



INSTALLATION DATA MANUAL

MODEL 555

PRESSURE TRANSMITTER

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COMPANY BACKGROUND

Viatran is an ISO 9001:2000 certified company committed to providing high quality pressure transducers and transmitters. Established more than 40 years ago, Viatran has built its reputation on providing durable, and accurate pressure sensing devices. Our products are often specifically requested by integrators and engineering firms for applications ranging from the offshore oil rigs to pump control to tank and well level measurement. Viatran is often called for custom modifications for applications where standard products are not available.

TECHNICAL SUPPORT

Technical assistance is available Monday-Friday 8:00 AM to 5:00 PM (Eastern) from our knowledgeable factory personnel to answer any of your application or installation questions. Our toll free number is 1-800-688-0030. Questions or additional documentation can also be requested via e-mail at solutions@viatran.com.

CUSTOMER SERVICE

Orders for additional units or accessories can be placed by calling customer service at 1-800-688-0030 or by fax at 1-716-693-9162. Orders can also be placed by contacting a local representative in your area. To find the nearest representative visit our web site at www.viatran.com.

PRODUCT OVERVIEW

All information contained in this document is representative of a standard Model 555. If the product you ordered has special requirements or modifications, refer to the Laser Marked information on the product and your purchase order for possible alteration to the product's configuration. Failure to verify product configuration before installation may cause permanent product damage and in most cases, void the manufacturer's product warranty. If you are unsure or have questions about your product, please contact our Application Engineers for assistance.

Remove and retain all instruction manuals and performance certificates that are shipped with the product. These documents provide important information on the product's calibration, operation, safety precautions, recommended maintenance, re-calibration requirements, repair service instructions and warranty information. These documents are updated from time to time as changes to the product occur and should be reviewed at receipt so that proper and safe installation can occur.

BASIC OPERATION

Note: *The casting of the module has raised numbers at the adjustment screw positions.*

Those numbers reflect the following function of the assigned screw.

Screw 1: Top left, Coarse Zero Pot (CCW - Lower, CW - Raise)

Screw 2: Top right, Fine Zero Pot (CCW - lower, CW - Raise)

Screw 3: Lower left, Internal Cal. Activation Pot (12 or 6 o'clock position - Disengage: 3 o'clock Engage)

Screw 4: Lower right, Span Adjustment Pot (CCW - lower, CW - Raise)

1. Outside of using the calibration circuit or the availability of a metrology lab for obtaining a pressure (Full Scale) reading, no object should be used to physically move the sensor.
2. Once proper connections and power are applied, the unit should begin to function.
3. Check the zero output with performance certificate to verify readings. If it is out of specification from the performance certificate, use the coarse and fine zero adjustment screws to obtain the proper reading.
4. With no pressure applied, engage the calibration circuit by slowly rotating the calibration screw until the current output rises to about 8.80 mA's. Check the reading with the performance certificate. If the reading is off, adjust the span screw to raise or lower the reading - return the calibration circuit to the original position.
5. When making zero and/or span adjustments, there may be some interaction between zero and span readings - repeat adjustments if needed.
6. Always return the calibration screw to off or CCW position before installing the transmitter into the application.
Note: This is a common reason for incorrect readings at start-up. The calibration circuit must be deactivated in order for the product to perform properly.
7. Once the product has been tested and functionality verified, the power and meter connections may be removed and the product reconnected to the instrumentation loop.

NON-STANDARD RANGE (NSR) CALIBRATION

NSR: A non-standard range is a customer request to provide alternate scale readings. Through the use of a single transmitter, numerous pressure ranges can be set-up. Depending upon the model, the transmitter can be scaled down to any pressure range, from three times to five times the original range. Only NSR requests for ranges less than the sensor's rated range are recommended and in most cases possible. The NSR is possible due to the ability of the adjustment screws to alter where the zero and span will fall. Refer to the below example for field calibration.

