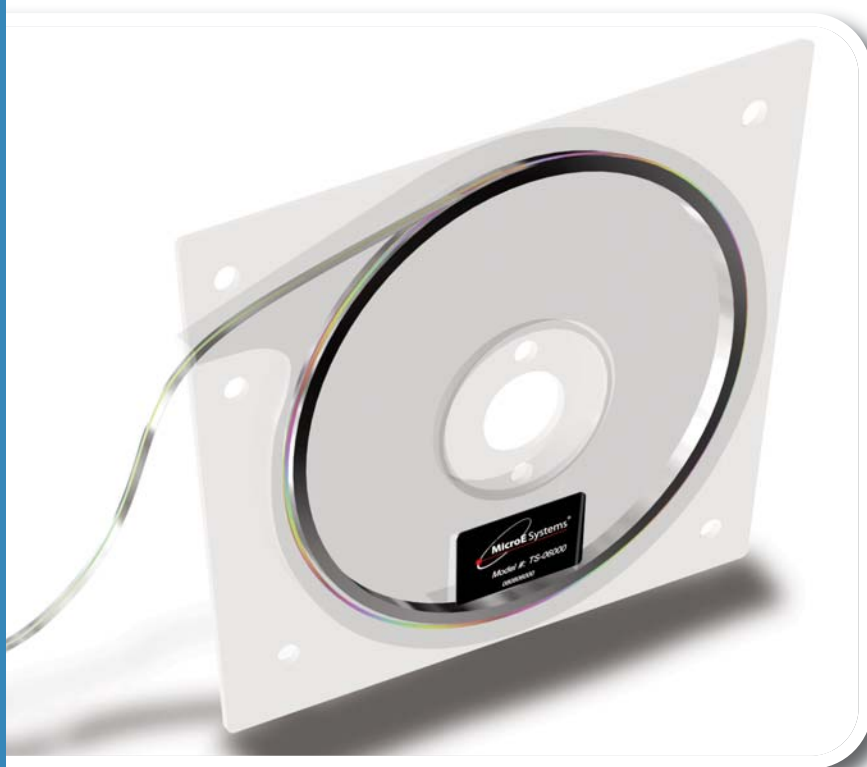




PurePrecision™

Tape and Glass Scale Installation for OPS Series Encoders



Installation Manual and Reference Guide

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PurePrecision™ Scale Installation

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Contacting MicroE Systems

Manual Version Numbers

IM-PurePrecision Scales OPS Rev A, issued January 2014

Changes: N/A

Related Documents

- OPS Data Sheet
- OPS Sensor Installation Manual
- OPS Interface Drawing

Precautions



- 1 Follow standard ESD precautions. Turn power off before connecting the sensor. Do not touch the electrical pins without static protection such as a grounded wrist strap.
- 2 Do not touch the glass scale unless you are wearing talc-free gloves or finger cots. Please read this installation manual for full instructions.

Patents

Covered by the following patents: US 5,991,249; EP 895,239; JP 3,025,237; US 6,897,435; and EP 1,451,933. Additional patents and patents pending may apply.

RoHS OPS models are CE and RoHS compliant.



Overview

Refer to encoder model data sheets for detailed ordering guide and more information about MicroE Part Numbers.

This manual applies to the installation of the following scale types.

- PurePrecision Marker Tape II for OPS Series, Model HPMT-
- PurePrecision Laser Tape II for OPS Series, Model HPTS-
- PurePrecision Performance and Value Linear Glass Scales for OPS Series, Model - PVGL-T (adhesive backed)
- PurePrecision Rotary Glass Scales OPS Series, Model - RXXXX

Items Required for PurePrecision Scale Installation

You will need the following items available:

- Shears (recommend, Clauss, Item# 18003)¹
- Tape Applicator Tool, for applications >300mm (not required for installations <300mm)¹
OPS Side Mount Configuration tool Model Number: TSAT-SM-PPT
OPS Top Mount Configuration tool Model Number: TSAT-PPT
- Finger Cots or talc-free gloves^{1,2}
- Acetone or isopropyl alcohol^{1,2}
- Lint-free cotton cloths or wipes^{1,2}
- Index and Limit Marker stick-on sheets or Strips¹
(optional, for Laser Tape II and Precision and Value Glass scales):
 - Limit Marker Strips, Model Number: NRLMS
 - Index Marker Strips, Model Number: NRIMS
- End caps (optional)¹
- Two-part epoxy (Tra-Con Tra-Bond 2116)^{1,2}
- Stick and disposable surface for stirring epoxy^{1,2}

¹Items needed for PurePrecision Tape Scales

²Items needed for Performance and Value Linear Glass Scales

Pre-Installation Information and Precautions

Read all instructions completely before beginning the installation process.

The PurePrecision™ Tape Scale is a precision metrological device. Handle it with the utmost care at all times.



Avoid bending the tape scale to a radius less than 90mm (3.5 inches)

Avoid twisting the PurePrecision Tape Scale.

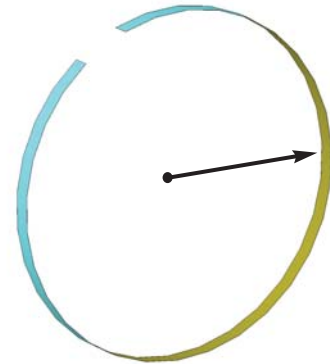
Do not let any sharp object touch the tape scale after the blue protective film is removed.

The PurePrecision Tape Scale is protected by a blue film on the top that prevents contamination and damage to the grating pattern during installation.

Once the adhesive on the tape scale is exposed (by removing the adhesive liner), do not touch the adhesive or allow any contamination to come into contact with it.

PurePrecision Tape Scale, Index and Limit Markers are designed for one time installation only.

If removed from the mounting surface for any reason, they should not be used for any kind of reapplication. This will affect the performance and reliability of the encoder system.



Minimum
storage radius
90mm (3.5 inches)



The adhesive on the PurePrecision™ Tape Scale is permanent.

Do not touch the adhesive once the adhesive liner is removed.

Do not remove the tape scale from the mounting surface once it has been installed.

Do not reinstall the tape scale if it has already been installed once.

Avoid any contamination to the adhesive. Any particulate matter or other contamination that is trapped between the scale and the mounting surface will affect encoder performance.



NOTE:

MicroE does not recommend installing PurePrecision Tape Scale on a curved (cylindrical) surface.

Design Guidelines

1.

Verify the tolerances of the scale's mounting surface given in the Interface Drawing.

2.

Verify the dimensions of the scale benching edge (groove or straight edge) given in the Interface Drawing.

3.

Calculate the length of PurePrecision™ Tape Scale required for your application. Refer to the Interface Drawing.

4.

Tape scales less than 300mm can be installed by hand against a straight edge. For lengths greater than 300mm, tape scale applicator tools are needed:

Side Mount Configuration:

Applicator tool Model Number: TSAT-SM-PPT

Top Mount Configuration:

Hand Grip Applicator tool Model Number:
TSAT-PPT

5.

If the tape scale is being installed into a 6mm groove, it must be installed by hand (regardless of scale length). Refer to the Interface Drawing.

6.

If machining the mounting surface is undesirable, or not possible, a temporary straight edge can be used that meets the dimensions and tolerances specified in the Interface Drawing.

Two kinds of temporary straight edge can be used -

- **Type I (thin)-**

Temporary Straight Edge of thickness
 0.76 ± 0.05 mm (0.030 ± 0.002 inches).

Refer to the Interface Drawing for additional dimensional requirements. A steel rule may be one of the options for this type of temporary straight edge.

- **Type II (thick)-**

Temporary straight edge with minimum thickness 9.53mm (0.375 inches). Refer to the Interface Drawing for additional dimensional requirements.

NOTE:

See the appropriate section on Tape Applicator Tool installations.

Mounting Surface Preparation

1.

Inspect the mounting surface for any machining irregularities. MicroE Systems recommends a surface finish of better than 1.6 micrometers Ra.

2.

The straight edge (either permanent or temporary) must be sharp on the benching side in order for the Applicator Tool to use it as a guide. In order for the tape scale to be mounted close to the straight edge, the maximum radius of 0.127 mm (0.005 inches) should be used where the edge meets the bottom of the mounting surface.

3.

Thoroughly clean the scale mounting surface and reference edge using a cotton swab or lint-free cloth dampened with isopropyl alcohol or acetone.

Remove all dust and particles.

4.

Mark the starting location on the mounting surface where the tape scale will be applied. Also mark the locations where the index and limit markers will be applied. Refer to the Interface Drawings to identify the reference points of the markers.

Cutting the PurePrecision™ Tape Scale

1.



NOTE:

When working with any encoder scale, it is important to use either finger Cots or talc-free gloves

Uncoil the tape scale and cut it to the required length using shears.

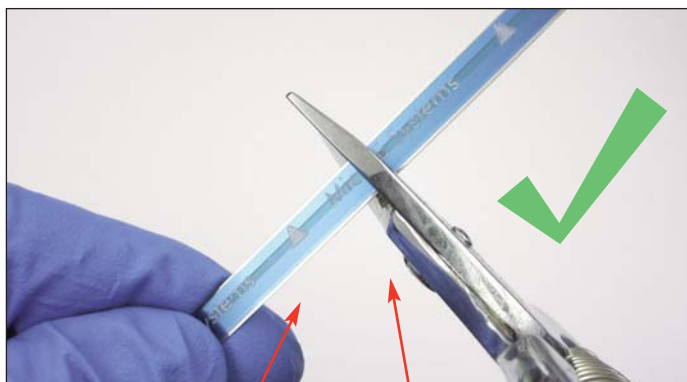
Note: check the interface drawing to make sure the scale is cut to the right length.



Securely hold the tape scale close to the shear (at an approximate distance of 40mm [1½ inches]) near the point of cutting.

Orient the tape scale perpendicular to the shear.

