INSTALLATION AND OPERATION MANUAL

Thermowells

FTW01 & FTW02

Manual scope

Controlled installation, commissioning, operation, shutdown and inspection guidance for the FTW01 screwed and FTW02 flanged thermowell series.

Final supplied configuration and operating limits are governed by the approved order data sheet, approved drawings, nameplate and project procedures.

PRODUCT VISUALS

FTW01
Bar-stock · screwed process connection

FTW02
Pipe-and-bar-stock · bolted flanged connection

Use before work
Read the approved order documents and site procedure before installation or removal.

Safety-led execution
Isolate, de-pressurize, decontaminate and release work only under site controls.

Order authority
The nameplate and approved documentation govern the final supplied product.

MANUAL CONTROL

Use this manual as a controlled work aid.

This manual provides product-family guidance for FTW01 and FTW02 thermowells. It does not replace the approved order data sheet, drawings, nameplate, site operating procedure, permit system, job hazard analysis, or instrument manufacturer instructions.

Series	Field	Confirm against approved order documents
Document	Control	Thermowells Installation and Operation Manual · FTW01 & FTW02
Document number	GUF.IOM.TWL.0826	Revision REV. 01 · issue date 24 Aug 2026
Audience	Users	Qualified installation, operations, maintenance and inspection personnel working under project controls.
Product scope	Models	FTW01 bar-stock screwed thermowells and FTW02 pipe-and-bar-stock flanged thermowells.

Governing-document precedence

Final supplied configuration, materials, dimensions, limits, process connections, accessories, inspection scope and documentation are governed exclusively by the approved order data sheet, approved drawings, nameplate and applicable project procedures. Do not use this manual to infer a rating, dimension, torque, test condition, configuration detail or service suitability.

Before work

Read the product tag, approved data sheet, approved drawing and work package; reconcile any discrepancy before work starts.

During work

Use the site permit, energy-isolation, hazardous-area and protective-equipment requirements.

After work

Return the system only through the approved commissioning or return-to-service procedure.

PRODUCT IDENTIFICATION

Identify the series before selecting a work route.

The connection concept and ordered configuration determine the installation route. Do not use product imagery as dimensional, rating or final-configuration evidence.

FTW01 · Bar stock (screwed)

The product documentation identifies FTW01 as solid bar-stock construction installed through a threaded process connection. Profile terminology includes straight, straight reduced tip, partial taper and full taper.

Visual context only. Verify the delivered process connection, material, bore and insertion arrangement against approved order documents.

FTW02 · Pipe & bar stock (flanged)

The product documentation identifies FTW02 as pipe-and-bar-stock construction with a bolted flanged process connection for longer-length requirements. The flange area is described as full-penetration welded.

Visual context only. Verify flange, facing, finish, material and insertion requirements against approved order documents.

Series	Field	Confirm against approved order documents
FTW01	Instrument categories	RTDs, thermocouples, mechanical thermometers and digital thermometers are listed in the product documentation.
FTW01	Connection and geometry fields	Profile, material, instrument connection, process connection C and bore D.
FTW02	Instrument categories	RTDs, thermocouples, mechanical thermometers and digital thermometers are listed in the product documentation.
FTW02	Connection and geometry fields	Flange & stub material, instrument connection, flange field C, facing, finish, bore, shank material and insertion length U.

SAFETY AND RESPONSIBILITIES

Do not work on a thermowell until the process hazard is controlled.

Thermowells can be connected to pressurized, hot, cold, corrosive, toxic, flammable or otherwise hazardous process systems. The work package and plant procedures control the specific hazard response.

Stop-work conditions

Stop work and obtain engineering or site authorization if the product tag is missing or mismatched; approved documentation is unavailable; the connection, material, insertion arrangement or instrument does not match the work package; the process cannot be made safe; or a damaged, bent, corroded, leaking or altered thermowell is identified.

