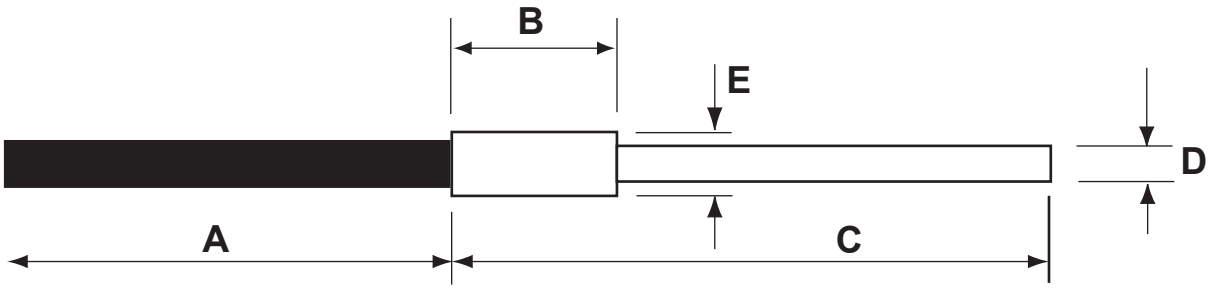
SENSOR TIP OPTIONS

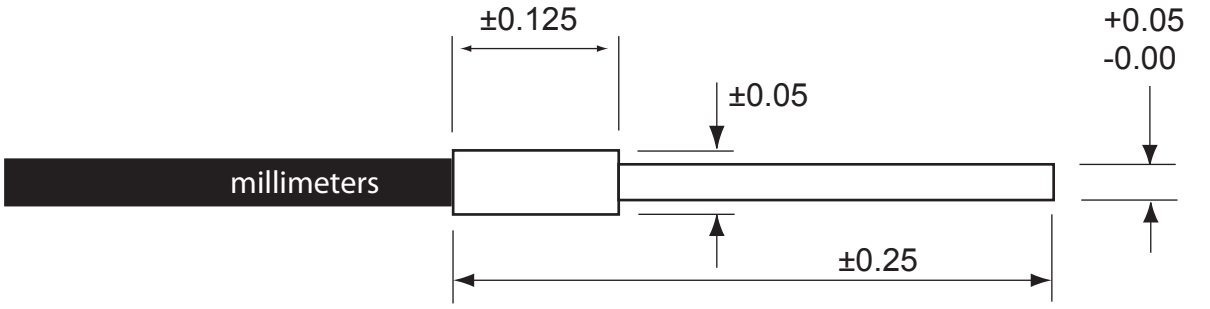
Custom Tips To Customer Specifications

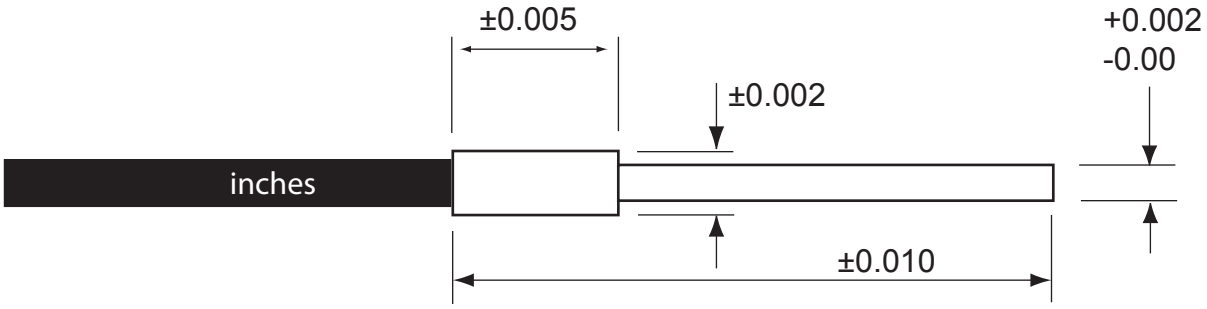
■ Option T1 - Simple Straight Tip

Use **T1** to designate a customized straight tip. Provide the dimensions shown here. Any deviation from a standard dimension requires T1.



STANDARD TOLERANCES for SENSOR TIPS





SENSOR TIP OPTIONS
Custom Tips To Customer Specifications

■ Option T2 - Straight Tip, Threaded

Use **T2** to designate a straight threaded tip. Specify size and length of thread.

