2500/2520 Automatic Tank Gauge

Simple and reliable liquid level measurement for bulk storage applications

2500 ATG (foreground) 2520 ATG (background)

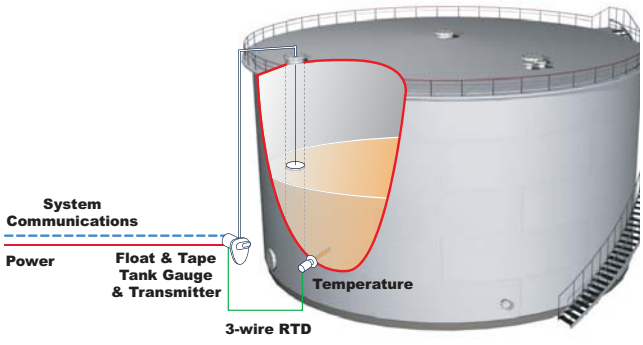
Highlights

- Low cost, continuous measurement – up to 0.2” (4 mm) accuracy
- No power required for continuous operation
- Meets API Chapter 3.1B regulations for inventory control applications
- Easy to read display – metric or imperial in decimals or fractions
- Wide variety of installation kits and materials available
- Mounting for optional transmitters or limit switches
- 2520 ATG High pressure version available - 150, 220 or 300 PSI gauge
- Floats available for standard, interface, or stilling well applications
- ATEX approved for use in potentially explosive atmospheres
- Optional Negator Cassette for reduced maintenance and increased safety

Application

The 2500 series of Automatic Tank Gauges (ATG) are mechanically operated, float and tape instruments designed to provide continuous liquid level measurement in bulk storage applications.

The measured level is displayed using a dial and counter built into the gaugehead. The 2500 ATG has many product options that allow it to be installed on the tank roof or at the tank side (at grade), which would facilitate ground level reading by the operator. If electronic transmission of level data or temperature measurement integration is required in the control room, then the gauge can be fitted with an optional tank gauging transmitter.



Example Tank Gauging System

Operation

The 2500/2520 Automatic Tank Gauges (ATG) are designed to provide continuous liquid level measurement for bulk storage applications.

The 2520 High Pressure Automatic Tank Gauge is designed to provide continuous liquid level measurement of products stored in pressurized vessels. The 2520 provides the specific considerations or options for installation on high pressure vessels.

The level measurement is displayed using a dial and counter built into the gaugehead. The gaugehead can be installed on the tank roof or at the tank side (at grade), which would facilitate ground level reading by the operator. If electronic transmission of level data or temperature measurement integration is required in the control room, then the gauge can be fitted with an optional tank gauging transmitter.

As standard, the 2500 ATG utilizes a large stainless steel float that is attached to the stainless steel perforated tape to detect the liquid level. The float follows the liquid level as it rises and falls due to the constant pullback tension provided by a powerful negator spring or cartridge motor. The precisely perforated tape engages pins on a sprocket wheel that in turn drive the counter assembly. This simple design and operation allows the gauge to perform with negligible maintenance throughout its working life.

Due to high pressure conditions, the 2520 ATG utilizes a magnetic drive that operates the dial reading mechanism. This drive provides a positive seal-off of the counter compartment and the transmitter housing, eliminating danger of glass breakage, loss of product and the escape of vapors, making it an important safety feature for both personnel and plant facilities.

Installation Guidelines

Various installation options and accessories are available to suit user installation requirements. The following information should be used as a guide only; please refer to the operation and maintenance manual for complete installation instructions.

All parts of the gaugehead, tape and float should move freely to reduce wear and maintenance. This section recommends general considerations when installing a float and tape operated tank gauge.

In-service vs. Out-of-service Installations

For in-service and out-of-service installations, how a guidewire is anchored at the tank bottom and welding parts to or in the tank are major considerations.

Floating Roof Tank Installations

In floating roof tank installations, it is recommended that gauges be installed in a floatwell, rather than attaching the tape directly to the tank roof. The floatwell should contain a baffle to prevent the float from escaping, but also allow sufficient product movement to equalize the liquid level. No tape should be exposed, outside of the roof or pipework. If any section of the tape is currently exposed it should be replaced with a stainless steel, flexible cable. This will reduce measurement error due to winddrift. The connector between the tape and cable should not run over a conduit elbow (or pulley).

Note! An internal floating roof is often referred to as a "Pan", e.g. a cone roof tank with a pan and floatwell.

Guidewires

Varec recommends guidewire installations for the 2500 and 2520 ATGs with standard guidewire centers of 17" (432 mm) when a standard 14.5" (368 mm) diameter Type 316 stainless steel hollow shell float is used. Guidewires provide stability for the float during turbulent conditions and provide increased accuracy by reducing the horizontal movement of the float across the surface of the product. The guidewires should be installed centered and free of twists or kinks. Check the movement of the float for friction or impended movement before final operation.

Note! Varec recommends guidewire installations or stilling well installations where possible.

Guidewire Anchors

Varec provides two options for tank bottom, guidewire anchors, in-service and out-of-service anchors. The in-service anchor (weight) hangs from the roof to a level just above the tank bottom. The out-of-service anchor can be welded to the tank bottom. See the accessories below for further details. Varec top guidewire anchors can be screwed or welded into the tank roof, maintenance hatch or manhole cover.

Support Brackets

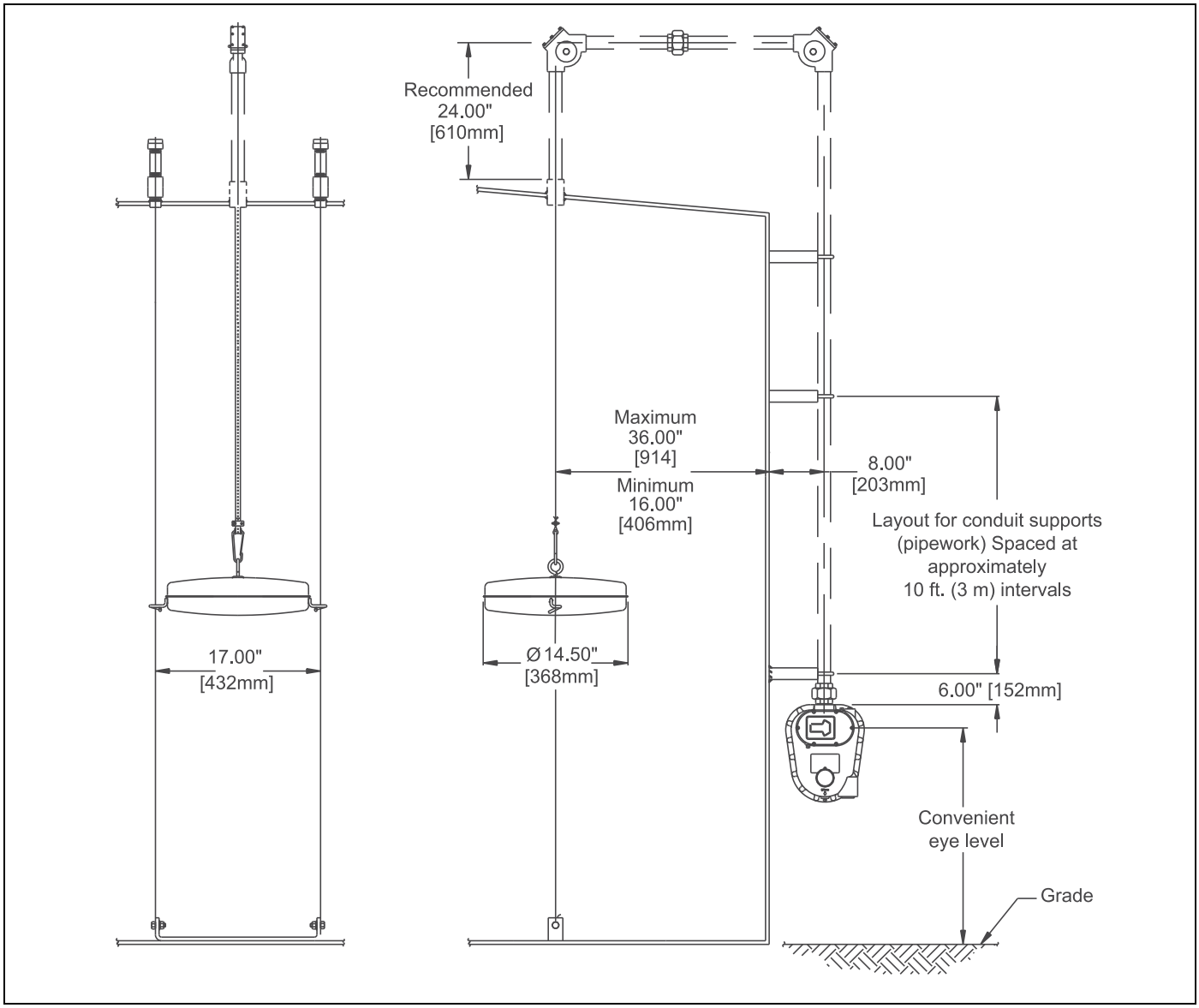
"A" frame brackets support the conduit (pipework) that carries the tape. These brackets can be welded or bolted to the tank and should be placed at regular intervals (approx. 10ft or 3 meters) to provide uniform support. The pipework should be held rigidly in place and correctly aligned so that the tape does not touch or rub the internal pipework.

