Designation: D 6301 – 03

Standard Practice for
the Collection of Samples of Filterable and Nonfilterable Matter in Water[1]

This standard is issued under the fixed designation D 6301; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice is applicable for sampling condensed steam or water, such as boiler feedwater, for the collection of filterable and (optional) nonfilterable matter using 0.45-μm membrane filter (filterable matter) and ion exchange media (nonfilterable matter). As the major filterable containment found in most boiler feedwaters is some form of corrosion product from the preboiler system, the device used for this practice is commonly called a corrosion product sampler.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:* [2]
D 1066 Practice for Sampling Steam
D 1129 Terminology Relating to Water
D 1192 Guide for Equipment for Sampling Water and Steam in Closed Conduits
D 1193 Specification for Reagent Water
D 1971 Practices for Digestion of Water Samples for Determination of Metals by Flame Atomic Absorption, Graphite Furnace Atomic Absorption, Plasma Emission Spectroscopy, or Plasma Mass Spectrometry
D 2332 Practice for Analysis of Water-Formed Deposits by Wavelength-Dispersive X-Ray Fluorescence
D 2777 Practice for Determination of Precision and Bias of Applicable Methods of Committee D19 on Water
D 3370 Practice for Sampling Water from Closed Conduits

D 3864 Guide for Continual On-Line Monitoring Systems for Water Analysis

3. Terminology

3.1 *Definitions*—For definitions of terms used in this practice, refer to Terminology D 1129.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *corrosion product sampler, n*—a device used to collect integrated samples of filterable and (as an option) nonfilterable matter. It consists of a flow totalizer that accurately measures the amount of sample passing through the device and a 0.45-μm pore size membrane filter. Adding a second filter for ion exchange resin impregnated membranes allows for collecting nonfilterable matter.

3.2.2 *filterable matter, n*—includes all matter that is removed by a 0.45-μm pore size filter.

3.2.3 *nonfilterable matter, n*—includes all matter that will pass through a 0.45-μm pore size filter and may be captured on anion, or cation ion exchange membranes, or both.

4. Summary of Practice

4.1 A typical sampling apparatus, or corrosion product sampler, is used to obtain integrated, representative samples of filterable and nonfilterable matter using a 0.45-μm membrane filter and ion exchange membranes. The sampling is accomplished at system operating pressure or after pressure reduction, and sample temperature of ≤50°C. The practice utilizes a modified stainless steel high pressure filter housing to accommodate a 47-mm diameter filter (for filterable matter) and if desired, ion exchange membranes (for nonfilterable matter). The sample collection system (corrosion product sampler) is designed and operated specifically for quantitative collection of filterable and nonfilterable matter. An important feature of the sampler is the flow totalizer, which accurately determines the total volume of sample that has passed through the sampler, regardless of changes in flowrate or pressure during the collection period. Control and pressure reducing valves and metering devices are downstream of the filter housing to eliminate the possible contribution of filterable and nonfilterable matter from these components to the sample stream. Additional flow may bypass the filter housing, so that flows within the sample lines are maintained within required range

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INLET ⬓ QUICK DISCONNECT

BYPASS
PRESSURE
REGULATOR

SAMPLE
ISOLATION
VALVE

RUBBER
BULB (OR EQUIV.)

FLEX HOSE

PRESSURE
INDICATOR

FILTER HOLDER
(MEMBRANE FILTER)

FILTER HOLDER
(ION EXCHANGE MEMBRANES)
(OPTIONAL)