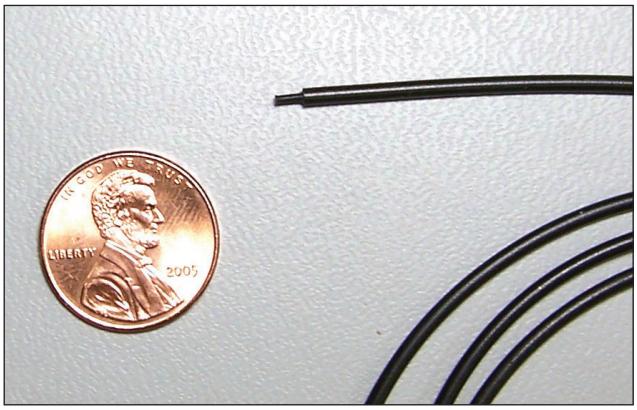
MINIMUM THREAD SIZES FOR METALLIC SENSOR TIPS

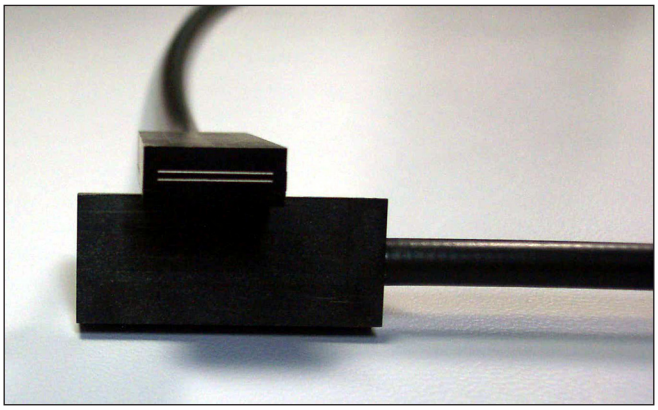
MODEL	UNIFIED THREAD SIZES	METRIC THREAD SIZES
D6 - D22	6 - 32 UNC	M3 x 0.5
D47	8 - 32 UNC	M4 x 0.7
D63, D64	8 - 32 UNC	M4 x 0.7
D100	1/4 - 20 UNC	M6 x 1
D125	1/4 - 20 UNC	M6 x 1
D169	5/16 - 24 UNF	M8 x 1.25
D170	5/16 - 24 UNF	M8 x 1.25
D171	5/16 - 24 UNF	M8 x 1.25
D240	7/16 - 14 UNF	M10 X 0.75
RC12, RC19	6 - 32 UNC	M3 x 0.5
RC20, RC22	6 - 32 UNC	M3 x 0.5
RC25	1/4 - 20 UNC	M6 x 1
RC32	8 - 32 UNC	M4 X 0.7
RC60	8 - 32 UNF	M4 x 0.7
RC62, RC63	5/16 - 24 UNF	M8 x 1.25
RC90	3/8 - 24 UNF	M10 x 1.5
RC99	1/4 - 20 UNC	M6 X 1
RC100	1/4 - 20 UNC	M6 x 1
RC140	7/16 - 32 UN	M10 x 0.75
RC171	5/16 - 24 UNF	M8 x 1.25
RC190	7/16 - 32 UN	M12 x 1.5
RC290	1/2 - 24 UNS	M14 X 2

SENSOR TIP OPTIONS
Custom Tips To Customer Specifications

■ Option T3 - Non-metallic Tip, Torlon or Peek Plastic

Use **T3** to designate a tip with non-metallic construction. Torlon and Peek plastic are readily machinable polymers and are the most commonly used materials. Any machinable shape can be produced. Factory contact is required to confirm dimensions.