Tank Roof Entry

Varec can provide manhole or inspection covers for ease of installation and maintenance of the float, tape and guidewires. Tape conduit and guidewire anchor entries into the tank roof should be near an existing manhole cover or be made through a manhole cover. See accessories below for further details.

Float Grounding Cable

Varec provides a grounding cable for the float to prevent the build-up of static electricity.



Example details of a cone roof tank installation. Note that measurements may vary depending on the specific tank type and installation.

Installation Options

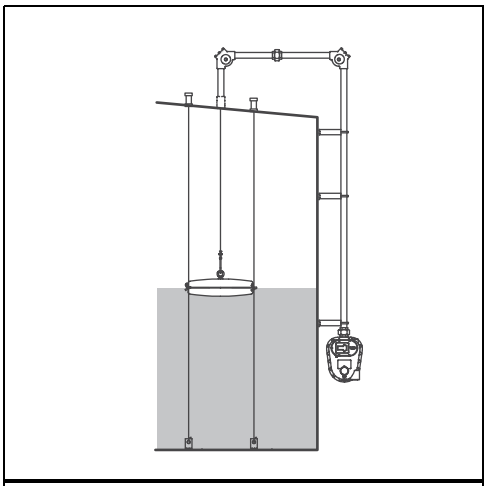
Various accessories are provided, depending on the installation type selected, in the product order codes.

Cone Roof Tank

Order Code T01, T11, T21, T22, T23, T24, T31, T33, T34 T41, T42

Installation parts supplied include:

- 90° Elbow assembly (x2)
- Gauge 'U' bolt kit
- Guidewire bottom anchor
- Guidewires
- Support bracket (x6)
- Gaugehead and tape
- Float
- Guidewire top anchors (x2)
- Tape connector

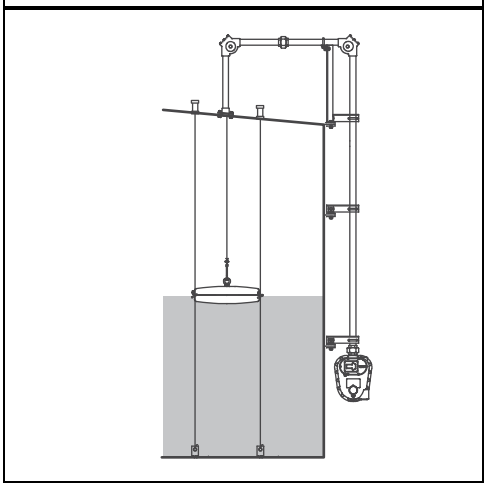


Bolted Tank

Order Code T05, T15

Installation parts supplied include:

- 90° Elbow assembly (x2)
- Guidewire bottom anchor
- Guidewires
- Support bracket assembly
- Support bracket (x7)
- Gaugehead and tape
- Float
- Guidewire top anchors (x2)
- Tape connector
- 1-1/2 Deck flange

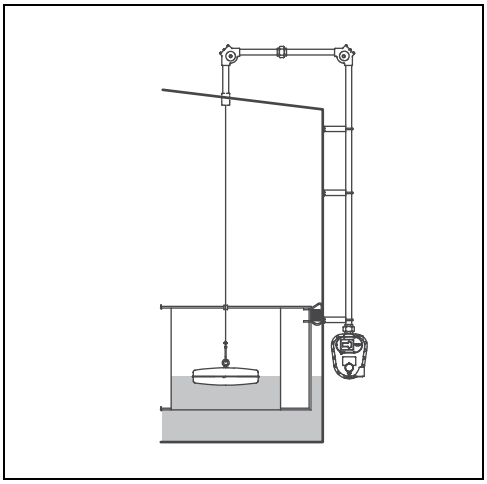


Cone Roof Tank with Pan and Floatwell

Order Code T02, T12

Installation parts supplied include:

- 90° Elbow assembly (x2)
- Gauge 'U' bolt kit
- Support bracket (x6)
- Gaugehead and tape/cable
- Float
- Tape/cable connectors

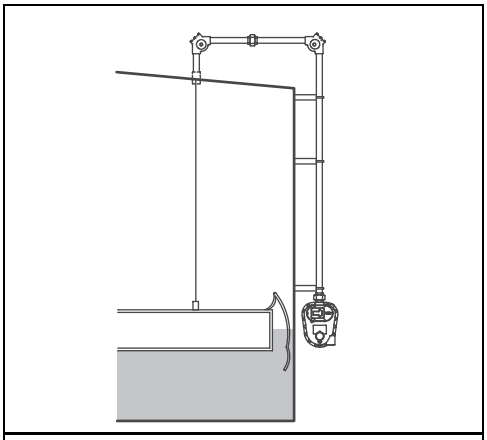


Cone Roof Tank and Pan: No Floatwell

Order Code T07, T17

Installation parts supplied include:

- 90° Elbow assembly (x2)
- Gauge 'U' bolt kit
- Support bracket (x6)
- Gaugehead and tape/cable
- Tape/cable connectors
- Cable to roof connector

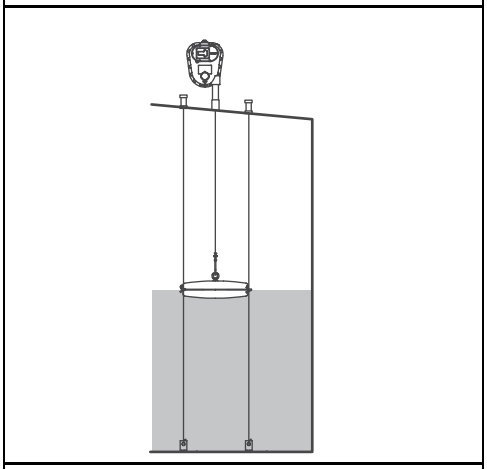


Tank Top Mounting

Order Code T04, T14, T24, T32

Installation parts supplied include:

- Guidewire bottom anchor
- Guidewires
- Gaugehead and tape
- Float
- Guidewire top anchors (x2)
- Tape connector

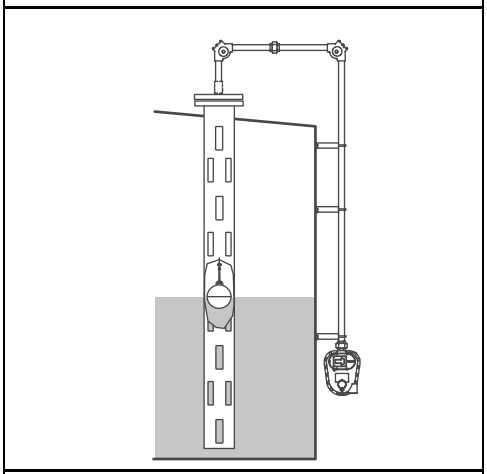


Stilling Well Service Cone Roof Tank 6" Diameter Float

Order Code T55, T56

Installation parts supplied include:

- 90° Elbow assembly (x2)
- Gauge 'U' bolt kit
- Support bracket (x6)
- Gaugehead and tape
- Float
- Tape connector

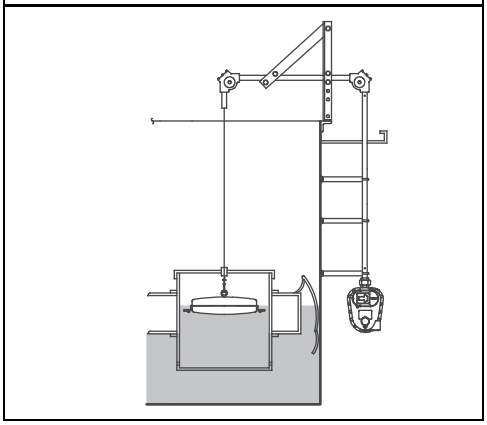


Floating Roof Tank and Floatwell

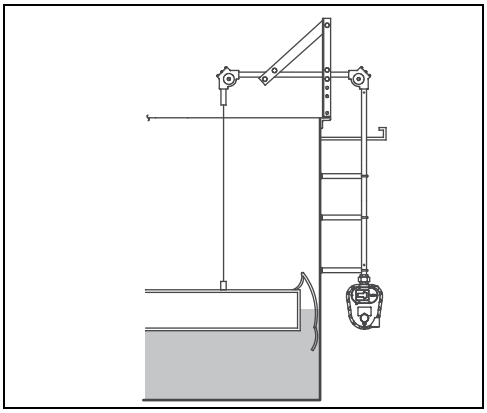
Order Code T03, T13

Installation parts supplied include:

- 90° Elbow assembly (x2)
- Gauge 'U' bolt kit
- Support bracket assembly
- Support bracket (x6)
- Gaugehead and tape/cable
- Float
- Tape/cable connectors



Floating Roof Tank: No Floatwell

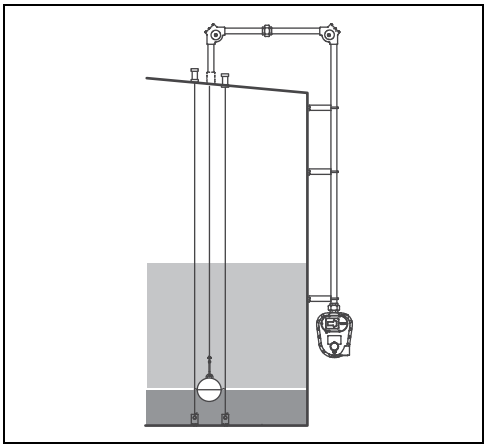


Order Code T06, T16

Installation parts supplied include:

- 90° Elbow assembly (x2)
- Gauge 'U' bolt kit
- Support bracket assembly
- Support bracket (x6)
- Gaugehead and tape/cable
- Tape/cable connectors
- Cable to roof connector

Interface Service

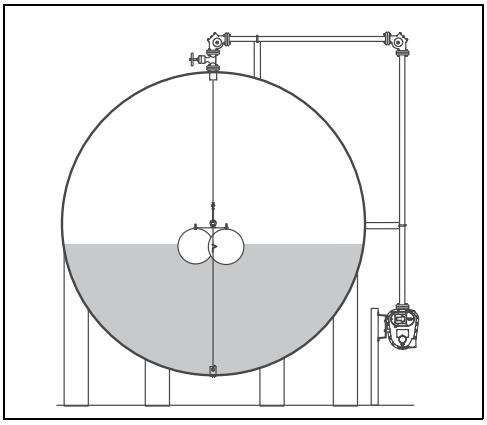


Order Code T51, T52, T53, T54

Installation parts supplied include:

- 90° Elbow assembly (x2)
- Gauge 'U' bolt kit
- Guidewire bottom anchor
- Guidewires
- Support bracket (x6)
- Gaugehead and tape
- Interface float
- Guidewire top anchors (x2)
- Tape connectors

Sphere Tank to 16ft (4.9 m) or Horizontal Cylinder Tanks

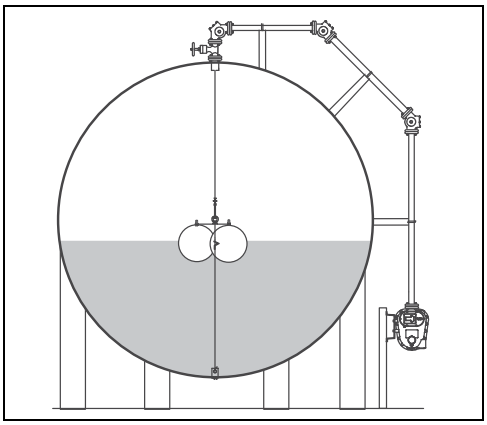


2520 ATG Order Code T01, T05

Installation parts supplied include:

- 90° Elbow assembly (x2)
- Guidewire bottom anchor
- Guidewires
- Support bracket (x2)
- Gaugehead and tape
- Float
- Guidewire top anchors (x2)
- Tape connector
- MTG bracket

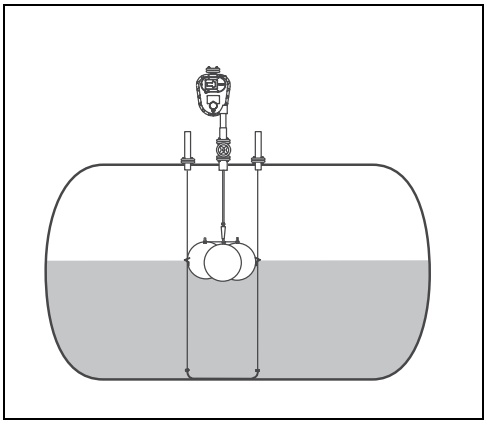
Sphere Tank to 48ft (14.6 m) or Horizontal Cylinder Tanks



2520 ATG Order Code T02, T06 - Installation parts supplied include:

- 90° Elbow assembly (x1)
- 45° Elbow assembly (x2)
- Guidewire bottom anchor
- Guidewires (x3)
- Support bracket
- Gaugehead and tape
- Float
- Guidewire top anchors (x2)
- Tape connector
- MTG bracket