Stage	Required control	Manual direction
Planning	Work authorization	Confirm the approved work package, permit, isolation plan, hazard assessment, required PPE and escalation route before touching the assembly.
Isolation	Positive isolation	Use the approved site energy-isolation procedure. A closed valve, disconnected signal lead or assumed process condition is not a substitute for the required isolation control.
Pressure and temperature	Safe condition	Depressurize, drain, purge, cool or otherwise make safe as required by the site procedure; verify the safe state by the approved method before opening a process boundary.
Electrical / instrument	Instrument control	Follow the instrument manufacturer and site electrical procedure for de-energization, hazardous-area controls, wiring and reconnection.

Qualified personnel

Installation, removal and inspection shall be performed only by personnel authorized by the site and competent for the specific process, mechanical and instrument tasks.

No field redesign

Do not modify the thermowell, weld on it, machine it, extend it, change its connection, or substitute hardware unless the approved order documentation and responsible engineering authority authorize the change.

RECEIPT, INSPECTION AND STORAGE

Protect identification and sealing surfaces from receipt to installation.

Receipt and storage controls prevent an installation decision from being made against damaged, mismatched or incompletely documented equipment.

Stage	Required control	Manual direction
Receipt	Identity check	Compare the package, tag or nameplate, model and ordered configuration with the approved order documentation. Record and escalate discrepancies before installation.
Visual inspection	Condition check	Inspect accessible external surfaces for transit damage, bent shanks, damaged threads, damaged flange faces, contamination, corrosion, missing protective covers or loose components.
Documentation	Traceability	Retain delivery documentation, approved data sheet, approved drawings, nameplate details and project records in accordance with the site document-control process.
Storage	Protection	Keep the product clean, dry, protected from impact and unauthorized handling, and in a manner that preserves connection and sealing surfaces. Keep protective covers in place until installation.

Lift and support

Support the product by a robust body or approved handling point. Do not lift or carry a thermowell by the sensing shank, tip, instrument connection or attached instrument.

Keep clean

Prevent dirt, moisture, loose packing material and foreign objects from entering open connections. Use clean, approved protection during storage and transport.

Damage escalation

Quarantine and report damaged or suspect product. Do not straighten, re-thread, machine, weld or otherwise repair it without approved engineering disposition.

PRE-INSTALLATION VERIFICATION

Confirm the delivered product and the prepared process interface.

Installation can proceed only when the ordered product, prepared process connection, instrument interface and project execution method are mutually consistent.

Do not infer missing data

This manual does not provide a torque, gasket, bolt, thread sealant, insertion position, orientation, clearance, pressure-test or dimensional specification. Use the approved order data sheet, approved drawings and project procedure for these requirements.

Stage	Required control	Manual direction
Identity	Product match	Confirm series, model, material code, process connection, instrument connection, bore, profile or flange fields, and insertion length where applicable against the approved order documentation.
Interface	Prepared connection	Verify the receiving process connection is the approved type and condition. Check accessible threads, flange faces and adjacent piping/nozzle condition under the project procedure.
Instrument	Fit-up basis	Verify the ordered measurement element and its accessories against the instrument manufacturer instructions and approved project documents.
Execution	Approved method	Confirm the applicable permit, isolation, installation method, tightening procedure, lifting/handling controls, inspection hold points and return-to-service sequence.

Installation release

Release installation only after the responsible personnel confirm that product identity, connection compatibility, safe process condition and the approved work method are aligned.

FTW01 · BAR STOCK (SCREWED)

Install the threaded series only to the approved connection procedure.

FTW01 is identified in the product documentation as a solid bar-stock thermowell installed through a threaded process connection. The final thread form, material, bore and geometry remain order-specific.

Stage	Required control	Manual direction
1	Verify configuration	Confirm FTW01 identity, ordered profile, process connection C, instrument connection and bore D against approved order documents.
2	Prepare interface	Confirm the process-side thread is the approved connection and is clean, undamaged and released for installation by the work package.
3	Assemble	Use only the approved project procedure for any sealant, engagement, tightening tool and torque requirement. Apply force only at the intended connection feature; never use the shank or tip as a lever.
4	Verify position	Confirm the final installed orientation and insertion arrangement against the approved drawing or installation instruction before instrument fit-up.

