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WATTS

WATTS IS-P-IP IP Transducers

Product Information

Specifications

- **Product Name:** IP Transducers Series 512
- **Model Number:** IS-P-IP
- **Supply Pressure Range:**
  - **Minimum:** 3 psig (21 kPa) above max output
  - **Maximum:** 100 psig (700 kPa)

Product Usage Instructions

Installation Instructions

Before installing the IP Transducers Series 512, ensure that you have read the manual thoroughly.

Follow these steps for installation:

1. Prepare the installation area by ensuring it is clean and free from any obstructions.
2. Mount the transducer securely using appropriate mounting hardware.
3. Connect the supply pressure according to the specified range mentioned in the manual.
4. Double-check all connections before proceeding.

Operating Characteristics

- The IP Transducers Series 512 has the following operating characteristics.
- Supply Pressure Range should be maintained within the specified limits.
- Ensure that the supply pressure sensitivity is within acceptable levels for optimal performance.

SAFETY INSTRUCTION

-  **WARNING:** Read this Manual BEFORE using this equipment.
- Failure to read and follow all safety and use information can result in death, serious personal injury, property damage, or damage to the equipment.
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Keep this Manual for future reference.

Features

- Low cost
- Built-in volume booster
- Small size
- Field reversible
- Low air consumption
- Mounts at any angle
- Convenient external Span and Zero adjusts
- Light Weight
- Wide supply pressure range
- Low supply pressure sensitivity

Operating Characteristics

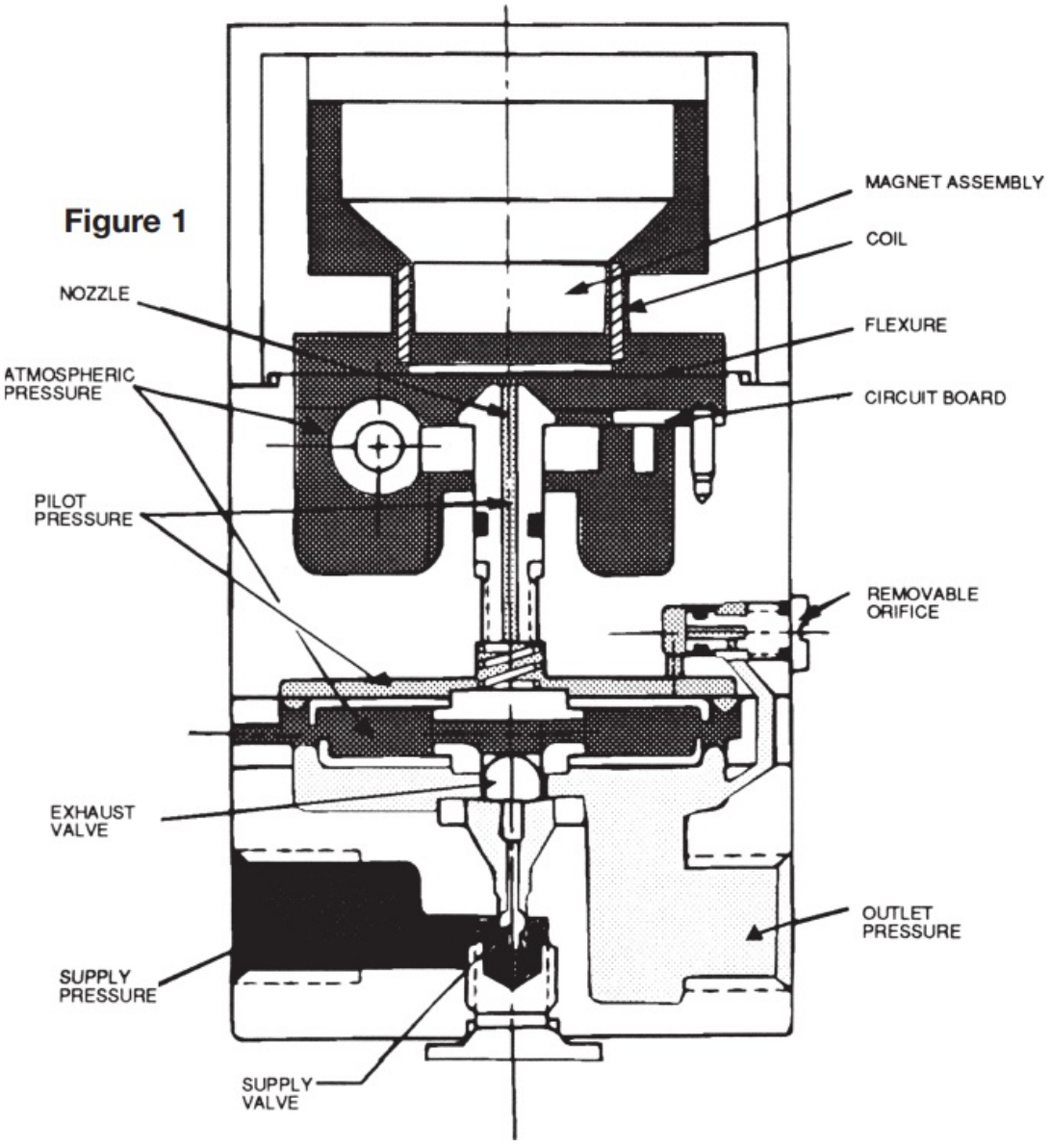
- **Supply Pressure Range:** Min: 3 psig (21 kPa) above max output
- **Max:** 100 psig (700 kPa)
- **Supply Pressure Sensitivity:** <±0.15% of span per 10 kPa at midrange (<±0.1% of span per psig)
- **Terminal Based Linearity:** <±1.0% of span
- **Repeatability:** <0.5% of span
- **Hysteresis:** <1.0% of span
- **Air consumption (Maximum):** 0.1 SCFM (0.2m3/hr) at midrange
- **Flow Rate at Midrange (Minimum):** 4.5 SCFM (7.6m3/hr ANR) at
    - 25 psig (175 kPa) supply;
    - 12 SCFM (20.0 m3/hr ANR) at
    - 100 psig (700 kPa) supply
- **Port Sizes:** 1/4 NPT (pneumatic);
    - 1/2 NPT (electric)
- **Size:** 2-1/8 in. x 2-1/8 in. x 4 in.
    - (54 mm x 54 mm x 102 mm)
- **Weight:** 2.1 lb (0.94 kg)
- **Impedance (nominal):** 512-117 … 180
    - 512-015 … 180
    - 512-027 … 220

