



NSF International
Special Engineered Specification
NSF SE 1494

Vacuum Drainage Systems





SPECIFICATIONS FOR A SPECIAL ENGINEERED (SE) PRODUCT NSF SE 1494

Vacuum Drainage Systems

1. **Scope of Specification:**

Testing and Marking requirements of the SE Vacuum Drainage System. SE is based upon a use application as expected in Supermarkets. There is no current industry standard for these products.

2. **Testing:**

Section	Proformance Criteria
3.1	Buffer Box Flow Capacity Test
3.2	Buffer Box Surge Capacity and Aeration Tests
3.3	Buffer Box Back-Flow Prevention Test
3.4	Vacuum Tank Back-Flow Prevention Test
3.5	System Continuous Flow and Cycle Test

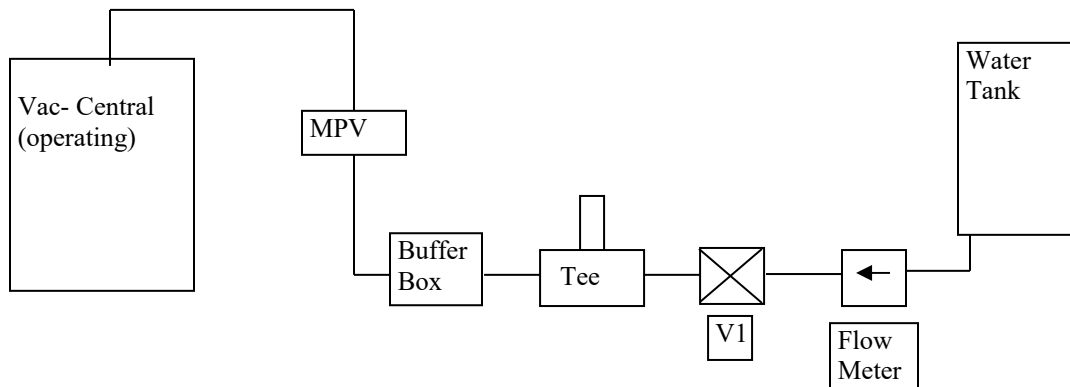
3. **Testing Requirements:**

3.1 Buffer Box Flow Capacity Test:

The purpose of this test is to confirm the maximum flow capacity of the Buffer Box.

- Testing will include all equipment as per Figure 1 shown below.
- Open valve V1 and start flowing water at 1 gpm. Then increase at 0.5gpm increments.
- Overflow from buffer box with flow meter indicating a flow rate of less than 5gpm shall be considered non-compliant

Figure 1





3.2 Buffer Box Surge Capacity and Aeration Tests:

The purpose of this test is to confirm surge capacity of the Buffer Box using a BVP Valve as an alternate air intake.

- Testing will include equipment as per Figure 2 shown below

3.2.1 Batch Flow Test

- Fill 20 Gallon compartment sink to maximum capacity with water and pull drain plug.
- Observe that flow of water continues through the buffer box without interruption (i.e. BVP Valve will behave as alternate air source to buffer box air intake) while maintaining minimum vacuum of 15" Hg.

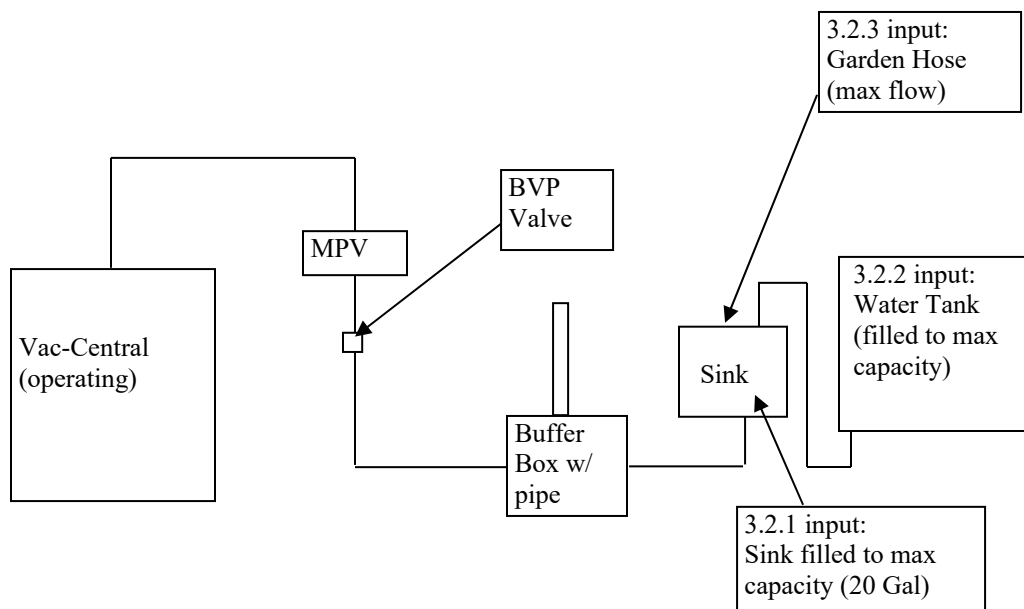
3.2.2 Multiple Batch (series or parallel) Flow Test

