**SUGGESTED SPECIFICATIONS**

**TAMCO SERIES 9000 BF THERMALLY INSULATED DAMPER WITH THERMALLY BROKEN FRAMES**

1. Extruded aluminum (6063-T5) damper frame shall not be less than 0.080” (2.03 mm) in thickness. Damper frame shall be 4” (101.6 mm) deep x 1" (25.4 mm), with duct mounting flanges on both sides of frame. Frame to be assembled using zinc-plated steel mounting fasteners. Welded frames shall not be acceptable.
2. Entire frame shall be thermally broken by means of polyurethane resin pockets complete with thermal cuts.
3. Blades shall be maximum 6" (152.4 mm) deep extruded aluminum (6063-T5) air-foil profiles with a minimum wall thickness of 0.06” (1.52mm). Blades shall be internally insulated with expanded polyurethane foam and shall be thermally broken. Complete blade shall have an insulating factor of R-2.29. All blades shall be symmetrically pivoted.
4. Blade seals shall be extruded silicone, secured in an integral slot within the aluminum blade extrusions and shall be mechanically fastened to prevent shrinkage and movement over the life of the damper. Adhesive or clip-on type blade seals will not be approved.
5. Frame seals shall be extruded silicone, secured in an integral slot within the aluminum frame extrusions and shall be mechanically fastened to prevent shrinkage and movement over the life of the damper. Metallic compression type jamb seals will not be approved.
6. Bearings shall be a dual bearing system composed of a Celcon inner bearing (fixed around a 7/16" (11.11 mm) aluminum hexagon blade pivot pin), rotating within a polycarbonate outer bearing inserted in the frame. Single axle bearing, rotating in an extruded or punched hole shall not be acceptable. Bearings are to be maintenance-free, requiring no lubrication.
7. Hexagonal control shaft shall be 7/16" (11.11 mm). It shall have an adjustable length and shall be an integral part of the blade axle. A field-applied control shaft shall not be acceptable. All parts shall be zinc-plated steel.
8. Linkage hardware shall be aluminum and corrosion-resistant zinc-plated steel, installed in the frame side, out of the airstream, and accessible after installation. Linkage hardware shall be complete with cup-point trunnion screws to prevent linkage slippage and a Celcon bearing between moving parts to reduce wear and increase longevity. Linkage that consists of metal rubbing metal will not be approved.
9. Dampers shall be designed for operation in temperatures ranging from -40°F (-40°C) to 212°F (100°C).
10. Dampers shall be AMCA rated for Leakage Class 1A at 1 in w.g. (0.25 kPa) static pressure differential. Standard air leakage data to be certified under the AMCA Certified Ratings Program.
11. Dampers shall be custom made to required size, with blade stops not exceeding 1¼” (31.7 mm) in height. The blade stop shall be a continuous and integral part of the head/sill. Welded and caulked blade stops shall not be acceptable.
12. Dampers shall be opposed blade action or parallel blade action, as indicated on the plans.
13. Dampers shall be Flanged to Duct install type only.
14. Installation of dampers must be in accordance with TAMCO's current installation guidelines, provided with each damper shipment.
15. Field supplied intermediate structural support is required to resist applied pressure loads for dampers that consist of two or more sections in both height and width. *(See TAMCO Aluminum Damper Installation Guidelines.)*
16. Acceptable product shall be TAMCO Series 9000 BF Thermally Insulated Damper with Thermally Broken Frame, as manufactured by T. A. Morrison & Co., Inc. (Tel: 1-800-561-3449, USA & Canada).

**OPTIONS** *(For each option listed, replace the specification lines above with their corresponding specification lines below.)*

**ECT - EXTREME COLD TEMPERATURE OPTION:**

4. Blade seals shall be specially formulated silicone, for reduced air leakage at extreme cold temperatures. Silicone formula to be the same as that used by NASA for its Aerospace program and must retain flexibility to -100°F (-73°C). Blade seals shall be secured in an integral slot within the aluminum blade extrusions and shall be mechanically fastened to prevent shrinkage and movement over the life of the damper. Adhesive or clip-on type blade seals will not be approved.

5. Frame seals shall be specially formulated silicone, for reduced air leakage at extreme cold temperatures. Silicone formula to be the same as that used by NASA for its Aerospace program and must retain flexibility to -100°F (-73°C). Frame seals shall be secured in an integral slot within the aluminum blade extrusions and shall be mechanically fastened to prevent shrinkage and movement over the life of the damper. Adhesive or clip-on type blade seals will not be approved.

9. Dampers shall be designed for operation in temperatures ranging from -100°F (-73°C) to 212°F (100°C).

**MR - MOISTURE RESISTANCE OPTION:**

1. Extruded aluminum (6063-T5) damper frame shall not be less than 0.080” (2.03 mm) in thickness. Damper frame shall be 4” (101.6 mm) deep x 1" (25.4 mm), with duct mounting flanges on both sides of frame. Frame shall be assembled using stainless steel screws. Welded frames shall not be acceptable.

7. Hexagonal control shaft shall be 7/16" (11.11 mm). It shall have an adjustable length and shall be an integral part of the blade axle. A field-applied control shaft shall not be acceptable. All parts shall be stainless steel.

8. Linkage hardware shall be aluminum and stainless steel, installed in the frame side, out of the airstream, and accessible after installation. Linkage hardware shall be complete with stainless steel cup-point trunnion screws to prevent linkage slippage and a Celcon bearing between moving parts to reduce wear and increase longevity. Linkage that consists of metal rubbing metal will not be approved.

**SW - SALT WATER RESISTANCE OPTION:**

1. Extruded aluminum (6063-T5) damper frame shall not be less than 0.080” (2.03 mm) in thickness. Damper frame shall be 4” (101.6 mm) deep x 1" (25.4 mm), with duct mounting flanges on both sides of frame. Aluminum frame shall be clear anodized to a minimum thickness of 0.7 mil (18 microns) deep. Frame shall be assembled using stainless steel screws. Welded frames shall not be acceptable.

3. Blades shall be maximum 6" (152.4 mm) deep extruded aluminum (6063-T5) air-foil profiles with a minimum wall thickness of 0.06” (1.52mm). Blades shall be internally insulated with expanded polyurethane foam and shall be thermally broken. Complete blade shall have an insulating factor of R-2.29. Extruded aluminum blades shall be clear anodized to a minimum thickness of 0.7 mil (18 microns) deep. All blades shall be symmetrically pivoted.

7. Hexagonal control shaft shall be 7/16" (11.11 mm). It shall have an adjustable length and shall be an integral part of the blade axle. A field-applied control shaft shall not be acceptable. All parts shall be stainless steel.

8. Linkage hardware shall be aluminum and stainless steel, installed in the frame side, out of the airstream, and accessible after installation. Linkage hardware shall be complete with stainless steel cup-point trunnion screws to prevent linkage slippage and a Celcon bearing between moving parts to reduce wear and increase longevity. Linkage that consists of metal rubbing metal will not be approved.