actionair

EnergyShield

Air Control & Shut-Off Damper

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Swegon
Air Management

Application Parameters

The ES range of dampers are suitable for air conditioning and ventilation systems requiring air control and low closed blade leakage performance.

Blade construction for system pressures up to 1000Pa and duct velocities of up to 10m/s on the ES35 and ES36 range and 1500Pa, and 20m/s on the ES50 range.

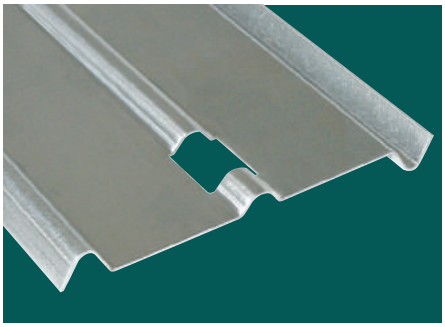
Suitable for applications in normal dry filtered air systems, including modulation function. If exposed to fresh air intakes, and/or inclement conditions, the 316 stainless steel option should be considered by the client (ES35 + 36).

All installations should be subject to a planned inspection programme, frequency of which is dependant upon application and environmental conditions.

For specialist applications and products outside specified parameters, please consult with our Technical Sales Office.

Please note: ES dampers must not be installed with blades running vertical.

Blade Features



ES35

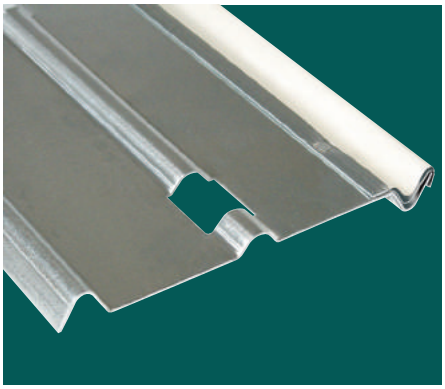
1.5mm thick triple "Vee" groove blade profile, to give maximum strength.

Suitable for systems with an operational temperature range of –40°C to +70°C.

ES35 - C280: (no blade seal sealant), suitable for 280°C continuous operation.

Standard: Galvanised steel.

Optional: 316 stainless steel.



ES36

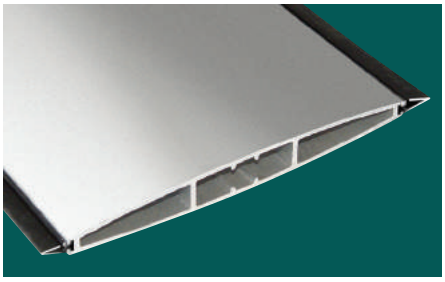
1.5mm thick triple "Vee" groove blade profile, to give maximum strength. With additional blade seals attached within blade "Vee" groove to create low closed blade leakage.

Suitable for systems with an operational temperature range of 180°C. continuous operation.

ES36 - C180: silicon blade seal, suitable for 280°C continuous operation.

Standard: Galvanised steel.

Optional: 316 Stainless steel.



ES50

Profiled aerodynamic **aluminium** extrusion for low noise generation. Blade tip seals to give very low closed blade leakage.

Suitable for systems with an operational temperature range of –40°C to +70°C (+70°C only standard blade seal).

Casing and Drive Features

All damper blades are within the casing I.e. they do not protrude beyond the casing depth. This ensures blades will not foul equipment (such as grilles or louvres) that may be fitted adjacent to the damper. This feature also allows easy fitting and removal of the Flanged damper (FLA). The 165mm wide FLA casing consists of a single skin 1.2mm steel frame with 40mm flanges and pre-punched corner holes to suit proprietary duct flanges. The Spigot (SPG) type casings are 178mm wide that include spigotted end caps fitted to either side of the FLA casing.

Total depth over spigots

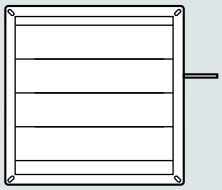
Type SPG (square/rectangular) = 254mm
Type SPG (circular (CIRC) and flat oval (FLOV) = 304mm

For all ES Dampers, the damper casing leakage conforms to HVCA Ductwork Specification DW144 class A,B and class C. Optional DW144 class C leakage available. Requires additional side cover plates.

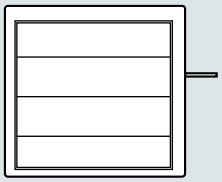
301 grade stainless steel side gasketting is fitted as standard to series ES36, and ES50 which significantly reduces air leakage between the blade ends, and the internal sides of the damper casing.

Blade Drive Mechanism

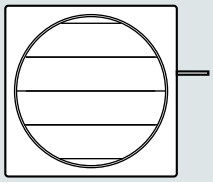
The blade drive mechanism is mounted out of the airstream to minimise pressure and noise generation, blade axles are 11.1mm hexagonal zinc plated steel. Synthetic blade bearings give a corrosion resistant, hard wearing and free running operation.



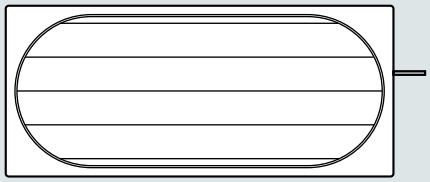
Type FLA Square/Rectangular



Type SPG Square/Rectangular



Type SPG Circular



Type SPG Flat Oval

Size Range

Type FLA and Type SPG (Rectangular)

Single section

Widths in any size from 200mm to 1200mm.

Heights in any height from 200mm to 1800mm (SPG: 1700mm) in increments of 1mm.

Double section

1. Single drive with hexagon coupling

Widths in any size from 1201mm to 2080mm.

Heights in any height from 200mm to 1800mm (SPG: 1700mm) in increments of 1mm (ES35).

Heights in any height from 200mm to 1000mm in increments of 1mm (ES36/ES50).

