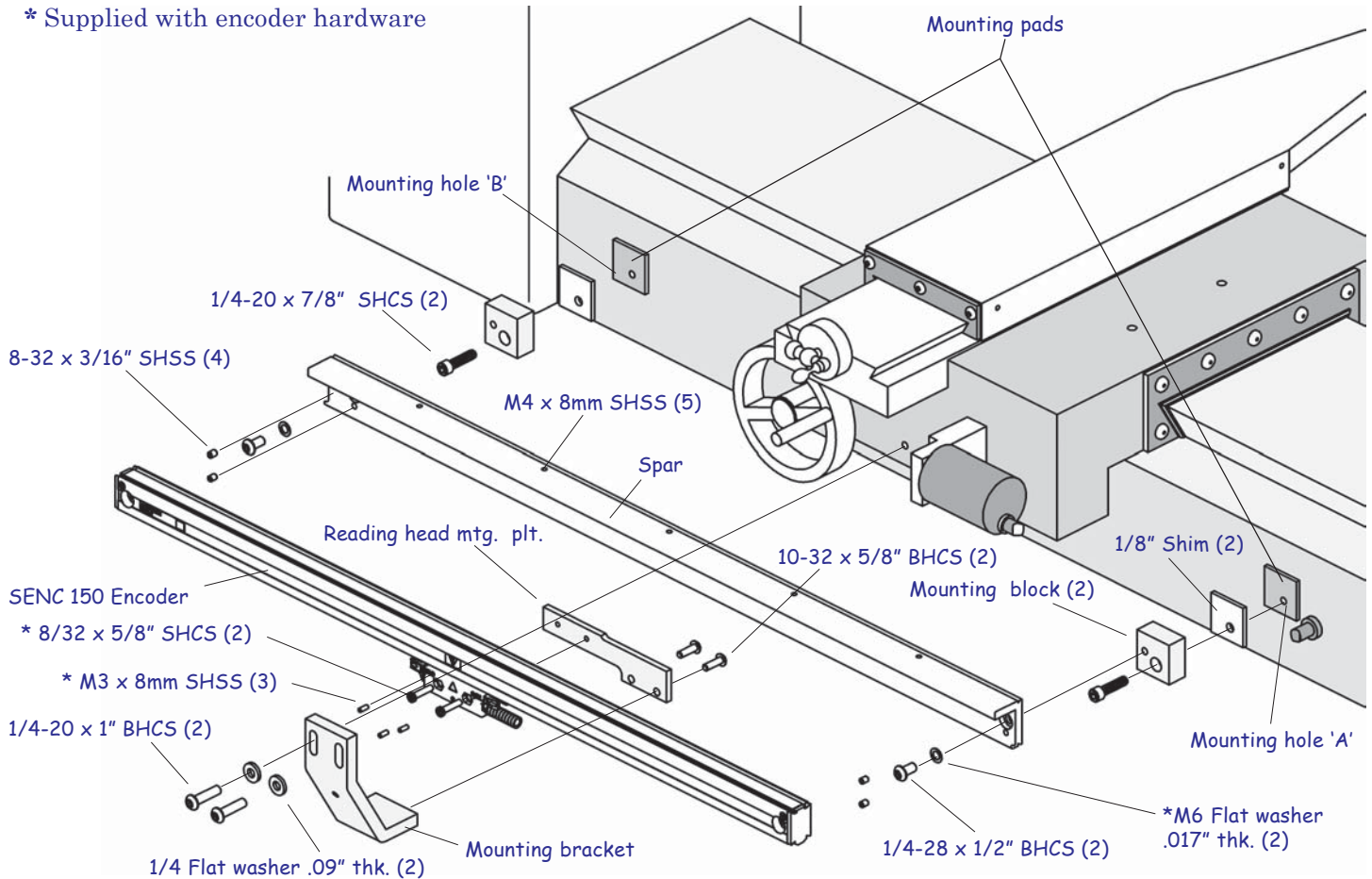


## Longitudinal Installation ...

\* Supplied with encoder hardware



## Mounting Information...

These are application instructions for mounting the longitudinal "Z" & "X" axis SENC 150 encoder. Since 1988, Hardinge lathes have been predrilled, and mounting pads added to the longitudinal installation.

### Before proceeding:

- Please read the instructions completely.
- Mount Z axis prior to installing the cross feed.
- Remove set screws from factory drilled holes.
- Keep the reading head centered during installation.
- Clean the mounting surfaces.
- Save the alignment brackets with the Encoder Reference Manual after installation is completed.

## First Steps ...

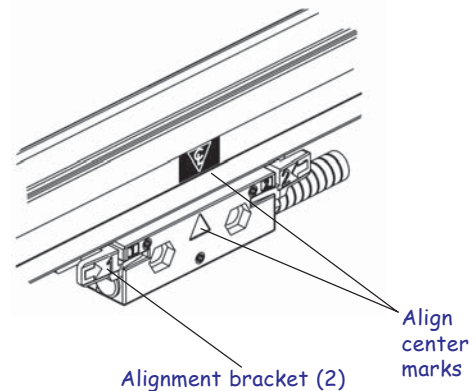
### Machine

- ✓ Move the carriage to its center of travel.
- ✓ Mark the axis so that it can be re-centered easily.

### Encoder

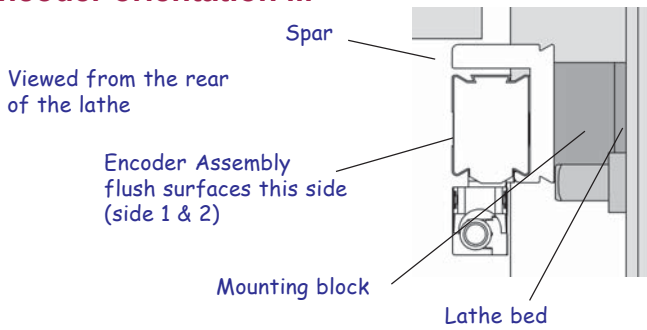
- ✓ Unpack encoder in a safe, convenient location.
- ✓ Do not remove the reading head alignment brackets until instructed.

