# 7E Cutter Body and Polish Calibration

**FOLLOW THE DIRECTIONS BELOW AFTER INSTALLING A NEW CUTTER BODY WITH POLISHING WHEELS INTO THE 7E TYPE MACHINES. IT IS ESSENTIAL TO DO THE FOLLOWING BEFORE ATTEMPTING TO CALIBRATE THE NEW CUTTER BODY.**

**You will need the blue plastic box that contained the new cutter body; it is labeled "7E Spindle Arbor Parameters" Below is a representation of the label color coded for later reference.**

### 7E Spindle Arbor Parameters

|  | Edging | Wheel 1 | Wheel 2 |
|---|---|---|---|
| Serial Number: |  |  |  |
| Size Bias: | ---- | ■ | ■ |
| Rimless Size Bias: | ---- | 0.0 | 0.0 |
| Bevel Bias: | ---- | ■ | ■ |
| Blade Radius: | 10.290 | ● | ● |
| Blade Offset: |  | Rev 1.2 |  |

**ENTER the Wheel 2 Blade Radius value on the 7E Calibration Screen in the field depicted immediately below, highlighted in yellow.**



**NOTE:  The values entered in the previous steps (Blade Offset and Wheel Radius) should not be changed unless the Cutter Body is replaced.**
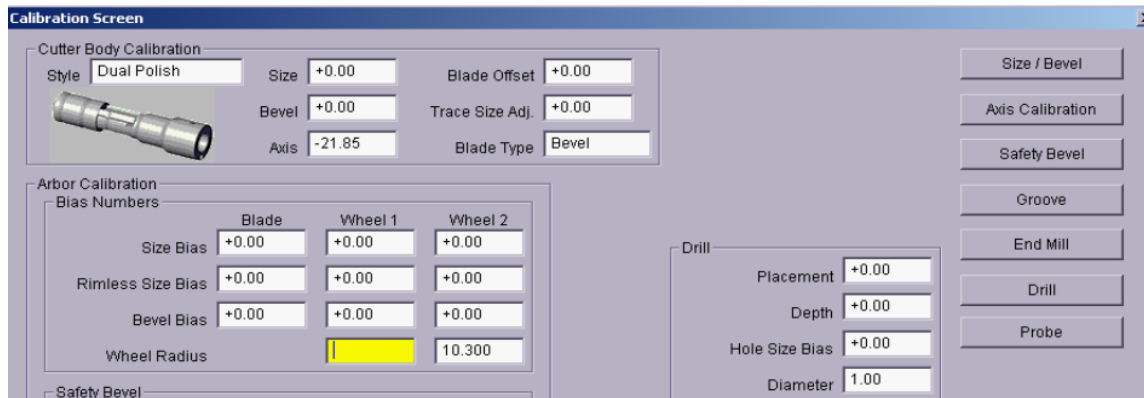
**NOTE:  Each 7E cutter body has its own unique set of parameters which must be entered into the 7E calibration screen upon installing the cutter body into the machine.**

**FIRST, near the bottom of the label on the blue plastic cutter body box you will find the "Blade Offset" value (circled in red in the diagram above).  Enter this number in the Blade Offset field on the 7E Calibration Screen as shown in the figure below, highlighted in yellow.**
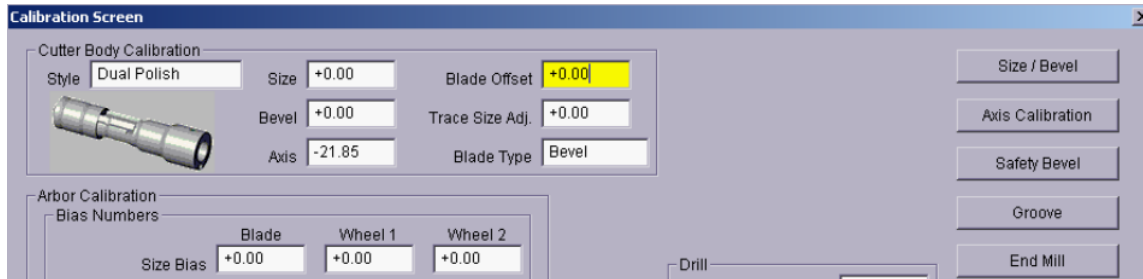


**NEXT, find the "Blade Radius" values for Wheel 1 and Wheel 2 on the label of the blue plastic cutter body box.  These values are located on the line just above the "Blade Offset" value used in the 1st step above (These fields are indicated by the blue oval and the orange oval in the diagram; blue for Wheel 1 and orange for Wheel 2).**

**ENTER the Wheel 1 Blade Radius value on the 7E Calibration Screen in the field depicted immediately below, highlighted in yellow.**

should be ENTERED on the 7E Calibration Screen in the two fields that are shown highlighted in yellow in the figure immediately below.



