



National Code of Firefighting Equipment :

QCVN 03:2021/BCA

INSULATED FIRE & SMOKE DAMPER

EI 30/45/60/90/120

“ We

sell

superiority”



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Certification of verified requirements for production

CHỨNG NHẬN

Mẫu số PC29

BỘ CÔNG AN
CỤC CẢNH SÁT PCCC VÀ CNCH

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

Số: 65...../KD-PCCC-P7

**GIẤY CHỨNG NHẬN
KIỂM ĐỊNH PHƯƠNG TIỆN PHÒNG CHÁY VÀ CHỮA CHÁY**

Căn cứ Nghị định số 136/2020/NĐ-CP ngày 24/11/2020 của Chính phủ quy định chi tiết một số điều và biện pháp thi hành của Luật Phòng cháy và chữa cháy và Luật sửa đổi, bổ sung một số điều của Luật Phòng cháy và chữa cháy;

Xét đề nghị của: Công ty Cổ phần ĐTCN Ngôi Sao Châu Á
về việc cấp giấy chứng nhận kiểm định phương tiện phòng cháy và chữa cháy tại văn bản số: KD/02-23122021 ngày 06 tháng 01 năm 2021;

Căn cứ kết quả kiểm định về phòng cháy và chữa cháy đối với phương tiện/lô phương tiện tại biên bản kiểm định ngày 06 tháng 01 năm 2021 của Trung tâm Tư vấn và chuyển giao công nghệ PCCC và CNCH - Cục Cảnh sát PCCC và CNCH

**CỤC CẢNH SÁT PHÒNG CHÁY, CHỮA CHÁY VÀ CỨU NẠN, CỨU HỘ
CHỨNG NHẬN:**

Phương tiện/lô phương tiện: Phòng cháy, chữa cháy ghi tại trang 2 - 8 của: Công ty Cổ phần ĐTCN Ngôi Sao Châu Á, địa chỉ: Tầng 3 TTMM Interserco, 17 Phạm Hùng, phường Mỹ Đình 1, quận Nam Từ Liêm, Thành phố Hà Nội

Tại thời điểm kiểm định, số phương tiện này có các thông số kỹ thuật phù hợp với các quy định về phòng cháy và chữa cháy và được phép sử dụng trong lĩnh vực phòng cháy và chữa cháy. *th*

Nơi nhận:

- Công ty Cổ phần ĐTCN Ngôi Sao Châu Á;
- Trung tâm TV và CGCN PCCC và CNCH;
- Phòng CS PCCC và CNCH - Công an các địa phương;
- Lưu: VT, P7(N.T.H);

Hà Nội, ngày 07 tháng 07 năm 2022

**KT. CỤC TRƯỞNG
PHÓ CỤC TRƯỞNG**

(Ký, ghi rõ họ tên và đóng dấu)



Đại tá Bùi Quang Việt

Certification of verified requirements for production

MINISTRY OF PUBLIC
SECURITY
**Police Department of Fire
Prevention and Fighting and
Rescue**
No.: 65/KĐ-PCCC-P7

SOCIALIST REPUBLIC OF VIETNAM
Independence-Freedom-Happiness

Form PC29
Issued with
The Circular
No 136/2020/NĐ-CP
Nov.. 24, 2020

CERTIFICATION OF INSPECTION FIRE SAFETY AND FIREFIGHTING EQUIPMENT

Base on the Decree No 136/2020/NĐ-CP on 24/11/2020 on guidelines for the Law on Fire Safety and Firefighting and the Law on Amendments to the Law on Fire Safety and Firefighting;

At the request of Research & Application Center of the Fire Safety and Firefighting Vietnam (IBST) on inspection for fire safety and firefighting equipments in the letter No 1213.21.NCPCC on 06/01/2021

THE POLICE DEPARTMENT OF FIRE PREVENTION AND FIGHTING AND RESCUE CERTIFIES THAT:

The range of fire safety and firefighting equipments are listed at page 2 and 3 by Star Asia Jsc. – Add.: 3rd floor, Interserco Trade Center, 17 Pham Hung str., My Dinh ward., Nam Tu Liem dist. Hanoi,
at the time of inspection, the technical specifications of this range of equipment are conformable with the fire safety and firefighting regulations and accepted to be applied for fire safety and fire fighting activities.

Hanoi, JAN. 7, 2022
On behalf of The Head of The Dept.
Vice-Head of the Depr
(signed and sealed)
Lt. Bui Quang Viet



VIỆN KHOA HỌC CÔNG NGHỆ XÂY DỰNG
Vietnam Institute for Building Science and Technology

VIỆN CHUYÊN NGÀNH KẾT CẤU CÔNG TRÌNH XÂY DỰNG
Institute of Building Structures

Địa chỉ: 81 Trần Cung - Nghĩa Tân - Cầu Giấy - Hà Nội
Tel: 024- 37543439 Hotline: (+84) 913000564 - Fax: (+84) 24. 62692708

LAS - XD 416

BÁO CÁO KẾT QUẢ THỬ NGHIỆM KHẢ NĂNG CHỊU LỬA CỦA MẪU
SẢN PHẨM VAN CHẶN LỬA
(No: 213.21.KC.NCPCC)

Khách hàng: Công ty Cổ phần Đầu tư Công nghệ Ngôi sao Châu Á
Địa chỉ: Tầng 3 TTTM Interserco, 17 Phạm Hùng, Mỹ Đình 1, Nam Từ Liêm, Hà Nội
Loại mẫu: Van chặn lửa cầu chì FD (mã S-FD-FS)
Van chặn lửa mô tơ MFD (Mã S-FD-M)
Hợp đồng: 159/2021VKC

Nhóm thực hiện
Chủ trì: Nguyễn Trung Kiên

- Cộng tác viên chính:**
- 1. Nguyễn Thị Ngọc Diệp
 - 2. Hà Văn Hạnh
 - 3. Thành Hữu Hồng Giang
 - 4. Nguyễn Việt Sơn
 - 5. Đào Duy Anh
 - 6. Lê Đắc Châu

