



Front Load Single Sensor

INFICON Front Load Single crystal sensors offer proven reliability and durability and have the best thermal stability of any sensor head on the market. The front load design allows for easy insertion of the crystal holder in applications lacking sufficient room for side insertion. Assembled mechanically rather than soldered, parts can be replaced conveniently in the field, if necessary. Sensors can be ordered individually or in a sensor / feedthrough combination that can be either welded or assembled with compression fittings.

Sensor Configurations

Two sensor configurations are offered: The standard version and the right angle (compact) version. The standard version is designed for installation from the side or bottom of the chamber having the cooling tubes parallel to the crystal face. The right angle version is designed for installation through the top of the vacuum system having the water cooling tubes perpendicular to the crystal face. Optionally, sensors can be ordered with a pneumatically driven crystal shutter to protect the crystal during source warm up, when not used during deposition of an alternate material, or to extend crystal life when used with RateWatcher™. The shutter is designed to flip down allowing easy crystal replacement.

The exposed crystal electrode is fully grounded to effectively eliminate problems due to RF interference.

Feedthroughs

INFICON offers two types of feedthroughs, either a 1 inch bolt feedthrough or a 2¾ inch (CF40) ConFlat® flange feedthrough. KF40 feedthroughs are available on request.

Feedthrough Connection

Front Load Single sensors can be ordered in combination with a feedthrough. The sensor / feedthrough connection can be either welded or made with compression fittings. Compression fittings allow for easy adjustability without the need for brazing or welding. The feedthrough can be moved along the length of the tubes allowing the length inside the vacuum systems to be adjusted over a range of 20.3 to 71.1 cm (8 to 28 inches) for "E" length sensors and 20.3 cm to 121.9 cm (8 to 48 inches) for "G" length sensors. Once the desired length is determined, the compression fittings allow for a finger tight tube seal. Alternately, a welded connection may be chosen. If a welded connection is desired, a sensor length specification form, provided by INFICON, must be completed prior to ordering and submitted with the order.



ADVANTAGES

- Front load crystal holder
- Easy installation
- Available with
 - 2.54 cm (1 inch) bolt feedthrough
 - CF40 feedthrough
- Adjustable length if ordered with compression fittings
- Sensor / Feedthrough combinations available welded to customer specified lengths.
- No brazing required if ordered with compression fittings or welded to feedthrough

ORDERING INFORMATION

Front Load Single Sensor (with in-vacuum cables)

Type of sensor (includes in-vacuum Cable, Crystal Snatcher and User Manual. Crystals sold separately)

Standard Sensor (water lines parallel)
 Right Angle Sensor (water lines perpendicular)

Shutter Assembly - SEE NOTE 4

None
 Standard shutter

Length of Sensor - SEE NOTES 1 and 3

Standard length - 203mm (8") to 711 mm (28") Includes 781 mm (30.75") In-vacuum cable. **SEE NOTE 6**.....

Extended length - Greater than 711 mm (28"); maximum 1219 mm (48") Includes 1524 mm (60") In-vacuum cable.

SEE NOTE 6

Feedthrough - SEE NOTE 2

None.....
 1" bolt
 CF40.....

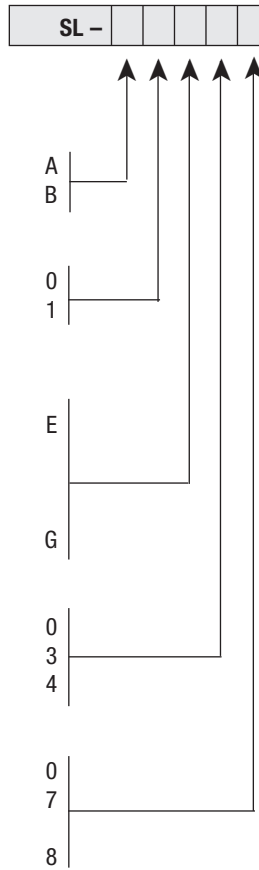
Feedthrough Connection - SEE NOTE 4

Sensor not connected to Feedthrough.....
 Sensor Welded to Feedthrough
 Variable length with Ultra-Torr® compression fittings. (Allows the sensor length to be variable by using Ultra Torr compression fittings)

The following combinations are not available (SEE NOTES 4 and 5):

SL-A1E38, SL-A1G38, SL-B1E38, SL-B1G38, SL-A1E47, SL-A1G47, SL-B1E47, SL-B1G47

Custom parts, special bends and other non-standard parts available - Consult factory



NOTE 1:

Orders for sensors welded to feedthroughs will be entered once INFICON receives customer signed off dimensional drawing. Once special length or manufactured order is confirmed, it is not cancelable. INFICON will provide a sensor length specification form.

NOTE 2:

Feedthrough configuration varies depending on options selected with or without shutter, type of feedthrough, etc). Example: SL-A0E37 uses feedthrough p/n 002-042 while SL-A1E37 uses feedthrough p/n 750-030-G1.

NOTE 3:

Sensor lengths are measured from center of the crystal to the vacuum side (sealing surface) of the feedthrough (see drawing).

NOTE 4:

Sensors ordered with shutters and 1" bolt style feedthrough can only be welded (compression fittings not available).