- Place a large hose in the compartment sink, open flow from the main tank to maintain water in the sink and allow the vacuum tanks to fill and discharge three times.
- Observe that flow of water continues through the buffer box without interruption (i.e. BVP Valve will behave as alternate air source to buffer box air intake) while maintaining minimum vacuum of 15" Hg.

3.2.3 Continuous Flow Test

- Place standard garden hose in the compartment sink, open flow to maximum rate (6 GPM) and allow water to run continuously for a period of no less than 5 minutes.
- Observe that flow of water continues through the buffer box without interruption (i.e. BVP Valve will behave as alternate air source to buffer box air intake) while maintaining minimum vacuum of 15" Hg.
- Failure to continuously drain all the water from the compartment sink shall be considered non-compliant.

Figure 2



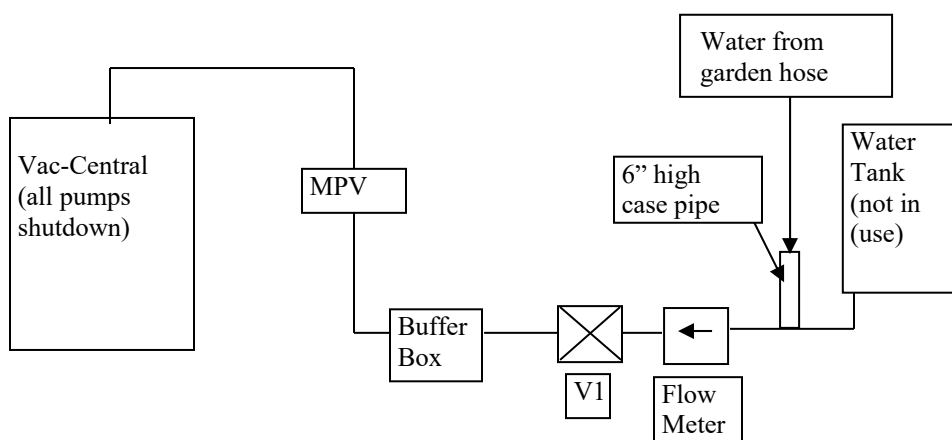


3.3 Buffer Box Back-Flow Prevention Test:

The purpose of this test is to confirm that in the situation of a low vacuum condition or absence of vacuum the Buffer Box overflows and collected water does not flow back into a refrigerated case.

- Testing will include equipment as per Figure 3 shown below.
- Fully open valve V1 and start flowing water at not less than 0.8gpm. After establishing a steady flow shutdown all pumps while water continues to flow into the case pipe.
- Failure to overflow sufficiently through the buffer box and prevent backflow through 6" standpipe shall be considered non-compliant

Figure 3



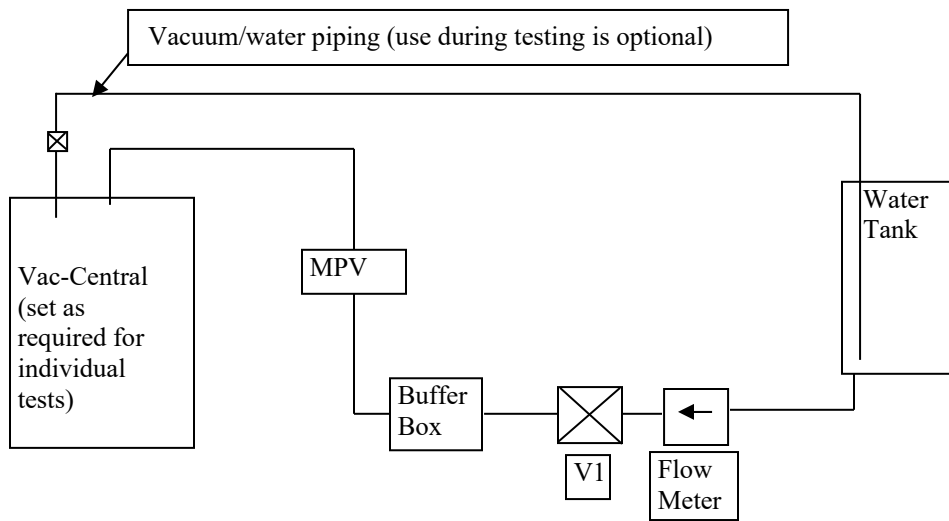
3.4 Vacuum Tank Back-Flow Prevention Test:

The purpose of this test is to confirm that in case of vac-central malfunction, there is always an air gap between the collected wastewater in the vacuum tanks and the piping to the tanks (which is ultimately connected to fixtures), thus preventing direct connection between the collected water and the piping.

