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VOLUME CONTROL / REGULATING DAMPERS

PRODUCT RANGE

Model Range Includes

A - Multi-Leaf. (Flanged - Rectangular Duct)
B - Multi-Leaf. (Slip joint / Spigot - Rectangular Duct)
C - Multi-Leaf. (Slip joint / Spigot - Circular Duct)
D - Single Blade. (Slip joint/Spigot - Circular Duct)
E - Iris. (Slip joint / Spigot - Circular Duct)

Operation Options

- Manual – Plastic quick release hand control
- Manual – Zinc cast quadrant hand control.
- Motorised – 12mm Ø Zinc Cast Spindle.

Material Options

- Extruded Aluminium.
- Galvanised steel.
- Stainless steel.

Description / Full Features:

The AJS range of volume control dampers, have been designed specifically for ease of balancing airflow through ducting systems. The range offers suitability for both rectangular & spiral/circular ductwork systems.

- Flanged and spigot / slip joint installation connections.
- Manual hand control options with visual open/closed indication.
- Motorised operation control.

Certification

- BSRIA Quality approved pressure tested.

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MULTI-LEAF VOLUME CONTROL DAMP-ER

PRODUCT RANGE

Model Range Includes

A - Multi-Leaf. (Flanged - Rectangular Duct)
B - Multi-Leaf. (Slip joint / Spigot - Rectangular Duct)
C - Multi-Leaf. (Slip joint / Spigot - Circular Duct)

Operation Options

- Manual – Plastic quick release hand control
- Manual – Zinc cast quadrant hand control.
- Motorised – 12mm Ø Zinc Cast Spindle. (Motors / actuators available on request)

Material

- Extruded Aluminium Casing.
- Extruded Aluminium Aerofoil Blades.

Certification

- BSRIA Quality approved pressure tested.

Description:

The AJS range of light weight extruded aluminium, multi-leaf volume control dampers are manufactured by us in the UK and have been designed specifically for ease of balancing airflow through ductwork systems. Our standard model operates via a single zinc cast spindle (specific to operation requirements) internally mounted to an internal (none visible gearing system), allowing a maximum rotation of 90º for the opposed aerofoil blades. The range offers both flanged and spigot / slip joint installation connections, a choice of manual hand control options with visual open/closed indication, (quick release plastic hand control or zinc cast quadrant hand control) and motorised operation control (12mm Ø Zinc cast extended spindle).

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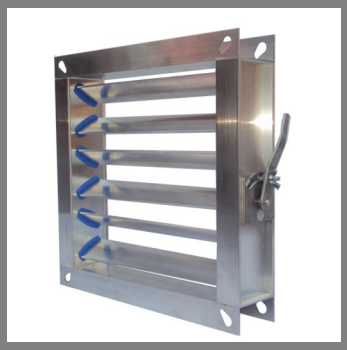
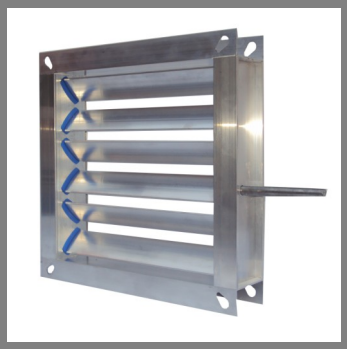
FLANGED TYPE A MULTI-LEAF VOLUME CONTROL DAMPER

Drive Operation Options

Manual – Plastic quick release hand control



Manual – Zinc cast quadrant hand control.



Motorised – 12mm Ø Zinc Cast Spindle.
(Motors / actuators available on request)

Features:

Model: Type A - Multi-Leaf Volume Control Damper.

Duct Suitability: Rectangular & Square Ducts.

Duct Connection Type: Flanged
- 35mm Flange .
- Pre-pierced tear drop hole corners (suitable for most flanging systems)

Internal Drive System: None Visible Gear Driven Blade Operation.
- High Impact Polypropylene Injection Moulded Gears
  - Allows min 0º - max 90º rotation of the opposed aerofoil blades.
- 5 Point High Impact Polypropylene Injection Moulded Blade Insert.
  - 2 x Snap-Lock connection to Drive Gears.
  - 3 x Strength points inserted within the blade ends.
- Safe Edge Gear & Blade Mounting Plate.
  - Galvanised steel - Pressed up-form / rolled over gear & blade mounting system (offers a safe edge through-hole between blade & gear assembly), preventing metal to plastic abrasion / cutting.
- Internally Mounted Non Removable Zinc Cast Spindle.
  - Positive action Gear to drive operation.
  - Prevents unnecessary removal.
    - Dismantling the damper unit for removal is required.

Operation Options
- Manual – Plastic quick release hand control
- Manual – Zinc cast quadrant hand control.
- Motorised – 12mm Ø Zinc Cast Spindle. (Motors / actuators available on request)

Material
- Extruded Aluminium Casing.
- Extruded Aluminium Aerofoil Blades.

Dimensional Details
- 75mm Depth.
  - Min 100mm x 100mm - Max 1000mm x 1000mm
  - Multi assembled units available for ducts over 1000mm x 1000mm

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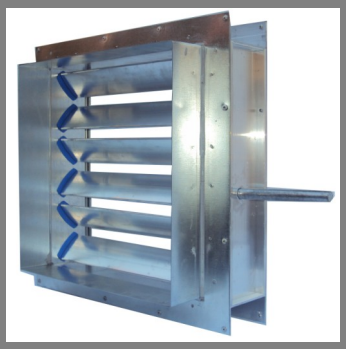
FLANGED TYPE B MULTI-LEAF VOLUME CONTROL DAMPER

Drive Operation Options

Manual – Plastic quick release hand control

Manual – Zinc cast quadrant hand control.



Motorised – 12mm Ø Zinc Cast Spindle.
(Motors / actuators available on request)

Features:

Model: Type B - Multi-Leaf Volume Control Damper.

Duct Suitability: Rectangular & Square Ducts.

Duct Connection Type: Slip joint / Spigot

Internal Drive System: None Visible Gear Driven Blade Operation.

- High Impact Polypropylene Injection Moulded Gears
  - Allows min 0º - max 90º rotation of the opposed aerofoil blades.
- 5 Point High Impact Polypropylene Injection Moulded Blade Insert.
  - 2 x Snap-Lock connection to Drive Gears.
  - 3 x Strength points inserted within the blade ends.
- Safe Edge Gear & Blade Mounting Plate.
  - Galvanised steel - Pressed up-form / rolled over gear & blade mounting system (offers a safe edge through-hole between blade & gear assembly), preventing metal to plastic abrasion / cutting.
- Internally Mounted Non Removable Zinc Cast Spindle.
  - Positive action Gear to drive operation.
  - Prevents unnecessary removal.
    - Dismantling the damper unit for removal is required.

Operation Options

- Manual – Plastic quick release hand control
- Manual – Zinc cast quadrant hand control.
- Motorised – 12mm Ø Zinc Cast Spindle. (Motors / actuators available on request)

Material

- Extruded Aluminium Casing.
- Extruded Aluminium Aerofoil Blades.