Hà nội, ngày 26 tháng 11 năm 2021

Phòng Nghiên cứu
Phòng chống cháy

Phạm Minh Điền

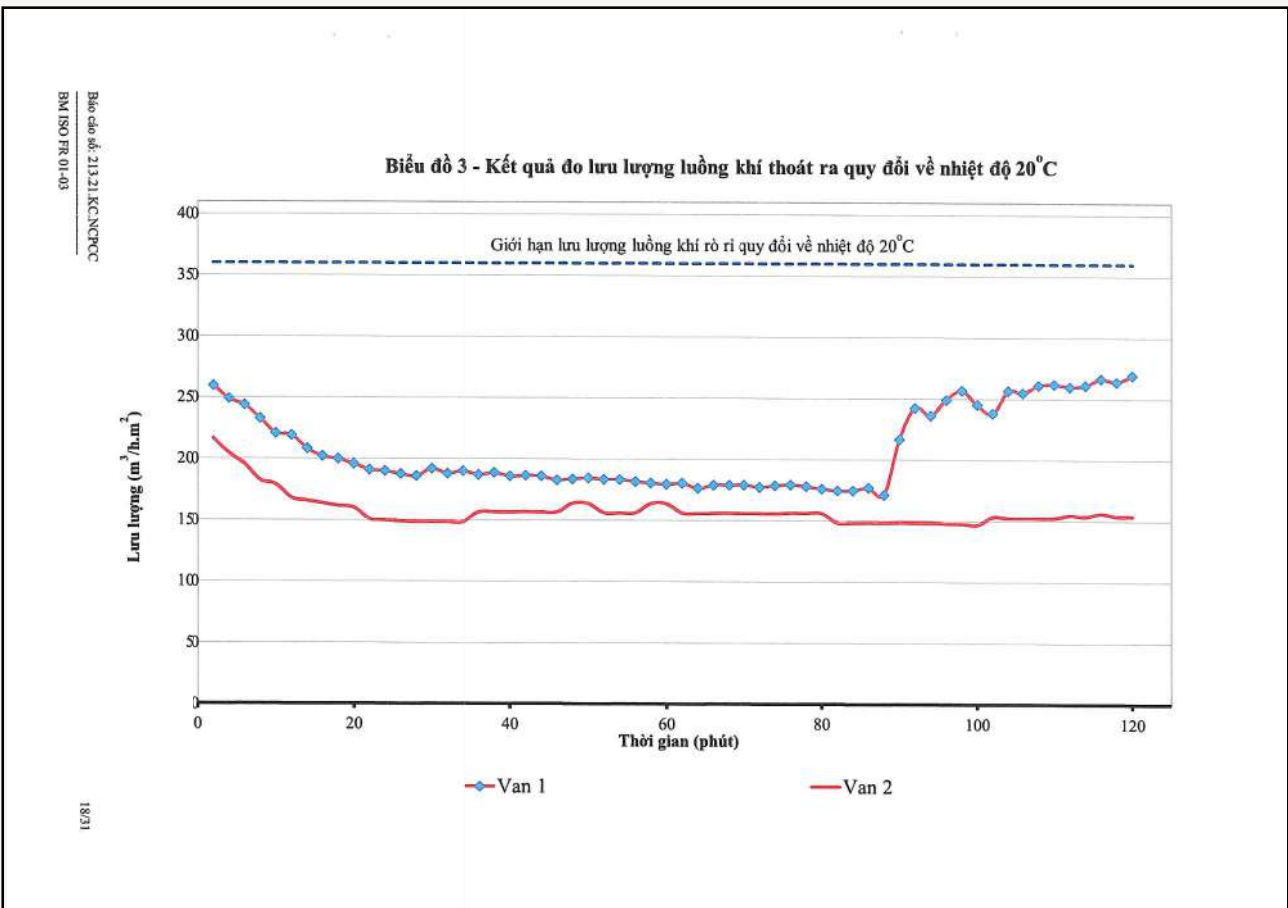
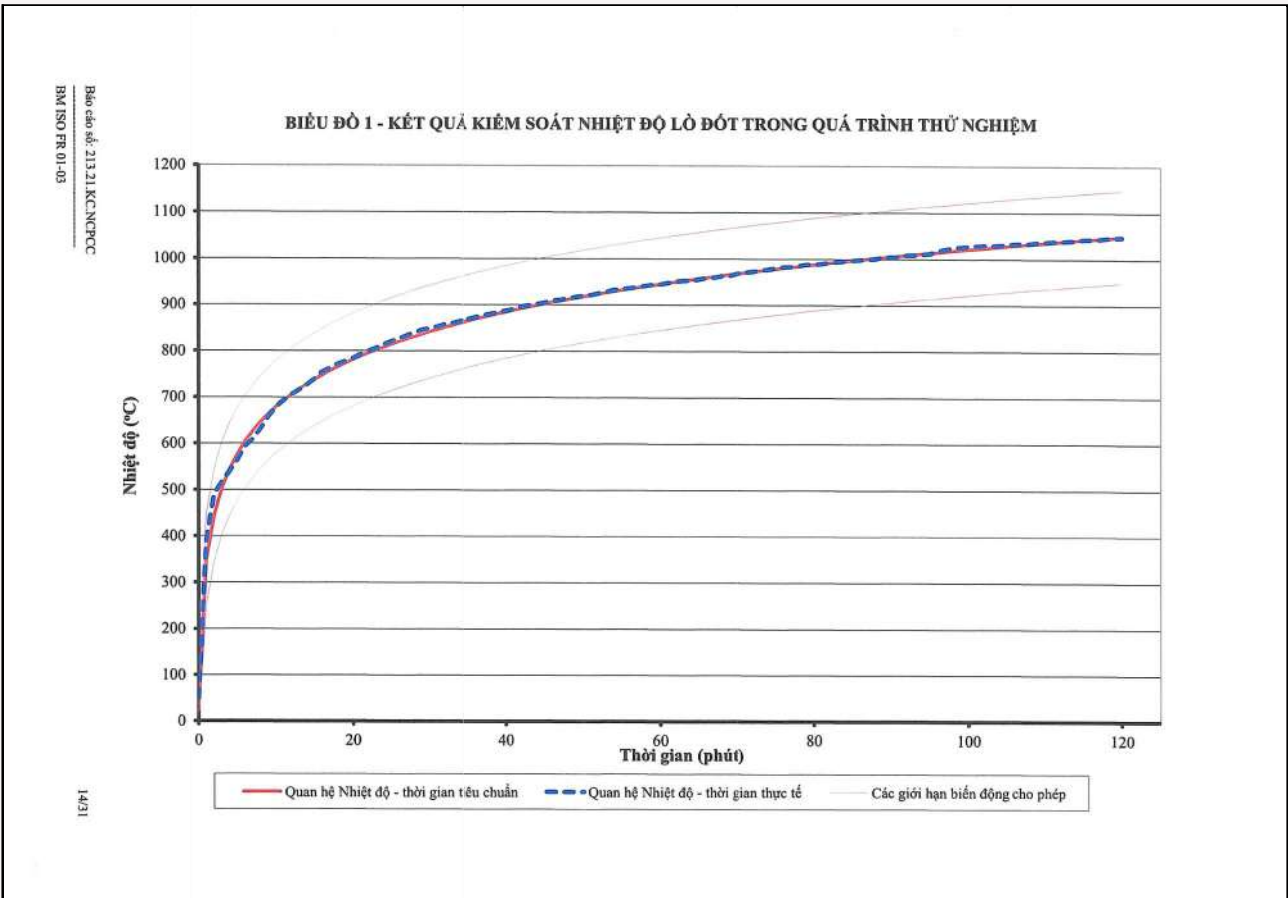
Phòng Tổng hợp

