

Volume Control Dampers

Type SLC



Multi-leaf volume control with aerofoil blades in opposed blade arrangement.

- The SLC dampers can be operated either manually with a hand locking quadrant or, automatically with the aid of electric actuators.
- Standard construction of the SLC damper is available with 30 mm wide flanges in all four sides.
- The SLC dampers can also be supplied with either rectangular, square or circular spigots.
- The SLC dampers are also available for low closed blade leakage using the applications C2 variant.

Type		Page
SLC	Product Descriptions	2
	Construction . Materials . Standard Sizes	3
	Installation Details	4
	Product Range	5
	Accessories	6
	Nomenclature . Technical Data	7
	Order Data	8

**Type SLC
Opposed blade damper**

a. Without tip seals



Balancing application
(standard)

b. With tip seals



Control application Seals
(optional)

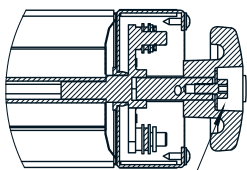
- Damper casing is manufactured from 1.2 mm galvanized sheet steel.
- Aerofoil shaped damper blades are made from extruded aluminium sections.
- Standard case bearings are made from engineering plastic. Capable of operating at temperatures up to 80°C.
- Maximum tested operating pressure is 1000 Pa.
- Blade tip seal is made from PVC material.
- Optional blade side seals are made from Grade 301 stainless steel or equivalent. Blade side seals reduce leakage between blade ends and casing.

Annotation:

1. Casing
2. Aerofoil blade
3. Handlocking quadrant
4. Side linkage
5. Side seal

**Type SLC – A with
wide flange casing**

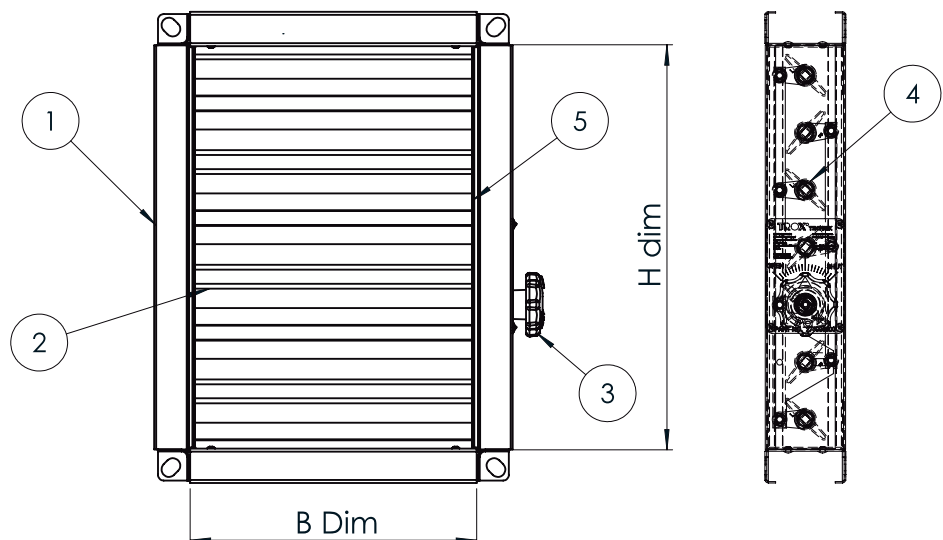
Detail of Locking Device



SLC...A

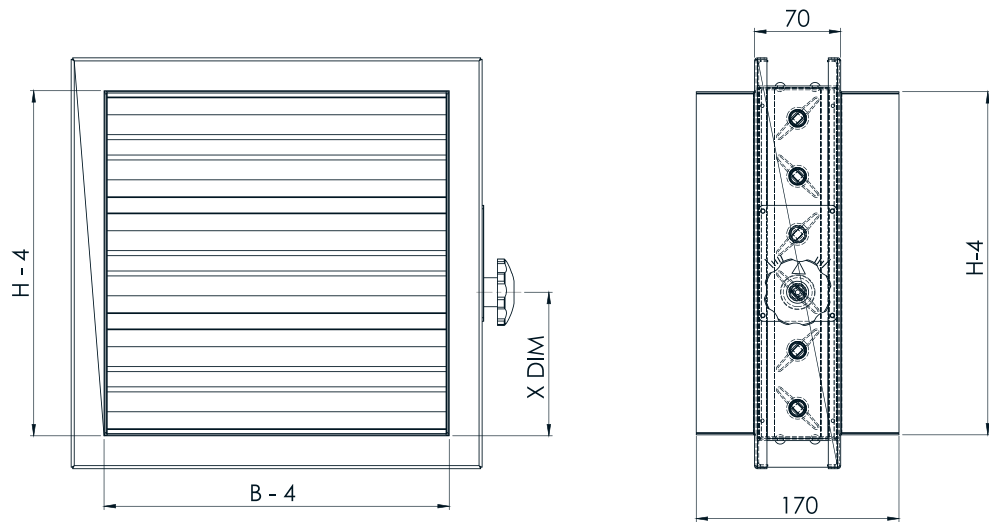
Release to operate
tighten to lock
(4mm Allen Key)

Type SLC - A Flange Casing



NOTE: B x H are duct dimensions

Type SLC – A2 with rectangular spigot



Type SLC – A3 with circular spigot

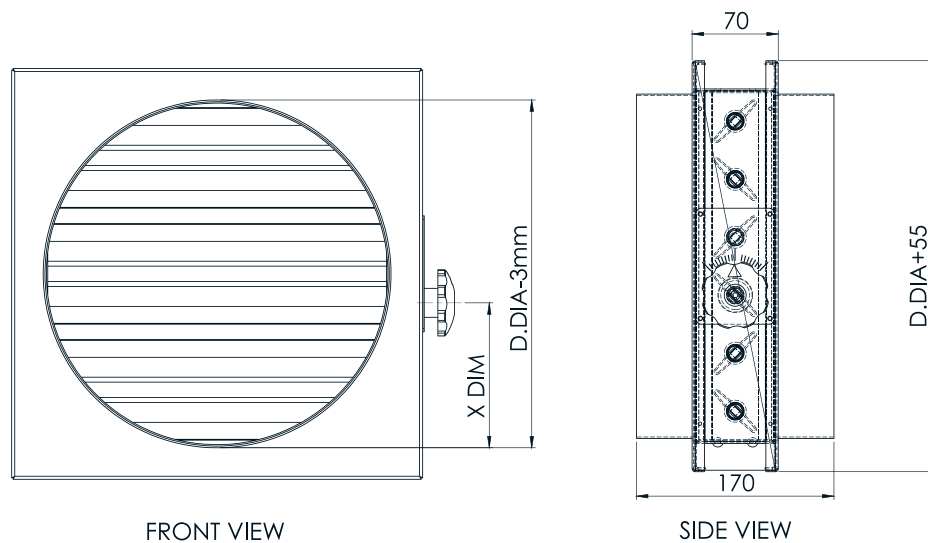


Table 2 : Standard sizes

B (mm)	H (mm)	D (mm)	No. of blades	X (mm)
100	100	100	2	25
150	150	150	3	25
200	200	200	4	125
250	250	250	5	125
300	300	300	6	125
350	350	350	7	125
400	400	400	8	225
450	450	450	9	225
500	500	500	10	225
550	550	550	11	225
600	600	600	12	325
650	650	650	13	325
700	700	700	14	325
750	750	750	15	325
800	800	800	16	325
850	850	850	17	425
900	900	900	18	425
950	950	950	19	425
1000	1000	1000	20	425

Note

The dimensions given in the table above are duct work connection sizes.
 The SLC-A / A2 / A3 damper can be supplied in any combination of the B and H dimensions given in Table 2.

Multiple assemblies

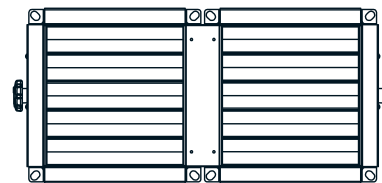


Figure 1 : A 2 x 1 modular horizontal arrangement (max.)

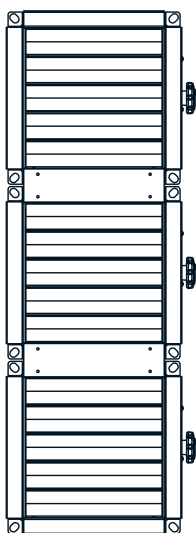


Figure 3 : A 1 x 3 modular vertical arrangement (max.)

