FLOWTECH FLOWTECH CO., LTD.

THE FLOWTECH GROUP

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CNo. : SD-11(E) December 2023

AGENT :

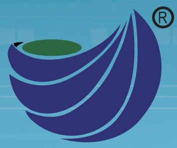
Smoke Damper

Motorized Damper / Control Damper

AMCA WORLDWIDE CERTIFIED RATINGS
AIR LEAKAGE
AIR PERFORMANCE
AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL, INC.
www.amca.org

CLASSIFIED UL R26192

FLOWTECH

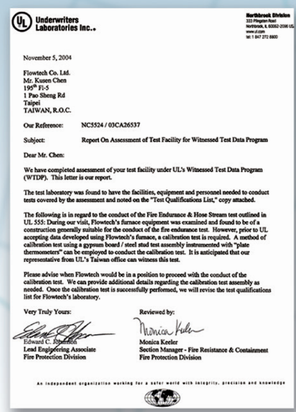


FLOWTECH

GLOBALLY RECOGNIZED CERTIFICATIONS AND STANDARDS

Ventilation Performance and Smoke management Laboratory

Any series of ventilation products such as fans, dampers required performance and quality requirements, can be provided by the laboratory for a full range of testing services. Technical requirements with an independent and impartial implementation for each test was supervision under by TAF, hence, all the domestic public works and fire safety related with ventilation products, do not have to shift the products to oversea for testing, and those owners and consultants would not have the trouble for witnessed commuting to foreign countries any more, this even saving more time and costs.



Underwriters Laboratories Inc.

Northbrook Division

November 5, 2004

Flowtech Co. Ltd.
Mr. Kusen Chen
195th Fl-5
1 Pao Sheng Rd
Taipei
TAIWAN, R.O.C.

Our Reference: NC5524 / 03CA26537

Subject: Report On Assessment of Test Facility for Witnessed Test Data Program

Dear Mr. Chen:

We have completed assessment of your test facility under UL's Witnessed Test Data Program (WTDP). This letter is our report.

The test laboratory was found to have the facilities, equipment and personnel needed to conduct tests covered by the assessment and noted on the "Test Qualifications List," copy attached.

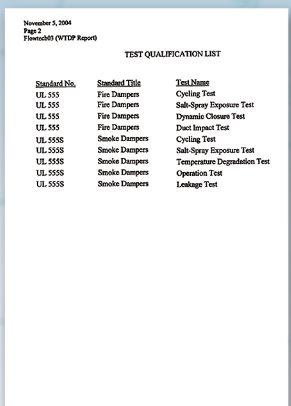
The following is in regard to the conduct of the Fire Endurance & Hose Stream test outlined in UL 555: During our visit, Flowtech's furnace equipment was examined and found to be of a construction generally suitable for the conduct of the fire endurance test. However, prior to UL accepting data developed using Flowtech's furnace, a calibration test is required. A method of calibration test using a gypsum board / steel stud test assembly instrumented with "plate thermometers" can be employed to conduct the calibration test. It is anticipated that our representative from UL's Taiwan office can witness this test.

Please advise when Flowtech would be in a position to proceed with the conduct of the calibration test. We can provide additional details regarding the calibration test assembly as needed. Once the calibration test is successfully performed, we will revise the test qualifications list for Flowtech's laboratory.

Very Truly Yours:
Edward C. Johnson
Lead Engineering Associate
Fire Protection Division

Reviewed by:
Monica Keeler
Section Manager - Fire Resistance & Containment
Fire Protection Division

An independent organization working for a safer world with integrity, precision and knowledge



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Page 2
Flowtech03 (WTDP Report)

TEST QUALIFICATION LIST

Standard No.	Standard Title	Test Name
UL 555	Fire Dampers	Cycling Test
UL 555	Fire Dampers	Salt-Spray Exposure Test
UL 555	Fire Dampers	Dynamic Closure Test
UL 555	Fire Dampers	Duct Impact Test
UL 555S	Smoke Dampers	Cycling Test
UL 555S	Smoke Dampers	Salt-Spray Exposure Test
UL 555S	Smoke Dampers	Temperature Degradation Test
UL 555S	Smoke Dampers	Operation Test
UL 555S	Smoke Dampers	Leakage Test

The only UL certification LAB. in ASIA.