2. Single Drive with jackshaft (ES35/ES36, GALV, FLA)

Widths in any size from 1201mm to 2480mm.

Heights in any height from 350mm to 1800mm in increments of 1mm.

3. Drive both sides

Widths in any size from 1201mm to 2480mm.

Heights in any height from 200mm to 1800mm (SPG: 1700mm) in increments of 1mm.

Type CIRC

Diameters in any size from 200mm to 1000mm.

Type Flat Oval

Single section

Widths in any size from 300mm to 1200mm.

Double section

Widths in any size from 1201mm to 2000mm.

Single or double section

Heights in any size from 200mm to 550mm.

Double section arrangement

Heights up to and including 1000mm, supplied factory assembled

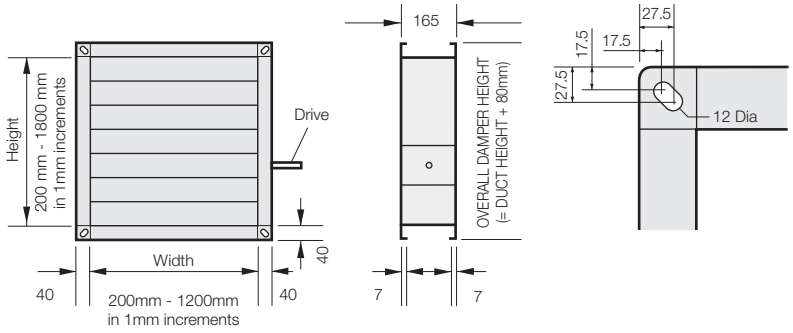
Heights above 1000mm, supplied individually with joining strips for site assembly, by others.

Additional note for multiple Type SPG (Rectangular)

Spigots attached to individual single section dampers. On-site provision of filling gaps between spigot and duct where dampers join required by others.

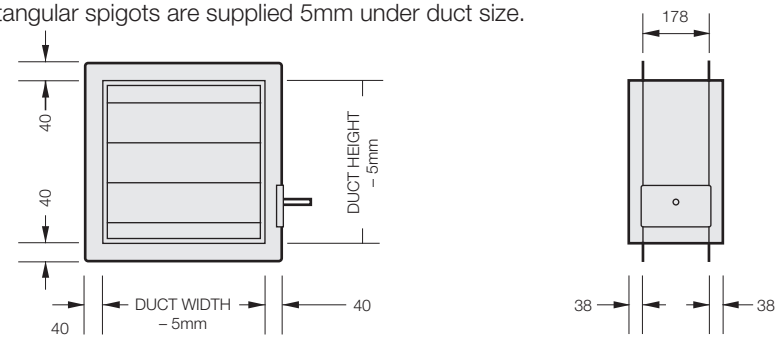
Dimensions

Flanged Casing (Type FLA). Single Drive (no mullion)



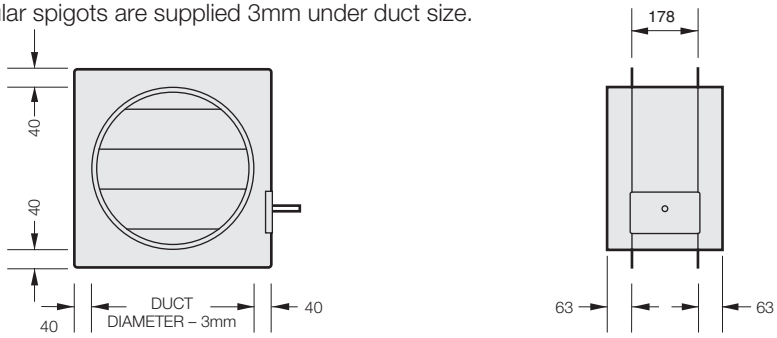
Spigot Casing (Type SPG Rectanglar)

SPG rectangular spigots are supplied 5mm under duct size.



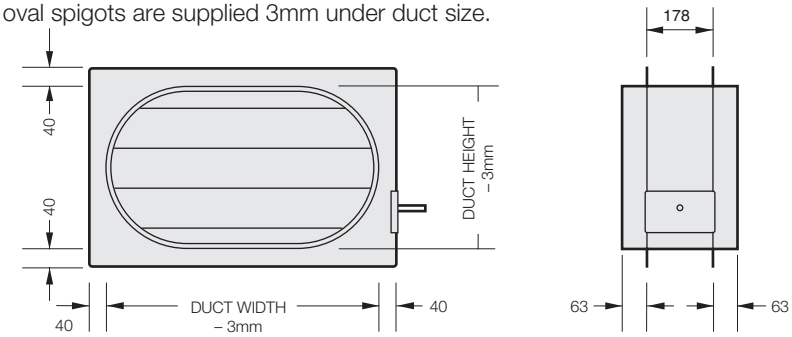
Spigot Casing (Type SPG Circular)

SPG circular spigots are supplied 3mm under duct size.



Spigot Casing (Type SPG Flat Oval)

SPG flat oval spigots are supplied 3mm under duct size.