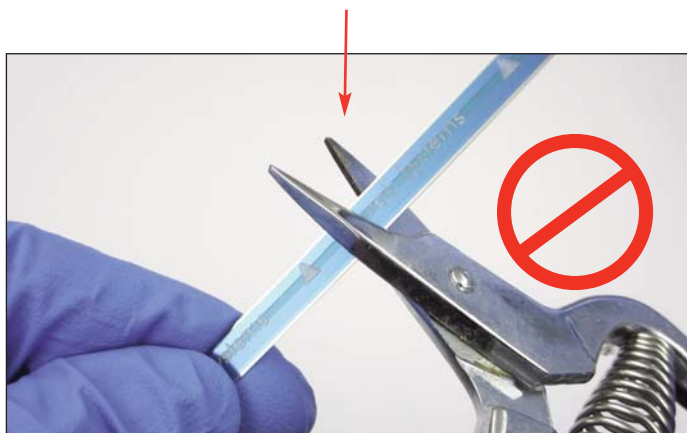
Cut the tape scale in a smooth, continuous motion.



Hand approximately at a distance of 40mm-50mm (1 1/2 inches to 2 inches) from the cutting point

Shear held perpendicular to the tape scale (NOT INCLINED)

Shear held inclined, not perpendicular, to the tape scale



Tape Scale, OPS Side/Top Mount Configurations

Installation By Hand



NOTE:

For best system performance, talc-free gloves or finger cots should be worn during all steps of tape scale installation.

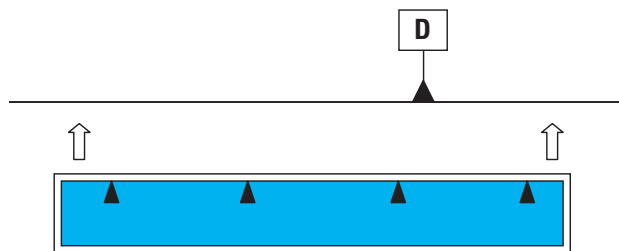
Thoroughly clean the scale mounting surface and reference edge using a cotton swab or lint-free cloth dampened with isopropyl alcohol or acetone. Remove all dust and particles.

1.

Scale direction/orientation

Orient the scale such that the "arrowheads" on the blue protective film are pointing towards the mounting surface reference edge "D" as shown in the interface drawings for your sensor model.

Refer to the correct model number Interface Drawing for reference edge "D" dimensions and sensor orientation. Download the latest Interface Drawing at www.microesys.com/products/documentation



D = Mounting Surface Reference Edge

2.

Removing/peeling the bottom adhesive liner.

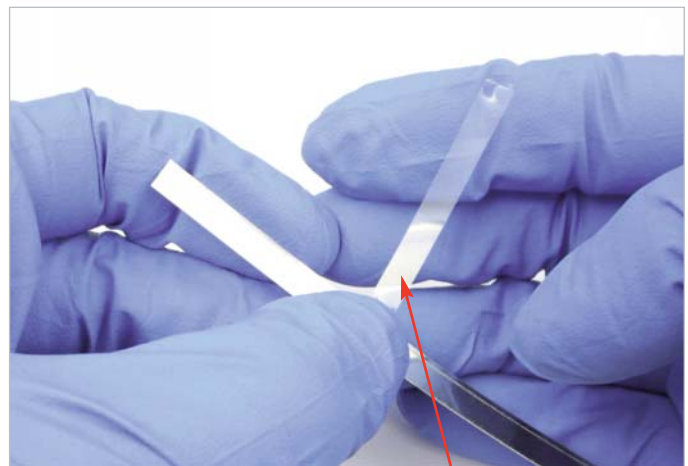
PurePrecision Tape Scales have 3 layers, blue protective film, steel scale, and adhesive backing.

Remove/peel back approximately 25mm (1 inch) of the bottom adhesive liner, taking care not to touch the adhesive or allow any particulate contamination.



NOTE:

Do not peel the blue protective film off at this time.



Adhesive liner peeled off about 25mm (1 inch) from one end

Tape Scale, OPS Side/Top Mount Configurations

Installation By Hand

3.

Flip the tape over with the 25mm (1 inch) exposed adhesive surface facing down. Be sure not to touch or contaminate the exposed adhesive surface. Be sure the orientation arrows on the blue protective film point to the “D” reference edge.

4.

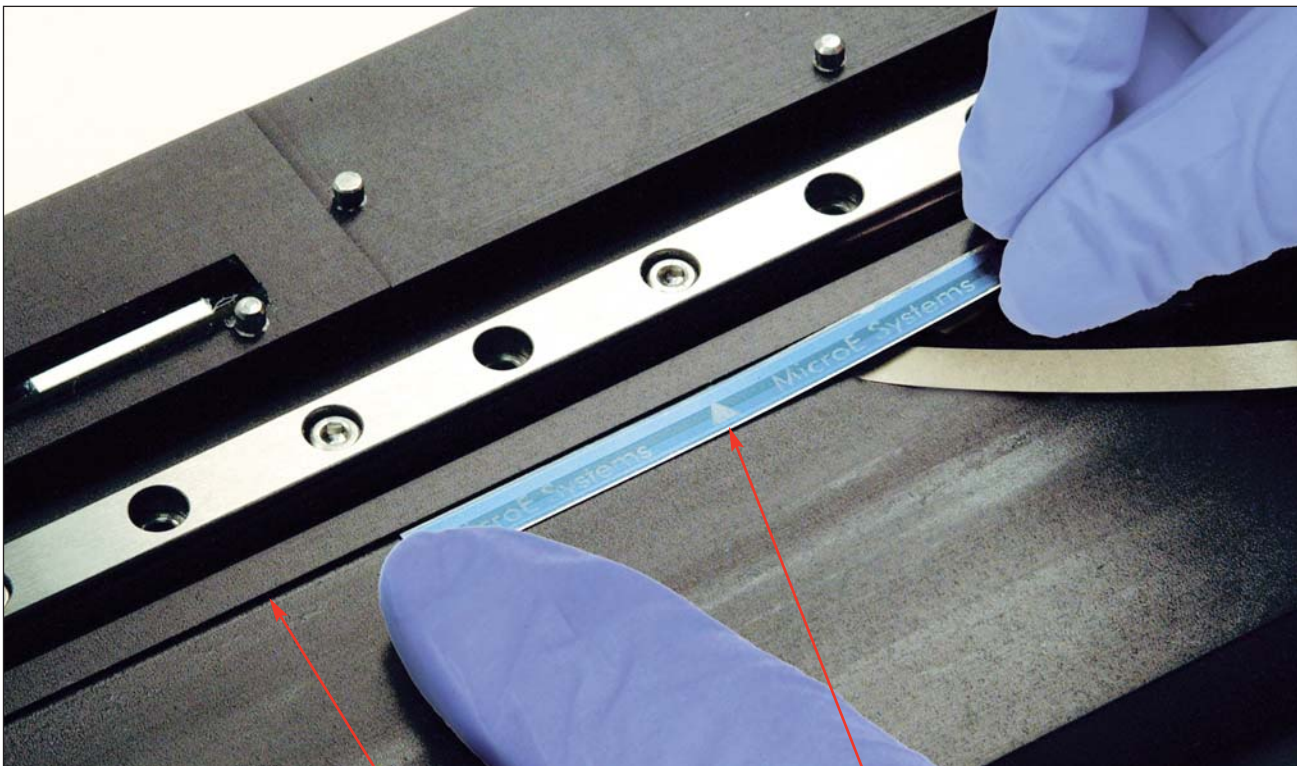
Place the PurePrecision™ Tape Scale against the mounting surface “D” reference edge.

Place the 25mm (1 inch) exposed adhesive end of the tape scale against the mounting surface “D” reference edge as shown and press firmly on the end.



NOTE:

Adhesive exposed by removing the adhesive bottom liner can touch the mounting surface only once.



“D” reference edge as shown in the OPS interface drawing.

Tape scale orientation arrows.

Tape Scale, OPS Side/Top Mount Configurations

Installation By Hand



NOTE:

Be sure to keep the blue top protective film in place.

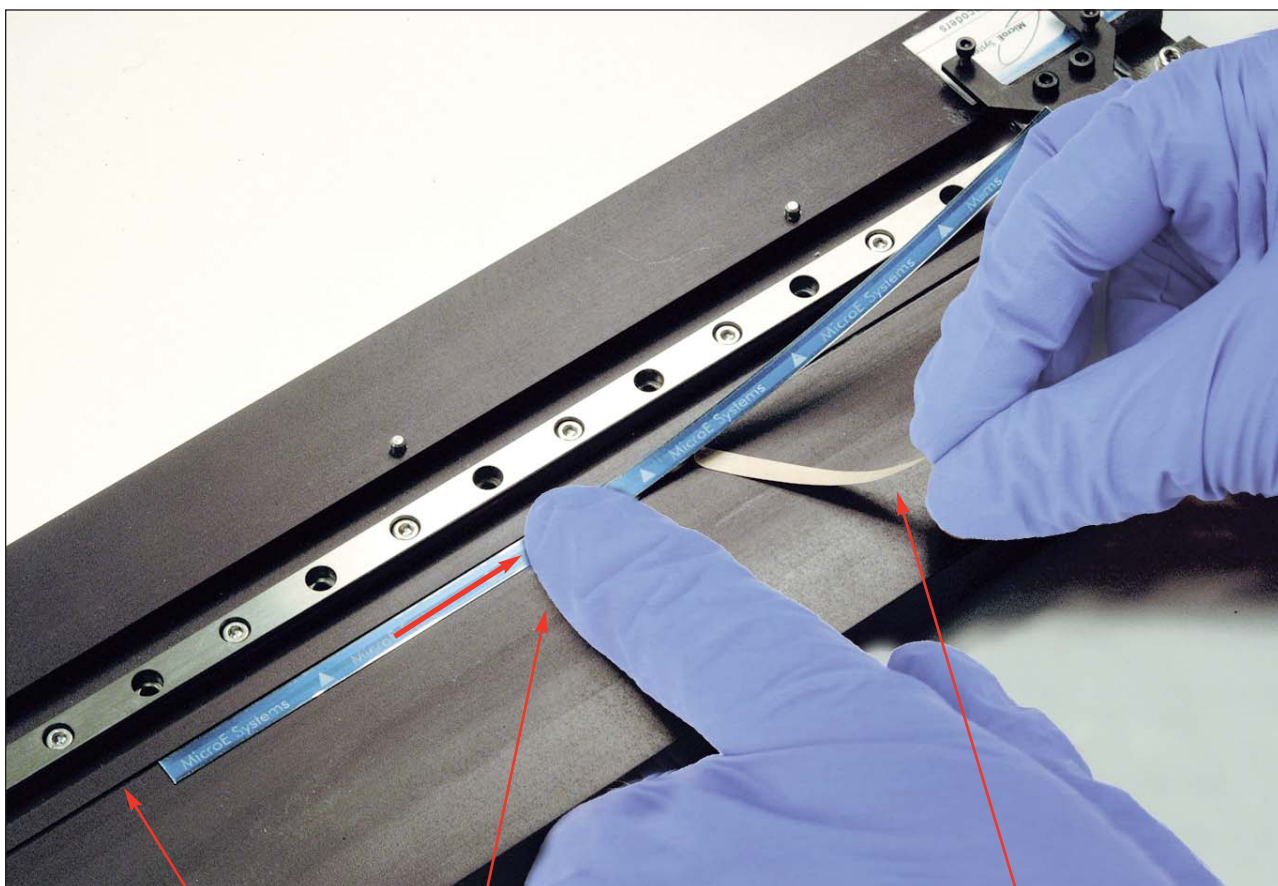
5.

