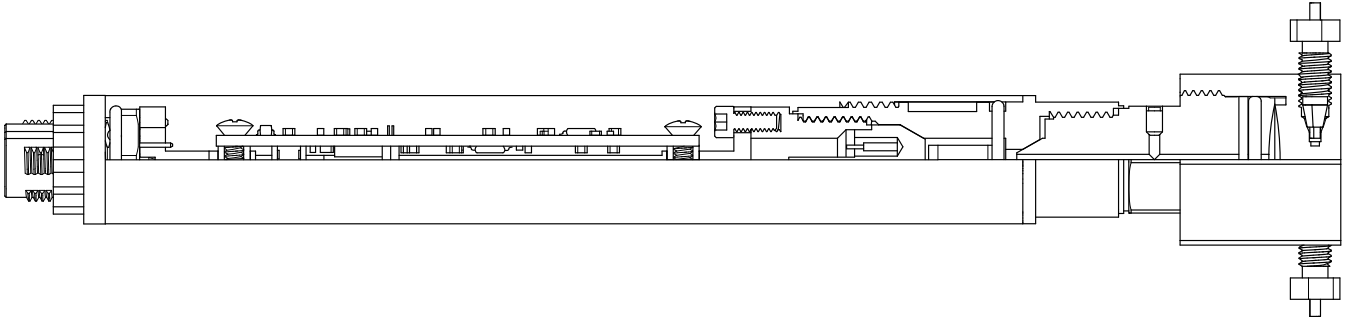
XtalX LUSQ1 Pressure Sensor

Mechanical User Manual



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Mechanical User Manual

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SECTION 1
MECHANICAL INSTRUCTIONS

1.1 CONNECTING USER FLUID SYSTEM TO PRESSURE SENSOR

When connecting the measured fluid to the sensor, the following connection parts are necessary:

Consumer Items	Description	Qty.	Material	Supplier	Part Number
Cone Ferrule	40° metal cone 1/16”	2	Stainless Steel 316	Vici Valco	ZF1S6-10
Cone Nut	#10-32-1/2” Nut	2	Stainless Steel 316	Vici Valco	MZN1-10
Metal Tubing	1/16” OD, .022” ID	2	Stainless Steel 316	McMaster Carr	89785K911
Metal Tubing	1/6” OD, .006” ID	2	Stainless Steel 316	McMaster Carr	89785K912

***Note:** If flow through the .006” ID Tubing is difficult, use the .022” ID tubing instead.

When installing the cone fittings, ensure that the metal tubing is cut flush and there are no burs or blockages in the internal diameter. Place the nut behind the cone port and slide the 1/16” tubing through both. Insert two tubing/cone/nut assemblies into the corresponding tapped holes of the micro-cap. Gently push the tubing to ensure that it has bottomed-out at the seat in the microcap. Hand tighten the screw until the cone ferrule bottoms out in the seat of the micro-cap. Tighten the nut with a ¼” wrench one-quarter turn to seal. Refer to the diagram below:

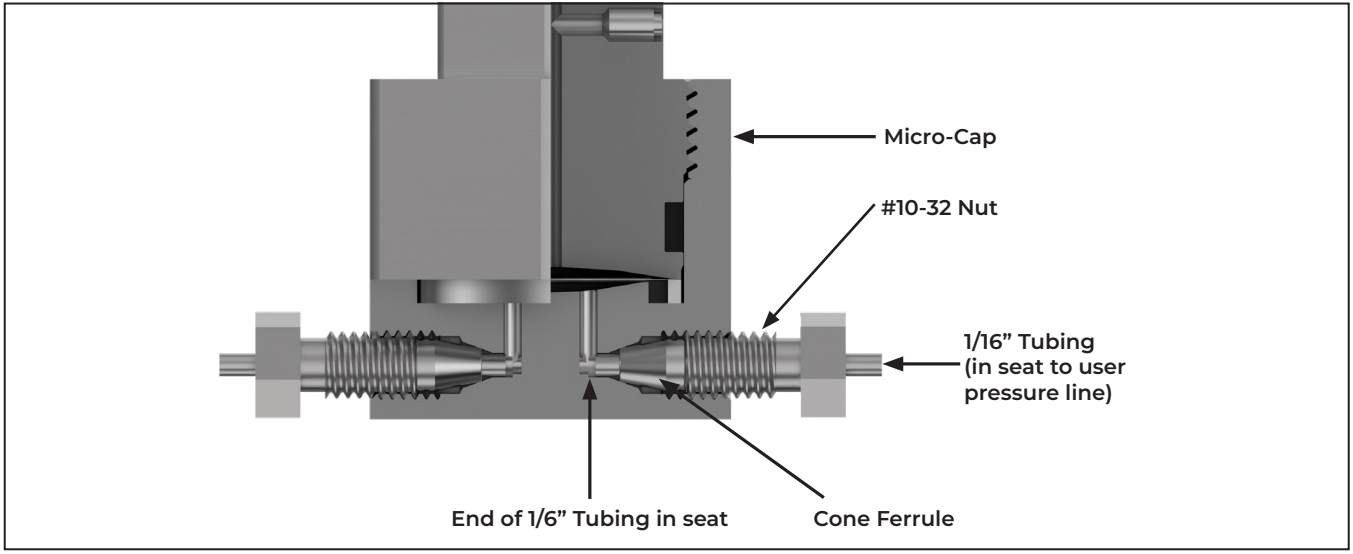

Figure 1-1. Installing Cone Fitting

1.2 CONSUMABLES

The following 0-rings may need to be replaced during the life of the sensor:

Number	O-Rings	Size	Qty.	Material	Supplier	Part Number
4	Diaphragm O-ring	DN-016	1	90D Viton Fluoroelastomer	McMaster Carr	8297T126
3	Diaphragm Backup Ring	DN-016	1	55D PTFE	McMaster Carr	9560K43
2	Bulkhead O-ring	DN-015	1	75D Viton Fluoroelastomer	McMaster Carr	9464K21
1	Rear O-ring	DN-014	1	60A Viton Fluoroelastomer	McMaster Carr	1284N115

***Note:** The O-rings in the above table are not compatible with acetone.

The placement of the O-ring is shown below:

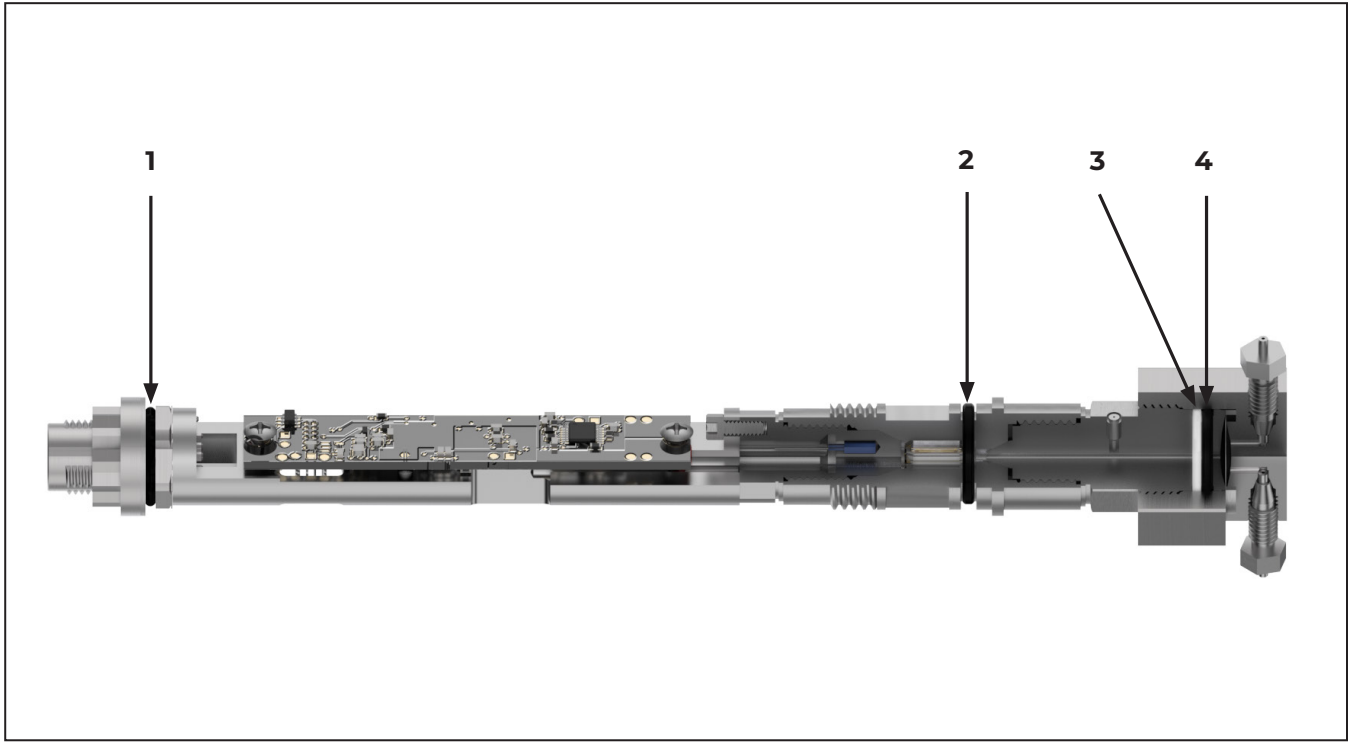

Figure 1-2. Placement of O-rings

1.3 MICROCAP ATTACHMENT

When removing or attaching the microcap to the pressure sensor, follow the procedures below:

Removal

1. Use a 1” hex wrench on the microcap and a 5/8” hex wrench on the diaphragm.
2. Turn the 5/8” wrench counter-clockwise to loosen.
3. Once the threads are disengaged, hand turn the diaphragm hex while gently pulling the diaphragm away from the micro-cap for the O-rings to pass the threads.
4. Take care to ensure the you do not touch the membrane as it is fragile.
5. If cleaning is necessary, use Isopropanol or other solvent to rinse the membrane without contacting it. *Note: if using acetone, note that the 016 O-ring is not compatible with acetone and will be damaged.
6. Check all O-rings for damage and replace if necessary.

Attachment

1. Check all O-rings for damage and replace if necessary.
2. Take care to ensure the you do not touch the membrane as it is fragile.
3. Engage the threads by hand using the diaphragm hex while gently pushing the diaphragm towards micro-cap for the O-rings to pass the threads.
4. Use a 1” hex wrench on the microcap and a 5/8” hex wrench on the diaphragm.
5. Turn the 5/8” wrench clockwise until face seal O-ring compression occurs. If there is no O-ring, tighten until the metal ring contacts the seat of the Micro-cap, then loosen off by less than 30° wrench angle.

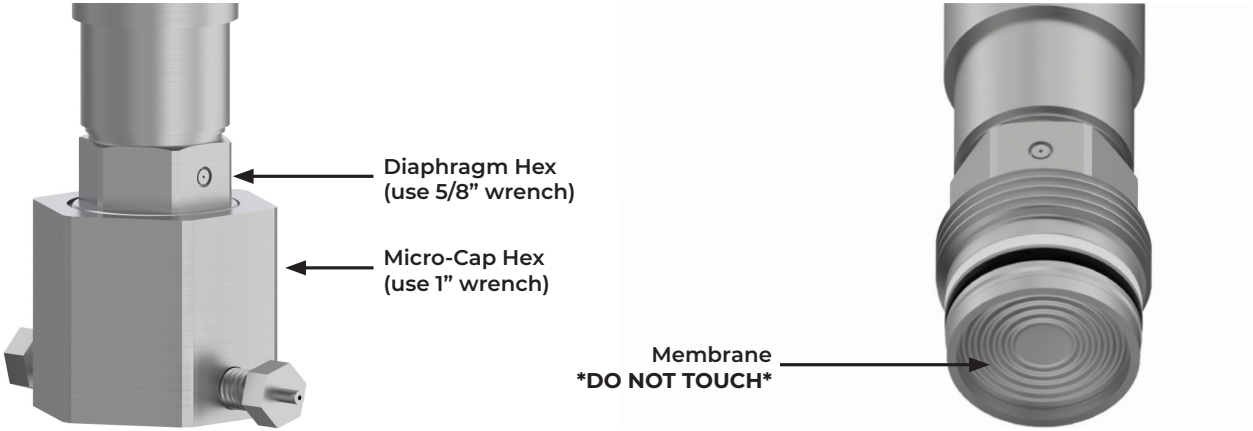

Figure 1-3. Microcap Attatchment

SECTION 2
XTALX LUQS1 SPECIFICATION SHEET

2.1 SPECIFICATION HIGHLIGHTS

CALIBRATED RANGE ..... 50 TO 10000 PSI(3.5 TO 690 BAR)
CALIBRATED TEMPERATURE RANGE ..... 10° TO 60°C
PRESSURE ACCURACY ..... 0.02 %FS
DRIFT @ MAX TEMPERATURE & PRESSURE 0.1%FS/YEAR
TEMPERATURE ACCURACY ..... 0.05°C
DRIFT @ MAX TEMPERATURE & PRESSURE ..... 0.01°C/YEAR

2.2 MECHANICAL SPECIFICATIONS

WEIGHT: 325 GRAMS
HEIGHT: 200MM (7.86”)
MAXIMUM WIDTH: 25.4MM (1.0”)
PROOF PRESSURE: 103MPA (15,000PSI)
DEADVOLUME: 0.1ML