### Center reading head ...



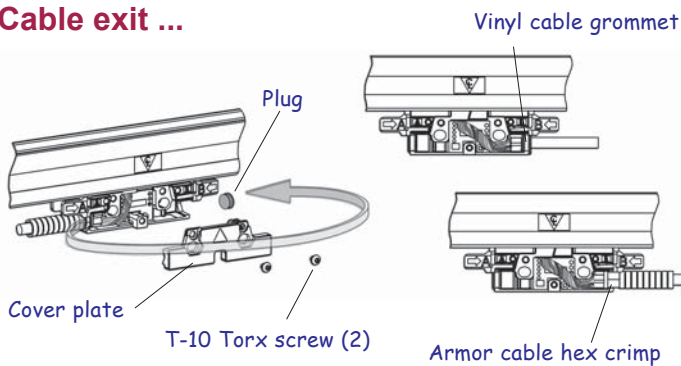
- Slide the reading head and brackets along the scale case until the center marks on the scale case and reading head are aligned.

## Encoder orientation ...



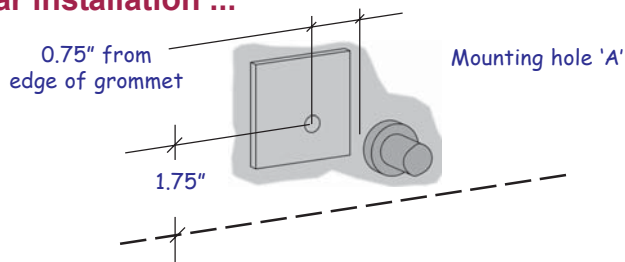
- These instructions will guide you through installing the encoder as shown in this view.

## Cable exit ...



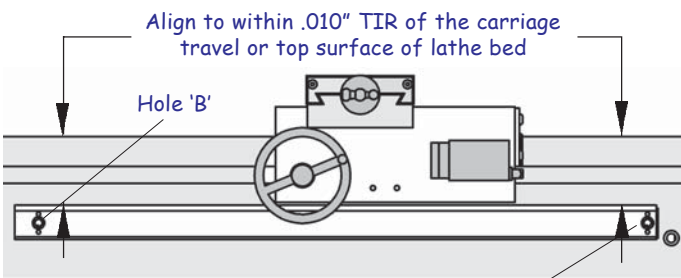
- Determine the cable exit direction before installing the encoder.
- To change the cable exit direction, remove the cover plate and rotate the cable 180°.

## Spar installation ...

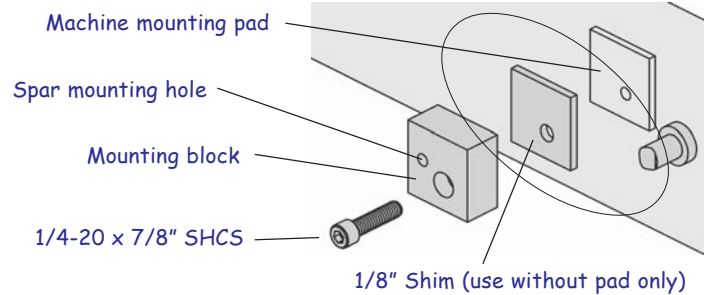


### Lathes manufactured prior to 1988:

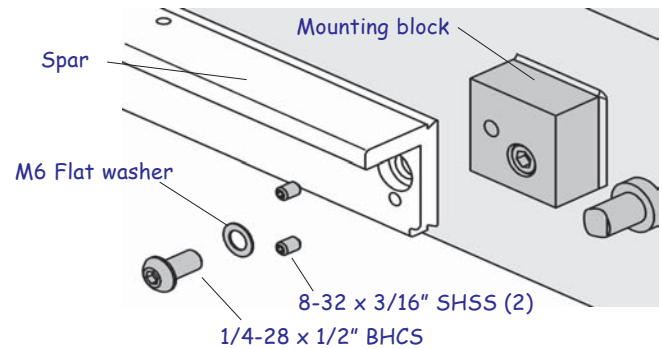
- These instructions assume factory drilled holes are present. If they are not, locate mounting hole "A", drill and tap for a 1/4-20 x 1/2" deep.



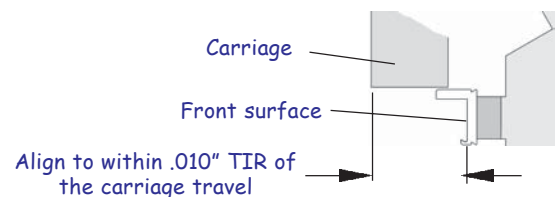
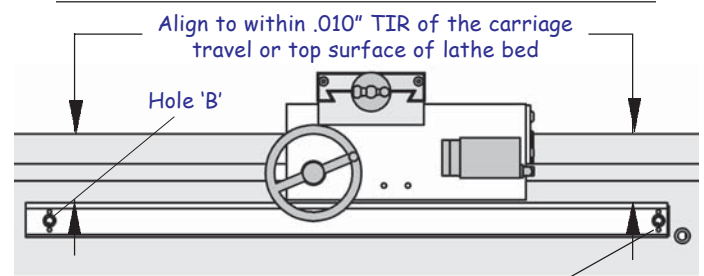
- Fasten the spar at Hole 'A' location and align the spar.
- **Pre 1988 lathes:** Transfer punch hole 'B', and drill and tap location for a 1/4-20 x 1/2" deep.



- Attach the spar mounting blocks as shown with the tapped hole to the left on the block.
- Align the top of the block parallel with the bed way. 1/8" shim is only required on pre 1988 lathes without mounting pads.

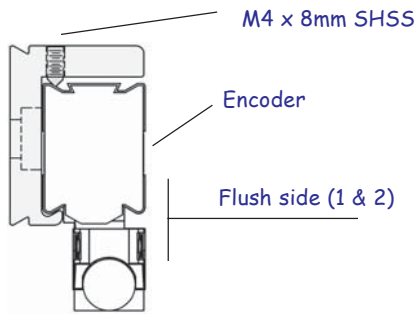


- Insert the two 8-32 x 3/16" SHSS into the spar at each end and attach the spar to the mounting blocks.



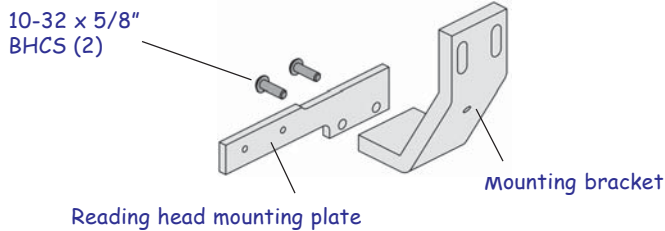
- Align the top and front surfaces of the spar.
- Secure spar in place maintaining alignment.