Top Mounting for Sphere or Horizontal Cylinder Tanks

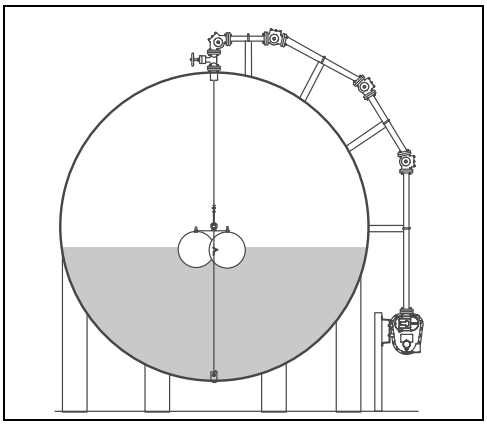


2520 ATG Order Code T03, T07

Installation parts supplied include:

- Guidewire bottom anchor
- Guidewires
- Gaugehead and tape
- Float
- Guidewire top anchors (x2)
- Tape connector

Sphere Tank to 60ft (18.3 m) or Horizontal Cylinder Tanks



2520 ATG Order Code T04, T08

Installation parts supplied include:

- 90° Elbow assembly (x1)
- 30° Elbow assembly (x3)
- Guidewire bottom anchor
- Guidewires
- Support bracket (x4)
- Gaugehead and tape
- Float
- Guidewire top anchors (x2)
- Tape connector
- MTG bracket

Model Options

English and Metric Configurations

Varec provides the following three measurement and display configurations:

- English fractional - feet/inches/16ths
- English decimal - feet/inches/10ths
- Metric configurations - meters/10ths/100ths

English reading gauges are manufactured with a reversible fractional/decimal dial. For example, if the customer desires a decimal level display, the dial can be removed, reversed and reinstalled to show decimal units. All dial/counters reflect product innage. For outage reading requirements, Varec offers a conversion kit (Part #13-08774) for English units. Consult Varec if metric outage in required.

Check Knob

An operation checker, provided as a standard feature on both the 2500 and 2520 ATG, permits your technician to check the instrument for correct operation.

Negator Cassette

The negator cassette improves the performance of your mechanical tank gauge by self-aligning the tape and motor as it provides the constant pullback tension required for the float to follow the liquid level. The cassette increases reliability and reduces maintenance by protecting internal moving parts from pipe debris that could cause stretching or corrosion. It also allows for safer, easier and quicker service as there is no tape to pull out or negator hubs to unwind in your hands.

Float Crank

The float crank allows your operators to manually raise and lower the float. This can be useful during turbulent mixing conditions so that the float or tape is not damaged.

Plug Valve

Varec recommends the use of the 275 Rubber Plug Gate Valve when installing the 2520 ATG on high pressure vessels. This permits the user to seal off tank working pressure from the gaugehead and tape piping system for routine inspection and maintenance. The plug valves have 1½" (38 mm) ANSI RF flanges, Viton-A plug and are rated for either 150 PSI (1034 kPa) or 300 PSI (2068 kPa) gauge pressure.

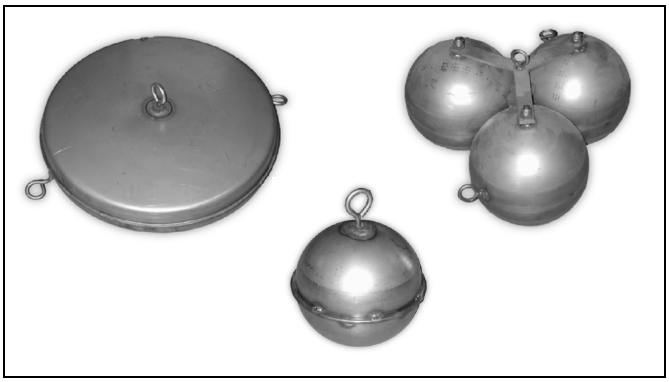
Transmitter Adapters

When directly mounting a transmitter or SPDT cam-operated limit switch to the 2520 ATG, Varec recommends the use of a 2581 (Oil Tight) Transmitter Adapter.

Floats

The 2500 ATG is provided with a standard 17” (432 mm) diameter Type 316 stainless steel hollow shell float. Depending on the type of service kit selected, moderate, severe or extreme, one of the floats may be supplied shown in the table below.

The 2520 ATG is provided with a standard 8" (203 mm) diameter multi-sphere 316 stainless steel float. To ensure the highest possible measurement accuracy, the specific gravity of the product being measured is required to properly adjust the weight of the float.



Standard 2500 ATG flat hollow shell float (left), Standard 2520 ATG Multi-sphere float (middle), 6" interface float (right)

2500 ATG Service Kit Materials

Description	Standard	Moderate	Severe	Extreme (NaOH)	Extreme (H_2SO_4)
Gaugehead	Aluminum	Aluminum	Cast iron	Cast iron	Cast iron
Elbow assembly	Aluminum	316 S.S.	Cast iron	Cast iron	Cast iron
Top anchors	Steel	316 S.S.	Steel	Steel	Stl/Carp. 20
Guidewire weight	Steel	316 S.S.	316 S.S.	Monel	Carp. 20
Guidewires, Perforated tape & Standard float	316 S.S.	316 S.S.	316 S.S.	Monel	Carp. 20

2520 ATG Service Kit Materials

Description	Material
Gaugehead	Cast carbon steel ASTM A 216, WCB
Counter housing & cover	Cast Aluminum
Sprocket, Motor Storage and Tape storage sheaves	Cast Aluminum
Negator spring, Perforated tape and Sprocket Pins	Type 301, 303 or 316 stainless steel
Bearings	Stainless steel

Floats

Part #	Material	Net Weight	Size
BM9074-000	316 S.S.	8.8 lb (4 kg)	17” (432 mm) Flat
BM12339-000	Carp. 20	10.7 lb (4.9 kg)	17” (432 mm) Flat
BM12338-000	Monel	10.5 lb (4.8 kg)	17” (432 mm) Flat
BM12411	316 SS	11 lb	8" (203 mm) Multi-sphere
BZ17777-006	316 SS	Depends on specific gravity of product - contact Varec	8" (203 mm) Sphere (interface)
BZ17782-006	316 SS		6" (152 mm) Sphere (interface)
BZ17783-006	316 SS		10" (254 mm) Sphere (interface)
BZ17785-006	316 SS		Spherical float, 13" - 17" guides
BZ17786-006	316 SS		Spherical float, 8.5" - 13.5" guides
P29-43	Fibre glass	9 lb	17" (432 mm) Flat

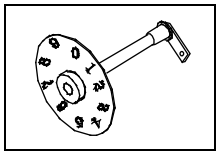
Conduit Elbows

Part #	Angle	Description	Pressure Rating	Conduit Material	Wheel Material
BM3661	90°	Elbow	150 PSI (1034 kPa) gauge	Cast steel	316 SS
BM3491	90°	Elbow	300 PSI (2068 kPa) gauge	Cast steel	316 SS
BM3490	45°	Elbow	300 PSI (2068 kPa) gauge	Cast steel	316 SS
BM3489	30°	Elbow	300 PSI (2068 kPa) gauge	Cast steel	316 SS
06-08564	90°	Elbow	Atmospheric	Aluminum	Delrin
06-07726	90°	Elbow	Atmospheric	Aluminum	316 SS
BM4675	90°	Elbow	Atmospheric	Cast iron	316 SS
BM5074	90°	Elbow	Atmospheric	316 Stainless steel	316 SS
BM3480	135°	Elbow	Atmospheric	Aluminum	Delrin

BM3481	180°	Elbow	Atmospheric	Aluminum	Delrin
BM3621	NA	Tape carrier	Atmospheric	Aluminum	Delrin
BM3479	45°	Elbow	Atmospheric	Aluminum	Delrin
BM12343	30°	Elbow	150 PSI (1034 kPa) gauge	Cast steel	316 SS
BM3662	45°	Elbow	150 PSI (1034 kPa) gauge	Cast steel	316 SS

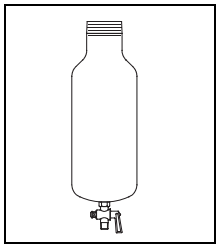
Accessories

Gauge Calibrator Assembly



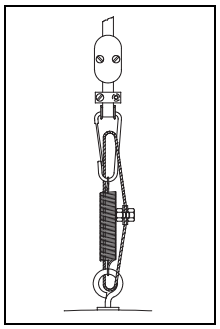
The Gauge Calibrator allows level transmitters with absolute encoders to be calibrated without disassembling the transmitter from the gaugehead. The calibrator is accessed by removing the counter assembly cover. By turning the calibrator, the counter and the transmitter can both be set to the proper level. The dual calibrator can be retrofitted to existing 2500 ATG installations, P/N 13-08948.

