

AIR PROXIMITY SENSOR

GENERAL DESCRIPTION

The air proximity sensor is a non-contact, no-moving-part sensor, capable of detecting the presence of an object at ranges up to 1/8". In the absence of an object, air flows freely from the sensor resulting in a near zero output signal. The presence of an object within the sensing range deflects the normal air flow and results in a positive output signal.

At low supply pressure, flow from the sensor exerts only minute force on the object being sensed and is consequently appropriate for use where the object is lightweight, or easily marred by mechanical sensors. Since there are no moving mechanical parts in the air proximity sensor, there are no inherent wear mechanisms or life limitations. In this regard, the sensor is not cycle dependent and is particularly appropriate for applications requiring large numbers of cycles. Also, the air proximity sensor is inherently explosion-proof and self-purging. Consequently, it is suitable for many adverse environments.

SPECIFICATIONS

Supply Pressure: Up to 10 psig.

Supply Flow: 0.5 scfm @ 1 psig
2.3 scfm @ 10 psig

Output Signal Pressure: See Output Pressure vs. Range Curves. Generally used to trigger air/air amplifier or air/electric switch.

Response Time: 1 millisecond (measured at sensor output).

Sensing Range: See Output Pressure vs. Range Curves. Nominal maximum range is 1/8 inch.

Materials of Construction:

Body – Stainless Steel
Connectors – Brass, Delrin
Tubing – Polyurethane

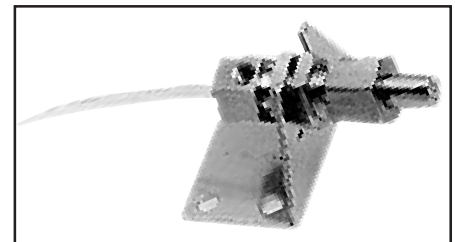
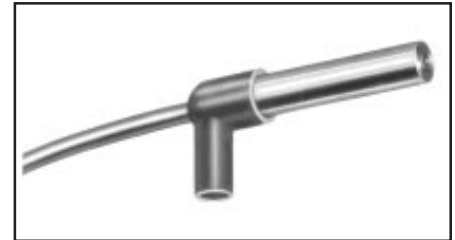
Air Supply Requirements: Dry air filtered to 1 micron.

Minimum Target Size:

Stationary Objects	Minimum Size
Cylinder	1/8" dia.
Slot	0.090" w.
Circular Hole	0.130" dia.
Circular Disc	0.130" dia.

Moving Targets

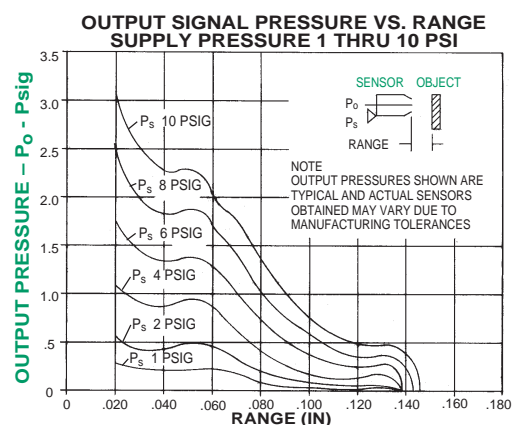
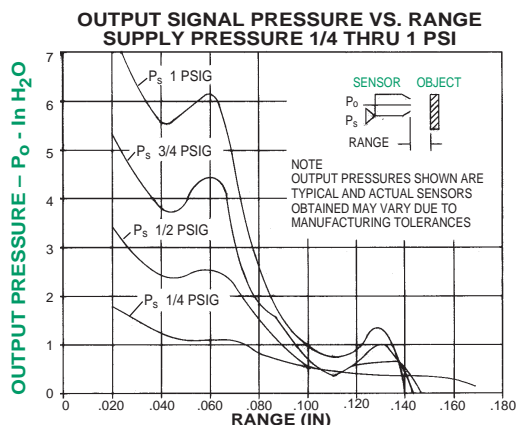
$$\text{Pulse Duration (sec) Approx.} = \frac{\text{Object Size - In}}{\text{Object Velocity - In/sec}}$$



APPLICATIONS

- **High Speed Part Sensing:** Rapid response time of sensor.
- **Manufactured Parts:** Counting, Gaging, Position, Presence.
- **Containers and Packages:** Counting, Motion, Presence.
- **Die Protection:** Part or Stock Presence and Position.
- **Machine Control:** Cam Position, Part Position, Stock Position.
- **Paper, Film, Textile Sensing:** Splice, Edge, Double Thickness Detection.