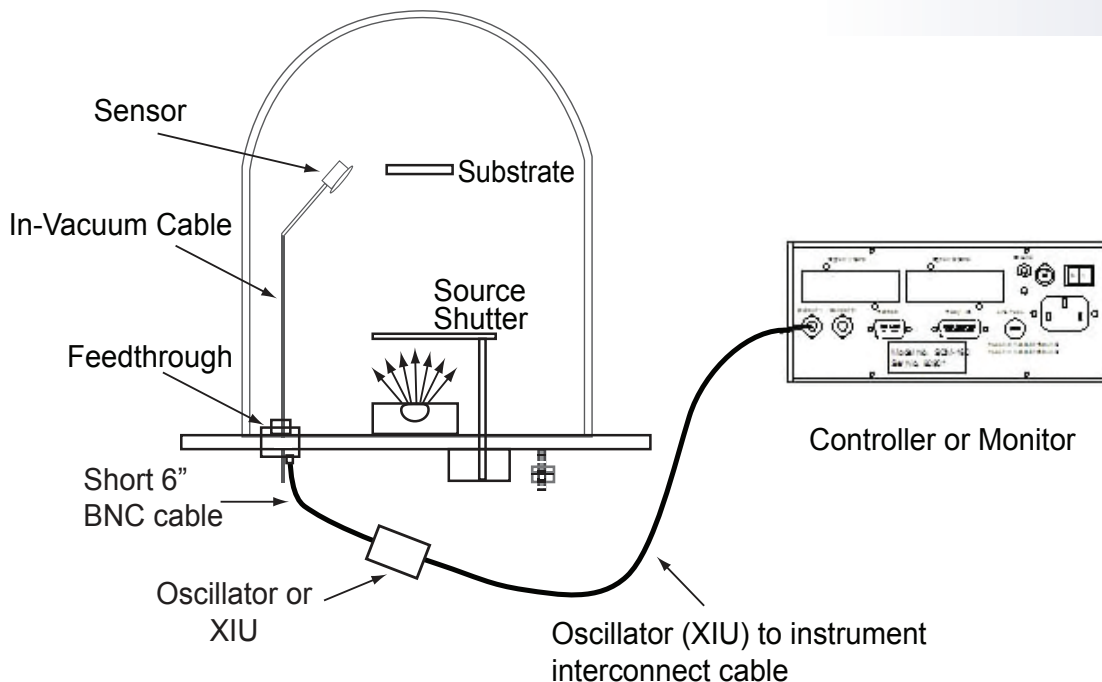
NOTE 5:

Front Load sensors ordered with a CF40 feedthrough and a shutter cannot be welded due to dimensional limits of the CF40.

NOTE 6:

For sensors ordered without a weld connection (option "0" or "8"), tubes are made to a length of 30" (762mm) for "E" length and 48" (1219mm) for "G" length sensors.

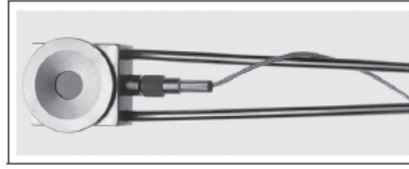
Operation with a 60" (1524 mm) cable may require a special oscillator.



SPECIFICATIONS

SL-A _____ Series Standard Single Sensor

Maximum bakeout temp with no water 130°C
Maximum operating isothermal environment temperature with minimum water flow 400°C



SL-A Size (maximum envelope without shutter) 1.063" x 2.42" x 0.69" (27 mm x 61.47 mm x 17.53 cm)
Water tube 1/8" (3.175 mm) O.D. seamless stainless steel
Crystal exchange Front loading; self-contained package for ease of exchange
Mounting Two #4-40 tapped holes on the back of the sensor body

Installation Requirements

Feedthrough 2 pass water 3/16" (4.8 mm) O.D. tubing with Microdot® coax connector
Water flow rate Minimum water flow 150-200 cc/min, 30°C max (Do not allow to freeze)
Water quality Coolant should not contain chlorides as stress corrosion cracking may occur. Extremely dirty water may result in loss of cooling capacity.

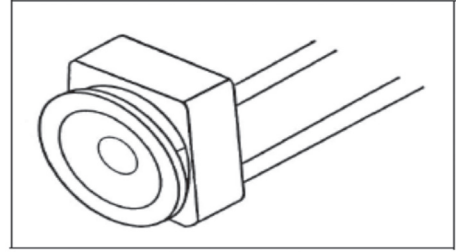
Materials

Body and holder 304 type stainless steel
Springs, electrical contacts Au plated Be-Cu
Water tubes S-304, 0.125" (3.175 mm) O.D. x 0.015" (0.381 mm) wall thickness seamless stainless steel tubing
Connector (Microdot) Stainless steel, Teflon® and glass insulated
Insulators >99% Al₂O₃
Wire Teflon insulated copper
Braze Vacuum process high temperature Ni-Cr alloy
Crystal 0.550" (13.97 mm) Diameter

SPECIFICATIONS

SL-B _ _ _ _ Series Right Angle Single Sensor Specifications

Maximum bakeout temp with no water	130°C
Maximum operating isothermal environment temperature with minimum water flow	400°C
SL-B _ _ _ _ Size (maximum envelope without shutter)	1.11" x 1.06" x 1.06" (28.19 mm x 26.92 mm x 26.92 mm)



Water tube	1/8" (3.175 mm) O.D. seamless stainless steel
Crystal exchange	Front loading; self-contained package for ease of exchange
Mounting	Two #4-40 tapped holes on the back of the sensor body

Installation Requirements

Feedthrough	2 pass water 3/16" (4.8 mm) O.D. tubing with Microdot® coax connector
Other	XIU or Oscillator to match specific controller, valve assembly 750-420-G1 for shuttered sensors
Water flow rate	Minimum water flow 150-200 cc/min, 30°C max
Water quality	Coolant should not contain chlorides as stress corrosion cracking may occur. Extremely dirty water may result in loss of cooling capacity.