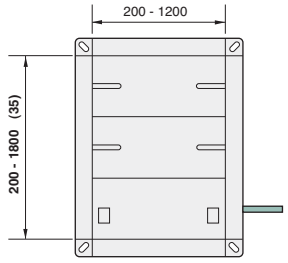


Alternative casing depths (FLA) in mm

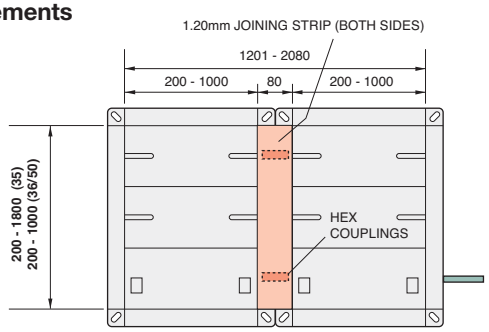
- 100, 120, 150, 160
  Blades will protrude outside casing.
- 165 default standard.
- 175, 200, 250.
- **Note: 100 and 120 not available with side covers or jack shaft.**

Standard Extended Spindle

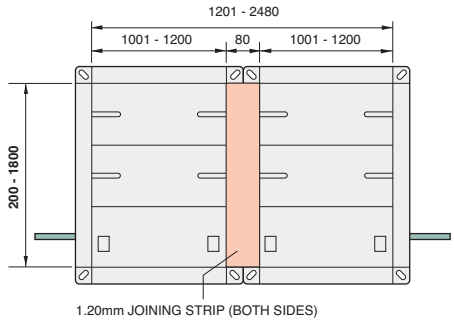
ES35, ES36 and 50, Extended Spindle and Hexagon Drive Arrangements



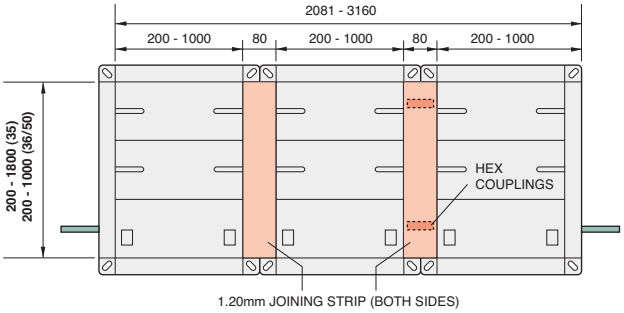
Standard section single unit



Two sections unit with Hex coupling (single drive)



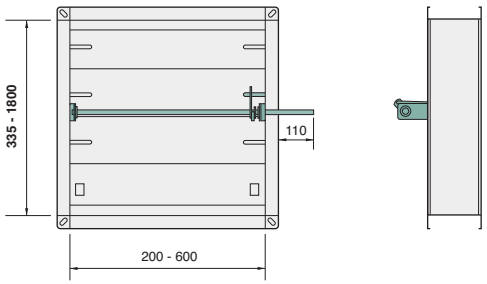
Two sections unit (drive both sides)



Three sections unit with Hex coupling (drive both sides)

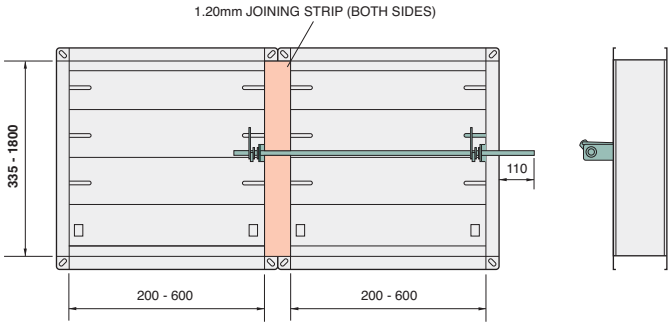
Jack Shaft External Drive Arrangements - Galvanised Flanged Only

ES35, ES36 Single Damper, External Drive



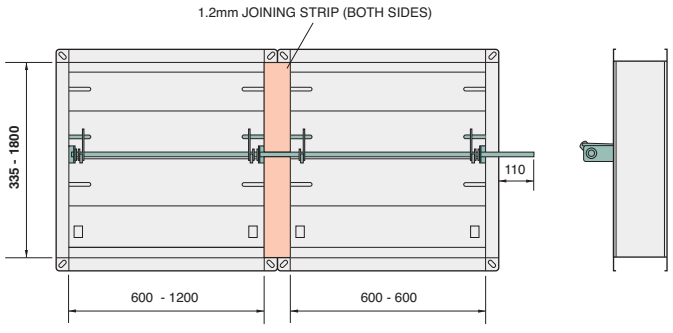
Single section unit with jackshaft external drive

ES35, ES36 Multiple Small Dampers, External Drive



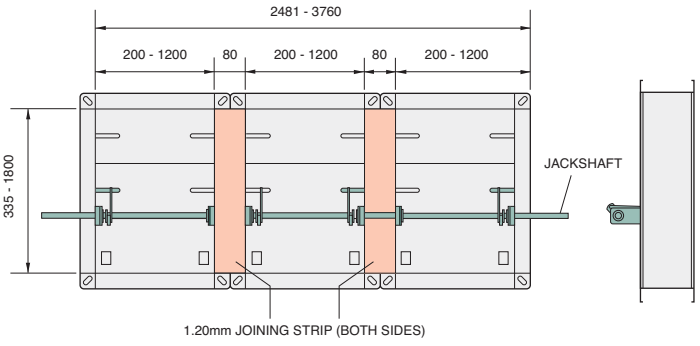
Two sections unit with jackshaft external drive

ES35, ES36 Multiple Large Dampers, External Drive



Two sections unit with jackshaft external drive (single drive)

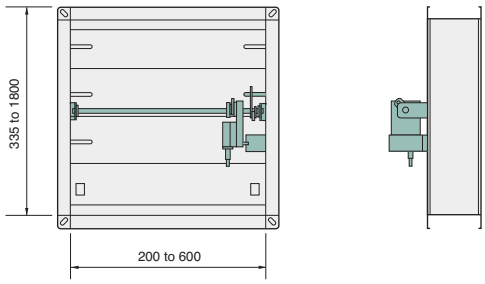
ES35, ES36, External Drive Jack Shaft arrangement



Three sections unit with jackshaft external drive (drive both sides)

