



## INSTALLATION MANUAL

### Models x50 and x51 for High Pressure Sanitary Applications



Model x50



Model x51

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## Pressure, Level & Temperature Products

### 1. INTRODUCTION

#### 1.1 Product Description

Models x50 and x51 are pressure transmitters designed for high pressure sanitary applications. Both models are available in 0-5VDC output (200 series) and 4-20mA output (300 series) and comply with 3A standard 74-07. The Model x50 design provides a unique one-piece "flow-thru" sensing body which eliminates any internal dead volume of process fluid. The Model x51 design provides a high pressure robust flush sensor, thus there is no internal dead volume removing the possibility of trapped media. Based upon the high pressure threaded connection, both designs are certified for Clean-Out of-Place (COP) service.

#### 1.2 Warning

Pressurized vessels and associated equipment are potentially dangerous. The product described in this guide should be operated only by personnel trained in the procedures that will assure safety to themselves, to others, to the equipment, and to the product. Specific warnings are noted as  in specific installation/operation sections.

#### 1.3 Unpacking and Inspection

All models covered in this manual are carefully tested, inspected and packed. Upon receipt of the shipment, thoroughly inspect the transducer. If you see any visible signs of obvious shipping damage, notify the freight company immediately.

#### 1.4 Using this Manual

This manual is intended to help the end user install, maintain, and provide general service of GP:50 Models x50 and x51 3A Sanitary Pressure Transducers. The user should have a general understanding of current loops & general instrument control. All aforementioned models are precision instruments and should be given the same care as any other precision instrument during installation and operation.

### 2. INSTALLATION & CLEANING

#### 2.1 Mounting / Process Connection

The Model x50 device is a "flow-thru" design with two (2) similar female pressure ports. One port lets process fluid into the pressure sensing region while the other port lets fluid out. Process connections are made using industry standard high-pressure metal-to-metal seals such as Parker/Autoclave Engineer M375C as depicted in Figure 2.1.

- Each female pressure port of the Model x50 device has a 3/32 weep hole which shall be oriented to facilitate self-draining in the event process fluid leaks past the metal-to-metal seal.
- When cleaning of the Model x50 "flow-thru" bore is required, system pressure shall be removed. Both process connections shall be loosened allowing the Model x50 device to be completely removed from the system (Clean Out of Place – COP). The "flow-thru" bore may then be flushed clean per standard cleaning practices.
- When remating each process connection, the taper ends of each tube shall be inspected for damage which may affect the integrity of the metal-to-metal seal.
- The Gland Nut shall be torqued per industry standard values depending upon the pressure port designation provided on the Model x50 device. Reference industry standard instructions for additional installation details (consult GP:50 for assistance if needed).



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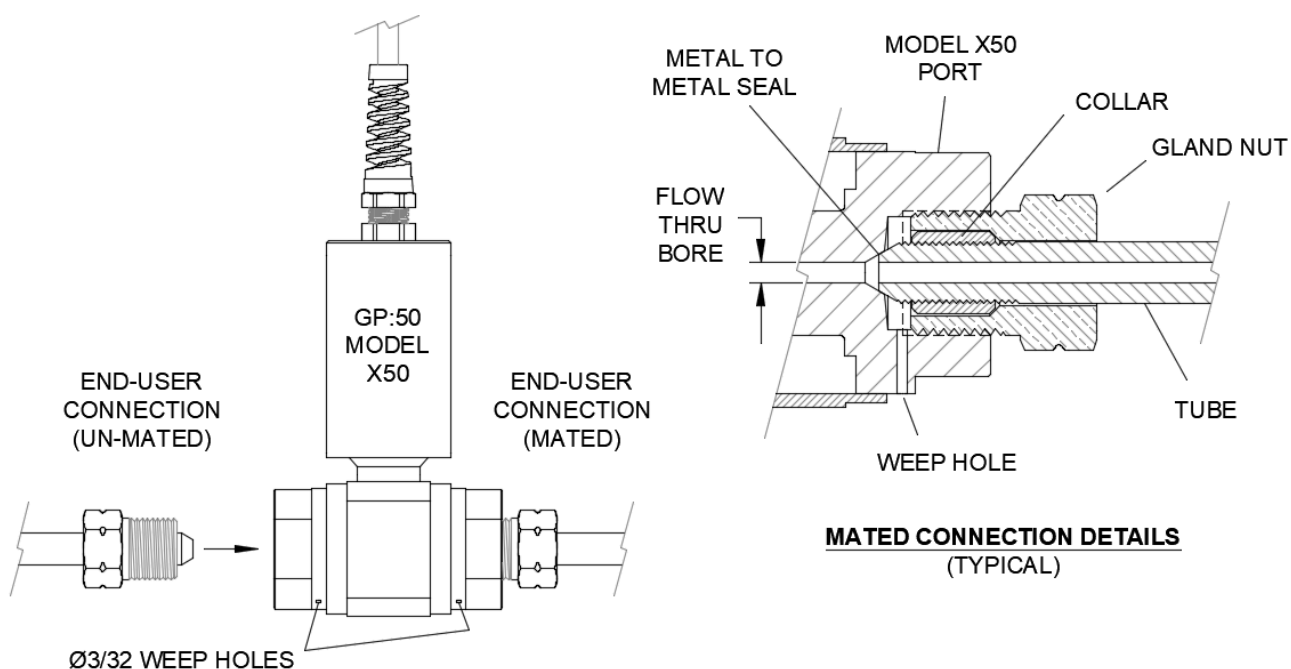


