

# **Fire Damper Installation on Masonry Wall**

## **Installation Instructions**

Doc No. : IM-082020/0002/00  
Prepared by : S.Y Ong, Wong Yew Loong  
First Issued Date : 27 August 2020

## The Secure Way of Installing Fire Damper on Masonry Wall

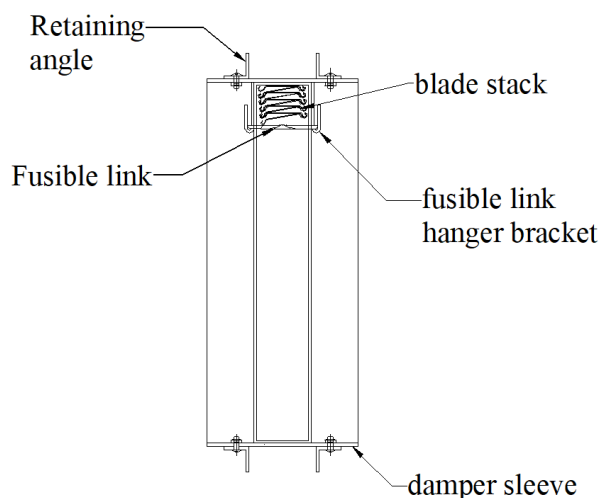
### 1. Pre-installation Preparation

- a) Provide fire dampers opening details and location on the masonry wall to builder. Ensure that sufficient expansion gap is included in the opening size. Opening size including allowance for thermal expansion is calculated according to the latest Singapore Standard SS333, Annex G.
- b) Calculation of Wall Opening:
  - i) For Galvanized steel  
Opening width = Damper width x 1.01 + 10 mm  
Opening height = Damper height x 1.01 + 10 mm
  - ii) For Stainless steel damper  
Opening width = Damper width x 1.015 + 10 mm  
Opening height = Damper height x 1.015 + 10 mm

For convenience, we have provided a recommended opening sizes as shown in Table 1 and Table 2 in Appendix A.

Also, excel template for calculation of the opening size is provided on our website.

- c) Check and confirm that fire damper opening position and dimensions (width, height and depth) provided on the masonry wall is correct before proceeding to install the fire damper. In the event that the opening provided is inaccurate, request the builder to make good.
- d) Check that the edges of the casted opening and surfaces are as flat as possible. For hacked opening, ensure edges of the opening are made good.
- e) Electrical trunking, piping or any other M & E services should not obstruct the installation of the fire damper.
- f) Figure 1 describes the damper parts that will be mentioned throughout this installation manual.



**Figure 1: Damper parts**

## 2. Installation Procedures

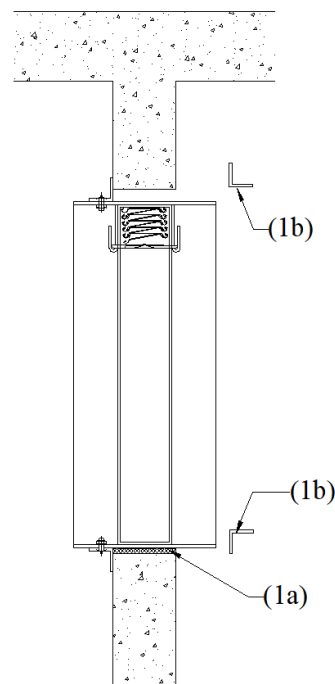
### Step 1

1a) Insert 25mm compressible and fire-retardant insulation on the bottom of opening.

1b) Remove the retaining angle on one side of the fire damper. Then position the fire damper in the center of wall opening. The weight of the fire damper will compress the insulation below it. That is alright as the top retaining angles are intentional made larger to accommodate the larger gap above the damper.

Note 1. The Vertical mounted fire damper is designed for bi-directional airflow and the fusible is accessible from either side, so the damper may be installed regardless of airflow direction and access panel may be installed on either side of the damper.

**Exception:** Where the damper is installed on very thick wall, the wall should be constructed as shown in Illustration 10 (page 10) for easy access to the damper. The access panel should be installed near to the damper.



### Step 2

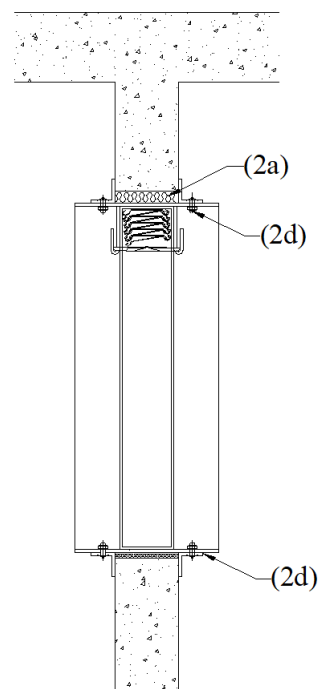
2a) Check that the expansion gap on both sides equal, then fill the remaining expansion gaps with compressible fire-retardant insulation.

2b) For multiple modules, fasten adjacent modules together using the M6 bolts and nuts provided. (refer to Illustration 1-6, pg 4-7). For 2 x 3 and 3 x 3 modular arrangement (Illustration 7-8, pg. 8-9), the use of vertical U-channel is recommended and provided.

2c) After all modules are properly secured, adjusted and levelled, check that damper is centered horizontally and expansion gaps are filled with compressible and fire-retardant insulation on the top and sides of the damper.

2d) Fix back the retaining angles that was removed in (1b). *Do not plaster the retaining angles to the wall.*

Note 2. Horizontally allow equal expansion on both sides, and vertically, all expansion gap must be provided on the top while the damper sits on the wall.



**Step 3**

3a) Remove the fusible link and release the damper blade and ensure that it falls freely and close fully (Illustration 9, pg. 10).

Note 3. For each module, remove the fusible link on one side from the hanger bracket by straightening the fusible link hanger bracket while supporting the blade stack with other hand. Let the fusible link fall out of the way and release the blades. For large damper you may need an assistance to support the blades. Ensure that the blade falls freely to the close position as shown in Illustration 9, page 10.