Materials

Body and holder	304 type stainless steel
Springs, electrical contacts	Au plated Be-Cu
Water tubes	S-304, 0.125" (3.175 mm) O.D. x 0.015" (0.381 mm) wall thickness seamless stainless steel tubing
Connector (Microdot)	Stainless steel, Teflon® and glass insulated
Insulators	>99% Al ₂ O ₃
Wire	Teflon insulated copper
Braze	Vacuum process high temperature Ni-Cr alloy
Crystal	0.550" (13.97 mm) Diameter

SPECIFICATIONS

Feedthrough Specifications

NOTE: Sensor / Feedthrough combination specifications are determined by lowest component specification

1 inch bolt and compression fitting terminations:

Materials	304 stainless steel, Teflon®, ceramic, beryllium nickel, VITON®
Temperature	Operational environment to 300°C with water cooling or 165°C without
Mounting	1.015" ±0.010" diameter aperture

CF 40 welded terminations:

Materials	304 stainless steel, Teflon, ceramic, beryllium nickel
Temperature	Operational environment to 450°C with water cooling or 165°C without
Mounting	Mates with 2 3/4" ConFlat type flanges with 1.375" I.D. min.

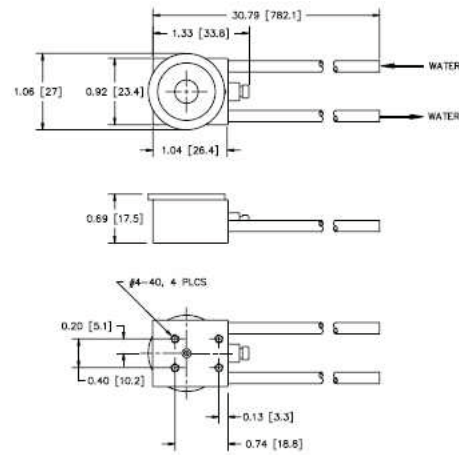
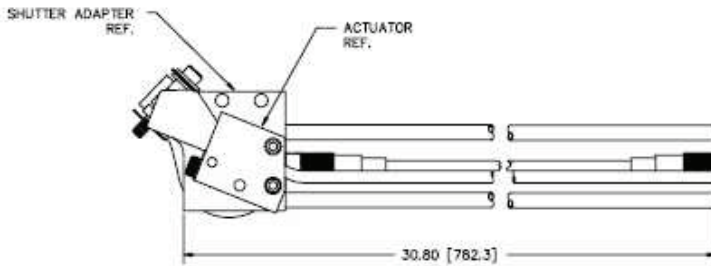
SPARE PARTS LIST

P/N	Description
007-007	Retainer Spring (for Crystal Holder)
007-023	Ceramic Retainer
007-044	In-Vacuum Cable, 30.75 in./ 78.1cm
080-018	Set Screw (for Female Coax)
082-044	Teflon Screw (for Leaf Spring)
750-115-P4	Coupling (for Bellows Assembly)
750-169-P2	Bellows Assembly (Coupling not included)
750-171-P1	Finger Spring Contact
321-039-G13	In-Vacuum cable, 60" (154.2 cm)

P/N	Description
750-172-G1	Crystal Holder (includes Retainer Spring)
750-174-P2	Female Coax
750-175-P1	Insulator (underneath Leaf Spring)
750-188-P2	Leaf Spring
750-210-G1	Shutter Module (Bellows Assembly, Shaft Assembly, and Shutter Assembly)
750-215-G1	Shaft Assembly (part of Shutter Module)
750-216-G1	Shutter Assembly (part of Shutter Module)

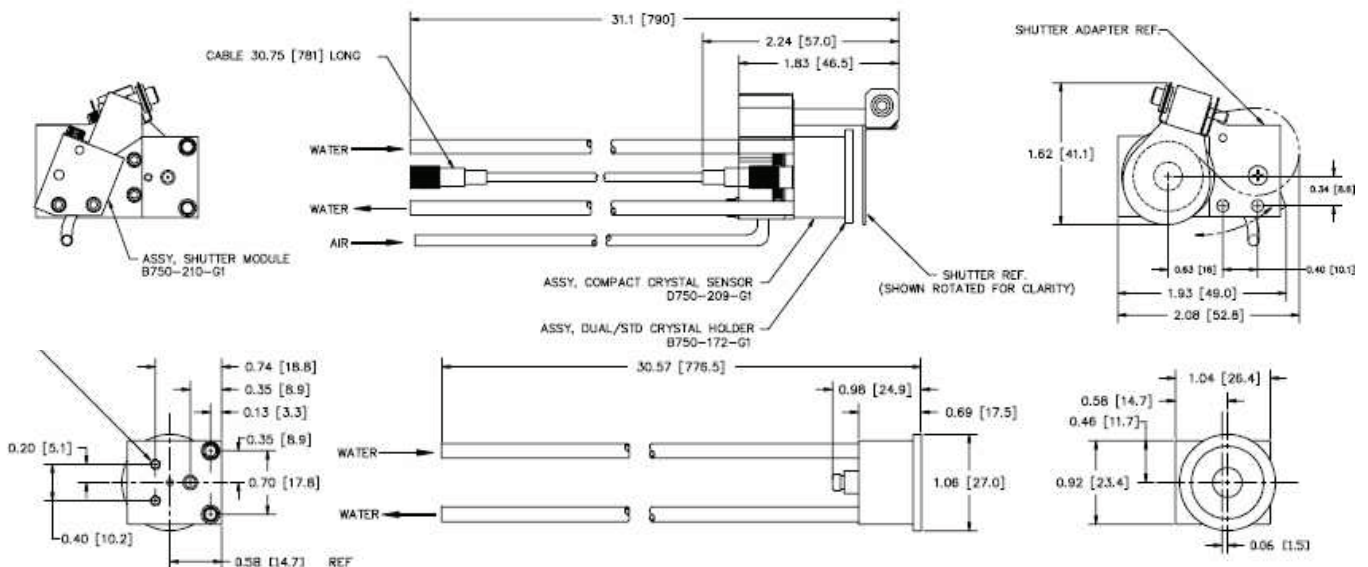
DIMENSIONS

SL-A _ E _ _ Series Standard Single Sensor (sensor only)



