TO: Joint Committee on Recreational Water Facilities
FROM: Mr. Tom Vyles, Chair of the Joint Committee
DATE: September 18, 2020
SUBJECT: Proposed revision to NSF/ANSI 50 Equipment for Swimming Pools, Spas, Hot Tubs and Other Recreational Water Facilities (50i162r2)

Revision 2 of NSF/ANSI 50 issue 162 is being forwarded to the Joint Committee for consideration. Please review the proposal and submit your ballot by October 9, 2020 via the NSF Online Workspace <www.standards.nsf.org>.

When adding comments, please identify the section number/name for your comment and add all comments under one comment number where possible. If you need additional space, please upload a word or pdf version of your comments online via the browse function.

Purpose

This ballot will incorporate language regarding automated controller valves into NSF/ANSI/CAN 50.

Background

Effective filtration is a crucial process in controlling waterborne disease transmission and protecting public health. Filtration concentrates the undesirable dirt, debris, and pathogens in the filter tank for subsequent extraction by filter cleaning. However, the accumulated matter remains in the water and in the hydraulic circuit, increasing headloss and consuming disinfectants. Correct cleaning (backwash and rinse for a media filter) extracts dirt, debris, and pathogens from the filter tank and thus from the water, ensuring media maintenance, as well as preventing fouling, clogging and channeling over time. The filter cleaning protocol is defined by the manufacturer and requires that actions be carried out correctly and timeously by the filter maintainer. This critical maintenance task is not assured, monitored, or controlled. Only the accomplishment of the event is recorded in the required maintenance log in public swimming pools.

As technology brings the benefits of improved water quality and public safety through process control automation, the critical filter cleaning task remains “manual” and therefore not optimized. The “NSF/ANSI/CAN 50 – 2019 Equipment and Chemicals for Swimming Pools, Spas Hot Tubs, and Other Recreational Water Facilities” standard “Section 9 Valves” (Annex 1, page 31) refers only to manual valves, with no language for automated valves to backwash and rinse the media filter and fully optimize this task. Furthermore, in automated process control the steps and actions within the cleaning cycle (date/time of the cleaning; valve positions; cleaning durations, pressures prior, during and after cleaning; etc.) are recorded and saved thus better enabling code adherence. Automated filter maintenance offers a significant improvement in water quality, reduction in consumption and tracking of the essential pool maintenance task, to promote sanitation and protection of the public health.
An r1 version of this language was presented to the JC in August 2020 and drew many comments. The issue proponent found the comments persuasive and revised the proposed language to be included in existing sections rather than creating an entirely new section of the standard. The r2 language presented here is the result of those revisions.

If you have any questions about the technical content of the ballot, you may contact me in care of:

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c/o Joint Committee Secretariat
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3 Definitions

3.8 **automated controller**: A system of at least one chemical probe, a controller, and auxiliary or integrated component, that senses the level of one or more swimming pool or spa / hot tub water parameters and provides a signal to other equipment to maintain the parameter(s) within a user-established range.

3.9 **automated valve**: A valve that switches flow paths without manual human interaction and contains at least one probe that senses the level of one or more swimming pool or spa / hot tub water parameters and provides a signal to other equipment to maintain the parameter(s) within a user-established range.

3.10 **backwash**: Flow of water through filter element(s) or media in a reverse direction to dislodge accumulated dirt or filter aid and remove them from the filter tank.

*Subsequent definitions will be renumbered accordingly.*

3.154 **valve**: A device used to direct flow to, through, and from a body of recreational water.

*Subsequent definitions will be renumbered accordingly.*
9 Valves

9.1 Scope

This section contains requirements for valves, automated valves, and manufactured manifolds used on filters in public and residential swimming pools and spas / hot tubs. The requirements apply to the housing, valve, handle, or valve mechanism and other components that are integral parts of the valve or multiport valve.

An automated valve with integrated automated controller functions shall also comply to Section 19.

