

Installation and Maintenance Instructions for the TC Tank Level Gauge



Before using the pressure gauge it is highly recommended that this instruction manual be thoroughly reviewed to prevent improper instrument handling and/or implementation. Consult Ashcroft on related topics not covered within this document



Table of contents:

- 1. INTRODUCTION 2**
- 2. APPLICATION 2**
- 3. TRANSPORTATION, STORAGE & UNPACKING PRECAUTIONS 2**
- 4. DRAWING 2**
- 5. INSTALLATION 2**
- 6. MAINTENANCE 3**
- 7. TROUBLESHOOTING 3**

1. INTRODUCTION

Pressure measurement is an important aspect of manufacturing. This manual describes the basic operation of the Ashcroft TC Tank Level Gauge, Designed specifically for vented tanks, the following instructions should be followed to ensure effective operation of the gauge.

[Before Using the Pressure Gauge]

It is highly recommended that this instruction manual will be thoroughly reviewed to prevent improper instrument handling and/or implementation. Consult Ashcroft on related topics not covered within this document.

2. APPLICATION

The TC Tank Level Gauge continuously measures liquid contents of any shape of storage tank or vessel, while its integral capillary line facilitates remote mounting/reading of the indicating dial. This gauge offers internal or external tank mounted seal housing, and multiple mounting options.

This product was designed with a 160mm analog dial. Dials are graduated in units to user specifications and are often marked with radial lines to denote critical tank levels.

The power required to operate the TC Tank Level Gauge is derived from the pressure exerted by the head of liquid within the tank (hydrostatic pressure). This pressure is sensed by a stainless steel diaphragm incorporated into the seal housing; pressure is then conveyed by capillary line to a capsule that drives the indicating pointer.

Deflection of the capsule within the indicator actuates a precision mechanism, which moves the a pointer over a calibrated scale. The transmitting diaphragm, capillary and indicator capsule together form a sealed system, which is thoroughly examined for leaks. No attempt should be made to disconnect the capillary from the instrument, except for mounting; this minimizes the risk of leaking and/or malfunction.

3. TRANSPORTATION, STORAGE & UNPACKING INSTRUCTIONS

3.1 Transportation

Units should be handled with care. Be very careful not to apply vibration to the pressure gauge during transportation. Never hit or drop the pressure gauge.

CAUTION

The instrument may incur damage if dropped or impacted.

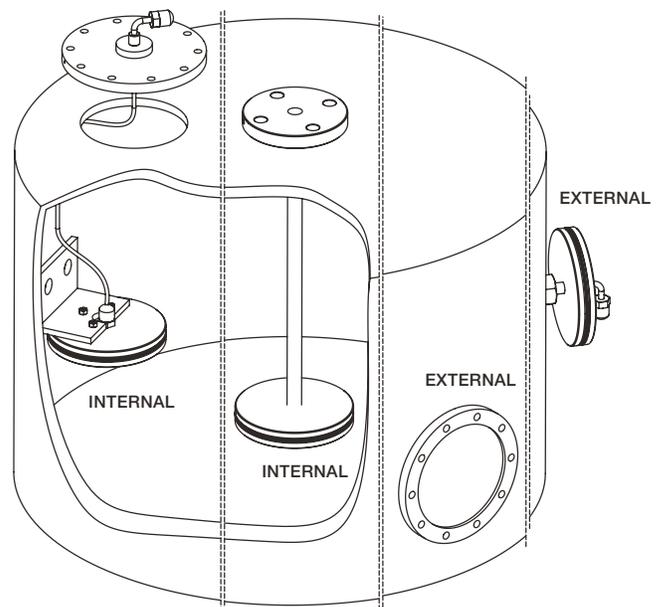
3.2 STORAGE

Store in a temperature-controlled environment free from dust, humidity, and vibration.

3.3 UNPACKING

Handle the instrument with great care during unpacking. Verify the product has not been damaged and that the instrument fulfils the required specifications.

4. MOUNTING



Typical mounting positions on vented tanks

5. INSTALLATION

Considerable care should be taken during installation to prevent damage and ensure proper performance. It is recommended that the case be mounted in position prior to commencing installation; this will reduce the risk of damaging the instrument's capillary line when it is uncoiled.

Note: If practicable, capillary line should only be disconnected from the indicator case during installation.

CAUTION

Protect the capillary line's coupling in the event it needs to be disconnected during routing and installation. Take care when uncoiling the capillary line while not using the case or seal housing as leverage points since this could damage the unit and render it inoperable.