Nguyễn Phương Tùng

Viện chuyên ngành Kết cấu CTXD



KT. GIÁM ĐỐC
PHÓ GIÁM ĐỐC
Hoàng Anh Giang





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VIỆN CHUYÊN NGÀNH KẾT CẤU CÔNG TRÌNH XÂY DỰNG
Institute of Building Structures

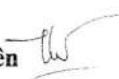
Địa chỉ: 81 Trần Cung - Nghĩa Tân - Cầu Giấy - Hà Nội - Tel: 024.62670817 - Website: www.vienketcau.vn

TEL : (84-24) 37543439 – Hotline: (84) 913000564 - Fax: 024.62692708



BÁO CÁO KẾT QUẢ THỬ NGHIỆM
CẦU CHÌ NHIỆT LẮP TRONG VAN CHẶN LỬA
(No: 001.22.VL.NCPCC)

Khách hàng: Công ty Cổ phần Đầu tư Công nghệ Ngôi Sao Châu Á
Địa chỉ: Tầng 3 Tòa nhà Trung tâm thương mại Interserco, số 17 đường Phạm Hùng, phường Mỹ Đình 1, quận Nam Từ Liêm, thành phố Hà Nội
Loại mẫu: Cầu chì nhiệt lắp trong van chặn lửa 70°C
Tiêu chuẩn thử nghiệm: ISO 10294-4:2001 và ISO 10294-4:2001/Amd 1:2014
Hợp đồng: 001/2022KNIBS

Nhóm thực hiện

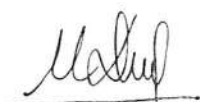
Chủ trì: Nguyễn Trung Kiên 

Cộng tác viên chính:

1. Phạm Minh Điền
2. Đào Duy Anh 
3. Nguyễn Thị Ngọc Diệp 
4. Hà Văn Hạnh
5. Thành Hữu Hồng Giang

Hà Nội, ngày 05 tháng 01 năm 2022

Phòng Nghiên cứu
Phòng chống cháy



Phạm Minh Điền

Phòng Tổng hợp



Nguyễn Phương Tùng

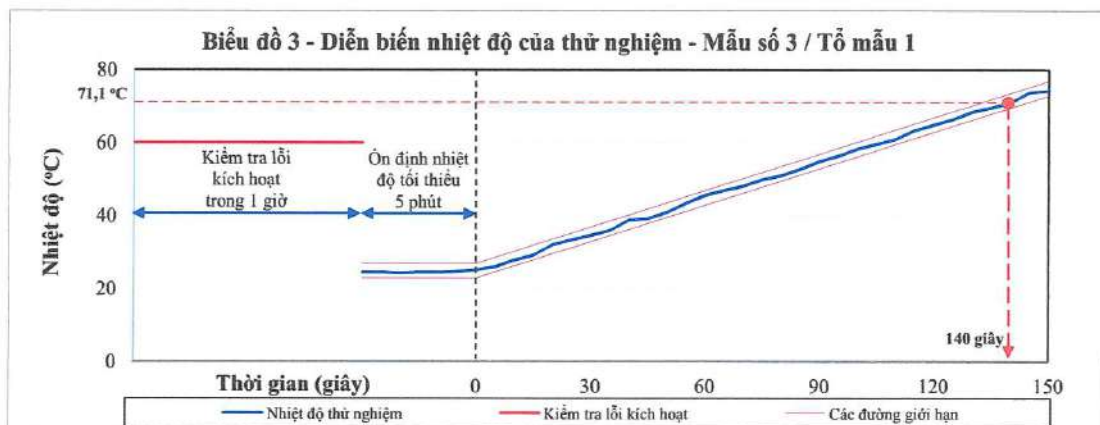
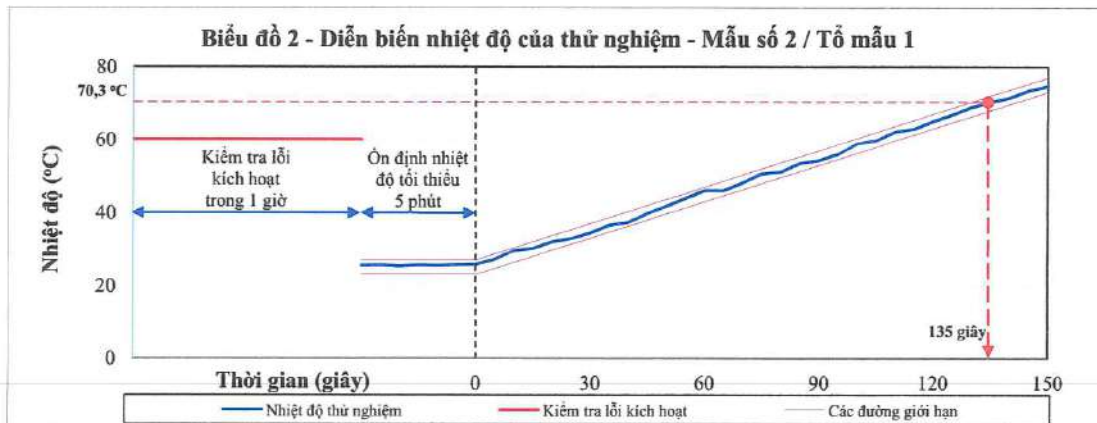
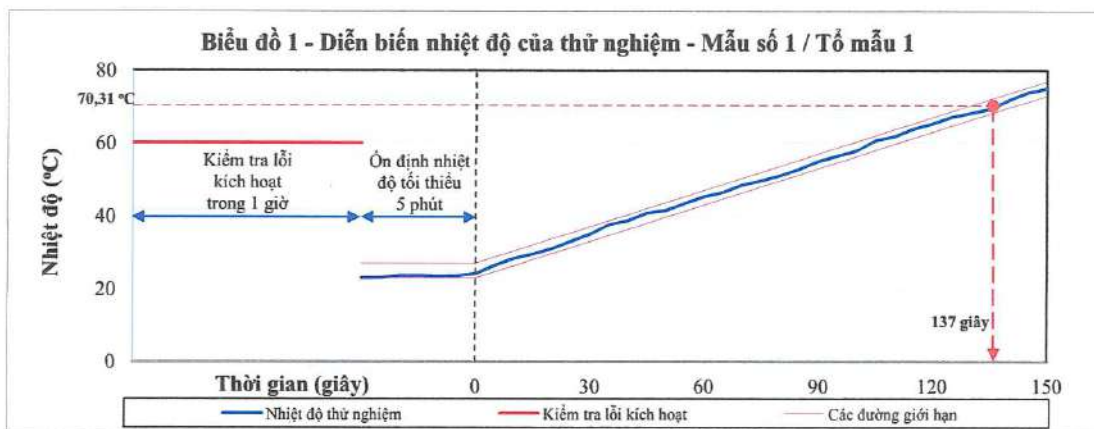
Viện chuyên ngành Kết cấu
công trình xây dựng