TUV certificates

TAF LAB certificates

Fan Performance Testing Facility

Standards

- AMCA 210
- BS 848-1
- ISO 5801
- DIN 24163-2

Smoke Damper Leakage Testing Facility

Standards

- AMCA 500
- ISO 10294
- UL 555S
- GB 15930

Louver Pressure Drop Testing Facility

Standards

- AMCA 500

Silencer / Acoustical Louver Tesring Facility

Standards

- ASTM-E477
- ISO 7235

Jet Fan Thrust Testing Facility

Standards

- ISO 13350
- BS 848-10

Fire Damper Testing Facility

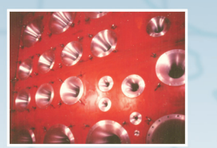
Standards

- UL 555

Standards

- AMCA 210
- AMCA 300
- AMCA 500
- AS 4429
- ASTM-E477
- ASHRAE 149
- DIN 24163-2
- BS 7346-2
- BS 848-1
- BS 848-2
- BS 848-10
- GA 211
- GB 15930
- EN 12101-3
- ISO 5801
- ISO 7235
- ISO 10294
- ISO 13350
- UL 555
- UL 555S

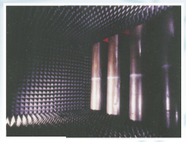
Exhaust Duct exit of Reverberant



Multiple Nozzles for Flow Measurement

Reverberant Room
360°Routing Microphone in Reverberant

Flow Straightener



Silencer in Exhaust Duct

FLOWTECH

Figure 5.4-Leakage Test

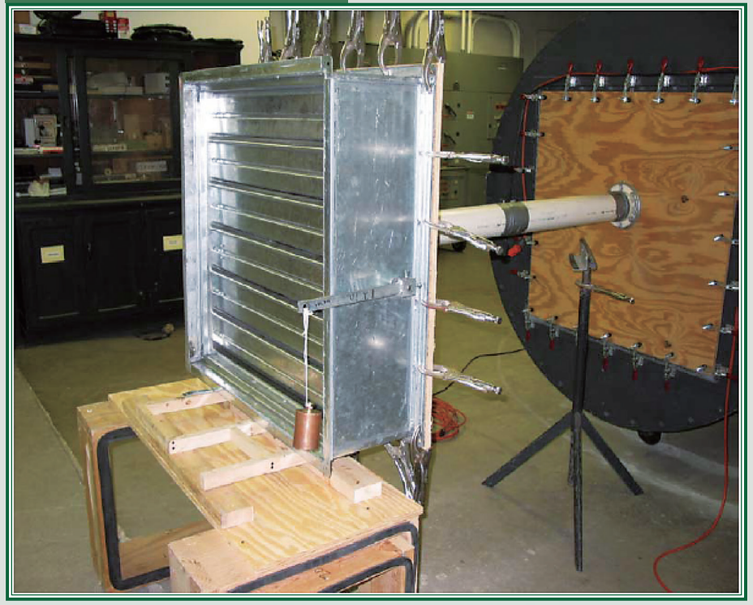


Figure 5.3-Ducted Intake Test

Motorized Damper / Control Damper

Smoke Damper

Motorized Damper / Control Damper

FLOWTECH

Application and design

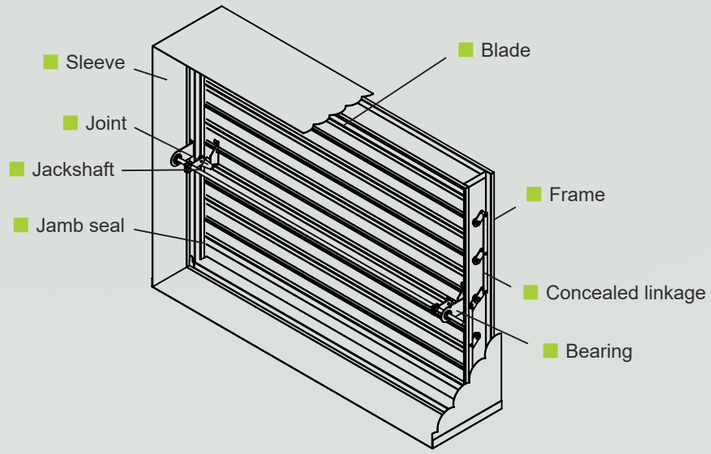
The SD-11 smoke damper employs triple-V blades and hat channel frame for point-of origin control of smoke in static and dynamic smoke management systems. The SD-11 is qualified to 2,000 ft/min (10.2 m/s) and 4.in.wg. (1.0 kPa) and may be installed in, or adjacent to vertical walls or partitions, or horizontally in, or adjacent to floors or assemblies.

