Pressure, Level & Temperature Products

Installation Manual

Model 370

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1. INTRODUCTION

1.1 Product Description

The Model 370 is an oil field service pressure transmitter with a 2″ 1502 or 2002/2202 WECO® Union fitting, 4-20 mA output and measures pressures up to 20,000 PSI.

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

The Model 370 was thoroughly tested and inspected and carefully 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 Model 370 Pressure Transducer. The user should have a general understanding of current loops and general instrument control. The Model 370 is a precision instrument and should be given the same care as any other precision instrument during installation and operation.

2. INSTALLATION

2.1 Mounting/Process Connection

It is assumed the user is familiar with WECO® Wing Union fittings and installations. To install the Model 370 into the process connection, place the unit into the WECO® pressure fitting and tighten the WECO® nut over both the unit and the pressure fitting. Using a 5 lb. Max hammer, tighten the nut. Caution should be taken as accidental impact from hammer to transmitter could result in electronic or mechanical failure and void the product warranty.

⚠ Ensure media is compatible with Inconel X750 or Inconel 718 (model dependent, check part number (Appendix A) to verify wetted material) to avoid premature corrosion of the diaphragm. This can cause performance degradation and eventual sensor rupture/failure.

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

⚠ Never insert sharp objects into diaphragm. This could cause permanent damage to the sensor and/or mechanical failure/diaphragm rupture.

2.2 Power Supply Connection

For best operation, the pressure transmitter needs clean, regulated power with an output impedance less than 20Ω. Minimum voltage is 10 volts with no resistive loading, to a maximum of 36 VDC (28 VDC for IS units). 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.

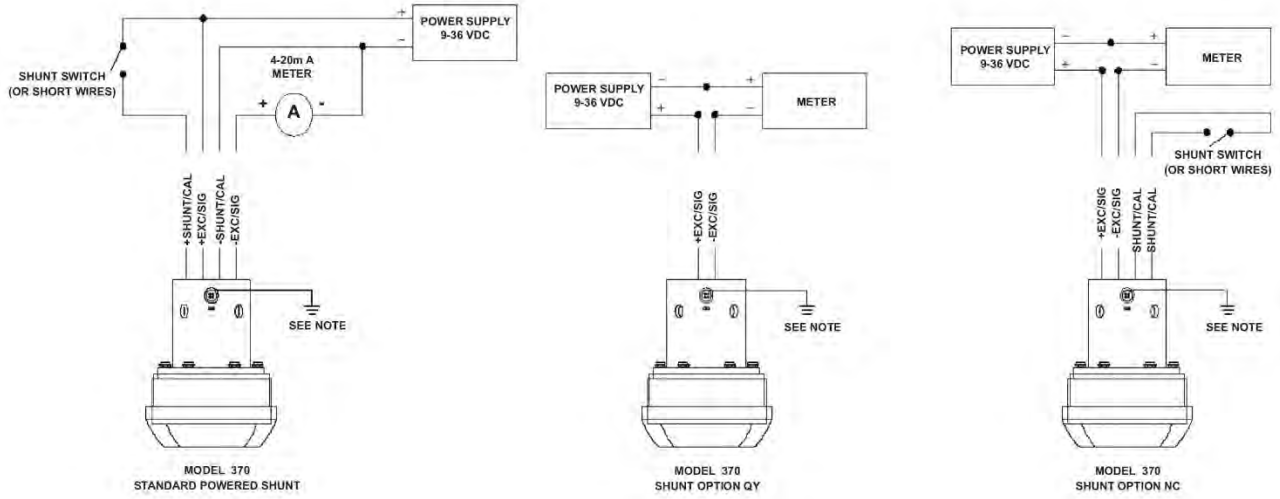
Exceeding maximum supply voltage can damage electronics and cause malfunctions or failure. With Intrinsically Safe units, this can cause an explosion. Please refer to the IS connection diagram (Appendix B) and applicable local codes for proper electrical installation.

2.3 Wiring/Grounding

To maintain signal integrity over long lengths of cable, use quality low capacitance twisted pair or shielded wire cable. 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.

As a rule, if the cable length is less than 5,000 ft, #24 AWG wire can be used. Any cable that runs over 5,000 ft should use #20 AWG wiring.

Fig. 1: Connection Diagrams (for IS units see Appendix B)



NOTE 1: QUALIFIED END-USER TO INSTALL GROUND WIRE PER CODE REQUIREMENTS.

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

Avoid contact with exposed leads or connector pins, high voltage may be present on leads and can cause electrical shock.

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

2.4 Environment

The typical operating temperature range for the electronics is from -10 °F to 176 °F (-23 °C to 80 °C). The unit should be mounted as close to the process as possible with the ambient temperature surrounding the electronics in the range as specified above. Transmitter with high temperature option (QX" is available for process temps from -50 °F to 360 °F (-45 °C to 182 °C).

Exceeding maximum temperature rating can cause electronics malfunction or failure and is an explosion risk with IS units.

