GREENHECK
Industry White Papers
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FROM THE
INSIDE OUT
A technical educational paper for engineers and contractors in the air movement, control and conditioning industry.

Bubble-Tight Damper Performance Requirements

For decades, bubble-tight damper performance has been dictated to comply with the rigorous standards of the nuclear industry. More specifically, performance specifications followed two codes from the American Society of Mechanical Engineers (ASME):

- ASME N509 - Nuclear Power Plant Air-Cleaning Units and Components
- ASME N510 - Testing of Nuclear Air Treatment Systems

Although these standards served their purpose in the past, both standards have been discontinued. According to ASME records:

- ASME N509 was discontinued on March 10, 2016 through Ballot #12-2532RC101 pertaining to Record #12-508
- ASME N510 was discontinued on November 14, 2012 through Ballot #12-2465 pertaining to Record #12-509

Seal Leakage Testing

Today, there are two standards that dictate performance testing requirements for bubble-tight dampers:

1. AMCA Standard 500D-12 Paragraph 6.2.2.5.5:

Damper setup for bubble test (Test Figure 5.8) - For bubble tests, one reading per determination of test pressure (Ps9) and damper inlet dry-bulb temperature (td9) shall be recorded. The size of bubble formation shall also be recorded by noting if any bubbles exceed 1.6 mm diameter (1/16 in.) in 1 second or if any bubbles exceed 7mm (1/4 in.) diameter in 1 minute.

2. ASME AG-1, 2015, section DA 5141:

Seal Leakage Test for Leakage Class 0 Dampers (Bubble Method) - The damper shall be bolted to a pressure chamber that is then pressurized to the specified blade design pressure. A bubble solution (a commercial test solution or a solution consisting of equal parts liquid detergent, glycerin, and water) shall be applied to the damper seat area to be tested. A few moments later, but before the soap solution can dry, check the wetted areas and mark places where bubbles are being generated. Unless otherwise specified, a leak indication is any bubble 1/16 in. (1.58 mm) diameter that forms in 1 sec, or a bubble 9/32 in. (7.14 mm) that forms in 1 min.

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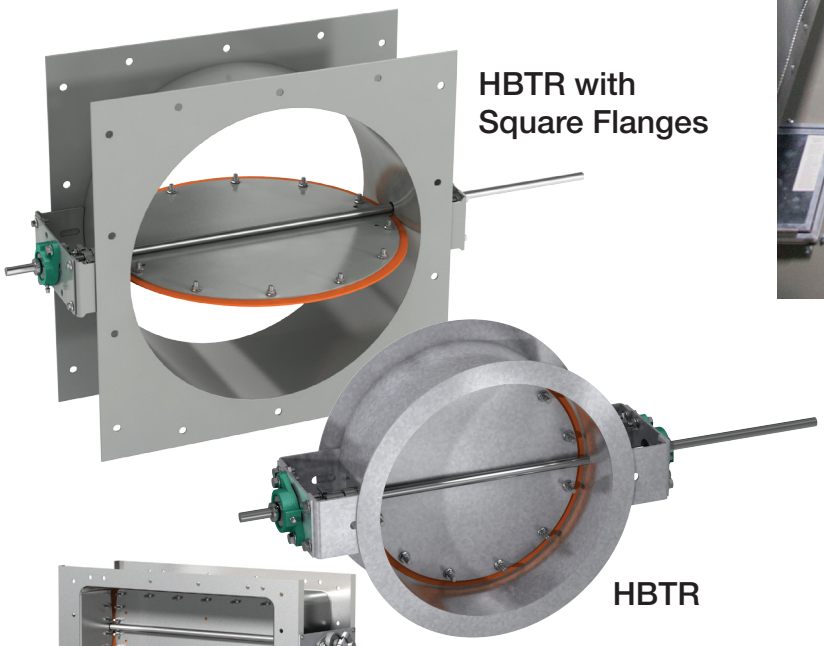
From the Inside Out

Greenheck has four bubble-tight products that meet today's AMCA and ASME requirements: models HBT-221, and HBTR-151, -451 and -551. These models have round blades and are rated for 10 in. wg, 30 in. wg and 30 in. wg respectively. Designed to perform under the most demanding requirements, these dampers provide safety and reliability. Each damper produced is tested to meet or exceed these AMCA and ASME requirements before shipping from our factory.

Specifying Greenheck HBTR dampers and referencing the AMCA Standard 500D or ASME AG-1, Section DA bubble-tight requirements will assure you receive the best isolation damper for your critical application.



HBTR with Square Flanges

HBTR

HBT-221