2.3 ELECTRICAL SPECIFICATIONS

MAXIMUM VOLTAGE RATINGS ..... 0.3 TO 24V DC
VOLTAGE SUPPLY RANGE ..... 2.7 TO 20V DC
CURRENT DRAW @ 25°C 24MA
CURRENT DRAW @ FS TEMP 25MA
OUTPUT ..... USB 2.0
ESD ..... IEC 61000-4-2 ±15KV

2.4 OSCILLATOR SPECIFICATIONS

NOMINAL REFERENCE FREQUENCY ..... 170MHZ ± 10PPM
NOMINAL PRESSURE FREQUENCY ..... 52KHZ ± 500HZ
NOMINAL TEMPERATURE FREQUENCY ..... 262KHZ ± 200HZ

2.5 ADDITIONAL SPECIFICATIONS

STORAGE TEMPERATURE ..... -65° TO 85°C
ACHIEVABLE RESOLUTION ..... 0.002 PSI
REPEATABILITY ..... 0.01 %FS
NOMINAL SENSITIVITY ..... 3 PSI/HZ
RESPONSE TIME 0.1S
GRAVITATIONAL EFFECTS ..... NEGLIGIBLE
ORIENTATIONAL EFFECTS ..... NEGLIGIBLE
ACCELERATION SENSITIVITY ..... NEGLIGIBLE
STARTUP TIME @ 25°C ..... <1SECOND
PEAK INRUSH CURRENT @ 25°C 25MA
STARTUP TIME @ FS TEMP ..... <1S
PEAK INRUSH CURRENT @ FS TEMP 26MA

3.6 LUQS1-10000-85 SPECIFICATION DRAWINGS

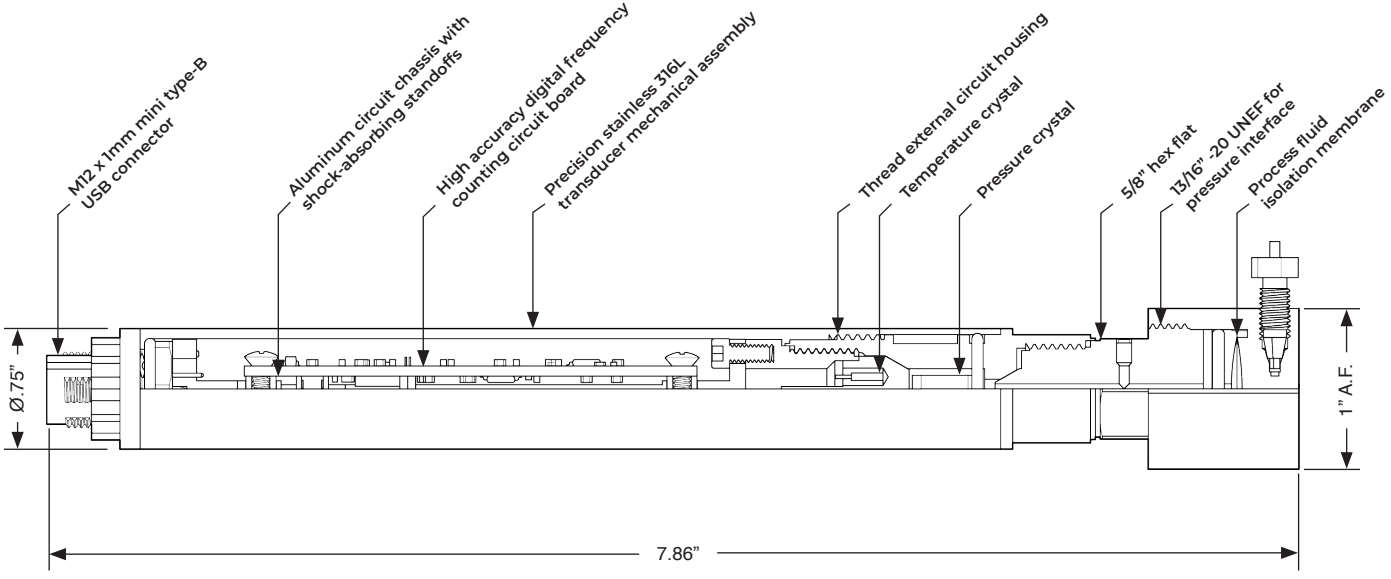

Figure 2-1. LUQS1 Pressure Sensor Specification Drawing