



*Fire & Smoke Dampers*

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防火排煙閘門



陽鼎實業股份有限公司  
FLOWTECH CO., LTD.





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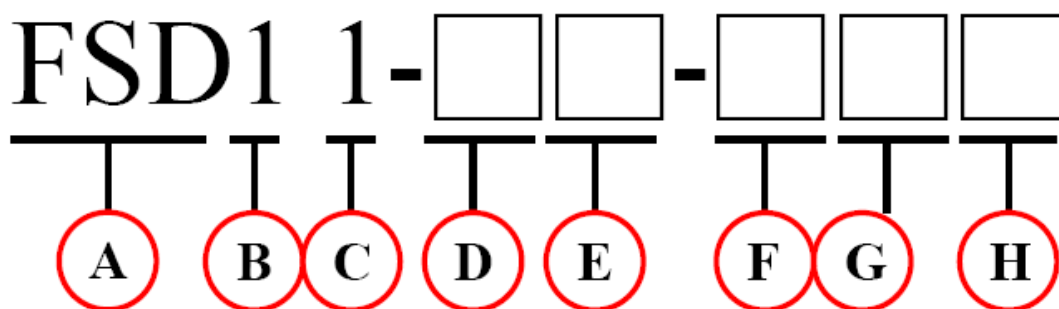
**CNo. : FSD11 September 2009**

**AGENT (經銷商):**

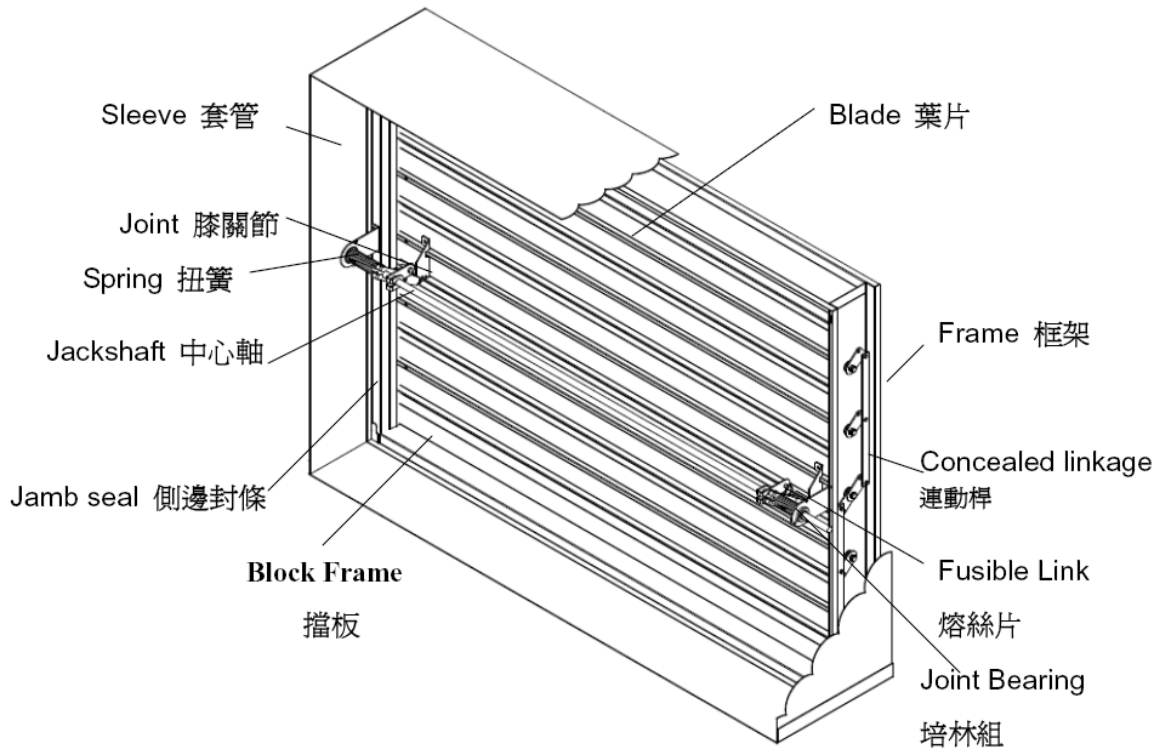
## Application and design 應用與設計

The **FSD11** Fire & Smoke Dampers employs triple-V blades and hat channel frame for point-of origin control of fire and smoke in static and dynamic smoke management systems. The Maximum Velocity Rating is 2000 ft/min (10.2 m/s), the Static Pressure Rating is 6 in-Wg (1.5 kPa) in the duct, the Fire Resistance Rating is 3 hr, and the air leakage is Class I level. It may be used for the fire wall, dividing wall (the brick wall or the gypsum board ) and the floor with the vertical mounting.