FTW01 installation control

Product visual only. No installation geometry, tightening point or thread specification is derived from this image.

Do not

Do not force a mismatched thread. Do not apply torque through the instrument, shank or tip. Do not install when the process boundary is not released under site isolation controls.

FTW02 · PIPE & BAR STOCK (FLANGED)

Install the flanged series only to the approved flange-assembly procedure.

FTW02 is identified in the product documentation as pipe-and-bar-stock construction with a bolted flanged process connection. Flange type, size/rating field, facing, finish, materials, insertion length and final arrangement are order-specific.

Stage	Required control	Manual direction
1	Verify configuration	Confirm FTW02 identity, approved flange field C, facing, finish, materials, bore and insertion length U against the approved order documents.
2	Prepare mating interface	Verify the mating flange, face condition, bolt set, gasket requirement and alignment method against the approved drawing and project procedure.
3	Assemble	Use the approved flange-assembly procedure for gasket selection, bolt lubrication, tightening sequence, torque and inspection. Do not impose bending, pipe load or unsupported weight on the thermowell.
4	Verify position	Confirm the completed flange assembly, orientation and insertion arrangement before return to service. Final acceptance is by the approved project procedure.

FTW02 installation control

Product visual only. It is not an approved GA drawing, flange specification or bolt-up procedure.

Do not

Do not use an assumed gasket, bolt size, torque or flange class. Do not weld, machine or modify the flange area in the field without approved engineering authorization.

INSTRUMENT ASSEMBLY AND INTERFACE

Complete instrument work under the approved instrument procedure.

The product documentation lists RTDs, thermocouples, mechanical thermometers and digital thermometers as instrument categories for both series. The final supplied instrument, extension, fittings, cable, seal and electrical arrangement are governed by the approved order documents and instrument manufacturer instructions.

Stage	Required control	Manual direction
Instrument identity	Approved fit-up	Confirm instrument tag, sensor type, stem or element arrangement, accessory requirements and installation method against the instrument documentation and approved work package.
Mechanical assembly	Connection integrity	Use the approved procedure for any fitting, compression connection, sealing element or retention feature. Do not force an instrument into a thermowell or use the instrument as a lever.
Electrical work	Site controls	Perform wiring, grounding, hazardous-area checks, termination, configuration and loop verification only under the relevant site and instrument procedures.
Functional check	Recorded result	Record the required functional verification in accordance with the project commissioning records. Do not characterize a sensor or process response outside the approved procedure.

Mechanical protection

Protect cable, extension and instrument hardware from mechanical strain, vibration, impact and unauthorized adjustment according to the approved installation arrangement.

Instrument authority

The instrument manufacturer instructions control instrument-specific mounting, wiring, configuration, calibration, diagnostics and maintenance. This manual does not replace those instructions.

COMMISSIONING

Return the assembly to service through the approved commissioning sequence.

Commissioning confirms that the completed installation matches the project requirements and is released by the responsible plant authority. This manual does not specify test pressure, leak-test method, acceptance criterion or start-up rate.

Stage	Required control	Manual direction
Pre-start review	Completion confirmation	Confirm mechanical completion, documentation, approved inspections, instrument readiness, removal of temporary protections and closure of open items under the project process.
Boundary verification	Process integrity	Use the approved project procedure to verify the process boundary, connections and any required leak or pressure test. Do not exceed approved limits or substitute a manual-derived value.
Process introduction	Controlled start	Introduce service only under the approved start-up procedure. Where thermal transition, vibration or process transients are relevant, follow the project engineering controls.
Record closeout	Traceable handover	Complete the applicable commissioning, inspection and handover records. Escalate abnormal indication, leakage, movement or mismatch before accepting the assembly.