## Encoder installation ...

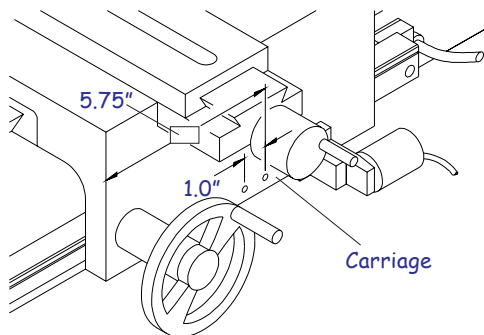


- Insert and center the encoder in the spar from end to end and tighten set screws to secure in place.

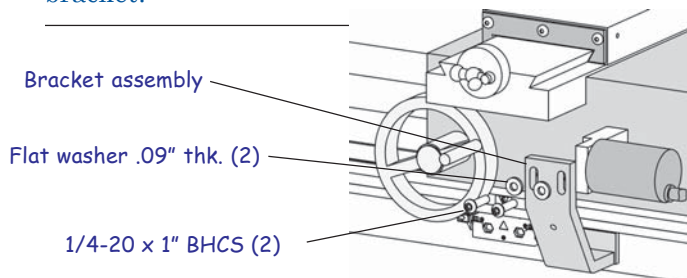
## Reading head installation ...



- Assemble and square up the brackets. Fully tighten the fasteners.

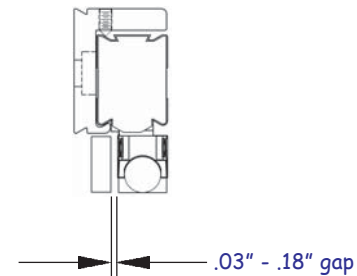


- **Pre 1988 lathes:** Drill and tap hole locations for a 1/4-20 x 1/2" deep. The height of the mounting holes are located by attaching the bracket assembly to the reading head and transfer punch using the bracket.

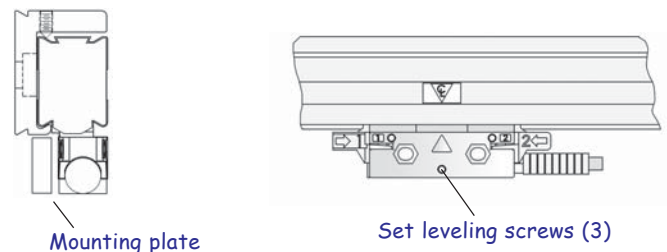


- With the carriage at its center of travel, attach the bracket assembly to the carriage.

- Position the assembly so that the reading head and bracket assembly mounting holes are aligned.
- Secure the assembly in place.

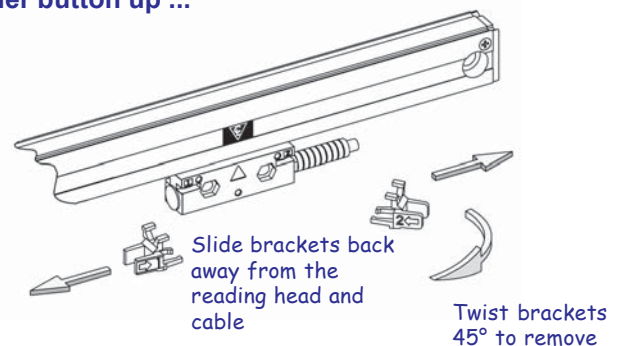


- There will be a gap of .03" - .018" between the bracket assembly and the reading head.



- Insert the two \*8-32 x 5/8" SHCS. Ensure the bracket is adjusted to provide proper screw head clearance. **Do Not Tighten Screws** at this time.
- Set each leveling set screw by placing a .001" - .003" feeler gage between the set screw and the bracket.
- Adjust each set screw until a slight drag is felt on the feeler gage.
- **Evenly tighten** the two 8-32 SHCS.