Figure 2.1: Model x50 Installation Details (Typical)

The Model x51 device is a high-pressure flush sensor design that mates specifically to an industry standard female high-pressure design such as Parker/Autoclave Engineer's F1000C43 designation (or similar) as depicted in Figure 2.2. A high-pressure metal-to-metal seal is also created once the Model x51 Gland Nut is torqued in place.

- If necessary, the weep hole on the mating female adapter (supplied by the end-user) may need to be modified to a Ø3/32" size to comply with 3A standards. During installation, the weep hole shall be oriented to facilitate self-draining in the event process fluid leaks past the metal-to-metal seal.
- When cleaning of the Model x51 device is required, system pressure shall be removed. The Gland Nut shall be loosened allowing the Model x51 device to be completely removed from the system (Clean Out of Place – COP). Cleaning of the device shall be per standard cleaning practices. Special care shall be taken to preclude damage to the sensing end of the device as identified in Figure 2.2.
- When remating each process connection, the taper ends in the vicinity of the metal-to-metal seal shall be inspected for damage which may affect the integrity of seal.
- The Gland Nut shall be torqued per industry standard values depending upon the pressure port designation provided on the Model x51 device. Reference industry standard instructions for additional installation details (consult GP:50 for assistance if needed).



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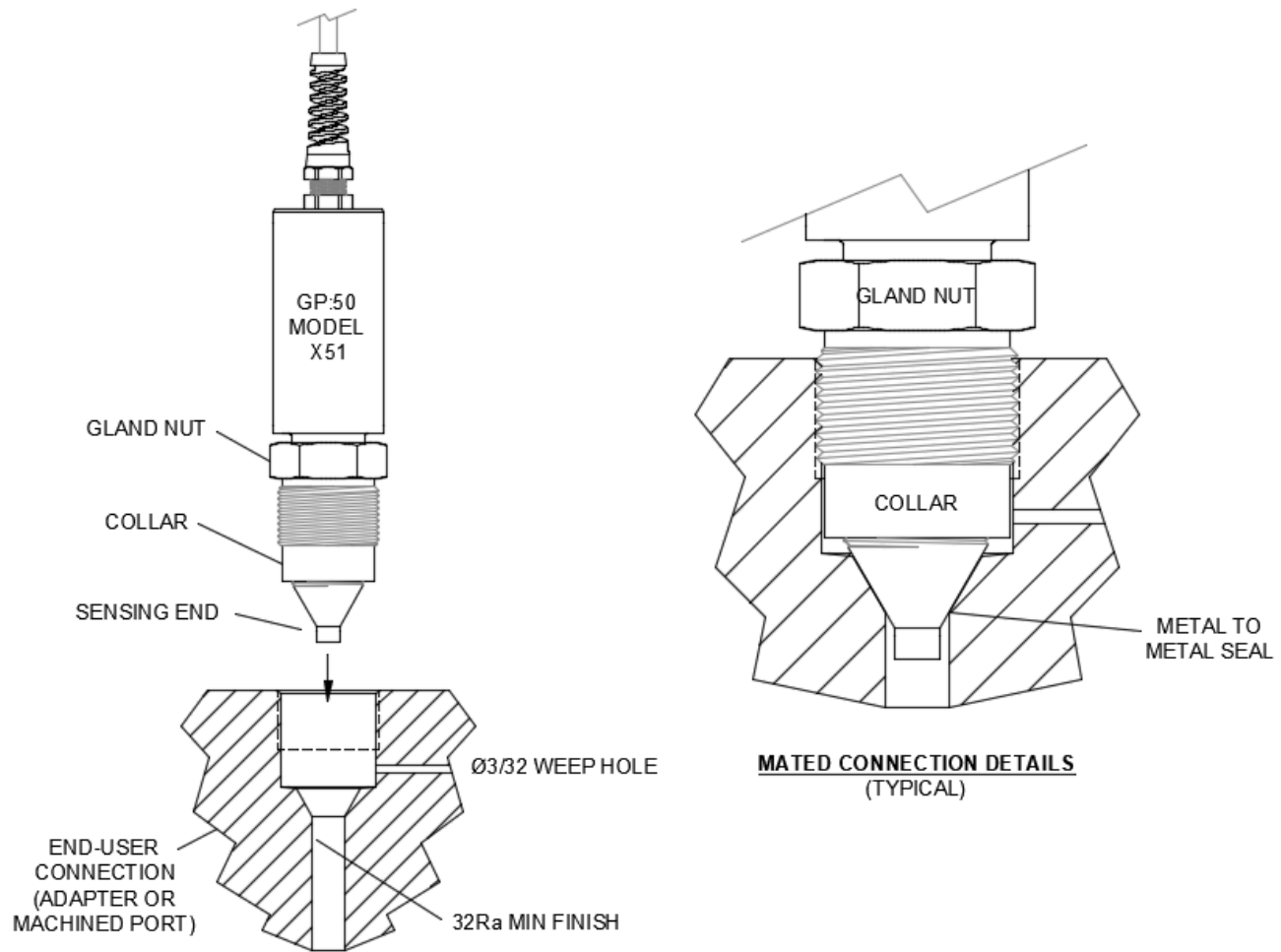


