

### Before Beginning Installation . . .

#### Check Your Travel Length

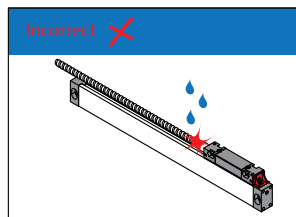
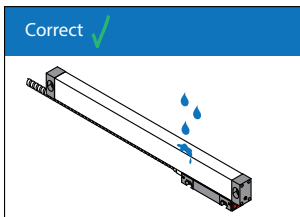
Verify linear encoder (linear scale) size is the correct length for your machine. The overall length of the linear scale is not the travel. Do not offset the scale (extra travel on one end, insufficient travel on the other end). If your machine travel is longer than the scale travel, please contact your dealer to obtain the properly sized encoder.

#### Squareness & Parallelism

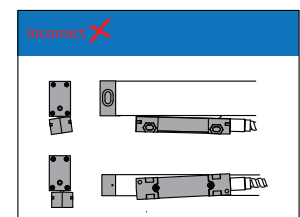
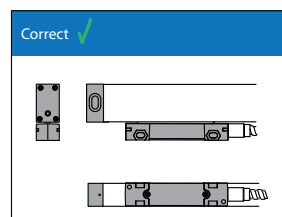
It is extremely important that scale is parallel to the machine table movement, and scale reader head is parallel to the scale. Avoid skewed installs, as loss of accuracy, premature wear, and/or irreversible damage can occur.

#### Disassembly & Modifications

Linear encoder is a very delicate instrument which contains precision optical and electronic components. Never attempt to remove reader head from the scale as irreversible damage will occur and all warranties will be void. Never drill, mill, or cut scale components. Do not enlarge any of the mounting holes. Modifications or repair attempts performed by end user **will void all warranties!**



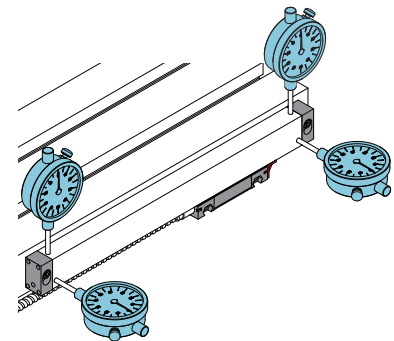
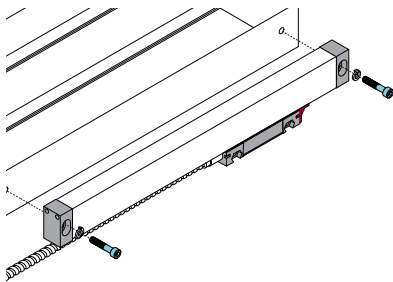
 **Lip seals should face downward**



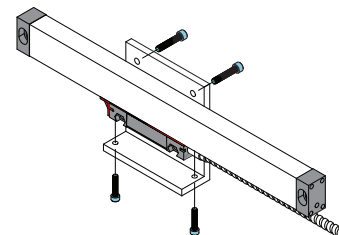
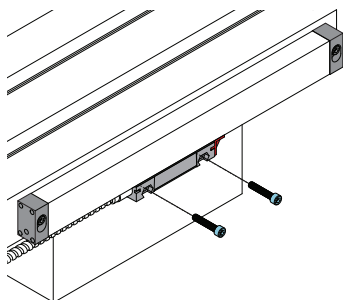
 **Avoid skewed installation**

### Installation Instructions

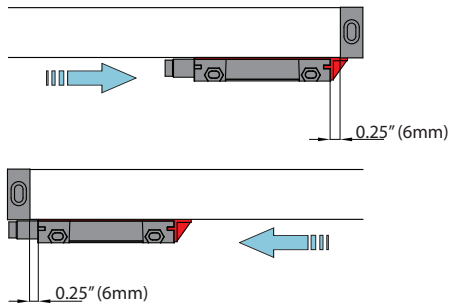
- The scale end caps must be mounted to a machined flat surface which is parallel to the axis movement. Center punch, drill and tap two holes. Install scale body and lightly tighten the screws. Do not fully torque at this point. Do not drill holes at an angle or space holes improperly as this could cause bowing or sagging of the scale.
- Perform an Alignment Check. Use dial indicator to indicate the front and the top of the scale body. It must be parallel to the table travel to within Total Indicator Reading (TIR) of 0.005 inch (0.13mm), in both planes, over the entire travel of the scale. Fully tighten mounting screws and verify alignment again. Re-adjust if TIR is not within the specifications.