Condensate Reservoir



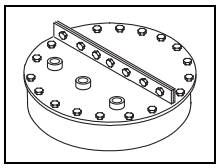
The condensate reservoir is designed to collect condensate that would otherwise accumulate in the gaugehead. Its use is recommended where an excessive amount of condensate could develop or in oil filled gauge applications, P/N DA4O51.

Shock Absorber



The Shock Absorber reduces wear and maintenance on a 2500 ATG by minimizing the transfer of wave energy from the float to the perforated tape and gaugehead components. It prevents the float from becoming detached from the tape by wave action and should always be used in tanks with turbulent conditions near inlet or outlet piping and near a mixer, P/N DA6138.

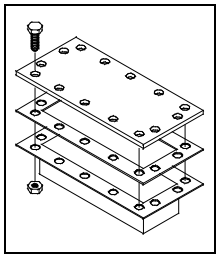
Manhole Cover



This manhole cover (Model 226) allows for in-service installation of the 2500 ATG through a tank's existing manway. each or the three port entries is threaded for simple installation of pipework or guidewire anchors:

- 20" Manhole Cover P/N BM3443
- 24" Manhole Cover P/N BM3607

Inspection Cover



This inspection cover (Model 228) can be installed onto an existing manhole cover, to provide an easily removable inspection plate, P/N BM6746.

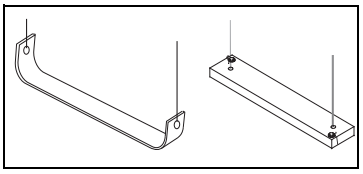
Float Grounding Kit

The Float Grounding Kit positively grounds the float to the tape or cable, P/N 13-10974-006.

Roof Weight Kit

The roof weight is optionally used in floating roof applications to reduce the likely hood that the tape/cable is damaged by a sudden roof drop. It sits on top of the floating roof and is connected to the tape/cable, P/N BA4580-003.

Guidewire Anchor



Varec can supply two different guidewire anchors (also referred to as bottom anchors or weights), depending on the installation type. An anchor that can be welded to the tank bottom is used when the tank is out-of-service:

- Carbon Steel Bottom Anchor P/N AA1025
- Stainless Steel Bottom Anchor P/N 05-08208
- Monel Bottom Anchor P/N 05-08209
- Carpenter 20 Bottom Anchor P/N 05-08210

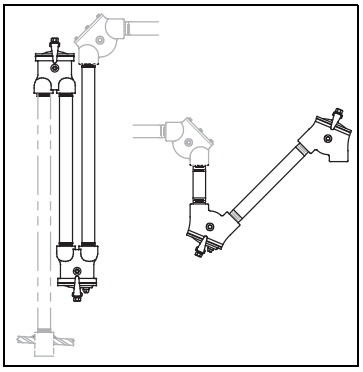
A carbon steel or stainless steel weight can be used as an alternative when the installation is performed while the tank is in-service:

- Carbon Steel 50lbs Weight P/N BA4481
- 304SS 50lbs Weight P/N BA4482-005
- 316SS 50lbs Weight P/N BA4482-006

Conduit Elbows

Conduit elbows reduce wear on the tape and provide various installation options, depending on the tank type. Varec can provide various angles, materials and low/high pressure options.

Conduit Oil Seals



Oil seals designed into the conduit pipework during installation can help reduce wear and maintenance on the tape, conduit and gaugehead parts. The seals also prevent the loss of damaging fumes or corrosive vapors. Depending on the installation, the following oil seals are available:

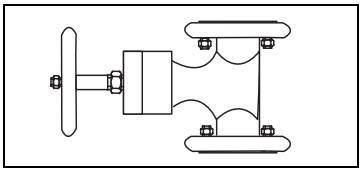
Part Number	Description
10-01994-AAA	Conduit Oil Seat, 135 Degree Aluminum Elbows with Delrin Sheaves, Steel Pipe, 8.5" WC Working Pressure
10-01994-AAA-SS	Conduit Oil Seal, 135 Degree Aluminum Elbows with SS Sheaves, Steel Pipe, 8.5" WC Working Pressure
10-01994-AAA-AP-SP	Conduit Oil Seal, 135 Degree Aluminum Elbows with SS Sheaves, SS Pipe, 8.5" WC Working Pressure
10-01994-BAA	Conduit Oil Seal, 135 Degree Cast Iron Elbows with SS Sheaves, Steel Pipe, 8.5" WC Working Pressure

10-02861-AAA	Conduit Oil Seal, 180 Degree Aluminum Elbows with Delrin Sheaves, Steel Pipe, 27" WC Working Pressure
10-02861-AAA-AP	Conduit Oil Seal, 180 Degree Aluminum Elbows with SS Sheaves, Steel Pipe, 27" WC Working Pressure
10-02861-AAA-SS	Conduit Oil Seal, 180 Degree Aluminum Elbows with SS Sheaves, SS Pipe, 27" WC Working Pressure

Teflon Tape Wipe

Generally used with the conduit vent, the Tape Wipe (Model 2546) can also be used alone. The Tape Wipe mounts in the conduit between the top of the tank and the first elbow and removes excess residue from the tape. It minimizes vapor loss from the tank into the conduit and helps prevent vapors and liquids from contaminating the gaugehead, P/N BA13924.

Plug Gate Valve

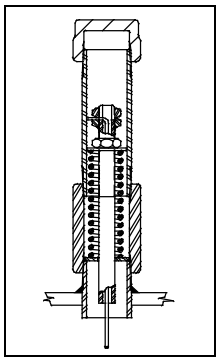


Varec recommends the use of the 275 Rubber Plug Gate Valve when installing the 2520 ATG on high pressure vessels. This permits the user to seal off tank working pressure from the gaugehead and tape piping system for routine inspection and maintenance. The plug valves have 1-½" (38 mm) ANSI RF flanges and are rated for 150 PSI (1034 kPa) or 300 PSI (2068 kPa) gauge pressure utilizing a Viton-A Plug.

Part Number	Description
2751V	1-1/2 150 PSI (1034 kPa) Gauge Plug Valve
2752V	1-1/2 300 PSI (2068 kPa) Gauge Plug Valve

Guidewire Top Anchors

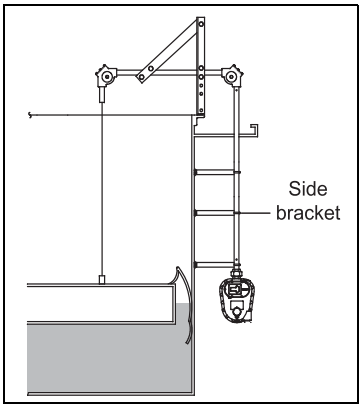
Guidewire top anchors provide a point on the tank roof to connect the guidewire during installation. The internal spring provides a constant tension on the guidewire, which reduces horizontal movement of the float due to turbulent conditions. Guidewire top anchors can be screwed or welded directly onto the tank roof or into an existing manhole cover.