3b) Reset the blade and the fusible link

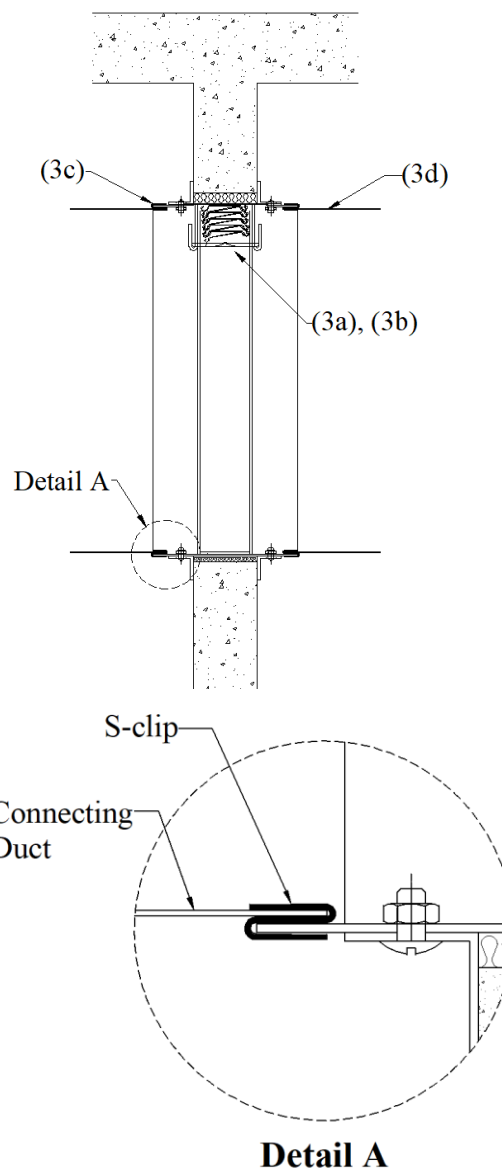
3c) Apply duct sealant to the S-clips as required.

3d) Connect the duct using S-clips all-round as shown in Detail A.

3e) Seal the joints with duct tape to prevent air leakage.

Note 4. For ease of duct connection and future maintenance, connecting duct shall be short of about 600mm. Access panel may be installed on this duct.

Note 5. Duct shall be connected such that the connecting duct is able to break free from the fire damper if the duct collapse during a fire. Alternative clips may be used as shown in Appendix B of the latest Singapore Standard SS 333

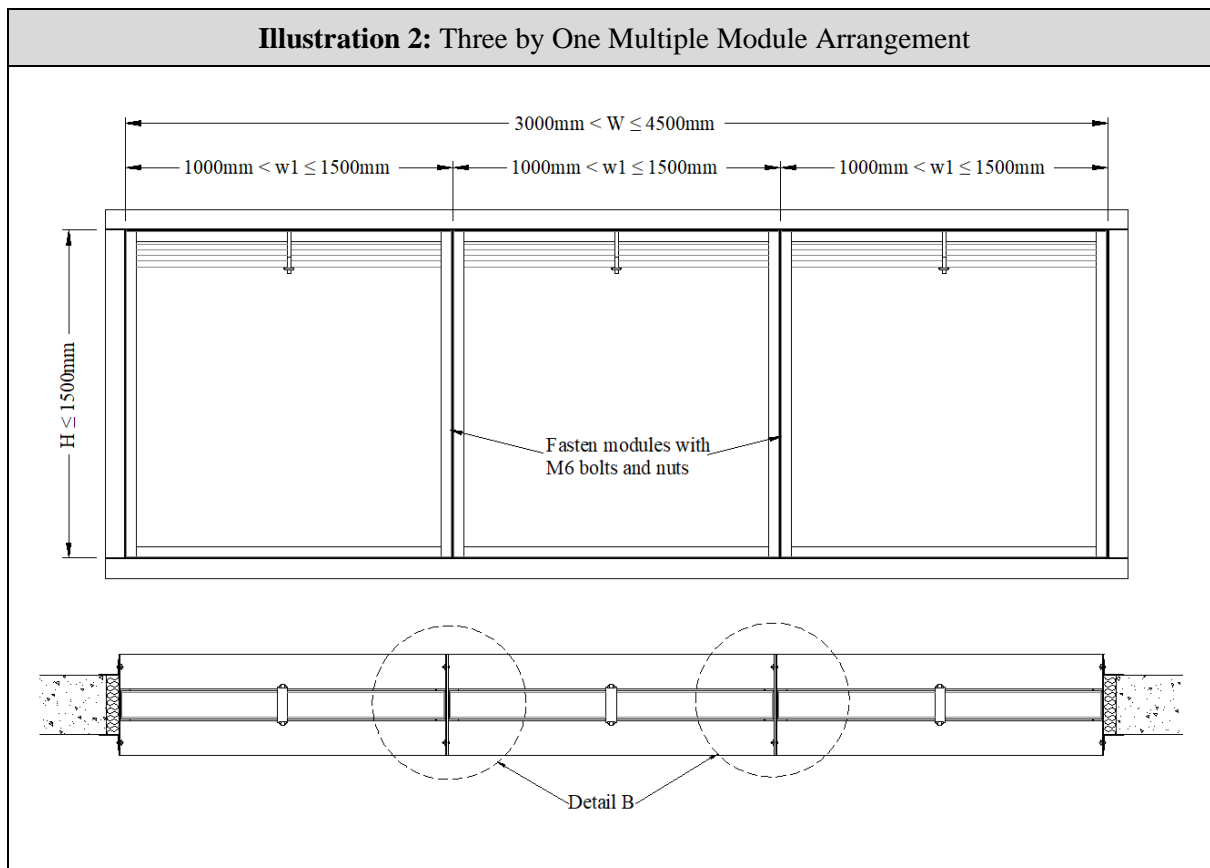
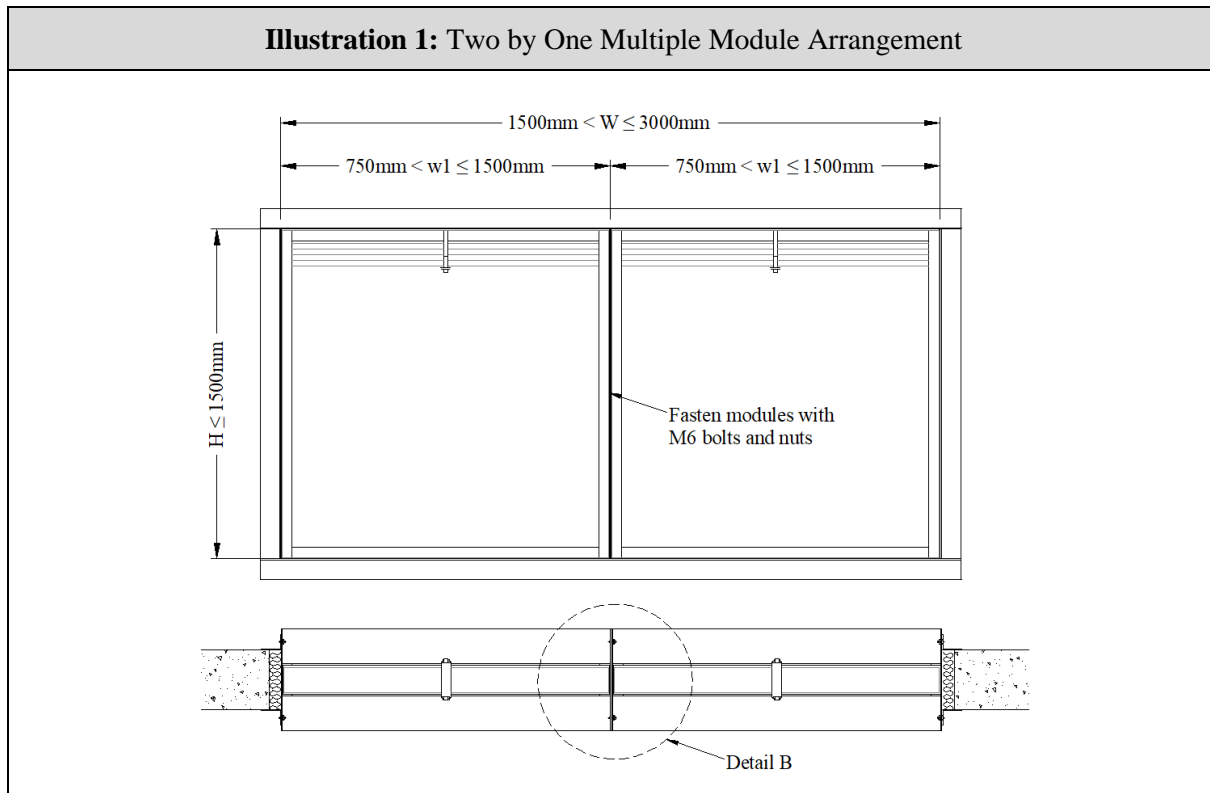


