MADE IN BRITAIN

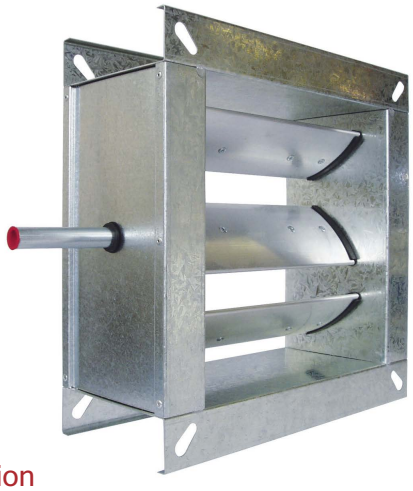
V12607

HD Series
Heavy Duty Air Control and Low Leakage Dampers

- Class C case leakage with side covers
- Conforms to Eurovent 2/2 classes A-C
- Velocity range to 20 m/s
- Duct Pressure to 2000 Pa
- DW 144 compliant
- EN 1751 closed blade leakage performance tested
- Four blade options
- Four case options
- Parallel blade option
- Three control options

HD Series

Heavy Duty Air Control and Low Leakage Dampers



Introduction

The HD series damper range offers blade profiles that provides air volume control through to low closed blade leakage characteristics, that have been designed for systems where high air pressures and velocities are involved.

With its robust construction the HD series damper makes it the ideal choice for use on air handing units and the aerodynamic blade profile encourages smooth airflow offering minimal pressure drop.

Side covers are fitted to the flanged case not only ensuring that the dampers meet Class C case leakage of DW144, but additionally safeguarding against hands and foreign objects being placed into the path of the moving linkage.

Damper control is via factory fitted 19mm diameter extended spindle control for actuation by others, manual quadrant, electric or pneumatic actuation. Dampers are supplied in flanged or spigot style casing compliant with DW144 as appropriate.

Flange dampers for air control are available with a single drive to a maximum 2380mm width for 50mm flanges and 2400mm width for 40mm flanges all with a maximum height of 2000mm and a standard 130mm deep case.

Dampers for low closed blade leakage applications (HD-LL), the damper width and height are limited to 1000mm to ensure continuity of performance with a single drive.

HD Features

- Standard case construction is galvanised mild steel
- Four blade options
- Interlocking blade option
- Four case options
- Three control options
- Low and high pressure models
- Enclosed drive mechanism out of airstream
- Easy transition from manual control to motorised and conversely
- Can be supplied with blades and case in Grade 430 and 316 stainless steel
- Air control and system balance
- Variable flange dimensions and casing depths
- Stainless steel side seals option to order
- Flanged case dampers include side covers enclosing the drive linkage ensuring Class C case leakage
- Vertical blade support that complies with DW144 available

Testing and Conformities

- Conforms to HVCA specification DW144. Case leakage A, B and C
- Conforms to Eurovent 2/2 classes A-C
- In-house performance tested for blade leakage (See Page 10)

The HD Series Product Range

Air Control Dampers

The HD Series Heavy Duty Damper is available in vertical or horizontal mounting configurations from 100mm square to 2380mm as a single section to 4860mm wide to a unlimited height for flange case dampers.

Low Closed Blade Leakage Damper

The HD-LL Series (Low Leakage Heavy Duty dampers) is available in a variety of vertical or horizontal mounting configurations from 100mm square/dia. to 1000mm square/dia. Where damper sizes are greater than these maximums, multiple sections will be provided to achieve requested size.

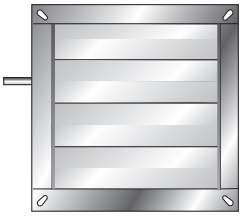
Rectangular Flangefit

Square/Rectangular Flange Connection.

Model HD-F
Air Control Damper

Model HD-IB-F
Low Leakage Damper

Model HD-LL-F
Low Leakage Damper



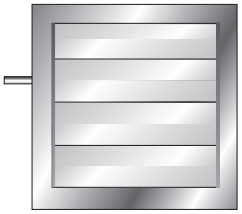
Rectangular Spigotfit

Square/Rectangular Spigot Connection.

Model HD-S
Air Control Damper

Model HD-IB-S
Low Leakage Damper

Model HD-LL-S
Low Leakage Damper



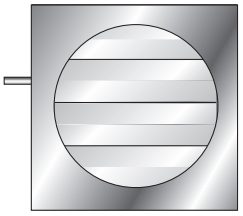
Circular Spigotfit

Circular Spigot Connection.

Model HD-C
Air Control Damper

Model HD-IB-C
Low Leakage Damper

Model HD-LL-C
Low Leakage Damper



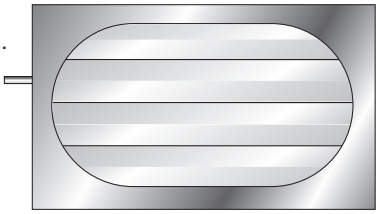
Flat Oval Spigotfit

Flat Oval Spigot Connection.

Model HD-O
Air Control Damper

Model HD-IB-O
Low Leakage Damper

Model HD-LL-O
Low Leakage Damper



Casing Features

The damper casings have a single penetration for the blade drive mechanism spindle that provides for control options, Extended Spindle Control, Manual Quadrant Control or Factory Fitted Electric or Pneumatic actuation.

The enclosed and sealed drive mechanism makes the dampers suitable for inclusion within ducted air systems of Class A, B & C for both flanged and spigot case models.

Flanged Case:
The galvanised case has welded and sealed corners. Flange corners on both faces of the damper have tear drop corner alignment holes to suit proprietary duct flanges. Optional stainless steel cases are available in either Type 1.4016 Ferritic or Type 1.4401 Austenitic grades to BS EN 1088-2.

The flange damper case allows the blades to rotate within the case depth without protruding past either side of the flange perimeter.

Spigot Case:
Spigot case dampers have square, rectangular, circular and flat oval male spigots to intersect with adjoining ductwork. Optional stainless steel case construction is available in either Type 1.4016 Ferritic or Type 1.4401 Austenitic grades to BS EN 1088-2.

Enclosed Drive Mechanism

The totally enclosed blade drive mechanism is outside the air stream maximising the available free area, providing protection from impact damage and airborne contamination.

Care should be taken not to puncture the case especially during installation. Any penetration into the damper case may impact the blade linkage mechanism operation and invalidate the product warranty.

Special Notes:
Flanged square and rectangular dampers can be manufactured to individual specifications and applications supplied complete with installation/joining strips.

Vertical Blade applications:
Single and multiple damper arrangements are designed to be installed with blades in the horizontal position. Where dampers are to be installed with blades in the vertical position, where side seals are called for, this must be advised at the time of requesting a quotation and/or placing an order to allow the inclusion of additional blade supports.

Drive Spindles are always fitted to the second blade down unless single blade only, or specified otherwise.

Blade End Bearings

Burst Through (Standard):
These are formed by a tool that punches through the side case material forming a burst through opening. Unlike standard undressed cut holes that can increase the torque requirement and cause undue wear, die punched formed holes provide low friction bearing for the blade spindles to rotate and in normal, filtered air condition systems are maintenance free.

Application: This option is suitable for all applications

Oilite Bearings (Optional):
Oilite is a porous bronze alloy impregnated with an oil lubricant and used as a bearing offering excellent load bearing properties. Oilite is formed using powder metallurgy so that tiny pores are present in the metal. The pores are then vacuum impregnated with an oil to reduce wear of the damper.

This bearing is not recommended for high heat applications.

Application: This option is most suitable for where high humidity is present.
Regardless of the bearing type used within our dampers, all dampers are recommended to be included within a regular maintenance programme and depending on the environmental conditions a more intensive maintenance regime may be required to be introduced.

Product Dimensional Range

HD Series	Flanged Single Section * 100mm x 100mm minimum size up to 2380mm wide by 2000mm high - one drive
HD Series	Rectangular Spigot Case 100mm x 100mm up to 2400mm wide x 2000mm high - one drive
HD Series	Circular Spigot Case 100mm dia. to 1422mm dia. - one drive
HD-IB Series	Flanged Single Section 100mm x 100mm minimum size up to 1000mm wide by 1000mm high - one drive
HD-IB Series	Spigot Case Option 100mm x 100mm up to 1000mm x 1000mm - one drive
HD-IB Series	Circular Spigot Case 100mm dia. to 1000mm dia. - one drive
HD-LL Series	Flanged Single Section 100mm x 100mm minimum size up to 1000mm wide by 1000mm high - one drive
HD-LL Series	Spigot Case Option 100mm x 100mm up to 1000mm x 1000mm - one drive
HD-LL Series	Circular Spigot Case 100mm dia. to 1000mm dia. - one drive

HD-IB Low Leakage Damper details commence from Page 11

HD-LL Low Leakage Damper details commence from Page 14

* Based on 50mm flange detail.

The maximum duct width for 40mm flange detail is 2400mm.

Multiple section spigot square/rectangular dampers will be supplied loose for site assembly complete with joining sections that will additionally provide spigot connection continuity. Factory assembled multiple sections will attract additional manufacturing and transport costs.

HD Series

Heavy Duty Air Control and Low Leakage Dampers

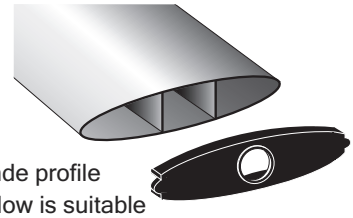
Blade Features

The 100mm wide galvanised blade is offered as standard with the option of extruded aluminium airfoil section or precision rolled grade 430 or 316 stainless steel available to order. Low leakage models are available with aluminium blades only. All blades are fitted to 19.05mm diameter spindles.