GIÁM ĐỐC
PHÓ GIÁM ĐỐC
Hoàng Anh Giang

BẢNG A.1 - CÁC GHI NHẬN VỀ SỰ LÀM VIỆC CỦA MẪU THỬ NGHIỆM - TỔ MẪU 1

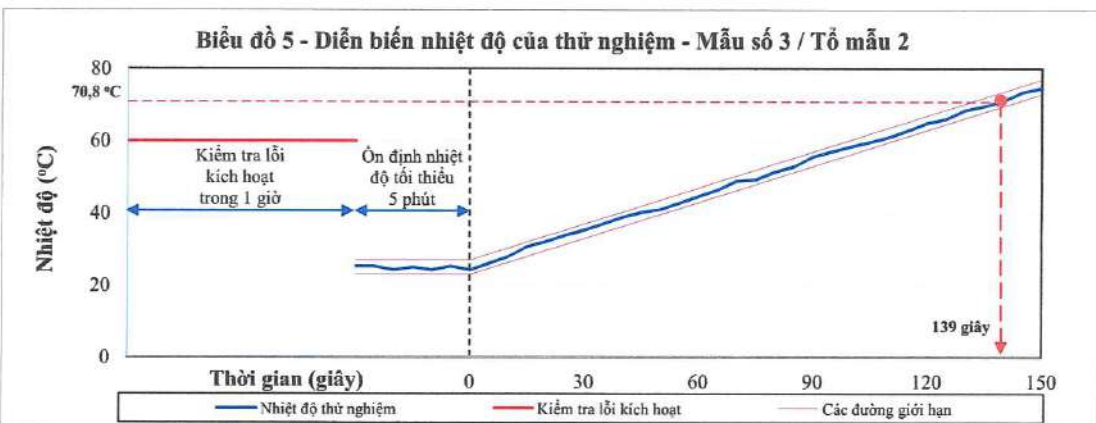
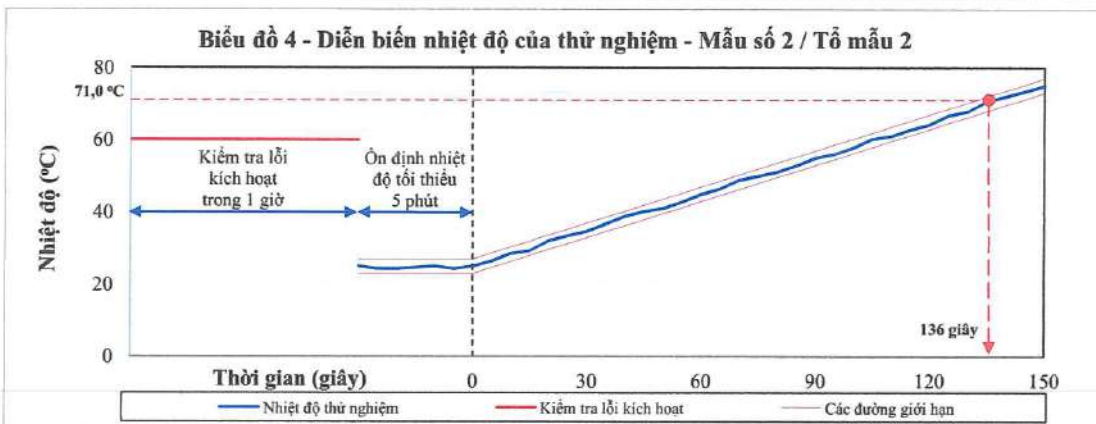
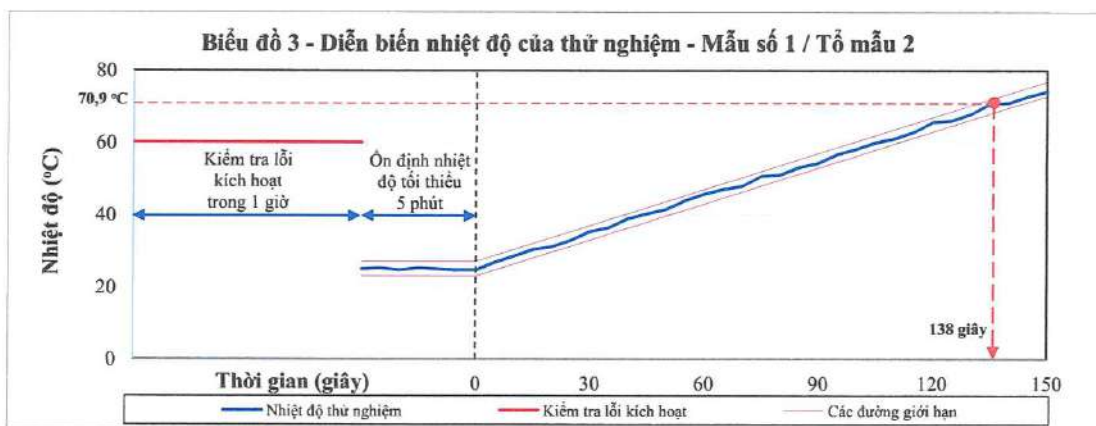
Ký hiệu mẫu	Hướng lắp đặt mẫu thử nghiệm	Tải trọng thử nghiệm (kG)	Kiểm tra lỗi kích hoạt của mẫu thử nghiệm	Ngưỡng kích hoạt của mẫu thử nghiệm	
				Thời gian kích hoạt (giây)	Nhiệt độ kích hoạt (°C)
Mẫu số 1	Mẫu lắp đặt theo hướng song song với luồng khí	0,5	Không bị lỗi kích hoạt	137	70,3
Mẫu số 2				135	70,3
Mẫu số 3				140	71,1
Giá trị trung bình				137	70,6





BẢNG A.2 - CÁC GHI NHẬN VỀ SỰ LÀM VIỆC CỦA MẪU THỬ NGHIỆM - TỔ MẪU 2

Ký hiệu mẫu	Hướng lắp đặt mẫu thử nghiệm	Tải trọng thử nghiệm (kG)	Kiểm tra lỗi kích hoạt của mẫu thử nghiệm	Ngưỡng kích hoạt của mẫu thử nghiệm	
				Thời gian kích hoạt (giây)	Nhiệt độ kích hoạt (°C)
Mẫu số 1	Mẫu lắp đặt theo hướng vuông góc với luồng khí	0,5	Không bị lỗi kích hoạt	138	70,9
Mẫu số 2				136	71,0
Mẫu số 3				139	70,8
Giá trị trung bình				138	70,9