Dimensional Details

- 75mm Depth.
  - Min 100mm x 100mm - Max 1000mm x 1000mm
  - Multi assembled units available for ducts over 1000mm x 1000mm

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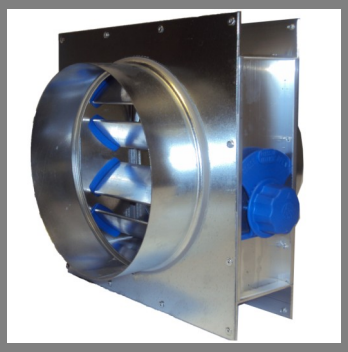
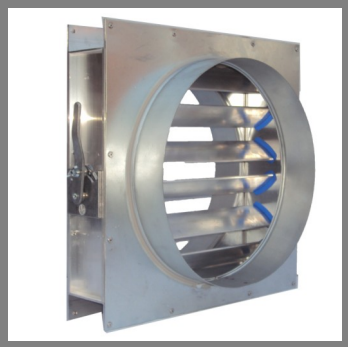
FLANGED TYPE C MULTI-LEAF VOLUME CONTROL DAMPER

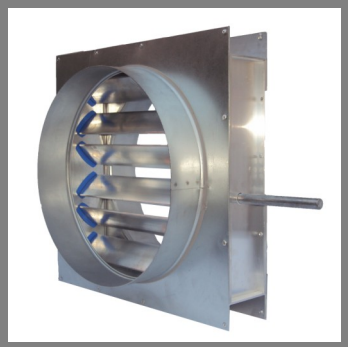
Drive Operation Options



Manual – Plastic quick release hand control



Manual – Zinc cast quadrant hand control.



Motorised – 12mm Ø Zinc Cast Spindle.
(Motors / actuators available on request)

Features:

Model: Type C - Multi-Leaf Volume Control Damper.

Duct Suitability: Spiral / Circular Duct.

Duct Connection Type: Slip joint / Spigot

Internal Drive System: None Visible Gear Driven Blade Operation.

- High Impact Polypropylene Injection Moulded Gears
  - Allows min 0º - max 90º rotation of the opposed aerofoil blades.
- 5 Point High Impact Polypropylene Injection Moulded Blade Insert.
  - 2 x Snap-Lock connection to Drive Gears.
  - 3 x Strength points inserted within the blade ends.
- Safe Edge Gear & Blade Mounting Plate.
  - Galvanised steel - Pressed up-form / rolled over gear & blade mounting system (offers a safe edge through-hole between blade & gear assembly), preventing metal to plastic abrasion / cutting.
- Internally Mounted Non Removable Zinc Cast Spindle.
  - Positive action Gear to drive operation.
  - Prevents unnecessary removal.
    - Dismantling the damper unit for removal is required.

Operation Options

- Manual – Plastic quick release hand control
- Manual – Zinc cast quadrant hand control.
- Motorised – 12mm Ø Zinc Cast Spindle. (Motors / actuators available on request)

Material

- Extruded Aluminium Casing.
- Extruded Aluminium Aerofoil Blades.

Dimensional Details

- 75mm Depth.
  - Min 80Ø - Max 1000Ø.
  - Multi assembled units available for ducts over 1000Ø.

FLAT OVAL DAMPERS AVAILABLE ON REQUEST.

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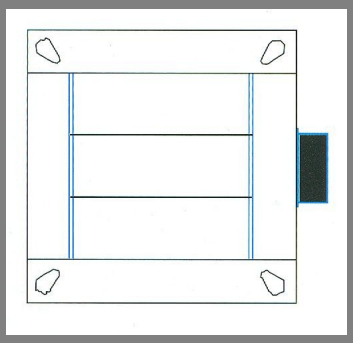
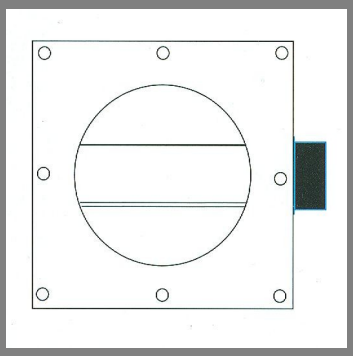
FLANGED MULTI-LEAF VOLUME CONTROL DAMPER DIMESION DETAILS

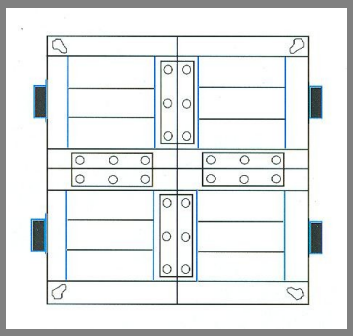
Diagram



Flange Connection
Maximum Single Unit Size 1000mm x 1000mm

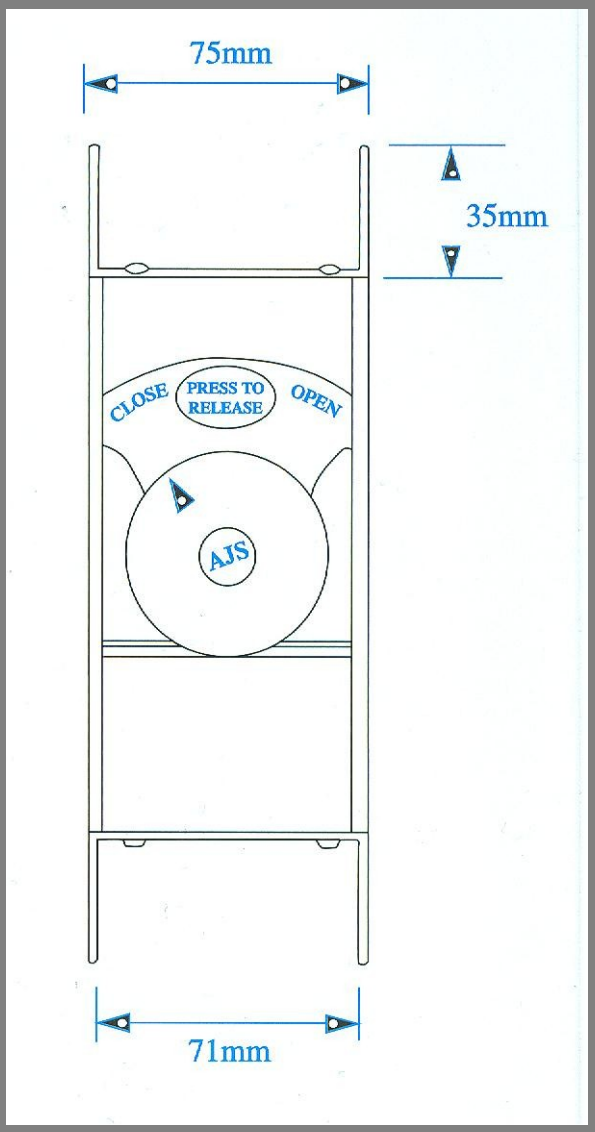


Spigot / Slip Joint Connection
Max Single Unit Size 1000mm Ø



Multi-Assembly Available for duct over
1000mm H, 1000mm W or 1000mm Ø

Typical Damper Dimensions



Materials

Aluminium.
- Min 1.5mm Aerofoil Blades
- Min 2mm Casing
- 3.2mm Aluminium Rivets

Galvanised Steel
- 0.8mm Blade & Gear Mounting.
- 0.8mm Slip Joint / Spigot.
- 1.2mm Joining Plates (Applies to multi-assembled units only).

Zinc Cast .
- Spindle (Standard).
- Quadrant Control (Optional).
- Motorised Spindle (Optional).