All models are available with either opposed blades as standard or optional parallel blades.

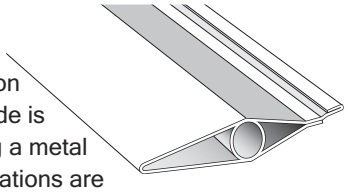
End caps are fitted to the aluminium blade ends to minimise noise generation.

HD Air Control Blade



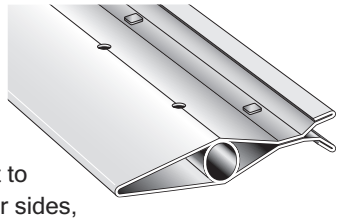
Aluminium Extruded Profile. The aerodynamic aluminium reinforced blade provides air control and system balancing, and with its 100mm smooth blade profile offering a low resistance to airflow is suitable for installations that are subject to high velocities and pressures. Purpose made blade end caps alleviate noise generation.
Suggested temperature operating range +5° to + 70°C.

HD Air Control Precision Rolled Mono Rib Blade



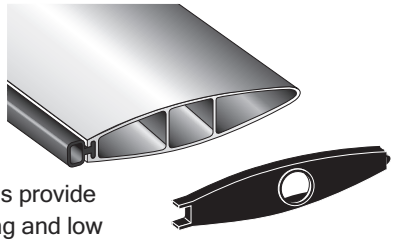
Galvanised, 430 or 316 precision rolled double skin mono rib blade is extended on one side providing a metal to metal overlap. Typical applications are to minimise drafts behind grilles and louvres, and where summer/winter ventilation is called for.

HD-IB Air Control Interlocking Blade



The HD interlocking blade Galvanised 430 or 316 provides low closed blade leakage. Complete with peripheral gasket to the inner damper case on all four sides, interlocking blades that are finished with a dutch fold for added safety and anti-corrosion clinched fastening that offers little resistance to the air flow, unlike other blade fixings.

HD-LL Air Control Low Leakage Aluminium Blade



The aerodynamic aluminium reinforced blade, blade end cap and vertical side blade end seals provide air control, system balancing and low closed blade leakage. Utilising only a single blade edge seal to the trailing edge, the engineered blade seal profile has a special shoulder design to ensure a positive sealed connection between the blade and fitted seal.
The blade seal acquiescent profile design accepts the leading edge of the interconnecting adjacent blade ensuring a good compressible seal with minimal torque, returning to its original form when the blades re-open.

Material Specification - HD Series

Casing
1.2mm (18swg) galvanised mild steel to BS EN 10346 specification DX 51D Z275. When circular or flat oval spigots are supplied, the material will be 0.7mm zintec for the spigots only.

Blades
Extruded airfoil aluminium to BS EN 755 Part 9 specification 6063 T6, wall thickness 1.3mm. Precision rolled 0.70mm galvanised mild steel, 0.7mm 430 grade stainless steel and 316 grade stainless steel.

Blade End Caps
HD Series injection moulded black polypropylene to BSB's recorded design.
HD-LL Series injection moulded black nylon to BSB's recorded design.

Blade and Drive Spindles
19.05mm diameter galvanised mild steel tube.
Options: Grade 316 stainless steel.

Side Gasket Option
Vertical blade formed edge gasket 0.20mm 301 grade stainless steel, reducing leakage past the closed blade edges.

Quadrant
1.2mm (18swg) galvanised mild steel chassis with integral rotation slot and blade position indication.
Zinc plated mild steel handle with integral clamp and locking nut to BS EN 10142; 30mm x 2.5mm for galvanised and 30mm x 2.0mm for 316 grade stainless steel. Coating Class BS1706.

Linkage
Crank Arm: 30mm x 2.50mm zinc plated mild steel and 30mm x 2.0mm for 316 grade stainless steel. Spindle clamp with integral 8mm diameter mild steel plated drive pins are as standard and 304 grade for stainless steel blade and case options.
Drive bar: 20mm x 2.50mm flat bar punched to engage with plated drive pins.

Bushes
Burst through bushes are formed within the casing to provide a low friction bearing for the blade spindles to rotate.
Options: Oilite bushes impregnanted with mineral oil to ISO VG 100 (SAE 30) can be supplied

Rivets
High quality self-sealed rivets used to European standards as relevant.

Sealant
All joints and seams are sealed with sealant conforming to dictates of DW144.

Paint
Low VOC water based primer applied to all accessible welds.

Operating Temperature

HD Air Control Option:
+5°C to +70°C as standard.

HD-LL Option
+5°C to +70°C
Exposure to moist low temperatures may allow condensation to form and crystalise. this may impact on the ability to open the damper blades.

The HD Series - Dimensional Data

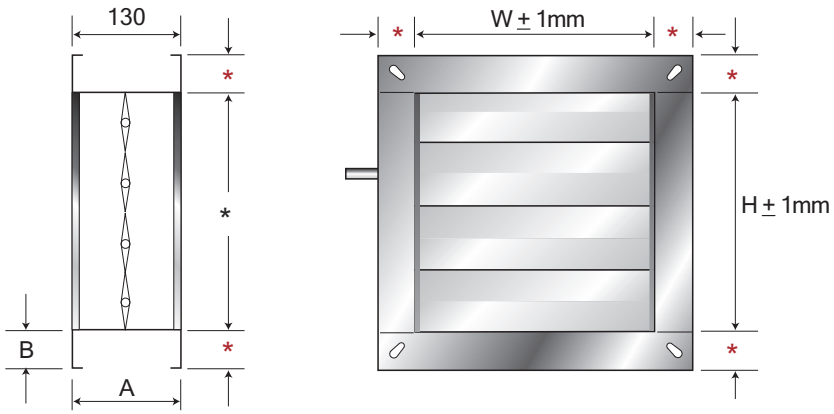
HD-F Heavy Duty Flangefit

HD Air Control Damper

* = 50mm Flange as standard:
Width: 100mm - 2380mm
Height: 100mm - 2000mm

* = 40mm Flange option:
Width: 100mm - 2400mm
Height: 100mm - 2000mm

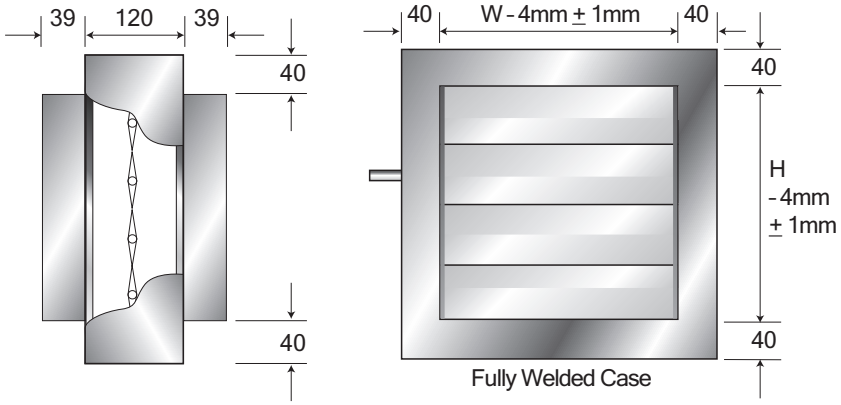
A = 130mm standard
(140, 150 and 200mm to order)
B = 50mm standard
(35mm and 40mm to order)



* Where damper heights are requested in 100mm increments, the damper air way height will be 12mm greater for galvanised and stainless steel blades and 5mm greater for aluminium blades. Top and bottom flanges are amended to accommodate the blade profile, with the overall flange size being unaffected.

HD-S Heavy Duty Spigotfit

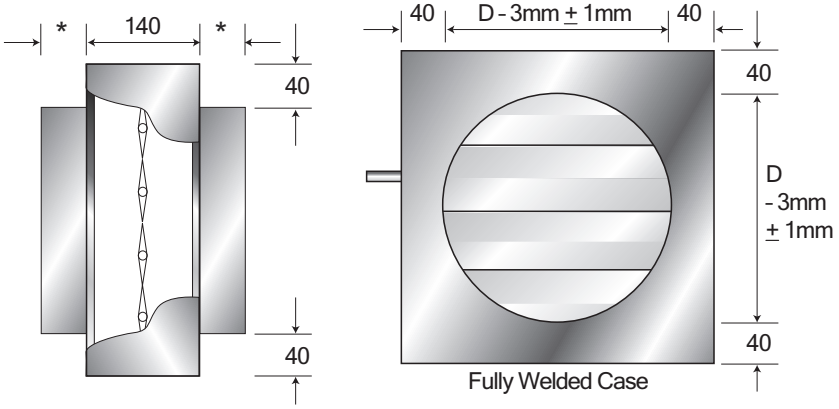
HD Air Control Damper



HD-C Heavy Duty Circular Spigotfit

HD Air Control Damper

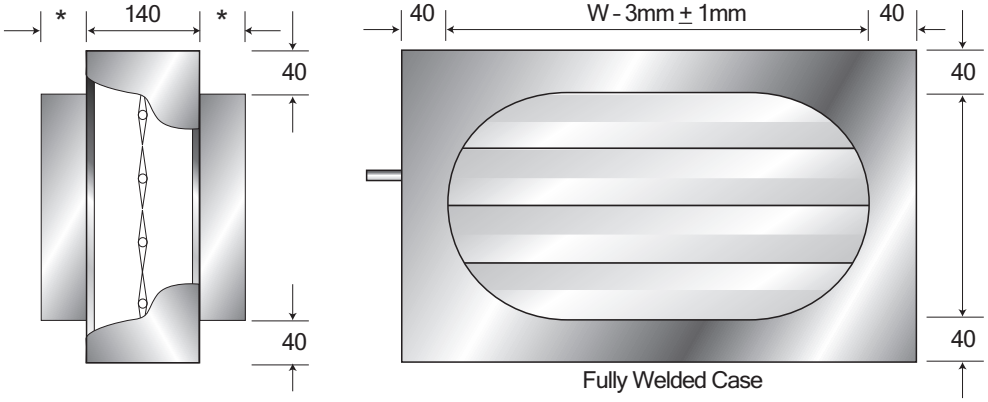
* Spigot length:
41mm (up to 350mm dia.)
55mm (over 350mm dia.)



