

Boilers and Pressure Equipment Regulations
DIRECTIVE

(Issued pursuant to s.30 of the *Technical Safety Act*)

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SUBSECTION: 45 (c)

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SUBJECT: Low Water Cutoff Devices in Hot Water Systems

The following options will be considered as meeting the intent of CSA B51 and the Boiler and Pressure Equipment Regulations. Manual reset for a low water condition will be required per CSD-1 and NBIC.

Rationale

LWCO Probes; It has been proven by independent testing that LWCO probes can be shorted, fouled and installed incorrectly yet still show as functioning normally during the circuit button test as supplied by the manufacturer. This directive addresses most common systems but alternate compliance applications are still acceptable if proven.

LWCO installed between an acceptable draining system; Long term inspection and use has shown better independent testing while in service with minimal disruption of operation or additional personnel requirements provided annual maintenance is performed.

Standard Probe Types

The circuit button test alone is not recognized as a suitable in-service test; periodic inspections by the department will require an actual low-water condition test

- Low-water probes installed shall be tested by an actual low-water condition whereby the water level is lowered and the probe shuts off and locks out the burner. The boiler may be isolated from the circulation system to accomplish this test but the boiler must remain in the operational condition.
- Probe maintenance shall be performed as per the manufacturer's recommendations.

- Where lowering the boiler water level is undesirable or is not possible during normal operation or re-inspection by the department, additional probes or floats may be installed while maintaining the original system. This can be in any form and location at or above the minimum boiler water level such as a separate acceptable column tied directly into the piping system or connected directly to the boiler.
- If a float type is used an alternate, pressure rating of the unit must be considered.

Self-Monitoring Probe Types

These systems are described as having the ability to detect a short circuit or internal fault in the probe. Information must be presented to the inspector to evaluate prior to the installation inspection.

- A low water condition shall be performed during the installation inspection. The circulation system may be isolated if required.
- Probe maintenance shall be performed as per the manufacturer's recommendations and documented.
- Future periodic inspection by the department will not require a low water condition test provided there is supporting documentation relating to probe maintenance

Redundant System Probes / flow switches in combination with secondary limits such as high temperature water or stack sensors. Information must be presented to the inspector to evaluate prior to the installation inspection.

- A low water / flow condition shall be performed during the installation inspection. The circulation system may be isolated if required.
- Probe maintenance shall be performed as per the manufacturer's recommendations.
- Future periodic inspection by the department will not require a low water condition test provided there is supporting documentation relating to probe maintenance