NSR Example

You have Viatran's model 555 with a standard range of 0 to 300 PSI. You would like to set an NSR of 0 to 150 PSI. Refer to the performance certificate and obtain the following:

- Zero = 0 PSI = 4.00 mA
- Full Scale = 300 PSI = 20.00 mA
- Cal Value = 90.04 PSI + 8.81 mA

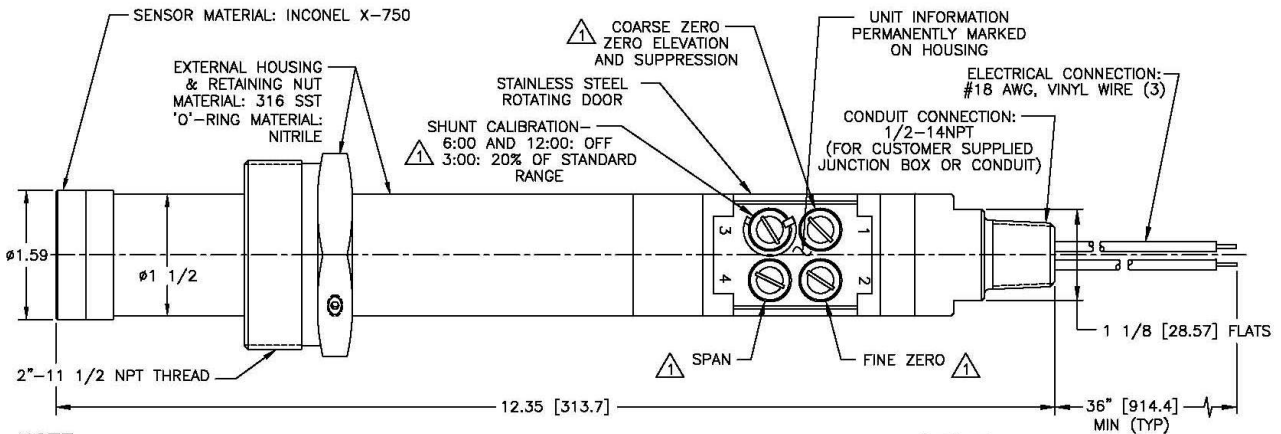
In order to recalibrate the transmitter, you must determine the cal reading in mA's at the NSR range. This is done by calculating what the cal output should be at the NSR range. For the example listed, the standard calibration value is set to represent 90.04 PSI. Once internally set, the calibration (Cal) will always represent the pressure.

Use the formula: $Cal\ mA's = [(16 \times 90.04) / \text{desired range}] + 4$
 Substitute Actual numbers: $Cal\ mA's = [(16 \times 90.04) / 150] + 4$
 $Cal\ mA's = (1440.64 / 150) + 4$
 $Cal\ mA's = 9.604 + 4$
 $Cal\ mA's = 13.604\ mA's$

The zero would be set at 4.00 mA's and the calibration circuit will read (after adjusting span) 13.604 mA's when activated. This would provide a new NSR range for the unit of 20 mA's over 150 PSI.

INSTALLATION DATA - VIATRAN MODEL 555

Note: The drawing below is for informational purposes only and is not to scale.
 All dimensions are nominal, in inches and for reference purposes only.



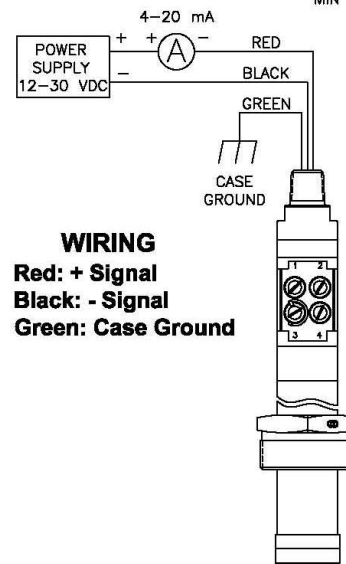
NOTE:

⚠ ALL ADJUSTMENTS ARE MAGNETICALLY COUPLED

CONNECTION DIAGRAMS & WIRING

Electrical Mating Connection:
 Acceptable 18AWG wire termination connection - 1/2" NPT (M)

- Sensor Construction:**
Bonded Foil Strain Gage
- Pressure Connection:**
Flush Diaphragm
- Model Output:**
4-20 mA
- Wetted Materials:**
Inconel X750, 316 Stainless Steel



Note: If the unit is certified for hazardous locations as Intrinsically Safe, use the enclosed connection diagram. Only the pressure transmitter is considered to have the Factory Mutual, CSA or ATEX safety ratings.