9.12 General

9.12.1 Valves and component parts that may require inspection and service shall be accessible.

9.12.2 Valves shall be marked or keyed for proper assembly and operation.

9.12.3 Valves shall be designed so that parts may be replaced without drilling or otherwise altering the multiport valve or replacement part.

9.23 Positive indexing

9.23.1 Valves shall be marked or have a suitable display so that the position of the operating handle or valve mechanism clearly indicates each operation.

9.23.2 Valves shall be designed so that the position of the operating handle or valve mechanism can only be changed intentionally.

9.23.3 Valves shall be designed so that the operating handle or valve mechanism, if removed, may only be properly realigned.

9.34 Design pressure

9.4.1 The working pressure of a pressure service valve or manufactured manifold or operational system associated with single or multiple tank filter system shall be 50 psi (344 kPa) or greater. The design burst pressure of a pressure service valve or operational system associated with single or multiple tank filter system shall be designed to have a burst pressure of at least four times the working pressure (i.e., minimum safety factor = 4:1).

9.4.2 If the pressure of an automated valve is limited by an active pressure reducing system or the installation parameters, the design working pressure of the vessel shall be specified by the manufacturer. If the automated valve pressure is limited by the installation parameters (gravity fed) then the manufacturer shall identify the max pressure for the specific installation parameter.

9.45 Pressure service

The valve or manufactured manifold and its integral components shall not rupture, leak, burst, or sustain permanent deformation when subject to the following conditions in accordance with the following: (Annex N-4):

— a hydrostatic pressure equal to 1.5 times the working pressure for 300 s;
— 20,000 consecutive pressure cycles per Section N-2.1.4.d; and
— a hydrostatic pressure equal to two times the working pressure per Section N-2.1.4.e.

9.56 Valve leakage

Filter system valves and manufactured manifolds, when operating at the test pressure and maximum design flow rate, shall not leak in excess of 3 mL from the waste port and 30mL from the return-to-pool port in the 5 min test.

9.67 Head loss curve

9.67.1 The manufacturer shall make available a head loss curve for both the filter and backwash positions.

9.67.2 The actual head loss across a multiport valve shall not exceed the head loss indicated by the manufacturer’s head loss curve by more than 5% (see Section N-4.4).

9.67.3 The head loss curve for manufactured manifolds may be calculated using a standard friction loss table and actual valve head loss data.

9.78 Waste port seal

The filter system valve or manufactured manifold shall not leak more than 3 mL in a 5 min test through the waste port when the valve is set in the position and a static pressure of 0 to 10 psi (70 kPa) is applied to the return port (Section N-4.5).

9.89 Vacuum service

9.89.1 The design collapse pressure of a vacuum service valve shall be at least 1.5 times the pressure developed by the weight of the water in the tank (i.e., minimum safety factor = 1.5).

9.89.2 Vacuum service valves shall not rupture, leak, collapse, or sustain permanent deformation when subjected to a vacuum of 25 in Hg (85 kPa) for 300 s in accordance with Section N-2.2.

9.89.3 Vacuum service valves are exempt from port leakage testing.

9.9 Installation and operating instructions

The manufacturer shall provide a manual with each valve or manufactured manifold. The manual shall include operating instructions, installation instructions, design head loss curve and parts lists, and any drawings or charts necessary to permit proper installation, operation, and maintenance.

9.10 Identification

The multiport valve shall be clearly and permanently marked or labeled with the following:

— manufacturer name and contact information (address, phone number, website, or prime supplier);

— model number;

— working pressure;

— vacuum pressure, if applicable;
19  Automated controllers

19.1  Scope

Automated controllers are used to monitor water conditions such as pH, ORP, free chlorine or other parameters specified by the manufacturer and to control equipment such as chemical feeders and pumps. Equipment covered by this section includes the controller and the chemical probes, and flow cells. Water contact components and materials of automated controllers shall be evaluated to the health effects criteria of Section 4. Mechanical chemical feeders are covered in Section 11, and flow-through chemical feeders are covered in Section 12.

An automated controller that has been incorporated into a valve shall also comply with the requirements of Section 9.