Zinc Plated Screws (As Standard)
- Stainless steel available on request.

High Impact Polypropylene.
- Gears (Gear Assembly)
- Blade End Inserts.
- Quick Release Manual Hand Control (Optional).

Emulsion Base Sealant.
- Slip Joint/Spigot Options Only.

1mm Closed Cell Polyethylene.
- Casing End Seals.

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SHUT OFF DAMPERS

Description / Full Features:

The AJS range of shut off dampers have been designed, engineered and tested, with smooth efficient operation as an important consideration. AJS shut off dampers have exceptionally low operating torque characteristics without compromising their “shut off” abilities. The immediate benefit of this feature is the ability to make small precise adjustments with ease and a dramatically reduced loading on control motors and actuating devices. All units have low profile, extruded aluminium blades with a symmetrical aerofoil section which minimize pressure loss. The operating linkages are entirely enclosed within the casing and outside the airstream and will require virtually no maintenance. AJS shut off dampers differ from VCD’s in that they are fitted with unique silicon blade edge seals ensuring ultra low leakage rates. The range offers suitability for both rectangular & spiral/circular ductwork systems.

Shut off dampers differ from volume control dampers in that they are intended for near shut off and automatic operation. For these reasons, **AJS** have developed a unique pressure sensitive blade edge seal. This silicone rubber blade edge seal provides an extremely tight air seal which is assisted by the build up of air pressure after the damper has closed. However, its low friction design means that there is very little breakaway torque required to reopen the damper. Since tight sealing characteristics are desirable, stainless steel jamb seals are standard. AJS Shut off dampers are available with an extended shaft and support bracket for connection to a variety of electric motors or pneumatic actuators.

- Flanged and spigot / slip joint installation connections.
- Manual hand control options with visual open/closed indication.
- *Tested to DW Class D at a static pressure of 2000 Pa for a minimum time of*
- *15 minutes with ‘Negligible Leakage’ recorded.*
- *Smooth precision operation with linkages completely outside the airstream.*
- *Unique silicone blade edges seals on shut off damper versions for ultra low leakage.*
- *Low profile extruded aluminium blades with symmetrical aerofoil section reducing*
- *pressure loss to a minimum.*
- *Stainless steel jamb seals.*
- *Roll formed casing with reinforced corners for strength and rigidity.*
- *Flanged or spigot connections.*
- *All AJS dampers are recommended to be installed with blades Running horizontally.*
- *Galvanised and stainless steel aerofoil blades available on request.*

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NON RETURN / BACK DRAFT DAMPER

PRODUCT RANGE

Model Range Includes

A - (Flanged - Rectangular Duct)
B - (Slip joint / Spigot - Rectangular Duct)
C - (Slip joint / Spigot - Circular Duct)

Material

- Extruded Aluminium Casing.
- Extruded Aluminium Blades.

Certification

- BSRIA Quality approved pressure tested.

Description / Full Features:

The AJS range of light weight extruded aluminium, multi-leaf non return / back draft dampers are manufactured by us in the UK and have been designed specifically for the need of single directional airflow to be maintained within a ductwork system. Our standard model operates via individual light weight gravity fed / pivoted aluminium blades mounted to an internal (none visible bearing system) allowing a maximum free rotation of 0 - 90º . The range offers both flanged and spigot / slip joint installation connections for square / rectangular, circular / spiral .

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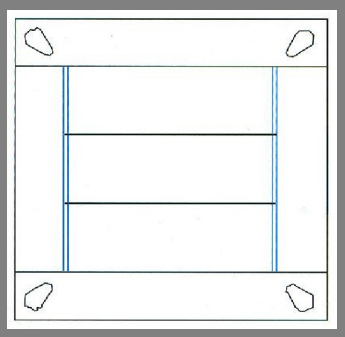
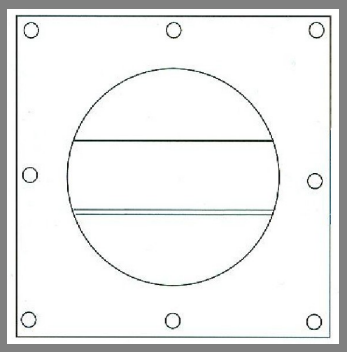
NON RETURN / BACK DRAFT DAMPER DIMESION DETAILS

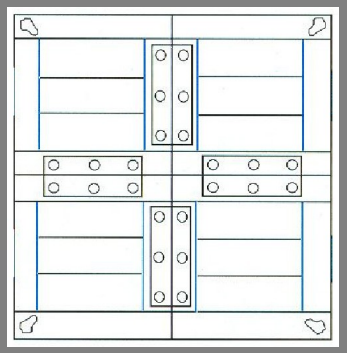
Diagram



Flange Connection
Maximum Single Unit Size 1000mm x 1000mm

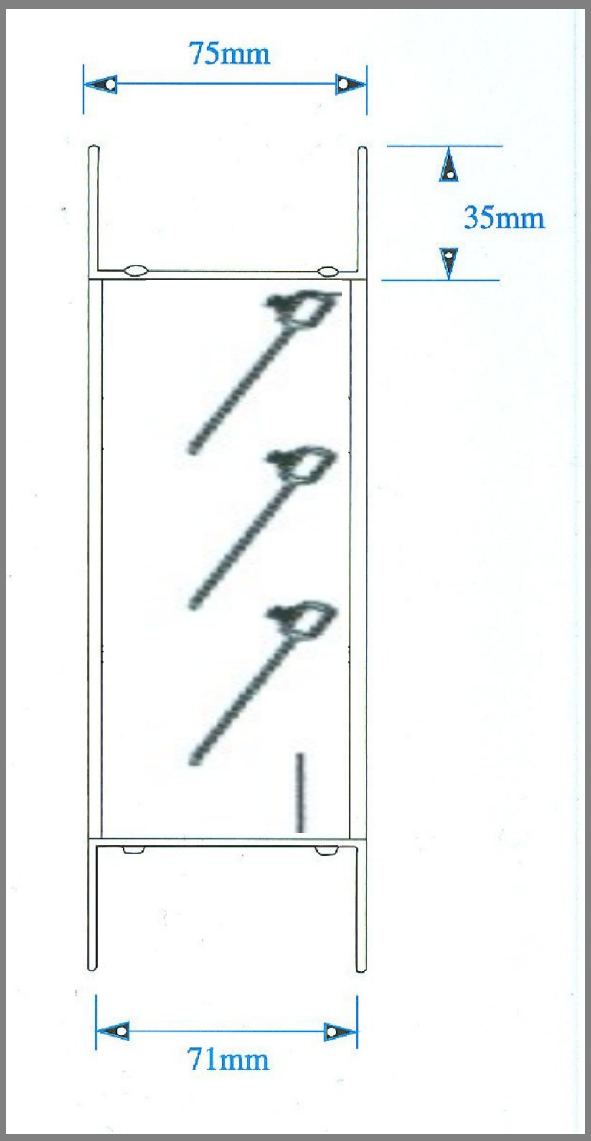


Spigot / Slip Joint Connection
Max Single Unit Size 1000mm Ø



Multi-Assembly Available for duct over
1000mm H, 1000mm W or 1000mm Ø

Typical Damper Dimensions



Materials

Aluminium.
- Min 1.2mm Blades
- Min 2mm Casing
- 3.2mm Aluminium Rivets

Galvanised Steel
- 0.8mm Blade & Gear Mounting.
- 0.8mm Slip Joint / Spigot.
- 1.2mm Joining Plates (Applies to multi-assembled units only).