INSTALLATION OF 555 INTO HAWLE PIPE SADDLE WITH SHUTOFF BLADE.

The Viatran model 555 Sludge Pressure transmitter is ideally suited for mounting in applications where cavity type pressure sensors might become clogged. The 555 also has exceptional abrasion resistance with its Inconel X750 flush diaphragm.

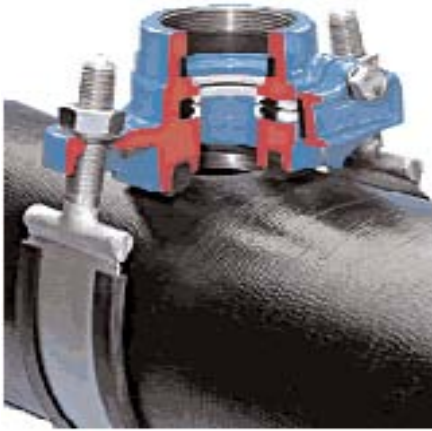


Figure 1

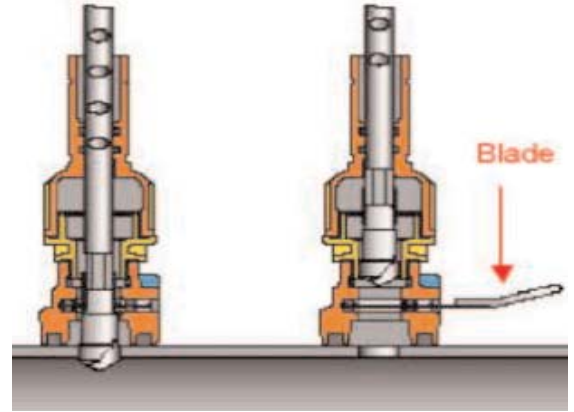


Figure 2



Typical installation configuration



Model 555

It is possible to install the model 555 quickly, without the necessity of shutting down the pressure system, by using the Hawle Model XXX Pipe Drilling Saddle with integral shutoff. **Figure 1** shows a cross-sectional view of the saddle attached to a ductile iron pipe. Make sure that the pipe-drilling machine will attach to the saddle. For USA, a 2" NPT fitting is required. For metric installations, the thread is G2".

Before starting installation, make sure that the model 555 pressure range is correct for the application. In most Wastewater plants, the normal sludge pumping application is between 30 and 60 PSIG. Consult the model 555 manual for instructions on setting the desired range. The pipe saddle-mounting strap should be sized to the correct pipe diameter.

The saddle assembly consists of 3 parts: The saddle, strap and shutoff blade.

1. Place the saddle on top of the pipe in the location desired. The gasket that comes with the mounting strap must be installed on the bottom of the pipe saddle so that the curved part is toward the pipe. This is important since it will be the sealing surface for the saddle.
2. Attach the strap around the pipe and tighten using a socket wrench.
3. Remove the two bolts that hold the plate to the saddle. This opens the blade slot. You are now ready to drill the hole.
4. Refer to **figure 2**.
5. Install the drilling machine using the instructions included with the machine.
6. Drill the hole

7. Withdraw the drill bit from the hole while keeping the machine installed in the pipe saddle.
8. Insert the stainless steel saddle blade until it is seated all the way in.
9. On drilling machines so equipped, attach the flushing hoses to clean out the cavity above the saddle blade
10. Remove the drilling machine.
11. Thread the model 555 locking ring with the sensor fully retracted. Apply the proper torque to tighten it into the saddle.
12. Slowly remove the saddle blade.
13. Push the transmitter into the mounting hole until the sensing diaphragm is flush with the inside of the pipe.
14. Using the hex wrench furnished, tighten the 3 screws into the transmitter shaft.
15. Replace the cover plate. Make sure the gasket is in place before tightening the two bolts.
16. Attach the two wires to the instrumentation system and start measuring and controlling.
17. It is recommended that the saddle blade be kept where it can be re-inserted if it becomes necessary to remove the Pressure Transmitter in the future.