INDICATING
ROTAMETER

PRESSURE
REDUCTION
VALVE

BYPASS
CONTROLLER

PRESSURE
INDICATOR

INDICATING
CONTROLLER
ROTAMETER

FLOW
TOTALIZER
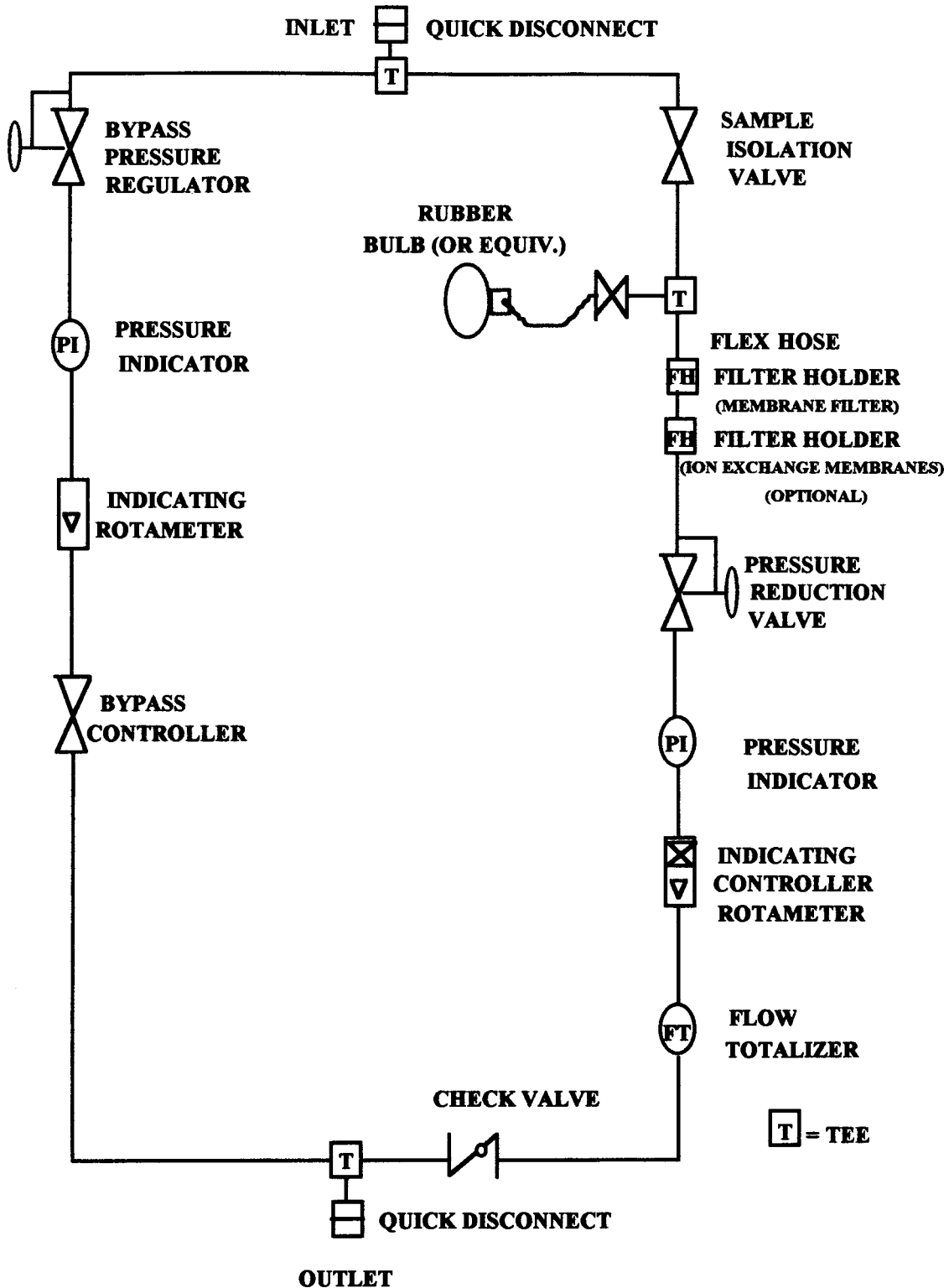
CHECK VALVE

T = TEE

QUICK DISCONNECT

OUTLET

FIG. 1 Simplified Flow Diagram for Corrosion Product Sampler

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