IF Isolation Dampers

Bubble Tight Dampers / Air Tight Dampers

General Characteristics

The isolation dampers are used to isolate the duct or bibo housings HEPA or carbon filters for purpose of decontamination for major alternation works, replacement of filters, testing and air balancing. Bubble Tight Dampers (BTD) or Air Tight dampers are of zero leakage are suitable for extremely high risk biosafety or animal biosafety Laboratories levels L3 above, radioactive, nuclear and chemical safety.

Applications

For exhaust air filtration of radioactive materials, pathogenic organisms, biological particles, dangerous and toxic substances. Used in food processing, clean roomsm genetic research, tissue culture laboratories, biosafety and animal laboratories level 1,2,3,4. Hospitals Isolation wards, operating theatres and pharmaceutical applications.

Construction

Bubble Tight damper frame is constructed of stainless steel 304 2mm thickness with flanges fully welded to both ends with minimum flange to flange distance of 200mm. Bolting Holes at flanges are provided.

The damper blade consists of two minimum 3.5mm heavy duty thick steel plate with silicon blade seal and double-gland axle which ensures bubble tight and airtight construction up to pressure of 2.5kPa and maximum pressure of 7.5kPa. Blade seal is not required for air balancing function. The blade seal is replaceable.

The shaft seal is constructed of compression type packing gland.

The operation is manual, optional electric or pneumatic actuator.

The BTD are manufactured in accordance to ISO9001:2015, AMCA Standard 500-D, Laboratory Methods of Testing Dampers for Rating, Class 1 and ASME AG-1 2012, ASME NQA-1 " Quality Assurance Requirements for nuclear facilities (containment air filtration), ASME N509-1996 "Reaffirmed" par 5.9.7.3. The damper blade are tested to be bubble tight in closed position at +/- 10" w.g (2.4kPa).

The complete pressure boundary (damper housing) shall be Pressure Decay Leak tested in accordance to ASME N510-1995 " Reaffirmed"/ NSF, "Testing of Nuclear Air Treatment Systems"/ NSF49 Biosafety Cabinetry. Pressure readings are recorded until pressure decays to 75% of test pressure or for five minutes. The housings shall not exceed a leak rate of 0.0005 cfm per cubic foot of housing volume.

All welding procedures, welders and welder operators are qualified with ASME Boiler and Pressure Vessel Code Section IX, "Visual Inspection of Welds" ANSI/AWS D9.1-1990 Specification for Welding Sheet Metal in Sections 5 and 8

Available in Round dampers and Standard Rectangular Dish Dampers for quick connection. Squares flanges for Round dampers can be requested.

ATD4: Class 4 Very low leakage damper is constructed of Galvanised Steel 1.2mm thickness with Aluminum Extruded blades with rubber gaskets, polypropylene gears, self-lubricating resin bushings, Al lateral sealing plates.
ATD4: Very low leak damper of Air tighness Class 4 tested accordingly to EN1751 with leakage 0.005m^3/s per m^2 area at 1000Pa.

Available in Square flanges for easy BIBO housing connections.

IF International Filtration

Isolation Dampers

Air Tight/ Bubble Tight Dampers

Technical Data

HEPA Housing, Bubble Tight damper and BIBO system
Filter Leak Test Standards
IEST RP-CC001,CC034 / EN1822 / NSF49 Biosafety Cabinetry
Aerosol Challenge DEHS/ PAO leak <0.01%

Pressure Integrity Test - Bubble Tight / Zero Leakage
ASME/ ANSI N510,1989 1995
Reaffirmed to +/-10"w.g (2500Pa)
<0.0005 cfm per cubic foot of housing volume

ATD4: EN1751 Air Tighness Class 4 (very low leak)
0.005m^3/s per m^2 area at 1,000Pa
ATD2: EN1751 Air Tighness Class 2 (low leak)
0.08m^3/s per m^2 area at 1,000Pa

Enclosing Frame
Stainless Steel 304, Stainless Steel 316
11 gauge (3.0mm) & 14 gauge (2mm) thickness

Axle	SS304
Bearing	SS304
Blade	SS304
Blade Seals	Silicone Rubber / Pressed Neoprene
ATD4 / ATD2 Blade	Galvanised Steel 1.2mm Frame Aluminum