5.1 NOTES

1. Protect the seal housing against the ingress of foreign matter such as sharp particles or this may puncture the diaphragm.
2. Support externally routed capillary line with mounting cleats at intervals of approximately 8 inches (200 mm).
3. Provide mounting cleats at the beginning and completion of each bend of the capillary line.
4. Despite having a stainless steel case, it is recommended that a shield be installed where damage may occur.
5. Capillary line should not be routed with a radius less than 2 inches (5 cm).

CAUTION - DISCONNECTING THE CAPILLARY

Disconnecting the capillary should be avoided unless it is required for routing through a bulkhead or partition wall. If necessary, the following steps should be followed:

1. Disconnect capillary line at the seal housing; use two wrenches (17mm).
2. Mount the gauge at installation.
3. Route capillary line through the wall and fasten with cleats at suggested intervals.
4. Mount the seal housing at tank installation (internal or external).
5. Thread capillary line to seal housing; use two wrenches (17 mm).
6. Gently open valve between the tank and the seal housing.

CAUTION

Avoid any pressure at the seal housing when disconnecting the capillary line; disregarding may lead to damage, or injury.

The instrument case may be installed in any orientation to the seal housing without affecting the gauge reading.

CAUTION

The following should be confirmed prior to installation:

1. Dial references to required specific gravity.

2. Unit capillary line length.

3. Unit's original installation point had not changed in relation to the bottom of the tank.

4. Operating temperature reflects original specification.

5.2 INSTALLING THE SEAL HOUSING (EXTERNAL)

The seal housing is bolted to a flange on the side of the tank (vessel). Installation is measured from the centerline of the connection point to the bottom of the tank; this requirement must exactly match that of the initial specification.

Take precautions to ensure that the machined face of the seal housing is not fouled by any welds or debris.

The diaphragm in the seal housing detects the hydrostatic head of the tank contents through holes or mesh. There should be no restrictions between the flange and tank, so proper flow of tank contents is guaranteed. If not, holes should be drilled.

CAUTION

TO PREVENT DAMAGE TO THE DIAPHRAGM OR SEAL HOUSING, MOUNTING HOLES MUST BE DRILLED BEFORE FITTING THE SEAL HOUSING.

The seal housing may be fitted using an Ashcroft isolating valve. This enables it to be removed without draining the tank (vessel). Be sure that the tank is completely empty if the capillary needs to be reconnected after installing the seal housing.

5.2 INSTALLING THE SEAL HOUSING (INTERNAL)

The seal housing is mounted horizontally on an internal bracket with the diaphragm facing downward at a predetermined height from the bottom of the tank; this measurement must be specified and not altered from that of the initial order.

The connecting capillary line is protected by flexible stainless steel armored tubing routed inside of the tank to a bulkhead flange/fitting on the side or top of the tank. Capillary line should pass through the bulkhead flange or bulkhead fitting and be adequately supported using best industry practices. Use a correctly sized spanner to tighten connections.

CAUTION

NEVER TWIST THE INDICATOR OR SEAL HOUSING TO TIGHTEN CONNECTIONS.

5.3 INSTALLING THE INDICATING CASE

The indicator must be mounted in compliance with standard industry practice and is designed with an integral back flange for wall (surface) mounting.

CAUTION

The gauge must not be subjected to:

- Mechanical shock
- Vibration
- Temperature in excess of the unit's recommended operating temperature

6. MAINTENANCE

This product will provide many years of service if properly installed and maintained. Maintenance operations are limited to periodical cleaning of the indicator face and ensuring that the seal housing is kept clear of sludge or congealed liquid.

It is recommended that electrical tracing for warming be installed with the external type seal housing when employed for use with viscous liquid. Alternatively, the gauge could be positioned close to outflow heaters, etc; this will assure the smooth operation of the seal housing's diaphragm.

The seal housing must be removed from the tank when cleaned of congealed fluid or sludge. Unless the instrument is attached to an isolation valve, it will be necessary to drain (empty) the tank prior to performing this operation.

Where water is being measured and the tank is exposed to the elements, normal winter precautions must be observed to prevent the transmitter being damaged by the formation of ice around the diaphragm.

CAUTION
MAINTENANCE, VERIFICATION AND/OR RECALIBRATION
MUST BE PERFORMED BY AUTHORIZED PERSONNEL

7. TROUBLESHOOTING

Refer to the accompanying table on page 4 to implement appropriate solutions. Please contact Ashcroft if an issue persists.