**FSD11** 排煙防火風門使用 3V 形式的葉片與帽槽型框架用於靜態型式及動態型式之防火煙控系統，**FSD11** 適用環境最大風速 2,000 fpm (10.2 m/s)、最大壓力 6 in-w.g. (1.5 kPa)、防火時效 3 小時、洩漏等級 Class I，可垂直安裝在防火牆、分間牆區劃隔間(磚牆或石膏板牆)，亦可安裝於樓地板間之應用。



A. Product Type		F. Max Velocity ( For UL Recognize )	
FSD	Fire & Smoke Damper	1	10.2 m/s (2000 fpm)
B. Blade Type		2	15.2 m/s (3000 fpm)
0	None	3	20.2 m/s (4000 fpm)
1	Triple Vee Blade	G. Max Pressure ( For UL Recognize )	
C. Air Leakage		A.	0.5 kPa ( 2 in-Wg )
1	Class I	B.	1.0 kPa ( 4 in-Wg )
2	Class II	C.	1.5 kPa ( 6 in-Wg )
3	Class III	H. Temperature ( For UL Recognize )	
D. Fire Rating ( For UL Recognize )		A	74 °C ( 165°F ) Operating
0	None	B	100 °C ( 212°F ) Operating
E. Mounting ( For UL Recognize )		C	121 °C ( 250°F ) Operating
V	Vertical	D	141 °C ( 285°F ) Operating
H	Horizontal	E	177 °C ( 350°F ) Operating



### Standard construction

Frame: 5" x 1" (123mm x 23mm) galvanized steel hat channel with interlocking corner gusset.

Blades: 6" x 16 gauge (153mm x 1.6mm) galvanized steel – triple – V.

Side-Plate: 12" x 16 gauge (300mm x 1.6mm) galvanized steel.

Jackshaft: 1/2" (12.5mm) diameter plated steel hex.

Linkage: Concealed in frame.

Bearings: Stainless steel oilite, sleeve-type.

Spring: Stainless steel.

Seals: Silicone blade edge seals and flexible metal mount.

Minimum Size: 12" x 12" (305mm x 305mm)

Maximum Size 48" x 36" (1220mm x 914mm)

Multiple Size 96" x 72" (2440mm x 1828mm)

### 標準結構

外框：採鍍鋅鋼材的帽型溝槽，結合方式採嵌入式結合。

葉片：6"x16 (153mmx1.6mm) 葉片形式採 3V 型。

單邊側板：12"x16 (300mmx1.6mm) 鍍鋅鋼板。

中心軸：Ø1/2" (12.5mm) 鍍鋅圓軸。

連接桿：隱藏於框架內。

軸承：材質為不銹鋼。

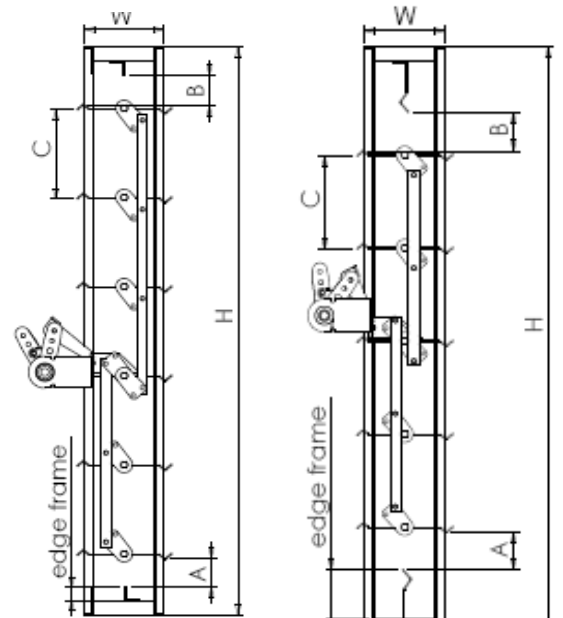
扭簧：材質為不銹鋼。

氣密：使用矽膠材質氣密條固定於葉片邊上並採彈簧片於葉片側邊與外框密合。

最小尺寸：12" x 12" (305mm x 305mm)

最大尺寸：48" x 36" (1220mm x 914mm)

最大組合尺寸：96" x 72" (2440mm x 1828mm)