PERFORMANCE CHARACTERISTICS (For General Reference Only)



Fax (203) 261-8331
Mailing Address
P.O. Box Q
Trumbull, CT 06611

Toll Free Phone (800) 533-3285

O'Keefe Controls Co.

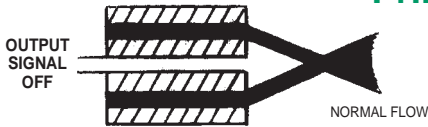
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CT Phone (203) 261-6711

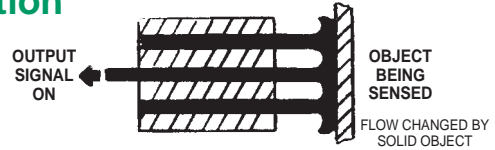
Location
4 Maple Drive
Monroe, CT 06468

Air Proximity Sensor

Principle of Operation

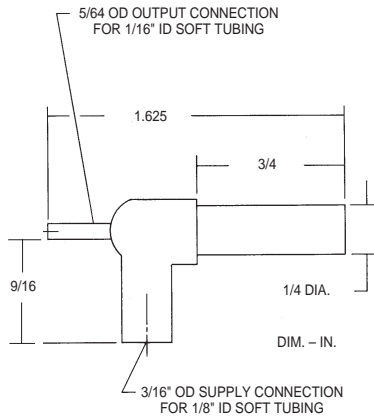


In the absence of an object disturbing the free flow of air exiting from the sensor, the output pressure signal is in an "off" condition. This "off" condition is a near zero output pressure.

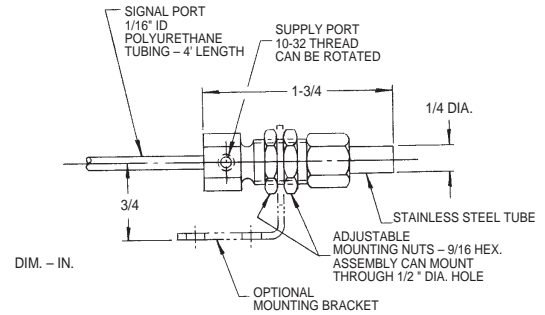


When an object is located inside the sensing range, the sensor flow is deflected with a resultant pressure buildup in the output. This pressure signal is the "on" condition of the sensor. The amount of pressure sensed increases as the object moves closer to the sensor. Nominal maximum sensing range is 1/8 inch.

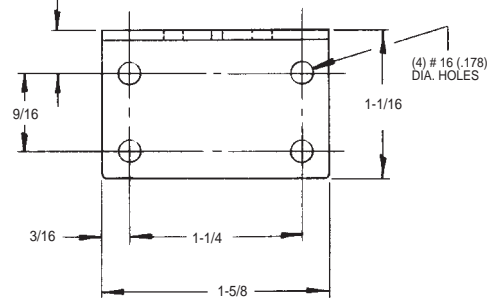
PROXIMITY SENSOR
P/N OKC 818 (Formerly 6080517)



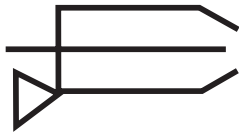
PROXIMITY SENSOR - INTEGRAL MOUNTING
P/N OKC-424



