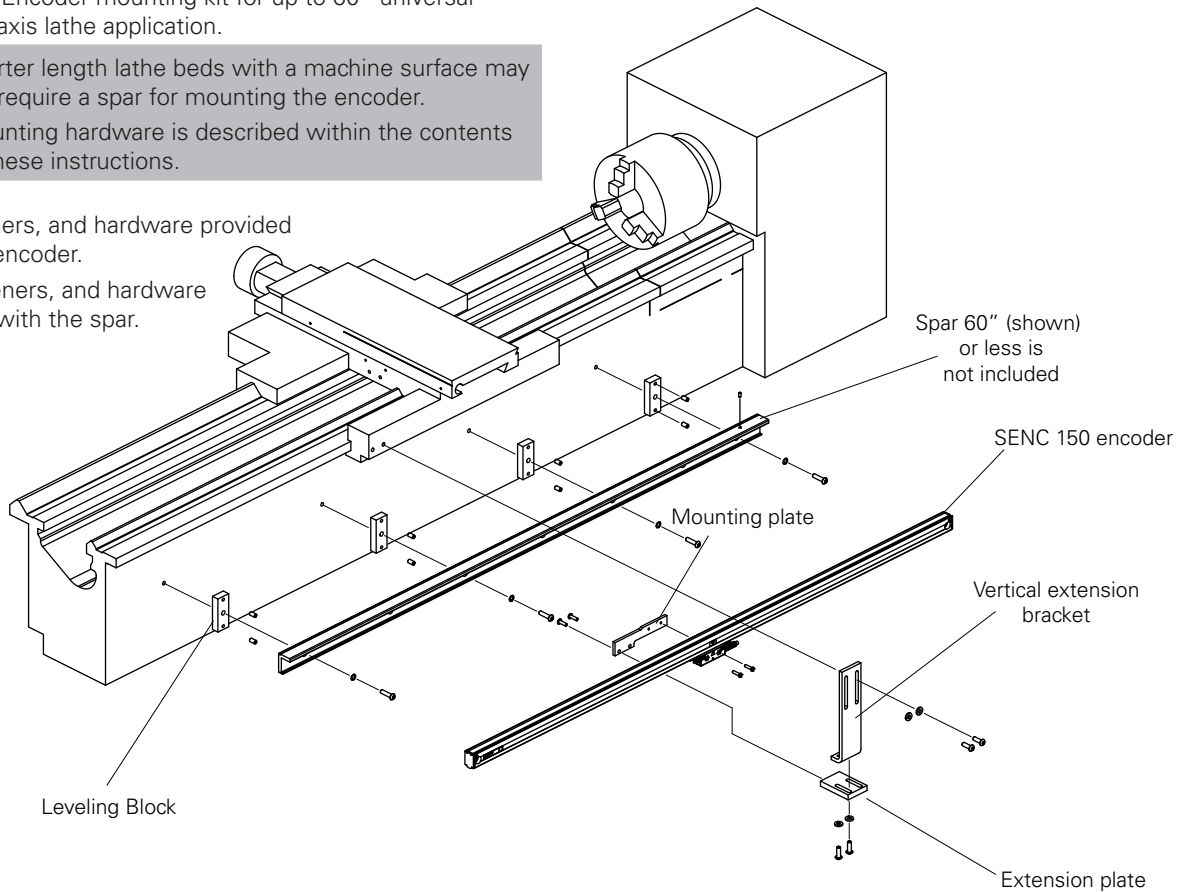
# SENC 150 Encoder Installation

**ACU-RITE®** Encoder mounting kit for up to 60" universal longitudinal Z axis lathe application.



Shorter length lathe beds with a machine surface may not require a spar for mounting the encoder. Mounting hardware is described within the contents of these instructions.

- (\*) Fasteners, and hardware provided with the encoder.
- (\*\*) Fasteners, and hardware provided with the spar.



## Mounting Information:

These installation instructions are for mounting the **SENC 150 encoder** to the **Z** axis longitudinal travel on the rear of the bed using a spar. The graphics in these instructions refer to the maximum length spar for a 60" encoder.

For installations not using a spar, follow these instructions in the same fashion for mounting the encoder using the end mounting holes. Refer to the encoder reference manual for installing encoder center support(s).

These graphics may not depict the exact installation application, but all necessary information is provided to successfully install the linear encoder.

Extra hardware may be included which may not be required for your specific installation.