- Testing will include equipment as per Figure 4 shown below.
- Fill the vacuum tank(s) with water until discharge occurs.
- Deactivate only the LSH on one or both tanks and fill the vacuum tank(s) with water until discharge occurs.
- Deactivate only the LSB on one or both tanks and observe that the tank(s) discharge (water) and isolate.
- Deactivate both the LSH and LSB on one or both tanks and observe that the tank(s) discharge (water) and isolate.
- Deactivate the operating logic and observe that the tanks discharge (water).
- Failure to discharge (water) in any of the above conditions shall be considered non-compliant



Figure 4



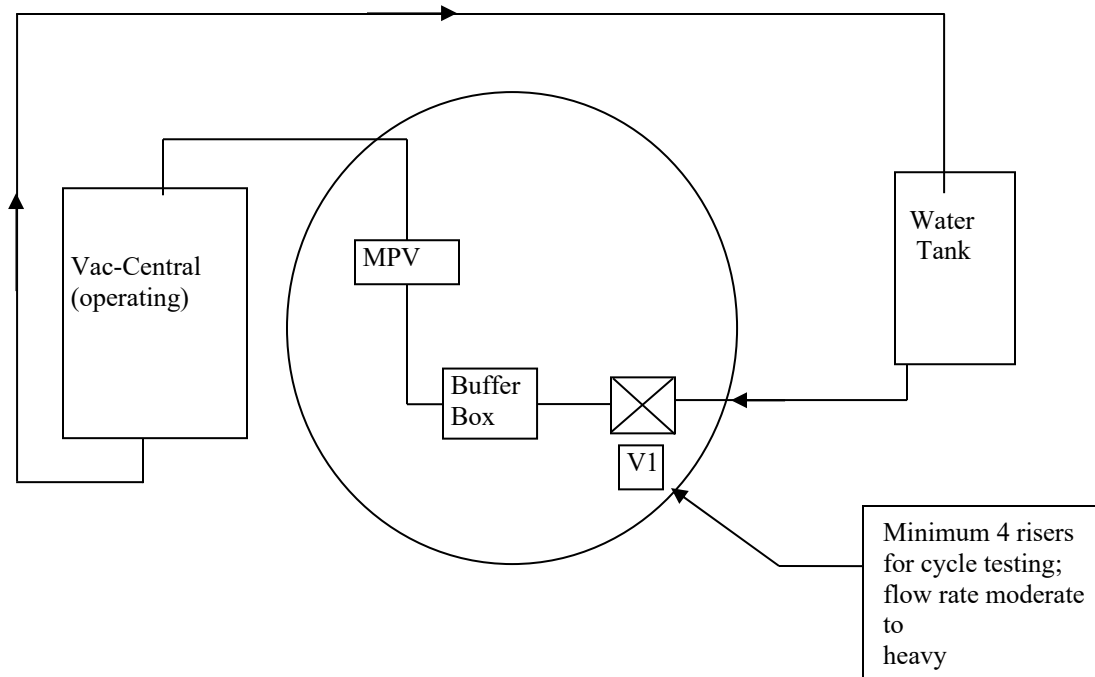
3.5 System Continuous Flow and Cycle Test:

The purpose of this test is to confirm proper operation and full functionality of the tested system for a period of no less than 16 hours.

- Testing will include equipment as per Figure 4 shown below.
- Allow system to operate normally; each buffer box should have a varied flow rate
- Failure of the system to continuously cycle the water throughout the test system for the determined amount of time shall be considered non-compliant; failure consists of but is not limited to a flooded riser, failure of a tank to discharge, flooding of and overflow from a buffer box, failure to isolate a vacuum tank, failure to fully recover vacuum (18"-22" Hg) after discharging one or both tanks; failure of any regularly maintained component (those components indicated in the maintenance schedule as requiring regular maintenance) shall not be considered non-compliance.



Figure 5



4. Product Marking:

Trade Name: Manufacturer Trade name.

NSF Mark:



SE

Or NSF®-SE

5. Retest Frequency:

Products require 5-year retesting.

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