Both CD-11 control damper and MD-11 motorized damper application in the HVAC systems for automatic air control and manual balancing.

SD
CD
MD 1 1 - □ □ - □ □ □

A B C D E F G H

A. Product Type		F. Max. Velocity(For UL Recognize)	
SD、 CD、 MD	Smoke Damper Control Damper Motorized Damper	1	10.2m/s(2000 fpm)
B. Blade Type		2	15.2m/s(3000 fpm)
0.	None	3	20.2m/s(4000 fpm)
1.	Triple-V 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℃ (165℉) operating
0	None	B.	100℃ (212℉) operating
E. Mounting(For UL Recognize)		C.	121℃ (250℉) operating
V	Vertical	D.	141℃ (285℉) operating
M	Horizontal	E.	177℃ (350℉) operating

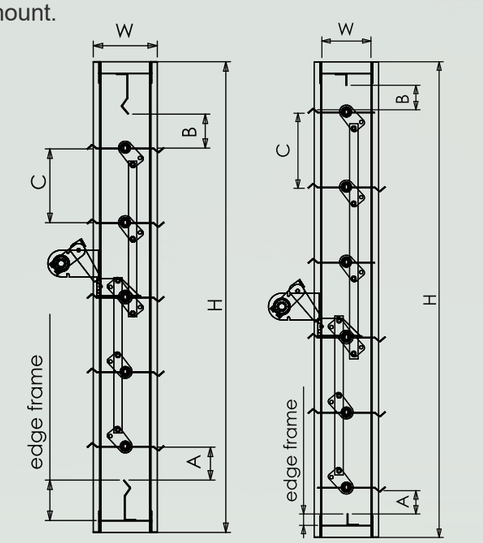


Standard construction

- **Frame**：5” × 1” (123mm×23mm) galvanized steel hat channel withinterlocking corner gusset.
- **Blades**：6” × 16 gauge (153mm×1.6mm) galvanized steel －triple－V.
- **Side-Plate**：12” × 16 gauge (300mm×1.6mm) galvanized steel.
- **Jackshaft**：1/2” (12.5mm) diameter plated steel hex.
- **Linkage**：Concealed in frame.
- **Bearings**：Stainless steel oilite, sleeve-type.
- **Seals**：Silicone blade edge seals and flexible metal mount.
- **Minimum Size**：12” × 12” (305mm × 305mm)
  Maximum Size：48” × 48” (1220 x 1220 mm)
  Multiple Size：96” × 96” (2440 x 2440 mm)

For UL Certification

- **Ratings**
  UL 555 Fire Resistance Rating: 3 hour (vertical)
  UL 555S Leakage Class: 1 [8 cfm/sq.ft. @ 4 in.wg.] [(0.04 m3/s/m2 @ 1.0 kPa)]
  Maximum Dynamic Closure Velocity: 2,000 fpm (10.2 m/s)
  Maximum UL555S Rated Pressure: 6 in.wg. (1.5 kPa)
  Maximum Temperature: 350˚F (177˚C)
- **Listings**
  UL 555 and 555S listing: R26192
  Meets NFPA Standards: 90A, 92A, 92B and 101
  -
  Minimum Size: 8” × 8” (203x203mm)；
  Maximum Size: 36” × 36” (914x914mm)