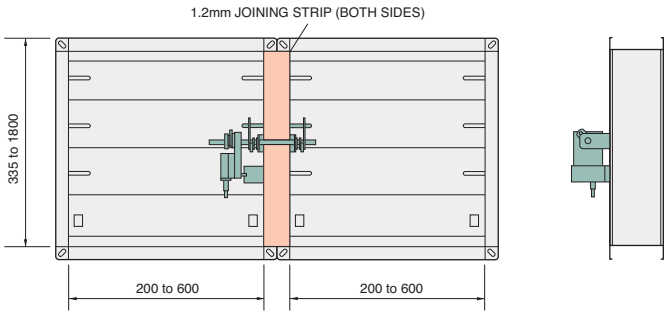
Jack Shaft Internal Drive Arrangements - Galvanised Flanged Only

ES35, ES36 Single Damper, Inboard Drive



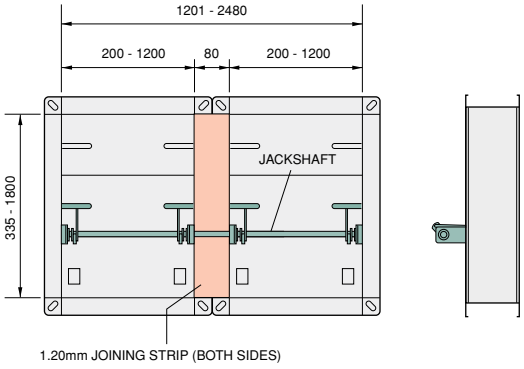
Single section unit with jackshaft inboard drive

ES35, ES36 Multiple Small Dampers, Inboard Drive



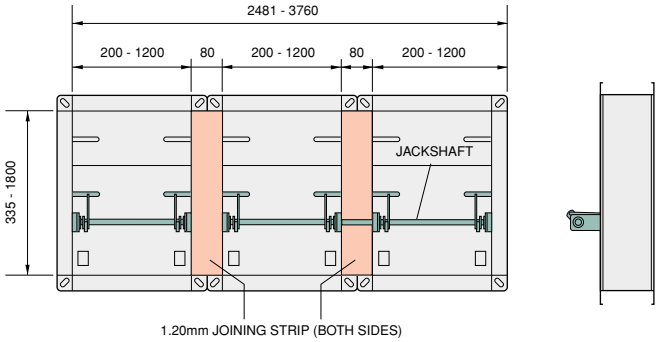
Two sections unit with jackshaft inboard drive

ES35, ES36 Multiple Large Dampers, Inboard drive



Two sections unit with jackshaft inboard drive (single drive)

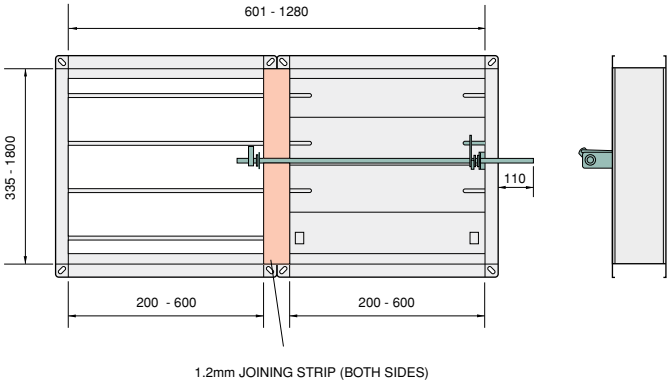
ES35, ES36, Inboard Drive Jack Shaft Arrangement



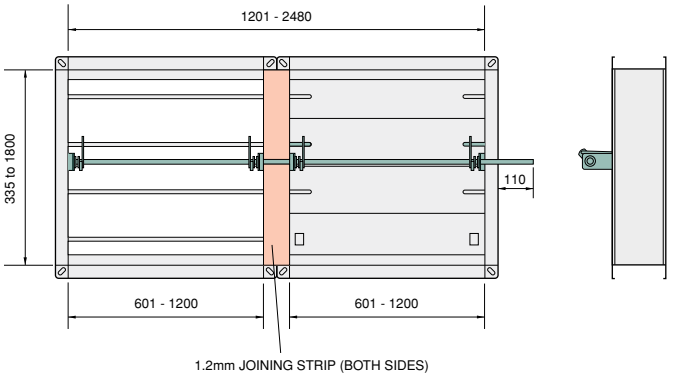
Three sections unit with jackshaft inboard drive (drive both sides)