After installation, check the followings to ensure proper installation:

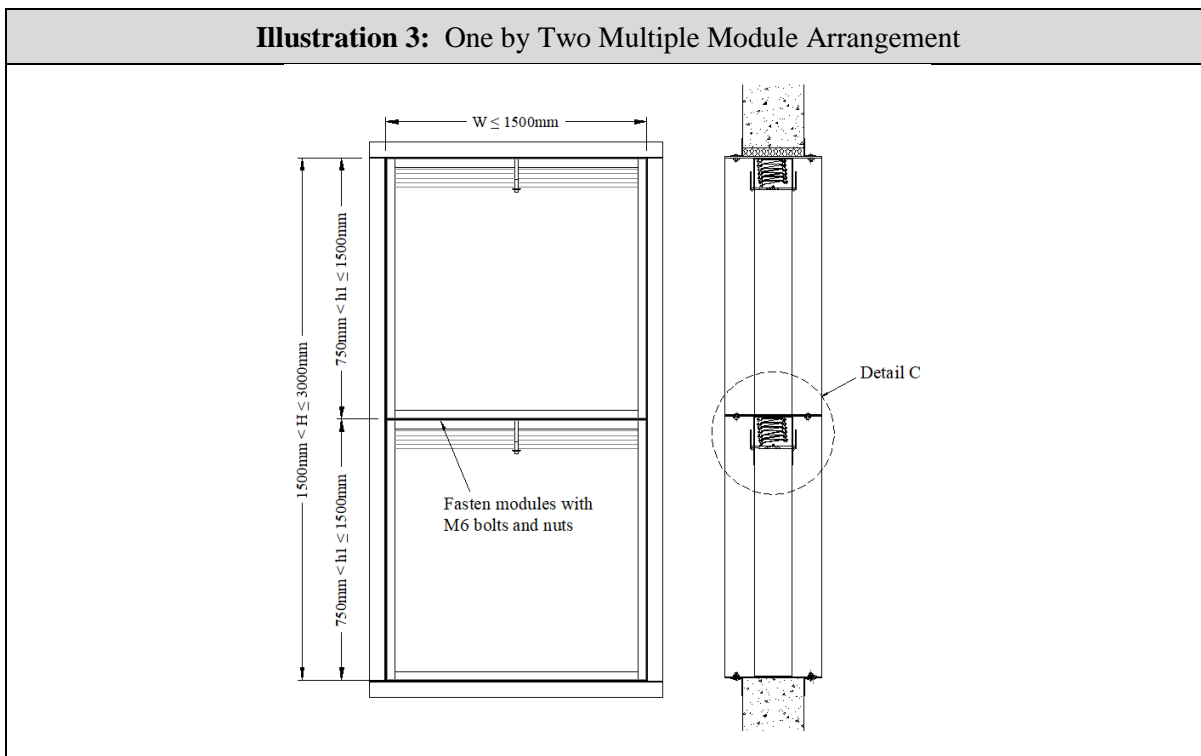
- i. All retaining angles must be firmly butted against the wall and overlap the wall by a minimum 25 mm.
- ii. The damper is square, and all bolts and nuts are tightened to a maximum torque of 12 Nm.
- iii. Both sides of the damper have an equal thermal expansion gap, and a sufficient gap must be provided on the top (damper mounted on masonry wall expand upwards and sideways).
- iv. Never insert a hard object in the expansion gap.
- v. Fusible link is hooked up properly. If the fusible link is lost, replace it with a new fusible link. never substitute with wire.