## Encoder button up ...

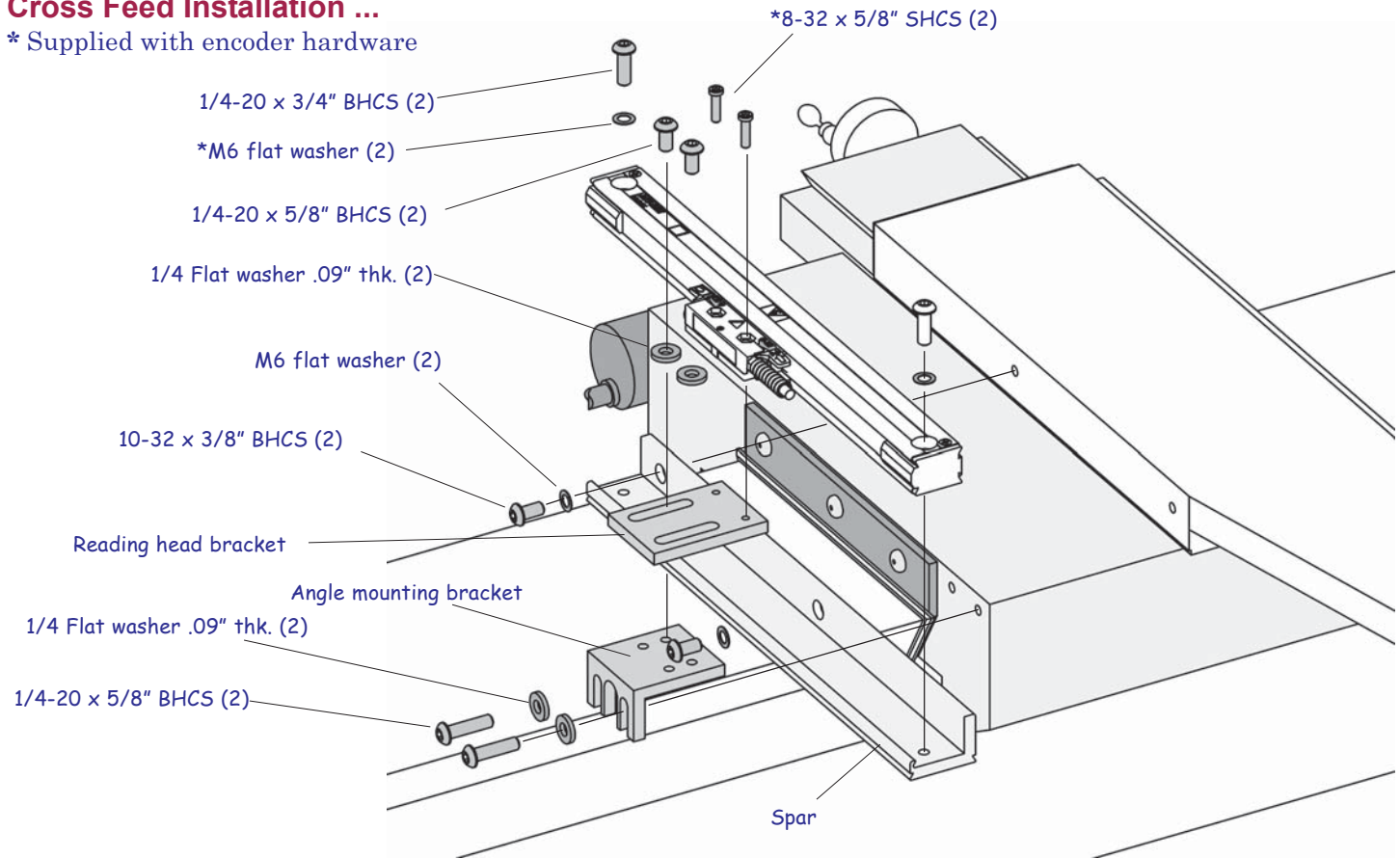


- Use allen wrench from set screw adjustment to slide alignment brackets away from the reading head.
- Remove alignment brackets and save.
- Move the axis through its full travel. Confirm that the assembly does not interfere with the machine movement.

**Proceed with the Cross Feed installation**

## Cross Feed Installation ...

\* Supplied with encoder hardware



## Mounting Information...

These are application instructions for mounting the cross feed "X" axis SENC 150 encoder. Since 1988, mounting holes have been predrilled.

### Before proceeding:

- Please read the Procedure completely.
- Mount Z axis prior to installing the cross feed.
- Remove set screws from factory drilled holes.
- Keep the reading head centered during installation.
- Clean the mounting surfaces.
- Save the alignment brackets with the Encoder Reference Manual after installation is completed.

## First Steps ...

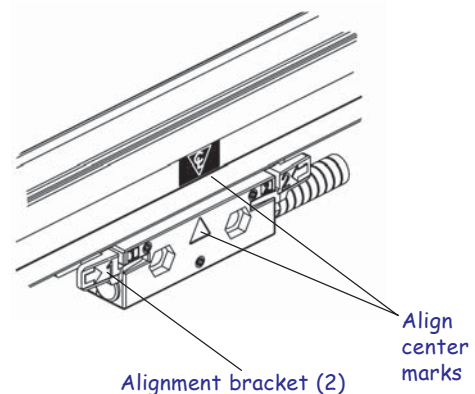
### Machine

- ✓ Move the cross feed to its center of travel.
- ✓ Mark the axis so that it can be re-centered easily.

## Encoder

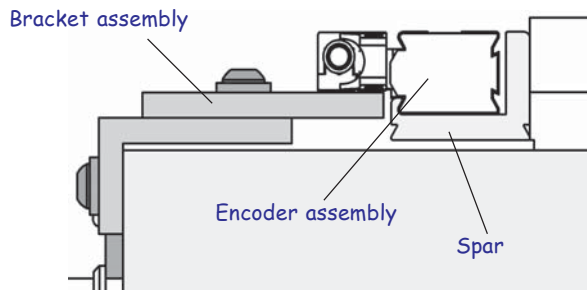
- ✓ Unpack encoder in a safe, convenient location.
- ✓ Do not remove the reading head alignment brackets until instructed.

## Center reading head ...



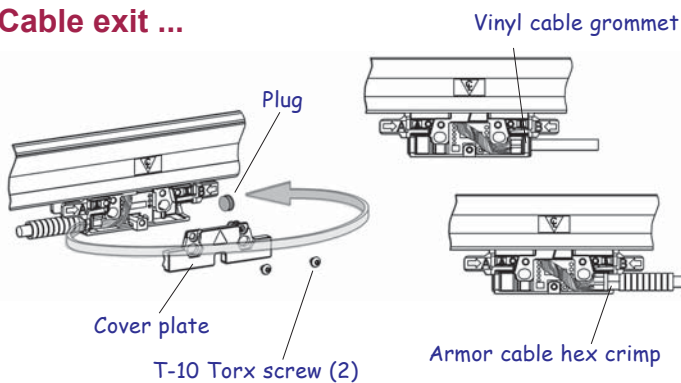
- Slide the reading head and brackets along the scale case until the center marks on the scale case and reading head are aligned.

## Encoder orientation ...



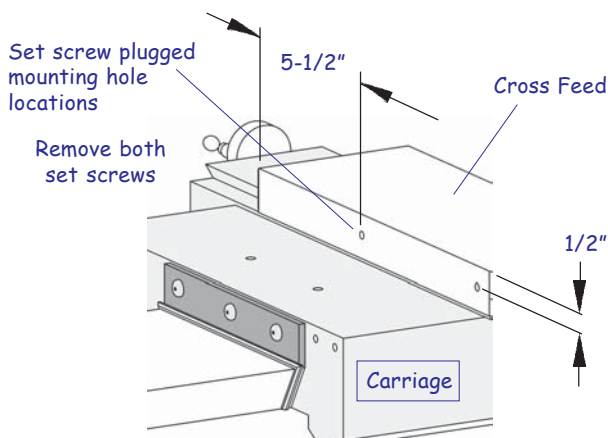
- These instructions will guide you through installing the encoder as shown in this view.

## Cable exit ...



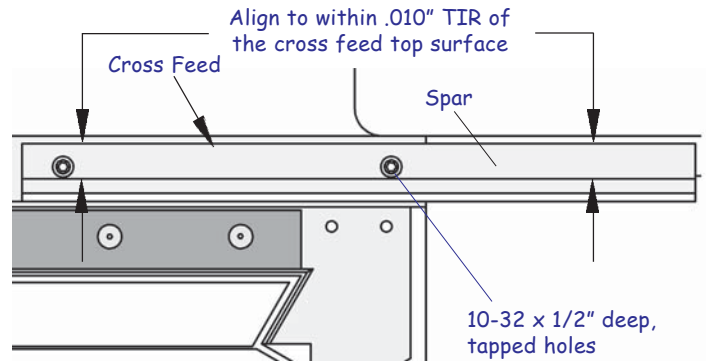
- Determine the cable exit direction before installing the encoder.
- To change the cable exit direction, remove the cover plate and rotate the cable 180°.