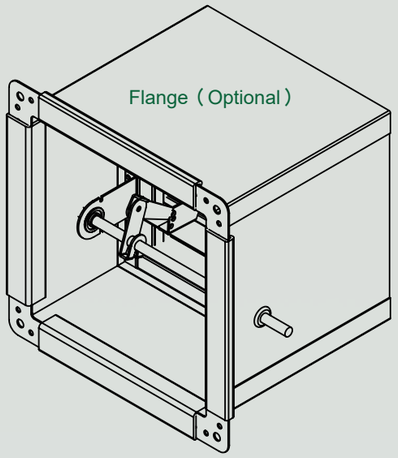


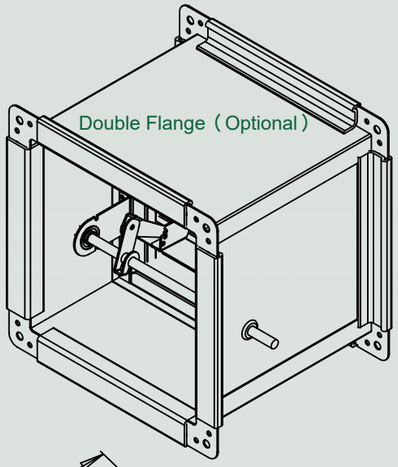
Type 1 ≧ 914mm×914mm | Type 2 < 914mm×914mm

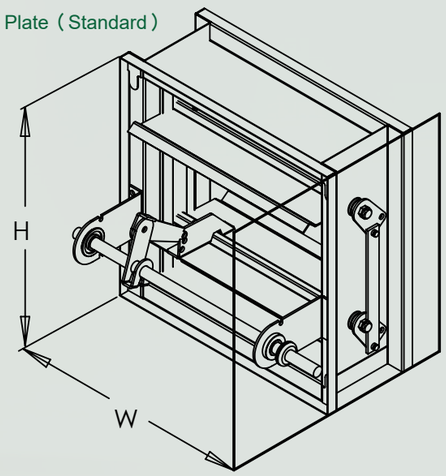
(UL Certification)