HD-O Heavy Duty Flat Oval Spigotfit

HD Air Control Damper

* Spigot length:
41mm (up to 350mm dia.)
55mm (over 350mm dia.)



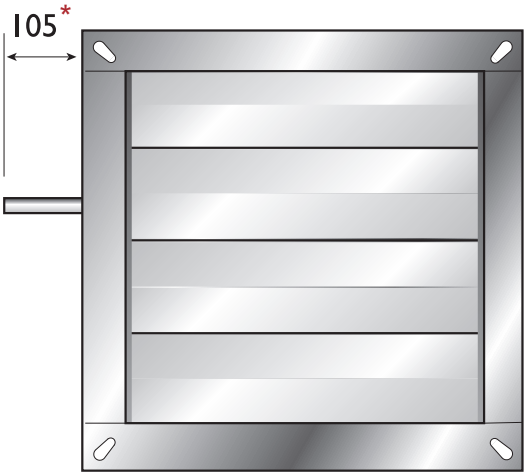
The HD Series - Control Options

Option E - Extended Spindle

When the specification requires the HD Series Damper to be supplied for motorisation by others. BSB supplies the damper with a 19.05mm diameter spindle, 105mm* in length.

Note: Where the damper side flanges differ from the standard 50mm option. The spindle length changes accordingly for all control options.

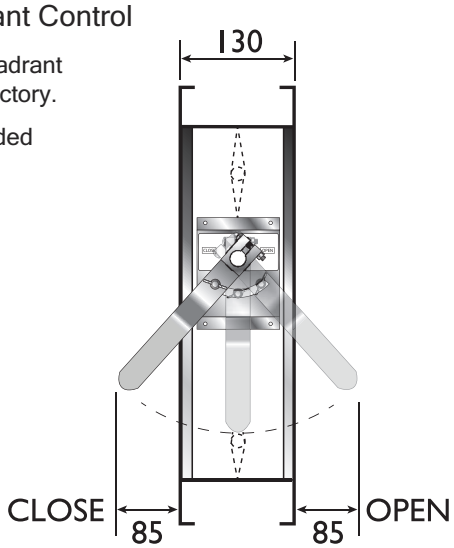
* Dimension shown refers to 50mm flange detail

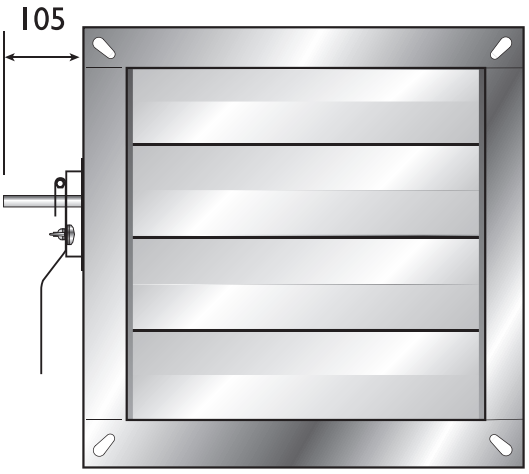


Option H - Manual Quadrant Control

BSB's unique hand-lockable quadrant is supplied complete from the factory.

When the specification is amended from Option "E" to Option "H" conversion is easily completed.

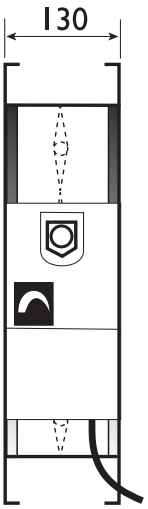


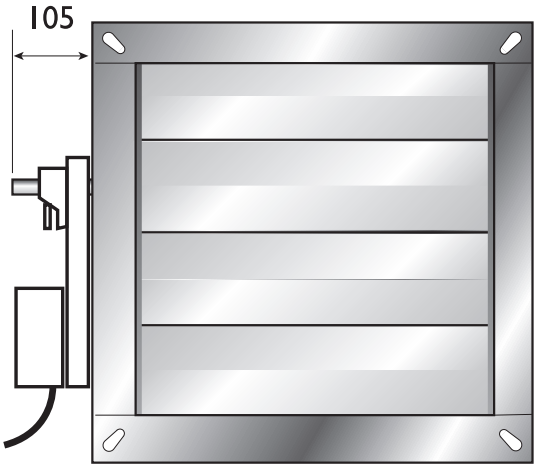


Option M - Electric Actuator

The HD Series Damper can be supplied factory fitted with electric actuators offering a choice of methods of operation.

For additional technical details, please contact BSB's sales office for data sheets





Flange Case Cover Plates

Cover plates come in two profiles, standard contoured or flat. The standard profile for flange sizes 40mm and 50mm is recessed with inward angled sides and a lip to both long edges. This will allow duct clamps to be used to connect mating duct flanges to the HD damper.

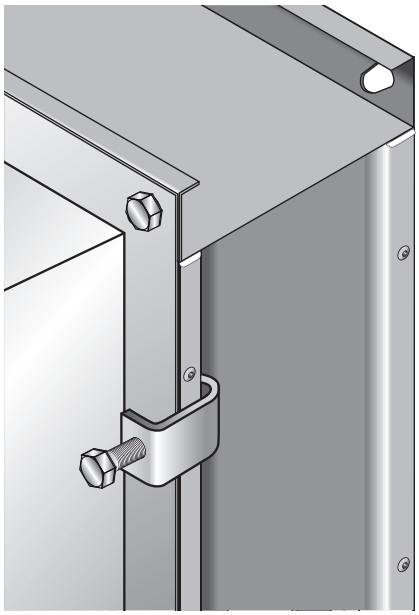
The flat cover plate for flange sizes 30mm and 35mm fit across the damper side case landing on the flange return and sealed in place. Wider reach G clamps will be required for the damper installation.

Before fitting either cover plates, a bead of sealant is applied to the two long flange returns. The side covers are secured by rivets to the flange return. A bead of sealant is applied top and bottom externally.

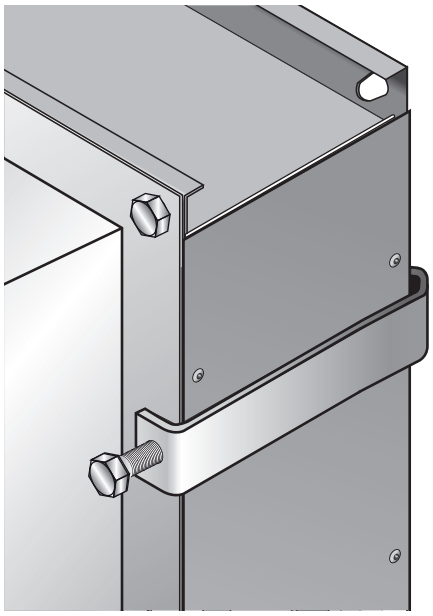
Flat cover plates extend past the top and bottom flange detail, so as to allow a bead of sealant to be applied.

Duct Clamps

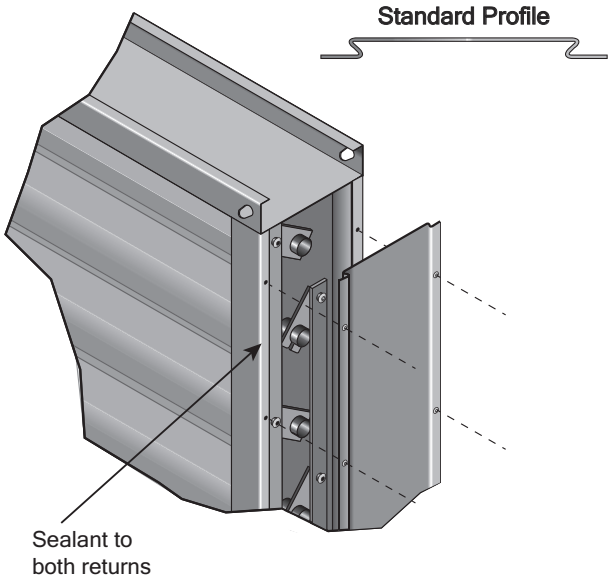
STANDARD DUCT G CLAMPS FOR STANDARD COVER PLATE (By others)