Installation and Maintenance Instructions for the TC Tank Level Gauge



ISSUES	CHECKPOINTS	CAUSES	SOLUTIONS
The gauge indicates a value above that which is known to be in the tank.	<ol style="list-style-type: none"> 1. Verify that tank dimensions, specific gravity and position of the seal housing are in accordance with specifications. 2. Confirm that the seal housing is not clogged with congealed liquid or sludge. 3. Confirm tank ventilation has not been blocked. 4. Check that the pointer doesn't touch the dial or glass window. 	<ol style="list-style-type: none"> 1. Gauge assembly is mounted to the incorrect tank. 2. The dimensions, specific gravity or the position of the seal housing had been altered/changed. 3. Congealed liquid or sludge on the inside of the tank.. 	<ol style="list-style-type: none"> 1. Install the gauge assembly to the proper tank. 2. Clean the tank ventilation and/or seal housing. 3. Contact Ashcroft if the above measures do not remedy the issue.
The gauge indicates a value below that which is known to be in the tank.	<ol style="list-style-type: none"> 1. Verify that tank dimensions, specific gravity and position of the seal housing are in accordance with specifications. 2. Verify that the capillary line has not been damaged or fractured. 3. Confirm that the seal housing is not clogged with congealed liquid or sludge. 4 Confirm that the indicating pointer registers in accordance to the tank when empty. 5. Check that the seal housing has not been fitted near strong flow, due to liquid movement or pump suction in the tank. 	<ol style="list-style-type: none"> 1. Gauge assembly is mounted to the incorrect tank. 2. The dimensions, specific gravity or the position of the seal housing had been altered/changed. 3. Too much mechanical force had been exerted on the capillary line. 4. Congealed liquid or sludge on the inside of the tank. 5. Placement of the seal housing is not optimal. 	<ol style="list-style-type: none"> 1. Install the gauge assembly to the proper tank. 2. Clean the tank ventilation and/or seal housing. 3. Reinstall the seal housing to a less turbulent position on the tank. 4. Replace the capillary line. 5. Contact Ashcroft if the above measures do not remedy the issue.
The pointer gradually returns to zero.	<ol style="list-style-type: none"> 1. Confirm that the seal housing is not clogged with congealed liquid or sludge. 2. Check that the seal housing has not been fitted near strong flow, due to liquid movement or pump suction in the tank. 	<ol style="list-style-type: none"> 1. Congealed liquid or sludge on the inside of the tank. 2. Placement of the seal housing installation is not optimal. 	<ol style="list-style-type: none"> 1. Clean the tank ventilation and/or seal housing. 2. Reinstall the seal housing to a less turbulent position on the tank. 3. Contact Ashcroft if the above measures do not remedy the issue.
The pointer shows no movement with variation in the liquid level.	<ol style="list-style-type: none"> 1. Confirm that the seal housing is not choked with congealed liquid or sludge. 2. Check that the seal housing has not been fitted near strong flow, due to liquid movement or pump suction in the tank. 3. Check that the capillary line has not been damaged or fractured. 	<ol style="list-style-type: none"> 1. Congealed liquid or sludge on the inside of the tank. 2. Placement of the seal housing installation is not optimal. 3. Too much mechanical force had been exerted on the capillary line. 	<ol style="list-style-type: none"> 1. Clean the tank ventilation and/or seal housing. 2. Reinstall the seal housing to a less turbulent position on the tank. 3. Replace the capillary line. 4. Contact Ashcroft if the above measures do not remedy the issue.
The pointer starts to make a second sweep of the scale.	<ol style="list-style-type: none"> 1. Verify that tank dimensions, specific gravity and position of the seal housing are in accordance with specifications. 2. Confirm tank ventilation has not been blocked. 	<ol style="list-style-type: none"> 1. The dimensions, specific gravity or the position of the seal housing had been altered/changed. 2. Congealed liquid or sludge on the inside of the tank. 	<ol style="list-style-type: none"> 1. Clean the tank ventilation and/or seal housing. 2. Contact Ashcroft if the above measure do not remedy the issue.
Indication is erratic, unstable and varies with temperature.	<ol style="list-style-type: none"> 1. Confirm that the seal housing is not clogged with congealed liquid or sludge. 	<ol style="list-style-type: none"> 1. Congealed liquid or sludge on the inside of the tank. 	<ol style="list-style-type: none"> 1. Clean the tank ventilation and/or seal housing. 2. Contact Ashcroft if the above measures do not remedy the issue.