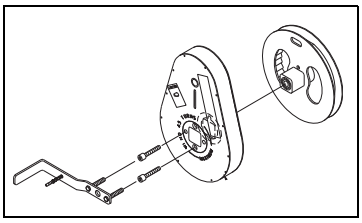
Part #	Material	Pressure rating
BM5200	Steel	Atmospheric
BM5088	316 Stainless Steel	Atmospheric
BM3646	Steel	150 PSI (1034 kPa) gauge
BM3647	Steel	300 PSI (2068 kPa) gauge
BM6472	Steel/Carpenter 20	Atmospheric

Support Brackets

"A" frame brackets support the conduit (pipework) that carries the tape. The steel pipe support bracket is used on the side of the tank, P/N B5643-003, and the upper support bracket assembly is used at the tank top, P/N BM717.



Negator Cassette



The negator cassette improves the performance of your mechanical tank gauge by self-aligning the tape and motor as it provides the constant pullback tension required for the float to follow the liquid level. The cassette increases reliability and reduces maintenance by protecting internal moving parts from pipe debris that could cause stretching or corrosion. It also allows for safer, easier and quicker service as there is no tape to pull out or negator hubs to unwind in your hands.

The negator cassette fits all aluminum Varec 2500 (model B & C) Automatic Tank Gauge and can be ordered as an option.

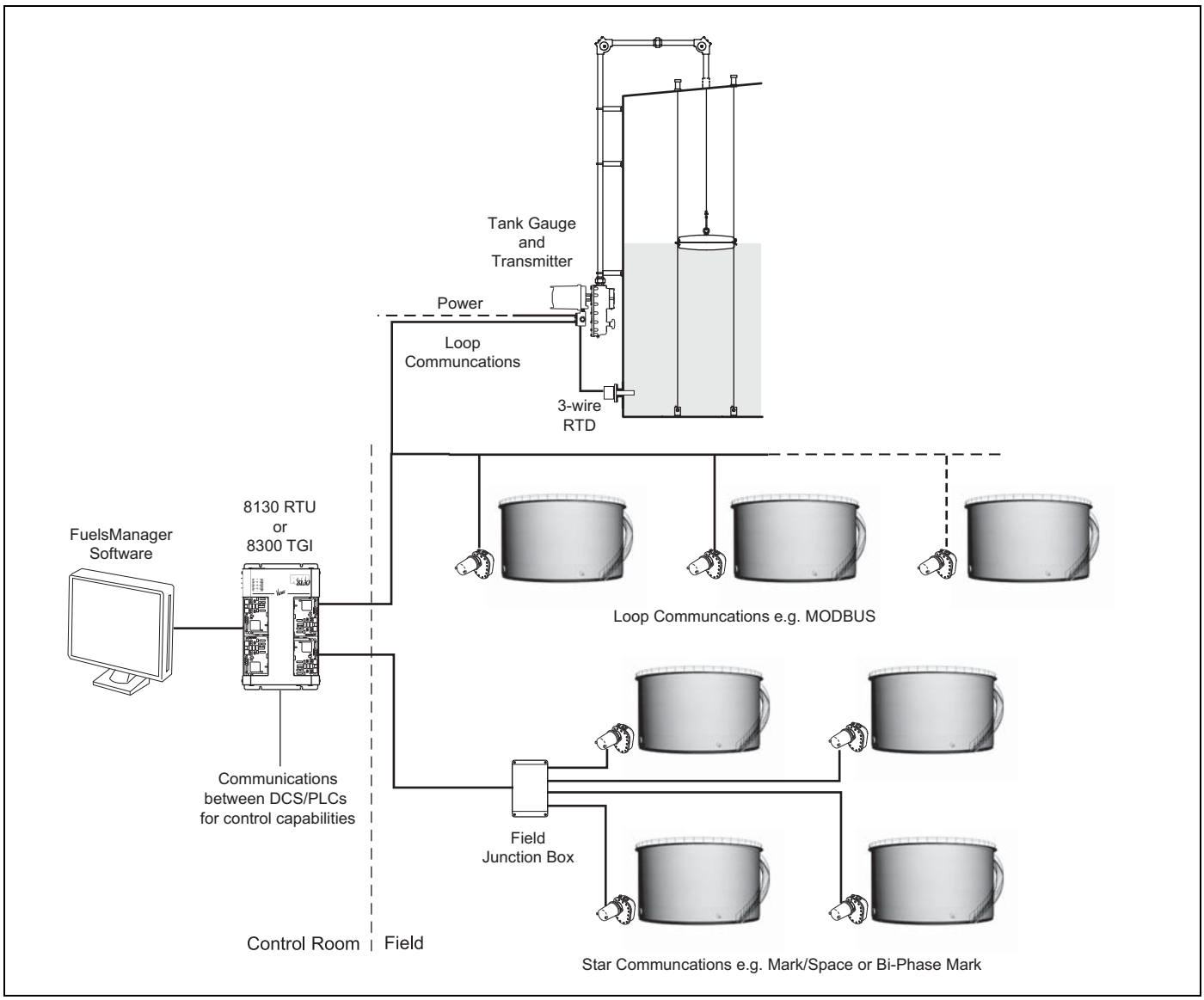
Part Number	Description
13-10652	Negator Motor Cassette Conversion Kit (Shown)
06-10368	Negator Cassette Only

Maintenance Kits

A regular schedule of maintenance is recommended. The frequency of such inspections depends on the specific environmental conditions and operation. Due to the various conditions, even from tank to tank on the same site, installations should be studied and a routine of inspection and maintenance should be planned that is best suited to individual needs.

Part #	Description
13-08766	2500 Basic Maintenance Kit - English
13-08767	2500 Basic Maintenance Kit - Metric
13-08768	2500 Extended Maintenance Kit - English
13-08769	2500 Extended Maintenance Kit - Metric
13-08770	2500 Overhaul/Refurbishing Kit - English
13-08771	2500 Overhaul/Refurbishing Kit - Metric
13-09794-00	Shoulder Bushing Kit, Aluminum Flange
13-08772	Extended Range Modification Kit - English
13-08773	Extended Range Modification Kit - Metric
13-08774	Outage Reading Conversion Kit - English
13-08785	2520 ATG Basic Maintenance Kit - Metric
13-08786	2520 ATG Overhaul/Refurbishing Kit - English
13-08787	2520 ATG Overhaul/Refurbishing Kit - Metric
13-07924	English Counter Kit
13-07925	Metric Counter Kit
BM16541	English to Metric Conversion Kit
BM16540	Metric to English Conversion Kit
13-10974	Float Grounding Kit
13-08768-CSST	2500 Extended Maintenance Kit - English, Negator Cassette
13-08770-CSST	2500 Overhaul Kit - English, Negator Cassette
13-08773	Extended Gauging Range Kit - Metric
13-08784	2520 Basic Maintenance Kit - English
13-08822	2500 Gasket Kit
13-09044	2520 Gasket Kit
13-09794-01	Shoulder Bushing Retrofit Kit, SS Flange
BM4547	Delrin Sheave Kit (includes sheave, shaft, and acorn nuts)
13-05060	Back Cap Replacement Kit, Aluminum
13-07526	SS Sheave Kit (includes sheave, shaft, & acorn nuts)
13-08560	Elbow Rebuild Kit, Delrin Sheave, Low Pressure
13-08560SS	Elbow Rebuild Kit, SS Sheave, Low Pressure
BA4580-003	Floating Roof Weight Kit
BM19900-100	2520 Model 2581 Oil Tight Adapter
BM19900-100	2500 Model 2581 Oil Tight Adapter
BM19900-100	Model 2581 Oil Tight Adapter

