

GI Series Diaphragm Pressure Gauge Guard INSTRUCTION MANUAL



Please read this Instruction Manual Carefully and Thoroughly for
the Correct and Optimum use of this Product.

Kindly keep this manual in a convenient place for quick reference.

1. About this document

Manual :

- Applies to all series referred to the Installation of the GI Series Gauge Isolator
- Describes safe and proper operation during all operating phases

Operating Company :

- Responsibilities:
 - Always keep this manual accessible where the device is used on the system.
 - Ensure that employees read and observe this document, particularly the safety instructions and warnings, and the documents which also apply.
 - Observe any additional country-specific rules and regulations that relate to the system.

Qualified Personnel

- Mechanics qualification :
 - Always keep this manual accessible where the device is used on the system.
- Responsibility :
 - Read, observe and follow this manual and the other applicable documents, especially all safety instructions and warnings.

1.3 Warnings and Symbols

Symbol	Meaning
	– Immediate acute risk – Death, serious bodily harm
	– Potentially acute risk – Death, serious bodily harm
	– Potentially hazardous situation – Minor injury
	– Potentially hazardous situation – Material damage
	Safety warning sign ► Take note of all information highlighted by the safety warning sign and follow the instructions to avoid injury or death.
	Instruction
1., 2., ...	Multiple-step instructions
	Precondition
	Cross reference
	Information, notes

2. General safety instructions



The manufacturer accepts no liability for damages caused by disregarding any of the documentation or misuse of the equipment

2.1 Intended use

The GI Isolator is used for Transmitting Media Pressure to a Pressure Gauge or Pressure Transmitter

- Use the GI Series Isolator to protect the gauge/instrument from the process media .
- Use the GI Series Isolator with a approved pressure gauge
- Use the GI Series Isolator only with solid free media
- Adhere to the operating limits
- Install the GI Series Isolator in the following manner
 - The Process Connection is connected to the pressurized pipe - See Fig 1 (Item #4)
 - The Pressure Gauge/Instrument is mounted into the Upper Bonnet - See Fig 1 (Item # 1)

2.2 General safety instructions



Read and observe the following regulations before carrying out any work.

2.2.1 Obligations of the operating company

Safety-conscious operation

- Only operate the GI Isolator if it is in perfect technical condition and only use it as intended, ensure that all personnel are aware of safety and risks, and in adherence to the instructions in this manual.
- Ensure that the following safety aspects are observed and monitored:
 - Intended use
 - Statutory or other safety and accident-prevention regulations
 - Safety regulations governing the handling of hazardous substances
 - Applicable standards and guidelines in the country where the pump is operated
- Make personal protective equipment available.

Qualified personnel

- Make sure all personnel tasked with work on the GI Isolator have read and understood this manual and all other applicable documents, especially the safety, maintenance and repair information, before they start any work.
- Organize responsibilities, areas of competence and the supervision of personnel.
- The following work should be carried out by trained technicians only:
 - Installation, Repair and Maintenance work
 - Work on the electrical system

2.2.2 Obligations of personnel

- Observe the instructions on the GI Series Isolator and keep them legible
- Only carry out work on the fitting if the following requirements are met:
 - System is empty
 - System has been flushed
 - System is de-pressurized
 - System has cooled down
 - System is secured against being switched back on again
- Do not make any modifications to the device

2.3 Hazardous media

- When handling hazardous media (e.g. hot, flammable, explosive, toxic, hazardous to health or the environment), observe the safety regulations for the handling of hazardous substances.
- Use personal protective equipment when carrying out any work on the GI series isolator.

3. Layout and Function



Fig 1

- 1 Pressure gauge Connection - 1/4" NPT
- 2 Upper Bonnet
- 3 Process Diaphragm
- 4 Lower Process Connection - 1/2"

Description

The fitting is a diaphragm pressure gauge guard. The fitting is mounted with the bottom section facing the pressurized pipe carrying the medium. The pressure gauge is mounted on the upper part. The separation diaphragm transmits the media pressure to the pressure gauge via a transmitter fluid.

Separation Diaphragm:

- FPM or PTFE Bonded EPDM Diaphragm Seal

Mounting Position:

- Any
- Pressure Instrument or Gauge Preferably in an Upright Position

4. Transport, Storage and Disposal

Unpacking and inspection on delivery

1. Unpack the GI Series when received and inspect it for damage that may have occurred during transportation
2. Report any damage to the manufacturer immediately.
3. For immediate installation, dispose of packaging material according to local regulations.

Storage

NOTICE

Material damage due to inappropriate storage!