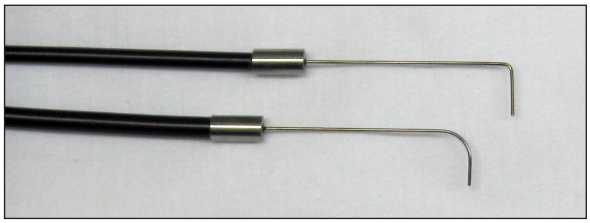


SENSOR TIP OPTIONS
Custom Tips To Customer Specifications

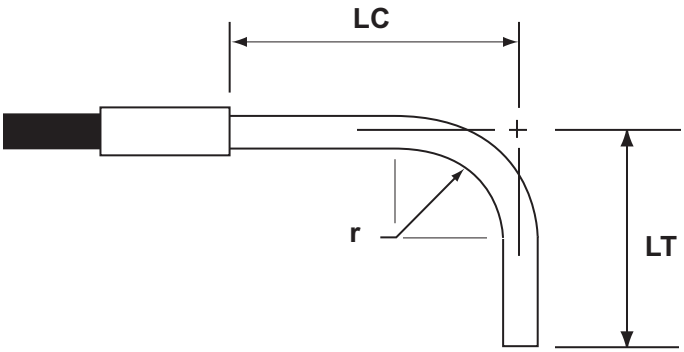
For 90° tips, specify Options T4 thru T6 to designate custom requirements.

- For the small probes, Option T4 turns 90° in the shortest space
- For large probes, Options T5 & T6 turn 90° in the shortest space

■ Option T4 - 90° Tubing



Use **T4** to designate a right angle tip with SS tubing bent into a 90° turn. Specify leg lengths LC and LT and (if desired) the bend radius r.

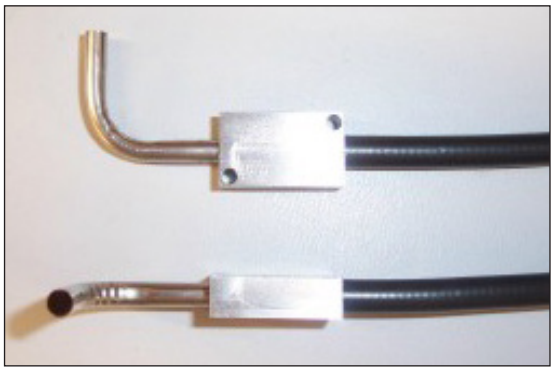


MINIMUM BEND RADIUS

The safe minimum radius for a given diameter tubing depends upon the thickness of the tubing wall, the quantity of fiberoptics filling the tube space, and the method of bending. Generally, it is good practice to design a part with the minimum inside bend radius of 4 times the probe diameter. Exceptions to this rule are probes with 3/16" diameter tube or larger which require 5.5 times the tube diameter.

In special instances, it may be possible to make probes with tighter bend radii than stated in the above general guideline. Please contact the factory in these cases.

A bend radius that is too small will cause the tubing to distort and break fibers as shown in this picture.



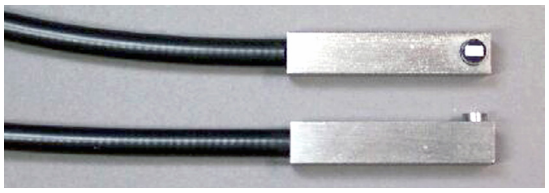
SENSOR TIP OPTIONS

Custom Tips To Customer Specifications

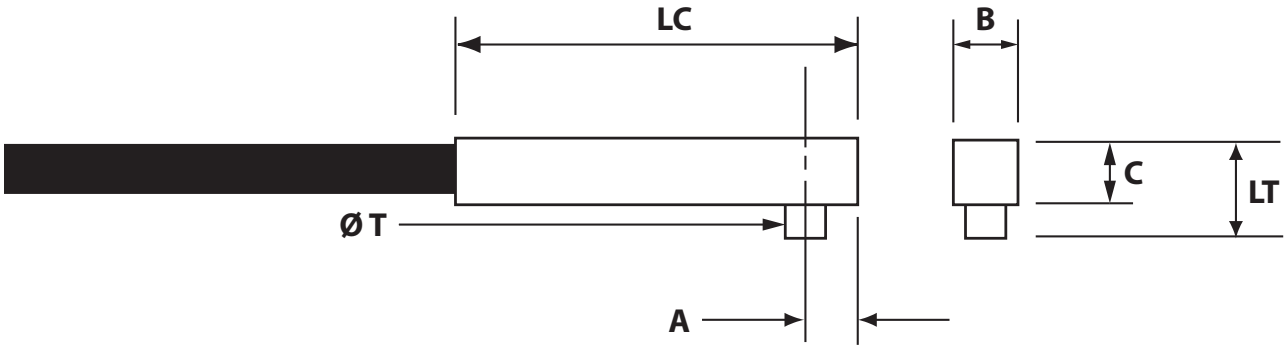
For 90° tips, specify Options T4 thru T6 to designate custom requirements.