LAS XD 416

VIỆN KHOA HỌC CÔNG NGHỆ XÂY DỰNG

Vietnam Institute for Building Science and Technology

VIỆN CHUYÊN NGÀNH KẾT CẤU CÔNG TRÌNH XÂY DỰNG
Institute of Building Structures

Địa chỉ: 81 Trần Cung - Nghĩa Tân - Cầu Giấy - Hà Nội


Website: www.vienketcau.vn



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**BÁO CÁO KẾT QUẢ THỬ NGHIỆM KHẢ NĂNG CHỊU LỬA CỦA MẪU
SẢN PHẨM VAN CHẶN LỬA**

(No: 064.22.KC.NCPCC)

Khách hàng: Công ty Cổ phần Đầu tư Công nghệ Ngôi sao Châu Á
Địa chỉ: Tầng 3 TTTM Interserco, 17 Phạm Hùng, Mỹ Đình 1, Nam Từ Liêm, Hà Nội
Loại mẫu: Van chặn lửa
Hợp đồng: 159/2021VKC

Nhóm thực hiện**Chủ trì:** Nguyễn Trung Kiên **Cộng tác viên chính:**

1. Nguyễn Thị Ngọc Diệp 
2. Hà Văn Hạnh
3. Thành Hữu Hồng Giang
4. Nguyễn Việt Sơn 
5. Đào Duy Anh 
6. Lê Đức Châu 

Hà Nội, ngày 18 tháng 01 năm 2022

**Phòng Nghiên cứu
Phòng chống cháy****Phạm Minh Điền****Phòng Tổng hợp****Nguyễn Phương Tùng****Viện chuyên ngành Kết cấu****KT. GIÁM ĐỐC
PHÓ GIÁM ĐỐC****Hoàng Anh Giang**

Test report of El single-section insulated fire damper

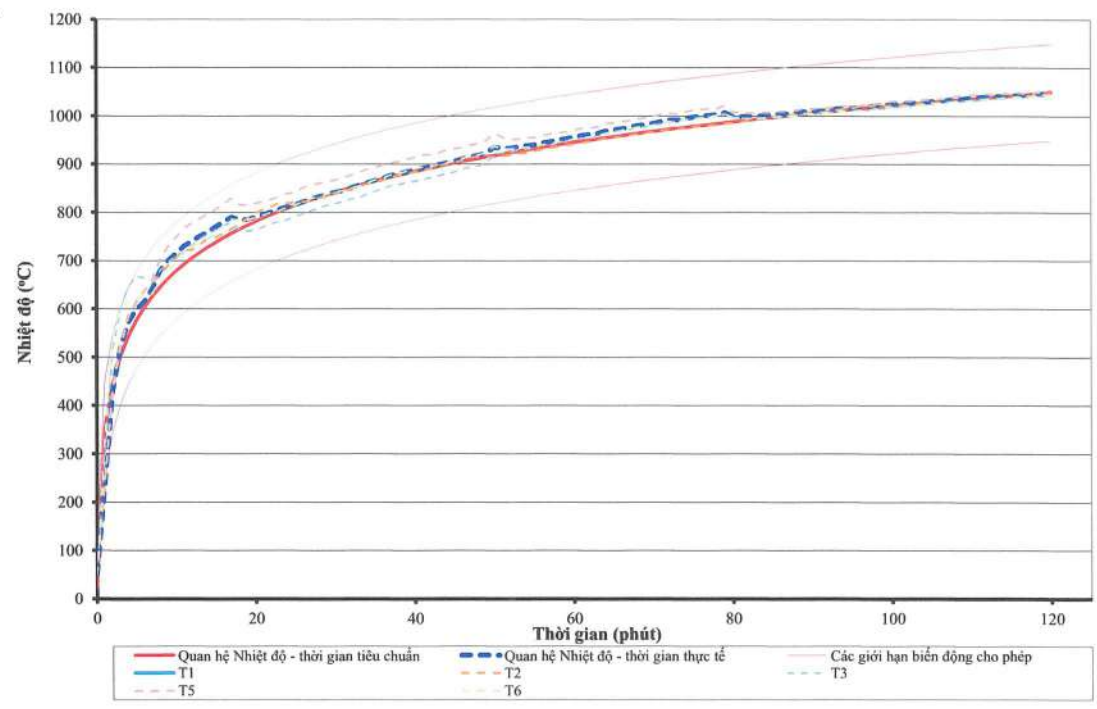
Test results from Building Material Institute