Face and Bypass Jack Shaft - External Drive Arrangement

ES35, ES36 Face and Bypass Small Dampers, External Drive



ES35, ES36 Face and Bypass Large Dampers, External Drive

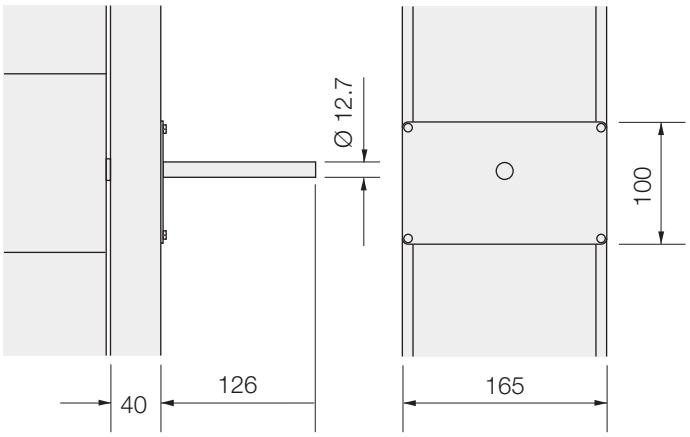


Note: Face and bypass available for all multiple arrangements

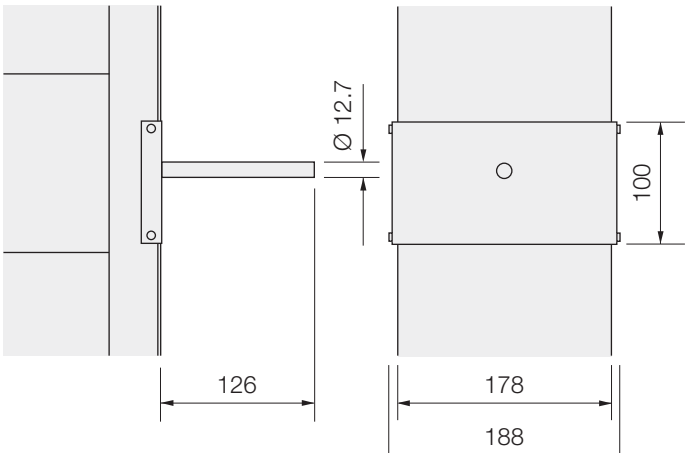
Control Options

Extended Shaft Control (Option X)
12.7mm diameter Zinc plated steel Extended Spindle for motorised control. Supplied as standard, loose for site fitting by others.

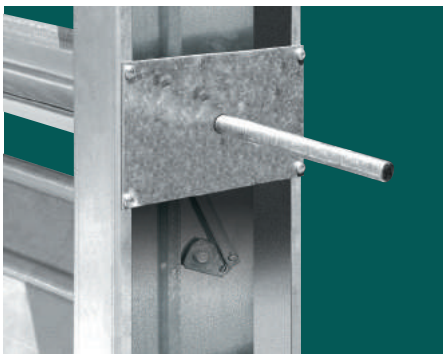
FLA Type Casing



SPG Type Casing



Casing Leakage Options



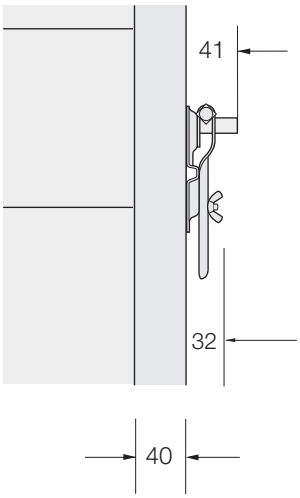
Exposed Linkage Class 'B' Casing leakage.

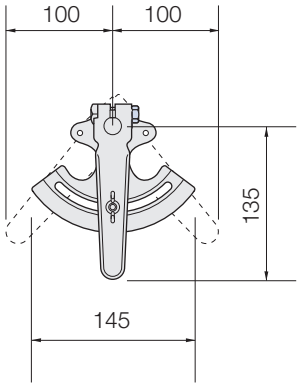
Side covers for Class 'C' Casing leakage. **Class 'C' Casings have spindle factory fitted.**

Note:
Class 'C' casings have spindle factory fitted.

Manual Quadrant Control (Option Q)
Manual Quadrant Control, fits onto a reduced shaft and is supplied factory fitted.

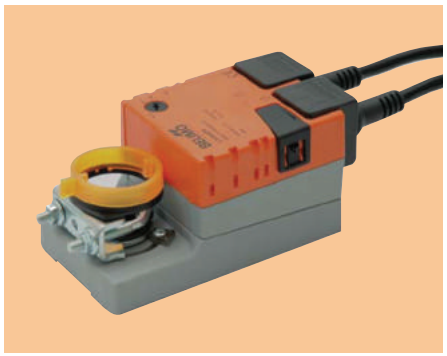
Class 'C' Casings have spindle factory fitted.





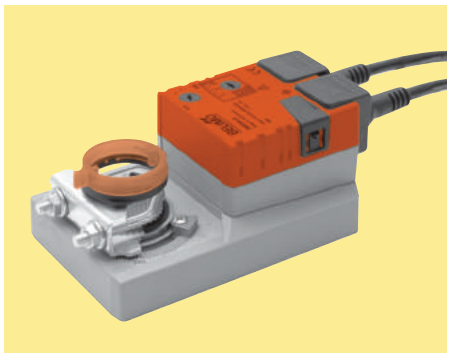
Electrical Controls (Option E)

Factory fitted Belimo Actuators for 24V or 230V open/closed or spring return operation and 24V modulating are available. These will comply with EMC Directive 2004/108/EC.



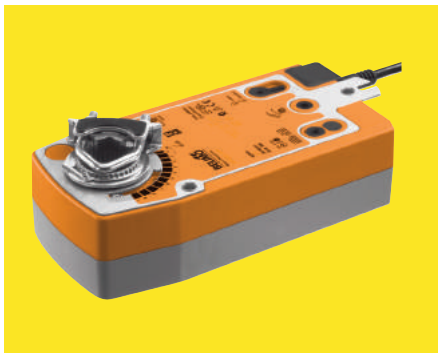
5 Nm LM-A

10 Nm NM-A

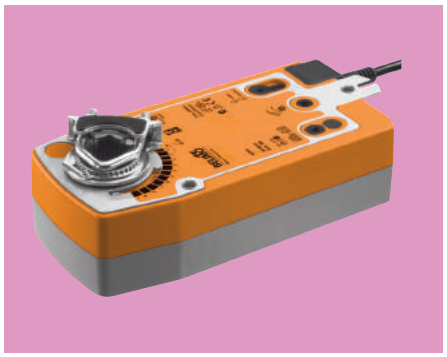


20 Nm SM-A

40Nm GM



10Nm NF



20Nm SF

Weights

FLA Damper Weight Table ES35 base product (Kg)

Height	Width					
	200	400	600	800	1000	1200
200	3.8	5.4	7.0	8.6	10.2	11.8
400	6.0	8.3	10.6	12.9	15.1	17.4
600	7.8	10.6	13.4	16.3	19.1	21.9
800	9.5	12.9	16.3	19.7	23.1	26.5
1000	11.4	15.3	19.1	23.0	26.9	30.7
1200	13.2	17.7	22.1	26.6	31.0	35.5
1400	15.1	20.3	25.5	30.6	35.8	41.0
1600	17.0	22.8	28.5	34.2	39.9	45.6
1800	18.7	25.0	31.2	37.4	43.6	49.9

CIRC Damper Weight Table ES35 (Kg)

200 dia	5.4
400 dia	11.7
600 dia	19.0
800 dia	27.5
1000 dia	37.3

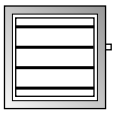
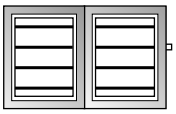
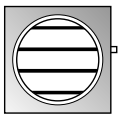
Multipliers for alternative configurations (select nearest size up from chart and use multiplier below).