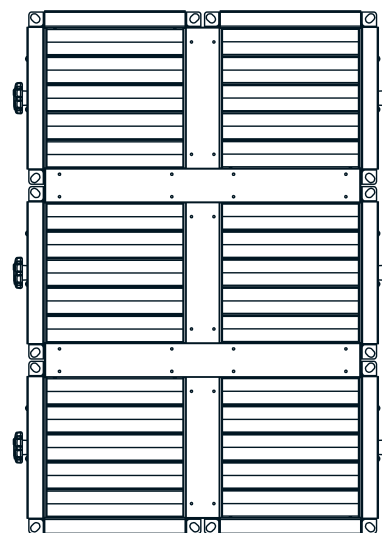


Figure 2 : A 2 x 3 modular vertical and horizontal arrangement (max.)

Note :

1. If the duct size of a damper exceeds 1m x 1m, it will be manufactured to consist 2 dampers joined together as shown above. The maximum joined number of dampers will be 2 horizontally and 3 vertically. Those will be factory, assembles and tested.
2. It is the customer's responsibility to ensure all dampers are correctly installed and properly supported.

Type SLC –
Construction variants

Construction Variants	Description
A	30 mm wide Flange casing in galvanized steel (Standard supply)
A2	Rectangular spigot casing
A3	Circular spigot casing
A35	35 mm wide Flange casing in galvanized steel
A40	40 mm wide Flange casing in galvanized steel
A45	45 mm wide Flange casing in galvanized steel

Options for seals

Construction Variants	Description
C0	Without side seal
C1	Side seals only (Standard supply)
C2	Side and tip seals for low closed blade leakage rating

Bearings

Construction Variants	Description
D	Sintered bronze (Standard supply) for motorized dampers
D1	Plastic (standard supply for Z04 - Z07)

Fig. 1
Installation of
Electric Limit Switch

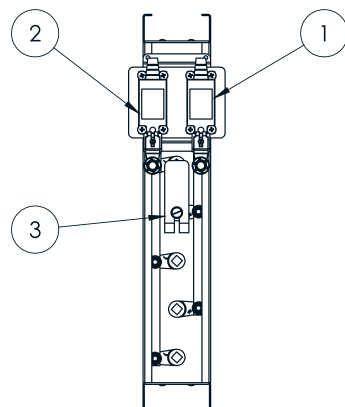


Fig. 2
Hand Locking
quadrant detail

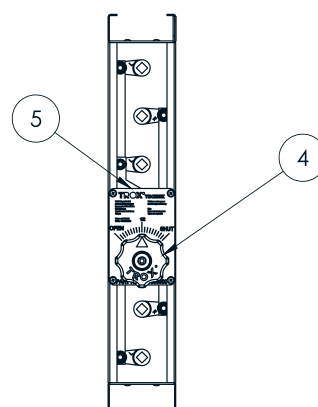
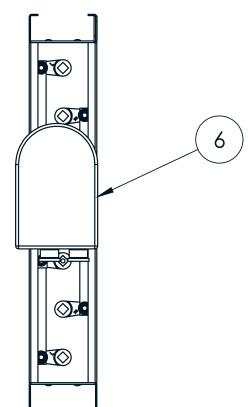