*Remember, lives depend on the proper functioning of fire damper.*

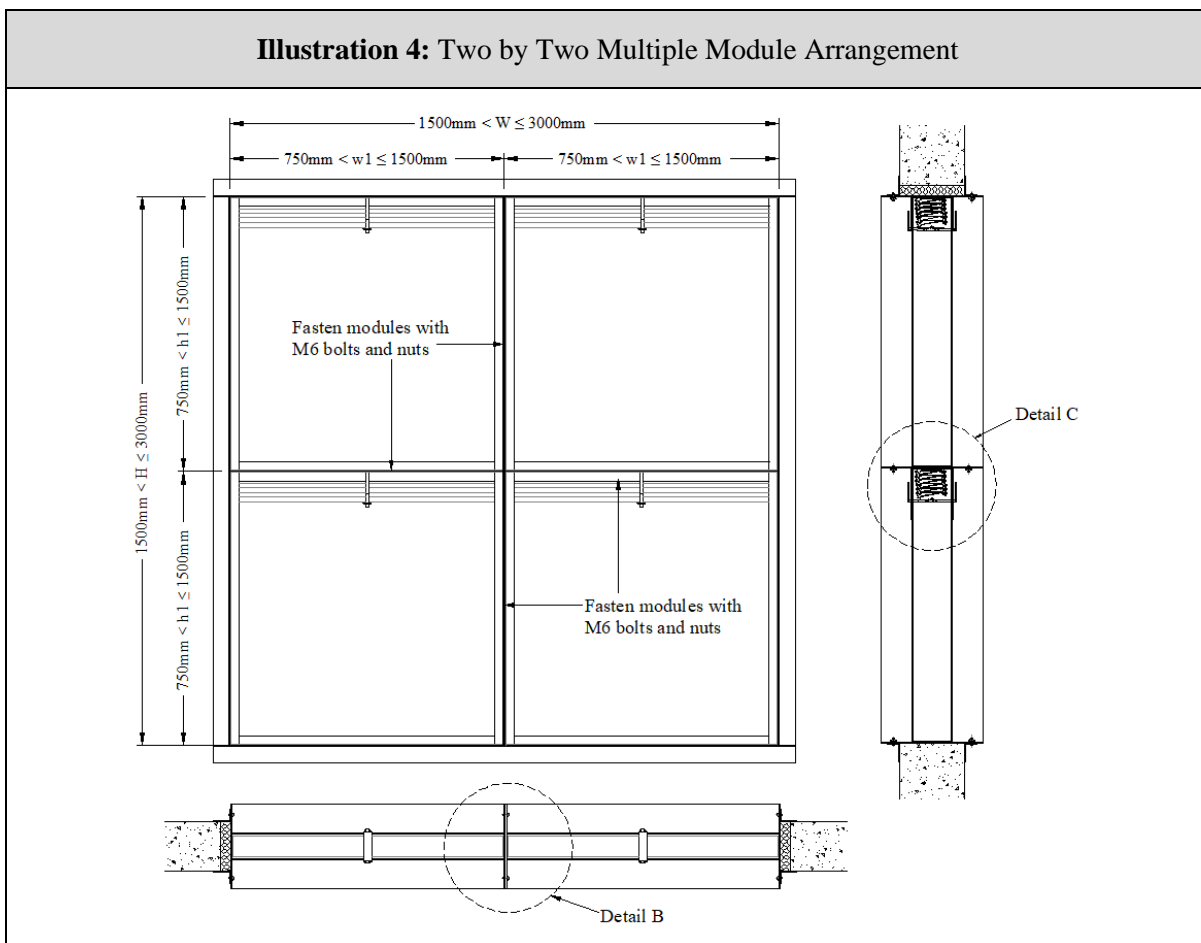
### 3. Modular Arrangement



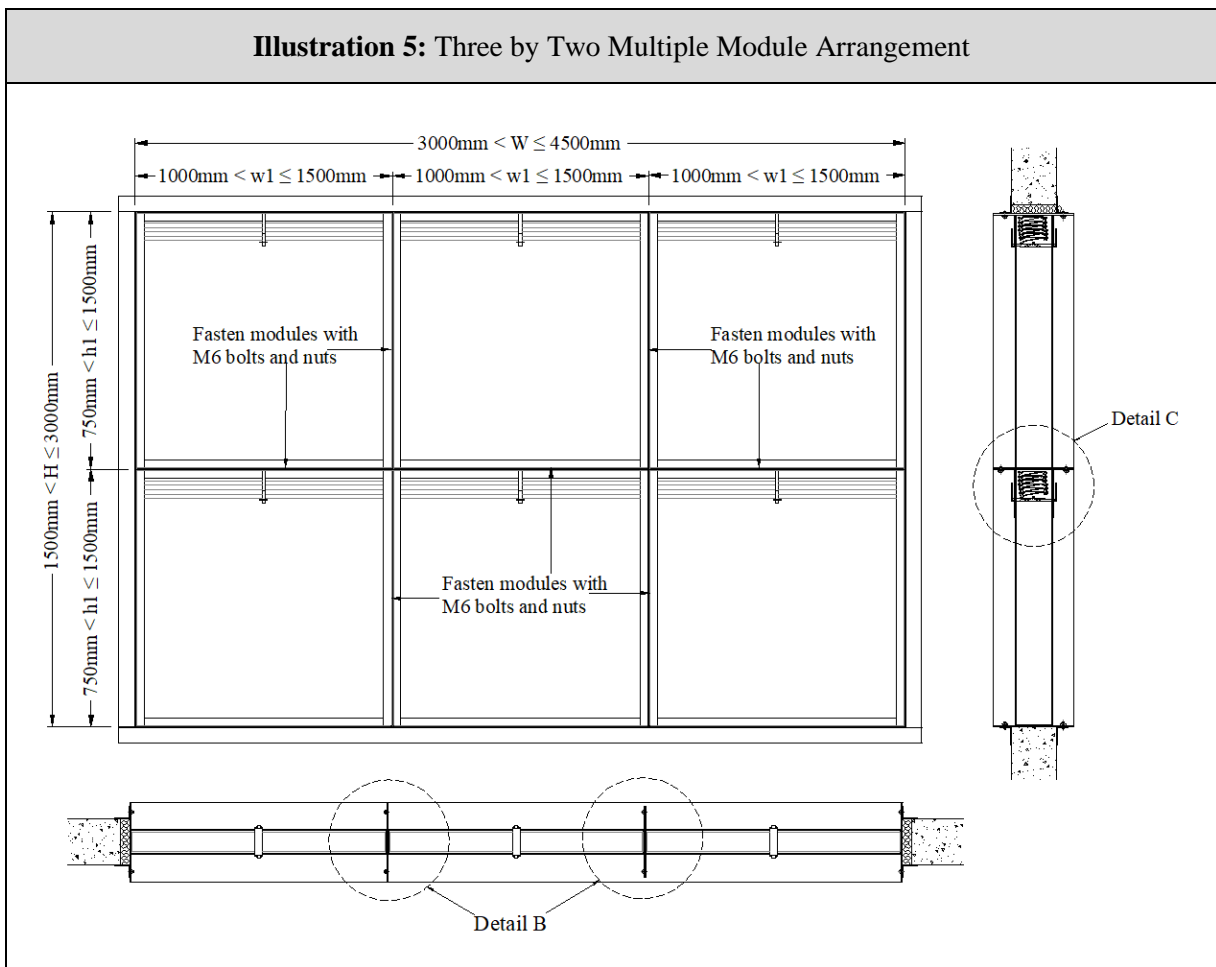