ES36 multiply by 1.1
ES50 multiply by 0.91

Example:
600 x 1000 ES36
19.1 x 1.1 = 21.01 Kg approx.

Selection

Electrical Controls (Option E)

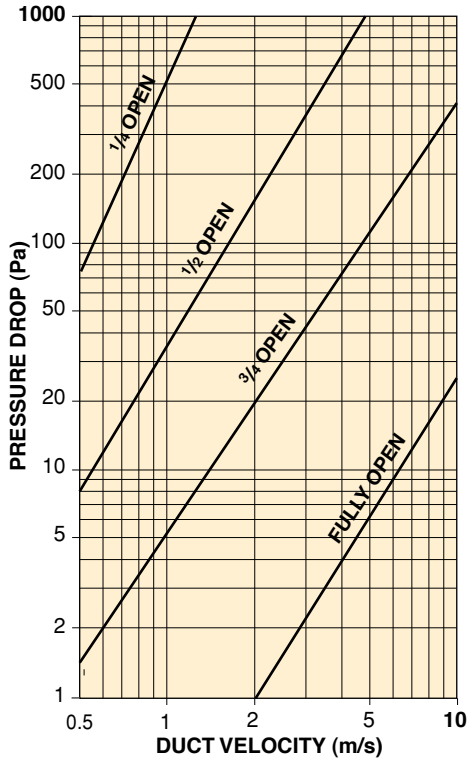
Single Section	Double Section with Hex drive arrangement*	Dia mm	Open/Close or Modulating				Spring Return		300 °C 1 Hour		
			5 Nm LM-A	10 Nm NM-A	20 Nm SM-A	40 Nm GM-A	10 Nm NF	20 Nm SF	15 Nm HM5-3P	20 Nm HM5/6	40 Nm HM5/6-2P
RECTANGULAR/FLOV		CIRCULAR									
ES35											
Up to 0.26 M²		Up to 500mm Dia	●				●				
Up to 0.43 M²		Up to 650mm Dia	●				●				
Up to 0.96 M²		Up to 950mm Dia		●			●				
Up to 1.35 M²		Above 950 mm Dia		●			●				
Above 1.35 M²					●			●			
	Up to 0.44 M²			●			●				
	Up to 0.72 M²			●			●				
	Up to 1.58 M²				●			●			
	Up to 1.76 M²				●			●			
	Up to 2.46 M²				●			●			
	Above 2.46 M²					●					
ES36/50									ES36 R-T Only		
Up to 0.11 M²		Up to 300mm Dia	●				●		●	●	●
Up to 0.18 M²		Up to 400mm Dia	●				●		●	●	●
Up to 0.44 M²		Up to 650mm Dia		●			●		●	●	●
Up to 0.79 M²		Up to 850mm Dia		●			●		●	●	●
Up to 1.62M²		Above 850mm Dia			●			●	●	●	●
Up to 1.79 M²					●			●		●	●
Above 1.79M²					●			●		●	●
	Up to 0.36M²			●			●		●	●	●
	Up to 0.64 M²				●			●	●	●	●
	Up to 0.72 M²				●			●		●	●
	Up to 1.36 M²				●			●		●	●
	Above 1.36 M²					●					●

* For other multiple arrangements refer to Actionair Technical Sales Office

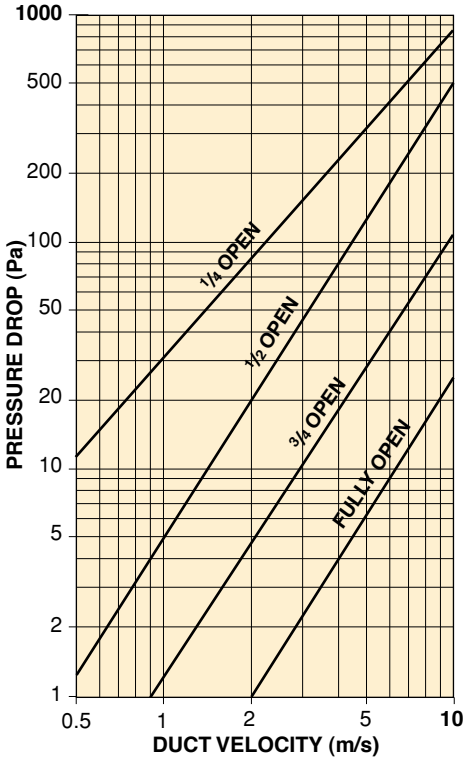
Technical Data

Pressure Drop Vs Velocity at intermediate Blade positions.
Dampers tested were 600mm x 600mm square