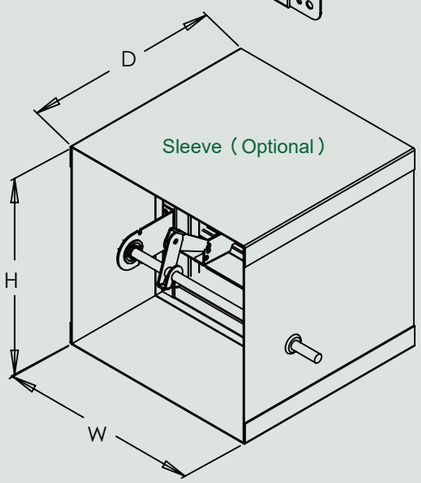
Optional

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



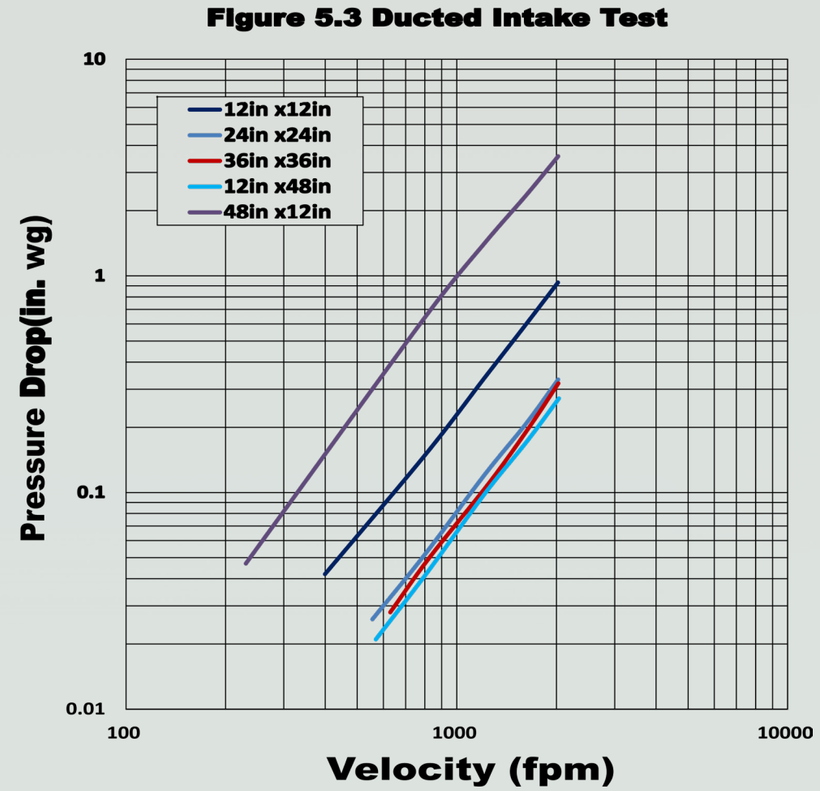


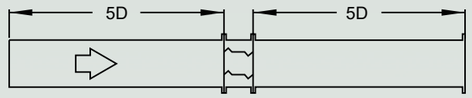




Performance Data

Pressure Loss



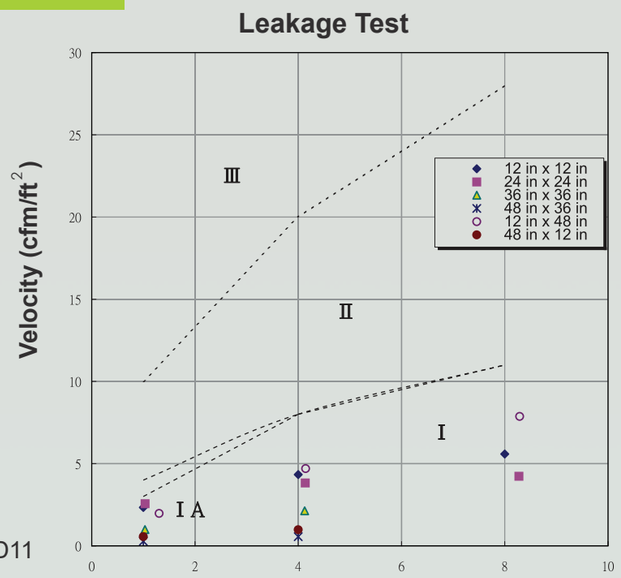


Ducted Inlet and Outlet

AMCA Figure 5.3 Illustrates a fully ducted damper. This configuration represents the lowest pressure drop of the three test configurations because entrance and exit losses are minimized by straight duct runs upstream and downstream of the dampers.

Leakage Data

SD-11 series dampers have pass AMCA Certification, the damper can to fit class Ⅰ leakage under 1 kPa and 2 kPa pressure conditions.Besides, the SD-11 require to ultra low leakage (class ⅠA) under the 250Pa pressure.