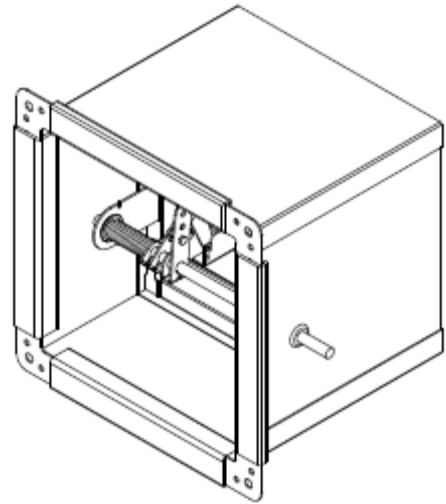


Type 1 ≤ 914mm x 914mm

Type 2 > 914mm x 914mm

### Options

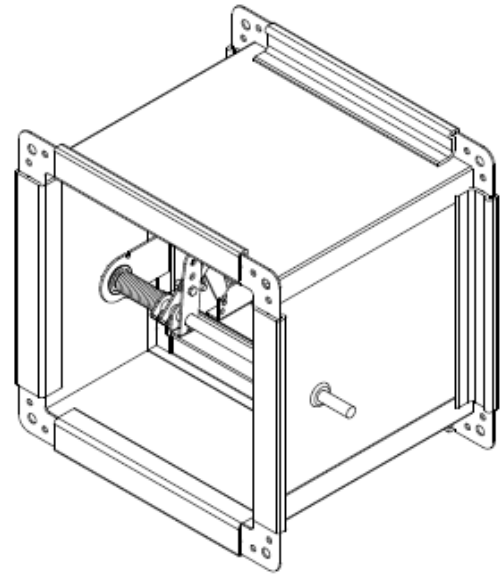
- Alternate actuator
  - 24 VDC  110 VAC  220 V AC
  - 7 N-m  13 N-m  20 N-m  Other \_\_\_\_\_
- Factory installed sleeve:
  - Gauge:  19# (1.2mm)  16# (1.6mm)
  - Length:  12"(305mm)  16"(406mm)
- Factory installed:
  - Side plate (Standard)  Flange
  - Double Flange  Sleeve



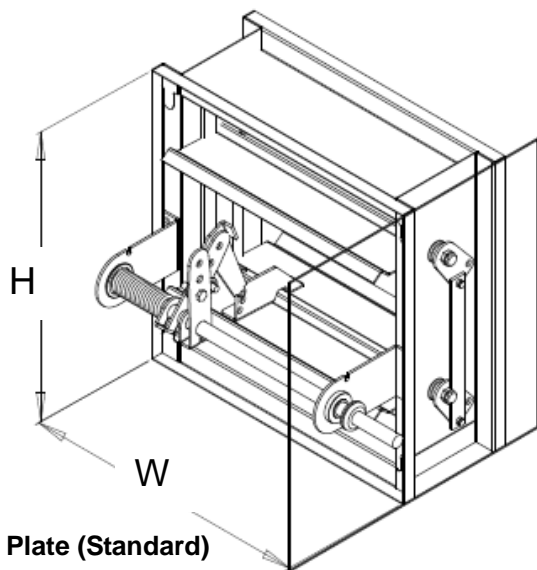
**Flange (optional)**

可供選擇

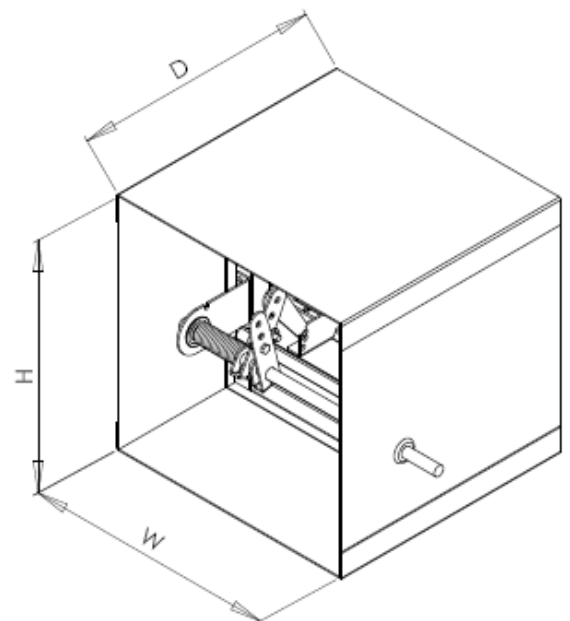
- 驅動器
  - 24 VDC  110 VAC  220 VAC
  - 7 N-m  13N-m  20N-m  其他 \_\_\_\_\_
- 選擇安裝的套筒規格:
  - 板厚  19# (1.2mm)  16# (1.6mm)
  - 深度  12"(300mm)  其他 \_\_\_\_\_
- 安裝樣式選擇:
  - 單邊側板 (標準型)  法蘭
  - 雙法蘭  套管