Zinc Plated Screws (As Standard)
- Stainless steel available on request.

High Impact Polypropylene.
- Blade & bearing (Assembly)

Emulsion Base Sealant.
- Slip Joint/Spigot Options Only.

1mm Closed Cell Polyethylene.
- Casing End Seals.

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TYPE D

SINGLE BLADE VOLUME CONTROL DAMPER

Damper Model

- **Type D**
  - Single Blade Regulating Damper.

Duct Connection Type

- Circular Slip joint / Spigot.

Size Options

- To suit 80 -500mm Ø

Material

- Galvanised Mild Steel.

Description / Full Features:

The AJS range of single blade volume control / regulating dampers are designed for balancing airflow through circular ducting systems. The range offers a slip joint installation connection and manual hand controls with visual open/closed indication.

- Designed to admit an insulation thickness of up to 50mm.
- Adjustable range of 0º to 90º.
- External **b**lade lock - via screw fixing.

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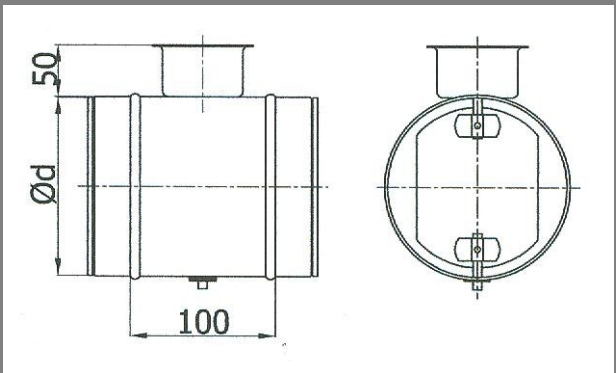
TYPE D

SINGLE BLADE VOLUME CONTROL DAMPER

Dimensions:



DIAMETER (mm)	WEIGHT (kg)
80	0.40
100	.046
125	0.55
150	0.65
180	0.75
200	0.80
224	0.90
250	1.10
280	1.30
300	1.45
315	1.5
355	2.00
400	2.40
450	3.50
500	4.00

Technical Data:

Pressure Loss and noise level chart

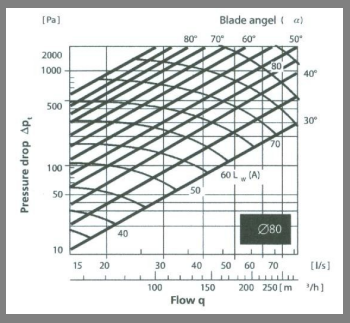
The continuous lines represent the dampers total pressure loss as a function of flow rate and blade angle. The curve shows Value A corresponding to noise level Lw (A) in dB within the duct.

Example:

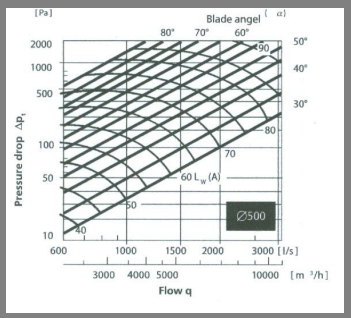
- Diameter Ø 100
- Flow Rate 60 l/s
- Pressure Loss 200 Pa

The following information can be read in the charts:

- Blade Angle 40°
- Noise Level 62 dB(A)



Example No. 1
Min Damper 80mm Ø



Example No. 2
Max Damper 500mm Ø

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TYPE D

SINGLE BLADE VOLUME CONTROL DAMPER

Technical Data

Noise data for DARL dampers
Noise level L_w (dB) in octave bands 63-8000Hz
as a function of diameter, flow rate and pressure loss.