Optional
Electric Actuators

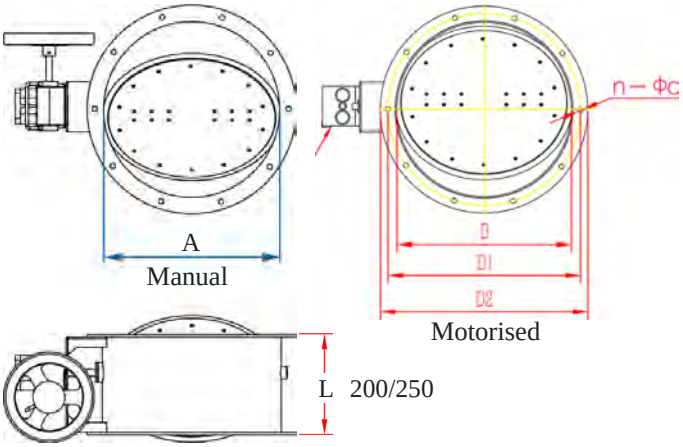
Continuous Operating Temperature	-30 to 80°C
Optional High Temperature (SS)	250 °C
Relative Humidity	90%

Dimensions

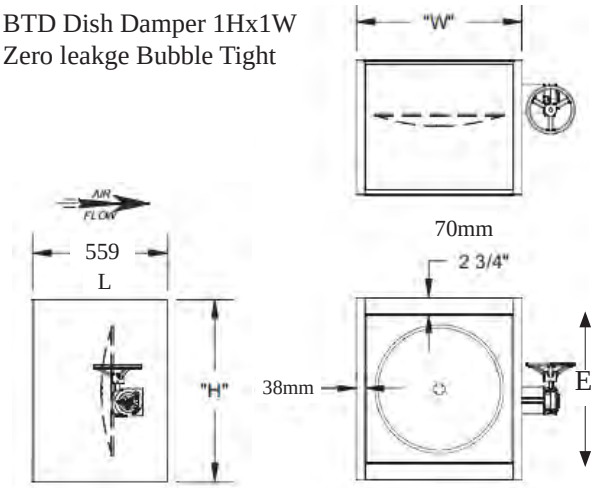
Type Round " inches	Typical for Filter/ Face Area 600x600 mm	A mm OD	Ext D2 mm OD	PCD D1 mm OD	L mm	n No of	d Hole Size mm	Air-flow cmh at 10m/s	Air-flow @ 12m/s
10	1.0	250	330	295	200	12	12	1824	2189
12	1.0	300	380	345		12		2627	3153
14	1.0-1.25	350	430	395		14		3576	4291
16	1.0-1.5	400	480	445		18		4670	5605
18	1.5-2.0	450	530	495		18		5911	7093
20	2.0-2.5	500	580	545	250	18		7298	8757
22	2.5-3.0	550	630	595		18		8830	10596
24	3.0-3.5	610	680	645		22		10508	12610
26	3.5-4.0	650	765	730		22		12333	14799
27	4.0-4.5	685	790	755		24		13300	15960
Dish Damper (Rectangle)		Up/down stream E mm	Height H mm	Width W mm					
1Hx1W	1-2	552/616	756	686	559		14.2	7298	8757
1Hx2W	2-4		756	1296			14.2	14595	17514
1Hx3W	3-6		756	1905			14.2	21893	26271
Class 4 /2 Damper (Square)		E	H	W				7 m/s	10 m/s
ATD	1-2	558	638	558	130	32	10-12	7800	11000
ATD	1-2	628	668	628	130	32	10-12	9900	14000

Round OD10-14" Commonly used at ceiling or outlet Face velocity <6.0m/s, fumehoods, biosafety cabinets, isolators exhaust. ATD4/2 Option: Customise Sizes / Flat Joint for Duct connection

BTD Round Damper
Zero leakage Bubble Tight

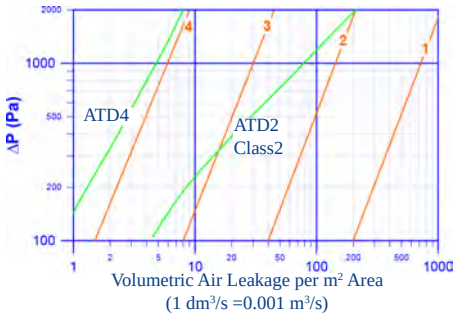


BTD Dish Damper 1Hx1W
Zero leakge Bubble Tight




Multi banks BIBO housing connections for higher airflow

Air Tight Class (according to EN1751)



ATD4 - Very low leakage Volume control damper with air-tight leakage class 4 according to EN1751.
Galvanised Steel Frame with Extruded Aluminum Blades with rubber gaskets,polypropylene gears,self-lubricating resin bushings, Al lateral sealing plates. Very low leakage can be used as shut-off dampers
0.0008-0.0015m^3/s per m^2 valve area at 100Pa
0.005-0.006 m^3/s per m^2 valve area at 1,000Pa

ATD2 - Low leakage Volume Control damper w air-tight leakage class 2, for general purpose use for air branching.
0.004-0.04m^3/s per m^2 valve area at 100Pa
0.08-0.15m^3/s per m^2 valve area at 1,000Pa

IF International Filtration

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