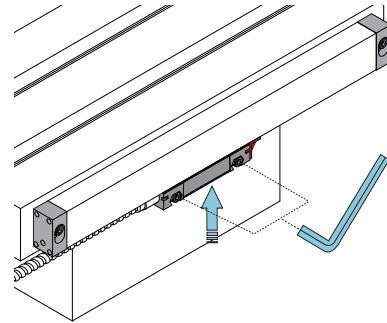
- Determine reader head attachment method and prefabricate mounting hardware if necessary to match your particular machine. Reader head must be attached to a flat surface parallel to the scale body. Depending on the situation there are two mounting options:
  - Utilize through holes on the side of the reader head. Mounting surface on the machine should be center punched, drilled and tapped. Use stainless steel shims to offset reader head if needed. This option is typically used for X axis on milling machines.
  - Reader head comes with pretapped M4 holes at the bottom. You can use this feature to attach the included mounting bracket to the scale. This option is typically used for Y axis on the Milling machine and Z axis on lathes.



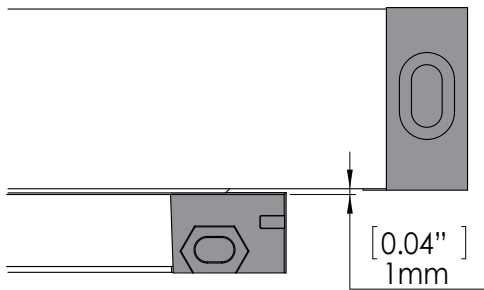
4. Remove the screw(s) holding shipping bracket to the encoder scale body. Do not remove shipping bracket from the reader head yet. Move machine axis to the dead stop on one end and mark reader head location. Gently slide reader head towards the same end and then slide it 1/4" (6mm) back to allow for travel reserve (safety factor). Mark reader head position on the moving axis. Repeat for the other end. Make sure to avoid over-travel! Obtain larger size scale if necessary.



5. After mounting location has been determined and all preparations complete, hand tighten reader head mounting screws and apply light pressure to the reader head, so it firmly touches red plastic shipping bracket. Fully tighten the screws while maintaining uniform pressure on the reader head.

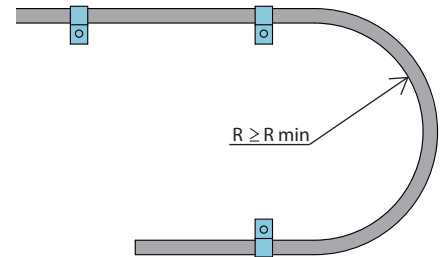


6. Remove remaining screws holding shipping bracket to the reader head and slide out the shipping bracket. Save it in case you need to ship scale in the future. Verify gap between reader head and scale. Gap should be of a uniform thickness and measure  $0.040 \pm 0.010$ " ( $1 \pm 0.25$ mm)

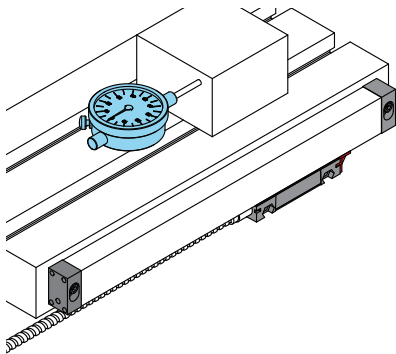


7. Route cable and connect it to DRO. Use cable clamps to securely attach cable to the machine. Make sure there is enough slack to allow for full range of machine axis movements.

- ⚠** Be careful to avoid bends smaller than minimum allowed bend radius. Bending with smaller than minimum allowed bend radius (3") will cause permanent damage to the cable!



8. Perform a Zero Repeat Check. Move machine axis to the end of its travel. Use a dial indicator to indicate a flat block or vise placed on the table or the table itself. Zero the indicator and display, then move the axis to the opposite end of its travel. Once there, return to the zero position on the readout. The dial indicator should have a reading of zero  $\pm 1$  count.



9. Place protective cover over the scale, check to make sure it does not interfere with machine movements and/or cable. Center punch mark, drill and tap 2 holes. Mount protective cover using screws with lock washers.

- ⚠** Be sure to install protective cover or contamination, physical equipment damage and premature wear are more likely to occur.