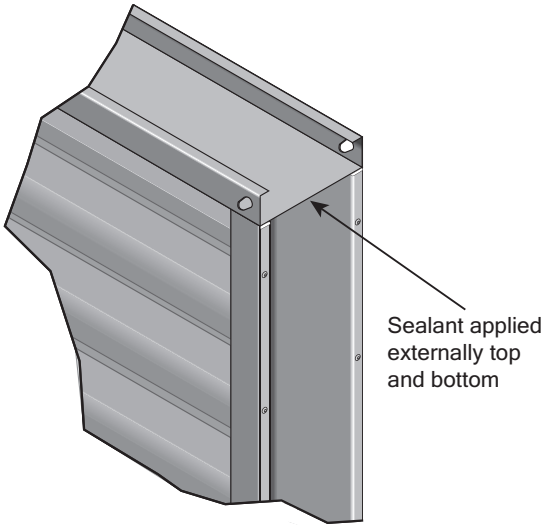


EXTENDED DUCT G CLAMPS FOR FLAT COVER PLATE (By others)

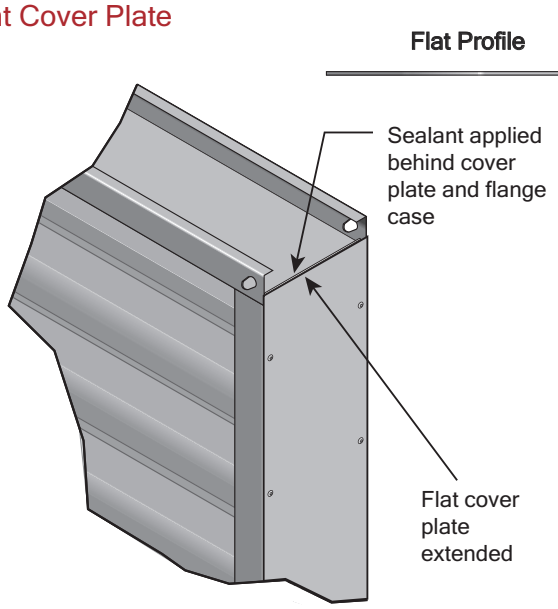


Standard Cover Plate





Flat Cover Plate



Multiple Assemblies

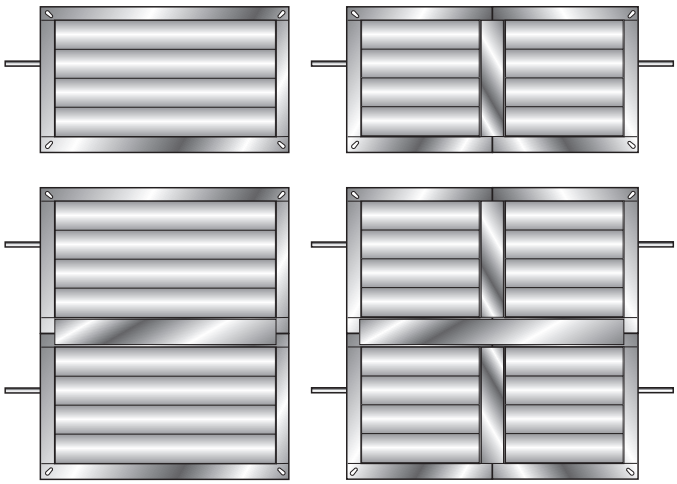
Flanged case HD Series dampers are supplied with a maximum duct width of 1250mm.

Damper widths greater than 1250mm up to 2380mm will have a single drive spindle and be supplied with a centre stability mullion.

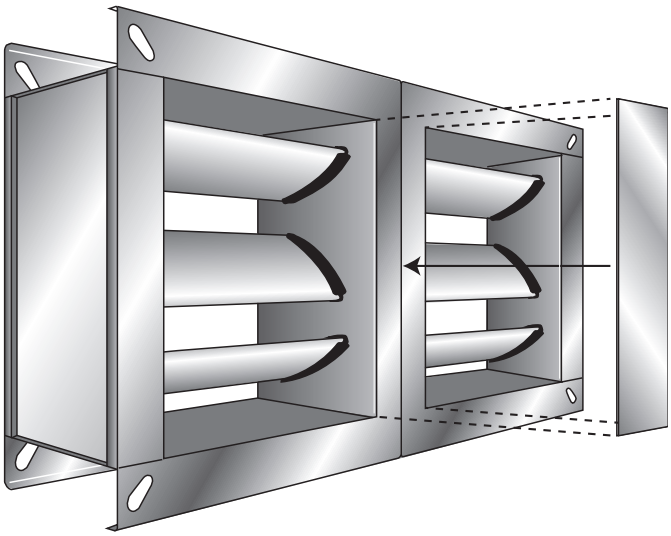
Damper widths greater than 2380mm or damper heights greater than 2000mm will be manufactured in multiple sections with a drive spindle attached to the second blade down in each section.

Damper requested sizes that require multiple sections will be despatched and shipped unassembled for site assembly by others. Joining strips are supplied un-drilled unless requested otherwise.

Large multiple damper arrangements that are required to be shipped fully assembled, will incur additional packing and shipping costs.

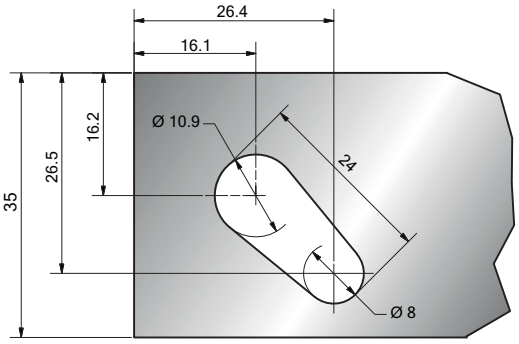


Multiple Connections Joining Strip

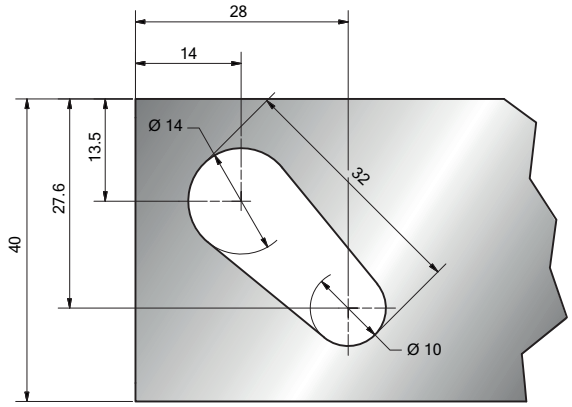


Corner Hole Detail

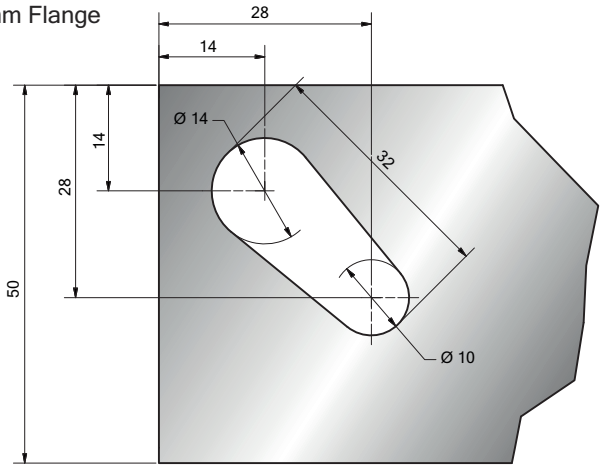
35mm Flange



40mm Flange



50mm Flange



Maintenance

BSB HD series Dampers are designed for installation within normal dry filtered air systems. A programme of planned inspections should be carried out to include full operational checks, correct interface and function of any controls and control systems.

As a guide, dampers should be inspected annually and more frequently if exposed to fresh air intakes and/or inclement and dusty conditions.

Any application involving corrosive and/or aggressive hostile environmental conditions (e.g. swimming pools and coastal applications) may invalidate our warranty and should be referred to BSB Sales Office.

HD Series Particular Specification

The BSB HD Air Control and Air Control Precision Blade shall be the type HD with 100mm wide Extruded Aluminium Air Control Blade or, Galvanised, 430 grade or 316 grade stainless steel precision rolled mono rib blade.

Galvanised and stainless steel blades are opposed in operation and are formed double skin airfoil shape and have self clinch fixings in lieu of any rivets, specific to BSB on a 100mm pitch. The clinch fixing removes the risk of rivet deterioration when exposed to unfiltered air or high humidity, that could weaken the blade profile and performance.

Blade profile shall be aerofoil in section to minimise noise and air flow disturbance as the air passes over the damper blade section.

Square or rectangular Flanged and Spigot case shall be formed from 1.2mm galvanised steel to BS EN 10346 DX51 Z275. Flanged units shall have peripheral flanges prepunched with elongated corner fixing holes to suit proprietary duct flanges. The damper casing shall have a single penetration to allow the drive control shaft fitted with “vee” seal to protrude. The damper will be supplied with either Manual Quadrant Control, Specified Belimo Motor or Extended Spindle Control. The damper will be designed to allow on site conversion from manual control to extended spindle control for motorisation by others, without the need to purchase a conversion kit or the requirement of any special tools.

Circular spigot case dampers shall be formed from 1.2mm galvanised steel to BS EN 10346 DX51 Z275 for the fully welded damper body and shall have circular spigots formed from 0.7mm minimum zintec steel.

Blade and drive spindles shall be 19.05mm diameter galvanised mild steel tube that is corrosion resistant and shall rotate via burst through bushes within the inner casing to provide a low friction drive bars and bearing surface.

Blade linkage for Aluminium Air Control dampers shall be via cross over link bars and for Precision Rolled Blade dampers for accurate blade control. All linkage shall be external to the airstream to increase the free area through the damper and also protect the drive mechanism.