diameter	pressure loss [Pa]	average speed 3 m/s							average speed 6 m/s							average speed 9 m/s							average speed 12 m/s							average speed 15 m/s						
		frequency [Hz]							frequency [Hz]							frequency [Hz]							frequency [Hz]							frequency [Hz]						
		63	125	250	500	1k	2k	4k	8k	63	125	250	500	1k	2k	4k	8k	63	125	250	500	1k	2k	4k	8k	63	125	250	500	1k	2k	4k	8k	63	125	250	500	1k	2k	4k	8k
		flow rate 15 l/s								flow rate 30 l/s								flow rate 45 l/s								flow rate 60 l/s								flow rate 75 l/s							
80	500	65	65	65	65	59	55	49	46	67	67	67	67	60	57	50	47	70	70	70	70	63	60	53	49	75	75	75	75	68	64	56	53	80	80	80	80	72	68	60	56
	300	63	63	60	60	54	48	42	36	66	66	63	63	56	50	44	38	70	70	67	67	60	54	47	40	75	75	71	71	64	57	50	43	79	79	75	75	68	60	53	45
	200	63	63	60	54	51	43	34	29	65	65	62	56	53	44	35	30	70	70	67	60	57	48	38	32	75	75	71	65	61	51	41	34	-	-	-	-	-	-	-	-
	100	55	60	53	48	43	30	23	15	59	65	57	51	46	32	24	16	66	72	63	57	51	36	27	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	56	54	47	43	36	25	16	9	59	59	52	47	40	27	17	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		flow rate 25 l/s								flow rate 50 l/s								flow rate 75 l/s								flow rate 100 l/s								flow rate 120 l/s							
100	500	67	64	64	57	54	48	48	48	72	68	68	62	59	52	52	52	78	75	75	67	64	57	57	57	84	81	80	72	68	62	61	61	88	85	84	76	72	65	64	64
	300	62	61	60	54	51	45	42	42	68	68	68	59	56	50	47	47	75	74	73	65	61	54	51	51	81	80	79	70	67	59	56	55	86	85	84	74	70	62	59	58
	200	58	58	58	50	48	40	37	37	65	65	64	57	54	45	42	42	74	73	73	64	59	50	47	46	80	80	79	69	66	55	51	51	-	-	-	-	-	-	-	-
	100	58	55	53	46	41	34	26	24	68	66	62	54	48	40	31	29	79	75	71	62	56	46	36	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	55	53	48	42	35	26	22	18	69	67	60	53	44	33	28	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		flow rate 40 l/s								flow rate 80 l/s								flow rate 120 l/s								flow rate 160 l/s								flow rate 180 l/s							
125	500	71	68	65	59	56	50	50	47	76	73	70	63	60	53	53	50	83	79	76	68	65	58	58	54	89	85	81	73	69	62	62	58	91	87	83	75	71	63	63	59
	300	66	66	60	55	52	46	43	40	73	73	67	60	57	51	48	44	79	79	72	66	62	55	52	48	86	86	79	71	68	60	56	53	89	88	81	73	69	62	58	54
	200	65	62	57	51	46	41	38	38	74	71	65	59	53	47	43	43	82	78	71	65	58	51	48	48	89	85	78	70	63	56	52	52	-	-	-	-	-	-	-	-
	100	64	59	53	47	39	34	29	27	77	70	63	55	47	40	35	32	84	78	70	61	51	45	39	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	63	54	50	41	36	27	25	20	80	68	60	51	43	34	32	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		flow rate 60 l/s								flow rate 120 l/s								flow rate 180 l/s								flow rate 240 l/s								flow rate 300 l/s							
160	500	68	67	64	59	55	53	52	51	72	71	68	62	59	55	54	53	78	77	74	67	63	60	59	58	84	84	80	72	68	65	65	65	89	89	85	77	73	69	69	69
	300	63	62	59	55	52	49	46	45	67	66	64	58	55	52	49	48	75	75	71	65	61	58	54	54	81	81	78	70	67	63	59	59	87	87	83	76	72	68	64	64
	200	58	56	50	48	42	40	40	68	65	62	56	53	47	44	44	76	73	69	63	59	53	50	50		84	80	77	69	66	58	55	55	-	-	-	-	-	-	-	-
	100	59	54	50	45	40	35	33	31	70	64	60	53	48	42	39	38	77	73	69	61	54	48	45	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	54	50	46	37	33	29	25	25	69	64	58	48	42	37	32	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		flow rate 100 l/s								flow rate 200 l/s								flow rate 300 l/s								flow rate 400 l/s								flow rate 450 l/s							
200	500	70	64	61	55	52	52	55	55	75	68	65	59	55	55	59	59	83	76	72	65	61	61	65	65	90	82	78	72	67	66	71	70	93	85	81	73	71	70	74	73
	300	67	62	56	50	48	45	48	48	74	68	62	55	52	51	53	52	84	78	71	64	61	57	60	60	92	84	78	71	67	63	67	66	95	87	81	72	68	66	69	68
	200	62	57	55	47	44	42	42	42	71	65	62	53	50	48	47	47	83	76	71	62	58	55	54	54	90	83	79	69	65	62	61	60	-	-	-	-	-	-	-	-
	100	57	52	48	41	39	36	34	34	69	64	58	50	47	44	42	42	83	76	69	59	56	53	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	51	45	41	36	32	32	28	28	63	56	51	44	39	39	34	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		flow rate 150 l/s								flow rate 300 l/s								flow rate 450 l/s								flow rate 600 l/s								flow rate 750 l/s							
250	500	69	66	59	53	50	54	53	52	71	67	61	56	53	56	55	54	78	75	68	61	58	61	60	59	87	83	76	68	64	68	68	68	94	90	82	74	70	74	74	74
	300	63	61	55	50	47	46	48	47	66	63	57	51	48	47	51	48	75	72	65	59	55	55	59	55	84	80	73	67	65	64	62	61	91	87	80	72	70	69	72	68
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	100	56	52	45	41	38	36	34	31	63	57	51	45	43	40	38	35	75	69	60	56	52	49	45	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	52	48	40	38	34	30	28	24	61	56	47	45	40	38	33	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		flow rate 250 l/s								flow rate 500 l/s								flow rate 750 l/s								flow rate 1000 l/s								flow rate 1200 l/s							
315	500	68	65	59	53	50	50	53	50	74	71	65	58	55	55	58	55	82	78	71	64	60	60	54	60	89	85	77	69	68	67	69	65	92	88	80	72	71	70	72	68
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	50	49	49	43	38	34	32	30	24	64	64	56	49	45	42	40	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		flow rate 400 l/s								flow rate 800 l/s								flow rate 1200 l/s								flow rate 1600 l/s								flow rate 1800 l/s							
400	500	79	73	67	62	57	60	59	58	82	75	68	65	59	62	61	60	88	81	74	70	62	66	65	64	95	87	79	75	67	71	70	69	98	90	82	78	70	74	73	72
	300	72	66	60	54	51	51	51	51	77	70	64	58	56	55	54	54	84	77	70	63	62	61	60	60	91	83	76	69	67	66	65	64	94	86	79	71	70	69	68	67
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	100	61	56	49	44	42	39	39	34	72	66	58	53	49	47	46	40	83	76	67	60	58	55	53	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	57	52	44	39	37	35	34	26	72	67	56	50	47	44	44	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		flow rate 600 l/s								flow rate 1200 l/s								flow rate 1800 l/s								flow rate 2400 l/s								flow rate 3000 l/s							
500	500	84	77	70	64	63	62	61	60	85	78	71	65	64	63	62	61	91	84	76	68	67	68	68	67	96	88	80	72	70	73	72	71	102	94	85	78	75	77	77	76
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	100	63	58	53	47	46	44	42	37	72	66	60	55	53	51	49	43	82	75	70	63	60	57	55	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	59	52	47	44	42	38	38	31	71	63	57	54	51	46	46	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		flow rate 1000 l/s								flow rate 2000 l/s								flow rate 3000 l/s								flow rate 4000 l/s								flow rate 4500 l/s							
630	500	88	80	73	69	66	64	63	62	90	83	75	71	68	67	65	64	96	88	80	76	72	72	70	68	103	95	86	82	77	77	76	73	107	98	90	85	81	81	80	76
	300	82	75	69	65	62	61	58	55	84	77	70	67	63	62	61	56	92	84	77	73	69	68	68	61	100	91	83	79	75	75	74	66	105	96	88	83	79	79	79	70
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	50	66	58	53	48	43	40	39	30	77	68	62	57	51	45	48	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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www.ajs-vent.co.uk

TYPE E IRIS DAMPER

Damper Model

- Type E
  - IRIS & IRIS-S Regulating Damper.

Duct Connection Type

- Circular Slip joint / Spigot.

Size Options

- To suit 80 - 800mm Ø

Materials / Construction

- Composed of regulation plates, regulating nut or handle (size 80) and regulation scale plus manometer connection and casing.
- The casing and regulation plates are manufactured from hot-galvanised steel (Standard Model IRIS).
- Alternative acid proof steel AISI 316 L (Model IRIS-S).
- Rubber gasket joining collars.

Description / Full Features:

The AJS range of IRIS volume control / regulating dampers are designed for balancing airflow through circular ducting systems. The range offers a slip joint installation connection and manual hand controls with visual open/ closed indication.

Usage

- The IRIS is an ideal solution for exact and quick air flow regulating and measuring.
- The ISRI-S is best suited for premises where acid proof ducts are used because of its acid proof material.

Installation

- The IRIS should be secured to the ducting via rivets.
- For vertical mounting, ensure the weight of the interconnecting ductwork is fully supported.

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FETA BSRIA Member HEVAC

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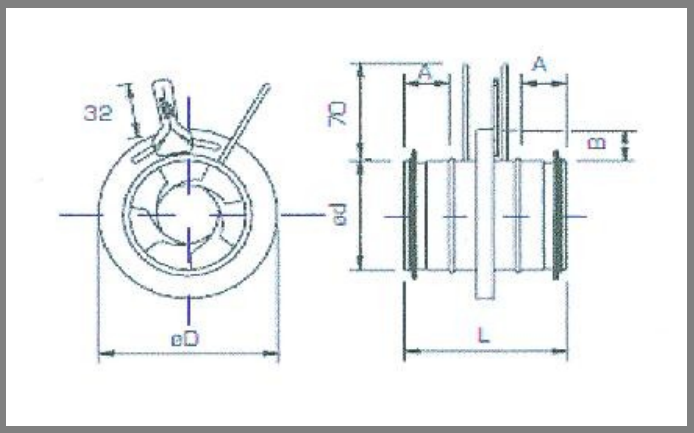
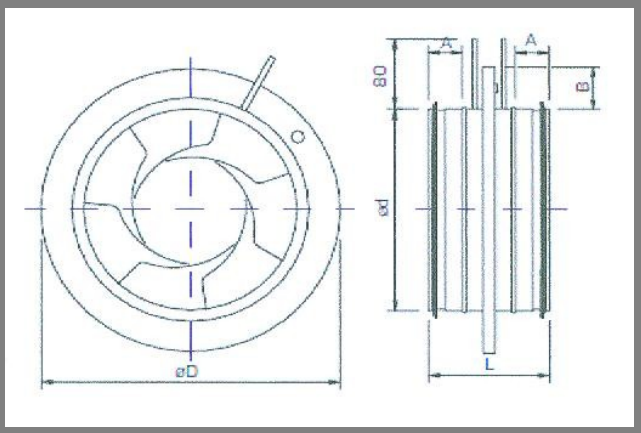
TYPE E IRIS DAMPER