Install the PurePrecision Tape Scale along the remaining length of the mounting surface.

Press the remaining tape on to the mounting surface with a sliding motion as shown below.
Pull the adhesive liner out of the way during the sliding motion.

NOTE:

Make sure that the tape scale is tight against the “D” reference edge.



Sliding motion of finger along the length of the tape

Pull adhesive liner out of the way during sliding motion

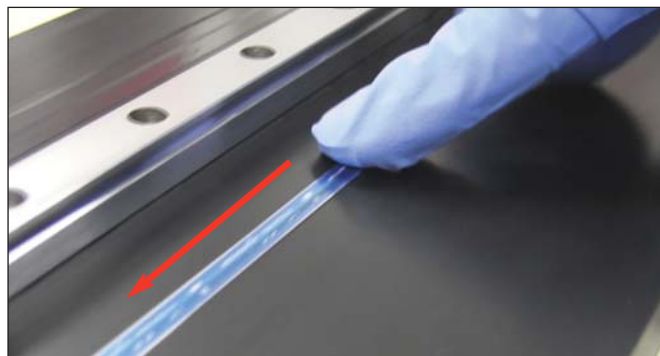
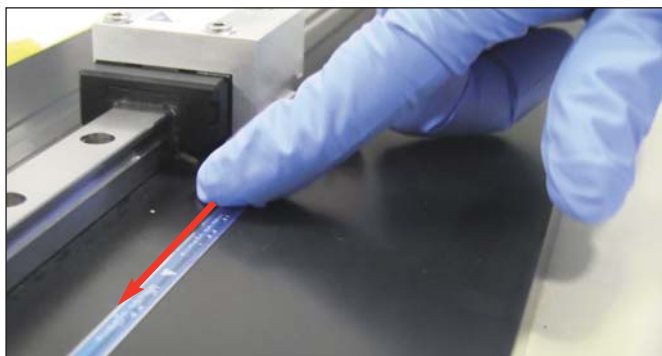
“D” reference edge as shown in the interface drawing.

Tape Scale, OPS Side/Top Mount Configurations

Installation By Hand

6.

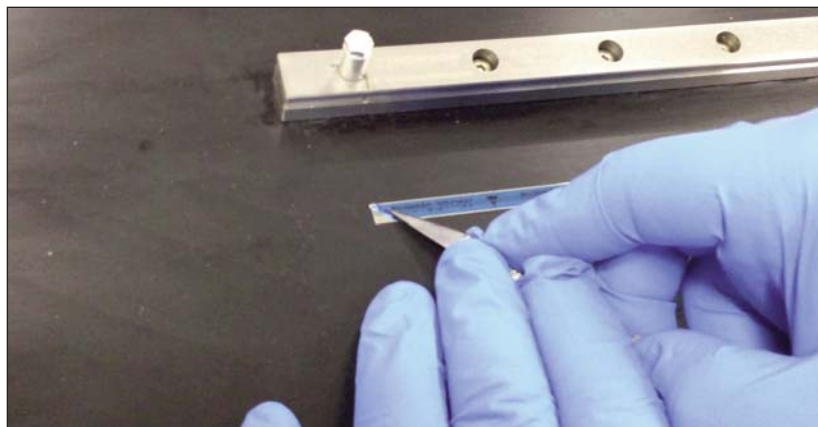
Once the scale is applied to the mounting surface, and before the blue protective film is removed, it is recommended that even pressure be applied over the entire tape scale length by sliding a glove or cot protected finger across the scale. The applied pressure will ensure that the adhesive is evenly and permanently set.



7.

Peel off the blue protective film.

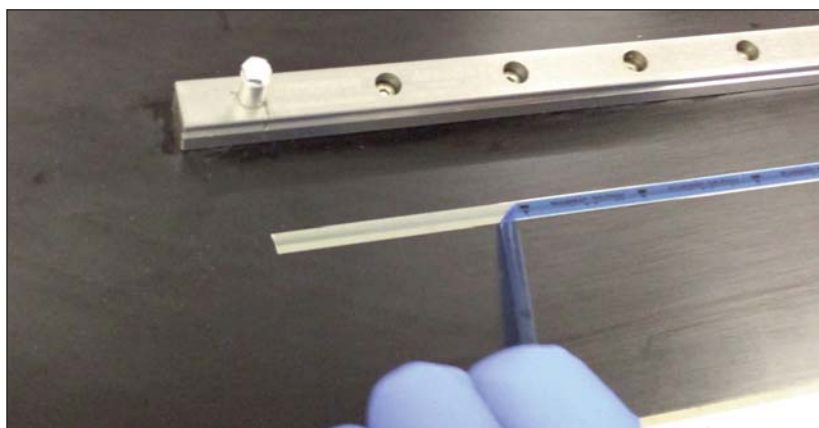
Start the peeling process using a sharp tool, being careful not to damage the scale. Pull off the remaining blue protective film.



NOTE:

After removing the blue protective film, the scale is ready for use and will perform to specification.

The encoder will not function properly with the blue protective film installed. It must be removed for proper encoder operation.



NOTE:

If installing index/limits (Laser Tape II and PVGL glass), go to the "Stick-On Index and Limit Marker Installation" section.

Tape Scale, OPS Side Mount Configuration

Installation By Mounted Applicator Tool



NOTE:

For best system performance, talc-free gloves or finger cots should be worn during all steps of tape scale installation.

Thoroughly clean the scale mounting surface and reference edge using a cotton swab or lint-free cloth dampened with isopropyl alcohol or acetone. Remove all dust and particles.

1.

OPS Side Mounted Tape Scale Applicator Tool (Model Number: TSAT-SM-PPT)

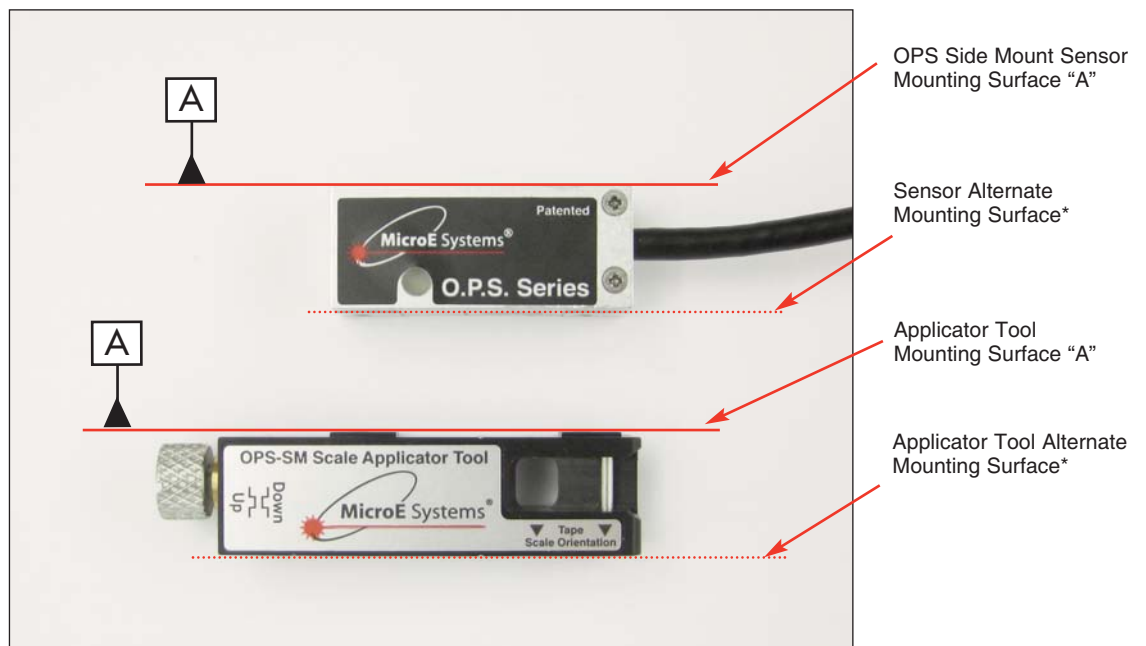
The mounted application tool is needed for scale lengths greater than 300mm. It is mounted in the same fixture as the OPS Side Mount Sensor.



2.

Tape Scale Side Mount Applicator Tool orientation to the "A" reference sensor mounting surface.

The "A" mounting surface is shown in the OPS interface drawing. The corresponding "A" reference mounting surface of the Applicator Tool is shown below.



Mounting Surface "A" (see the OPS interface drawing)

*The OPS-SM Tape Scale Applicator Tool, is designed to be mounted on either Sensor mounting surfaces. The proper orientation of the OPS-SM Applicator Tool in relation to the "A" mounting surface and "Alternate mounting surface," is shown above.

Tape Scale, OPS Side Mount Configuration

Installation By Mounted Applicator Tool

3.

Mount the Applicator Tool.

Mount the Applicator Tool in the Sensor mounting holes. Use the Z-height shim to set up the approximate Z-height, to ensure proper Applicator Tool function.