► **Store the fitting properly.**

1. Make sure the storage room meets the following conditions:
 - Dry
 - Frost-free
 - Vibration-free
 - Not in direct sunlight
 - Storage temperature +10 °C to +60 °C

Disposal



Plastic parts can be contaminated by poisonous or radioactive media to such an extent that cleaning will not be sufficient.



Risk of poisoning and environmental damage from medium.

- Use personal protective equipment when carrying out any work on the fitting.
- Before disposing of the fitting:
 - Collect escaping medium and dispose separately according to local regulations.
 - Neutralize residues of medium in the fitting.
- Remove plastic parts and dispose of them in accordance with local regulations.
- Dispose of fitting in accordance with local regulations.

5. Installation and connection

Preparing for installation

Check operating conditions

1. Ensure the GI Series Isolator is suitable for the purpose intended:
 - Materials used (→ Type plate).
 - Medium(→ Order and design data).
2. Ensure the required operating conditions are met:

Resistance of the materials of the body, process diaphragm a to the medium (→ Check Chemical Resistance Guide).

- Materials used (→ Type plate).
- Medium (→ Order and design data).

2. Ensure the Required Operating conditions are met:

- Chemical Resistance of the materials of the body, separation diaphragm and seals to the medium (→ Check Chemical Resistance Guide).
- Media temperature (→ Data sheet).
- Operating pressure (→ Data sheet).

3. Consult with the manufacturer regarding any other use of the device.

Check the Installed Condition of the GI Series Isolator

- ▶ Check the installed condition of the fitting and depending on the situation proceed as follows:
 - Ensure GI Series Isolator has been properly filled with the transmitter fluid and pressure gauge has been installed properly

Planning pipelines



Risk of poisoning and environmental damage from medium.

Leaks due to impermissible pipework forces.

- ▶ Ensure that the fitting is not subject to any pulling or thrusting forces or bending moments.

1. Plan pipes safely:

- No pulling or thrusting forces
- No bending moments
- Adjust for changes in length due to temperature changes (compensators, expansion shanks)
- Optional flow direction
- Optional installation position and direction

Installing the fitting



Before installation in the pipeline, the GI Series Isolator must be filled and the pressure gauge must be filled and mounted. Follow the section drawing for assembly Use the recommended transmitter fluid

Fill the fitting

The fitting must be filled

The compressed air supply must be available

1. Fill the upper chamber(item #2) with suitable transmitter fluid. Ensure there are no air bubbles trapped inside chamber

NOTICE

Damage to the Process Diaphragm due to lack of Transmitter Fluid!

- ▶ Before commissioning, make sure that the GI Series isolator is Sufficiently Filled with Transmitter Fluid.

Damage to the Process Diaphragm Using Compressed Air!

- ▶ Apply Compressed Air to the fitting only for Very Short Periods of time. When doing so, do not exceed the permissible pressure of the pressure gauge that is used.

2. Screw the Pressure Gauge (1) Clockwise into the Upper Chamber (2) .
3. Rotate the Fitting until the Pressure Gauge (1) is Facing Vertically Downwards.
4. Connect the Compressed Air supply to the Process Connection (Bottom Section) (6).
5. Switch on the Compressed Air Supply and Apply Compressed Air to the Isolator for a Short Period (Short Burst) of time. This will ensure the Transmitter Fluid is Forced into the Bourdon Tube
6. Switch Off the Compressed Air Supply and Carefully Detach it from the Isolator .
7. Rotate the Isolator until the Pressure Gauge (1) is in the Upright Position.
8. Unscrew the Pressure Gauge (1) from the Upper Chamber (2).
9. Check the Fill Level in the Upper Chamber (2) and Depending on the Liquid Level proceed as Follows:
 - If the fill level is Sufficient - Liquid Level at Top of Upper Chamber - Continue with Process.
 - OR –
 - If the Fill Level is Too low: Top Up the Transmitter Fluid (4) in the Upper Chamber (2). Repeat Steps 2-9
10. Check the Thread Seal to ensure there are no leaks
 - G Type or BSP: Ensure that the O-ring Seal in Located within the Upper Chamber (See Item 3) .
 - OR –
 - NPT Thread: If Necessary Wrap Sealing Tape Around the Thread of the Pressure Gauge (1).
11. Screw the Pressure Gauge Clockwise into the Upper Chamber (2)
12. Ensure the Pressure Gauge is Zeroed. The Isolator is Now Ready to be Installed

Installing Isolator into Piping Sytem

- ✓ The Pressure Gauge Must Be Mounted on the Isolator
- ✓ The Isolator Must Be Filled with the Transmitter Fluid.
- ✓ The Bourdon Tube of the Pressure Gauge Must Be Filled with the Liquid Transmitter Fluid.

**Risk of Injury or Environmental Damage from Liquid Media.**

Leak due to faulty installation.