**Double Flange (optional)**



**Side Plate (Standard)**



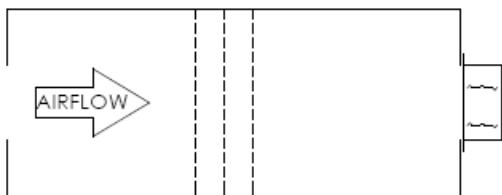
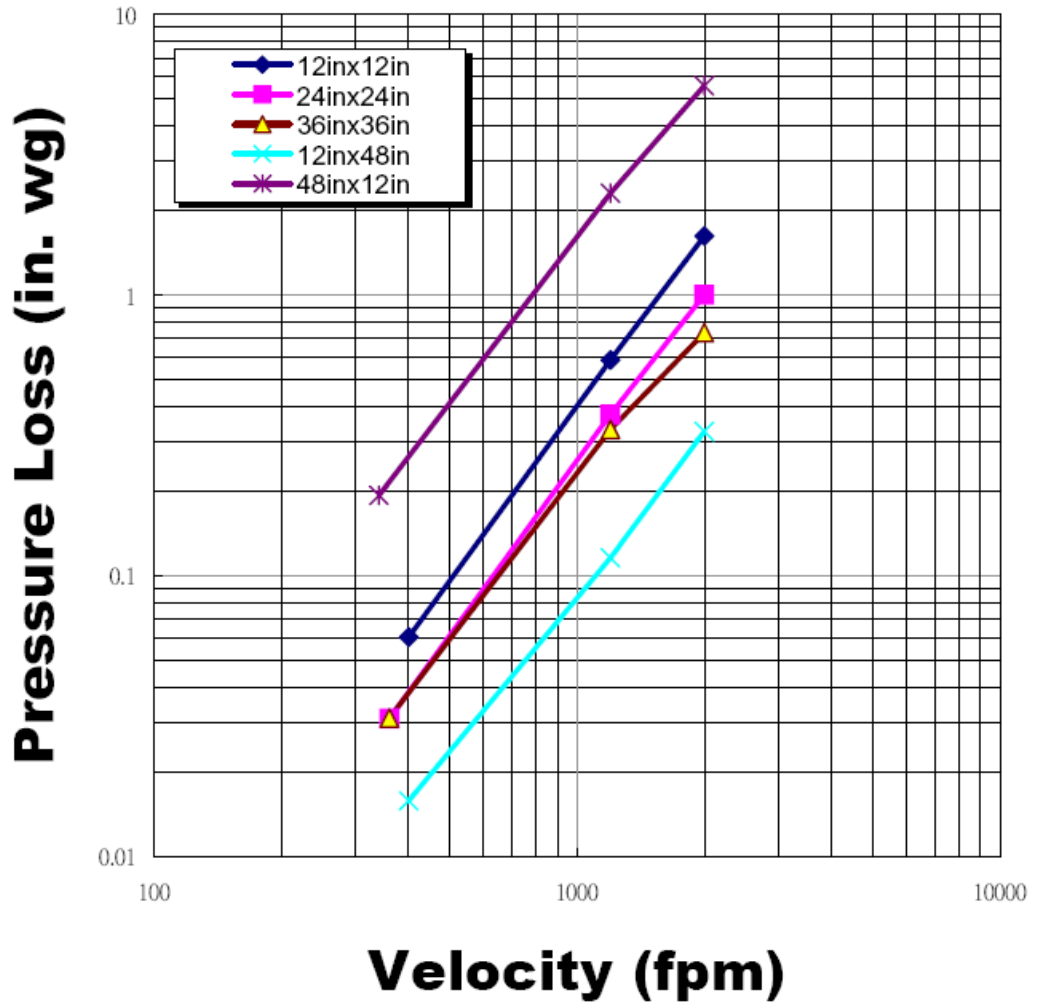
**Sleeve (optional)**

## Performance Data

### Pressure Loss 壓損

### Figure 5.5

### Setup Test with Inlet chamber



依據AMCA Figure 5.5  
風箱測試，風箱內壓力流  
經閘門產生極快速的氣體  
流動，導致閘門產生極大  
的壓力損失。

#### Plenum Mount

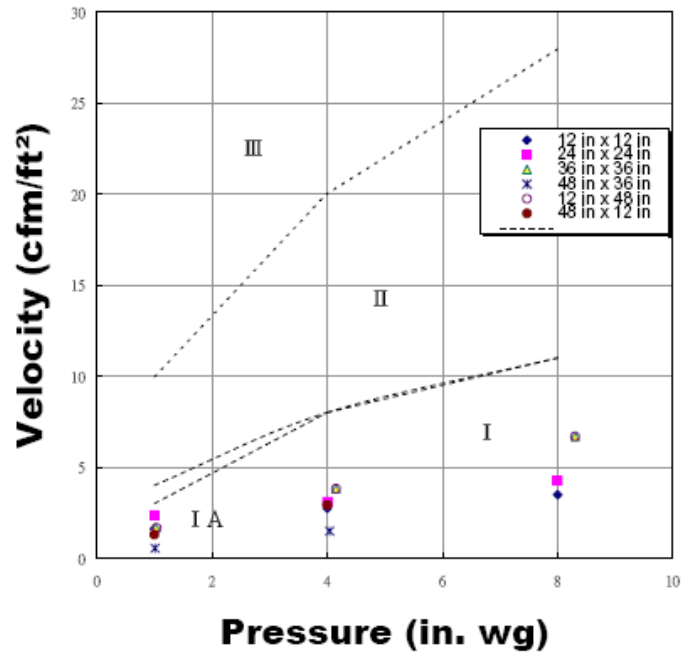
AMCA Figure 5.5 illustrates a plenum mounted damper. This configuration has the highest pressure drop because of extremely high entrance and exit losses due to the sudden changes of area in the system.

## Leakage Test

### Leakage 洩漏

FSD11 series dampers had pass AMCA Certification, the damper can to fit **class I** leakage under 1 kPa and 2 kPa pressure conditions. Besides, the FSD11 require to ultra low leakage (**class I A**) under the 250Pa pressure.

