

Vapor Seal Extended Handle

A Handle Extension's traditional role is to simply extend the handle beyond insulation. That simple concept has caused hundreds of thousands of dollars in untold damage due to condensation in chilled water systems. **Simply extending the handle is not enough!** Building owners must be concerned with the Indoor Air Quality which can be affected by moisture.

A Vapor Seal Extended Handle serves two critical roles: 1) **To prevent thermal transfer** from the chilled system to the handle causing condensation outside the insulation and 2) **To prevent vapor creep** to the interior of the insulation resulting in condensation interior to the insulation. By controlling the thermal and vapor components affecting condensation, a **Vapor Seal Extended Handle directly benefits the Indoor Air Quality by eliminating the moisture source for mold and mildew.**

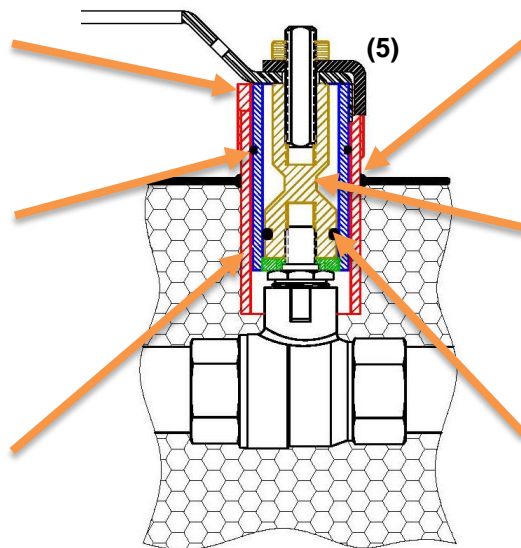
Vapor condensation to the interior of the insulation is not readily visible and can result in long term issues such as mold, mildew, bacterial growths, etc. Hidden, moist environments can be very costly to building owners and have long term implications.

What makes a Vapor Seal Extended Handle??

Rigid Outer Shell (1) that does not rotate allowing insulation to bond or seal against it

Seal (2) between Rigid Outer Shell and Handle Extension to prevent Vapor Creep below the insulation

Handle Extension (7) allowing 2" of insulation for chilled systems or 1" for heated systems that firmly rotates with the handle and stem



Insulation installed with a **Permanent Seal (6)** for a vapor barrier preventing vapor creep into the insulation.

Solid Metal Stem Extender with a **Thermal Diffuser (4)** to reduce thermal transfer to the exterior of the insulation

Seal between **Stem Extender and Handle Extension (3)** to prevent Vapor Creep below the insulation

Specifications

- ✓ Extended Handle Shall have **Rigid Outer Shell** that does not rotate with the handle such that the insulation can permanently bond or seal against the outer rigid shell. **(1)**
- ✓ Handle Extension shall have a positive **Seal** utilizing an O-ring or other sealing method that will hold a minimum of 10 psi differential across the device. Seal shall be between the Handle Extension and Rigid Outer Shell. **(2)**
- ✓ Stem Extension shall have a positive **Seal** utilizing an O-ring or other sealing method that will hold a differential of 10 psi between the Stem Extension and the Handle Extension. **(3)**
- ✓ Stem Extender shall be metal with a **Thermal Diffuser** to minimize thermal transfer to exterior. **(4)**
- ✓ Extended Handles with **Memory Stops** shall be above the insulation. **(5)**
- ✓ Insulation shall be **Permanently Sealed** against Rigid Outer Shell to prevent Vapor Creep. **(6)**
- ✓ Handle Extension shall allow for 2" of insulation for chilled systems and 1" of insulation for heated systems. **(7)**

Why is a Vapor Seal important when handles are extended?

- A handle without a vapor seal allows saturated air to creep below the insulation.
- Saturated air that is cooled below the dew point from the chilled piping will condensate causing moisture.
- The moisture is trapped, absorbed, and accumulated by the insulation.

Changes in temperature, changes in weather, and seasonal cycles are a few of the conditions that **cause the** pressure internal to the insulation to change in relation to the pressure outside of the insulation. Changes in pressure result in air flowing back and forth internal to the insulation resulting in the **accumulation of condensation**.

Many of the insulating materials retain this condensation allowing for long term exposure to moisture for the growth of molds, mildew, and conditions favorable to bacterial growth. Since most systems operate at a temperature conducive for mold and most materials are suitable for mold growth (even dust is sufficient), **controlling moisture** is the #1 objective in mold prevention.

Extensions that allow condensation to the external section of the insulation can be annoying due to water drops damaging ceiling tiles. **Condensation collecting internal to the insulation is much worse**. The result can be mold remediation requirements, bacterial disinfecting, and the total replacement of insulation.

Examples of Poor Vapor Barrier Practices



Water soaked insulation. The water is from vapor that condensed on the cooler valve. This is a competitor's valve but it did not leak. The **moister** is a result of no vapor seal on the extended handle. The condensation rate is higher than the evaporation rate resulting in the accumulation of moisture in the insulation.

moisture?



Insulation did not bond to handle resulting in faulty vapor seal. This is a typical issue with most extended handles because there is not a rigid outer shell for the insulation to bond with. Turning the handle breaks the seal established by the Insulation Contractor which is why a rigid outer shell should be required. The handle should rotate without disturbing the insulation.

Vapor Seal Extended Handles Shall Be Required!!!

- Vapor Seal Extended Handles cost no more than standard extended handles.
- Vapor Seal Extended Handles help assure that the insulation does its job.
- Vapor Seal Extended Handles help protect the Indoor Air Quality by reducing the possibility of moisture.