- ▶ Installation should only be performed by technicians who have been properly trained

1. Align the Isolator together with the pressure gauge, preferably in a upwards position
2. Install the Isolator into Piping System - Perform Hydrostatic Test

Performing the Hydrostatic Test- Mandatory

Pressure Test using Neutral Medium, e.g. Water.

1. Pressurize the fitting ensuring
 - Test pressure < Permissible System Pressure
2. Check the GI Series for leaks

6. Troubleshooting



Risk of Injury Due to Hazardous or Hot Process Media.

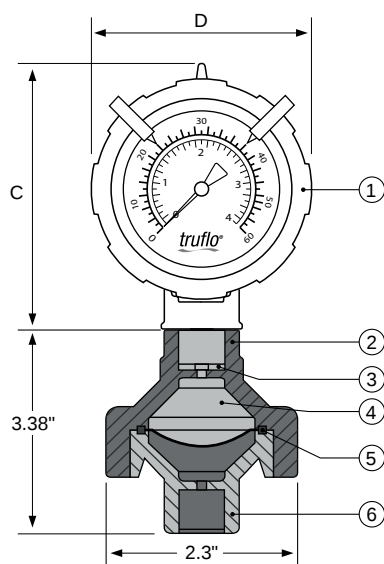
- ▶ Use personal protective equipment when carrying out any work on the fitting.
- ▶ Safely collect the media and dispose of it in accordance with environmental regulations.

Consult with the manufacturer regarding faults which are not identified in the following table, or which cannot be traced to the indicated causes.

Error	Possible cause	Corrective action
Incorrect Measurement value	Air bubbles in the transmitter fluid	▶ Check that the fitting is sufficiently filled with transmitter fluid, top it up if necessary
Medium in the transmitter fluid	Defective separation diaphragm	▶ Change the process diaphragm
Medium is leaking	Defective seal	▶ Check the seal at the connection to the pipeline and tighten or replace

7. Appendix Technical data

Dimensions



PARTS

No.	Part	Materials
1	Pressure Gauge	PP 316 SS
2	Bonnet	PPG PVDF
3	O-Ring	FPM*
4	Liquid Fill	Glycerin Silicone
5	Diaphragm	PTFE Bonded EPDM
6	Lower Chamber	PVC PPG PVDF

* For G-Type Thread Only

OPTIONAL GAUGES

Truflo offers the gauges listed below mounted to isolator and pre-filled with glycerin, silicone or special fluid for chlorine applications. Truflo gauges have a PP plastic housing and the cases are normally filled with either glycerin or silicone for corrosion resistance and dampening.

Truflo GI Series gauge isolators are not recommended for vacuum applications.

OTHER OPTIONS

Flanged Process Connections

DIMENSIONS (INCHES)

Gauge Diameter	Item No.	Gauge Connection	Housing	Bourdon Tube	Window	Accuracy	Dimensions	
							C	D(max.)
2-½"	OBS-xx	¼"	PP	316 SS	Polycarbonate	±0.75% of span	3.6	3.1
2-½" Double-Sided	OBS-DGOxx-	¼"	PP	316 SS	Polycarbonate	±0.75% of span	3.6	3.1
2-½" Back Mount	OBS--xx-	¼"	PP	316 SS	Polycarbonate	±0.75% of span	3.6	3.1
4-½"	OBS4--xx-	¼"	PP	316 SS	Polycarbonate	±0.5% of span	6.0	6.0

xx denotes the maximum gauge pressure i.e., 30 / 60 / 100 / 160 psi. See data page for recommended working pressures. Other Ranges are available

Upper Chamber Liquid Fill



Icon recommends the following Liquid Transmitter Fluids for Upper Chamber

Transmitter Fluid
Glycol (ethylene glycol) Glycerin Silicone
Antifreeze (such as Glysantine or Aral Antifreeze)
De-mineralized water* \ Halo Carbon

Tightening Torques

Description	Torque
Pressure gauge	Hand-Tight,
Upper Chamber	22 ft-lbs
Process Connection	Hand-Tight

WORKING PRESSURES (psi) *(Non-Shock)

WEIGHTS

Material	10 – 20°C 50 – 68°F	30°C 86°F	40°C 104°F	50°C 122°F	60°C 140°F	70°C 158°F	80°C 176°F	90°C 194°F	100°C 212°F	120°C 248°F	Net Weights Pounds ³
PVC	150	100	80	45	15	-	-	-	-	-	1.0
PP	150	125	100	80	65	45	-	-	-	-	0.7
PVDF	150	150	150	125	105	85	70	60	45	30	1.3

Temperature Ranges : PVC 0 to 60°C (32 to 140°F) / PP 10 to 80°C (50 to 176°F) / PVDF -30 to 120°C (-22 to 248°F)