**Illustration 3: One by Two Multiple Module Arrangement**



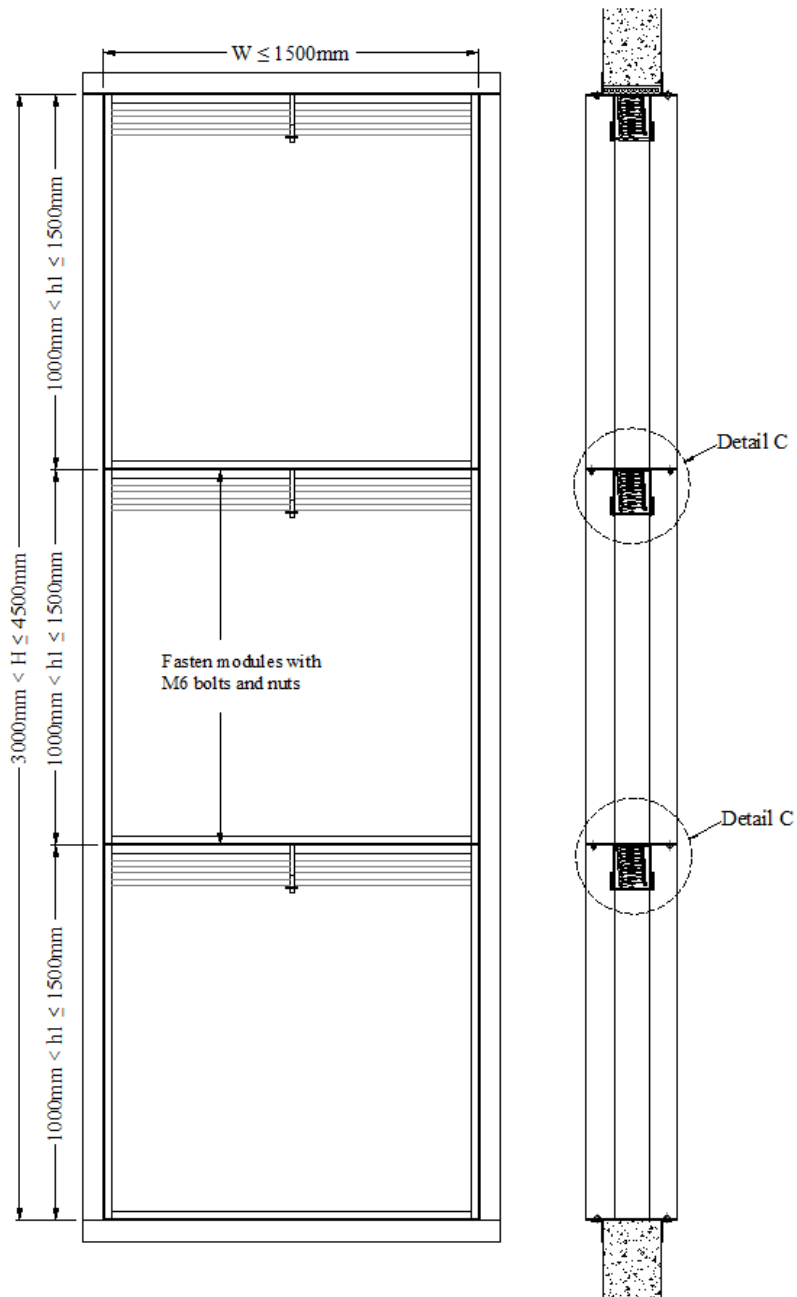
**Illustration 4: Two by Two Multiple Module Arrangement**