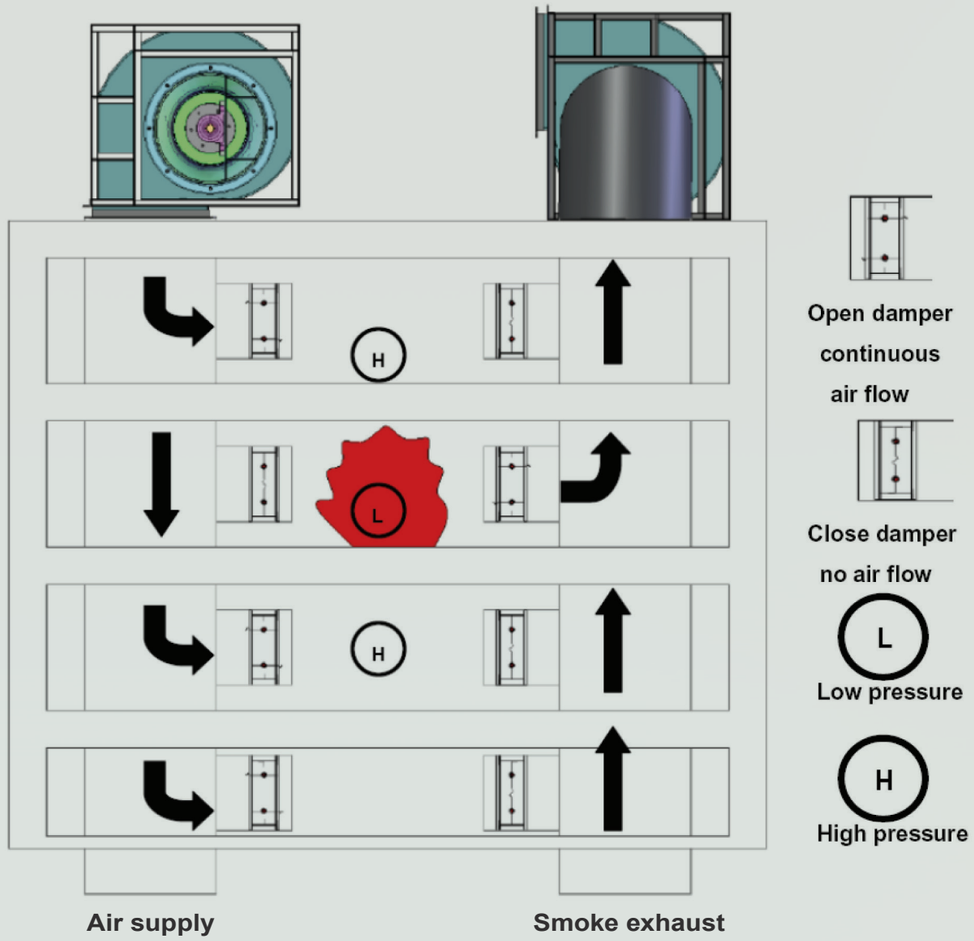


FLOWTECH CO., LTD. certifies that the SD11 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program.

* Tested for air leakage in accordance with ANSI/AMCA Standard 500-D, Figure 5.4. Alternate and Figure 5.6A
* Air leakage is based on operation between 0° C - 49° C (32° F - 120° F)
* Data are based on a torque of 60.7Nm/m2 (50 in-lb/ft2) applied to close and seat the damper during the test.

Damper Size	Leakage Class Test Resuls	Leakage Class Test Resuls	Leakage Class Test Resuls
Damper Width mm(in.)×Height	250Pa (1 in. wg) Class	1kPa (4 in. wg) Class	2kPa (8 in. wg) Class
305 (12)×305 (12)	ⅠA	Ⅰ	Ⅰ
610 (24)×610 (24)	ⅠA	Ⅰ	Ⅰ
910 (36)×910 (36)	ⅠA	Ⅰ	N/A
305 (12)×1220 (48)	ⅠA	Ⅰ	Ⅰ
1220 (48)×305 (12)	ⅠA	Ⅰ	N/A
1220 (48)×910 (36)	ⅠA	Ⅰ	N/A

