

Bubble Tight Dampers Supplemental Information - HBT/HBTR Series

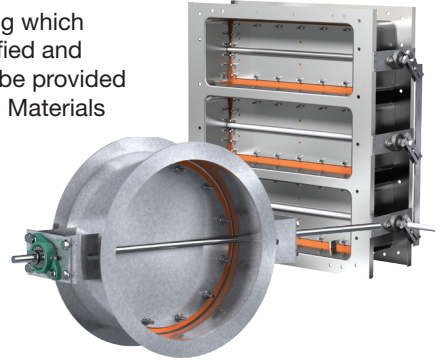
QA and Testing

All Greenheck industrial dampers are produced under our ISO9001- 2015 Quality Assurance Program in Schofield, WI. Each bubble tight damper is tested before shipment. We test every unit per the AMCA Standard 500D test procedures. Testing procedures also comply with ASME AG-1 and obsolete codes ASME N509 and N510 which are often specified although obsolete. Test pressure is applied to the damper based on the models rated pressure, plus a minimum of 10% extra. All welded seams, axle penetrations and bolted connections are verified for zero leakage. The units are tested in both directions, so installation direction is irrelevant. We place a "bubble tight tested" sticker on the unit and attach a test report form to the damper for shipment to the job site. Greenheck retains copies of the test report in our systems if additional copies are needed.



Construction

Bubble tight dampers are an all welded design. Welding will be via Greenheck standard welding which is based on American Weld Society (AWS) weld procedures. Welders and procedures are certified and documented to AWS standards. Weld inspection reports by AWS certified weld instructor can be provided if requested prior to order. Standard material options are painted steel, 304SS and 316SS. 304 Materials are dual certified 304/304L. 316 Materials are dual certified 316/316L. Material thickness varies depending on damper sizes and model selections. Requests for increased material thickness can be reviewed on a per project bases through a special design request (SDR). Mounting holes can be selected and edited within CAPS to meet project specifications such as maximum 4 inches O.C. distance (ERDA 76 STD) or custom mounting hole patterns can be provided by submitting a special design request (SDR).



Blade Direction

Dampers are designed for axles to be horizontal after installation. Damper installations with the axle running vertically are not recommended as the weight of the damper blade and axle can prevent the blade seals from being properly centered. If vertically bladed units are required, please contact your representative for SDR information.

Seals

Bubble tight dampers are designed with a full perimeter sweep seal. This seal is made of silicone rubber for best sealing results and the lowest torque requirements. Dampers were prototyped to 10,000 cycles without failure to the seal. Greenheck does not recommend using alternate seal materials as they have shown to increase the torque value to 2-4 times that of silicone and generally have a shorter life span. They will also require larger actuators and more rugged blade and axles sizes which can significantly increase costs. Every 5-7 years, the silicone blade seal should be evaluated for wear or dry rotting. The seal should be replaced if there appears to be damage or degradation in any way.

Temperature

The HBTR and HBT series dampers are ideally designed for -40°F to 250°F (-40°C to 121°C) temperatures. At temperatures above 250°F (121°C) the blade and axles could have excessive movement due to thermal expansion of the materials. The direction and amount of expansion can be unpredictable causing the damper seals to not properly seat against the frame and may cause the damper seals to lose effectiveness.

Actuators

Bubble tight dampers are designed as 2-position dampers – fully open or full closed. They are not designed to be modulated due to the blade seal configuration. The blade seal is a fold-over sweep seal design and modulating the damper may cause problems with the folding of the seal and prevent the bubble tight effectiveness of the seal.

Greenheck strongly recommends that actuators be ordered and installed from the factory. This allows us to properly install, set up and cycle the actuators on the damper and ship them complete to the job site. If dampers are ordered without actuators Greenheck can supply two actuator mounting angles on the damper frame ("bracket only" in CAPS). The job site will be responsible for actuators as well as any additional components used for mounting. Additional components depend on actuator style and include, but are not limited to, mounting plates, additional brackets, and coupling. If dampers are ordered without actuators, the axles come standard without keyways.