**Illustration 5: Three by Two Multiple Module Arrangement**

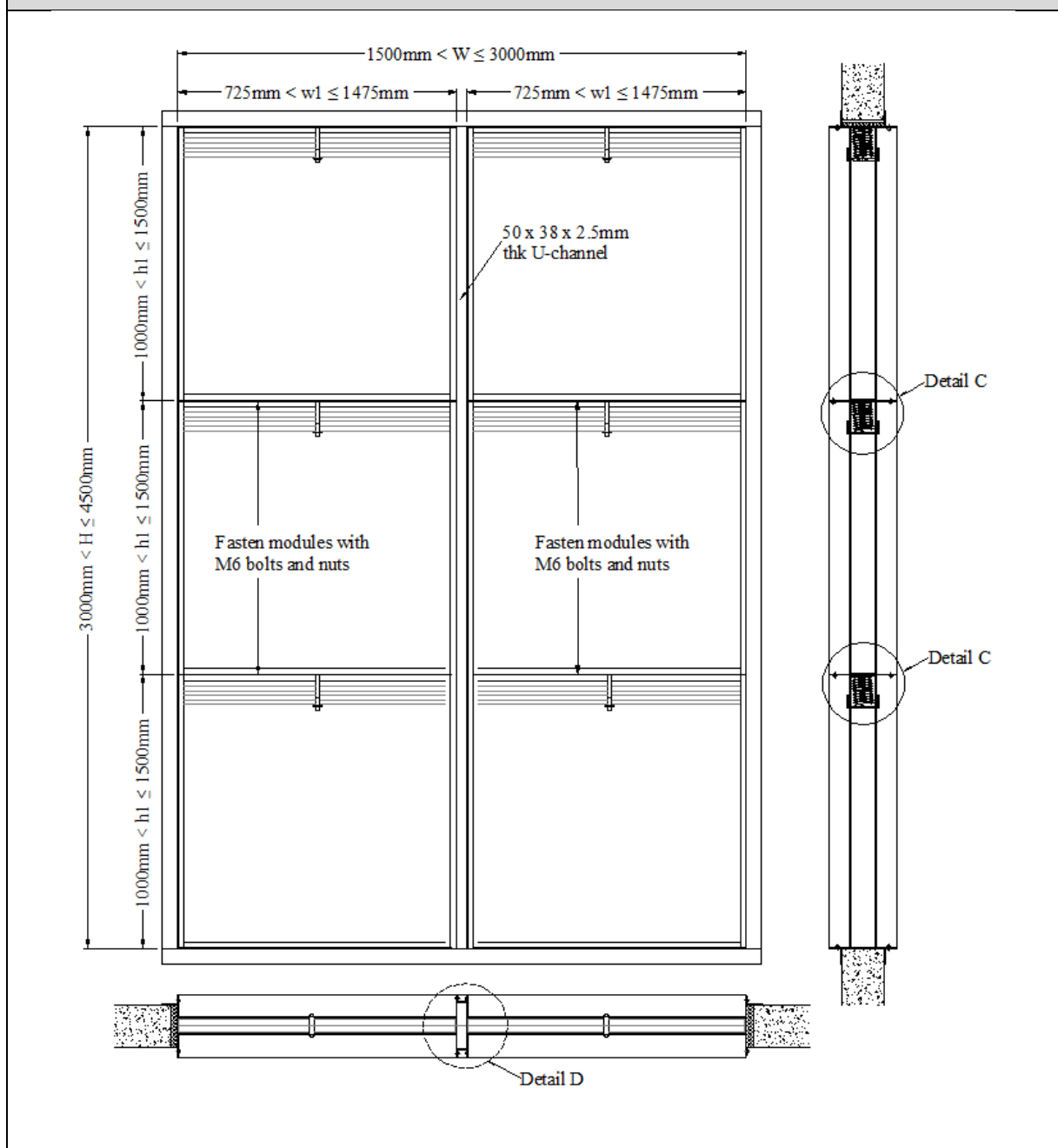


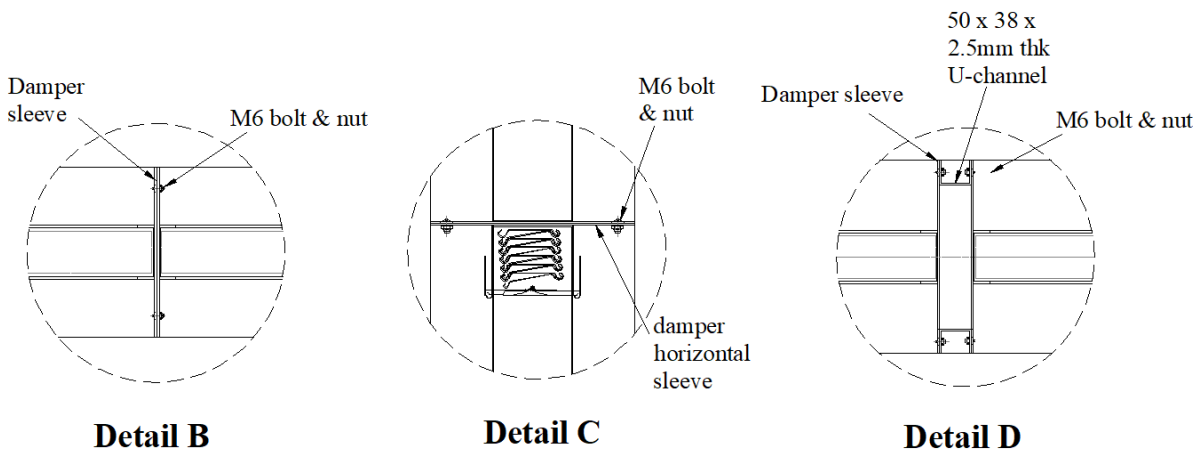
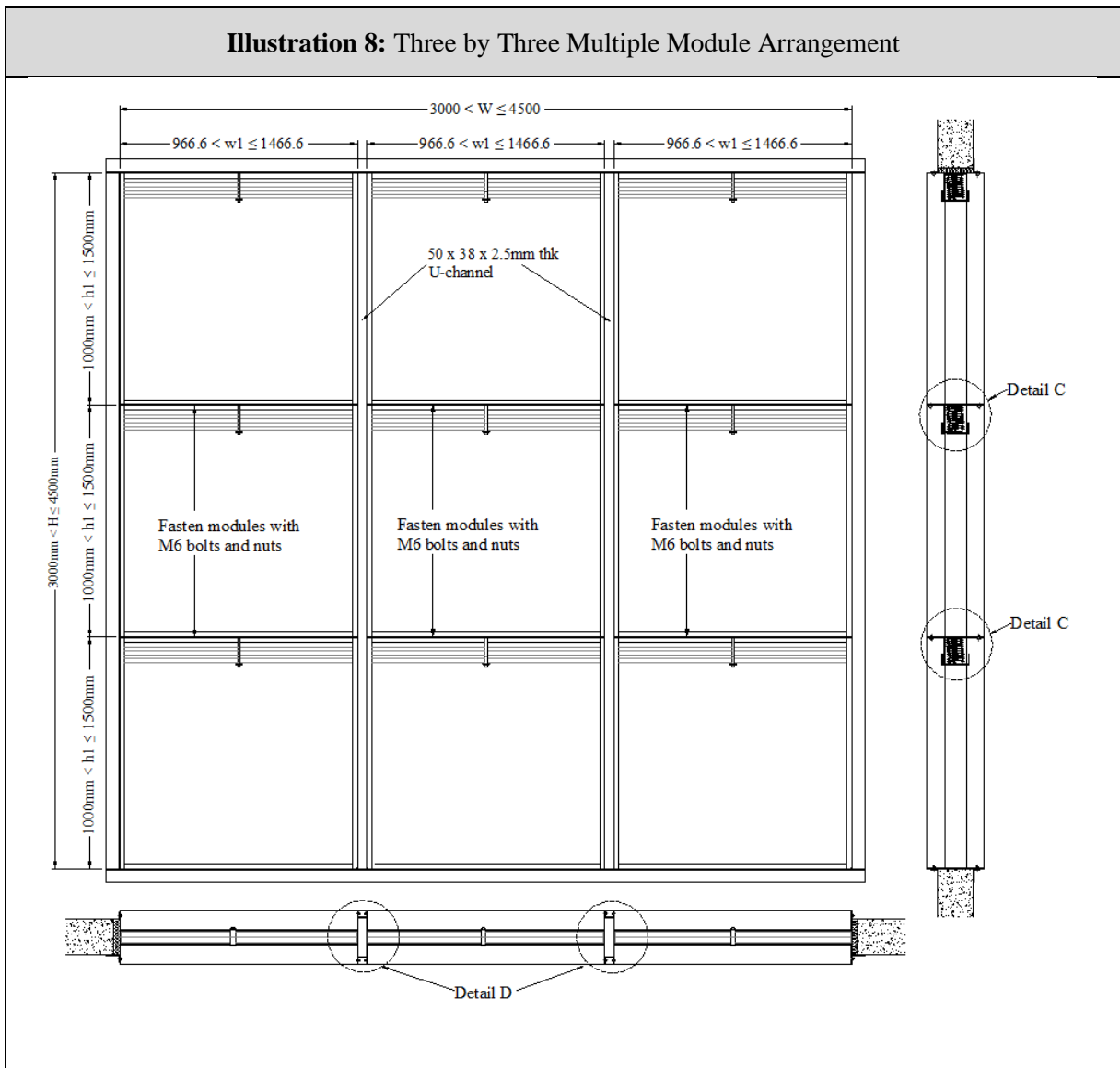
**Illustration 6: One by Three Multiple Module Arrangement**



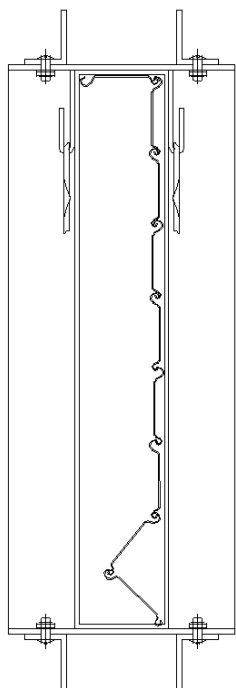


**Illustration 7: Two by Three Multiple Module Arrangement**

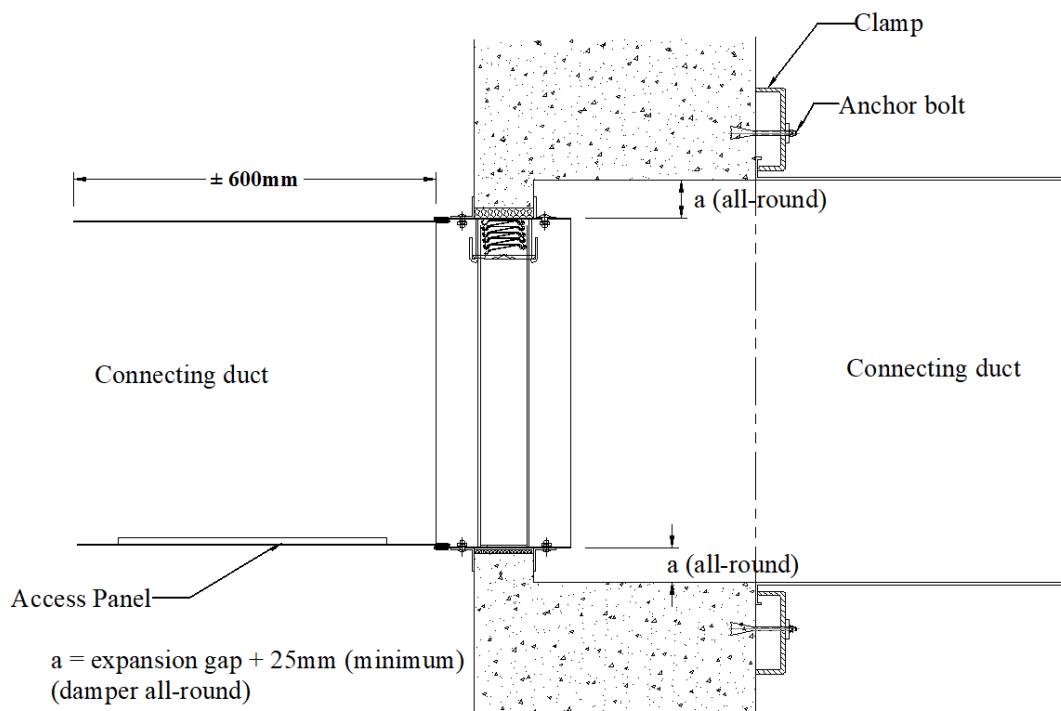




**Illustration 9: Blade in fully close position**



**Illustration 10: Installation of Fire Damper on Thick Wall**



**4. Troubleshooting**

<b>Problem</b>	<b>Action</b>	<b>Remedy</b>
Blade cannot close freely	<ul style="list-style-type: none"> <li>a) Check that blade is release squarely</li> <li>b) Check that the damper is square</li> </ul>	<ul style="list-style-type: none"> <li>i. Open fully and release squarely</li> <li>ii. Remove damper and adjust its square and re-install.</li> </ul>
Blade cannot close fully	Check that there is no obstruction within the damper frame	Remove obstruction and try closing it again
Damper closed	Check if fusible link is broken	Replace fusible link