OPTIONAL MOUNTING BRACKET
P/N OKC 326



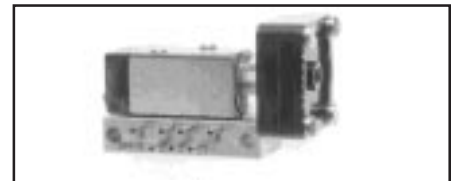
Air Proximity Sensor Symbol



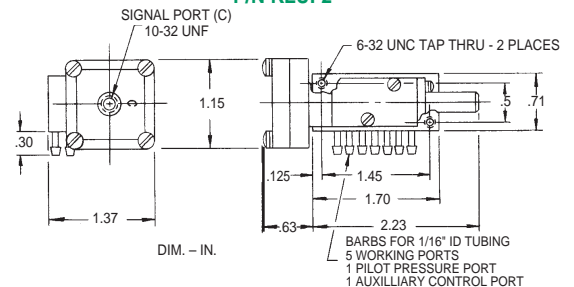
Air/Air Amplifier

DESCRIPTION

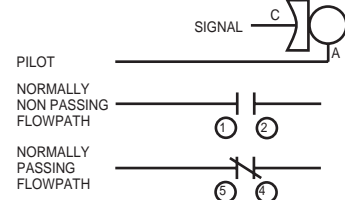
The air/air amplifier requires only low pressure signals to pilot a directional control valve, which in turn, can operate at supply pressures up to 100 psig. A control signal of 2" H₂O pressure is sufficient to shift the 4 way valve and produce an output signal up to 100 psig. The main valve is of five ported-4 way construction, and can be used additionally as a 3 way valve, either normally closed or normally open.



AIR/AIR PRESSURE AMPLIFIER
P/N KLUF2



SYMBOL-AIR/AIR AMPLIFIER



SPECIFICATIONS

PART NO.	KLUF2
Main Valve	- 5 ports, 2 positions, 4 way
Signal Pressure	- Valve shifts at 2" H ₂ O increasing pressure Valve resets at 1/2" H ₂ O decreasing pressure
Supply Pressure	- 30 to 100 psig
Pilot Pressure	- 50 psig optimum pressure
Main Valve Flow	- C _v equals .08 (limited by 1/16" ID barbs)
Range of Proximity Sensor Air/Amplifier Combination	- Up to 1/8"

Air/Electric Switches

DESCRIPTION

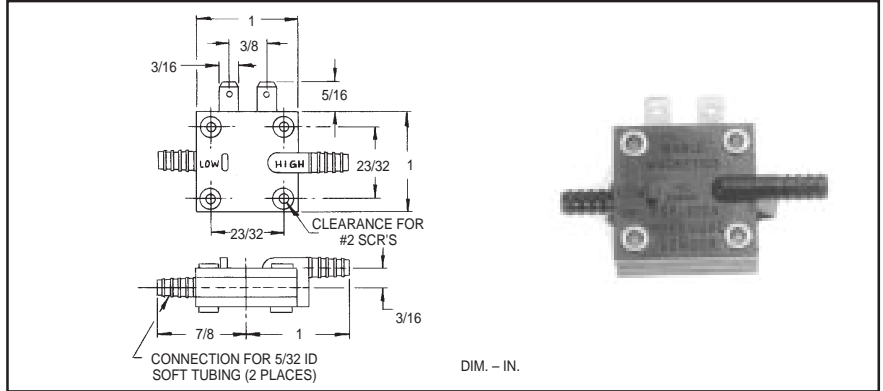
The air/electric switches presented here operate readily with the air proximity sensor. Each responds to low pressure air signals, and each has special characteristics which increase the total range of applications of the air proximity sensor. Considerations in selecting a switch are current requirements, response time, differential or single ended operations, and maximum required sensing range.

FEATURES

- P/N OKC-661 Excellent vibration resistance; small size; pressure, vacuum or differential operation; fast response time.
- P/N OKC-664 Greatest current capacity (10 amps); pressure only; SPDT contacts; moderate response time.
- P/N OKC-819 Smallest size; fastest response time; up to 60 milamps; pressure, vacuum or differential operation.