## Before proceeding:

- ▶ Become familiar with these instructions prior to installing the encoder.
- ▶ Ensure that the correct length encoder is being used for the complete travel of the axis.
- ▶ Clean all mounting surfaces removing any debris and paint.
- ▶ Save the alignment brackets with the Encoder Reference Manual after completing the installation.



Installation of the encoder requires the reading head to be centered on the scale case, and the carriage at its center of travel.

## First Steps:

### Machine ...

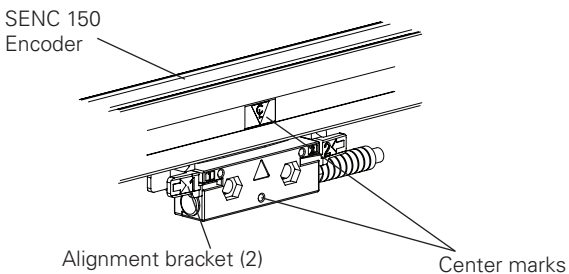
- ▶ Move the carriage to its center of travel in the longitudinal Z axis.
- ▶ Place a pencil mark on the bed so that the carriage can be moved back to the center of travel easily.

### Encoder ...

- Unpack the encoder in a safe, convenient location.
- The reading head alignment brackets are not removed until **after** the installation is completed.

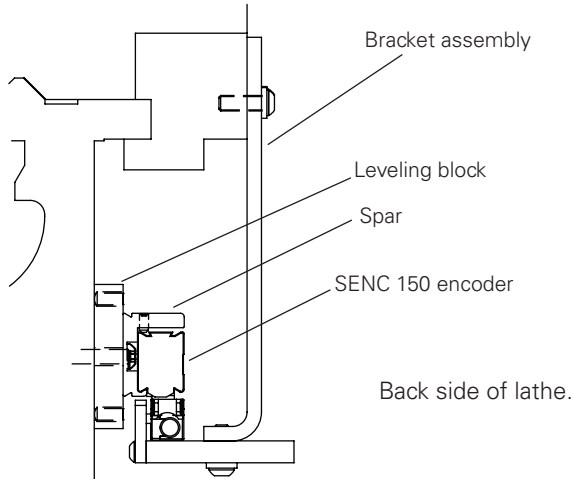
### Center reading head ...

- ▶ Center the reading head on the scale case by sliding the reading head with the brackets attached along the scale case until the center marks are in alignment.



## Installation information:

- These instructions will install the encoder and spar as shown here, viewed from the end of the lathe bed.

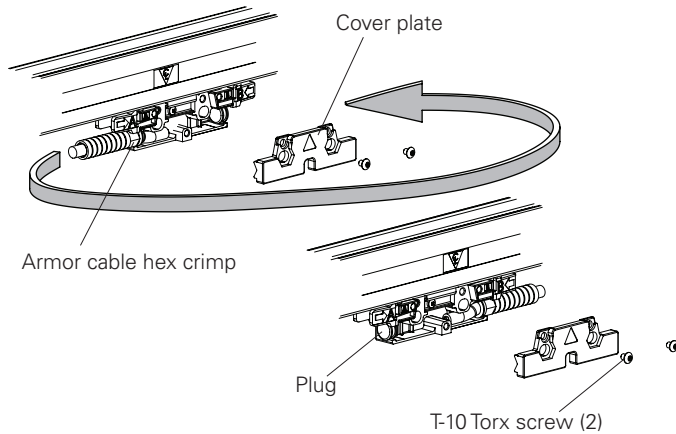


### Cable exit ...



The cable exit direction must be set before installing the encoder.

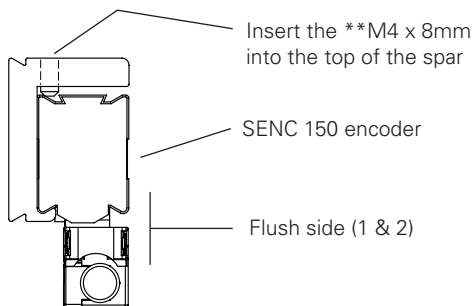
- Exit the cable out of the reading head that provides the safest direct route to where the read out will be mounted.
- To change the exit direction, remove the cover plate, and plug. Rotate the cable 180° to the opposite end of the reading head casting. Insert the plug at the other end, and re-attach the cover plate.