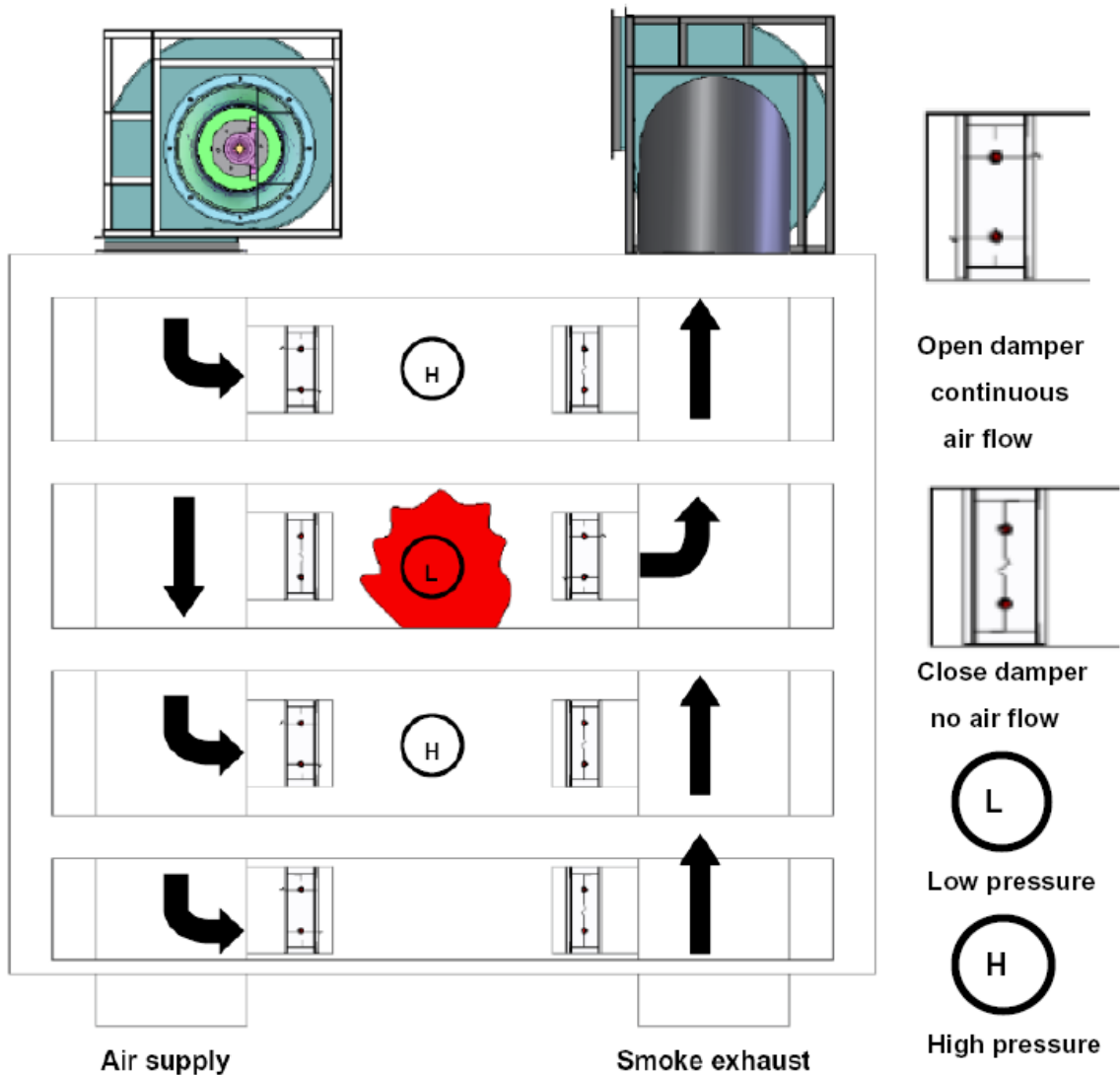
FSD11 系列閘門通過AMCA認證在1kPa與2kPa狀態下洩漏等級均達**Class I**，且在250Pa壓力狀態下可達極低洩漏量，等級為**Class I A**



FLOWTECH CO., LTD. certifies that the FSD11 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 Certified Ratings Programs. The AMCA Certified Ratings Seal applies to air Leakage and air Performance ratings

Damper Size	Leakage Class Test Results	Leakage Class Test Results	Leakage Class Test Results
Damper Width mm(in.)×Height	250 Pa (1 in. wg) Class	1kPa (4 in. wg) Class	2kPa (8 in. wg) Class
305 (12) × 305 (12)	I A	I	I
610 (24) × 610 (24)	I A	I	I
914 (36) × 914 (36)	I A	I	N/A
305 (12) × 1220 (48)	I A	I	I
1220 (48) × 305 (12)	I A	I	N/A
1220 (48) × 914 (36)	I A	I	N/A