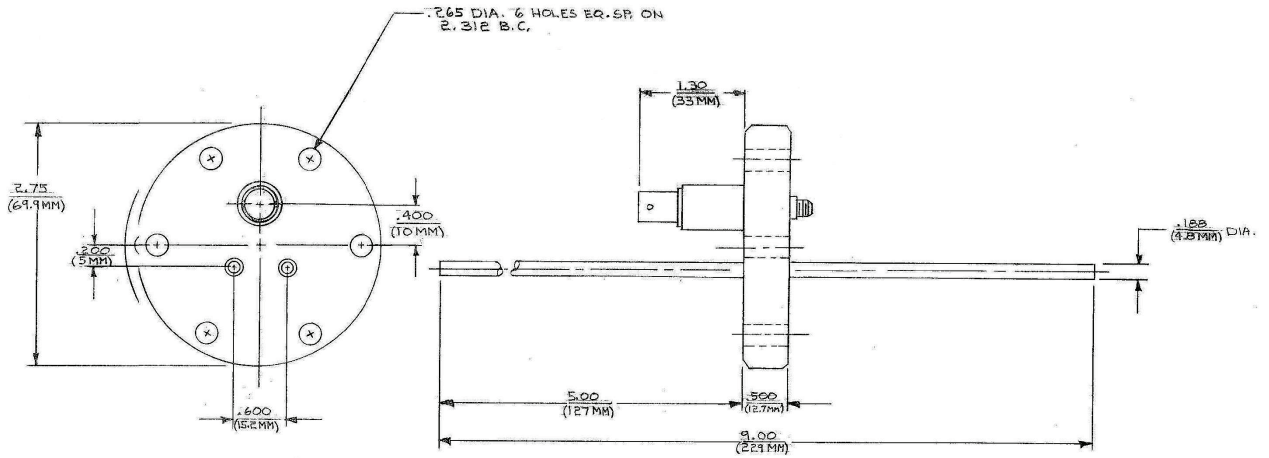
DIMENSIONS

SL-B _ E _ _ Series Right Angle Single Sensor (sensor only)



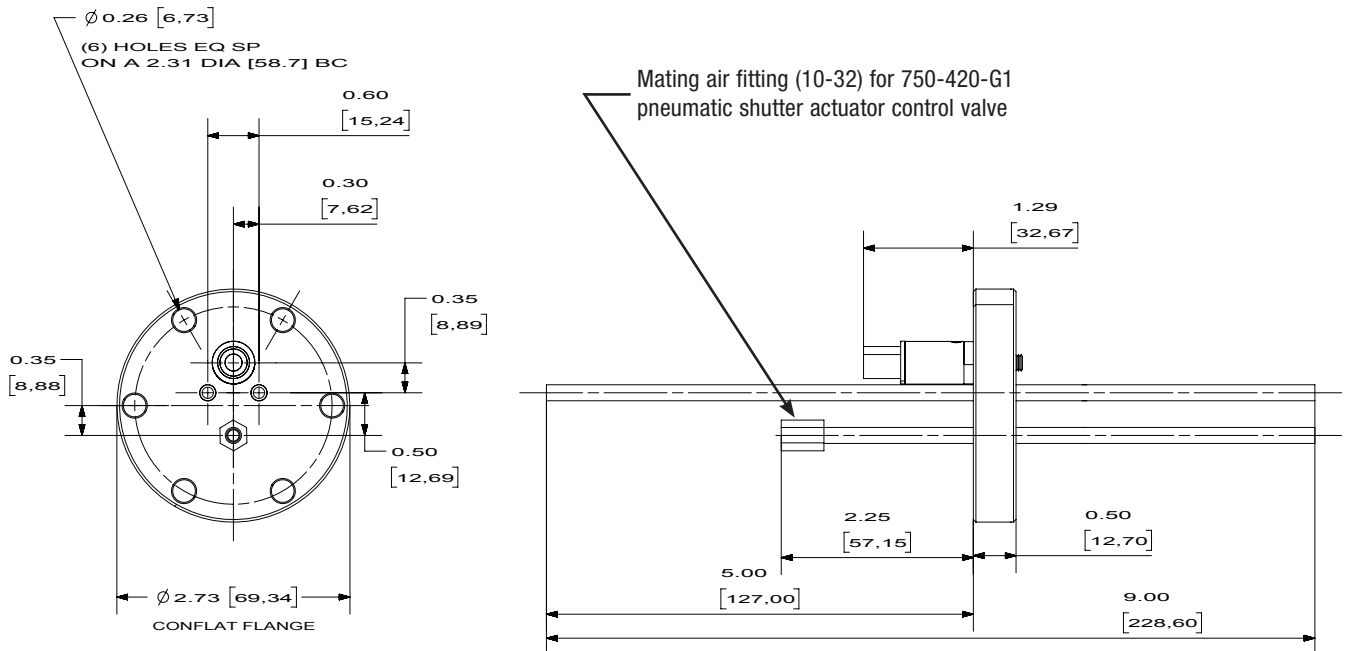
DIMENSIONS

Feedthrough used for SL-A0_47, SL-A0_40, SL-B0_47, and SL-B0_40 Sensor / Feedthrough Combinations