## Starting the installation:

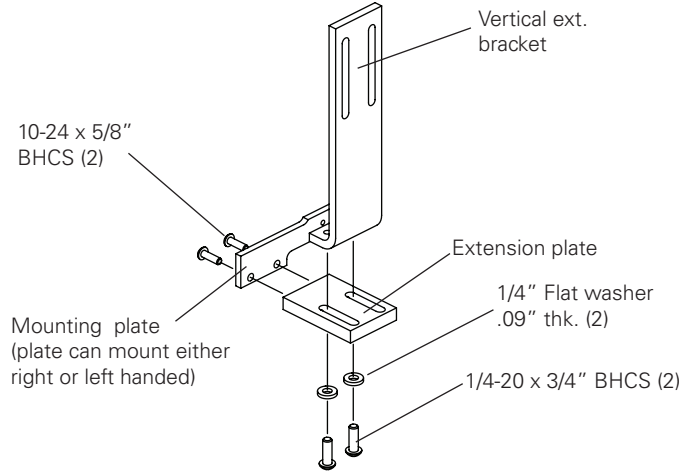
### Encoder/spar assembly ...

- For installations using a spar, assemble the encoder into the spar as shown, and center from end to end. Tighten the center set screw only.



### Bracket assembly...

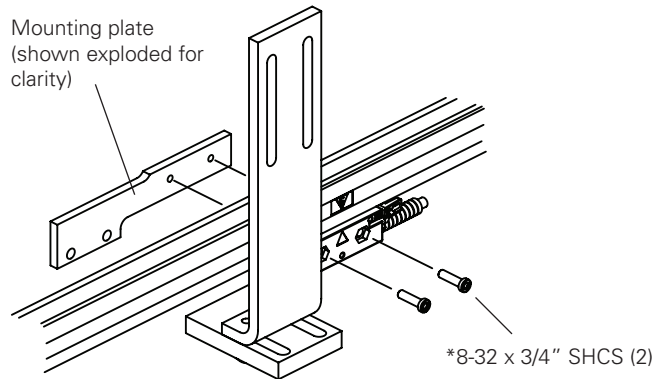
- Assemble the brackets, leaving the extension plate loose enough to slide back and fourth.



- Temporarily attach the bracket assembly to the reading head for locating purposes.



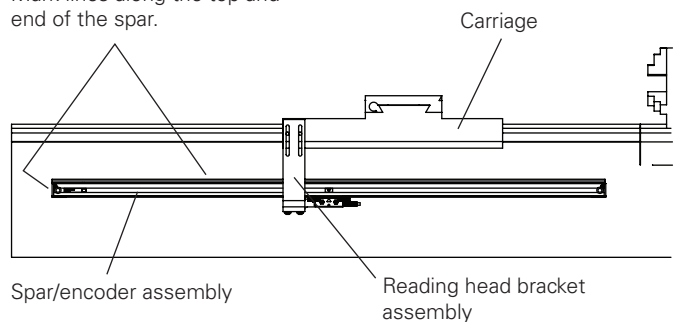
Take care to support the reading head bracket assembly at all times. The alignment brackets will not support the bracket assembly while attached.



### Mounting location ...

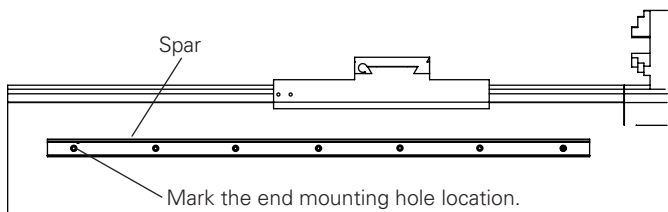
- With the carriage at its center of travel, position the encoder/spar assembly to the side of the bed, and the bracket assembly to the carriage.
- Locate the assembly so that a suitable mounting position is provided for both the encoder/spar assembly to the bed, and the bracket assembly to the carriage.
- With the assembly parallel to the bed ways, mark location reference lines on the bed, and remove the assembly.

Mark lines along the top and end of the spar.



### First mounting hole location ...

- ▶ Carefully remove the bracket assembly from the reading head, then the encoder from the spar.
- ▶ Position the spar to the scribed lines and mark an end mounting hole location to the bed.
- ▶ Drill and tap the location for a 1/4-20 x 1/2" deep.



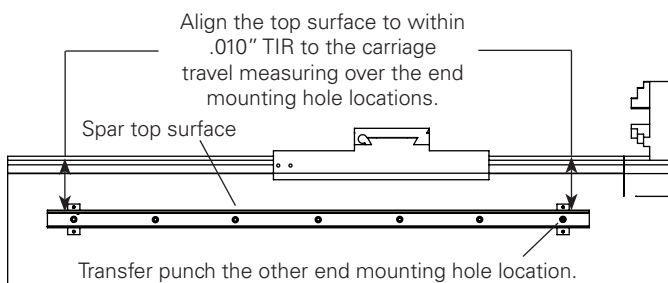
### Second mounting hole location ...