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

3. OPERATION/MAINTENANCE/HANDLING

The Model 370 is designed to give a 4-20 mA output directly proportional to pressure. See Appendix A for all performance specifications. For standard operating ranges above 15,000 PSI, the WECO® 2002/2202 is recommended. The 20,000 PSI option on the WEC® 1502 is recommended only for sensors that may see an occasional 20,000 PSI pressure spike.

Always inspect/clean electrical connection and sealing surface prior to installation.

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

Unit can be hot when removed from service. Wear protective gloves when handling unit in this condition.

4. TROUBLESHOOTING & RETURN INFORMATION

No output
- Verify power supply voltage meets transmitter 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 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
Phone: (716) 773-9300

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.

5. WARRANTY

GP:50 warranties 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 INSALLATION 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/.

APPENDIX A – SPECS

A.1 Specifications

Accuracy	< 0.25% FSO (RSS) (Non-linearity, hysterisis, non-repeatability)
Zero Balance	4.0 mA ± 1% FSO at 10 Vdc
Full Scale Output	20 mA ± 1.0 % FSO
Compensated Temperature Limits	-40°F to 180°F (-40°C to 80°C)
Operating Temperature Limits	-50°F to 190°F (-45°C to 85°C)
Temperature Compensation - Zero	Less than ± 1.0 % FSO/100°F
Temperature Compensation - Span	Less than ± 1.0 % FSO/100°F
Excitation Voltage	9-36 Vdc (9-28 Vdc for IS units)
Input Current	23 mA max
Output Current	23 mA max
Load Impedance	N/A
Proof Pressure:	1.5 times pressure range
Burst Pressure:	2.0 times pressure range
Sensor Material	Inconel X-750 or Inconel 718 (option code dependant)
Housing Material	300 Series SST
Pressure Connection	WECO ® 2" 1502 or WECO ® 2" 2002/2202
Electrical Connection	Bendix PT1H-10-6P
Identification	Etched onto housing or nameplate

A.2 Part Number Configuration

MODEL	APPROVAL CODE	PROCESS CONNECTION	NONSTANDARD RANGE- IF APPLICABLE	PRESSURE RANGE	ALTERNATE ELECTRICAL CONNECTIONS	OPTIONS
• —	• —	• —	• —	• —	• —	•/•/•

MODEL 370

APPROVAL CODE
AI ATEX Intrinsic Safety
EC CE Marking (std. on AI)
I FM/CSA Intrinsic Safety
GI ATEX/FM/CSA Intrinsic Safety

PROCESS CONNECTION
A 1502 2″ WECO®, Inconel X750
B 2002 2″ WECO®, Inconel X750
C 2202 2″ WECO®, Inconel 718
D 1502 2″ WECO®, Inconel 718
E 1502 compatible, 2″ WECO®, Inconel X750
F 1502 compatible, 2″ WECO®, Inconel 718

NON-STANDARD RANGE (if applicable)
SZ Customer to specify range on Sales Order

PRESSURE RANGE
RV 5000 PSI
RW 6000 PSI
RX 7500 PSI
RZ 10,000 PSI
SB 15,000 PSI
SD 20,000 PSI

ALTERNATE ELECTRICAL CONNECTIONS
CA Bendix 6-pin PT1H-10-6P (standard)
CF ½” NPT with 18” AWG MTW cable
DK Glenair 4-pin BC379-2-14S-2P
DM MS3102-142
DO Jupiter REC-M-10TP-N-04-16

OPTIONS
GB Alternate electrical output
GC Special calibration run
GE Improved temperature compensation
GG Nonstandard shunt cal value
GJ Zero and Span adjustments
HE 80% FSPR shunt calibration
JS Internal damping
ME 80% shunt cal
MR Alternate wiring
NC Comparator shunt cal (100%)
NG Removable carrying handle
NH Dual welded handle
QX Extended operating temperature
Process: -45 °F to 350 °F
Electronics: -40 °F to 185 °F
QY Remove shunt cal

Customer Modification (Contact Factory)
An (n=1,2,3…) – Special customer requirements

APPENDIX B – APPROVAL INFORMATION

B.1 Approval Documentation packages to be shipped with units, per option code:

AI – ATEX Intrinsic Safety

- o A8EG-10AIA.CC ATEX C of C
- o A8EG-10AIA.DC CE-ATEX Declaration of Conformity
- o A8EG-10AIE.DC CE-EMC Declaration of Conformity
- o A8EG-10AIP.DC CE-PED Declaration of Conformity
- o 8C1-55.00-2 ATEX IS Connection Diagram, Model 370

EC – CE Compliance (EMC and PED)

- o A8EG-10AIE.DC CE:EMC Declaration of Conformity
- o A8EG-10AIP.DC CE:PED Declaration of Conformity

I – FM/CSA Intrinsic Safety

- o A8EG-10IC.CC CSA C of C
- o A8EG-10IF.CC FM C of C
- o 8C1-56.00-2 FM/CSA IS Connection Diagram, Model 370