Báo cáo số : 064.22.KC.NCPCC
BM ISO FR 01 - 03

18/52

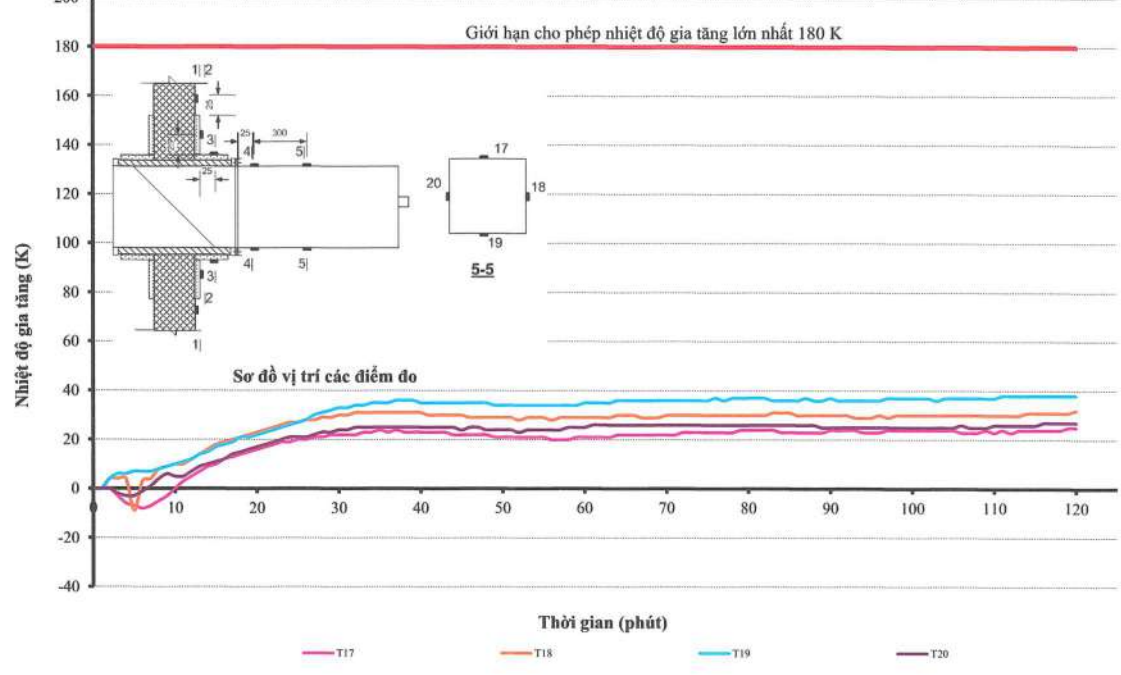
BIỂU ĐỒ 1 - KẾT QUẢ KIỂM SOÁT NHIỆT ĐỘ LÒ ĐỐT TRONG QUÁ TRÌNH THỬ NGHIỆM

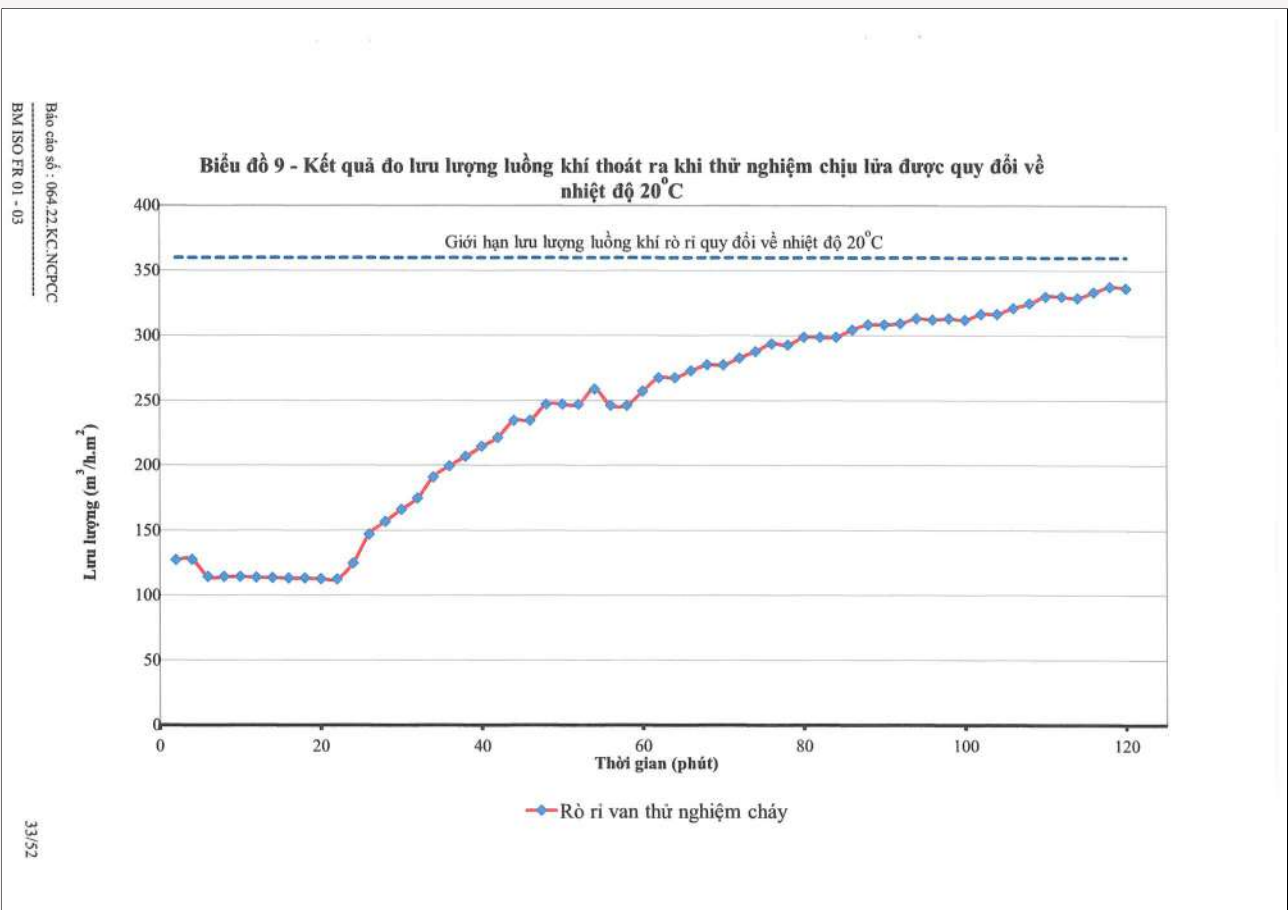
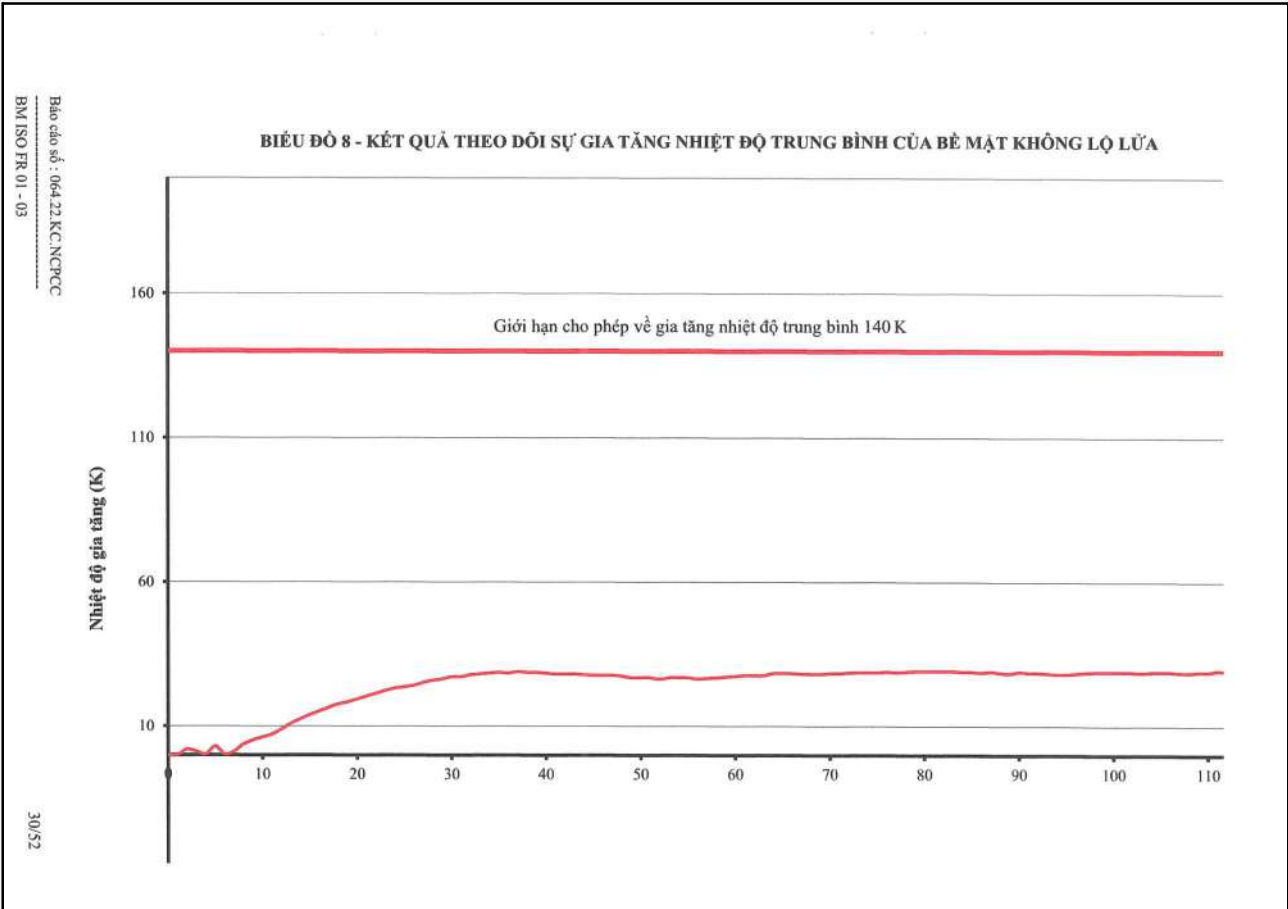