- ▶ Attach the spar at the end hole location to the bed using a \*\*1/4-20 x 1/2" or 1/4-20 x 1-1/4 BHCS with leveling block.



All bed surfaces except a machined surface requires using the leveling blocks. A machined surface may require them to space the spar/encoder away from the side of the bed.

- ▶ Align the top of the spar to the carriage travel to within 0.010" TIR measured at each end.
- ▶ Transfer punch the other end mounting hole location.
- ▶ Remove the spar, drill and tap the hole location for a 1/4-20 x 1/2" deep.
- ▶ Attach the spar at each end to the bed.
- ▶ Align the top of the spar to the carriage travel to within 0.010" TIR measured above each end hole location and secure in place.



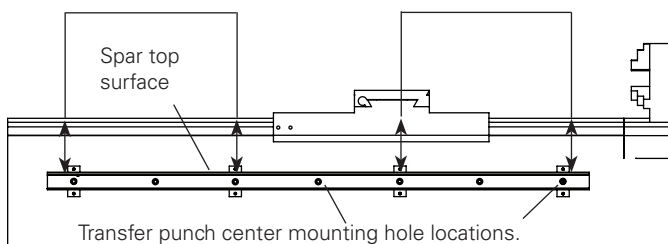
### Remaining mounting hole location(s) ...

- ▶ Measure and position the top of the spar above each hole location to be used to within 0.010" TIR with the closest end mounting hole location. Transfer punch each mounting hole location as they are being measured.
- ▶ Remove the spar, drill and tap the hole location for a 1/4-20 x 1/2" deep.



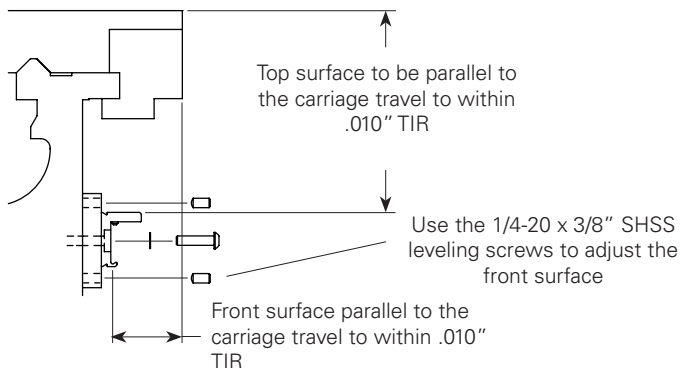
Longer spars have multiple mounting holes spaced at 10.0" apart. Mounting hole locations should not exceed 20".

Align the top surface to within .010" TIR to the carriage travel measuring over the end mounting hole locations.



### Spar alignment ...

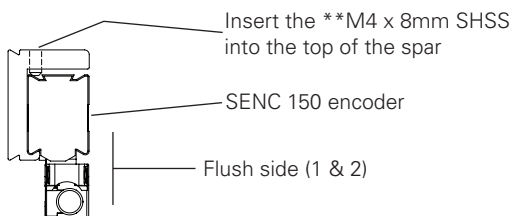
- ▶ Align the front surface of the spar to within .010" TIR of the carriage travel while maintaining the top surface alignment.
- ▶ Secure the spar in place maintaining all alignments.



### Encoder installation:

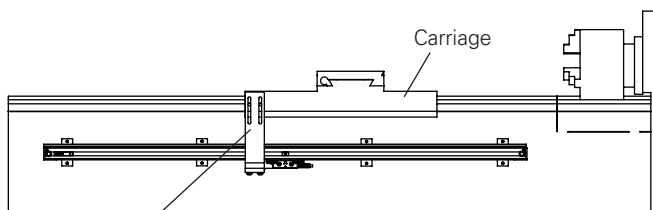
#### Encoder / spar assembly ...

- ▶ Insert the encoder into the spar as done previously.
- ▶ Secure the encoder in the spar by tightening the spar set screws starting from the center, working out towards the ends.



#### Reading head bracket installation ...

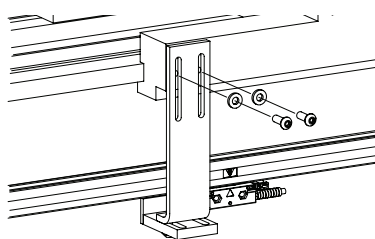
- ▶ Move the carriage to its center of travel.
- ▶ Attach the bracket assembly to the reading head. Support the reading head bracket assembly at all times.
- ▶ Position the assembly to the carriage, and mark the location of the two mounting slot locations.
- ▶ Carefully remove the assembly from the reading head.
- ▶ Drill and tap the locations for 1/4-20 x 1/2" deep.