Blade linkage for Precision Rolled Blade dampers shall be via geared discs with two connected drive bars and cross over link bars for accurate blade control.

All linkage shall be external to the airstream to increase the free area through the damper and also protect the drive mechanism.

They shall meet with the air tightness test requirements of DW144 to classes A, B & C for all models. They shall also conform to Eurovent 2/2 classes A-C.

Weight Charts These values are approximate (Kg)

Flangefit Model HD with aluminium blades

	Damper width (mm)											
Height (mm)	200	400	600	800	1000	1200	1400	1600	1800	2000	2200	2400
100	3.0	4.5	5.5	7.0	8.0	9.5	11.5	12.5	14.0	15.0	16.5	17.5
200	3.5	5.0	6.0	7.5	8.5	10.0	12.0	13.0	14.5	15.5	17.0	18.0
400	5.5	7.0	9.0	10.5	12.0	13.5	16.5	18.0	20.0	21.5	23.0	24.5
600	7.5	9.5	11.5	13.5	15.5	17.5	21.5	23.5	25.0	27.0	29.0	31.0
800	9.5	12.0	14.0	16.5	18.5	21.0	26.0	28.5	30.5	33.0	35.0	37.5
1000	12.0	14.5	17.0	19.5	22.0	24.5	31.0	33.5	36.0	38.5	41.0	44.0
1200	14.0	16.5	19.5	22.5	25.5	28.5	35.5	38.5	41.5	44.5	47.5	50.0
1400	16.0	19.0	22.5	25.5	29.0	32.0	40.5	43.5	47.0	50.0	53.5	56.5
1600	18.0	21.5	25.0	28.5	32.0	36.0	45.0	48.5	52.5	56.0	59.5	63.0
1800	19.5	23.5	27.0	31.0	34.5	38.5	48.0	52.0	55.5	59.5	63.5	67.0
2000	21.0	24.5	28.5	32.0	36.0	39.5	50.0	53.5	57.5	61.0	65.0	68.5

Circular Model HD-C with aluminium blades

Diameter	Weight (kg)
100	3.0
200	5.0
300	7.5
400	10.5
500	13.5
600	17.0
700	20.5
800	24.0
900	28.0
1000	32.5
1100	37.0
1200	41.5

Flangefit Model HD with galvanised 430 or 316 grade stainless steel blades

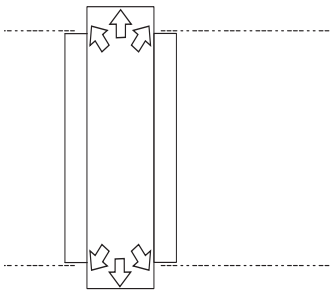
	Damper width (mm)											
Height (mm)	200	400	600	800	1000	1200	1400	1600	1800	2000	2200	2400
100	3.5	4.5	6.0	7.5	9.0	10.0	12.5	13.5	15.0	16.5	17.5	19.0
200	4.0	5.0	6.5	8.0	9.5	10.5	13.0	14.0	15.5	17.0	18.0	19.5
400	6.0	8.0	9.5	11.5	13.5	15.0	18.5	20.0	22.0	24.0	25.5	27.5
600	8.0	10.5	13.0	15.0	17.5	19.5	24.0	26.0	28.5	31.0	33.0	35.5
800	10.5	13.0	16.0	18.5	21.5	24.0	29.5	32.0	35.0	37.5	40.5	43.0
1000	12.5	16.0	19.0	22.0	25.5	28.5	35.0	38.5	41.5	44.5	48.0	51.0
1200	15.0	18.5	22.0	25.5	29.5	33.0	40.5	44.5	48.0	51.5	55.0	59.0
1400	17.0	21.0	25.0	29.0	33.0	37.5	46.5	50.5	54.5	58.5	62.5	66.5
1600	19.0	23.5	28.0	32.5	37.0	41.5	52.0	56.5	61.0	65.5	70.0	74.5
1800	21.0	25.5	30.5	35.0	40.0	44.5	55.5	60.0	65.0	69.5	74.5	79.0
2000	22.0	27.0	31.5	36.0	41.0	45.5	57.0	61.5	66.5	71.0	76.0	80.5

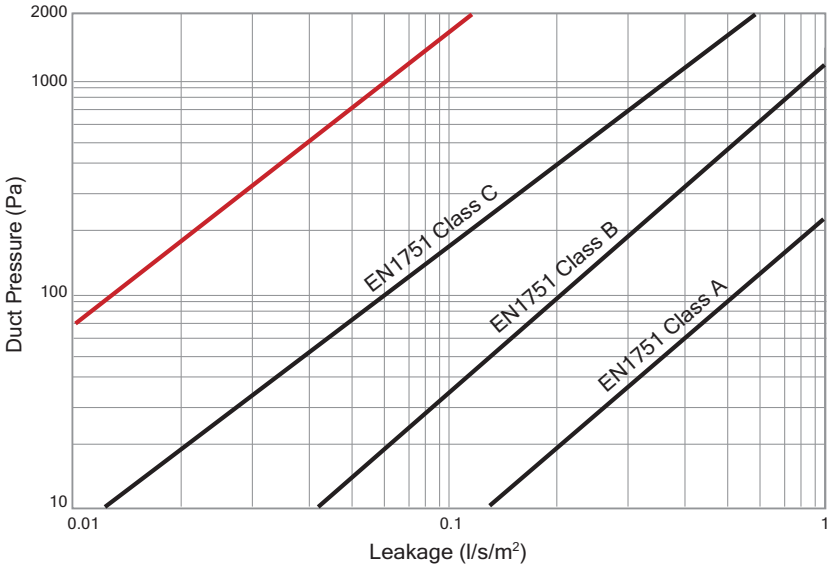
Circular Model HD-C with steel blades

Diameter	Weight (kg)
100	3.0
200	5.5
300	8.0
400	11.5
500	14.5
600	18.5
700	22.5
800	26.5
900	31.5
1000	36.0
1100	41.5
1200	47.0

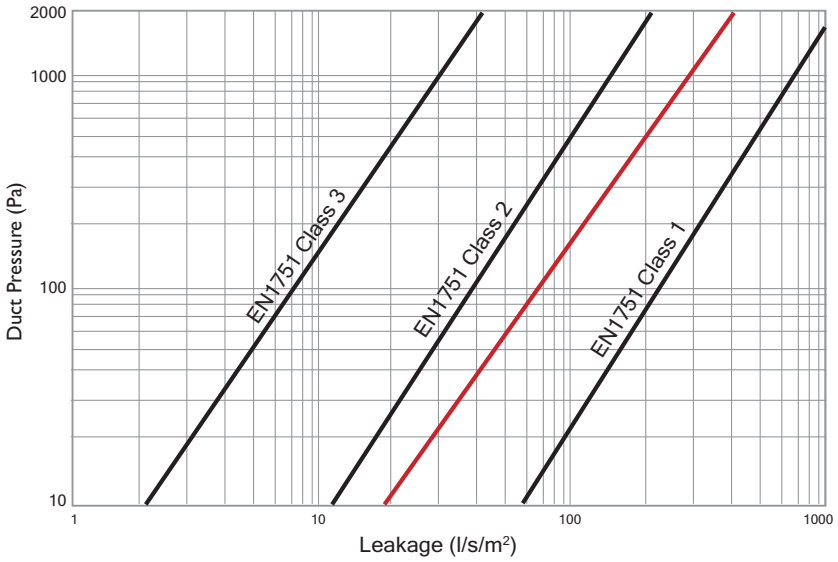
Performance Data

HD Case Leakage
With side covers fitted





HD Blade Leakage
900mm x 900mm

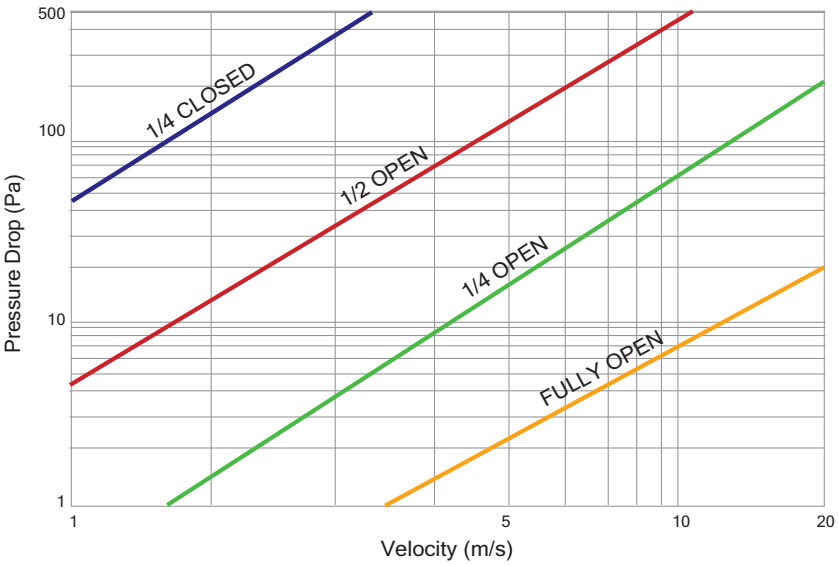


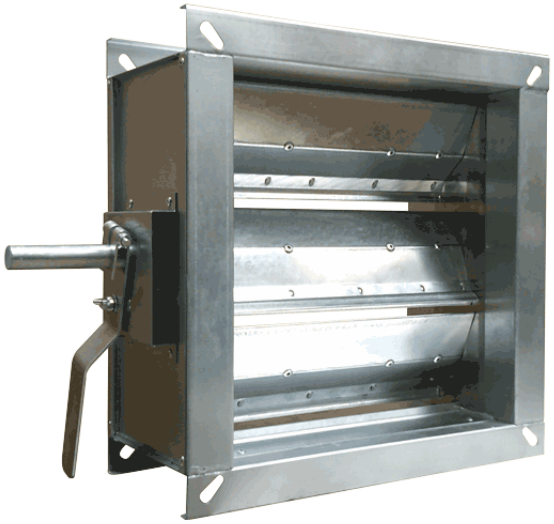
HD Pressure Drop
600mm x 600mm

(Excludes duct friction loss)

Free area = 78%

Velocity Range 0 to 20 m/s





Introduction - HD-IB Series

The HD-IB series damper has been designed for installation within air conditioning and ventilation systems requiring air control and reduced closed blade leakage where exposure to aggressive air and moisture is a possibility.