Dimensional Data:



Size 80mm Ø



Size 100mm - 800mm Ø

Size Ø (mm)	Ød	ØD	A	B	L	WEIGHT (kg)
80	79	125	35	22	120	0.5
100	99	165	30	32	110	0.5
125	124	188	30	32	110	0.7
150	149	230	30	40	110	0.9
160	159	230	30	35	110	0.9
200	199	285	30	42	110	1.4
250	249	335	40	42	132	2.1
315	314	410	40	47	132	3.5
400	398	525	50	62	155	6.4
500	498	655	50	77	170	9.6
630	798628	615	50	92	170	15.6
800	798	1015	100	107	270	25.0

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TYPE E MOTORISED IRIS DAMPER

Damper Model

Type E
- **SPI-F-LM230A** Motorised Regulating Damper.

Duct Connection Type
- Circular Slip joint / Spigot.

Size Options
- To suit 100 - 315mm Ø

Design
This air-supply device consists of an SPI iris damper with an actuator for forced air flow. It is manufactured from galvanised sheet steel, equipped with test points for easy setup. Units are fitted with Belimo actuators, type LM24A or LM230A. Versions of the iris damper with a 0-10V modulating control signal are fitted with Belimo actuators type LM24A-SR.

Protective distance
- Bends - Before 1 x D / After " 1 x D
- T-pipes - Before 3 x D / After " 1 x D
- Supply-air devices - Before 3 x D

Description / Full Features:

The AJS range of **SPI-F-LM230A IRIS DAMPER** models are fitted with a motor designed for controlling the air flow using two predetermined settings. The minimum and maximum air-flow settings are adjusted with the help of a measuring nipple and are fixed mechanically with damper stops. The SPI-F models have a low sound level and produce a centrically patterned airflow. They are ideal for use as adjustable, motorised dampers.

The SPI-F adjustment damper must be installed in accordance with the distances required to minimise air-flow deviation. Reducing or enlarging the duct to the next duct size does not require any specified distances for minimising deviation. The SPI-F enables the taking of precise airflow measurements at all points including points close to duct deviations such as T junctions and bends and points in front of other supply-air devices.

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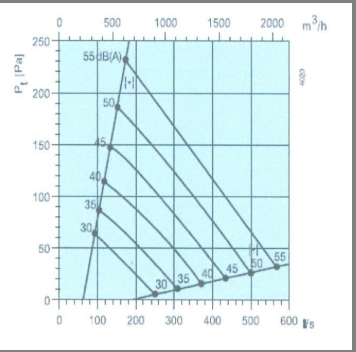
TYPE E MOTORISED IRIS DAMPER

Technical Data:

Mid-frequency Band, Hz

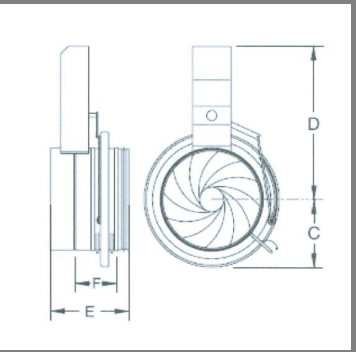
Size Ø (mm)	63	125	250	500	1000	2000	4000
100	11	10	3	-2	-8	-16	-24
125	7	8	2	-4	-11	-19	-27
160	9	6	1	-5	-11	-18	-27
200	9	5	1	-5	-12	-17	-24
250	6	1	-4	-3	-12	-17	-24
315	3	1	-4	-4	-9	-14	-23
Tolerans	±6	±5	±2	±2	±2	±2	±3

Diagrams



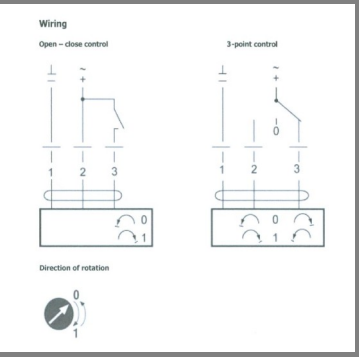
Dimensions

Size Ø (mm)	C	D	E	F
100	82	215	185	122
125	106	235	195	130
160	116	265	200	135
200	143	285	210	135
250	167	365	210	130
315	203	408	210	130



Wiring

Cable Colour	No.
Blue	1
Brown	2
White	3



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MULTI-LEAF VOLUME CONTROL DAMPER BSRIA TEST REPORT DETALS

BSRIA

Report

www.bsria.co.uk

Testing of a multi-leaf volume control damper to determine the casing leakage

Report 17160/1
July 2002

Carried out for: A J Services
Unit 3
Expressway Industrial estate
Bracebridge Street
Aston
Birmingham, B6 4NE

Compiled by: C.H. Smith

No. of pages: ii of preamble
2 of text

Appendix: A (7 pages)

Quality Approved: J.Cairns
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MULTI-LEAF VOLUME CONTROL DAMPER BSRIA TEST REPORT DETALS

CONTENTS

1 INTRODUCTION 1
2 DESCRIPTION 1
3 TESTING 1
4 COMMENTS ON TEST RESULTS 2
5 RESULTS 2

APPENDICES

Appendix A Test result and Instrumentation

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MULTI-LEAF VOLUME CONTROL DAMPER BSRIA TEST REPORT DETALS

1 INTRODUCTION

The test work was carried out to determine the casing leakage of a multi-leaf rectangular air volume control damper. Testing was carried out generally in accordance with BS EN 1751:1999 "Ventilation for buildings - Air terminal devices - Aerodynamic testing of dampers and valves."

The damper was supplied by and tested on behalf of:

A J Services
Unit 3, Expressway Industrial Estate
Bracebridge Street
Aston
Birmingham
B6 4NE

Testing took place at BSRIA's Crowthorne laboratory during the 10th and 11th May 2002.

This report refers only to the damper described in the main body of the report and to no other manufactured by the above company.

2 DESCRIPTION

The sample submitted for testing was a multi-leaf rectangular air volume control damper manufactured in aluminium. The unit was assembled in such a way as to enclose the blade bearings within the structure of the frame. The only bearing shaft to penetrate outside the frame was connected to the control handle, which had a self-locking mechanism. The aerofoil blades were connected together internally and linked to the control handle via a single shaft.

The test sample had internal dimensions of 300 mm high by 300 mm wide by 75 mm deep with six 50 mm deep aerofoil damper blades.

The damper sample was:-

- AJS Multi-Leaf Volume Control Damper: 300 mm x 300 mm x 75 mm with 6 aerofoil blades

3 TESTING

Testing was carried out using the test methodology described in BS EN 1751:1999 "Ventilation for buildings – Air terminal devices – Aerodynamic testing of dampers and valves." Only the procedure described in section 5.3 "Casing Leakage" was applied to the test sample.