## Spar installation ...



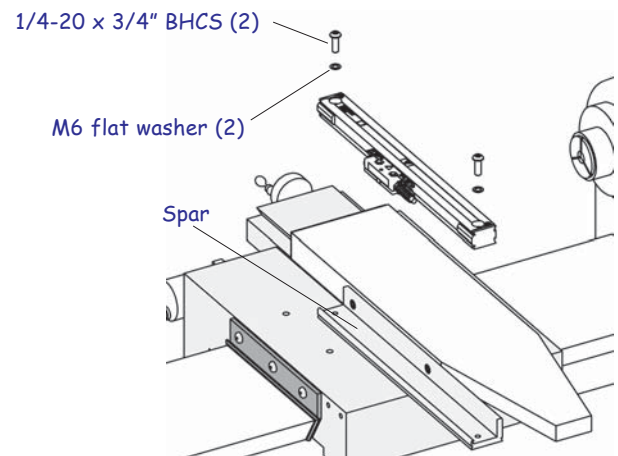
## Lathes manufactured prior to 1988:

- These instructions assume factory drilled holes are present. If they are not, locate mounting holes, drill and tap for a 10-32 x 1/2" deep.



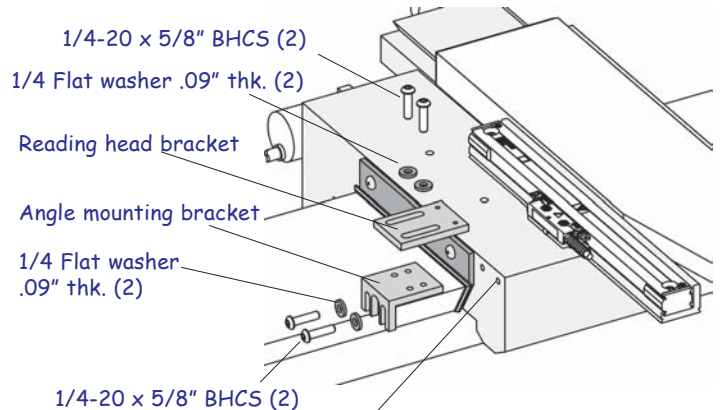
- Attach the spar to the axis with the 10-32 x 3/8" BHCS and M6 flat washers provided.
- Align the top surface of the spar to the cross feed travel or top surface to within .010" TIR.

## Encoder installation ...

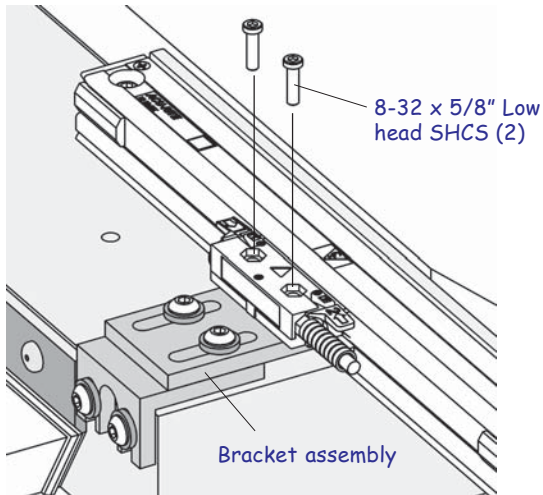


- Insert the encoder into the spar and seat the encoder into the lip of the spar. Secure in place.

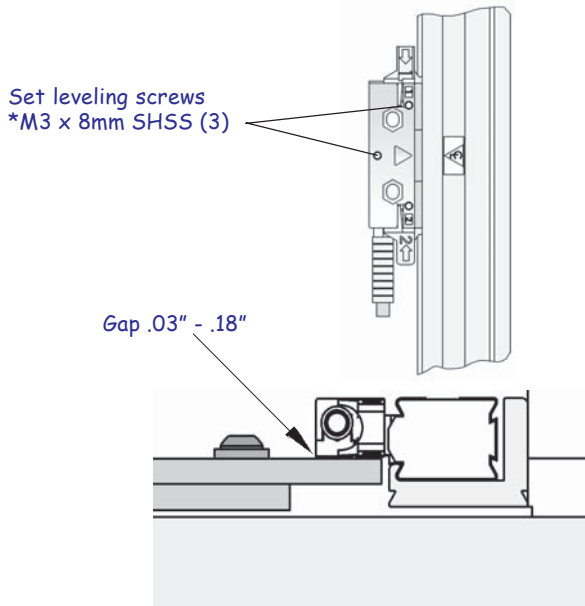
## Reading head installation ...



- Set screw plugged mounting hole locations.  
Remove both set screws (Drill and tap these holes if not provided).
- With the cross feed at its center of travel, loosely attach the bracket assembly to the carriage.

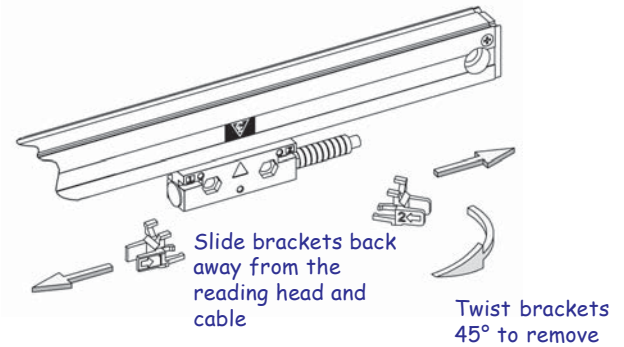


- Position the assembly so that the reading head and bracket assembly mounting holes are aligned. Lightly tighten brackets in place; further adjustment is required.
- Attach the reading head to the bracket assembly with the \*8-32 x 5/8" SHCS, but do not tighten.