Again, looking at the blue plastic box that came with the new cutter body, the values in the two squares highlighted in orange in the figure above (Size Bias and Bevel Bias for Wheel 2) should be ENTERED on the 7E Calibration Screen in the two fields that are shown highlighted in yellow in the figure immediately below.

**Finally, ENTER the size and bevel bias for Wheel 1 and Wheel 2.**

**Looking at the blue plastic box that came with the new cutter body, the values in the two squares highlighted in blue immediately below, (read further below)**

| 7E Spindle Arbor Parameters | Edging | Wheel 1 | Wheel 2 |
|---|---|---|---|
| Serial Number: | | | |
| Size Bias: | ---- | | |
| Rimless Size Bias: | ---- | 0.0 | 0.0 |
| Bevel Bias: | ---- | | |
| Blade Radius: | 10.290 | | |
| Blade Offset: | | Rev 1.2 | |

# 7E SIZE/BEVEL CALIBRATION

**For the purpose of simplicity, all examples herein will use the lens a-size of**

**58.00 mm which corresponds to the circumference size of 182.21 mm.  All directions must be followed in order from top to bottom.**

**Begin on the Calibration Screen pictured immediately below;  PRESS the "Size/Bevel" key at the bottom left of the screen (one of the keys in the row of keys along the top of the keypad).**



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**Finally, it is important that the three boxes under the word "Blade" are all set to 0.00 before calibrating.  NOTE: The "Size Bias" and the "Bevel Bias" under "Blade" should remain at 0.00 after calibrating the cutter body.**

Because you are calibrating after a cutter body change or any other time that size requires adjustment other than after a blade change, setup the screen as follows:

*Cutter Calibration* = "Body"

*Box Size* = "0.00"

*Frame* = "Metal"

*Material* = "Poly"

*Bevel* = "Center"

*Polish* = "☐" (unchecked)

Again, please MAKE SURE that the "Cutter Calibration" field at the right of this screen is set to "Body" NOT "Blade".

At this point, you will need at least one spherical lens blank (having no cylinder power) with an edge and center thickness of about 3 – 5 mm.

Put the lens in the 7E and close the chuck.

PRESS the "Start" button on the keypad; then wait until the cycle ends.

After edging the lens, if the apex of the bevel is not off the edge of the lens (for example, see figure below), measure the a-size or "eye size" of the lens using calipers. The diameter should be 58 mm (PLEASE SEE the figure below showing the use of calipers.)  You may also use the procedure found at the end of this document in order to check size of the lens, it's likely to be more accurate.
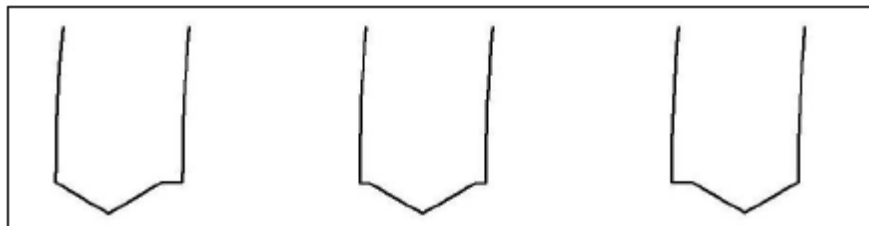
When you press the "Size/Bevel" key, if a password box appears in the center of the screen, ENTER the password.  Then, PRESS the "Size/Bevel" key again.

A white text box will most likely appear in the center of the screen at this point, and on the keys pictured along the bottom edge of the screen there will be a "Yes" key and a "No" key.
PRESS the "No" key.

You should now see the "Size/Bevel Calibration" screen similar to what is pictured immediately below.  Please make sure that "Body" appears in the Cutter Calibration box at the top right of the screen, as is pictured below.