Testing was carried out on the damper by fitting blanking plates to either side with a supply air connector and static pressure tapping on one side. Air was supplied to the damper from a high pressure fan via an airflow measuring device. The damper was subjected to a range of pressures up to 2300 pascals, and the supply airflow rate was noted against each pressure. Several tests were carried out to determine by elimination the leakage rate for different components of the damper. The damper itself has two areas where leakage can take place, there are the four corner seals of the frame, and where the drive shaft is connected to the control handle. There is also another area of leakage, which is the test rig itself. As very small airflow rates are involved it is almost impossible to have a leak free system, so a rig calibration test was conducted to establish the leakage rate from the test rig. The results from this test were then subtracted from the other test results so that the true frame leakage can be established. The results of all the tests can be found in Appendix A.

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MULTI-LEAF VOLUME CONTROL DAMPER BSRIA TEST REPORT DETALS

4 COMMENTS ON TEST RESULTS

The results for tests 1, 2 and 3 are shown in appendix A, and from these results Table 4 has been generated, correcting the leakage to take into account the test rig losses, also shown is a break down of the leakage for the frame and the control handle. As can be seen from the results the highest area of leakage is the control handle, which is 82% of the total. Also shown in Table 4 is the calculated leakage rate per square metre of the whole assembly and the frame for comparison with the leakage classifications A, B, & C in accordance with the standard. As can be seen, the frame leakage component is close to class C, however adding to it the control handle leakage, changes it to a class A.

Looking at the construction of the test sample assembly, it could be seen that the areas of leakage will be the same for units of a different size with a single control handle assuming that the width will always be 75 mm. Based on this information from the test results Table 5 has been generated by calculating the leakage rate per area for different sizes of damper. As can be seen from the calculations small units will only meet class A whereas large units will probably meet class C at low pressures.

5 RESULTS

SUMMARY OF TEST RESULTS		
Test pressure (Pa)	**Frame leakage (l/s)**	**Control handle leakage (l/s)**
200	0.004	0.018
1000	0.020	0.090
2000	0.040	0.180

Leakage rates corrected to standard conditions of 20°C and 1013.25 mbar.

Individual test results can be found in Appendix A: Tables 1 to 3.

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MULTI-LEAF VOLUME CONTROL DAMPER BSRIA TEST REPORT DETALS

APPENDIX A

Test results and Instrumentation

Total No. of pages: 7

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Table 1: Test 1. Frame leakage test on frame joints both sides and control handle

Test 1
Frame size:300 x 300 x 75 mm

test pressure Pa	measured leakage l/s
304.5	0.0593
548.0	0.1136
852.2	0.1801
1202.1	0.2435
1611.5	0.3134
1921.4	0.3616
2183.0	0.4033
2385.0	0.4355

Graph 1: Test 1. Frame leakage test on frame joints both sides and control handle

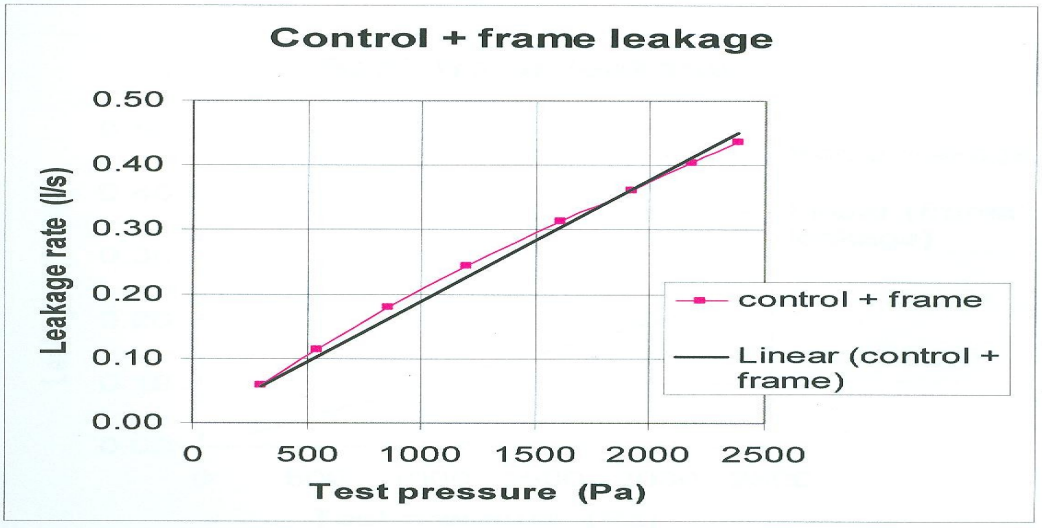

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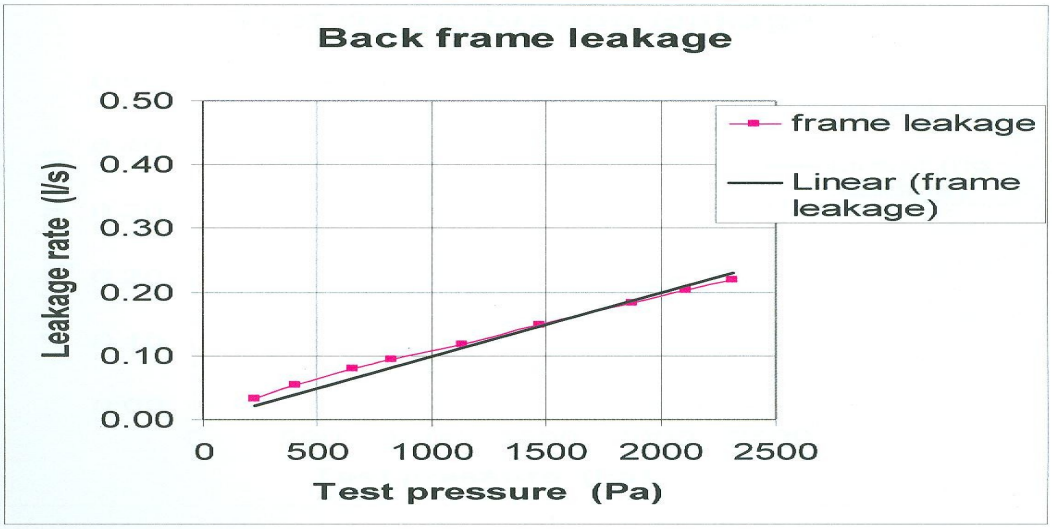
Table 2: Test 2. Frame leakage test on back frame joints only

Test 2
Frame size:300 x 300 x 75 mm

test pressure Pa	measured leakage l/s
227.8	0.0335
404.0	0.0543
654.0	0.0797
822.5	0.0939
1140.0	0.1178
1471.0	0.1494
1873.6	0.1832
2112.9	0.2035
2314.0	0.2200