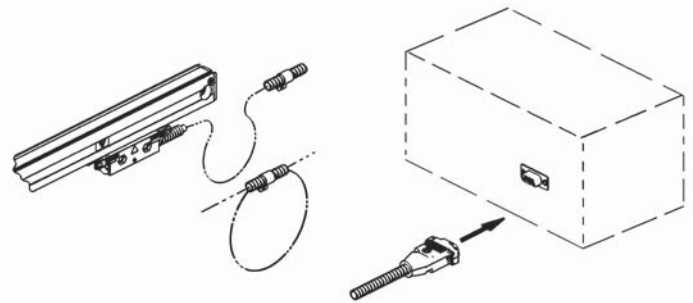


- Adjust the bracket assembly so that a gap of .03" - .18" is between the bracket and the reading head. Secure the bracket assembly only, in place.
- Insert and set each leveling screw by placing a .001" - .003" feeler gage between the set screw and the bracket.
- Adjust each set screw until a slight drag is felt on the feeler gage.
- **Evenly tighten the two 8-32 SHCS.**

## Encoder button up ...



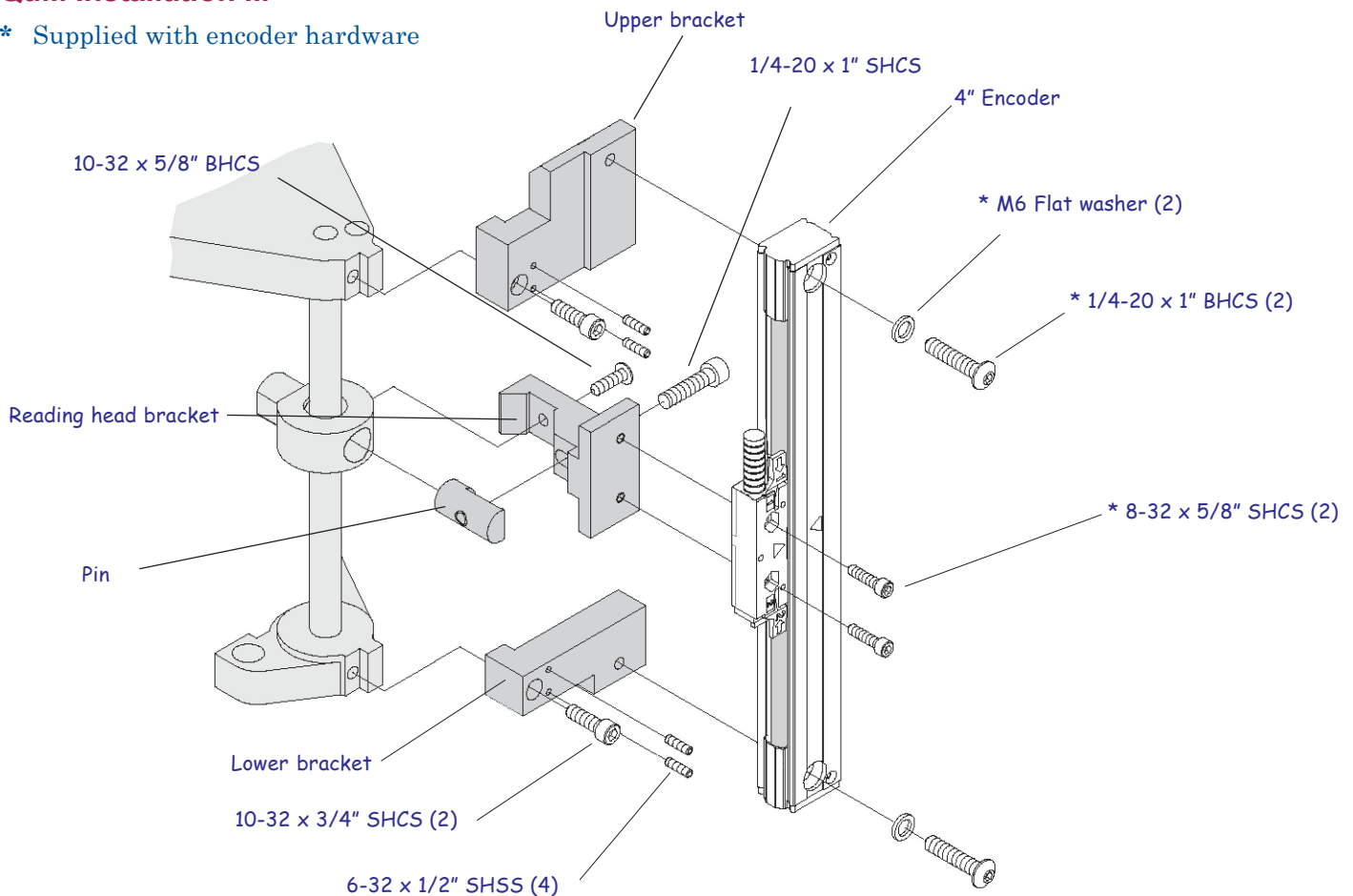
- Use allen wrench from set screw adjustment to slide alignment brackets away from the reading head.
- Remove alignment brackets and save.
- Move the axis through its full travel. Confirm that the assembly does not interfere with the machine movement.



- With both axis installations complete, route the cables providing sufficient slack loops for machine movement to the readout.
- Secure cables by fastening with clips or ties.
- Attach the linear encoder connectors to the readout.
- Complete the installation by following the steps in "Checking Your Installation" section in the encoder "Reference Manual".

## Quill Installation ...

\* Supplied with encoder hardware



## Mounting Information...

These are application instructions for mounting the quill "Z" axis SENC 150 encoder.

### Before proceeding:

- Please read the instructions completely.
- Ensure that the correct length encoder is being used for the total axis travel.
- Keep the reading head centered during installation.
- Clean the mounting surfaces.
- Save the alignment brackets with the Encoder Reference Manual after installation is completed.

## First Steps ...

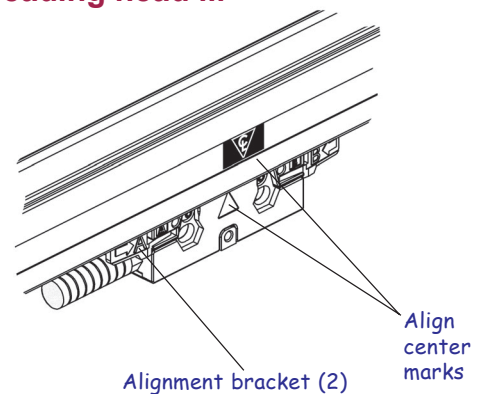
### Machine

- ✓ Move the quill to its center of travel.
- ✓ Mark the axis so that it can be re-centered easily.