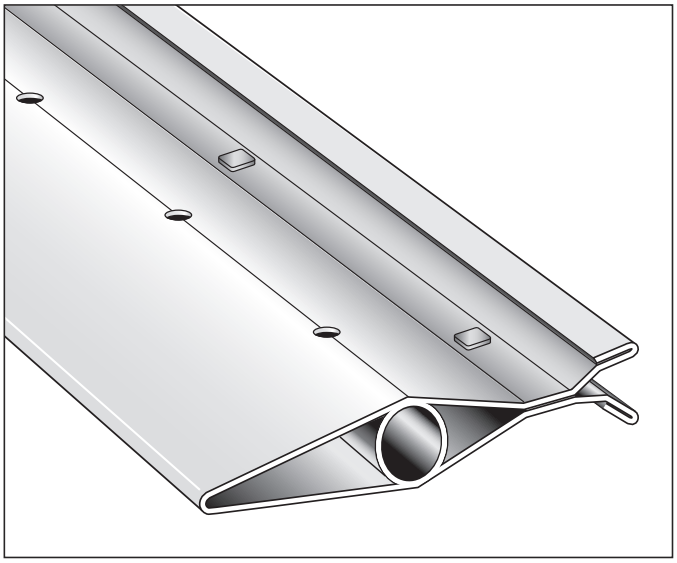
The damper case and blade construction can be offered in all galvanised, 430 grade stainless or 316 grade stainless steel. 316 grade offers the highest resistance.

Damper case is either square/rectangular flanged or spigot design, circular or flat oval spigot case.

Blades are opposed in operation and are formed double skin airfoil shape and have self clinch fixings in lieu of any rivets, specific to BSB on a 100mm pitch that interlock when closed. The clinch fixing removes the risk of rivet deterioration when exposed to unfiltered air or high humidity, that could weaken the blade profile and performance.

There are no plastic parts in the interlocking blade and damper construction, eliminating hygroscopic actions.

The BSB HD-IB series interlocking blade dampers are available in a variety of vertical or horizontal mounting configurations from 100mm square/dia to 1000mm dia and 1000mm wide x 1000mm high with a single drive spindle.



Material Specification - HD-IB Series

Casing
1.2mm (18swg) galvanised mild steel to BS EN 10346 specification DX 51D Z275. When circular or flat oval spigots are supplied, the material will be 0.7mm zintec for the spigots only.

Blades - Interlocking
Precision rolled double skin airfoil in shape galvanised, 430 stainless or 316 grade stainless steel, on a 100mm pitch that interlock when closed.

Side Seal Gasket
Grade 302 stainless steel hard rolled to BS EN 10088-2, 0.20mm thick.

Blade and Drive Spindles
19.05mm diameter galvanised mild steel tube.
Options: Grade 316 stainless steel.

Quadrant
1.2mm (18swg) galvanised mild steel chassis with integral rotation slot and blade position indication. 30mm x 2.5mm zinc plated mild steel handle with integral clamp and locking nut..

Linkage
Crank Arm: 30mm x 2.75mm zinc plated mild steel spindle clamp with integral 8mm diameter drive pins 5.75mm thick. Drive Bar: 20mm x 2.5mm flat bar punched to fit onto zinc plated drive pins.

Bushes
Burst through bushes are formed within the casing to provide a low friction bearing for the blade spindles to rotate.
Oilite bushes impregnated with mineral oil to ISO VG 100 (SAE 30) can be supplied.

Rivets
High quality self-sealed rivets used to European standards as relevant.

Sealant
All joints and seams are sealed with sealant conforming to dictates of DW144.

Paint
Low VOC water based primer applied to all accessible welds.

Operating Temperature
+5°C to +70°C as standard.

Refer to Page 5 for casing dimensions.

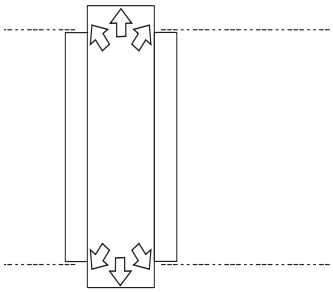
HD-IB Series

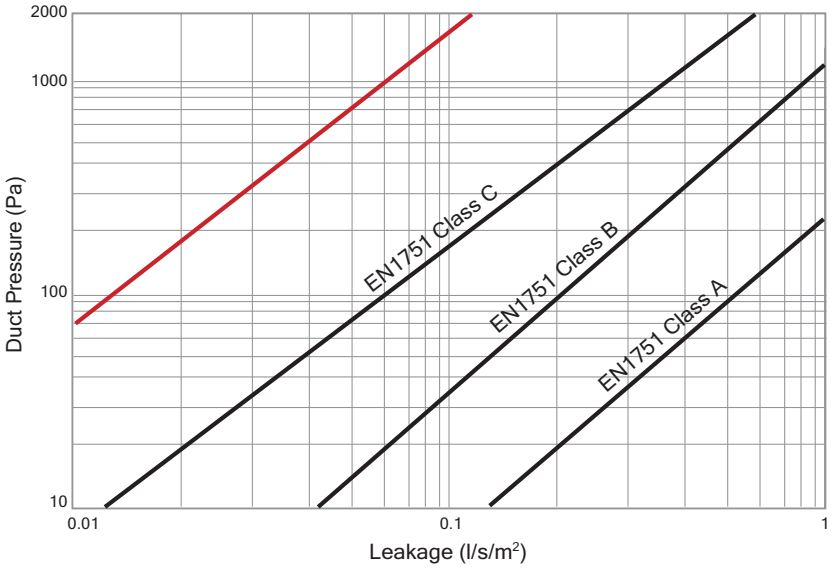
Heavy Duty Interlocking Blade Low Leakage Dampers

Performance Data

HD-IB Case Leakage

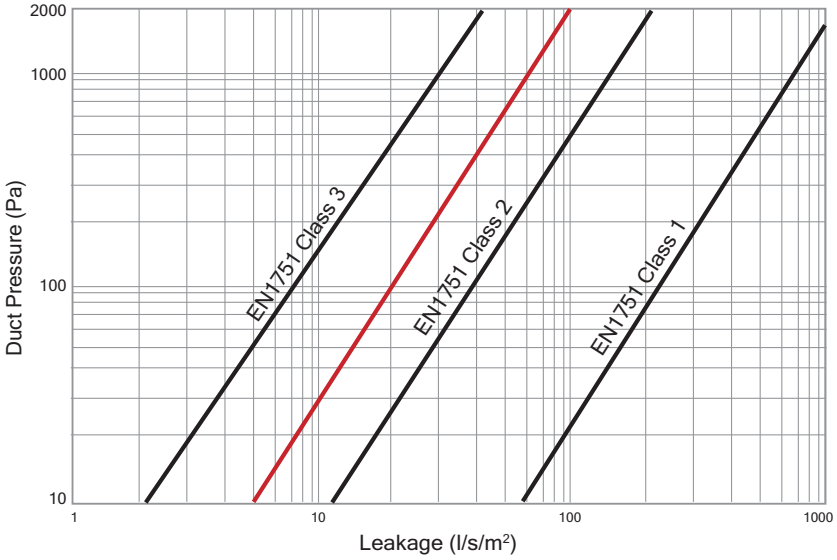
With side covers fitted





HD-IB Blade Leakage

1000mm x 1000mm



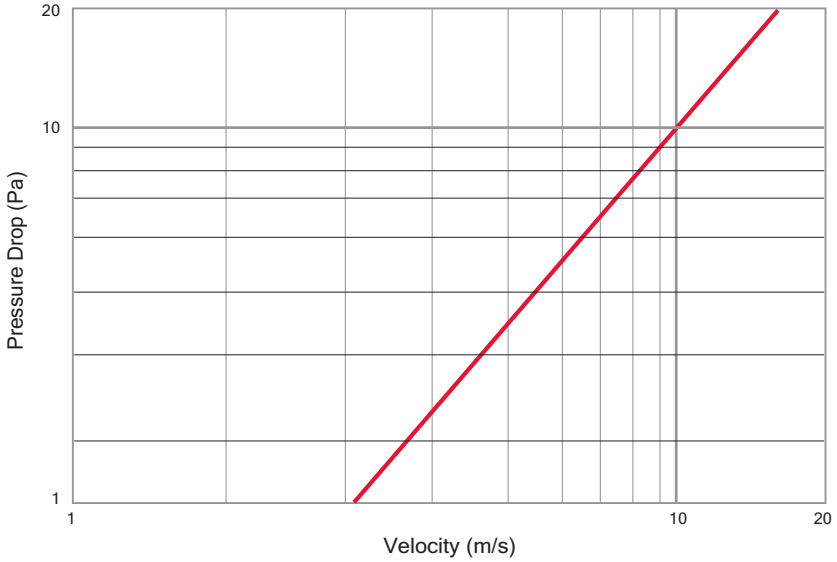
HD-IB Pressure Drop

600mm x 600mm

(Excludes duct friction loss)

Free area = 78% (when fully open)

Velocity Range 0 to 20 m/s



HD-IB Series Low Leakage Particular Specification

The BSB HD Low Leakage Interlocking Blade damper shall meet Class 2 blade leakage of EN 1751 and Class C of DW144 casing leakage.