**Appendix A: Thermal Expansion Gap**

**Table 1:** Recommended Thermal expansion gap for Galvanized Steel Fire Damper

Damper Dimension W or H (mm)	Recommended gap for Galvanized Steel fire dampers (mm)		
	Side	Top	Bottom
150-850	10	10	10
851-1500	15	20	10
1501-2000	25	25	10
2001-3000	30	35	10
3001-4500	35	45	10

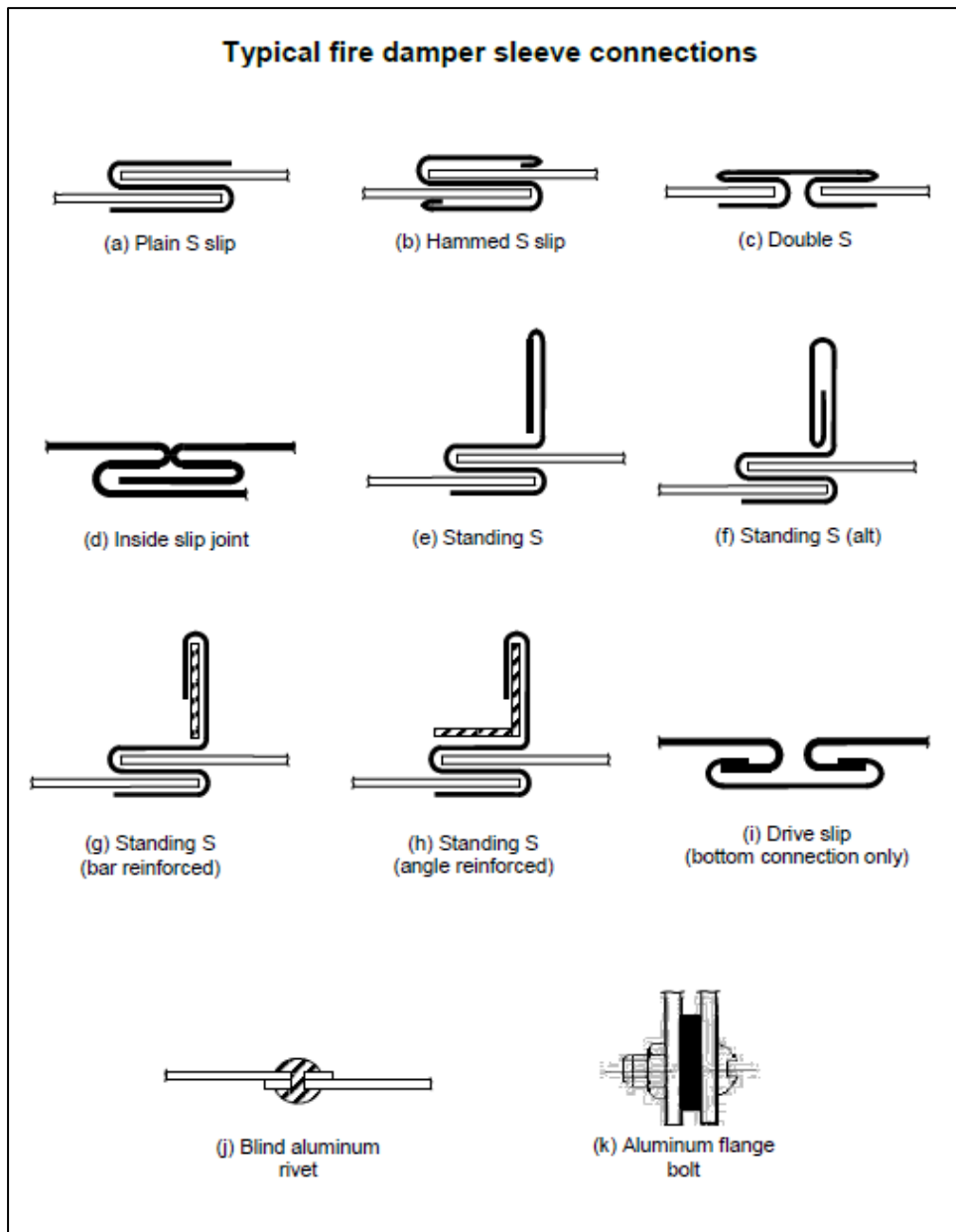
1. Table 1 is applicable to single module and multiple modules (up to 3 x 3 module arrangement) galvanized steel damper only. Damper dimension refers to width or height of a damper.

**Table 2:** Recommended Thermal expansion gap for Stainless Steel Fire Damper

Damper Dimension W or H (mm)	Recommended gap for Stainless Steel fire dampers (mm)		
	Side	Top	Bottom
150-600	10	10	10
601-1250	15	20	10
1251-1500	20	30	10
1501-2000	30	35	10
2001-3000	35	45	10
3001-4000	40	55	10
4001-4500	50	60	10

1. Table 2 is applicable to single module and multiple modules (up to 3 x 3 module arrangement) stainless steel damper only. Damper dimension refers to width or height of a damper.

**Appendix B:** Typical Fire Damper Connection



Remark:

1] Extracted from SS333 Singapore Standard for Fire Dampers

2] Connection (d) and connection (i) are not suitable for OLS Fire Damper.