Design-basis control

Design review reference: ASME PTC 19.3 TW. Where approved order documentation requires thermowell wake-frequency review, this reference is applied as part of the controlled design review. This statement does not constitute a blanket compliance claim or a calculation result for the delivered thermowell.

NORMAL OPERATION

Operate within the ordered application basis and plant procedure.

A thermowell is a process-boundary component. The approved order documents and nameplate define the supplied configuration; the site procedure governs normal operation, monitoring and response to abnormal conditions.

Operate within approved limits

Do not exceed or infer operating limits from this manual. Use the nameplate, approved order data, plant operating envelope and applicable process instructions.

Do not loosen, remove, reposition or instrument-swap a thermowell while the process boundary remains live unless an approved, dedicated procedure explicitly authorizes the work.

Monitor and escalate

Escalate visible leakage, unexpected movement, impact damage, corrosion, loss of identification, abnormal vibration, damaged instrument hardware or a change in process duty that may affect the ordered configuration.

Any change in fluid, temperature, pressure, velocity, connection, instrument, material requirement or installation geometry requires application review against approved documentation.

Live-process restriction

Never treat the thermowell as a removable accessory. It interfaces with the process system; removal, inspection or replacement requires the approved isolation, depressurization, decontamination and work-release sequence.

Identity

Keep the nameplate or identification legible and traceable.

External condition

Observe accessible external condition through normal site rounds; do not perform intrusive work without release.

Application change

Route service changes to responsible engineering before continuing operation.

SHUTDOWN AND REMOVAL

Make the process safe before opening the connection.

Removal must be planned as process-boundary work. The exact isolation, venting, draining, purging, cooling, decontamination and release method is controlled by site procedures and the applicable work permit.

Stage	Required control	Manual direction
1	Plan and authorize	Review the work scope, product identity, process hazards, job hazard analysis, permit, isolation plan, waste/decontamination needs and recovery route for the removed item.
2	Isolate and make safe	Use the approved site procedure to isolate the process, de-pressurize, drain, purge, cool or otherwise make safe. Confirm the required safe state before breaking the process boundary.
3	Remove instrument	Remove or protect the measurement instrument in accordance with its manufacturer instructions and the approved work package. Maintain identification and prevent contamination.
4	Break connection	Use the approved threaded or flanged disassembly procedure. Support the item; do not bend, pry, strike or apply force through the sensing shank or tip.
5	Control removed item	Protect connection surfaces, retain traceability and route the item for inspection, quarantine, repair disposition or disposal under the approved project process.

Zero-pressure confirmation

Opening a connection is prohibited until the approved site method confirms that the relevant process boundary is isolated and safe. Do not rely on presumed isolation or the position of a single valve.

INSPECTION AND PREVENTIVE MAINTENANCE

Inspect to the project plan; escalate conditions beyond external review.

No maintenance interval, repair method, acceptance criterion or inspection scope is confirmed for this product family in the approved product documentation. The project maintenance plan and approved engineering instructions govern the required interval and extent.

Stage	Required control	Manual direction
Routine external review	Project maintenance plan	During authorized site rounds, identify visible external leakage, damage, corrosion, loose instrument hardware, missing identification or abnormal movement and report conditions through the site process.
Event-driven review	Engineering review	After an upset, impact, abnormal vibration, service change, leak event, instrument issue or suspected damage, obtain responsible engineering direction before return to normal service.
Removed-item review	Controlled examination	When removed under an approved procedure, inspect and disposition the item in accordance with the work package and project inspection requirements. Do not create a field acceptance standard from this manual.
Replacement	Order-controlled supply	Use an approved replacement configuration that matches the order requirements. Do not substitute material, connection, bore, profile, insertion length or instrument interface without application review.

Do not repair by assumption

Field welding, machining, straightening, thread restoration, flange alteration or process-boundary repair requires approved engineering and project authorization.