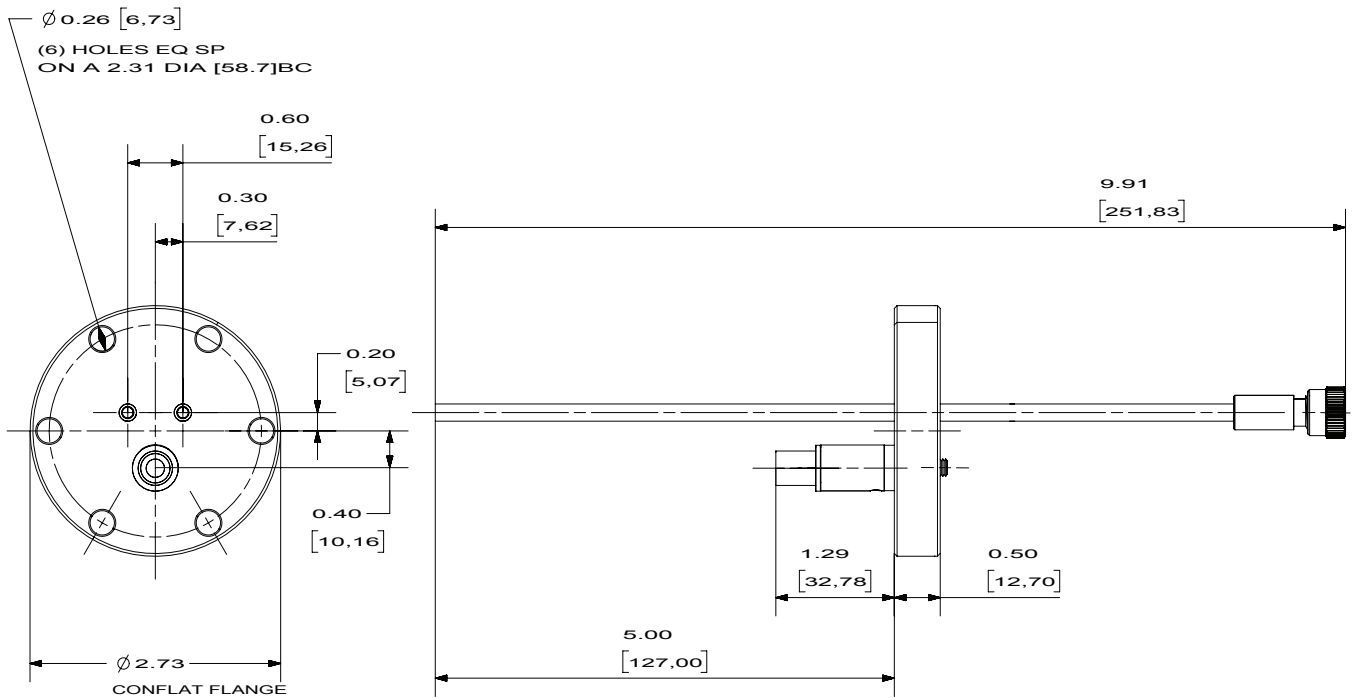
NOTES:
METRIC DIMENSIONS ARE FOR REF. ONLY.