Mark the two mounting slot locations.

#### Reading head bracket installation ...

- ▶ Attach the bracket assembly to the carriage with two 1/4-20 x 1" BHCS, and 1/4" Flat washers (.09" thk.).
- A 5/8" thick spacer and two 1/4-20 x 1-1/2" BHCS are provided if the vertical bracket must be spaced further out away from side of the carriage.

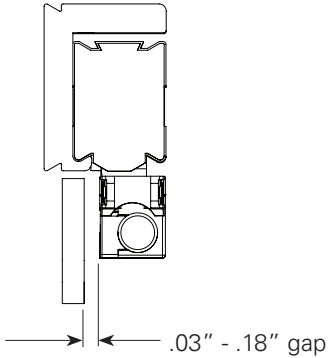


## Mounting plate positioning ...



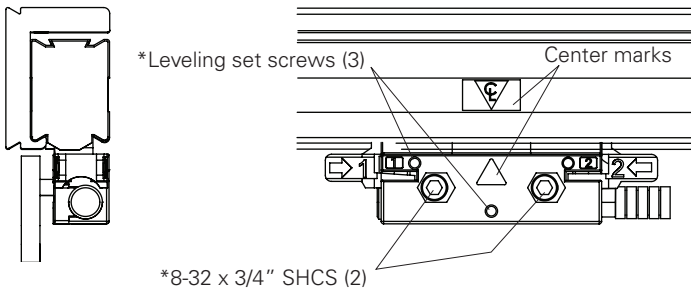
The carriage should be at it's center of travel, and the reading head should be centered on the scale.

- ▶ Adjust the extension plate so that a .03" - .18" gap is between the reading head and the mounting plate.
- ▶ Align the holes in the mounting plate to the reading head mounting holes.
- ▶ Insure that screw head clearance is provided in the reading head casting counter bore, by inserting the two \*8-32 x 3/4" SHCS (do not tighten). Screw heads should not contact the sides of the counter bore.
- ▶ Remove the screws, and secure bracket assembly in place.



## Attaching the reading head ...

- ▶ Re-insert the two \*8-32 x 3/4" SHCS through the front of the reading head casting into the mounting plate (do not tighten).
- ▶ Set each leveling screw by placing a .001 - .003" feeler gage between the screw and reading head mounting plate. Adjust each screw (with the \*allen wrench provided) until a slight drag is felt on the feeler gage.
- ▶ Insure that screw head clearance is provided in the reading head, and evenly tighten the two \*8-32 SHCS.



## HEIDENHAIN CORPORATION

333 East State Parkway  
Schaumburg, IL 60173-5337 USA

☎ +1 (847) 490-1191

FAX +1 (847) 490-3931

E-Mail: info@heidenhain.com

www.heidenhain.com

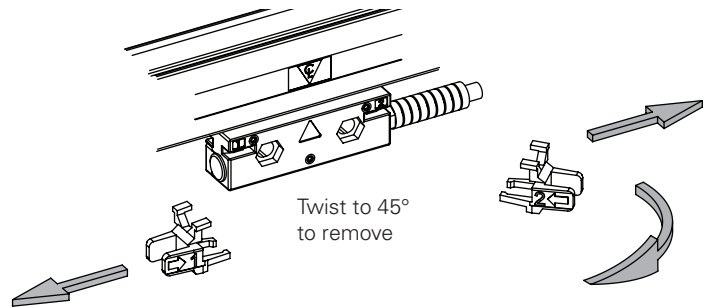
8/2014

## Alignment bracket removal ...

- Use the \*allen wrench provided as a tool to slide the alignment brackets away from the reading head.
- ▶ Slide the alignment brackets away from the reading head 2 - 3"
- ▶ Twist the brackets 45° as shown to remove them from the scale case.
- Save Alignment brackets for possible future use.



Move the axis through its full travel. Confirm that the assembly does not interfere with the machine movement.



## Encoder connection ...

- ▶ After completing the cross feed installation, route the cables providing sufficient slack loops for machine movement to the readout.
- ▶ Secure cables by fastening with the nylon ties provided.
- ▶ Attach the encoder connectors to the readout.
- ▶ Complete the installation by following the steps in "Checking Your Installation" section in the encoder "Reference Manual".



Proceed with the **X** axis installation, followed by installing the DRO.