- For the small probes, Option T4 turns 90° in the shortest space
- For large probes, Options T5 & T6 turn 90° in the shortest space

■ Option T5 - 90° Tip



Use **T5** to designate a right angle tip with square body construction having a short sensor tip section mounted at 90°. This design often turns 90° in the shortest space possible. Specify dimensions shown.



MINIMUM REQUIRED DIMENSIONS FOR T5 TIPS (mm)						
MODEL	**LC**	**ØT**	**A**	**B**	**C**	**LT**
D6, D12, D20, D21, RC12 - RC22	12.7	0.81	0.75	4	4	5.5
D47, RC32	12.7	1.65	1.25	4	4	6
RC25	12.7	4.75	3	6.35	6.35	9
RC60, D63, D64	20	1.83	1.2	4	6.35	9
D100, RC99, RC100	20	3.18	2	6.35	8	10.5
RC62, RC63	25	4.75	3	6.35	8	10.5
D125	25	3.96	2.5	6.35	10	12.5
D169, D170, D171, RC171	30	4.75	3	8	25	35
RC90, RC190	30	7.92	4.5	8	25	35
D240, RC290	40	7.92	4.5	10	30	40

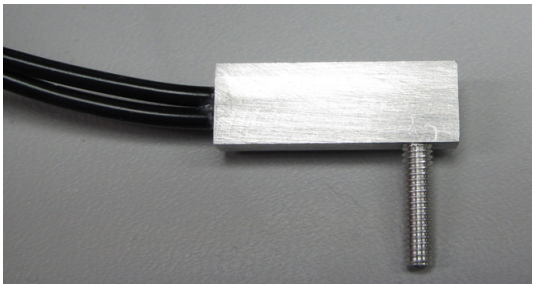
SENSOR TIP OPTIONS

Custom Tips To Customer Specifications

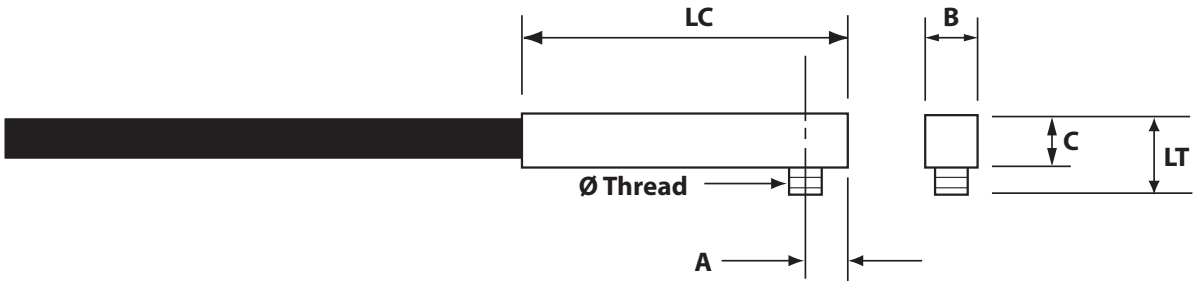
For 90° tips, specify Options T4 thru T6 to designate custom requirements.

- For the small probes, Option T4 turns 90° in the shortest space
- For large probes, Options T5 & T6 turn 90° in the shortest space

■ Option T6 - 90° Tip, Threaded



Use **T6** to designate a right angle tip with square body construction having a threaded sensor tip section mounted at 90°. Specify thread size and length.