ACCESSORIES - OPTIONAL EQUIPMENT

Conduit Connection Box; Pipe Saddle with shutoff; Calibration Test Fixture

INSTALLATION REQUIREMENTS AND CAUTIONS

1. All electrical & pressure connections should be compatible with specifications outlined above.
2. Installation should occur only after electrical (input power) and line pressure is off and at zero.
3. The product's internal electrical circuitry is isolated from case ground. It is not recommended that the case or ground of the unit be connected to the input, output or calibrate pins of the product or wiring system. Ground loops and line noise will affect the product's performance and may cause internal electrical failure.
4. All products should be protected from direct or continued exposure to fluids at the electrical connection. The electrical connections on the Model 555 have been designed to be terminated in a junction box or encased in conduit. In applications where moisture or fluid contamination is possible, the use of an application approved connection box is recommended for connection termination.
5. Use care when handling the unit by the connection wires. Continued or constant movement of the connection wires at the area of sealant might cause the seal to break. If the seal fails, internal contamination and product failure will occur.
6. When installing the unit to a pressure or electrical connection, only use the wrench flats closest to the end being installed. If the unit is being installed on a pressure pipe, only use the 1-1/4" wrench flats at the end where the pressure port is located.
7. At no time should an object be inserted into the pressure port or pressed against the sensing area to deflect the sensor (to test or simulate pressure), as permanent damage to the sensing diaphragm may occur.
8. To preserve the integrity of the hermetic design, the units have no field replaceable or repairable parts.
9. When shipped in quantities, units should be packaged individually to eliminate possible damage.

MAINTENANCE AND REPAIR

Viatran transmitters are designed to function free from routine or scheduled maintenance. Simple cleaning of the electrical connector, pressure port threads and pressure cavity on an as needed basis will provide years of satisfactory performance. Protecting the product from continued exposure to moisture or fluids at the electrical connection, breather area (model dependent) will eliminate premature internal failure of the product. Whenever the product is removed from service the connector and pressure port threads should be cleaned and the pressure cavity flushed with a stainless steel compatible cleaner to prevent media buildup. A lint-free cloth is recommended for cleaning. Cleaning with a coarse or stiff bristle can damage the diaphragm surface.

It is suggested that the calibration be verified on a usage dependent schedule. If the product is in continuous service 7 days a week, then calibration verification may be necessary every 6 to 8 months. If the product is in a lab test environment a more lenient verification schedule would be appropriate. In all instances the performance of the product will depend on the individual application or process in which it is installed. More continued usage would require a shorter period between calibration verification and product maintenance.

If a product is perceived to be exhibiting problems, it can be returned to Viatran for analysis and/or repair. It is suggested that only Viatran personnel attempt repair of the product. Any damage resulting from customer disassembly would result in a loss of coverage under the warranty policy. All Viatran products are able to be repaired at minimal cost if simple cleaning and precautions are taken in the handling and application of the product. Older products returned for repair are updated to current specifications unless the repair cost would outweigh the cost of a new replacement model. Products returned for repair should include information on the person to contact for repair quote approval, the individual to contact if Viatran's technical staff requires additional information during analysis, and a brief description of the problem associated with the product's failure.




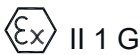





WARRANTY

Viatran Corporation warrants that its products shall be free from defective workmanship and/or material for a period of twelve (12) months from the date of shipment, provided that Viatran's obligation hereunder shall be limited to correcting any defective workmanship and/or replacing any defective material f.o.b. factory. No allowance will be made for any expense incurred for correcting any defective workmanship and/or material without written consent by Viatran. This warranty is in lieu of all other warranties expressed or implied.