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

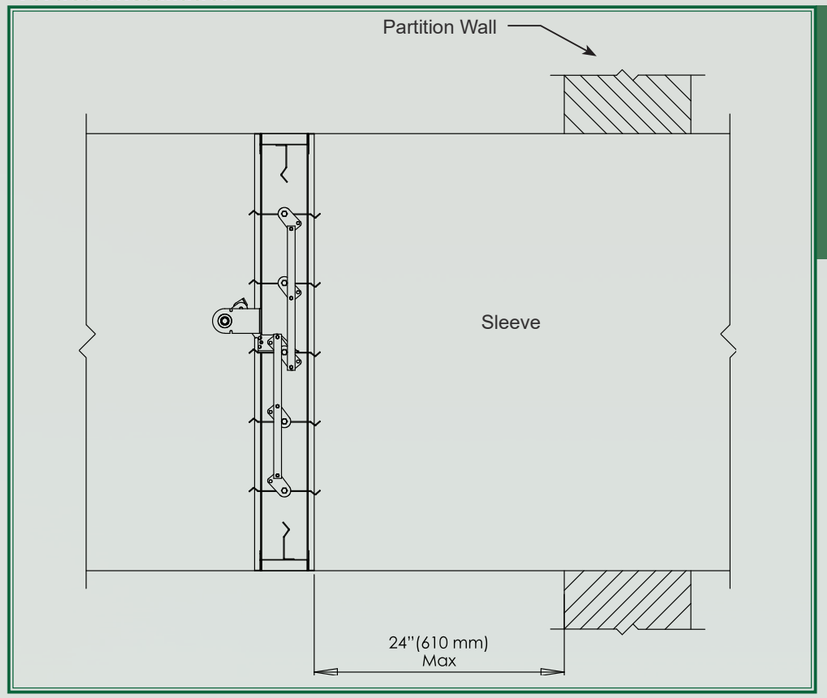


Damper Installation

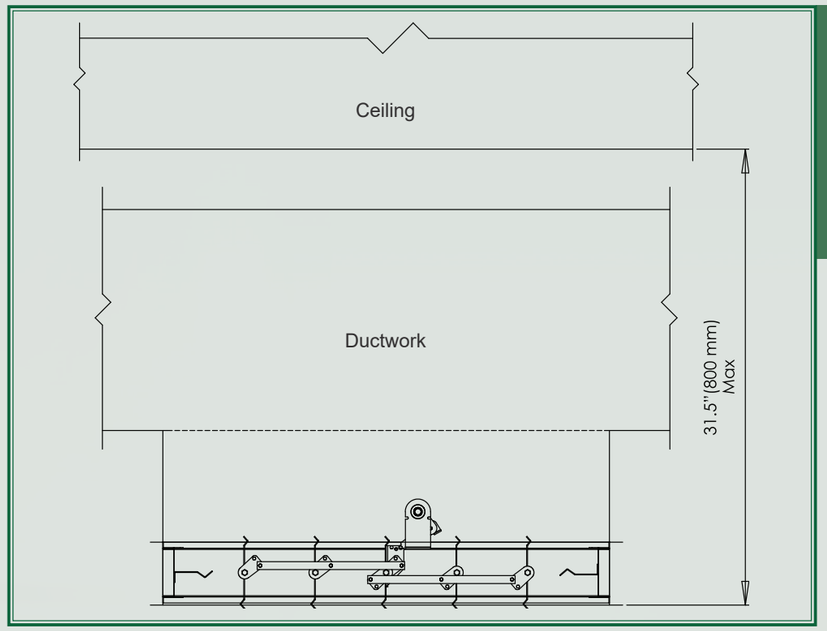
(1) Smoke Damper may be vertical the installment or the level installment.

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.