Damper Leakage Class	Damper Leakage Class	Damper Leakage Class
250 Pa (1 in. wg)	1kPa (4 in. wg)	2kPa (8 in. wg)
I A	I	I



## Damper Installation(閘門安裝)

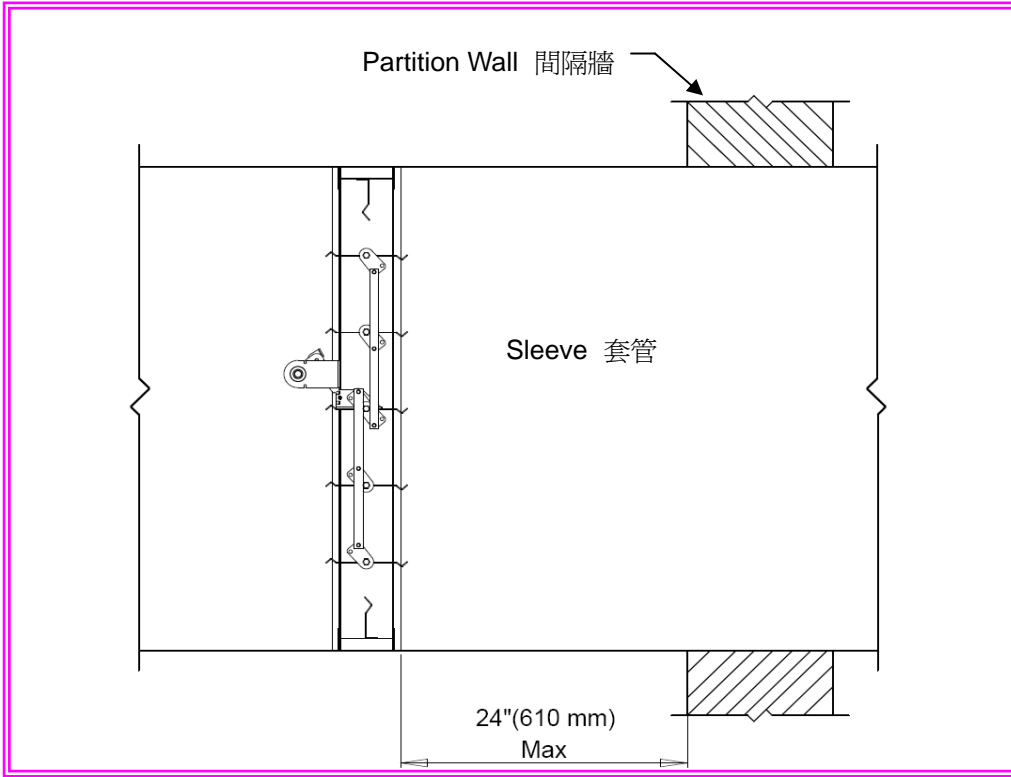
### (1)Smoke Damper may be vertical the installment or the level installment.

Damper in vertical installs when should not surpass the partition wall 24" (610mm) 。 Damper installs in the level when should not be lower than the ceiling 31.5"(800mm) or installment in duct when should not surpass the duct base.

### (1)排煙閘門可垂直安裝或水平安裝

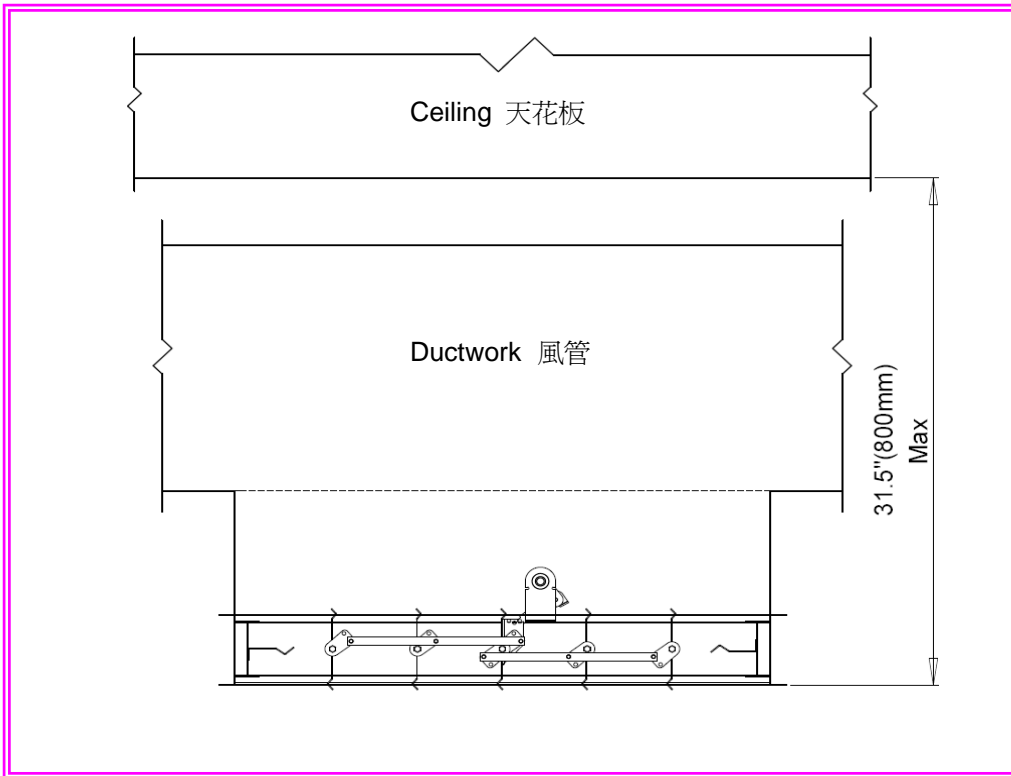
閘門於垂直安裝時距離應不超過間隔牆 24" (610mm) 。 閘門於水平安裝時應不低於天花板 31.5" (800mm) ， 或安裝於風管時應不超過風管底部。