Description

- This transducer is an electropneumatic device that reduces a supply pressure to a regulated output pressure that is directly proportional to an electrical input signal.
- It uses a supply pressure between 18 and 100 psig (125-700 kPa). An integral pneumatic volume booster is included in the design to provide high flow capacity (up to 12 SCFM).
- Three versions of the compact transducers are available. Listed below are their model numbers, the current input accepted by each, and the output signal emitted by each.
- **512-117…4-20** mA Input/1-17 psi Output
- **512-015…4-20** mA Input/3-15 psi Output
- **512-027…4-20** mA Input/3-27 psi Output

Operating Principle

- The I/P transducer is a force balance device in which a coil (see figure 1) is suspended in the field of a magnet by a flexure.
- Current flowing through the coil generates axial movement of the coil and flexure. The flexure moves against the end of a nozzle and creates a back pressure in the nozzle by restricting air flow through it.
- This back pressure acts as a pilot pressure to an integral booster relay.
- Consequently, as the input signal increases (or decreases, for reverse acting), output pressure increases proportionally. Zero and span are calibrated by turning easily accessible adjusting screws on the front face of the unit.
- The zero adjusting screw causes the nozzle to move relative to the flexure. The span adjusting screw is a potentiometer that limits the current through the coil. A thermistor in series with the coil provides temperature compensation.



Mounting

- The 512 series transducers can be pipe, panel, or bracket mounted in any position. Positions other than vertical will require recalibration of the zero adjustment.
- For maximum output pressure stability, the transducer should be mounted in a vibration-free location or such that vibration is isolated to the X and Z axes shown on the dimensional drawing (see Figure 2).

