

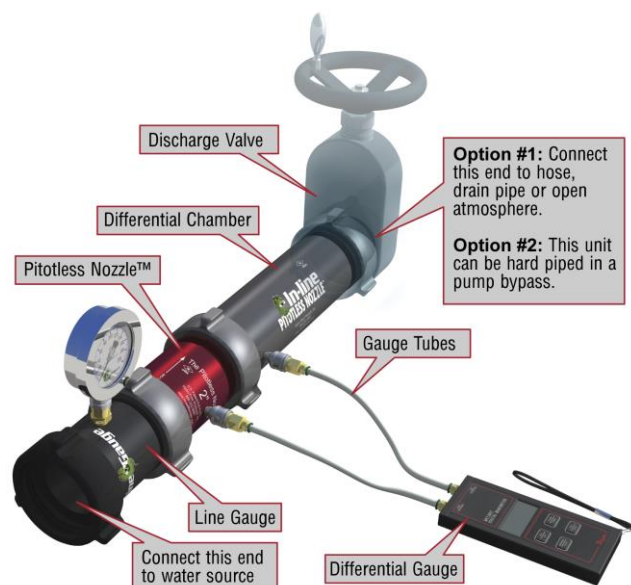
In-line PITOTLESS NOZZLE™

USER GUIDE

Item#: INPN2, INPN1.75, INPN1.125, INPNK

OVERVIEW

The In-line Pitotless Nozzle can be used for: stairwell standpipe flow testing, pressure reducing valve flow testing, fire pump flow testing, fire flow testing of hydrants, or as an in-line flow meter for fire pumps. The device connects to 2 ½" outlets. Hose or piping can be attached downstream of the unit without affecting the accuracy of the readings. The *In-Line Pitotless Nozzle* determines flow-rate by measuring the differential pressure between the two gauge ports.



COMPONENTS (INCLUDED IN KIT)

- 1) **Line Gauge.** 0-200 psi, 2 1/2" dial, 1% full scale accuracy rated.
- 2) **Pitotless Nozzle™ Threaded.** Sizes: 1 ½", 1 ¾", or 2".
- 3) **Differential Chamber.** 2 ½" NH Female Swivel x 11".
- 4) **Differential Gauge.** ½% full scale accuracy rated; 0-100 PSI.
- 5) **Gauge Tubes.** Two 12" tubes w/ push-to-connect tube fittings and male quick disconnects.
- 6) **Discharge Valve.** 2 ½" NH Slow close valve for controlling water discharge. Included in kit.

OPTIONAL ACCESSORIES (NOT INCLUDED)

- 7) **2 ½" Stream Shapers.** To minimize hose-burn.
- 8) **30° or 45° Elbows.** To angle the hose or the In-line Pitotless Nozzle to meet job conditions.
- 9) **Spanner Wrench.** To tighten swivel couplings.

OPERATION

- 1) Insert and secure the *Line Gauge* threads into the inlet of the *Pitotless Nozzle Threaded*.
- 2) Insert and secure the threaded outlet of the *Pitotless Nozzle* into the swivel coupling of the *differential chamber*. Line up the gauge ports of the *differential chamber* and *Pitotless Nozzle* so that they are parallel to each other.
- 3) Attach the *discharge valve* to the outlet-end (downstream-end) of the *In-Line Pitotless Nozzle*. Close the *discharge valve*.
- 4) Secure the female swivel coupling of the *In-line Pitotless Nozzle assembly* to the water source. You can attach the unit to a 2 ½" valve, a valve larger than 2 ½" by using adapters, or the end of a secured hose.
- 5) Attach the two *gauge tubes* to the *differential gauge* by inserting the free tube-ends into the push-to-connect tube fittings on the *differential gauge*.
- 6) Attach the opposite ends of the *gauge tubes* to their respective gauge port connections on the *differential chamber* and the *Pitotless Nozzle*. Connect the "High Pressure" side to the *Pitotless Nozzle*. Connect the "Low Pressure" side to the *differential chamber*. Rotate the *In-line Pitotless Nozzle* so that the *differential gauge* can be viewed easily.
- 7) Before flowing water verify that the *discharge valve* is fully closed and all connections are fastened securely. Any leakage can affect readings. Slowly open the water source when ready. Allow the differential chamber to completely fill with water and become pressurized.
- 8) Slowly open the *discharge valve* to the desired flow rate or to fully open. The *differential gauge* displays the differential pressure. Use the appropriate flow chart to convert the pressure reading (psi) to flow-rate (GPM).
- 9) When the test is complete, close the water source and the *discharge valve*.