Using the last 10mm increment, add what you read on the dial to it, (in this case 50 + 7.8 = 57.8)

10mm increments

Note that the apex (point) of the bevel touches the flat parts of the caliper jaws for beveled lenses and the edge for rimless lenses. The widest portion of the lens is the actual diameter.

**In this figure the apex of the bevel is still on the edge of the lens in all three examples.**

**NEXT, judge the position of the bevel. Since you set the bevel to "Center" in previous steps, the bevel should be centered on the edge of the lens.**
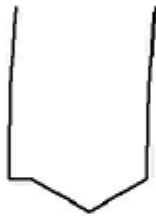
Bevel too far back --
move forward by positive
bevel adjustment.

Bevel correctly entered --
no adjustment necessary.

Bevel too far back --
move forward by positive
bevel adjustment.

**If the bevel position needs correction, heed the following example.**

**Assuming the edge of the lens you cut in the previous steps, when you were checking the a-size of the lens, looks like the drawing immediately below …**

Bevel too far back --
move forward by positive
bevel adjustment.

If the calipers do not read 58 mm, enter the measured size in the *Measured Size* field on the 7E "Size/Bevel" calibration screen. For example, if your measurement of the lens a-size is 57.91 mm, enter 57.91 in the box to the right of the words Measured Size as pictured below. (It is best to caliper the a-size or diameter of the lens several times in a row to make sure you get the same measurement.)



After entering the measured size value, PRESS the "OK" key at the bottom left of the screen. Then re-edge the lens with a box size 3.00 mm less than the box size used the previous time. Once again, caliper the a-size of the lens to confirm that it matches the

"A =" value found at the top of the "Lens Shape" box on the screen.

PRESS the "OK" key at the bottom left of the Size/Bevel Calibration screen after entering the amount of Bevel Adjustment.  This will apply or save the adjustment.

Then re-edge the lens with a box size 3.00 mm less than the box size used the previous time.  Again, judge the position of the bevel.  Since you set the bevel to "Center" in previous steps, the bevel should be centered on the edge of the lens.

Before doing the following, be sure that an unpolished lens (just off the blade) is on size and a center bevel is, in fact, centered on the edge of the lens. Note the exact a-size and circumference.

For the purpose of simplicity, all examples herein will use the lens a-size of

58.00 mm.  All directions must be followed in order from top to bottom.

Your Material Screen 2 settings should be as follows before doing the calibration outlined on the next several pages.

**Material Screen 2**

| Name | Dry Polish | | | | Wet Polish | | | | | | | Safety Bevel | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Take Off | Revs | Lens RPM | Motor RPM | Take Off | Bev. Edge Pres. | Rmls Edge Pres. | Revs | Lens RPM | Motor RPM | Water Flow | Lens RPM | Motor RPM | Water Flow |
| CR-39 | | | | | 0.08 | 0.00 | 0.00 | 6 | 7 | 8 | 40 | 4 | 10 | 25 |
| Poly | 0.20 | 3 | 10 | 10 | 0.02 | 0.00 | 0.00 | 4 | 10 | 10 | 20 | 8 | 10 | 15 |

With the "Bevel Adjustment" box highlighted on the "Size/Bevel" Calibration screen, enter a positive adjustment to move the bevel closer to the front edge of the lens. (see the example below).

PRESS the "OK" key at the bottom left of the Size/Bevel Calibration screen after entering the amount of Bevel Adjustment.  This will apply or save the adjustment.

Then re-edge the lens with a box size 3.00 mm less than the box size used the previous time.  Again, judge the position of the bevel.  Since you set the bevel to "Center" in previous steps, the bevel should be centered on the edge of the lens.

## 7E Wheel 1 Poly Polish Calibration

## Calibrate Wheel 1 Bevel

Go to the SIZE / BEVEL calibration screen and set it:

> Frame = Metal; Material = Poly; Bevel = Center; Polish is checked; Wheel = 1D
(You must use a polycarbonate lens.)

Edge a lens; LISTEN closely to make sure you hear the lens touching the polish wheel during the polish part of the cycle. If you hear nothing and you are sure that the lens is not touching the polish wheel, enter +58.10 in the Measured Size box, press the OK key at the bottom left, and repeat the steps above. Again, listen to make sure the lens is touching the polish wheel.

• After watching the lens touch the polish wheel for ½ rotation of the lens, press the STOP key. Do NOT clean the swarf (lens material shavings) from the bevel of the lens.