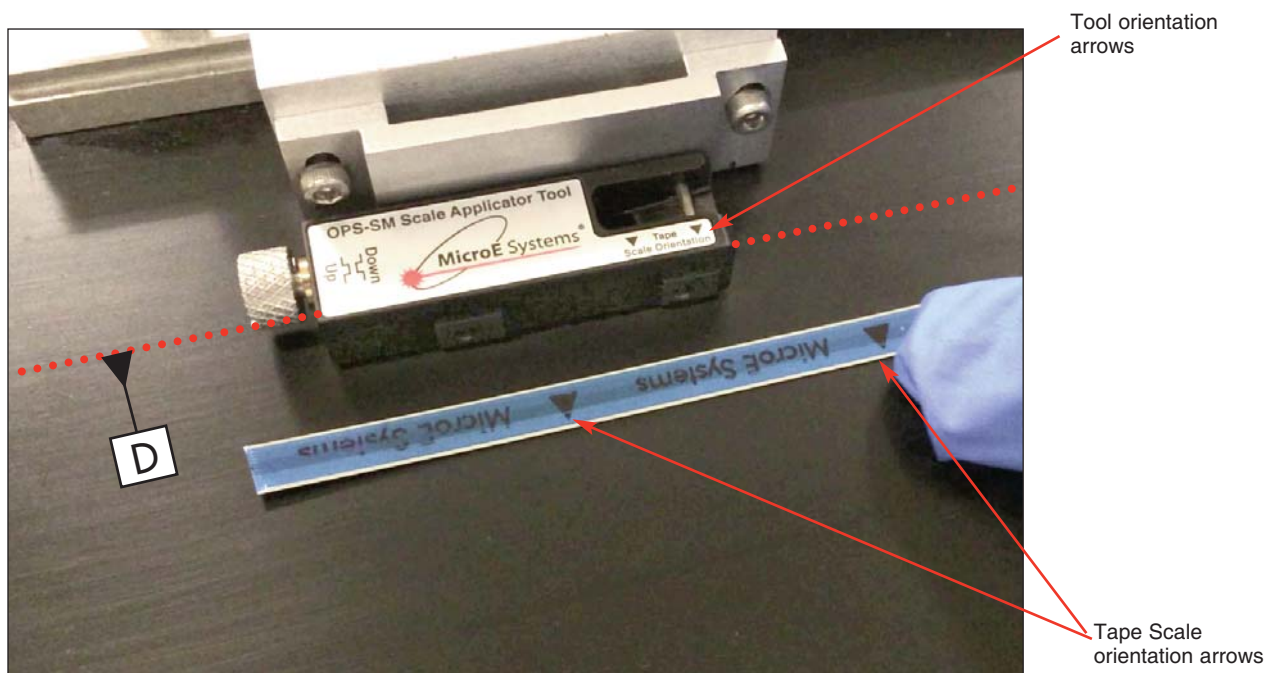
4.

Note tape scale orientation with arrows and the “D” reference edge.

The applicator tool is shown mounted to the OPS Sensor mount. Both Tape Scale arrows, and Applicator Tool orientation arrows need to point in the same direction for proper configuration.

Also note, the “D” reference edge is determined from the OPS interface drawing. The tape scale orientation arrows always point to the “D” reference edge. In the example below, the dotted red line shown is the measured “D” reference edge. When the tape scale is finally installed, the orientation arrows will be pointing to the calculated “D” reference edge.

In the example shown, the left side of the tape scale needs to go into the applicator tool entry channel first.



Tape Scale, OPS Side Mount Configuration

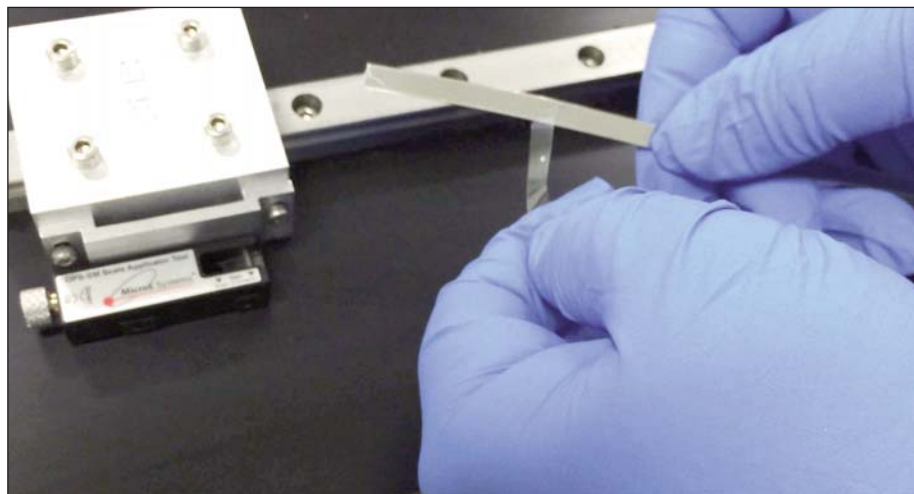
Installation By Mounted Applicator Tool

5.

Peel off a short section of bottom adhesive backing approximately 50mm (2 inches).

PurePrecision Tape Scales have 3 layers, blue protective film, steel scale, and adhesive backing.

Using a sharp tool or fingernail, initiate the peeling of the adhesive liner from the end of the tape scale that will be inserted into the applicator tool entry channel.



NOTE:

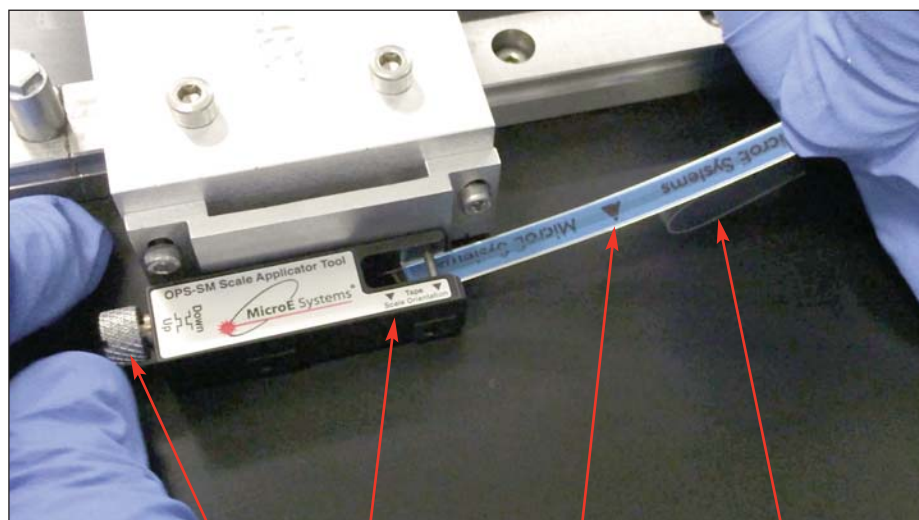
Do not peel the blue protective film off at this time.

6.

Turn Applicator Tool to the “Up” position and insert tape into applicator tool.

Rotate the knob that controls the contact cylinder plunger to the **UP** position. This allows you to insert the first section of adhesive exposed tape, into the applicator tool.

Be sure that both the tape scale orientation arrows and the applicator tool arrows point in the same direction.

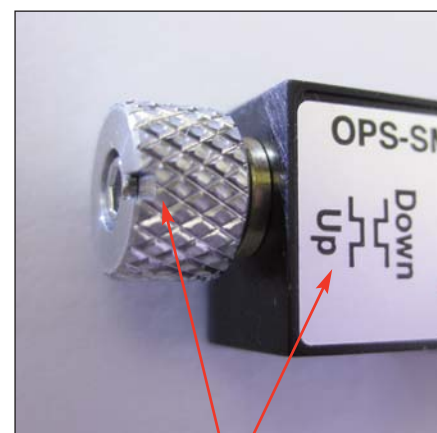


Plunger in **UP** position

Tool orientation arrows

Tape Scale orientation arrows

Adhesive backing liner



Close-up of plunger knob in the **UP** position. The position of the keyways indicates **UP** or **Down**. Rotating the knob will both move the plunger up or down.

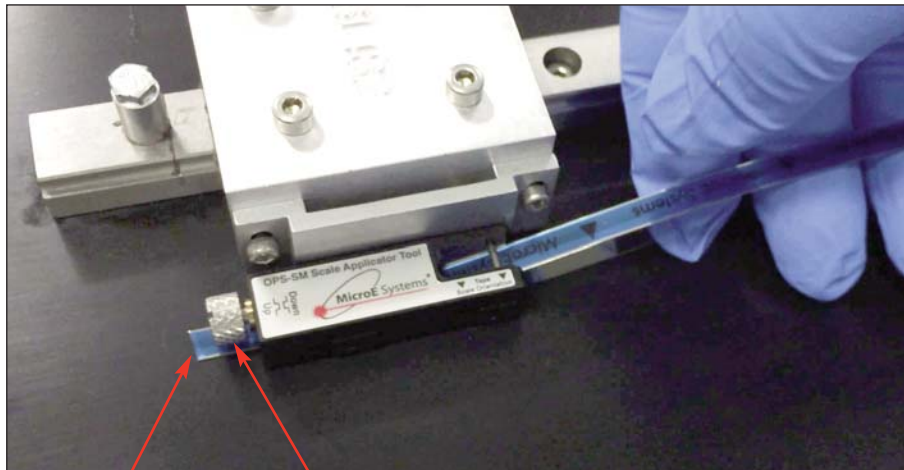
Tape Scale, OPS Side Mount Configuration

Installation By Mounted Applicator Tool

7.

Insert a short section of tape scale into the tool, approximately 50mm (2 inches).

Insert the first short section of tape scale so that it emerges just past the plunger knob to a desired end location. Press down on this exposed 3-5mm section of tape.