## Encoder

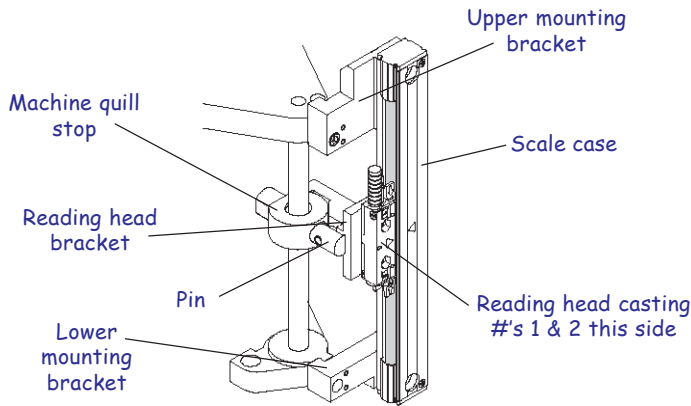
- ✓ Unpack encoder in a safe, convenient location.
- ✓ Do not remove the reading head alignment brackets until instructed.

## Center reading head ...



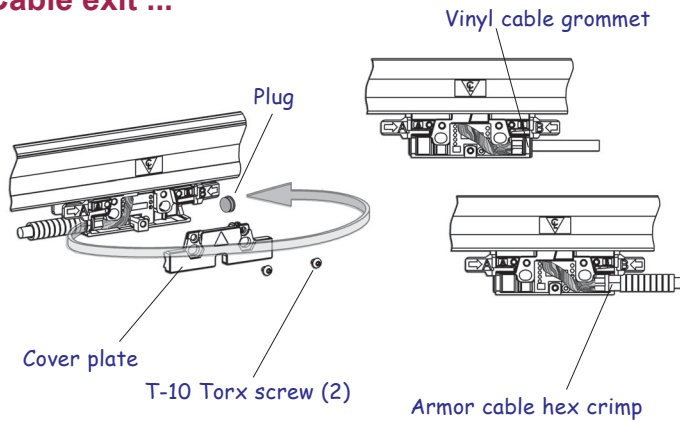
- Slide the reading head and brackets along the scale case until the center marks on the scale case and reading head are aligned.

### Encoder orientation ...



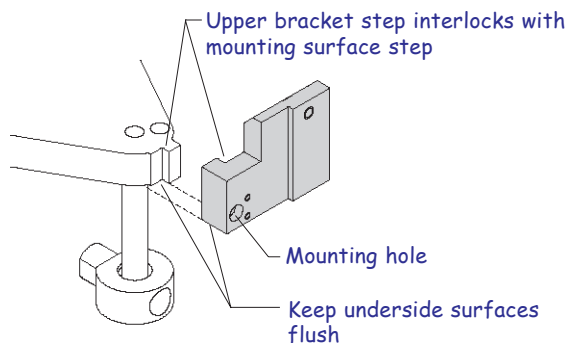
- These instructions will guide you through installing the encoder as shown in this view.

### Cable exit ...

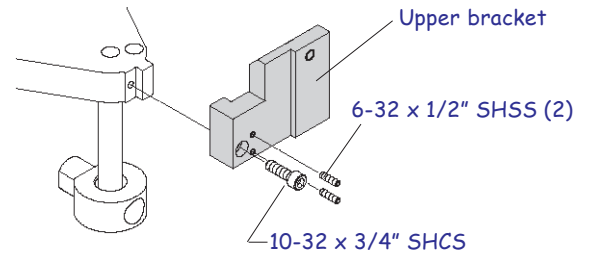


- Determine the cable exit direction before installing the encoder.
- To change the cable exit direction, remove the cover plate and rotate the cable 180°.

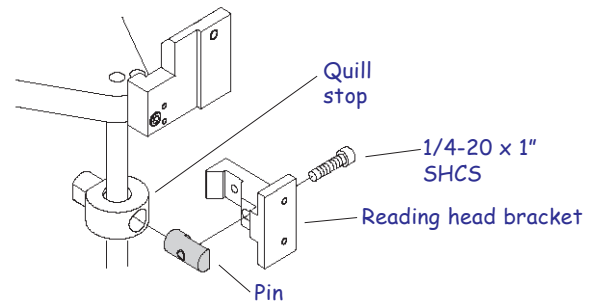
### Encoder Installation ...



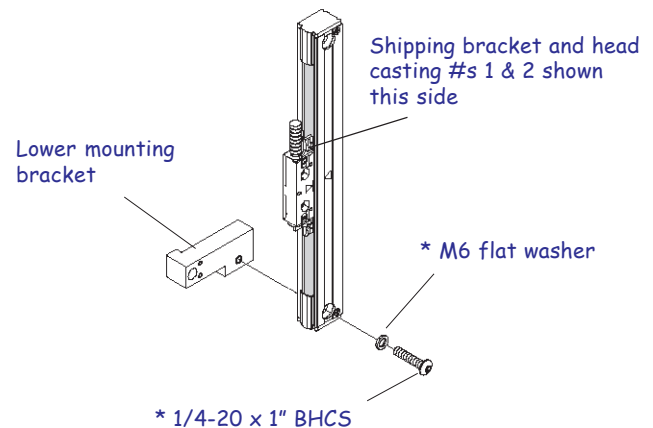
- Locate upper bracket to its mounting position.
- Transfer punch mounting hole location.
- Drill and tap hole location for a 10-32 x 3/8" deep.



- Attach the bracket, interlocking it with the step, and secure in place.
- Insert the set screws, but do not tighten.

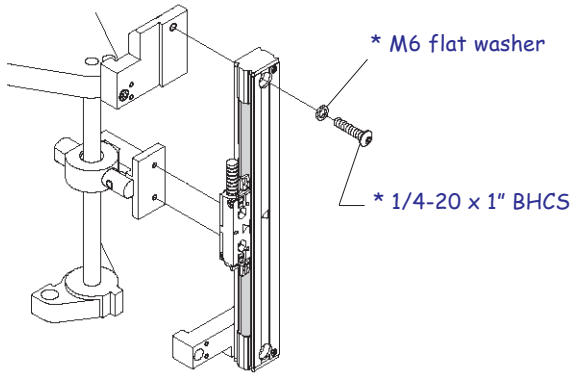


- Position the reading head bracket to the stop.
- Insert the correct pin (tightest fit) into the stop and attach the bracket securely.