Retain traceability

Retain the product identity and relevant service history when routing a removed thermowell for assessment, disposition or replacement.

TROUBLESHOOTING AND CORRECTIVE ACTION

Respond safely; do not diagnose beyond the available evidence.

The table below directs safe escalation. It does not establish a root cause, rating, inspection result or repair method for the delivered product.

Stage	Required control	Manual direction
Visible leakage	Process-boundary concern	Follow the site emergency or abnormal-operating response. Do not tighten, disassemble or modify a live connection unless an approved procedure explicitly directs the action. Escalate for engineering and maintenance review.
Instrument abnormality	Instrument system concern	Follow the instrument manufacturer instructions and site diagnostic process. Verify tag, wiring and process status only within the authorized work scope; do not remove the thermowell from a live process to investigate an indication.
Physical damage	Mechanical integrity concern	Stop work or restrict operation as required by site procedure. Photograph or record the condition if permitted, preserve traceability and obtain responsible engineering disposition.
Configuration mismatch	Order-document discrepancy	Do not install or return to service. Reconcile the product tag, approved data sheet, approved drawings and work package before proceeding.
Changed service	Application-review trigger	Refer the change to responsible engineering. A new fluid, temperature, pressure, velocity, instrument or process arrangement may require a revised application review.

Escalation principle

Where the condition could affect process containment, measurement reliability or mechanical integrity, the safe action is to follow the site abnormal-operating process and obtain responsible engineering direction rather than attempting an unapproved field correction.

TECHNICAL AND DOCUMENTATION REFERENCE

Use configuration fields to verify the ordered product—not to infer final limits.

The following series fields are confirmed from the product documentation. The final delivered values, dimensions, ratings, materials and installation arrangement are defined by the approved order data sheet, approved drawings and nameplate.

Series	Field	Confirm against approved order documents
FTW01	Profile	Straight, straight reduced tip, partial taper or full taper.
FTW01	Selection fields	Material, instrument connection, threaded process connection C and bore D.
FTW02	Construction	Pipe-and-bar-stock construction with bolted flanged process connection.
FTW02	Selection fields	Flange & stub material, instrument connection, flange field C, facing, finish, bore, shank material and insertion length U.

Design-basis wording

Design review reference: ASME PTC 19.3 TW. Where approved order documentation requires thermowell wake-frequency review, this reference is applied as part of the controlled design review. No calculation result or blanket compliance claim is made by this manual.

Required documents for work

Use the applicable approved order data sheet, approved drawings or GA, nameplate, project installation procedure, permit/isolation package, inspection plan and instrument manufacturer instructions.

Excluded information

This manual does not state pressure-temperature ratings, flange class, nominal sizes, torque values, test conditions, maintenance intervals, material suitability, inspection or certification scope, final geometry, performance values or service life. Obtain those requirements from controlled project documentation.

SERVICE SUPPORT AND GOVERNANCE

Provide a complete product and application basis for support.

For installation support, replacement review or configuration clarification, provide controlled product and project information so the request can be assessed against the approved order basis.

Information to provide

Product identity	FTW01 or FTW02 model, tag/ nameplate information and document references.
Configuration	Ordered material, process/ instrument connection, bore, profile or flange fields and insertion length where applicable.
Application	Relevant service information, operating concern, change history and required project decision.
Documents	Approved order data sheet, approved drawings/GA, photographs if permitted and applicable inspection or work records.

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TECHNICAL SUPPORT

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State the approved document references and site constraints with each request.

Final governing statement

Final supplied configuration, materials, dimensions, limits, process connections, accessories, inspection scope and documentation are governed exclusively by the approved order data sheet, approved drawings, nameplate and applicable project procedures. Product selection and any change in service remain subject to application review.

SOURCE CONTROL

Manual technical scope is controlled by Globe United FTW01/FTW02 product documentation and the approved project documentation referenced above. This manual is issued as product-family operational guidance and must be used with—not in place of—project-specific controlled documents.