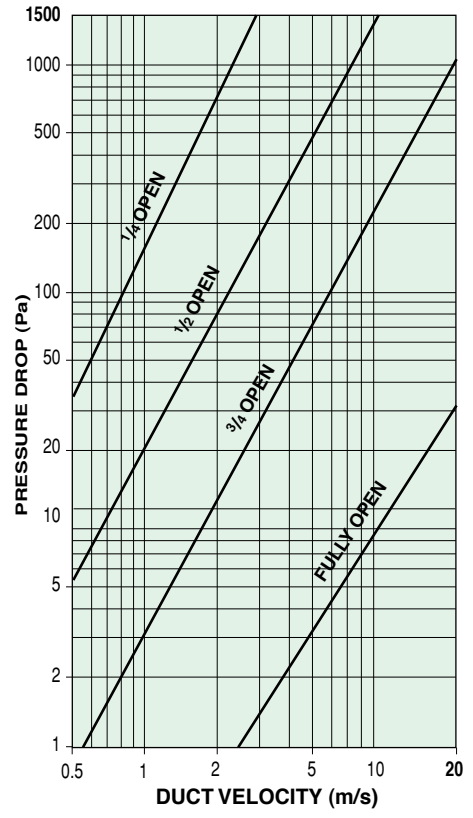
ES35R, 36R (Opposed Blade)



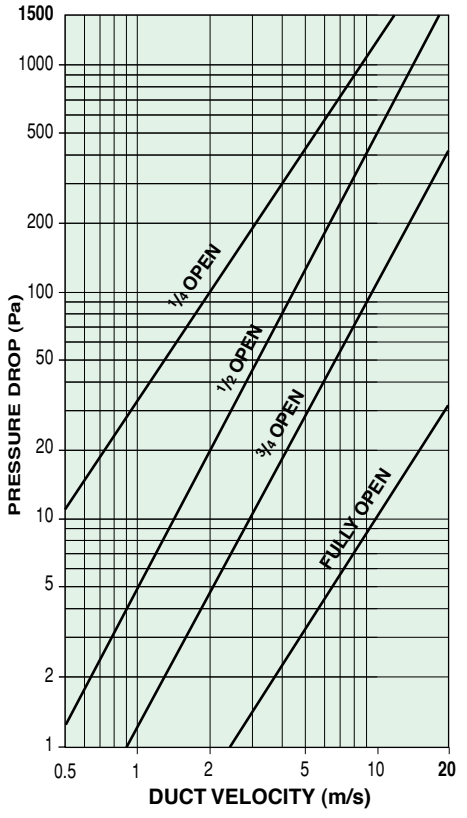
ES35P, 36P (Parallel Blade)



ES50R (Opposed Blade)



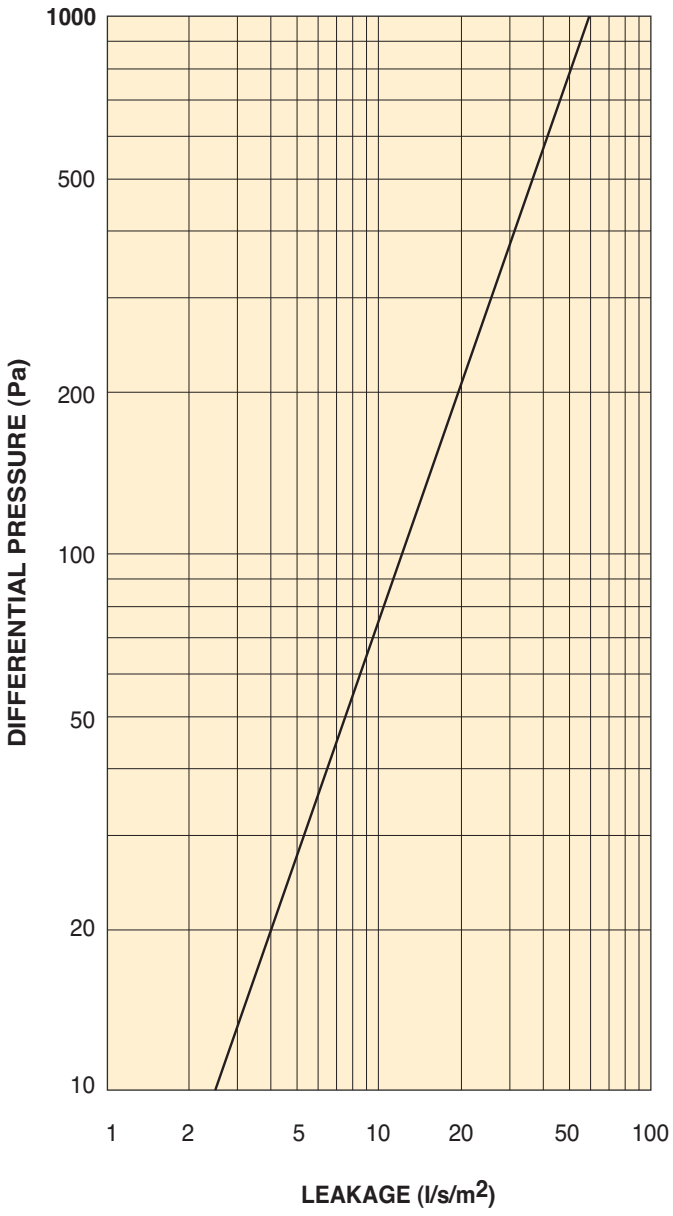
ES50P (Parallel Blade)