Feedthrough used for SL-A1_40 and SL-B1_40 Sensor / Feedthrough Combinations

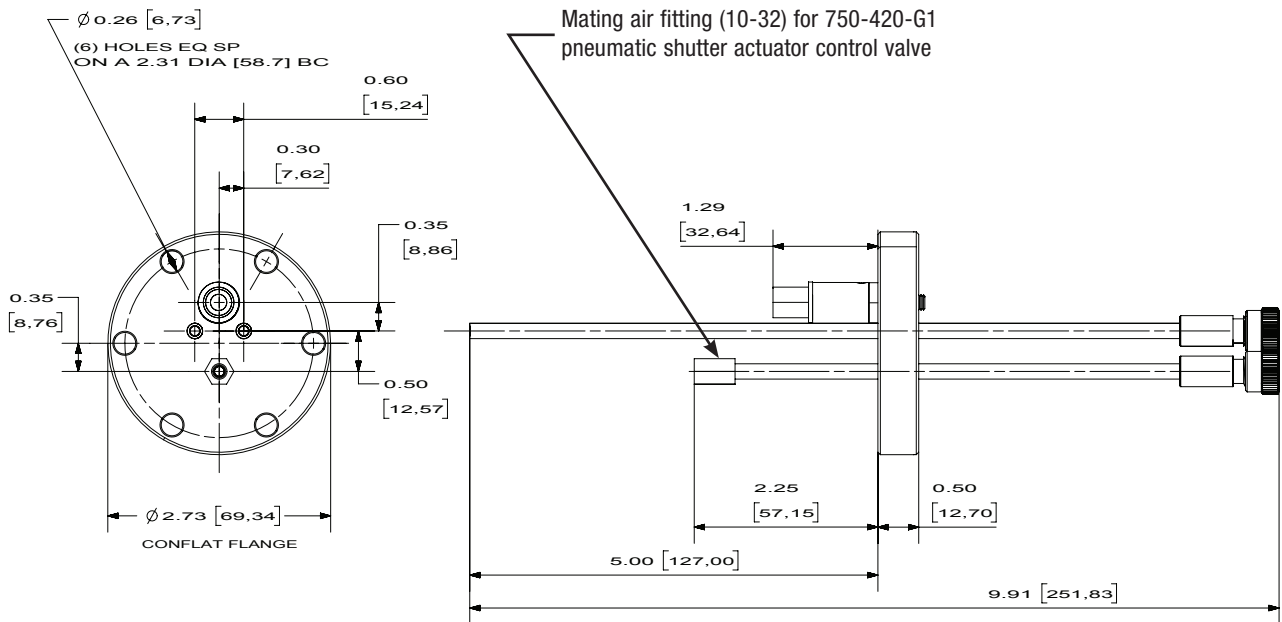


DIMENSIONS

Feedthrough used for SL-A0_48 and SL-B0_48 Sensor / Feedthrough Combinations

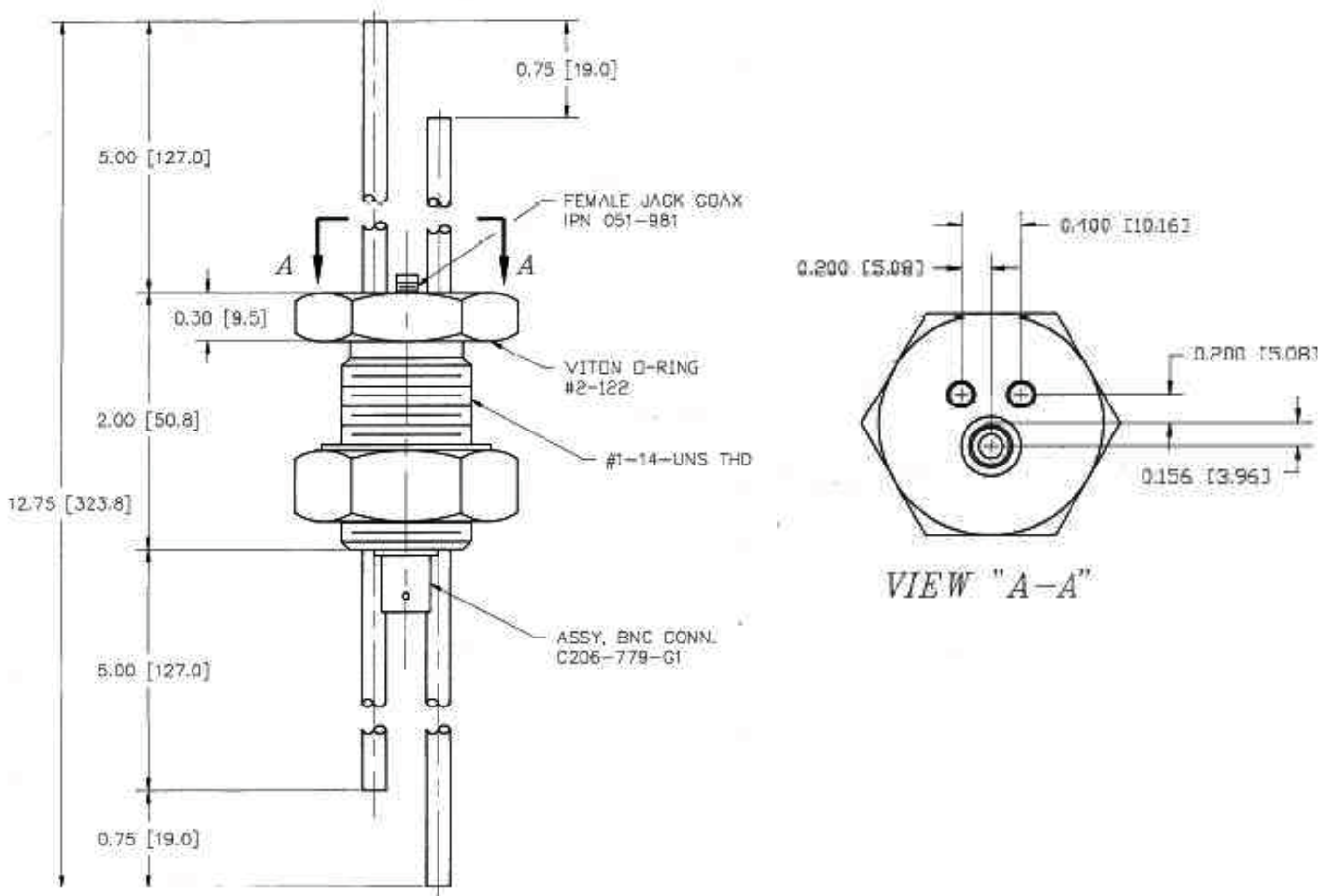