Báo cáo số : 064.22.KC.NCPCC
BM ISO FR 01 - 03

29/52

BIỂU ĐỒ 7 - KẾT QUẢ THEO DÕI SỰ GIA TĂNG NHIỆT ĐỘ TẠI CÁC ĐIỂM TRÊN BỀ MẶT KHÔNG LỘ LỬA MẶT CẮT 5-5







VIỆN KHOA HỌC CÔNG NGHỆ XÂY DỰNG
Vietnam Institute for Building Science and Technology

VIỆN CHUYÊN NGÀNH KẾT CẤU CÔNG TRÌNH XÂY DỰNG
Institute of Building Structures

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**BÁO CÁO KẾT QUẢ THỬ NGHIỆM KHẢ NĂNG CHỊU LỬA CỦA MẪU
SẢN PHẨM VAN CHẶN LỬA**

(No: 066.22.KC.NCPCC)

Khách hàng: Công ty Cổ phần Đầu tư Công nghệ Ngôi sao Châu Á
Địa chỉ: Tầng 3 TTTM Interserco, 17 Phạm Hùng, Mỹ Đình 1, Nam Từ Liêm, Hà Nội
Loại mẫu: Van chặn lửa
Hợp đồng: 159/2021VKC

Nhóm thực hiện

Chủ trì: Nguyễn Trung Kiên

Cộng tác viên chính:

1. Nguyễn Thị Ngọc Diệp
2. Hà Văn Hạnh
3. Thành Hữu Hồng Giang
4. Nguyễn Việt Sơn
5. Đào Duy Anh
6. Lê Đức Châu

Hà nội, ngày 26 tháng 01 năm 2022

**Phòng Nghiên cứu
Phòng chống cháy**

Phạm Minh Điền

Phòng Tổng hợp

Nguyễn Phương Tùng

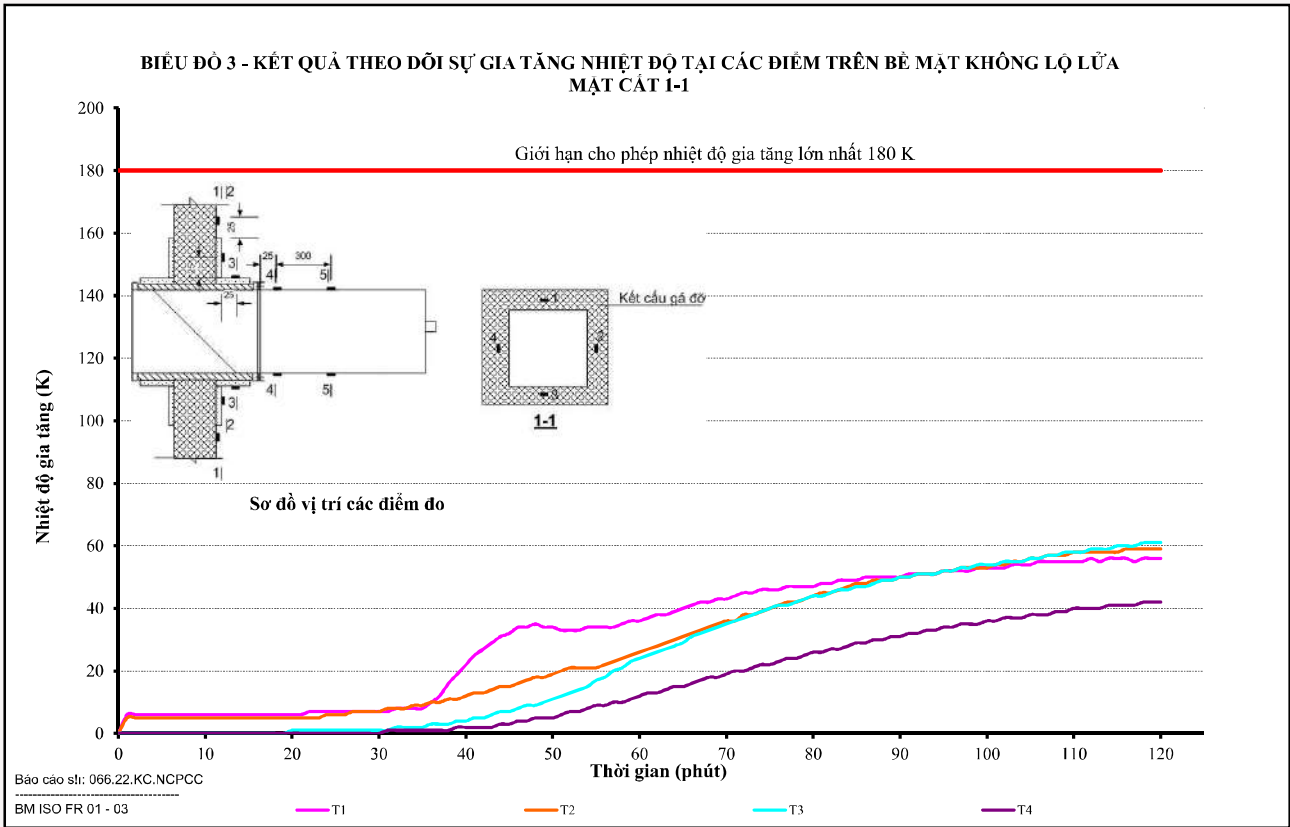
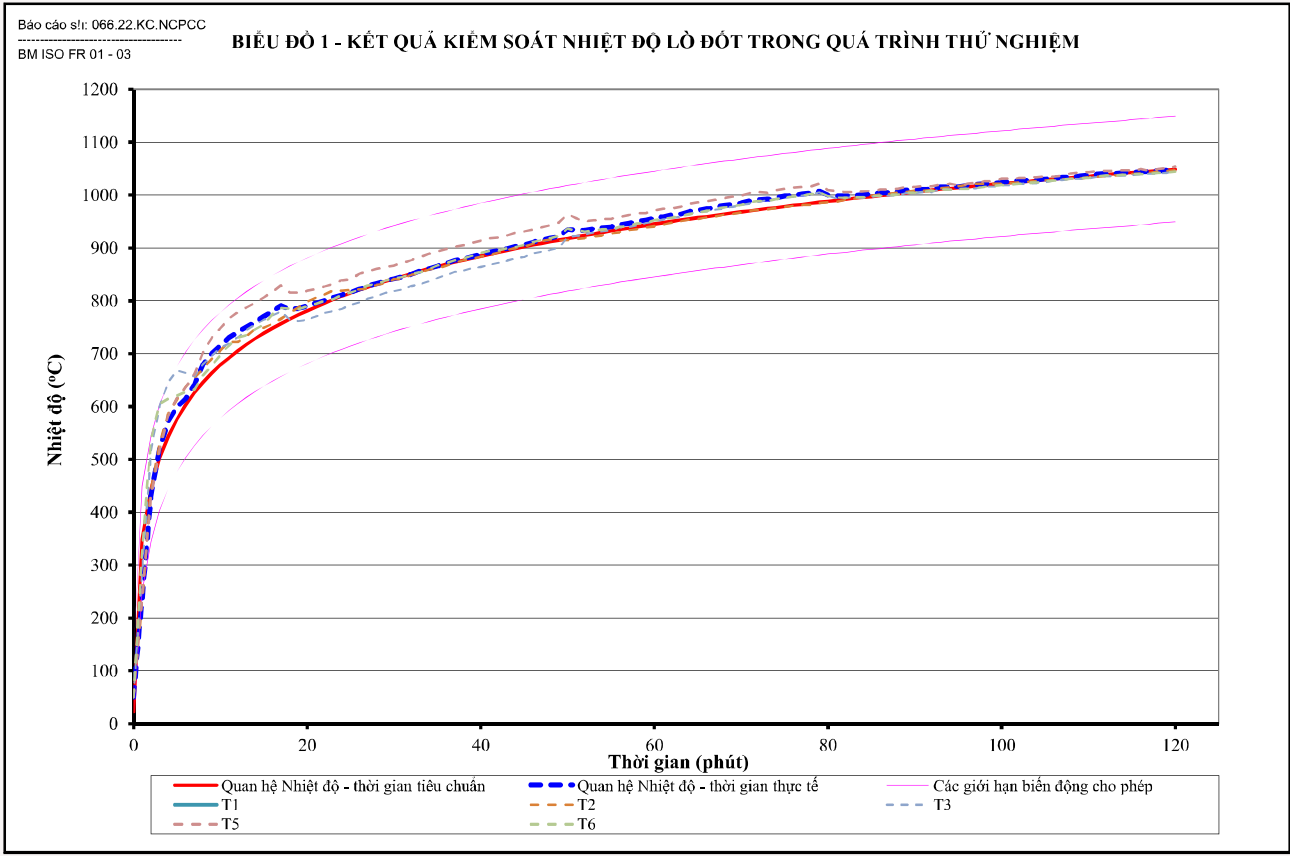
**Viện chuyên ngành Kết cấu
CTXD**