The BSB HD-IB low leakage interlocking blade damper shall be the type HD with 100mm wide Galvanised Interlocking Blade.

The Blade profile shall be aerofoil in section to minimise noise and air flow disturbance when the air passes over the damper blade section and shall not protrude beyond the case depth.

Square or rectangular Flanged and Spigot cases shall be formed from 1.2mm galvanised steel to BS EN 10346 DX51 Z275. Flanged units shall have peripheral flanges prepunched with elongated corner fixing holes to suit proprietary duct flanges. The damper casing shall have a single penetration to allow the drive control shaft to protrude. The damper will be supplied with either Manual Quadrant Control, Specified Belimo Motor or Extended Spindle Control. The damper will be designed to allow on site conversion from manual control to extended spindle control for motorisation by others, without the need to purchase a conversion kit or the requirement of any special tools.

Circular spigot case dampers shall be formed from 1.2mm galvanised steel to BS EN 10346 DX 51D Z275 fully welded for the damper body and shall have circular spigots formed from 0.7mm minimum zintec steel.

Blade and drive spindles shall be 19.05mm diameter galvanised mild steel tube that is corrosion resistant and shall rotate via burst through bushes within the casing to provide a low friction bearing surface.

They shall meet with the air tightness test requirements of DW144 to classes A, B & C for all models. They shall also conform to Eurovent 2/2 classes A-C.

Weight Charts

Flangefit Model HD-IB with galvanised blades shall have a size range of 100mm wide x 100mm high to 1000mm wide x 1000mm high.

	Damper width (mm)				
Height (mm)	200	400	600	800	1000
100	3.0	4.5	5.5	7.0	8.0
200	3.5	5.0	6.0	7.5	8.5
400	5.5	7.0	9.0	10.5	12.0
600	7.5	9.5	11.5	13.5	15.5
800	9.5	12.0	14.0	16.5	18.5
1000	12.0	14.5	17.0	19.5	22.0

Circular Model HD-IB-C with galvanised blades

Diameter	Weight (kg)
100	3.0
200	5.0
300	7.5
400	10.5
500	13.5
600	17.0
700	20.5
800	24.0
900	28.0
1000	32.5

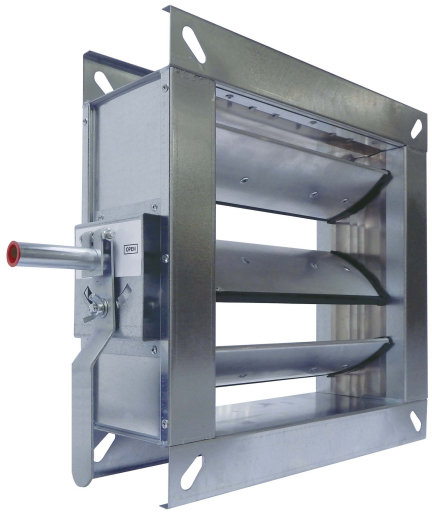
Maintenance

BSB HD series Dampers are designed for installation within normal dry filtered air systems. A programme of planned inspections should be carried out to include full operational checks, correct interface and function of any controls and control systems.

As a guide, dampers should be inspected annually and more frequently if exposed to fresh air intakes and/or inclement and dusty conditions.

Any application involving corrosive and/or aggressive hostile environmental conditions (e.g. swimming pools and coastal applications) may invalidate our warranty and should be referred to BSB Sales Office.

HD-LL Series
Heavy Duty Low Leakage Dampers



Introduction - The HD-LL Series

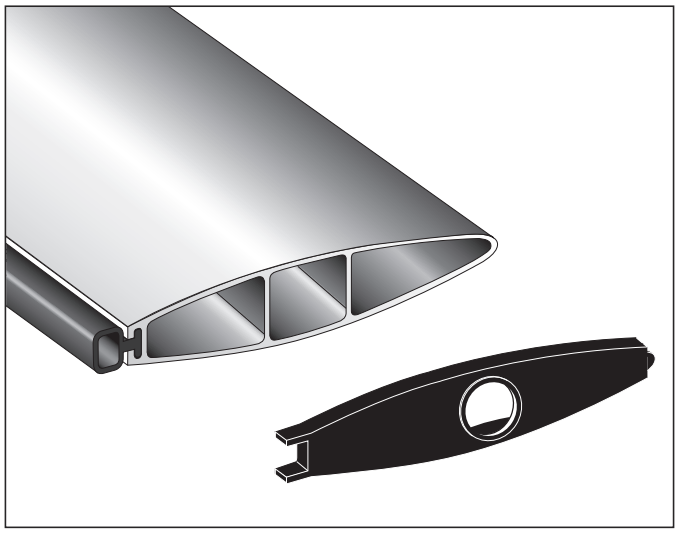
The HD-LL series damper has been designed for air conditioning and ventilation systems requiring air control and low closed blade leakage performance.

The aerodynamic aluminium reinforced blade design requires only a single blade edge seal to the trailing edge. The blade seal profile has an engineered shoulder design to ensure a positive sealed connection between the blade and fitted seal.

The blade seal acquiescent profile design accepts the blade leading edge of the interconnecting adjacent blade ensuring a good compressible seal with minimum torque, returning to its original form when the blades re-open.

Control can be effected by a manual quadrant, fitted actuator of choice or extended spindle for actuation by others.

The BSB HD-LL Series Low Leakage Heavy Duty dampers are available in a variety of vertical or horizontal mounting configurations from 100mm square/dia. to 1000mm square/dia.



Material Specification - HD-LL Series

Casing
1.2mm (18swg) galvanised mild steel to BS EN 10346 specification DX 51D Z275. When circular or flat oval spigots are supplied, the material will be 0.7mm zintec for the spigots only.

Blades
Extruded airfoil aluminium to BS EN 755 Part 9 specification 6063 T6, wall thickness 1.3mm.

Blade Edge Seals
Extruded hollow section TPE blade edge seal with temperature range +5°C to +70°C.

Side Seal Gasket
Grade 302 stainless steel hard rolled to BS EN 10088-2, 0.20mm thick.

Blade End Caps
Injection moulded black nylon to BSB's recorded design.

Blade and Drive Spindles
19.05mm diameter galvanised mild steel tube.
Options: Grade 316 stainless steel.

Quadrant
1.2mm (18swg) galvanised mild steel chassis with integral rotation slot and blade position indication. 30mm x 2.5mm zinc plated mild steel handle with integral clamp and locking nut..

Linkage
Crank Arm: 30mm x 2.75mm zinc plated mild steel spindle clamp with integral 8mm diameter drive pins 5.75mm thick. Drive Bar: 20mm x 2.5mm flat bar punched to fit onto zinc plated drive pins.

Bushes
Burst through bushes are formed within the casing to provide a low friction bearing for the blade spindles to rotate.
Oilite bushes impregnated with mineral oil to ISO VG 100 (SAE 30) can be supplied.

Rivets
High quality self-sealed rivets used to European standards as relevant.

Sealant
All joints and seams are sealed with sealant conforming to dictates of DW144.

Paint
Low VOC water based primer applied to all accessible welds.

Operating Temperature
+5°C to +70°C as standard.

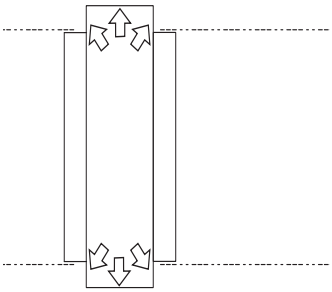
Refer to Page 4 for casing dimensions.

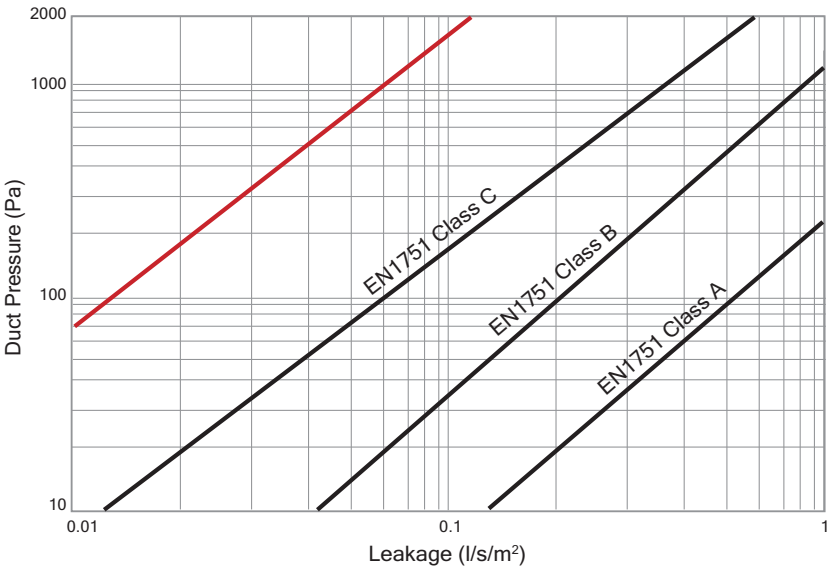
HD-LL Damper.
The HD-LL Low Leakage damper model shall have a size range of 100mm wide x 100mm high to 1000mm wide x 1000mm high.