Feedthrough used for SL-A1_48 and SL-B1_48 Sensor / Feedthrough Combinations

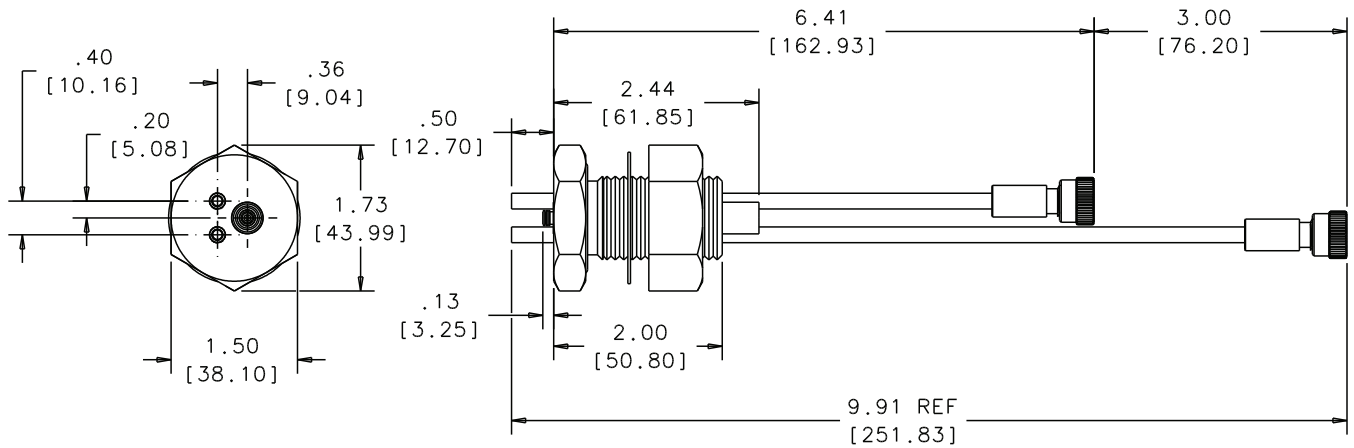


DIMENSIONS

Feedthrough used for SL-A0_37, SL-B0_37, SL-A0_30 and SL-B0_30 Sensor / Feedthrough Combinations

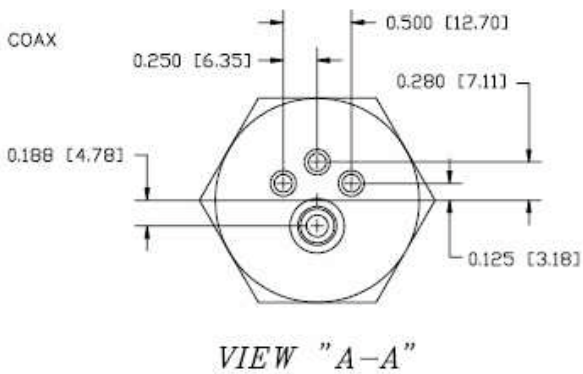
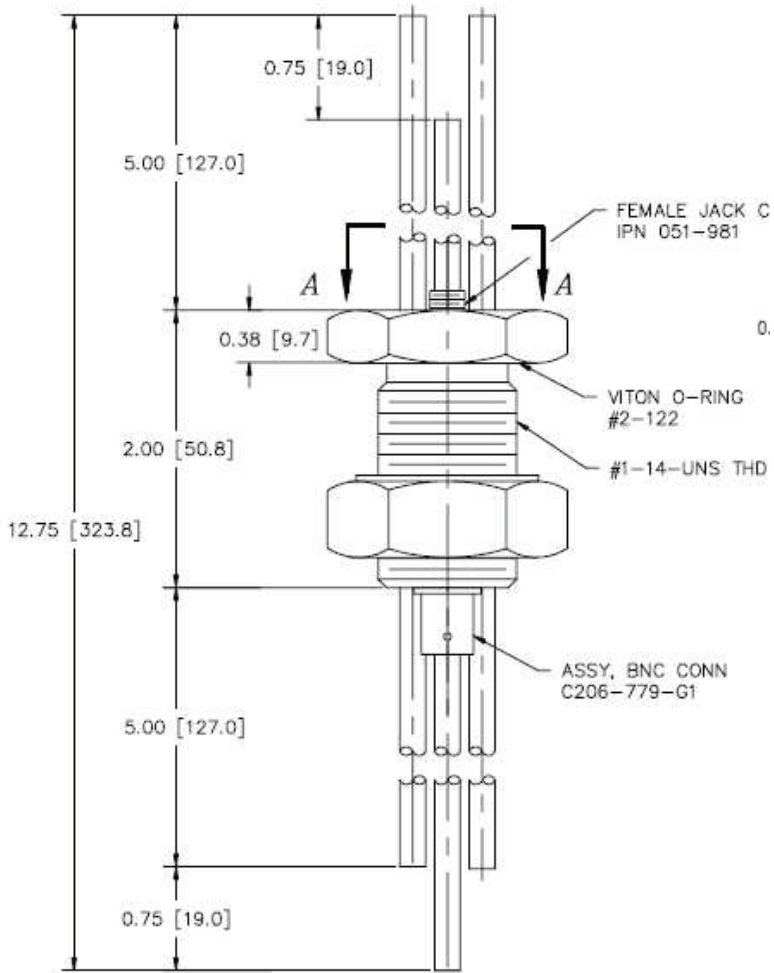