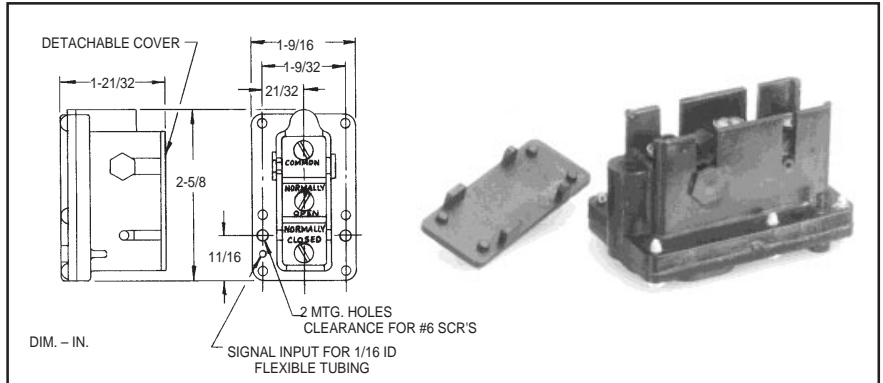
Specifications for P/N OKC-661

P/N OKC-661	Normally Open (air to make contacts)
Type	Single Pole Double Break
Maximum Current	200 ma @ 30 VDC
For Resistive Load	Neon lamp @ 120 VAC
Media	Air or inert gas only
Differential Pressure To Operate	0.5" H ₂ O minimum 1 psig maximum
Response Time ④	20 millisec
Input Connections	For use with 5/32" ID tubing
Body Materials	Plastic
Terminals	3/16" Male Tab Type. Mating connectors furnished
Range ③	1/8" maximum



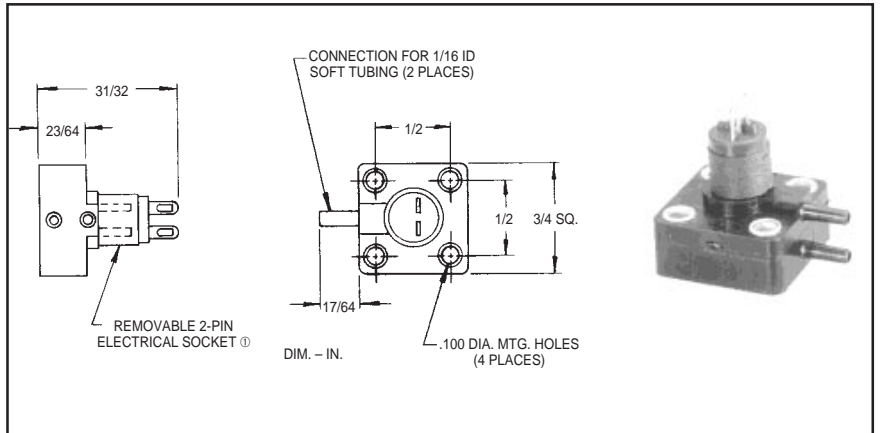
Specifications for P/N OKC-664

P/N OKC-664 (formerly 6080158)	Air to actuate (positive pressure only)
Type	Single Pole Double Throw
Maximum Current	10 amps @ 125 or 250 VAC
Media	Air or inert gas only
Pressure to Operate	4" H ₂ O minimum 5 psig maximum
Response Time ④	50 millisec
Input Connection	For 1/16" ID tubing
Body Materials	Plastic
Terminals	Screw style
Range ③	3/32" maximum

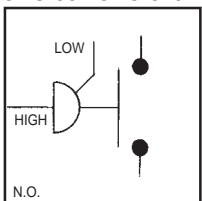


Specifications for P/N OKC-819

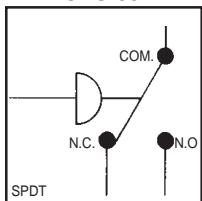
P/N OKC-819-1 (formerly 6080157)	Normally Open (air to make contacts)
P/N OKC-819-2 (formerly 6080503)	Normally Closed (air to break contacts)
Type	Single Pole Double Break
Maximum Current	60 ma @ 120 volts-AC
For Resistive Load	40 ma @ 120 volts-DC
Media	Air or inert gas only
Differential Pressure To Operate	1" H ₂ O minimum 1 psig maximum
Response Time ④	10 millisec
Input Connections	For 1/16" ID tubing
Body Materials	Plastic
Terminals	Solder connections ① ②
Range ③	1/8" maximum



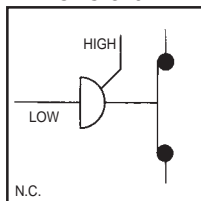
OKC-661 OKC-819-1



OKC-664



OKC-819-2



NOTES

- ① A separate electrical connector is provided for soldering to the electrical wire terminals. Soldering must be done with the electrical connectors removed from the switch to prevent damage to the switch contacts by soldering heat.
- ≠ When controlling inductive loads, such as small relays, it is good practice to use RC suppression or diodes, as required to prevent arcing.
- ③ Range – Maximum sensing distance for combination of air proximity sensor and air/electric switch.
- √ Response Time – Combined response time of air proximity sensor and air/electric switch.