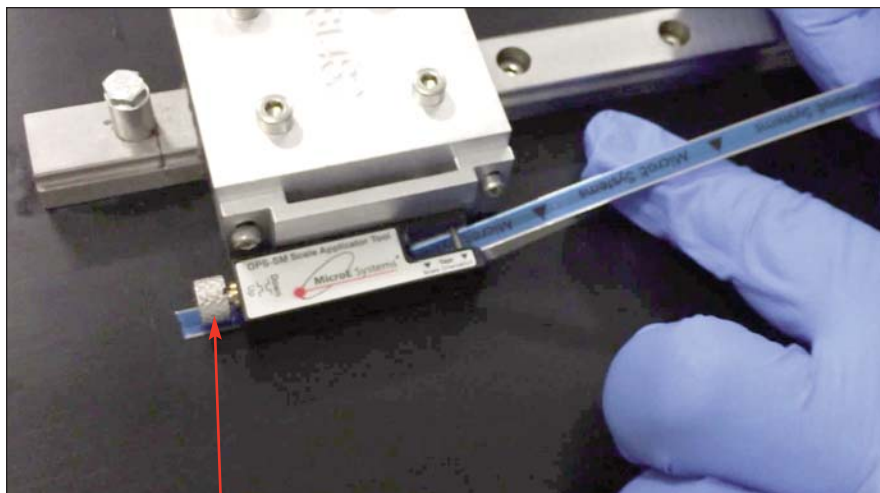
Press down on this small section of tape

Plunger in the **UP** position

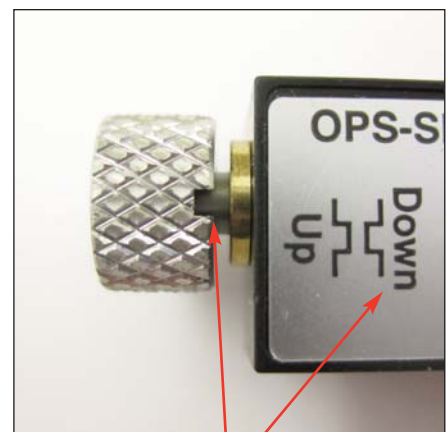
8.

Rotate the pressure plunger knob to the "Down" position.

Rotate the plunger knob so that the key-way notch is in the position shown.



Plunger knob in the **DOWN** position



Close-up of plunger knob in the **DOWN** position. Position of notch indicates that the plunger is in the **DOWN** position.

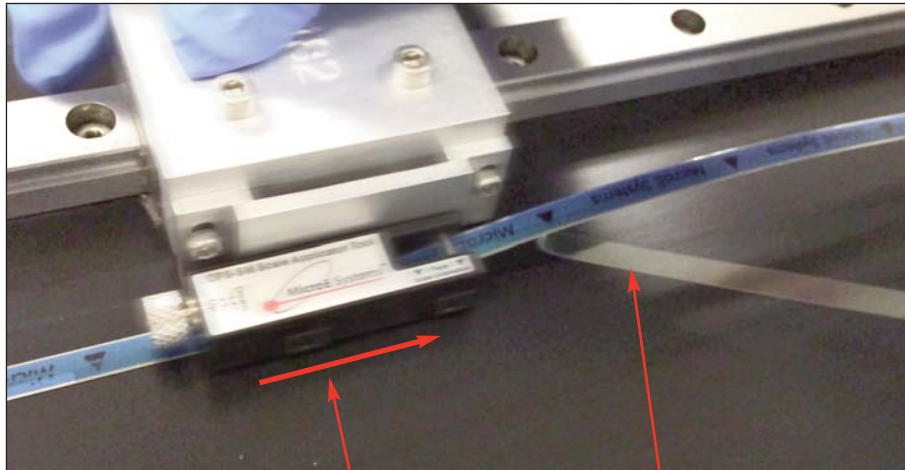
Tape Scale, OPS Side Mount Configuration

Installation By Mounted Applicator Tool

9.

Move the tool in a steady motion to apply the tape scale.

Push the applicator tool in the direction of tape application. Be sure to pull the adhesive backer out of the way while the applicator is in motion.

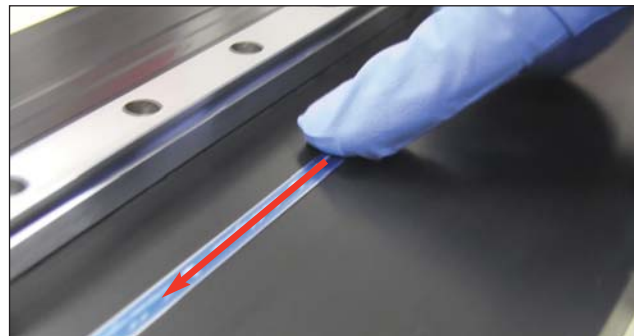
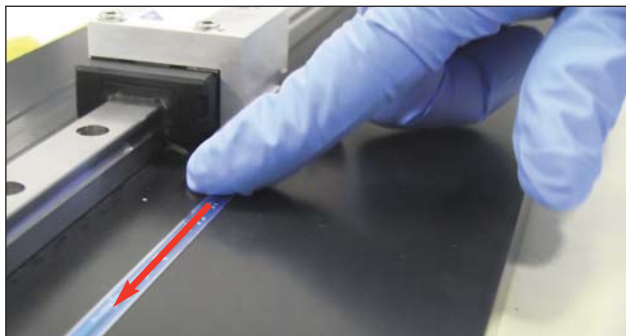


Direction of motion of tape applicator tool.

Pull adhesive backer away from tape applicator, while moving the applicator tool.

10.

Once the scale is applied to the mounting surface, and before the blue protective film is removed, it is recommended that even pressure be applied over the entire tape scale length by sliding a glove or cot protected finger across the scale. The applied pressure will ensure that the adhesive is evenly and permanently set.



Tape Scale, OPS Side Mount Configuration

Installation By Mounted Applicator Tool

11.

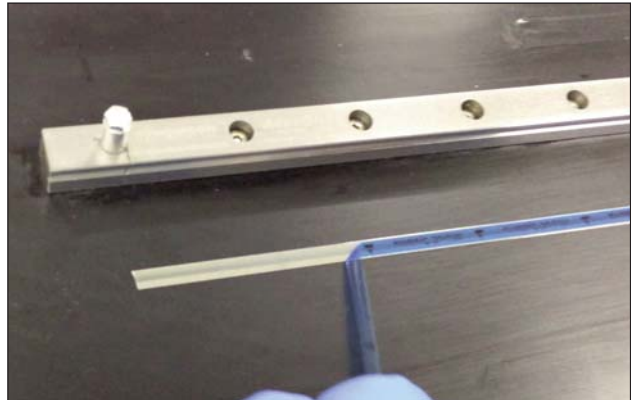
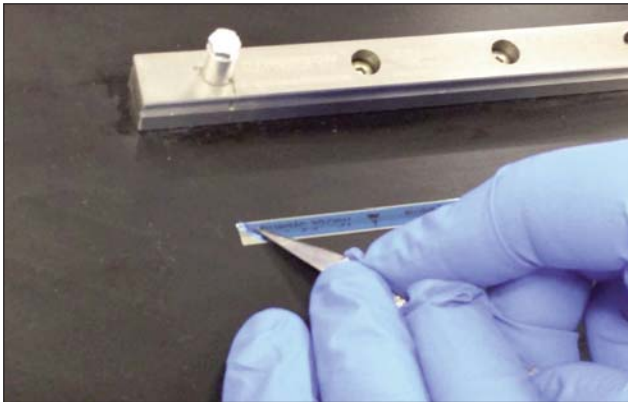
Peel off the blue protective film.

Start the peeling process using a sharp tool, being careful not to damage the scale. Pull off the remaining blue protective film. Clean the tape scale using alcohol or acetone and a lint-free cotton cloth.



NOTE:

Make sure you have on finger cots or talc-free gloves.



NOTE:

After removing the blue protective film, the scale is ready for use and will perform to specification.

The encoder will not function properly with the blue protective film installed. It must be removed for proper encoder operation.



NOTE:

If installing index/limits (Laser Tape II and PVGL glass), go to the "Stick-On Index and Limit Marker Installation" section.

Tape Scale, OPS Top Mount Configuration

Installation by Hand Grip Applicator Tool



NOTE:

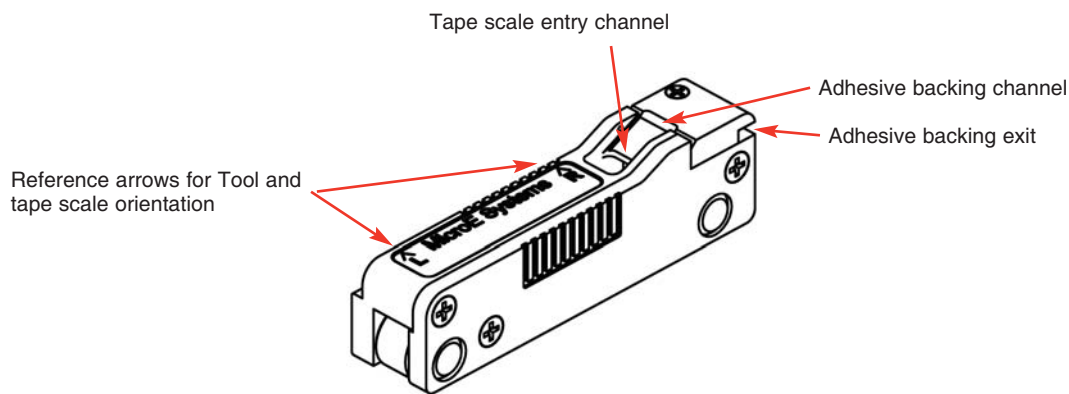
For best system performance, talc-free gloves or finger cots should be worn during all steps of tape scale installation.

Thoroughly clean the scale mounting surface and reference edge using a cotton swab or lint-free cloth dampened with isopropyl alcohol or acetone. Remove all dust and particles.

1.

OPS Top Mounted Tape Scale Applicator Tool (Model Number: TSAT-PPT)

The Hand Grip Applicator Tool is needed for tape scale lengths greater than 300mm. It is designed to be hand held and to slide along either a permanent or temporary mounting edge while tape scale is applied.



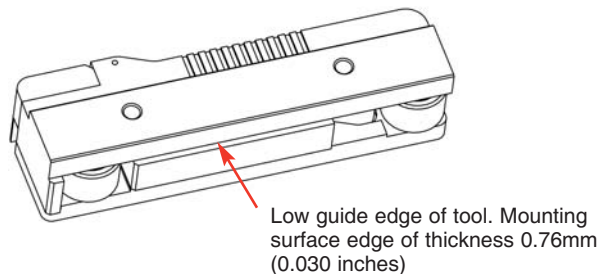
2.

Hand Grip Applicator Tool mounting surface guide edges.