Field Reversible

- All transducers are calibrated at the factory for direct acting operation, but may be used in the reverse acting mode by reversing the polarity of the signal leads and recalibrating.
- When calibrated for reverse-acting applications, the transducers provide a minimum of their full rated output pressure (i.e., 15, 17, or 27 psig) upon input signal failure.

Installation

Mounting

Pipe

- Due to its lightweight, the transducer may be supported using its plumbing on pipes used for air supply and output.

Panel (with access to the rear of the panel)

- Attach transducer to panel using two 10-32 screws (supplied) into the threaded holes on the back of the transducer.

Panel (with no access to the rear of the panel)

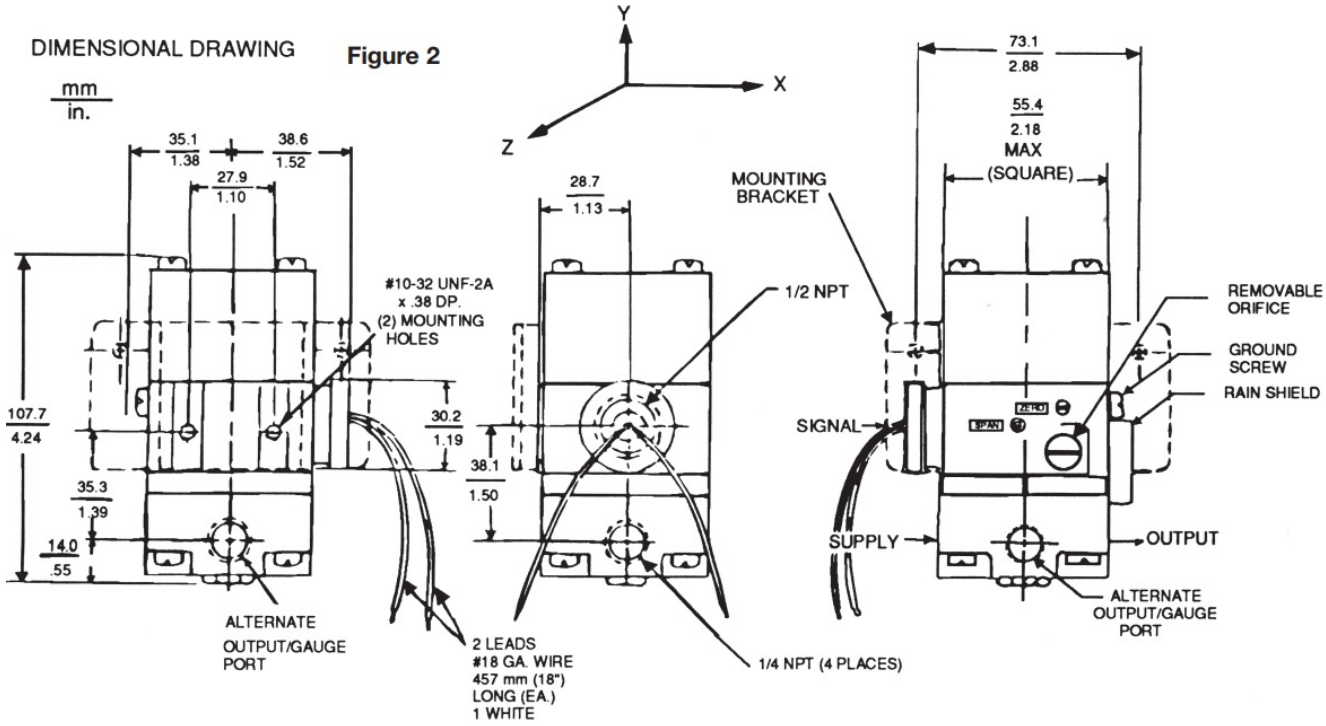
- Attach bracket using tow 10-32 screws (supplied) into the threaded holes on the back of the transducer. Use 10-32 screws through holes in the bracket to mount transducer to panel.

Flowrite II Valve

- For mounting in the field, use the mounting kit (optional accessory, #512-005), which contains an adapator bracket (AB). First, attach this AB to the yoke, then attach the mounting bracket (shown in Figure 2-supplied with transducer) to the AB.