• Remove the lens from the 7E and examine the front and back surfaces of the bevel.

• Then adjust the bevel polish using the Bevel Adjustment, following the directions displayed at the bottom of the screen when the Bevel Adjustment box is highlighted (see page 16 of this document). The front and back surfaces of the bevel need to be touched equally by the polish wheel.

**W1 Bevel Bias_____**

# High Luster Polish

Material Screen 2

| Name | Dry Polish | | | | Wet Polish | | | | | | | Safety Bevel | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Take Off | Revs | Lens RPM | Motor RPM | Take Off | Bev. Edge Pres. | Rmls Edge Pres. | Revs | Lens RPM | Motor RPM | Water Flow | Lens RPM | Motor RPM | Water Flow |
| CR-39 | | | | | 0.08 | 0.00 | 0.00 | 6 | 7 | 8 | 40 | 4 | 10 | 25 |
| Poly | 0.20 | 3 | 10 | 10 | 0.02 | 0.00 | 0.00 | 4 | 10 | 10 | 20 | 8 | 10 | 15 |
| Hi-Idx | | | | | 0.12 | 0.01 | 0.01 | 8 | 8 | 8 | 40 | 8 | 10 | 15 |
| Trivex | 0.07 | 2 | 10 | 10 | 0.04 | 0.00 | 0.00 | 5 | 10 | 10 | 60 | 8 | 10 | 15 |
| Thk Poly | 0.20 | 3 | 10 | 10 | 0.02 | 0.00 | 0.00 | 5 | 10 | 10 | 35 | 8 | 10 | 15 |
| AR Hi-Idx | | | | | 0.12 | 0.01 | 0.01 | 8 | 8 | 8 | 40 | 8 | 10 | 15 |
| AR Poly | 0.20 | 3 | 10 | 10 | 0.02 | 0.01 | 0.01 | 4 | 10 | 10 | 20 | 8 | 10 | 15 |
| AR CR-39 | | | | | 0.08 | 0.00 | 0.00 | 6 | 7 | 8 | 40 | 8 | 10 | 15 |

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**Calibrate Wheel 1 Size**

On the "SIZE / BEVEL" calibration screen set:
Frame = Metal; Material = Poly;  Bevel = Center;  Polish is checked;  Wheel = 1D;
 Dry Takeoff = 0.20

Edge the 58.00 mm circle lens and again LISTEN to make sure you hear the lens touching the polish wheel. The sound will be louder this time.  Check the a-size to see if it matches the unpolished lens size you noted per the instruction at the top of the page.  After checking the a-size several times to ensure you measure the same value, enter the size that you measured into the "Measured Size" box and then press OK.
 (THE LENS PRODUCED IN THIS STEP WILL NOT APPEAR TO BE POLISHED.)

Edge another lens on this 1D setting to verify that the size is correct and matches the unpolished size.

**Calibrate Poly Bevel Polish**
On the "SIZE / BEVEL" calibration screen, set it:
Frame = Metal; Material = Poly; Bevel = Center; Polish is checked; Wheel = 1D-W;
 Dry Takeoff = 0.20; Wet Takeoff = 0.02; Edge Pressure = 0.05
Edge and Polish a lens and verify good polish quality.

The edge pressure should always stay within the range of 0.00 to 0.10.  (0.00 up to 0.05 IS USUALLY WHAT WORKS WELL.)

BEVEL EDGE PRESSURE AND RIMLESS EDGE PRESSURE FOR POLY IS ALMOST ALWAYS  0.05
(Sometimes 0.00 up to 0.02 works well.)

FOR CR-39, HI-INDEX, AND TRIVEX MATERIALS  0.00  IS  USUALLY ADVISABLE FOR THE BEVEL EDGE PRESSURE AND RIMLESS EDGE PRESSURE.  THESE MATERIALS  ALSO REQUIRE MORE WATER AND THUS, THE WATER FLOW SHOULD BE SET TO ABOUT 40 OR 50 FOR WET POLISHING FOR THESE MATERIALS.

**END OF PROCEDURE**

# Basic 7E or 7Ex Size Calibration

Basic 7E Edger Calibration Method with Use of  4T or 4TX

*NOTE*: Before beginning, be sure that the "Circumference Offset" for beveled lenses is set 0.00 mm.