Figure 2.2: Model x51 Installation Details (Typical)



Ensure media is compatible with the wetted materials of the Model x50 and x51 devices (typically 316 SST, 17-4PH SST, Inconel 625, Inconel 718 or Hastelloy C276) and compliant with 3A Standard 74-07 section D1.1.1. Check part number to verify wetted material to avoid premature corrosion of the diaphragm. This can cause performance degradation and eventual sensor failure.



Properly tighten process connections before applying pressure to ensure no leaks or mechanical failure can occur.



Never touch the flush diaphragm with sharp and/or rigid objects as this could cause permanent damage to the sensor and / or mechanical failure/diaphragm rupture. Never spray high pressure cleaning fluids directly on the flush sensor diaphragm as this may rupture the sensor diaphragm.



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### 2.2 Power Supply Connection

Consult power requirements listed on the Calibration Record provided with each serialized individual unit. For best operation, the pressure transducer needs clean regulated power with output impedance less than  $20\Omega$ . As loads are added to the current loop (galvanic barriers, current measuring devices resistors), the minimum excitation voltage must increase in order to maintain proper operating voltage. Refer to datasheet for additional electrical specifications.

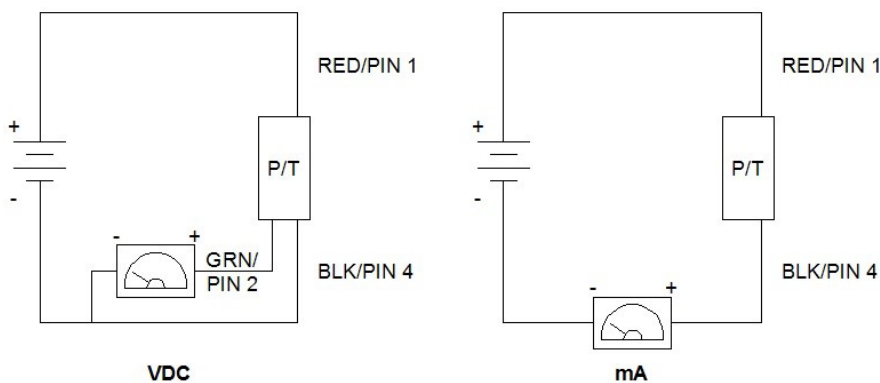
### 2.3 Wiring & Grounding

Consult wiring listed under Electrical Connections on the Calibration Record provided with each serialized individual unit. Do not run wires next to power lines, electrical systems, motors, generators, or any other equipment which may generate a significant amount of electrical noise or magnetic fields.

A 4-20mA transmitter requires a DC power supply (typically 10-36 VDC) and mA meter wired in a current loop. Connect the Red wire of the transducer to the + Terminal of the power supply and the Black wire of the transducer to the + Input terminal of the meter. Connect the - Input terminal of the meter to the - Terminal of the power supply.