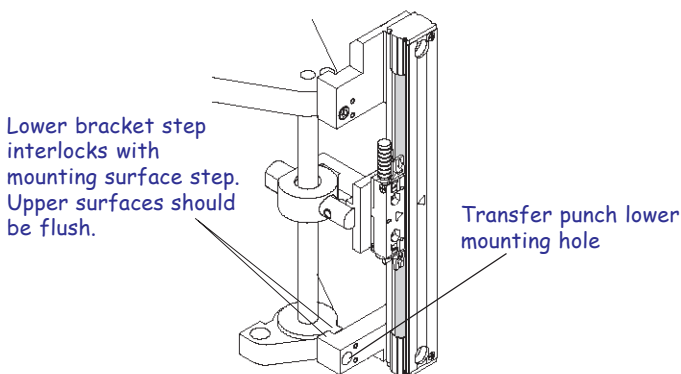


- Attach the lower mounting bracket to the encoder as shown. Encoder has the numbers 1 & 2 facing out.

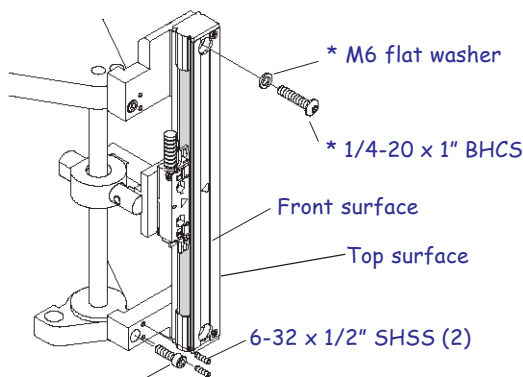




- Attach the encoder assembly to the upper bracket.



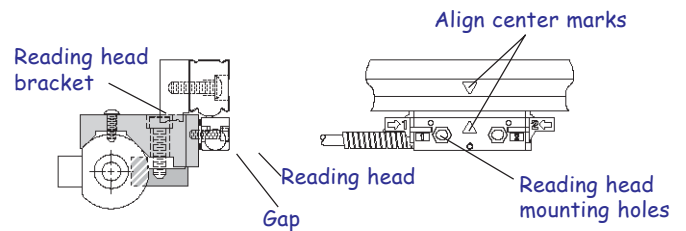
- Locate lower bracket to its mounting position.
- Transfer punch hole location, and remove assembly.
- Drill and tap location for a 10-32 x 3/8" deep.



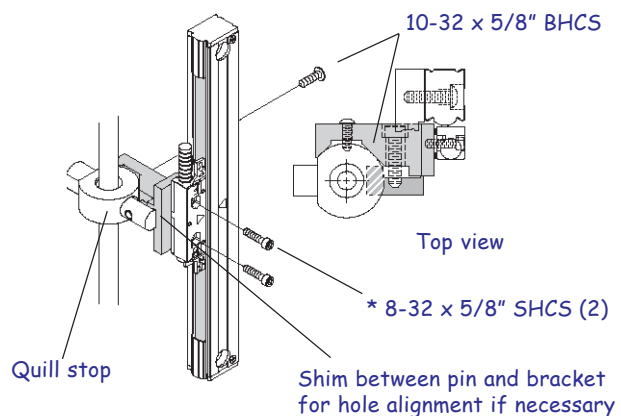
10-32 x 3/4" SHCS

- Attach the assembly, and align the scale case front surface to within .010" TIR of the axis travel. Use the leveling screws to aid with this alignment.
- Align the scale case top surface to within .010" TIR of the axis travel and secure encoder in place.

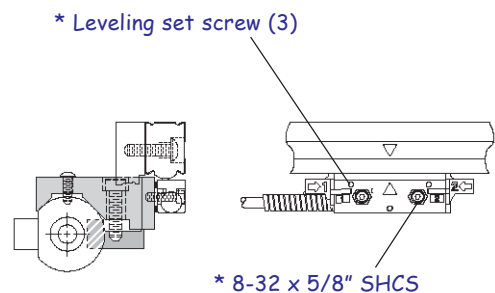
### Reading head installation ...



- Slide the reading head to the center of the scale case. Align the bracket to the reading head mounting holes, and lock the quill in place.
- A gap will exist between the reading head and bracket.

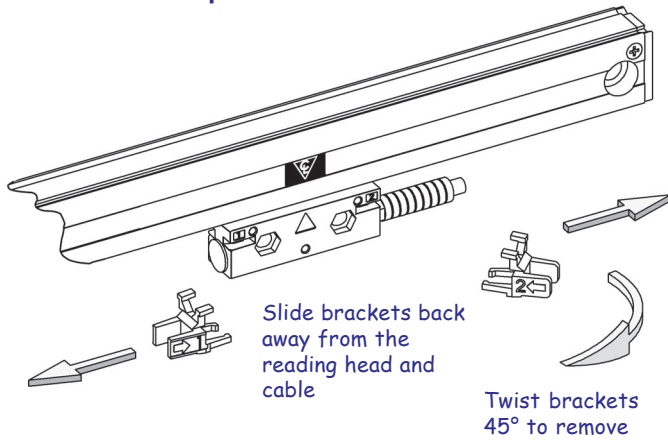


- Adjust the bracket parallel with the reading head; shim if necessary.
- Drill and tap for the 10-32 x 5/8" BHCS to lock the bracket in position.
- Attach the reading head to the bracket with two 8-32 x 5/8" SHCS. **Do not tighten fasteners.**

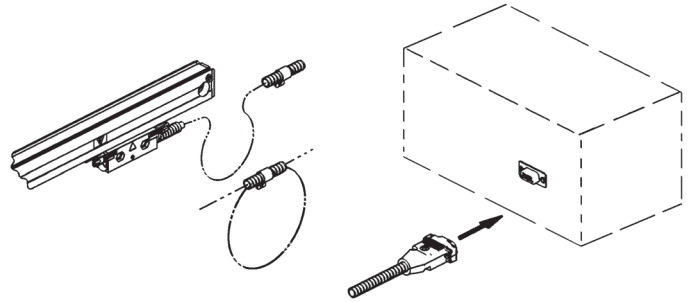


- Set each leveling set screw by placing a .001"-.003" feeler gage between the set screw and the bracket.
- Adjust each set screw until a slight drag is felt on the feeler gage.
- **Evenly tighten** the two 8-32 x 5/8" SHCS.

### Encoder button up ...



- Use allen wrench from set screw adjustment to slide alignment brackets away from the reading head.
- Remove alignment brackets and save.
- Move the axis through its full travel. Confirm that the assembly does not interfere with the machine movement.



- With the longitudinal axis installation complete, route the cables providing sufficient slack loops for machine movement to the readout.
- Secure cables by fastening with clips or ties.
- Attach the linear encoder connectors to the readout.
- Complete the installation by following the steps in “Checking Your Installation” section in the encoder “Reference Manual”.