Performance Data

HD-LL Case Leakage

With side covers fitted

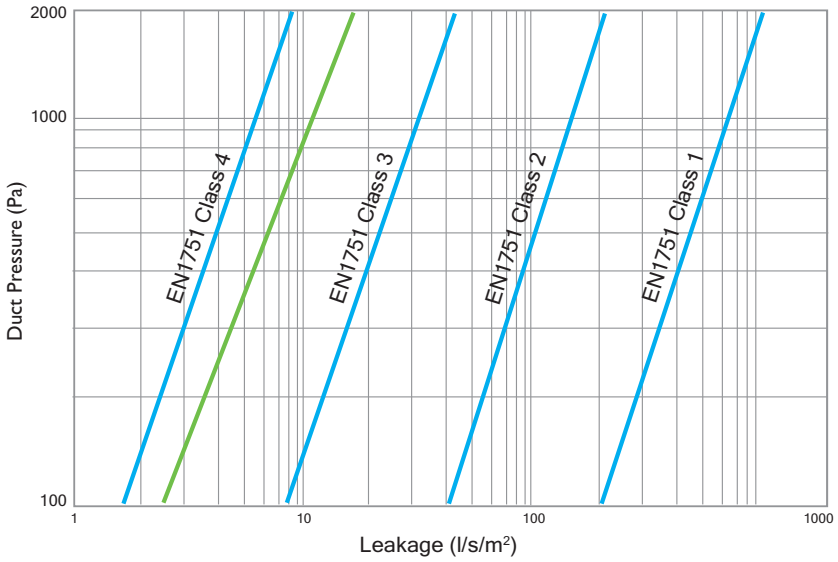




HD-LL Blade Leakage

1000mm x 1000mm

Leakage with angle fillers



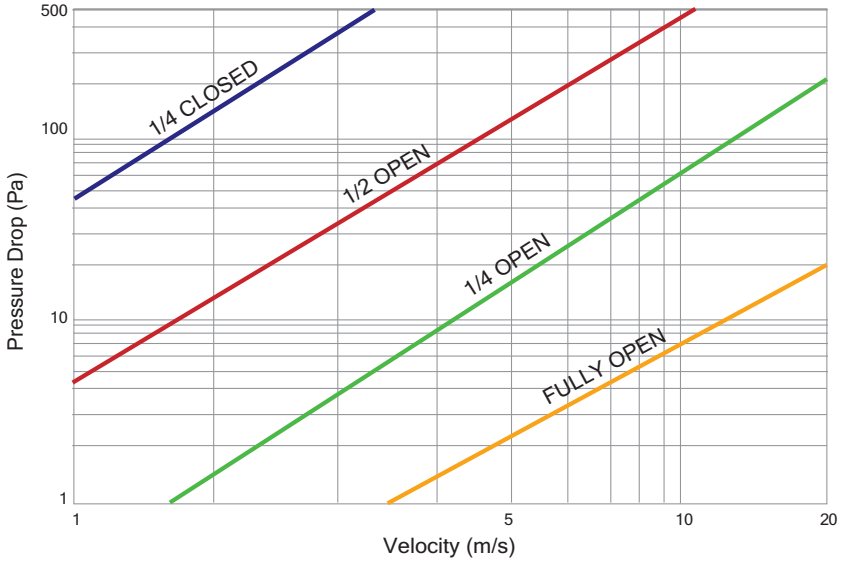
HD-LL Pressure Drop

600mm x 600mm

(Excludes duct friction loss)

Free area = 78% (when fully open)

Velocity Range 0 to 20 m/s



HD-LL Series
Heavy Duty Low Leakage Dampers

HD-LL Series Low Leakage Particular Specification

The BSB HD Low Leakage damper shall meet Class 3 blade leakage of EN 1751 and Class C of DW144 casing leakage.

The BSB HD-LL low leakage damper shall be the type HD with 100mm wide Extruded Aluminium Balance Blade utilising a single blade edge seal to the trailing edge to effect a good seal. The blade edge seal shall be of an engineered design that incorporates a special shoulder profile to ensure a positive sealed connection.

The Blade profile shall be aerofoil in section to minimise noise and air flow disturbance when the air passes over the damper blade section and shall not protrude beyond the case depth.

Square or rectangular Flanged and Spigot cases shall be formed from 1.2mm galvanised steel to BS EN 10346 DX51 Z275. Flanged units shall have peripheral flanges prepunched with elongated corner fixing holes to suit proprietary duct flanges. The damper casing shall have a single penetration to allow the drive control shaft to protrude. The damper will be supplied with either Manual Quadrant Control, Specified Belimo Motor or Extended Spindle Control. The damper will be designed to allow on site conversion from manual control to extended spindle control for motorisation by others, without the need to purchase a conversion kit or the requirement of any special tools.

Circular spigot case dampers shall be formed from 1.2mm galvanised steel to BS EN 10346 DX 51D Z275 fully welded for the damper body and shall have circular spigots formed from 0.7mm minimum zintec steel.

Blade and drive spindles shall be 19.05mm diameter galvanised mild steel tube that is corrosion resistant and shall rotate via burst through bushes within the casing to provide a low friction bearing surface.

They shall meet with the air tightness test requirements of DW144 to classes A, B & C for all models. They shall also conform to Eurovent 2/2 classes A-C.

Weight Charts

Flangefit Model HD-LL with aluminium blades shall have a size range of 100mm wide x 100mm high to 1000mm wide x 1000mm high.

	Damper width (mm)				
Height (mm)	200	400	600	800	1000
100	3.0	4.5	5.5	7.0	8.0
200	3.5	5.0	6.0	7.5	8.5
400	5.5	7.0	9.0	10.5	12.0
600	7.5	9.5	11.5	13.5	15.5
800	9.5	12.0	14.0	16.5	18.5
1000	12.0	14.5	17.0	19.5	22.0

Circular Model HD-LL-C with aluminium blades

Diameter	Weight (kg)
100	3.0
200	5.0
300	7.5
400	10.5
500	13.5
600	17.0
700	20.5
800	24.0
900	28.0
1000	32.5

Maintenance

BSB HD series Dampers are designed for installation within normal dry filtered air systems. A programme of planned inspections should be carried out to include full operational checks, correct interface and function of any controls and control systems.

As a guide, dampers should be inspected annually and more frequently if exposed to fresh air intakes and/or inclement and dusty conditions.

Any application involving corrosive and/or aggressive hostile environmental conditions (e.g. swimming pools and coastal applications) may invalidate our warranty and should be referred to BSB Sales Office.

HD Series
Ordering Codes

HD Heavy Duty Air Control Damper

Example: HD - W x H - F - G - E

Type:
HD Heavy Duty Air Control Damper

Model:
F Flangefit
S Rectangular/ Square Spigotfit
C Circular Spigotfit
O Flat Oval Spigotfit

Blade Material:
G Galvanised Mild Steel Airfoil Blades
A Aluminium Airfoil Balance Blades
S Stainless Steel Airfoil Blades (state grade)

Options:
E Extended Spindle
H Hand Control
M Electric Motor (state voltage and model)

HD-IB Heavy Duty Reduced Leakage Damper

Example: HD - IB - W x H - F - G - E

Type:
HD-IB Interlocking Blade

Model:
F Flangefit
S Rectangular/Square Spigotfit
C Circular Spigotfit
O Flat Oval Spigotfit

Blade Material:
G Galvanised Mild Steel Airfoil Blades
S Stainless Steel Airfoil Blades (state grade)

Options:
E Extended Spindle
H Hand Control
M Electric Motor (state voltage and model)

HD-LL Heavy Duty Low Leakage Damper

Example: HD - LL - W x H - F - A - E

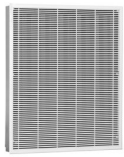
Type:
HD-LL Heavy Duty Low Leak Damper

Model:
F Flangefit
S Rectangular/Square Spigotfit
C Circular Spigotfit
O Flat Oval Spigotfit

Blade Material:
A Aluminium Airfoil Low Leakage Blades

Options:
E Extended Spindle
H Hand Control
M Electric Motor (state voltage and model)

Other Air, Fire and Smoke Control Products in the BSB Range:



LD and LDN Series
Lobby Dampers

FD Series
Fire Dampers

FD-C Series
Circular Fire Dampers

FSD-C Series
Circular Dampers

FSD-TD Series
Fire/Smoke Dampers

BD Series
Backdraught Dampers

HD Series
Heavy Duty Dampers

SS Series
SlimSeal Dampers

A60 Series
Marine Fire Damper

Control Systems

For full details of the complete BSB Product Range, please refer to our individual product brochures, sales office or website.

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For purchase orders and order related enquiries, please email: orders@bsb-dampers.co.uk
For pricing, technical and general enquiries, please email: enquiries@bsb-dampers.co.uk

Website: www.bsb-dampers.co.uk · A member of the Maico group

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Assessed to ISO 9001:2015 Cert. No. 1464