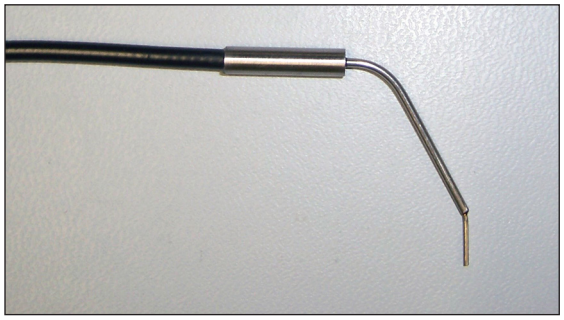


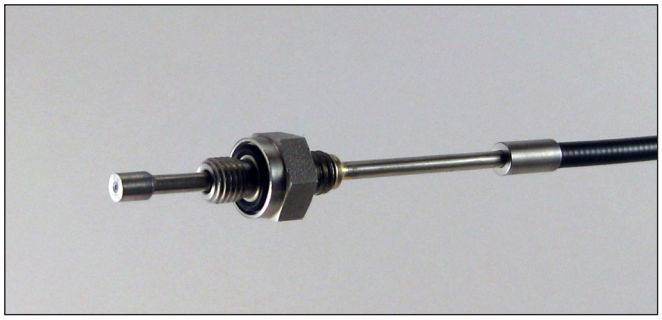
MINIMUM REQUIRED DIMENSIONS FOR T6 TIPS						
MODEL	**LC**	**ØT**	**A**	**B**	**C**	**LT**
D6, D12, D20, D21, RC12 - RC22	12.7	M3 x 0.5	3	4	4	6
D47, RC32	12.7	M4 x 0.7	4	5	4	8
RC25	12.7	M6 X 1	5	6	6.35	10
RC60, D63, D64	20	M4 x 0.7	4	5	6.35	10
D100, RC99, RC100	20	M6 X 1	5	7	8	12
RC62, RC63	25	M8 X 1.25	6	10	8	12
D125	25	M6 X 1	5	7	10	12
D169, D170, D171, RC171	30	M8 X 1.25	6	10	25	35
RC90	30	M10 X 1.5	7	12	25	35
D240, RC140	40	M10 X 0.75	7	12	25	35
RC190	40	M12 X 1.5	8	14	25	35
RC290	50	M14 x 2	10	16	30	40

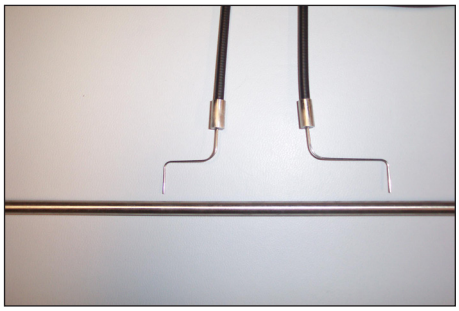
SENSOR TIP OPTIONS
Custom Tips To Customer Specifications

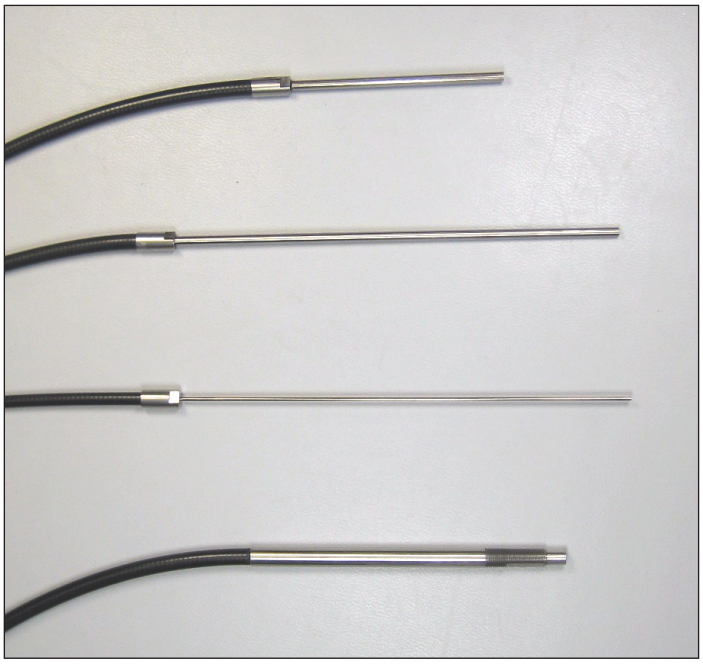
■ Option T7- Custom Tip

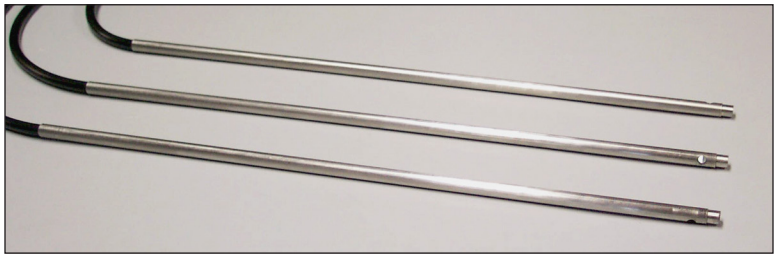
Use **T7** to designate a unique shape tip made to customer's original drawing.