Vertical installation

垂直安裝圖示



Horizontal installation

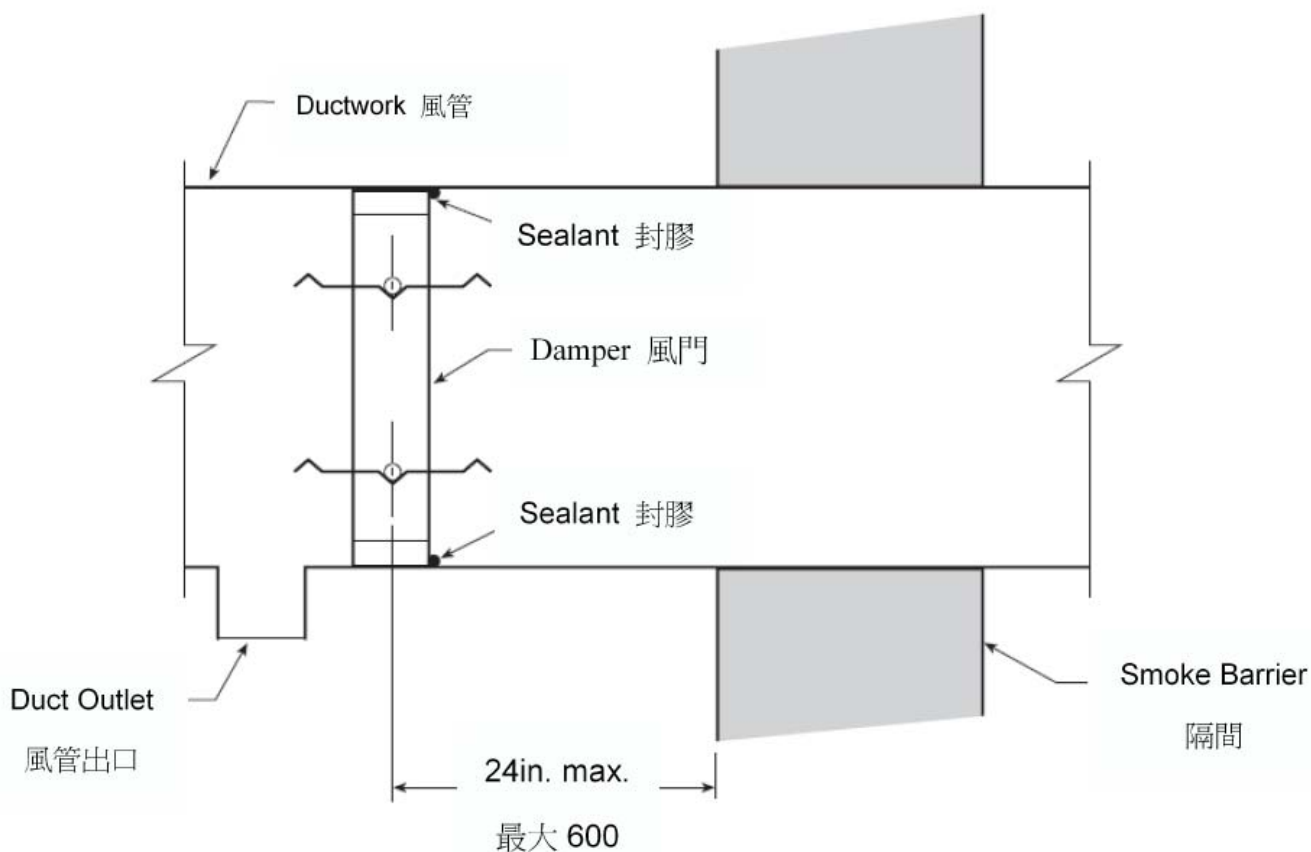
水平安裝圖示

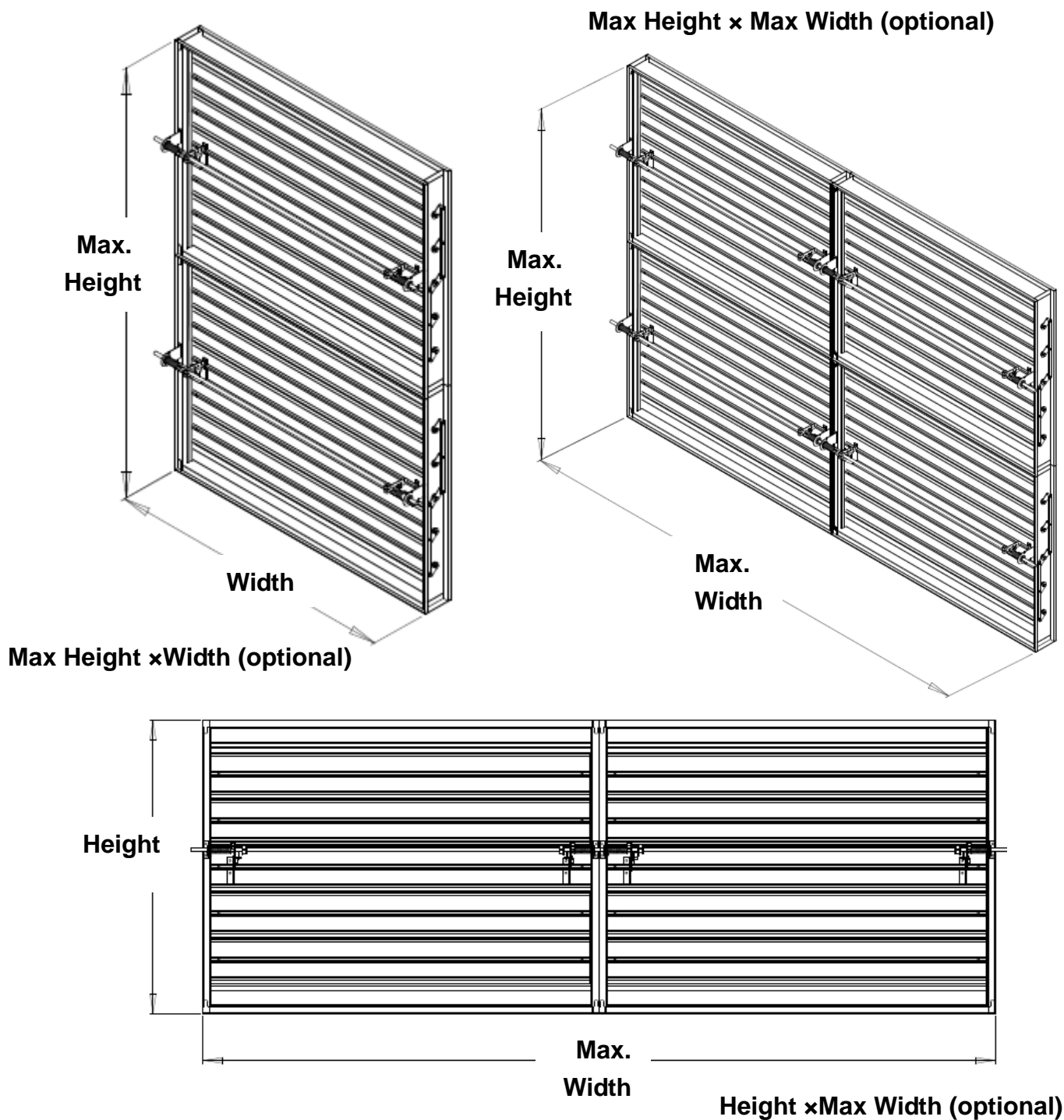
## (2) SEALING THE INSTALLATION

After installing the damper in ductwork, seal the joint between the damper frame and the duct using GE1200 Silicone Construction Sealant or Dow Corning RTV732 Sealant. Make sure to press the Sealant into the joint to guarantee proper seal. Use minimum amount of material required to completely seal the joint. Figure as follows,

## (2) 安裝使用密封膠

密封膠的使用目的在於防止由金屬間之縫隙所產生之洩漏。如下圖所示可以在閘門的兩側、閘門和套管及多個閘門組合斷面之建議使用下列密封膠，GE1200 矽材質密封膠、Dow Corning RTV 732 密封膠等。使用時，確認將密封膠加入連結處以確保完全氣密，盡量不要塗抹過量，並依製造廠商之使用說明施作。





### (3) Assembly damper installation

If the size of area surpasses the sole damper size(48" × 36" or 1220mm × 914mm), shall be to use assembly damper. In the each of sole damper size, do not bigger than the product size specification (48" × 36" or 1220mm × 914mm), and to install individual actuator. During assembly damper linking should by steel rivet, quick lock contact, spot welding, attacks screw, bolt or welds fixedly.

### (3)多重閘門組安裝

在閘門尺寸超過單一閘門尺寸時可以使用多重閘門組，但閘門組內每一個單一閘門尺寸不超過產品尺寸規格，並配置各別的驅動器。多組閘門間的連結，應以鋼鉚釘、快鎖接點、點焊或自攻螺絲、螺栓或長的焊道固定。