On the 4T, see no. 5 on the calibration menu.

On the Dimension, see the "Offsets" screen.

Step 1: Verify that tracer is calibrated on-size for tracing a beveled lens.
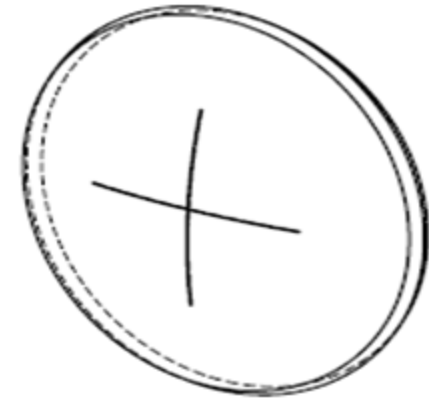
Using the 58 mm circular beveled lens provided with the tracer (see above), or order part no. 88502, trace it on the tracer as a beveled lens.  It is extremely important to make sure you select "Beveled Lens" on the tracer screen (on the 4T, "Beveled Lens" should be highlighted at the bottom right corner of the screen). This informs the machine which object is being traced.  If you trace this beveled lens as a "Rimless Lens," "Demo," or "Pattern" your results will NOT be accurate.  The circumference of this lens is 182.21 mm.

If the c-size displayed on the tracer screen after tracing this lens is 182.2 mm, you are done verifying for the purposes of this procedure.

IF you do NOT see the above number (182.2) displayed on the tracer screen for the c-size, then proceed to the calibration screen/menu of your tracer (see example below). Using the same 58 mm circular lens described above, perform the "BEVELED LENS SIZE CALIBRATION."

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            CALIBRATION MENU

1.  FRAME BEVEL POSITION CALIBRATION
2.  FRAME SIZE AND AXIS CALIBRATION
3.  PATTERN/RIMLESS LENS SIZE AND
     PATTERN/LENS AXIS CALIBRATION
4.  BEVELED LENS SIZE CALIBRATION
5.  CIRCUMFERENCE OFFSETS

6.  ADVANCED CALIBRATION

    Press number of desired selection.