Mounting Notes

1. The transducer may be mounted at any angle. See “Calibration.”
2. The effect of external vibration can be kept at a minimum if the unit is mounted so that vibration is restricted to being along the X and Z axes shown on the Dimensional Drawing, see figure 2.



Connections

Air Supply

- Connect air supply to 1/4 NPT port marked “IN” on the base of the unit. Avoid getting pipe compound in the air line and transducer.
- Supply air must be instrument quality (filtered and dried).
- Output Connect output to 1/4 NPT port marked “OUT” on the base of the unit. The two unmarked 1/4 NPT ports may be used as alternate output ports or for a gauge to measure output pressure. Unused ports must be plugged.

Electrical Connections

- Connect the electrical signal to the leads exiting the side of the unit through a 1/2 NPT conduit fitting. For direct acting (where increasing the signal increases the output pressure), connect the positive signal to the black lead and the negative to the white.
- For reverse acting (increasing signal decreases output pressure), connect the positive signal to the white lead and the negative to the black.

Calibration

- The transducer should be calibrated after mounting. If the transducer is calibrated in an upright position, then mounted at an angle, readjustment of the “ZERO” is necessary.
    1. Remove plastic cap from “ZERO” and “SPAN” adjustment screw access holes.
    2. Set the signal to the low end of the signal scale. (For reverse acting, set to the high end of the signal scale.)
    3. Adjust “ZERO” screw until output pressure is set to the low end of the output scale. Turn counterclockwise to increase pressure, clockwise to decrease pressure.
        - If output pressure does not change when screw is turned, turn screw counterclockwise until pressure starts to rise.
    4. Set the signal to the high end of the signal scale. (For reverse acting, set to the low end of the signal scale.)
    5. Adjust “SPAN” screw until output pressure is set to the high end of the output scale.
    6. Repeat steps 2, 3, 4, and 5 until no further readjustment is necessary.
    7. Replace protective caps.

Maintenance

- If internal clogging occurs due to improper filtering of the supply air, the orifice can be cleaned without removing the unit from its mounting or plumbing. Turn off the supply air. Unscrew and remove the orifice assembly.
- Clean the orifice through the side of the orifice assembly using a wire that has a smaller diameter than 0.015 in. (0.38 mm).

- Shake out any loose particles inside the orifice assembly. Screw orifice assembly back into unit.

WARRANTY

- The Seller warrants that the equipment manufactured by it and covered by this order or contract is free from defects in material and workmanship and, without charge, equipment found to be defective in material or workmanship will be repaired, or at Seller's option replaced F.O.B. original point of shipment, if written notice of failure is received by Seller within one (1) year after date of shipment (unless specifically noted elsewhere), provided said equipment has been properly installed, operated in accordance with the Seller's instructions, and provided such defects are not due to abuse or decomposition by chemical or galvanic action.
- THIS EXPRESS WARRANTY IS IN PLACE OF AND EXCLUDES ALL OTHER WARRANTIES, GUARANTEES, OR REPRESENTATIONS, EXPRESS OR IMPLIED.
- THERE ARE NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.
- The Seller assumes no responsibility for repairs made on the Seller's equipment unless done by the Seller's authorized personnel or by written authority from the Seller.
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Frequently Asked Questions

- **Q: What should I do if the supply pressure exceeds the maximum limit?**
  - **A:** If the supply pressure exceeds the maximum limit of 100 psig (700 kPa), immediately shut off the supply and check for any potential damage to the equipment. Contact customer support for further assistance.

- **Q: Can the IP Transducers Series 512 be used for high-pressure applications?**
  - **A:** The IP Transducers Series 512 is designed for a maximum supply pressure of 100 psig (700 kPa). It is recommended to use it within this specified range to avoid any damage or safety hazards.

Documents / Resources

	WATTS IS-P-IP IP Transducers [pdf] Owner's Manual IS-P-IP, IS-P-IP IP Transducers, IS-P-IP, IP Transducers, Transducers

References

- User Manual

IP Transducers, IS-P-IP, IS-P-IP IP Transducers, transducers,

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