Fig. 3
One Electric Actuator



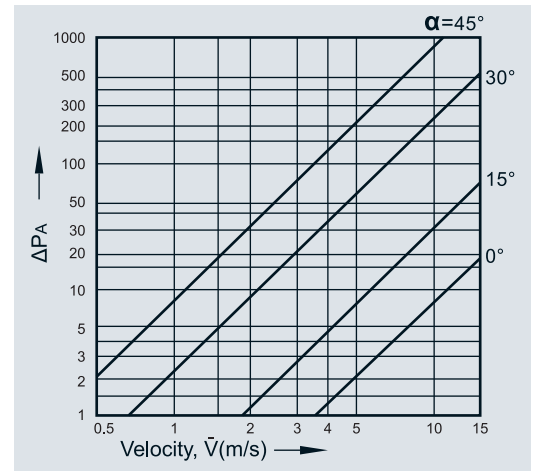
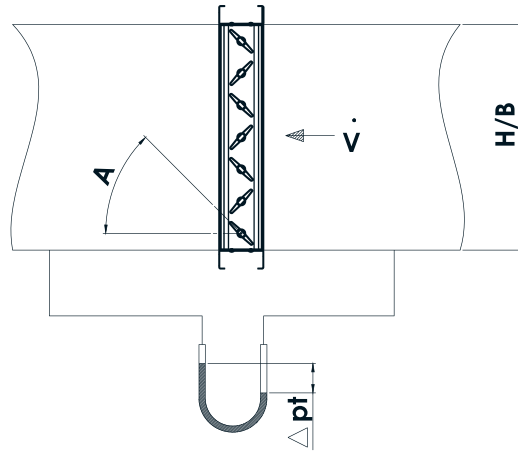
- ① Electric limit switch with double changeover contact, indicates damper 'Closed'.
- ② Electric limit switch with double changeover contact, indicates damper 'Open'.
- ③ Operating arm
- ④ Hand locking quadrant
- ⑤ 'Open' - 'Shut' Indicator
- ⑥ Actuator

Accessories	Type of control and operation modes available	Setting	Code
None	Plain drive shaft (Standard supply)		Z00
With hand locking quadrant. Note : This damper can be locked in the set position using an Allen key	Without limit switch (Fig. 2)		Z04
	Together with a limit switch to indicate 'Closed' position		Z05
	Together with a limit switch to indicate 'Open' position		Z06
	Together with two limit switches to indicate 'Open' and 'Closed' positions (Fig.1)		Z07
With electric spring return actuator	Damper with 230 V spring return actuator without integral limit switches	FO	Z08
		FC	Za9
	Damper with 230 V spring return actuator with integral limit switches	FO	Z10
		FC	Z11
	Damper with 24 V spring return actuator without integral limit switches	FO	Z12
		FC	Z13
	Damper with 24 V spring return actuator with integral limits witches	FO	Z14
		FC	Z15
	Damper with 230 V spring return actuator with one independent limit switch (see Note below)	Open	Z16
		Closed	Z17
	Damper with 230 V spring return actuator with two independent limit switches to indicate 'Open' and 'Closed' positions		Z18
	Damper with 24 V spring return actuator with one independent limit switch (see Note below)	Open	Z19
Closed		Z20	
Damper with 24 V spring return actuator with two independent limit switches to indicate 'Open' and 'Closed' positions		Z21	
Electric two- position (i.e., Open / Closed) actuator	Damper with 230 V two-position actuator without limit switches		Z22
	Damper with 230 V two-position actuator with integral limit switches		Z23
Electric modulating actuator with 2 to 10 Vd.c. feedback signal	Damper with 230 V modulating actuator		Z24
	Damper with 24 V modulating actuator		Z25
	Extended shaft 50 mm from the edge of the Flange		ZS99

Note :

Actuators are available.

When only one independent limit switch is required, the customer shall advice whether to set limit switch to Fail Close (FC) or Fail Open (FO) position when they place the order.



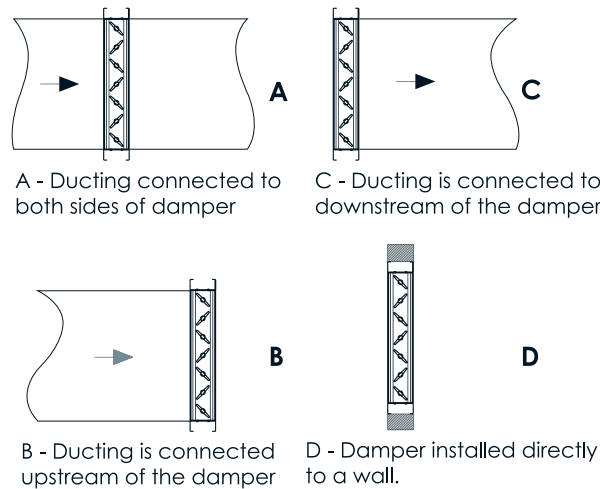
Graph 1 : Pressure Drop For Installation Type A

- | | | | |
|--------------------------|-------------------------------------|------------------------------|--|
| B (in mm) | Duct width | V (in l/s/m ²) | Closed blade leakage rate |
| H (in mm) | Duct height | \tilde{v} (in m/s) | Face velocity based on A |
| A (in mm) ² | Duct operating area (i.e., B x H) | α | Blade angle. When blades are fully open, $\alpha=0^\circ$ |
| N | Number of damper blades | Δpt (A - D) (Pa) | Total pressure drop (to state if it is for installation A, B, C, or D) |
| a (in cm) | Torque coefficient (Graph 2) | | |
| ζ | Pressure loss coefficient | | |

Note

The pressure drop Δpt for installation Type A with ductwork connected to both sides of the damper can be determined from Graph 1. For other installations, a corrections factor, F should be used as given in Table 4 below.