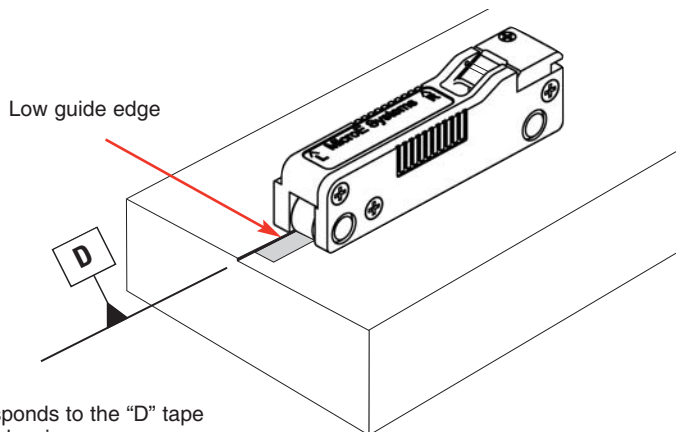
The hand grip applicator tool has two guide edges. One is for low guide edge configurations of thickness 0.76mm (0.030 inches) and one for higher guide edge configurations of thickness greater than 9.5mm (.375 inches).

Refer to the OPS interface drawing for tape scale reference edge "D"

Low guide edge



Note: The low guide edge also corresponds to the "D" tape scale reference edge in the interface drawing.



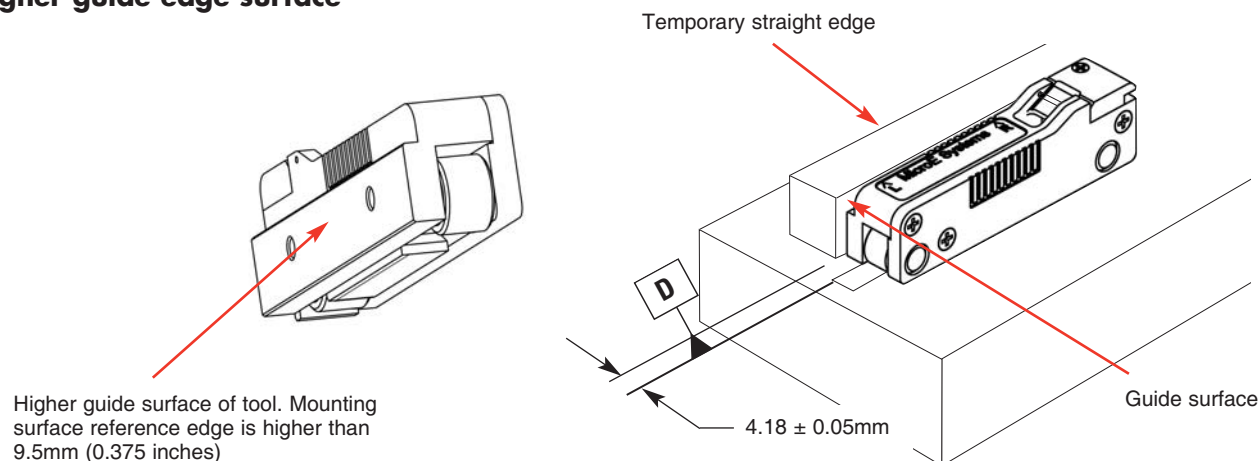
Tape Scale, OPS Top Mount Configuration

Installation by Hand Grip Applicator Tool

2.

Hand Grip Applicator Tool mounting surface guide edges (continued)

Higher guide edge surface



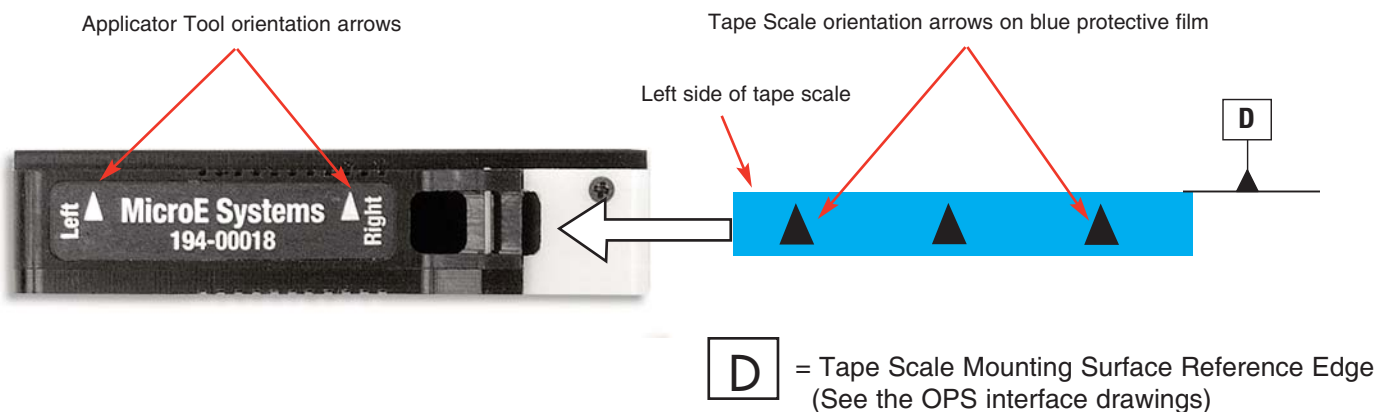
3.

Orienting the Hand Grip Applicator Tool and PurePrecision II Tape Scale

Both Tape Scale arrows, and Applicator Tool orientation arrows need to point in the same direction for proper orientation.

Also note, the “D” reference edge in the OPS interface drawing. The tape scale orientation arrows always point to the “D” reference edge. In the example below, the “D” reference edge is shown, with tape scale orientation arrows pointing to it. The applicator tool orientation arrows are also pointing in the same direction.

In the example shown below, the left side of the tape scale will need to go into the applicator tool entry channel first. This tape scale end is referred to as the “correct” end.



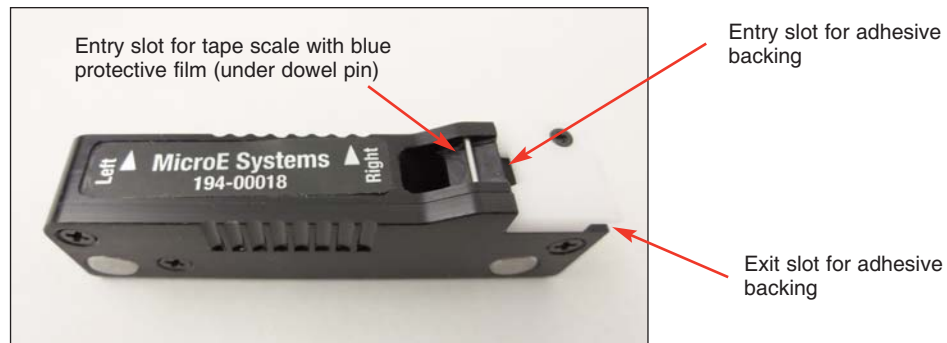
Tape Scale, OPS Top Mount Configuration

Installation by Hand Grip Applicator Tool

4.

Preparing the tape scale for the applicator tool

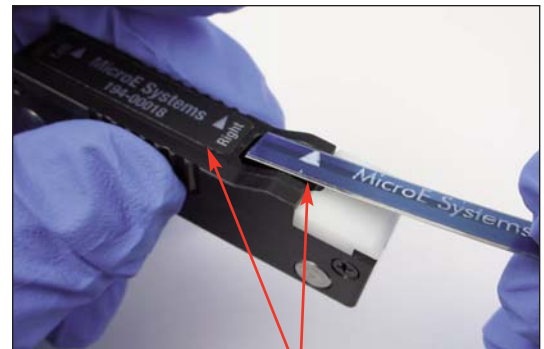
PurePrecision Tape Scales have 3 layers, blue protective film, steel scale, and adhesive backing. The top two layers fit under the dowel pin, while the bottom adhesive backing fits into the backing slot as shown below.



Determine the "correct" end of the tape scale to insert into the applicator tool entry slot. The correct end is determined by the direction of the orientation arrows on both the tape scale blue protective film and the applicator tool arrows. Both sets of arrows have to point in the same direction.

There are different methods to prepare and insert the tape scale and backing into the hand grip applicator tool slots. One method is shown below.

From the "correct" end of the tape scale, peel and curl back 50-75mm (2-3 inches) of the adhesive liner as shown. Take care not to touch the adhesive on the bottom of the tape scale or allow any particle contamination.

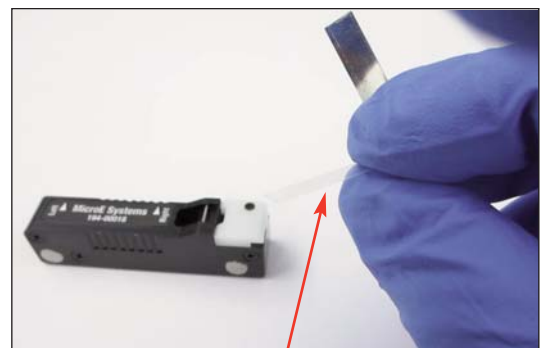


"Correct" tape scale end. All orientation arrows point in the same direction.



NOTE:

Do not peel the blue protective film off at this time.



Peel and curl back 50-75mm (2-3 inches) of the adhesive liner

Tape Scale, OPS Top Mount Configuration

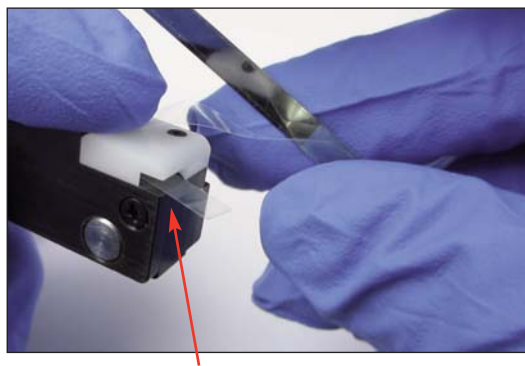
Installation by Hand Grip Applicator Tool

5. Feed the adhesive backing into the applicator tool

Insert the backing film into the applicator tool.



5.1 Adhesive backer inserted into backer slot.



5.2 Adhesive backer exiting from backer slot.

6. Tape Scale Insertion

Insert the tape scale (with blue protective film) under the dowel pin, into the entry slot as shown.