Note: All connections in this assembly must be water-tight. Any leakage can affect readings.

FLOW CHARTS

Verify the correct flow chart is used. It should have the correct size and the "In-line Pitotless Nozzle" logo in the title. Additional copies are available at: www.HoseMonster.com/literature.html. The pressure readings on the chart are in net psi. Net psi, also known as differential pressure, is the difference between the upstream pressure and the downstream pressure.

MAINTENANCE

- **The female quick disconnect fittings.** Apply lubricant or WD-40 for stainless steel or brass fittings as necessary to prevent corrosion, and then wipe down with a cloth. The gauge port on the *Pitotless Nozzle* and *differential chamber* are assembled with a ¼" nipple and a female quick disconnect coupling. The female quick disconnect coupling can be removed, but the ¼" nipple cannot. Use a hold-back when changing out the female quick disconnect coupling. Apply thread tape (not thread-locking sealant) on the male end of the nipple to re-install the female quick disconnect coupling. Contact Hydro Flow Products, Inc. customer service if repair is needed.
- **Differential Gauge.** For operation and battery replacement information, refer to the manufacturer's instructions, which are included and on the back-side of the unit. This gauge is not field serviceable. Calibration to NIST standard is available through Hydro Flow Products. Contact HFP if service is needed.
- **The Line Gauge.** It is recommended that analog gauges be certified and calibrated annually. Calibration to NIST standard is available through us. Contact Hydro Flow Products, Inc. if service is needed.
- **Pitotless Nozzle and Differential Chamber.** Wipe down the product with a damp rag after each use to remove dirt and debris.

TIPS

- The *In-Line Pitotless Nozzle* can be discharged directly to open atmosphere without a hose downstream of the unit. The accuracy will not be affected and the flow chart will still be the same. In this case the *discharge valve* must be used and unit properly secured. Direct discharge away from people or property.
- If you are discharging to hose, attach a 2 ½" *Stream Shaper* to the downstream end of the *discharge valve*. This will minimize hose burn.
- The *In-Line Pitotless Nozzle* can be attached between hoses; however, to prevent hose-end-whip, the discharge hose end must be secured or used with a *Hose Monster*®.
- When flowing from fixed valves (standpipes, pump test header, etc.) consider using 30° or 45° Elbows in order to change the discharge angle. Item#: EL302HNNH, EL452HNNH

IN-LINE PITOTLESS NOZZLE FLOW RANGES

Pitotless Nozzle Size	Flow Range	Part Number
1 ⅛"	94 – 321 GPM	PN1.125THD
1 ¾"	250 – 1000 GPM	PN1.75THD
2"	500 – 1432 GPM	PN2THD

SAFETY AND HANDLING

CAUTION: ALL CONNECTIONS IN THIS ASSEMBLY MUST BE ATTACHED SECURELY. DIRECT WATER DISCHARGE AWAY FROM ANY PEOPLE OR PROPERTY THAT MAY BE AFFECTED. DO NOT ATTACH THE *IN-LINE PITOTLESS NOZZLE* TO THE END OF A HOSE UNLESS A *HOSE MONSTER* IS ATTACHED TO IT OR UNLESS THE HOSE IS PROPERLY SECURED. THE USE OF THIS PRODUCT INVOLVES HEAVY WATER FLOW WHICH CAN RESULT IN SERIOUS INJURY OR DEATH IF USED IMPROPERLY. PRODUCTS THAT HAVE BEEN ALTERED OR MODIFIED IN ANY WAY POSE A SAFETY RISK AND WILL VOID THE MANUFACTURER'S WARRANTY. THE MANUFACTURER AND ITS DISTRIBUTORS ARE NOT RESPONSIBLE FOR ANY DAMAGE OR INJURY CAUSED BY THE USE OF THIS PRODUCT.

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