Vertical installation

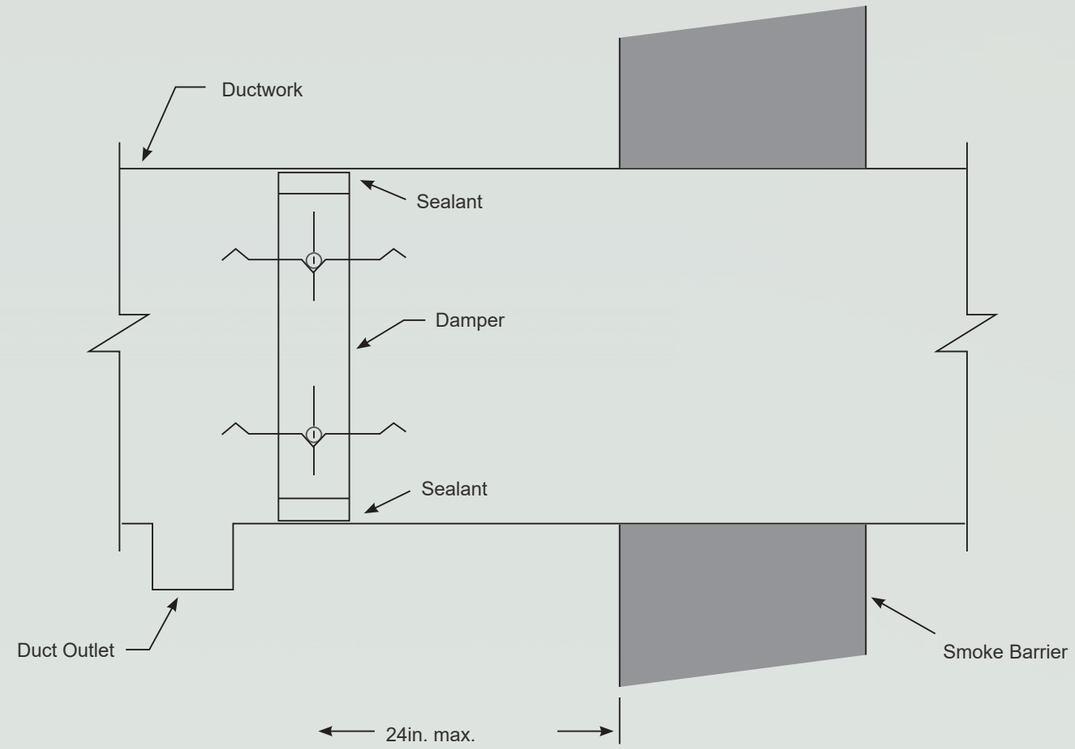


Horizontal installation

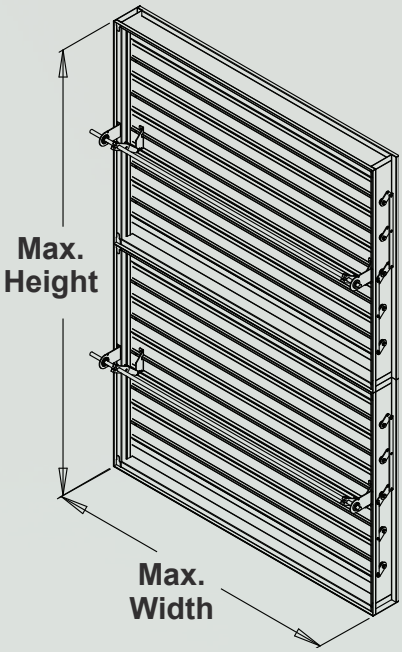


(2) SEALING THE INSTALLATION

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 guarantees proper seal. Use minimum amount of material required to completely seal the joint. Figure as follows:



Max Height × Max Width (optional)



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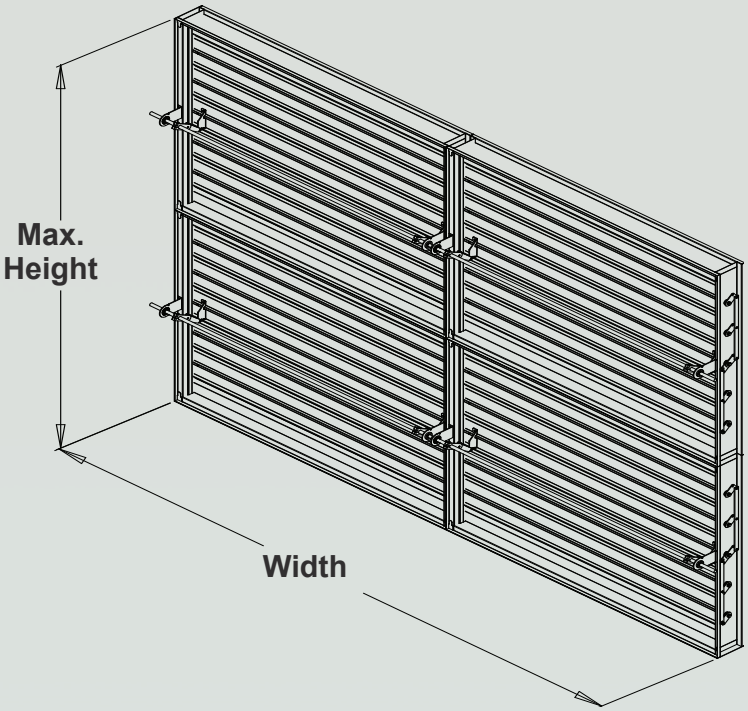

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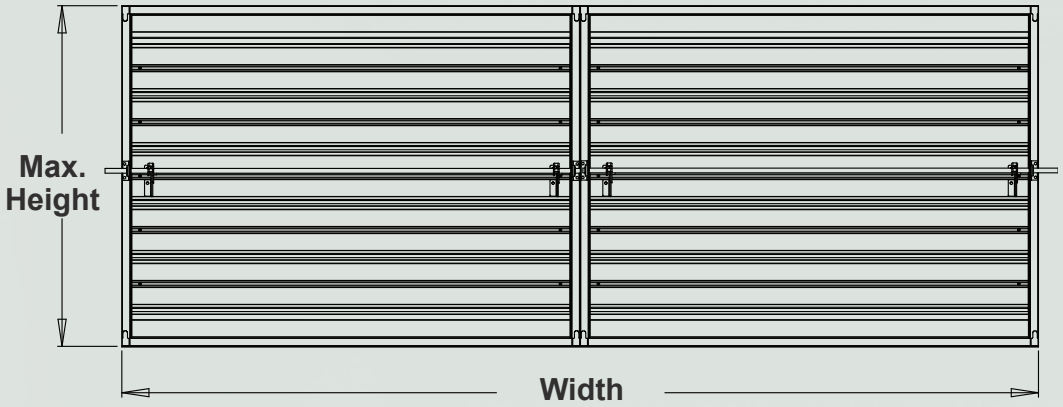

(3) Assembly damper installation

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