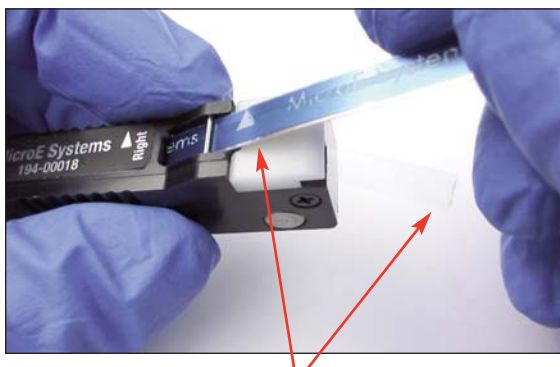


6.1 Dowel pin and entry slot.

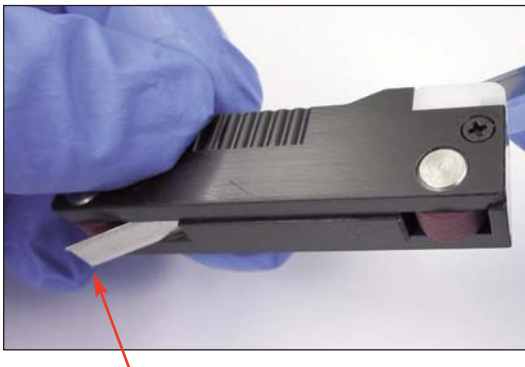


6.2 Tape inserted.

Feed tape scale into the applicator tool, until the end of the tape is past the front roller as shown.



6.3 Tape inserted with adhesive backing exiting.



6.4 Tape scale fed past front tool roller.

Tape Scale, OPS Top Mount Configuration

Installation by Hand Grip Applicator Tool

7.

Applying tape scale with the hand grip applicator tool

Once the applicator tool is configured with the adhesive backer exiting from the exit slot and steel tape extending past the front tool roller, the scale is ready to be installed on the mounting surface.



Applicator tool correctly configured for installation.



High guide edge face.

Applicator tool pressed down and against high guide edge face.



Applicator tool in motion against guide edge face.

Slide tool along guide edge face with a slow even pressure motion until all of the tape is installed on the mounting surface.

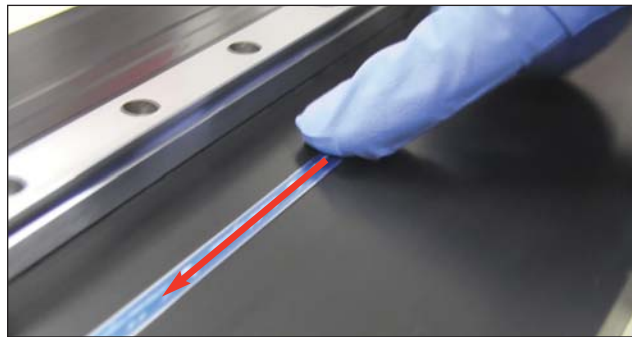
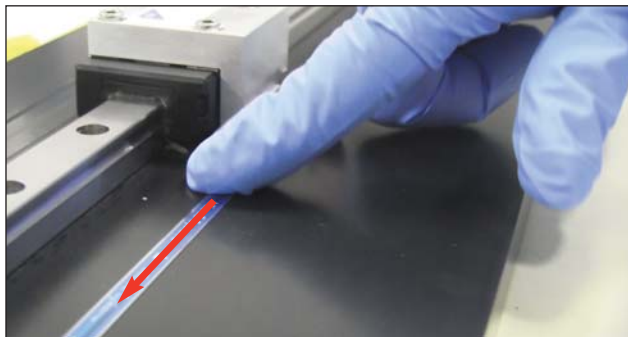
Be sure the adhesive backing film does not bunch up and jam inside the tool and exits freely from the exit slot.

Tape Scale, OPS Top Mount Configuration

Installation by Hand Grip Applicator Tool

8.

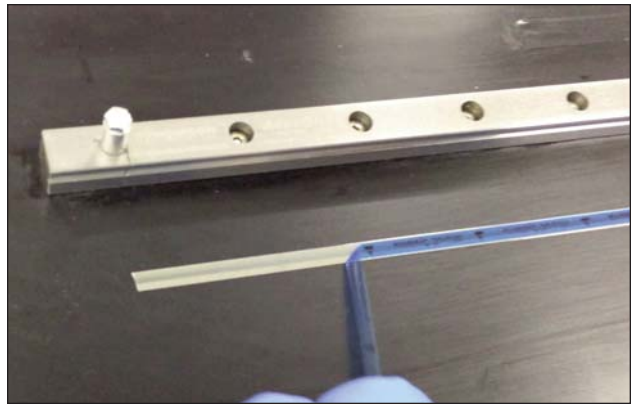
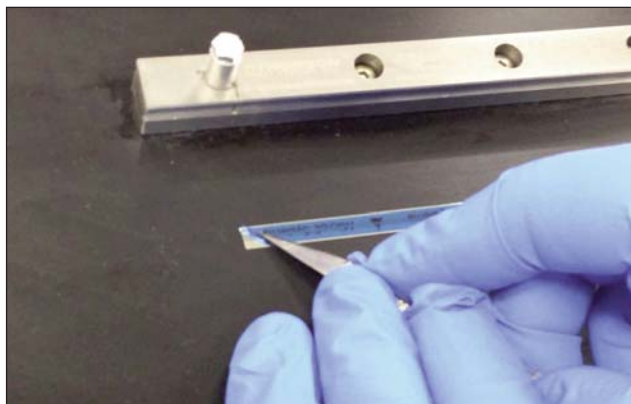
Once the scale is applied to the mounting surface, and before the blue protective film is removed, it is recommended that even pressure be applied over the entire tape scale length by sliding a glove or cot protected finger across the scale. The applied pressure will ensure that the adhesive is evenly and permanently set.



9.

Peel off the blue protective film.

Start the peeling process using a sharp tool, being careful not to damage the scale. Pull off the remaining blue protective film. Clean the tape scale using alcohol or acetone and a lint-free cotton cloth.



NOTE:

After removing the blue protective film, the scale is ready for use and will perform to specification.

The encoder will not function properly with the blue protective film installed. It must be removed for proper encoder operation .



NOTE:

If installing index/limits (Laser Tape II and PVGL glass), go to the "Stick-On Index and Limit Marker Installation" section.

Linear Glass Scales, OPS Side and Top Mount Configurations

Installation

1.

Mounting Surface Preparation

Inspect the mounting surface for any machining irregularities. MicroE Systems recommends a surface finish of better than 1.6 micrometers Ra and mounting surface flatness of 0.0001 inch/inch.

2.

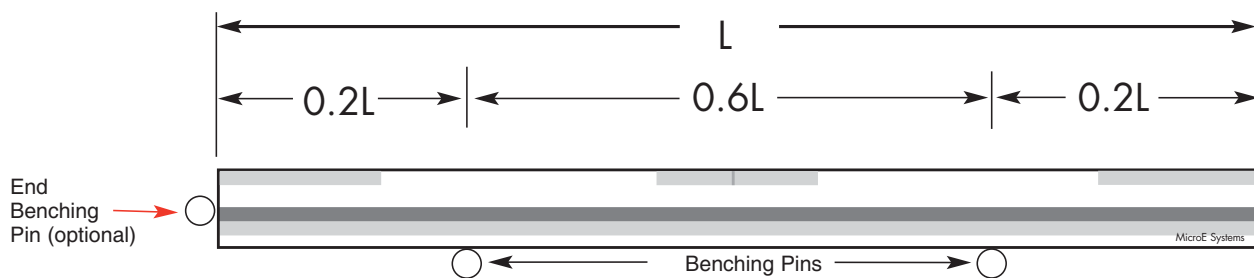
"Benching" the linear Scale

MicroE Systems' linear glass scales should be permanently affixed to the mounting surface, using epoxy and the adhesive attached to the back of the scale.

"Benching" the glass scale to the system means aligning the scale by means of benching pins. Refer to the OPS Interface Drawings for dimensions. The "benching" pins can be set up on either side of the glass scale, but are referenced to the "D" reference edge of the glass scale as shown in the Interface Drawing.

Be sure to use the proper orientation for the "D" linear glass scale reference edge and the OPS Top Mount reference face "B" as shown in the OPS Interface Drawings.

Two benching pins are recommended on either long side of the glass scale and one at either end.



Glass Scale "Benching" Diagram

Position the benching pins inward from either end of the scale. 20% of the overall scale length is the recommended location from the edge.

Be sure the benching pins do not exceed the height of the linear glass scale to prevent mechanical interference with the sensor or sensor mount.

Linear Glass Scales, OPS Top Mount Configurations

Installation

3.

Mounting linear Glass Scales (with adhesive backing), Model Number PVGL-T

Make sure that the mounting surface is dry and clean.

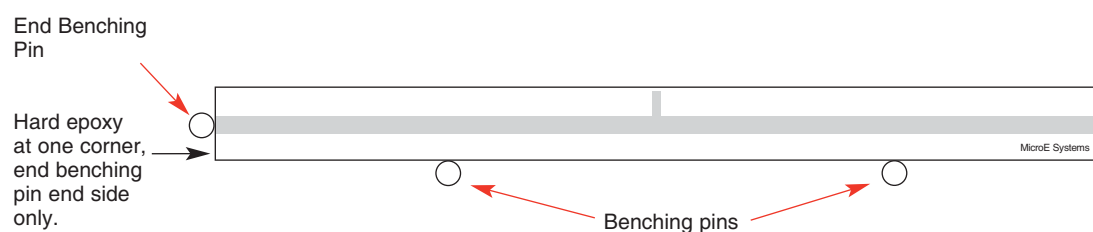
Align the scale by placing the edges against the benching pins.

Peel off the glass scale adhesive backing and press into place.

Apply a hard epoxy, such as Tra-Con's Tra-Bond 2116, to the one end of the scale (at the end benching pin side, if an end benching pin is used).

Using one end secured with hard epoxy, allows thermal expansion from the benched end of the scale.

Allow the adhesives to fully cure. A cure time of 12 hours is required for the glass scale's pressure sensitive adhesive to achieve the best performance and reliability.