SENSOR TIP OPTIONS

Standard sensor tips are constructed with glass fibers, epoxy and stainless steel housings. These standard materials allow operation down to cryogenic temperatures. The upper temperature limits for standard sensors are:

- 200°C for continuous duty
- 300°C for intermittent duty

■ Option T8- 350°C High Temperature Tip

Use **T8** to designate a 300 - 350°C high temperature requirement.

- 300°C for continuous duty
- 350°C for intermittent duty

■ Option T9- 450°C High Temperature Tip

Use **T9** to designate a 350 - 450°C high temperature requirement. T9 probes are specially constructed with high temperature adhesive that, due to its poor strength, cannot support elevated pressure.

- 350°C for continuous duty
- 450°C for intermittent duty

■ Option T10- >482°C High Temperature Tip (Quartz Fiber)

Use **T10** to designate a high temperature requirement exceeding 482°C. T10 probes are specially constructed with quartz fiber and ceramic adhesive to survive temperatures exceeding 482°C, up to 800°C.

■ Option T11- Non-Magnetic Tip (Brass or Aluminum)

Use **T11** to designate brass or aluminum for operation in high EMF.

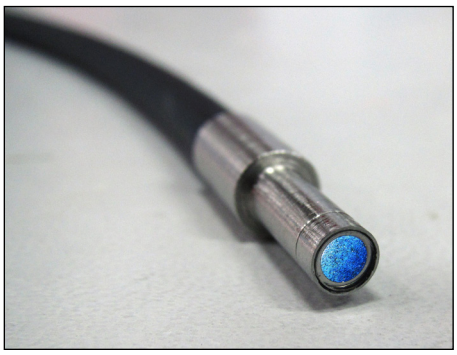
■ Option T12- Invar Tip (Low CTE)

Use **T12** to designate Invar tip material for low coefficient of thermal expansion.

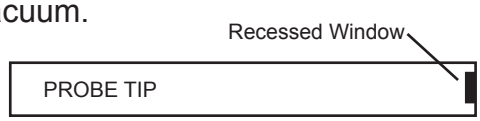
SENSOR TIP OPTIONS

■ Option W- Epoxied Window Probe

Use **W** to designate a sapphire window recessed and epoxied in the probe tip.

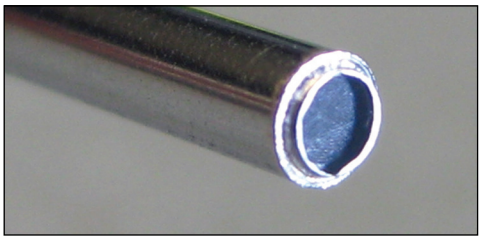


Window probes are used for sensing in high pressure or vacuum applications. Window probes utilize a sapphire window set over the fiber bundle. The window is recessed into the sensor tip and epoxied to the face of the fiberoptic bundle to seal against the high pressure or vacuum.



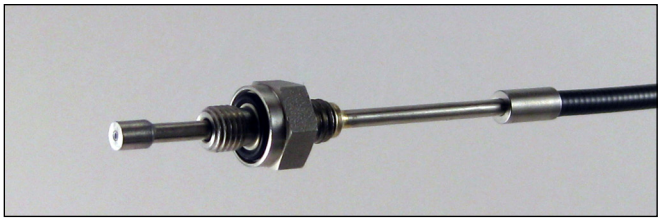
■ Option Wb- Brazed Window Probe

Use **Wb** to designate a sapphire window brazed to the probe tip.



Brazed windows are used in very high temperature applications or for pulsating pressures where the epoxy design does not have sufficient strength to secure the window under those conditions. Brazed windows have a much higher cost than epoxied windows. Please RFQ the factory.

HIGH PRESSURE
Sensor tips are usually threaded for high pressure. The sensor tip can be supplied brazed to a straight thread o-ring fitting as shown here. Successful applications to 30,000 psi have been achieved.



PULSATING PRESSURE
Stroking pistons create a pulsating pressure that can pull the window out of the probe. A retaining ring can be added for mechanical security.