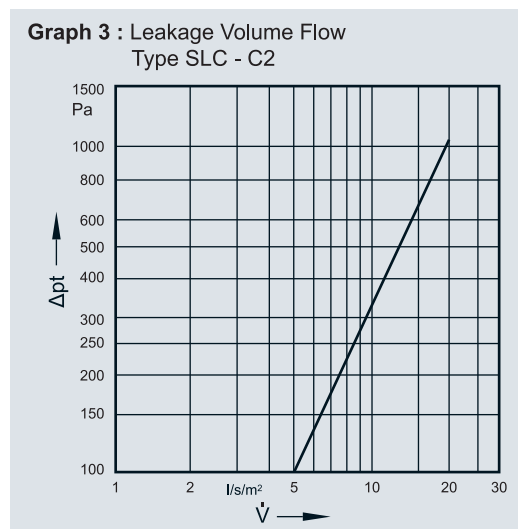
Types of installation



Type of Installation	Correction Factor, F for blade angle setting, α			
	0°	15°	30°	45°
B	6	4.3	2	1.4
C	4	2.9	1.7	1.4
D	9	6.3	2.7	1.8

Table 4 : Correction Factor for Types of installation

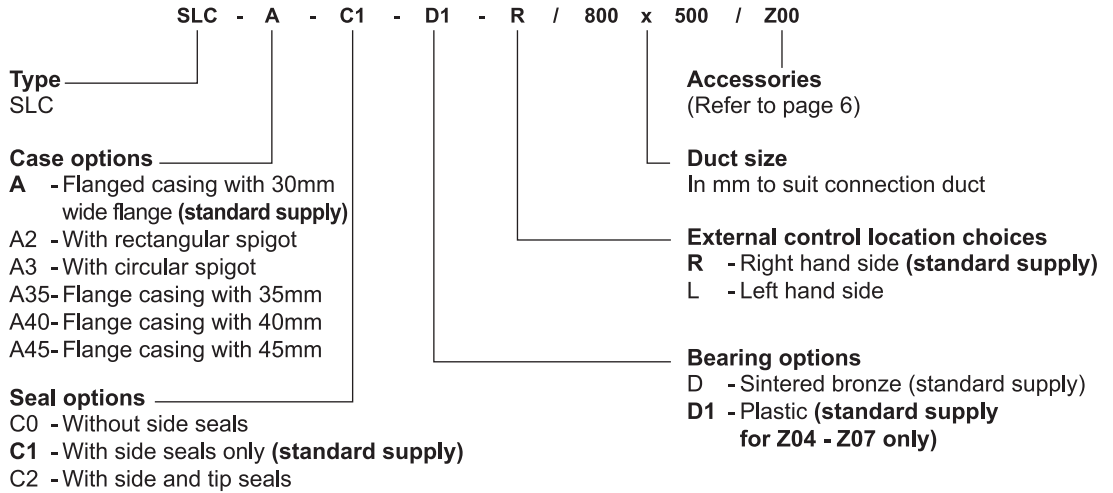
Leakage Volume flow



Order code

Note

If the order is not complete as shown below then it will be assumed that a standard supply air damper is required.



General

Select and supply a TROX volume control damper to suit the required airflow, pressure control and/or isolation sections of a mechanical ventilation air conditioning system. The damper blades will be formed from extruded aluminium Aerofoil shaped in opposed arrangement.

The dampers manual will be suitable for electric or pneumatic actuator(s) operations. Side and tip seals are to be provided to achieve low closed blade air leakage.

Order example

Make : TROX
 Type : SLC – A – C1 – D1 – R600 x 600 / Z04 12
 Quantity : 12 nos