Feedthrough used for SL-A0_38 and SL-B0_38 Sensor / Feedthrough Combinations



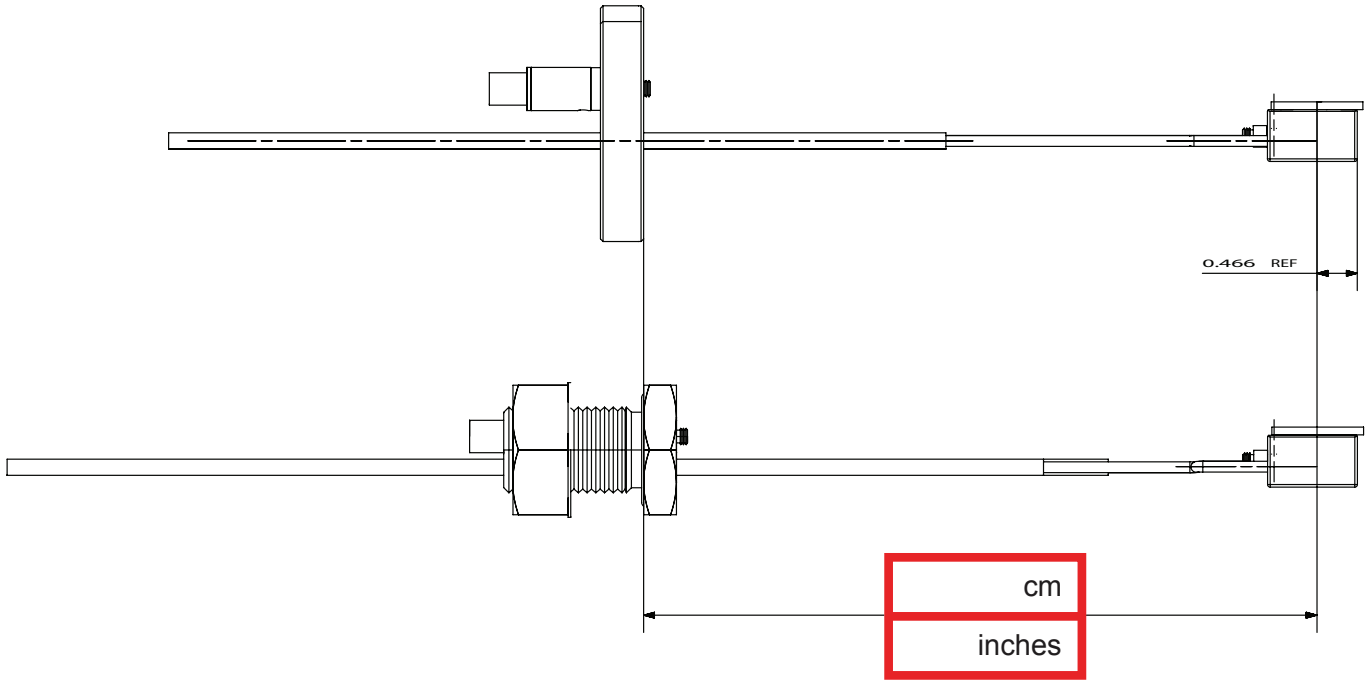
DIMENSIONS

Feedthrough used for SL-A1_37, SL-B1_37, SL-A1_30 and SL-B1_30 Sensor / Feedthrough Combinations

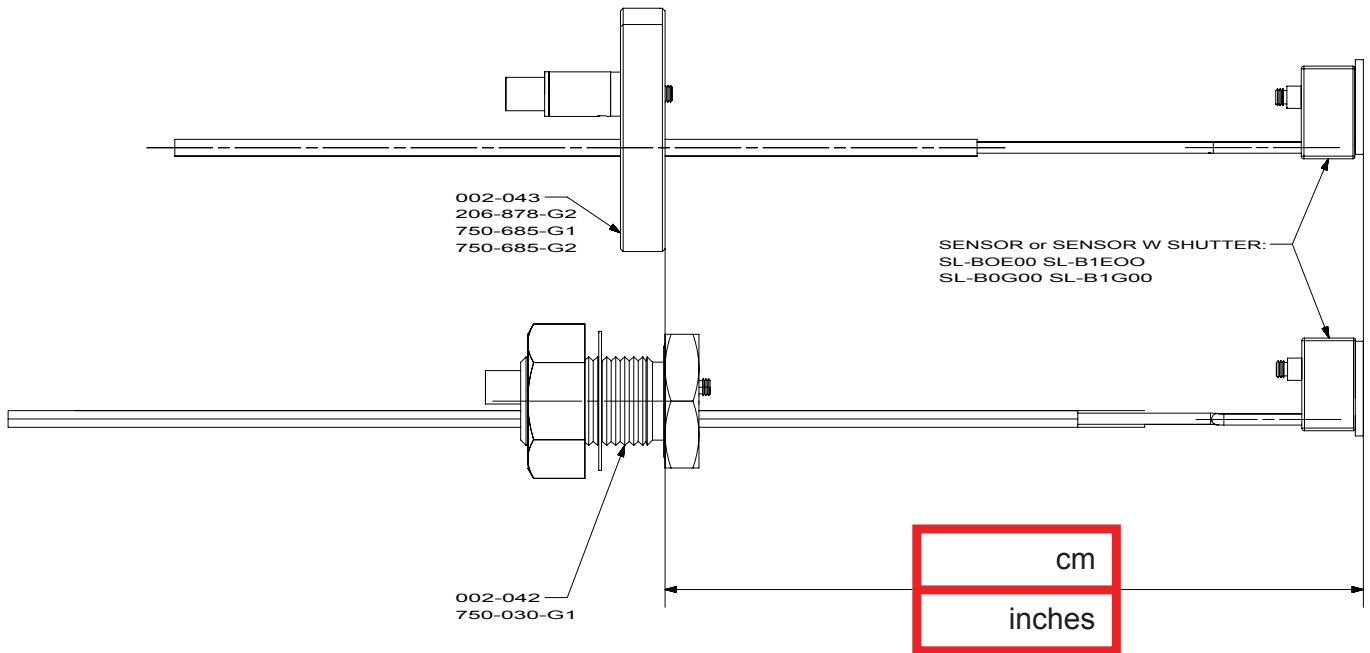


DIMENSIONS

Sensor Length Specification for SL-A_ _ _ _ Sensor / Feedthrough Combinations



Sensor Length Specification for SL-B_ _ _ _ Sensor / Feedthrough Combinations



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