                                HOME
```
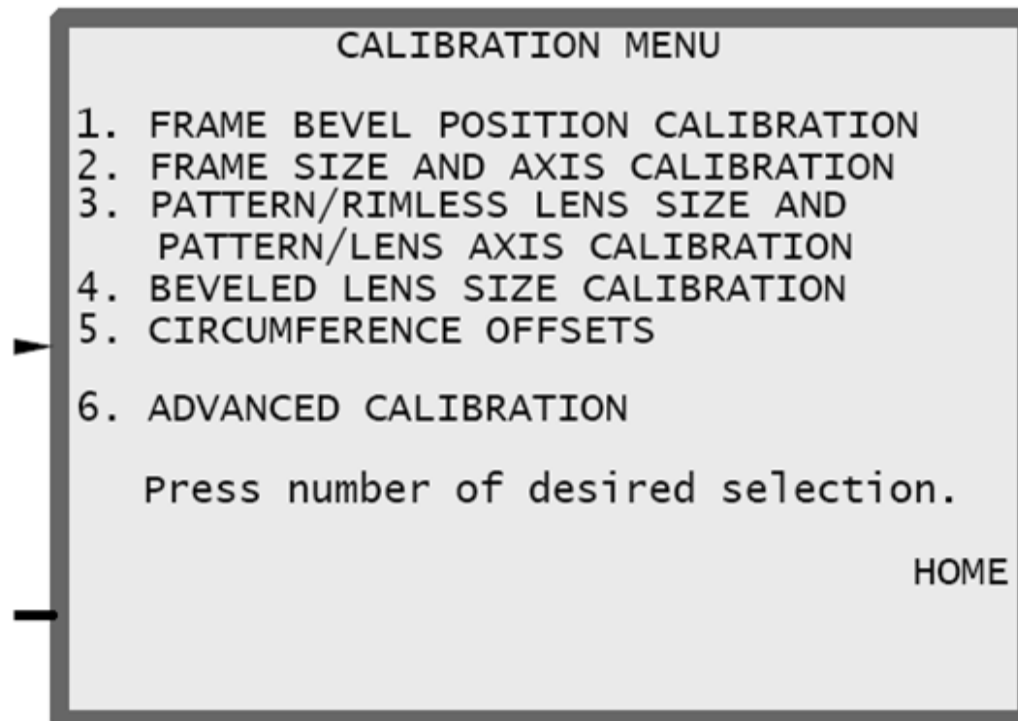
After doing the above calibration, return to the job or tracing screen, and using the 58 mm circular beveled lens provided with the tracer (see above), trace it on the tracer as a beveled lens.  It is extremely important to make sure you select "Beveled Lens" on the tracer screen (on the 4T, "Beveled Lens" should be highlighted at the bottom right corner of the screen). Once again, if the c-size displayed on the tracer screen after tracing this lens is 182.2 mm (or 182.21 mm), you are done verifying for the purposes of this procedure.

**Step 2: Edge a 58mm Circular Lens on the 7E**

Next, proceed to the Calibration Screen and select the "Size/Bevel" key (see it at the bottom left of the screen).  When you press the "Size/Bevel" key, if a password box appears in the center of the screen, ENTER the password.  Then, PRESS the "Size/Bevel" key again.

A white text box will most likely appear in the center of the screen at this point, and on the keys pictured along the bottom edge of the screen there will be a "Yes" key and a "No" key.

PRESS the "No" key.

**(SEE NEXT PAGE)**

**Because you are calibrating after a cutter body change** or
any other time that size requires adjustment **other
than** after a blade change,
setup the screen as follows:
*Cutter Calibration* = "Body"
*Box Size* = "0.00"
*Frame* = "Metal"
*Material* = "Poly"
*Bevel* = "Center"
*Polish* = "☐" (unchecked)
*Safety Bevel* = "☐" (unchecked)

NOTE*:  IT IS APPROPRIATE TO USE "BLADE" IF YOU HAVE JUST REMOVED AN OLD / DULL
CUTTER BLADE AND PUT A NEW ONE IN, BUT ANY ADJUSTMENTS AT THIS POINT SHOULD BE
VERY SMALL (APPROX. +/- 0.10 mm Max. in Box Size).*

At this point, you will need at least one spherical lens blank (having no cylinder power) with an
edge thickness of about 3 – 5 mm.

Put the lens in the 7E and close the chuck.
PRESS the "Start" button on the keypad; then wait until the cycle ends.

At the end of this edging cycle, **do not press any buttons on the 7E**.  It should stay on the
"Size/Bevel" screen with the "Measured Size" highlighted until you complete Step 3.

At the end of this edging cycle, **do not press any buttons on the 7E**. It should stay on the "Size/Bevel" screen with the "Measured Size" highlighted until you complete Step 3.

After edging the lens, if the apex of the bevel is not off the edge of the lens, proceed to step 3.
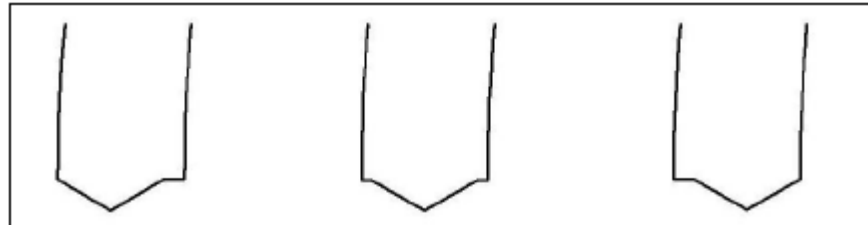
In this figure the apex of the bevel is still on the edge of the lens in all three examples.

**Step 3: Check the size of the 58mm circle lens you edged using the 4T or Dimension tracer.**

Using the tracer that you verified sizing on in Step 1 of this procedure, trace the lens you edged in Step 2.  Again, it is extremely important to make sure you select "Beveled Lens" on the tracer screen (on the 4T, "Beveled Lens" should be highlighted at the bottom right corner of the screen).  This informs the machine which kind of object is being traced.  If you trace this beveled lens as a "Rimless Lens,"  "Demo," or "Pattern" your results will NOT be accurate.

After the lens has been traced, write down the c-size displayed on the tracer screen.  Take this number back to the 7E with you.

Enter the c-size value from the tracer screen into the "Measured Size" box on the edger's "Size/Bevel" screen.  Note: This Measured size box will have 58.00 in it.  You will be changing it to a value of something more like 182.xx

Then, press the "OK" key at the bottom of the 7E screen.