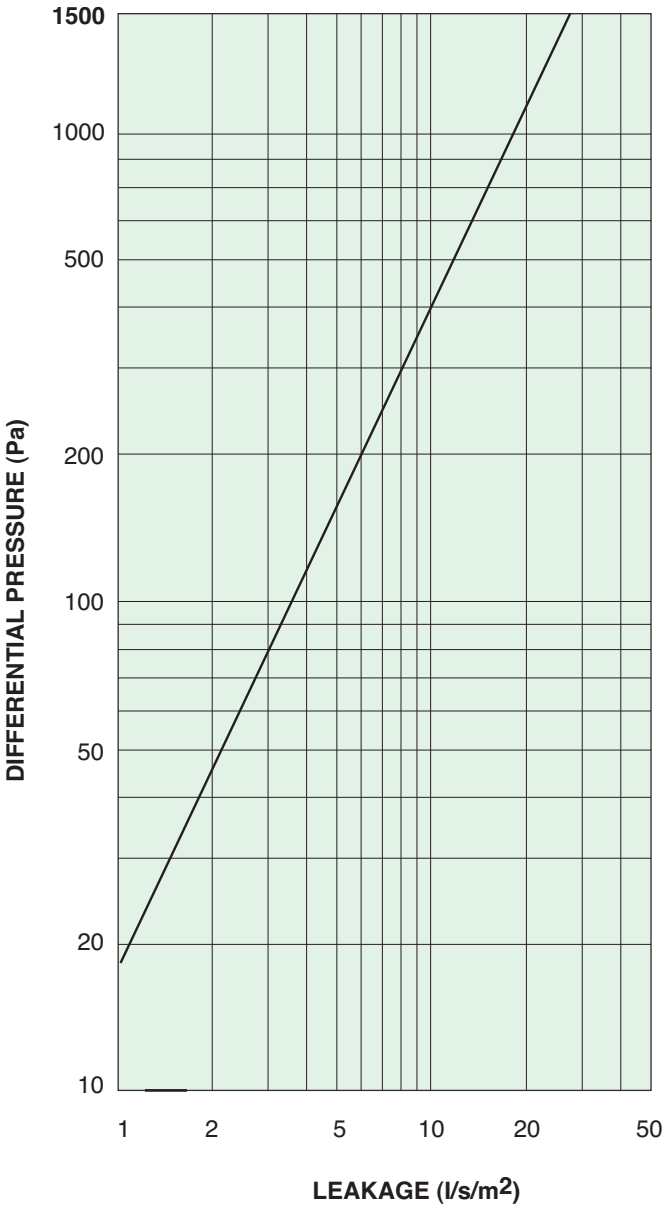
Technical Data Continue

Damper Leakage

ES36 Closed Blade leakage
1000mm wide x 1000mm high damper



ES50 Closed Blade leakage
1000mm wide x 1000mm high damper



Specification

ES35
Air control dampers to EN1751 class 0* and DW144 class B casing leakage comprising of 1.5mm thick x 157mm triple "Vee" galvanised steel blades with synthetic blade bearings. Housed in a 1.2mm thick x 165mm deep galvanised steel casing. Integral 40mm peripheral flanges with pre-punched corner fixing holes to suit proprietary duct flanges. Damper blades within damper casing. Drive mechanism mounted outside airstream. **ES35 as manufactured and supplied by Actionair**

ES36
Air control and shut-off dampers EN1751 class 2* and DW144 class B casing leakage comprising of 1.5mm thick x 157mm triple "Vee" galvanised steel blades with silicone coated glassfibre scrim blade seals and stainless steel side gasketting. Synthetic blade bearings. Housed in a 1.2mm thick x 165mm deep galvanised steel casing. Integral 40mm peripheral flanges with pre-punched corner fixing holes to suit proprietary duct flanges. Damper blades within damper casing. Drive mechanism mounted outside airstream. **ES36 as manufactured and supplied by Actionair.**

ES35 Stainless Steel
Air control dampers EN1751 class 0* and DW144 class B casing leakage comprising of 1.5mm thick x 157mm triple "Vee" 316 stainless steel blades with stainless steel blade bearings. Housed in a 1.2mm thick x 165mm deep 316 stainless steel casing. Integral 40mm peripheral flanges with pre-punched corner fixing holes to suit proprietary duct flanges. Damper blades within damper casing. Drive mechanism mounted outside airstream. **ES35 Stainless Steel as manufactured and supplied by Actionair**

ES36 Stainless Steel
Air control and shut-off dampers EN1751 class 2* and DW144 class B casing leakage comprising of 1.5mm thick x 157mm triple "Vee" 316 stainless steel blades with silicone coated glassfibre scrim blade seals and stainless steel side gasketting. Stainless steel blade bearings. Housed in a 1.2mm thick x 165mm deep 316 stainless steel casing. Integral 40mm peripheral flanges with pre-punched corner fixing holes to suit proprietary duct flanges. Damper blades within damper casing. Drive mechanism mounted outside airstream. **ES36 stainless steel as manufactured and supplied by Actionair.**

ES50
Air control and shut off dampers EN1751 class 3* and DW144 class B casing leakage comprising of profiled aerodynamic aluminium aerofoil blades with blade seal tips and stainless steel side gasketting. Synthetic blade bearings. Housed in a 1.2mm thick x 165mm deep galvanised steel casing. Integral 40mm peripheral flanges with pre-punched corner fixing holes to suit proprietary duct flanges. Damper blades within damper casing. Drive mechanism mounted outside airstream. **ES50 as manufactured and supplied by Actionair.**

ES-CIRC, ES-FLOV and ES-SPG
As appropriate rectangular model with additional note:-
Spigotted circular or flat oval components sealed and attached to damper flanges manufactured in the same material as the base damper..

*Based on a 1m x 1m damper.

Ordering Information ES35, ES36 and ES50

Example

Quantity	Series	Casing Type	Operation	Control Option	Duct Size	Casing Leakage
10	ES35	FLA	R	X	1200 (W) x 400 (H)	B

Quantity	Series	Casing Type	Operation	Control Option	Casing Leakage
Number Required	**ES35** **ES36** **ES50**	**FLA** Flanged **SPG** Spigotted	**R** Opposed Blade Movement **P** Paralled Blade Movement	**X** Extended Shaft Control (standard option) **Q** Manual Hand Quadrant **E** Electrical Operator 24V or 230V open/closed 24V or 230V spring return or 24V modulating. **JS** Jackshaft **IB** - Inboard **OB** - Outboard **FB** - Face and Bypass	**B** **C** (Requires side Covers)

For further application, technical and pricing information, please refer to Actionair Sales Office.

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