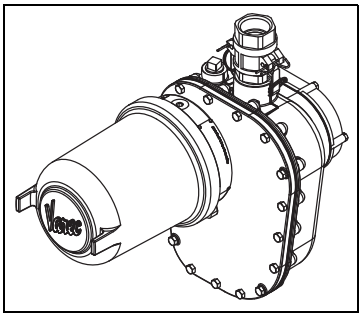
System Integration



2500 ATG & 2900 FTT System Diagram

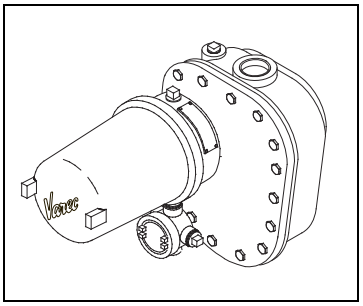
A range of analog and digital tank gauge transmitters is available that mounts directly to mechanical tank gauges. Level measurement data is encoded by the transmitter and output via industry standard communications to the control room. Some transmitters also offer spot temperature measurement integration that can be used for inventory control applications. When a tank gauge transmitter is used, communications and power are required at the gaugehead. Varec transmitters do not require an adapted flange. When connecting third party equipment, a specific adaptor flange, depending on the transmitter, is often required.

2910 Alarm Limit Switch



The 2910 Alarm Limit Switch (ALS) is designed to mount directly to the 2500 Automatic Tank Gauge (ATG) or at a conduit elbow. It provides a contact closure or opening at a pre-set cam position to allow for alarm indications. The 2910 ALS is available with 2, 4 or 6 switches that can be used to activate alarms or relays at any level selected by the user. For further information, refer to product documentation. It is recommended to use a 2581 (Oil Tight) Transmitter Adapter (Part #BM19900-100) when directly mounting a transmitter or SPDT cam-operated limit switch to a 2520 ATG.

2910 Float & Tape Transmitter



The 2910 Float & Tape Transmitter (FTT) provides data from the tank-side to the control room for use in inventory management volumetric calculations. The 2910 FTT utilizes an absolute capacitive encoder to accurately convert the mechanical level measurement from the connected tank gauge. The 2910 FTT is also able to integrate a single temperature sensor and provide cam-operated switches for the indication of alarms or relays. Level and temperature information is transmitted via one of the following field communications protocols:

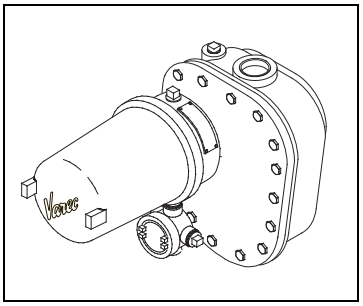
- Mark/Space
- EIA-485 Modbus/GSI Type Modbus
- Tankway (L&J)

2920 Float & Tape Transmitter

The 2920 Float & Tape transmitter (FTT) provides data from the tank side to the control room for use in inventory management applications. It converts mechanical level measurement from the tank gauge, integrates temperature and HART devices, and provides digital inputs and digital outputs for the indication of alarms or drive relays. Level and temperature information is transmitted via one of the following field communications protocols:

- Mark/Space Communications
- EIA-485 Modbus/GSI Type Modbus Communications
- Tankway (L&J) Communications
- Bi-Phase Mark Communications
- Dual 4-20 mA Analog Output

8200 Current Output Transmitter



The 8200 Current Output Transmitter (COT) is a precision analog transmitter designed to relay level information via field communications to the control room. The 8200 COT is designed to provide an increase in current output with a rising level using a 4-20 mA or 10-50 mA signal, which varies in direct proportion to the liquid level.

Technical Specifications

2500 ATG

Product gravity range	0.7 to 1.9 g/cc (700-1900 kg/m³) specific gravity
Service rating	Aluminum — Atmospheric to 2.5 PSI (17.4 kPa) gauge pressure Cast Iron — Atmospheric to 14.9 PSI (102.73 kPa) gauge pressure
Gauging range	0 – 60 ft (18 m)
Extended range	0 – 90 ft (27 m) Fixed roof tanks only, requires extended range kit
Ambient temperature ranges	-40 °F to +185 °F (-40 °C to +85 °C)
Materials	Dependent on installation type and parts selected
Shipping weight	45 lbs. (20.4 kg) to 80 lbs. (36.3 kg), depending on the specific options ordered
Approvals	ATEX II 1 G Certificate Number: FM06ATEX0009 IP66 (optional)

2520 ATG

Product gravity range	0.45 to 0.69 g/cc (450-690 kg/m³) specific gravity
Service rating	Atmospheric to 150 PSI (1034 kPa), 220 PSI (1500 kPa), or 300 PSI (2068 kPa) gauge pressure
Gauging range	0 – 60 ft (18 m)
Ambient temperature ranges	-30 °F to +160 °F (-34 °C to +71 °C)
Materials	Dependent on installation type and parts selected
Shipping weight	180 lbs. (82 kg) to 250 (114 kg), depending on the specific options ordered
Approvals	IP66 - All Models (optional) 150 and 220 PSI (15 Bar) Gauge versions conform to ATEX Ex II 2G T5 (Zone 1)

2500 ATG Order Codes

NOTE!

- For outage reading please specify "OUT", for example N250001-T55 OUT. For outage versions with metric units please contact the factory.
- For asphalt applications please specify "AP", for example N250001-T55 AP.
- All parts originate in U.S. and conform to ATEX; Ex II 1 G, Ta = -40°C to 85°C.
- For an IP66 certified gauge, please specify "IP66", for example N250001-T55 IP66.
- For an Iron Gaugehead for use in pressurized applications up to 14.9 PSI (102.73 kPa), please specify "-PT", for example N250001-T55-PT.

English Configuration

Aluminum Gaugehead with Negator Motor

10	Tank Type	
	T01	Standard service cone roof tank
	T02	Standard service cone roof tank with pan & floatwell
	T03	Standard service floating roof tank & floatwell
	T04	Standard service tank top mounting
	T05	Standard service bolted tank
	T06	Standard service floating roof tank; no floatwell
	T07	Standard service cone roof tank with pan; no floatwell
	T41	Moderate service cone roof tank
	T51	Interface service cone roof tank; 15 min. s.g. differential
	T52	Interface service cone roof tank; 25 min. s.g. differential
	T55	Stilling well service cone roof tank 6" dia. float

N250001 -		Complete product designation

Aluminum Gaugehead with Float Crank

10	Tank Type	
	T01	Standard service cone roof tank
	T05	Standard service bolted tank

N250002 -		Complete product designation

Iron Gaugehead (ATEX Approved)

10	Tank Type	
	T21	Severe service cone roof tank SS316
	T22	Extreme service cone roof tank; monel
	T23	Extreme service cone roof tank; carp.20
	T24	Severe service tank top mounting

N250005 -		Complete product designation

Aluminum Gaugehead with Negator Cassette

10	Tank Type	
	T01	Standard service cone roof tank
	T02	Standard service cone roof tank with pan & floatwell
	T03	Standard service floating roof tank with floatwell
	T04	Standard service tank top mounting
	T05	Standard service bolted tank
	T06	Standard service floating roof tank; no floatwell
	T07	Standard service cone roof tank & pan; no floatwell
	T41	Moderate service cone roof tank
	T55	Stilling well service cone roof tank