A VDC transducer requires a DC power supply (10-36 VDC) and voltmeter. Connect the Red wire from the transducer to + on the power supply, the Green wire to the +Signal of the VDC meter and the Black wire from the transducer to both the -Power on the power supply and -Signal on the VDC meter.

See wiring guides below.





## **Pressure, Level & Temperature Products**

### **2.4 Environment**

The operating temperature range varies for each model, consult the specific model datasheet for temperature specifications. Mount the unit as close to the process as possible with the ambient temperature surrounding the electronics falling within the operating range.



Protect electrical connection from direct/continued exposure to fluids. Moisture ingress can occur and cause eventual electrical failure.

### **2.5 Cleaning**

Models x50 and x51 are 3A certified for Clean-Out Of-Place (COP) operation. Special care shall be taken to ensure the cleaning process used does not damage the delicate flush sensor diaphragm.

## **3. OPERATION & MAINTENANCE**

Models x50 and x51 are designed to produce the respective output (0-5 Vdc, 4-20 mA) in direct proportion to pressure. Specific pressure range, input voltage requirements, and electrical connections are marked on unit. Appropriate mating connections are required for proper installation and safety. Other port and electrical connections are available and noted as option code in part number.



Install only after verifying both input power and line pressure are off and at zero.



Replace broken fasteners (available through the factory) as they may compromise the seal and cause contamination and/or electronics failure.



Observe safe ESD handling precautions to avoid static damage to sensitive components.



## **Pressure, Level & Temperature Products**

### **4. TROUBLESHOOTING & RETURN INFORMATION**

#### **No output**

- Verify power supply voltage meets transducer requirements
- Check wiring connections
- Verify pressure if being applied
- Verify output load is not shorted

#### **Erratic output or zero drift**

- Verify pressure applied is constant
- Verify power supply remains within specifications
- Inspect electrical connections for discontinuity or damage
- Verify output with a multi-meter
- Check insulation resistance between amplifier and transducer case

#### **Slow Response**

- Verify pressure port or process connection is not clogged

If the problem persists, please call the factory as indicated below for assistance. Please have the following information ready:

- Serial number
- Model number
- Loop setup details (power supply, resistor, cable routing/length)
- Which action caused device failure

Contact: [sales@gp50.com](mailto:sales@gp50.com)



Repairs should only be done by GP:50. Repairs done by customer will void any warranties and may cause permanent damage to unit. Repairs done by customer on Intrinsically Safe units will void the approvals and are a potential explosion hazard.



**Returned products that have been exposed to hazardous substances must be cleaned prior to return and include the Material Safety Data Sheet for all substances.**



## **Pressure, Level & Temperature Products**

### **5. WARRANTY**

GP:50 warrants its products to the original customer/purchaser against defects in material and workmanship for a period of one (1) year from the date of delivery by GP:50, as shown in its shipping documents, subject to the following terms and conditions:

Without charge GP:50 will repair or replace products found to be defective in materials or workmanship within the warranty period provided that:

1. The product has not been subjected to abuse, neglect, accident, incorrect wiring (not provided by GP:50), improper installation or servicing, or use in violation of instructions furnished by GP:50.
2. As to any prior defect in materials or workmanship covered by this warranty, the product has not been repaired or altered by anyone except GP:50 or its authorized service agencies.
3. The serial number has not been removed, defaced or otherwise changed.
4. Examination discloses, in the judgment of GP:50, a defect in materials or workmanship which developed under normal installation, use and service.
5. GP:50 is notified in advance of, and approves, the return by issuing a Return Material Authorization Number; and the products are returned to GP:50 transportation prepaid. Products returned without an RMA number will not be accepted and be returned to sender at sender's expense.

***THIS WARRANTY IS THE ONLY WARRANTY AND IS IN LIEU OF ANY OTHER WARRANTY EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OR MERCHANTABILITY OR FITNESS. NO REPRESENTATIVE OR PERSONS ARE AUTHORIZED TO GIVE ANY OTHER WARRANTY OR TO ASSUME FOR GP:50 ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF ITS PRODUCTS. GP:50 DOES NOT ASSUME THE COSTS OF REMOVAL AND/OR INSTALLATION OF THE PRODUCT OR ANY OTHER WORKMANSHIP, OR WILL GP:50 BE LIABLE FOR ANY CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OR INSTALLATION OF ITS PRODUCT.***

**For a copy of our warranty policy and to fill out a warranty registration form, visit our website at: <https://www.gp50.com/products/warranty/>**

**For assistance with repairs, call our Repair Dept. at 716-773-9300, ext. 237, or complete a Repairs, Returns, RMA form at: <https://www.gp50.com/resources/repairs-returns-rma/>.**

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