Glass Scale with Adhesive Backing

Index and Limit Marker Installation

Stick-On Markers for PurePrecision Laser Tape II (HPTS-) and Performance and Value Linear Glass (PVGL-). (Not applicable to PurePrecision Marker Tape II Scales)

Stick-On Index and Limit Markers, Part Numbers

Index Marker Strips, Model Number NRIMS

Limit Marker Strips, Model Number NRLMS

Index and Limit Marker “Strip” Packaging



Index Strip: 8 Index Markers



Limits Strip: 4-Left and 4-Right*

*Limit markers have different reflectivity values for left and right markers.

Index and Limit Marker Installation

Stick-On Markers for PurePrecision Laser Tape II (HPTS-) and Performance and Value Linear Glass (PVGL-). (Not applicable to PurePrecision Marker Tape II Scales)

1.

Put on finger cots or gloves before starting the index and limit markers installation.



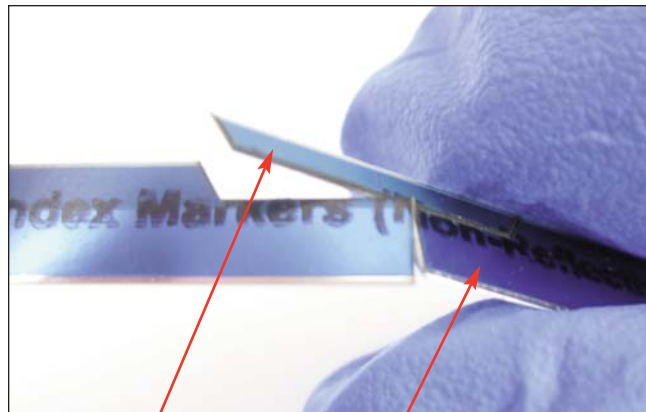
NOTE:

Before installing the Limit and Index Markers, make sure that the blue protective film from the PurePrecision Tape Scale has been removed.

Begin by holding the Limit and Index Marker strip so that the blue protective film is on top and the reflective surface is at the bottom.

Remove the marker from a perforated strip by gently twisting the strip in the area of the marker.

The marker will pull away from the transparent adhesive liner. Holding only the **handle** section, slowly pull the index marker from the perforated sheet. This will expose the adhesive.



Stick-on Index

Handle section



NOTE:

Be sure to hold the Index or Limit Markers by the **handle only**. The adhesive on the handle section can be touched. However, be careful not to touch the adhesive on the areas of the markers that will be applied to the scale.

Index and Limit Marker Installation

Stick-On Markers for PurePrecision Laser Tape II (HPTS-) and Performance and Value Linear Glass (PVGL-). (Not applicable to PurePrecision Marker Tape II Scales)



NOTE:

Be sure to remove the blue protective film from the top of the tape scales before applying stick-on index and limit markers.

For benching edge requirements, refer to the Interface Drawings for OPS. The benching edge corresponds to the “D” reference edge in the interface drawings.

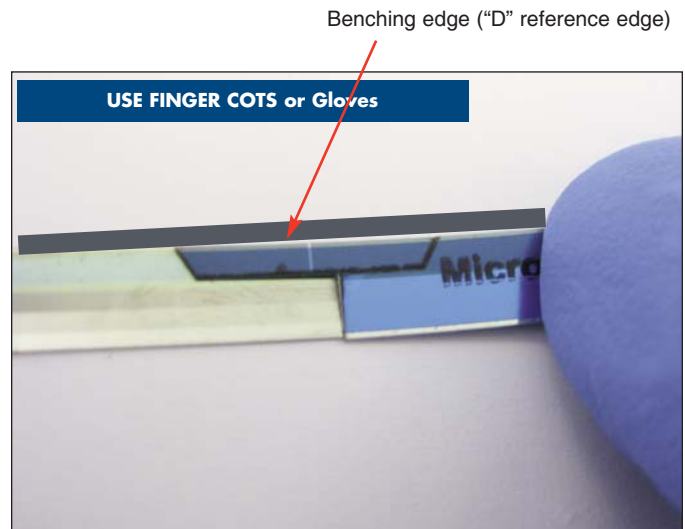
2.

Attaching the Index Marker to the Scale

Place the top edge of the marker against the benching edge, holding it at a 45° degree angle as shown in the photo. This keeps the adhesive away from the scale, until the marker is the correct location, before being pressed into place.

If the scale is installed with an offset from its reference edge, a temporary reference edge surface such as a small metal block must be used for the index and limit markers.

When the marker is tight against the reference edge, press the marker onto the scale with your finger.



Index Marker

Index and Limit Marker Installation

Stick-On Markers for PurePrecision Laser Tape II (HPTS-) and Performance and Value Linear Glass (PVGL-). (Not applicable to PurePrecision Marker Tape II Scales)

3.

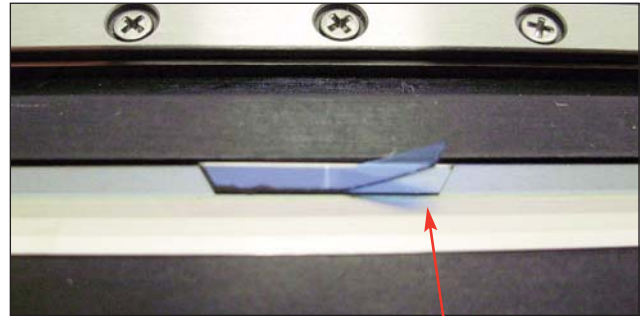
Press your finger on the marker close to the edge of the handle. Then, with your other hand, pull up on the handle to detach it from the marker. The handle will break away from the marker.

Carefully remove the blue protective film from the marker surface.



NOTE:

Use fingernails or plastic tweezers to remove the blue protective film, but do not use a hard metal object. Using a hard metal object might damage the grating on the PurePrecision Tape Scale.



Peel blue protective film



Stick-on marker installed

4.

Apply the left and right limit markers, if applicable. Repeat steps 1-3.

End Cap Installation for Tape Scales

Optional

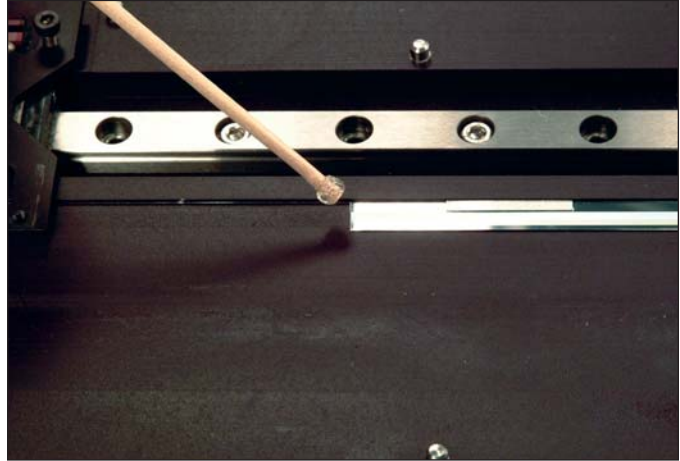
1.

Epoxy Setup

- Mix the two-part epoxy and place it in a syringe or on the end of a stick. Do not use a cotton swab to apply the epoxy.
- Put epoxy on the end of the scale. Make sure that the epoxy touches both the mounting surface and the scale across the width of the scale.



Only apply epoxy at the ends of the tape scale. Do not get any epoxy on the tape scale in the measuring area.

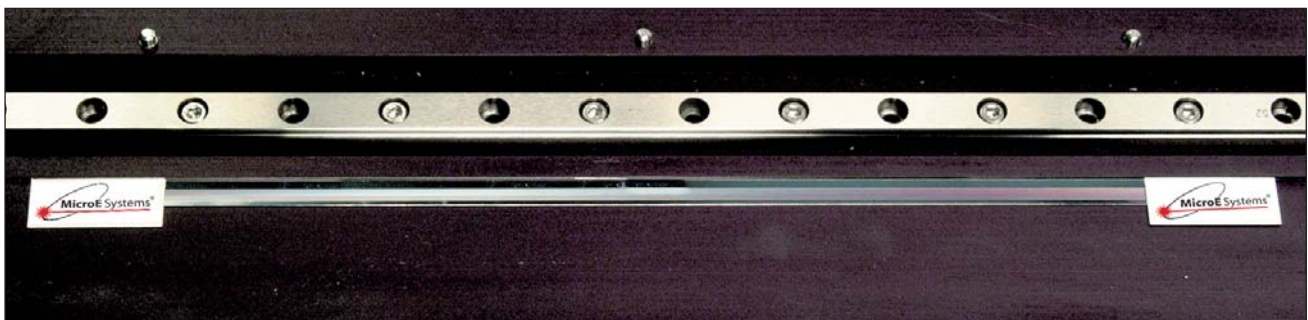


- Perform Step 2, immediately while the epoxy is still in a liquid state.

2.

Installing the End Caps on the Mounting Surface

- Remove the adhesive liner from end cap.
- Place the end cap on the top of the scale and epoxy so that the end of the scale is in the middle of the end cap.
- Press down lightly to ensure adhesion and let cure for 24 hours.



Final Cleaning, Inspection and Cure Time

Before using the encoder for servo control, clean the tape scale, index marker and limit markers using alcohol or acetone and a lint-free cotton cloth or swab. Finally, inspect the tape scale's surface for scratches, adhesive spots or smears in the measuring length.

A cure time of 12 hours is required for the tape scale's pressure sensitive adhesive to achieve the best performance and reliability.

Reworking to Correct Mistakes

Once installed, the tape scale, the index marker, and the limit markers cannot be moved or removed and reinstalled. Reworking will require removal and discarding of the old tape or markers, and installation of new ones.

If only the index or limit markers have to be replaced, the scale can remain in place and be reused so long as there is no damage to the scale's surface. Do not use a tool made of metal or other hard material to remove the markers. Clean the scale's surface completely of any adhesive residue before applying new markers.

Contacting MicroE

MicroE Systems is a world leader in optical encoder technology with offices in major industrial centers around the globe.

To learn more about MicroE Systems products, visit:
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Our products have been used by thousands of companies worldwide to solve a wide range of motion control applications. Our advanced encoder technology and application expertise has driven innovations in the design of machinery, equipment and instrumentation in many industries, including medical, industrial, robotics, automation, metrology, semiconductor manufacturing, packaging equipment, entertainment, energy, military, and scientific research.



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