REPAIR INSTRUCTIONS

Viatran's Transmitters are designed to be easily repaired and recalibrated if necessary. If a failure occurs, the transmitter should be returned to the factory for inspection and testing. Please contact the Customer Support Department at 1-800-688-0030, for a return tracking number and/or a repair cost estimate. A nominal inspection fee is charged on all units returned to the factory which are not subsequently repaired.

OPTIONAL CERTIFICATIONS

| | | | |
|--|---|--|---|
| <p>555_TF_(A) [All product ≥300 PSIS]</p>  <p>APPROVED</p> <p>INTRINSICALLY SAFE FOR USE IN CLASS I, II, III, DIV. 1, GROUPS A, B, C, D, E, F, G CLASS I, ZONE 0, AEx ia IIC T4, Ta=80°C, T5, Ta=40°C NEMA TYPE 4X, HAZ. LOC. INSTALL PER GD0667 DUAL SEAL for Process Temps -40°F to 300°F</p> | <p>555_TF_(B) [All product ≤299 PSIS]</p>  <p>APPROVED</p> <p>INTRINSICALLY SAFE FOR USE IN CLASS I, II, III, DIV. 1, GROUPS A, B, C, D, E, F, G CLASS I, ZONE 0, AEx ia IIC T4, Ta=80°C, T5, Ta=40°C NEMA TYPE 4X, HAZ. LOC. INSTALL PER GD0667</p> | <p>555_TF_(C) [All alternate electrical connections]</p>  <p>APPROVED</p> <p>INTRINSICALLY SAFE FOR USE IN CLASS I, DIV. 1, GROUPS A, B, C, D CLASS I, ZONE 0, AEx ia IIC T4, Ta=80°C, T5, Ta=40°C HAZARDOUS LOCATIONS INSTALL PER GD0667</p> | <p>555_NK_</p>  <p>Ex ia IIC T4 Ga (-20°C < Ta < 40°C) Ii=28V, Ii=100mA, Pi<1W Ci=6.0nF, Li=1.2uH LCIE 03 ATEX 6373 X</p>  |
| <p>555_NZ_(A) [All product ≥300 PSIS]</p>  <p>APPROVED</p> <p>NONINCENDIVE FOR USE IN CLASS I, II & III, DIV. 2, GRPS A, B, C, D, F, G CL I, ZN 2, GRP IIC T4, Ta=80°C, T5, Ta=40°C NEMA TYPE 4X, HAZ LOC DUAL SEAL for Process Temps -40°F to 300°F</p> | <p>555_NZ_(B) [All product ≤299 PSIS]</p>  <p>APPROVED</p> <p>NONINCENDIVE FOR USE IN CLASS I, II & III, DIV. 2, GRPS A, B, C, D, F, G CL I, ZN 2, GRP IIC T4, Ta=80°C, T5, Ta=40°C NEMA TYPE 4X, HAZ LOC</p> | <p>555_NZ_(C) [ZU option only]</p>  <p>APPROVED</p> <p>NONINCENDIVE FOR USE IN CLASS I, DIV. 2, GRPS A, B, C, D CL I, ZN 2, GRP IIC T4, Ta=80°C, T5, Ta=40°C HAZ LOC</p> | <p>555_TW_</p>  <p>TC RU C-US BH02.B 00653/18 0Ex ia IIC Ga T4: -20°C < Ta < 80°C T5: -20°C < Ta < 40°C METROLOGY CERT: OC.C.30C001.A No 73774</p> |

SPECIAL CONDITIONS FOR USE

| Certificate | Type | Special Instruction |
|------------------------|-------------------------|---|
| LCIE 03 ATEX 6373 X-03 | ATEX Intrinsically Safe | The equipment must only be connected to certified intrinsically safe equipment. This combination must be compatible as regards intrinsic safety use |

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