Graph 2: Test 2. Frame leakage test on back frame joints only



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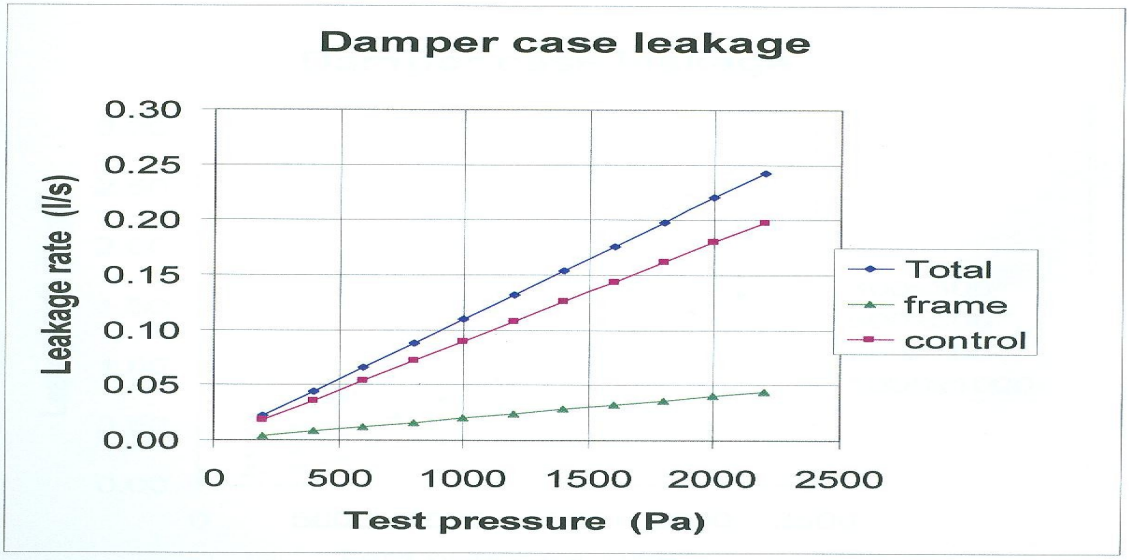
MULTI-LEAF VOLUME CONTROL DAMPER BSRIA TEST REPORT DETALS

Table 4: Calculated leakage from test results

test 1 control handle + 2 side frames + rig leakage
test 2 1 side frame + rig leakage
test 3 test rig calibration leakage

pressure	Total	frame	control	test 1	test 2	test 3	total	frame	Class A	Class B	Class C
Pa	l/s	l/s	l/s	l/s	l/s	l/s	l/s/m²	l/s/m²	l/s/m²	l/s/m²	l/s/m²
200	0.022	0.004	0.018	0.040	0.020	0.018	0.244	0.044	0.88	0.28	0.09
400	0.044	0.008	0.036	0.080	0.040	0.036	0.489	0.089	1.39	0.43	0.15
600	0.066	0.012	0.054	0.120	0.060	0.054	0.733	0.133	1.82	0.56	0.19
800	0.088	0.016	0.072	0.160	0.080	0.072	0.978	0.178	2.20	0.67	0.23
1000	0.110	0.020	0.090	0.200	0.100	0.090	1.222	0.222	2.54	0.78	0.27
1200	0.132	0.024	0.108	0.240	0.120	0.108	1.467	0.267	2.86	0.87	0.31
1400	0.154	0.028	0.126	0.280	0.140	0.126	1.711	0.311	3.17	0.96	0.34
1600	0.176	0.032	0.144	0.320	0.160	0.144	1.956	0.356	3.46	1.05	0.37
1800	0.198	0.036	0.162	0.360	0.180	0.162	2.200	0.400	3.74	1.13	0.40
2000	0.220	0.040	0.180	0.400	0.200	0.180	2.444	0.444	4.01	1.20	0.43
2200	0.242	0.044	0.198	0.440	0.220	0.198	2.689	0.489	4.26	1.28	0.46

Graph 4: Calculated leakage from test results



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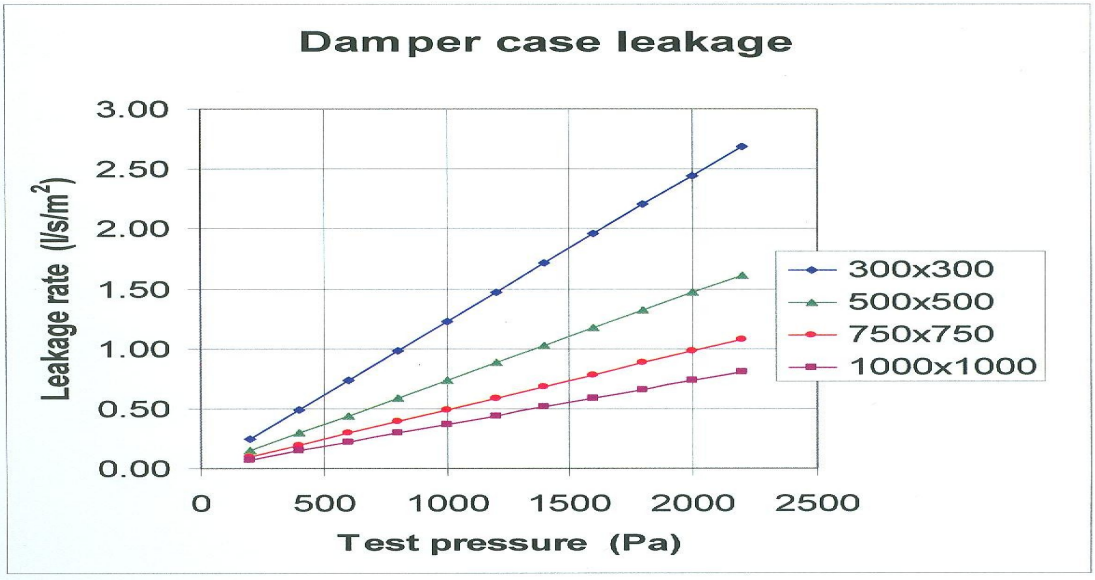
MULTI-LEAF VOLUME CONTROL DAMPER BSRIA TEST REPORT DETALS

Table 5: Calculated leakage for different size of frame

area	0.090	0.150	0.225	0.300	BS EN 1751:1999 classification		
size	300x300	500x500	750x750	000x1000	Class A	Class B	Class C
Pressure		Damper leakage			Maximum leakage		
Pa	l/s/m²	l/s/m²	l/s/m²	l/s/m²	l/s/m²	l/s/m²	l/s/m²
200	0.244	0.147	0.098	0.073	0.88	0.28	0.09
400	0.489	0.293	0.196	0.147	1.39	0.43	0.15
600	0.733	0.440	0.293	0.220	1.82	0.56	0.19
800	0.978	0.587	0.391	0.293	2.20	0.67	0.23
1000	1.222	0.733	0.489	0.367	2.54	0.78	0.27
1200	1.467	0.880	0.587	0.440	2.86	0.87	0.31
1400	1.711	1.027	0.684	0.513	3.17	0.96	0.34
1600	1.956	1.173	0.782	0.587	3.46	1.05	0.37
1800	2.200	1.320	0.880	0.660	3.74	1.13	0.40
2000	2.444	1.467	0.978	0.733	4.01	1.20	0.43
2200	2.689	1.613	1.076	0.807	4.26	1.28	0.46

Graph 5: Calculated leakage for different size of frame



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MULTI-LEAF VOLUME CONTROL DAMPER BSRIA TEST REPORT DETALS

Instrumentation

Test Equipment /Instruments	Instrument No	Calibration expiry date
Manometer	502	February 03
Air measurement venturi (8 mm)	No2	January 03
Linier flow air measurement device	125	January 03

Test unit reference number	17160A1CHS	300 x 300 x 75 mm

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