N250011 -		Complete product designation

Metric Configuration

Aluminum Gaugehead with Negator Motor

10	Tank Type	
	T11	Standard service cone roof tank
	T12	Standard service cone roof tank with pan & floatwell
	T13	Standard service floating roof tank with floatwell
	T14	Standard service tank top mounting
	T15	Standard service bolted tank
	T16	Standard service floating roof tank; no floatwell
	T17	Standard service cone roof tank with pan; no floatwell
	T42	Moderate service cone roof tank
	T53	Interface service cone roof tank; 15 min. s.g. differential
	T54	Interface service cone roof tank; 25 min. s.g. differential
	T56	Stilling well service cone roof tank 6" dia. float

N250003 -		Complete product designation

Aluminum Gaugehead with Float Crank

10	Tank Type	
	T11	Standard service cone roof tank

N250004 -		Complete product designation

Iron Gaugehead (ATEX Approved)

10	Tank Type	
	T31	Severe service cone roof tank
	T32	Severe service tank top mounting
	T33	Extreme service cone roof tank; monel
	T34	Extreme service cone roof tank; carp.20

N250006 -		Complete product designation

Aluminum Gaugehead with Negator Cassette

10	Tank Type	
	T11	Standard service cone roof tank
	T12	Standard service cone roof tank with pan & floatwell
	T13	Standard service floating roof tank & floatwell
	T14	Standard service tank top mounting
	T15	Standard service bolted tank

Varec, Inc., 5834 Peachtree Corners East, Peachtree Corners (Atlanta), GA 30092 USA
Tel: +1 (770) 447-9202 | Toll Free: +1 (866) 698-2732 | Fax: +1 (770) 662-8939 | www.varec.com

Document Code: TEC011GVAE0716

10	Tank Type	
	T16	Standard service floating roof tank; no floatwell
	T17	Standard service cone roof tank & pan; no float-well
	T42	Moderate service cone roof tank
	T56	Stilling well service cone roof tank

N250013 -		Complete product designation

2520 ATG Order Codes

150 PSI (10.3 Bar) Gauge Steel Gaugehead

10	Measurement Units	
	01	English
	02	Metric

20		Tank Type	
		T01	16 ft. Diameter or sphere or cylinder Tanks
		T02	48 ft. Diameter or sphere or cylinder Tanks
		T03	Top Mounting on sphere or cylinder Tanks
		T04	60 ft. Diameter or sphere or cylinder Tanks

30			Plug Valve	
			0	Plug valve not used
			1	1½" (38 mm) 150 PSI (10.3 Bar) Gauge Plug valve (Viton -A plug)

60				Transmitter Adapter	
				0	Transmitter Adapter Not Used
				1	2581 Transmitter Adapter

N2520-						Complete product designation

220 PSI (15 Bar) Gauge Steel Gaugehead

10	Measurement Units	
	01	English
	02	Metric

20		Tank Type	
		T05	16 ft. Diameter or sphere or cylinder Tanks
		T06	48 ft. Diameter or sphere or cylinder Tanks
		T07	Top Mounting on sphere or cylinder Tanks
		T08	60 ft. Diameter or sphere or cylinder Tanks

30			Plug Valve	
			0	Plug valve not used
			1	1½" (38 mm) 220PSI (15 Bar) Gauge Plug valve (Viton -A plug)

60				Transmitter Adapter	
				0	Transmitter Adapter Not Used
				1	2581 Transmitter Adapter

N2520-						Complete product designation

Note! 150 (10.3 Bar) and 220 PSI (15 Bar) Gauge versions conform to ATEX, Class I, Zone 2 (Ex II 2G T5)

300 PSI (20.6 Bar) Gauge Steel Gaugehead

10	Measurement Units	
	01	English
	02	Metric

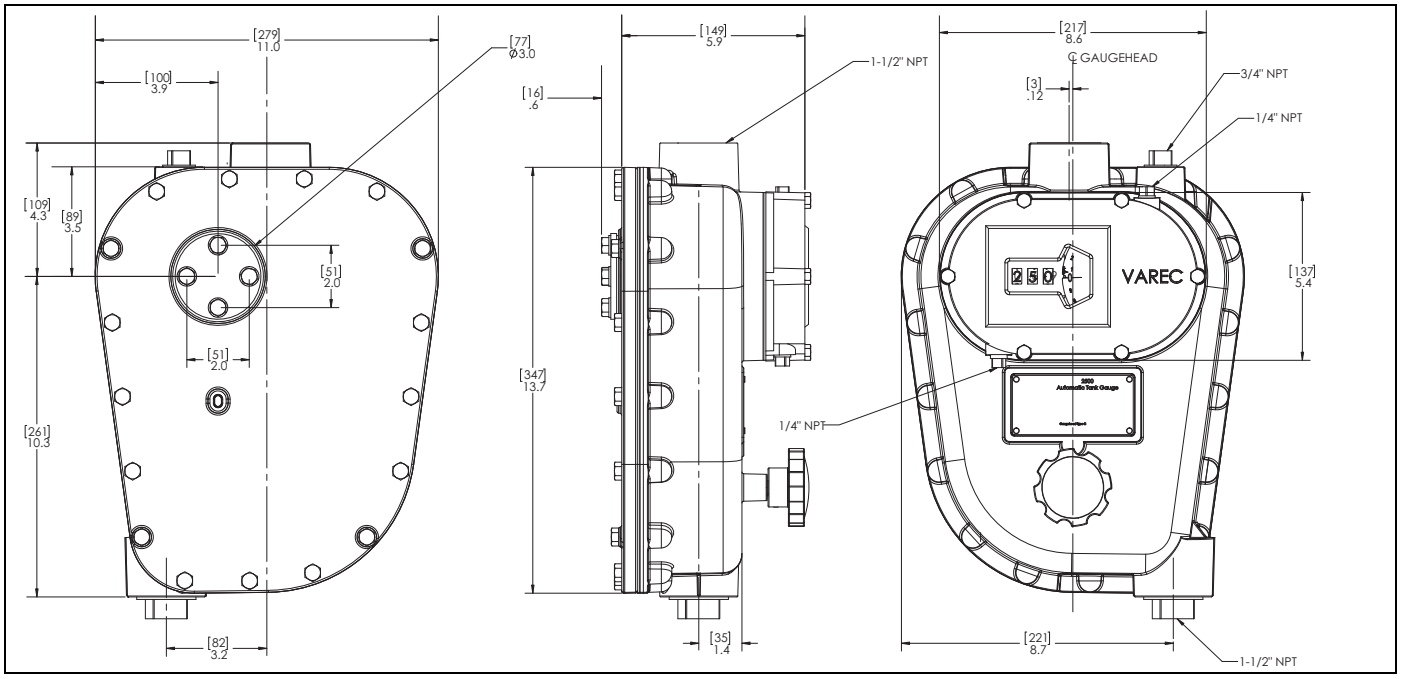
20		Tank Type	
		T05	16 ft. Diameter or sphere or cylinder Tanks
		T06	48 ft. Diameter or sphere or cylinder Tanks
		T07	Top Mounting on sphere or cylinder Tanks
		T08	60 ft. Diameter or sphere or cylinder Tanks

30			Plug Valve	
			0	Plug valve not used
			1	1½" (38 mm) 300PSI (20.6 Bar) Gauge Plug valve (Viton -A plug)

60				Transmitter Adapter	
				0	Transmitter Adapter Not Used
				1	2581 Transmitter Adapter

N2520-						Complete product designation

2500 ATG Product Dimensions



2520 High Pressure ATG Product Dimensions