**KT. GIÁM ĐỐC
PHÓ GIÁM ĐỐC
Hoàng Anh Giang**

Báo cáo số: 066.22.KC.NCPCC

BM ISO FR 01 - 03

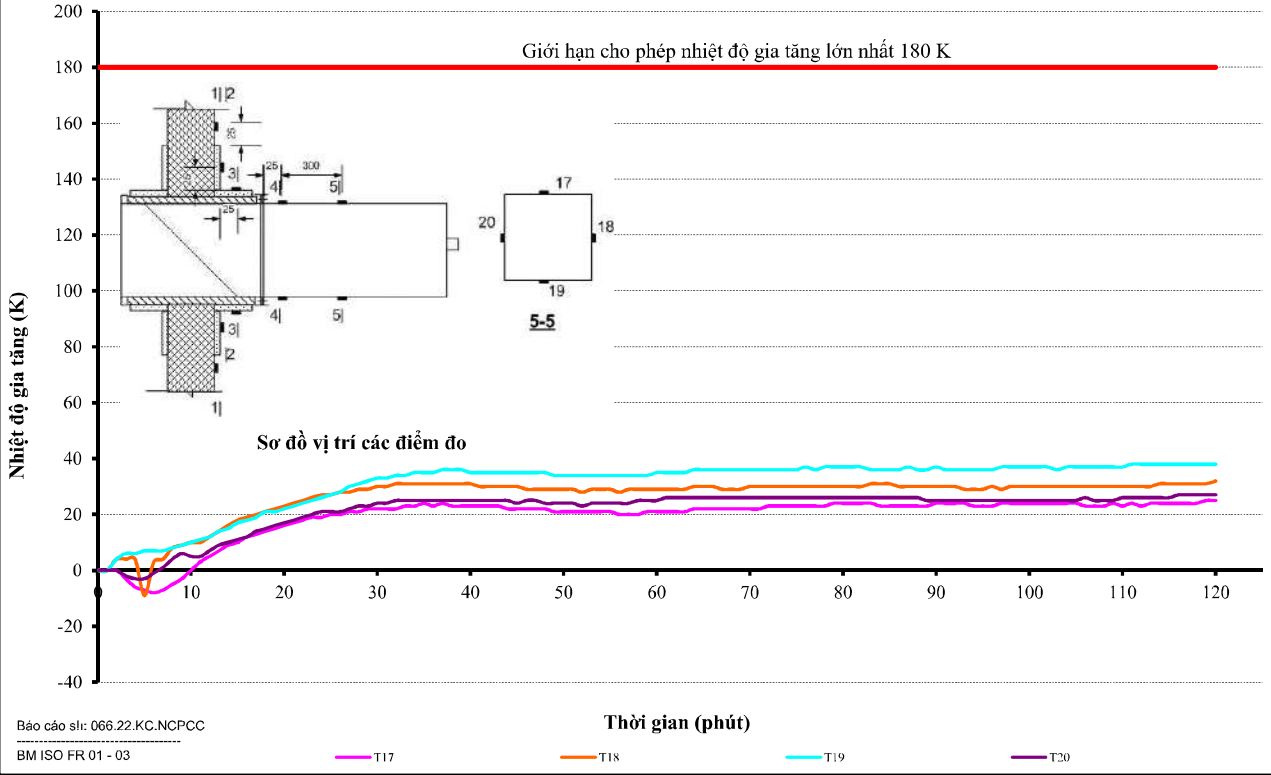


Test report of expandable insulated fire damper

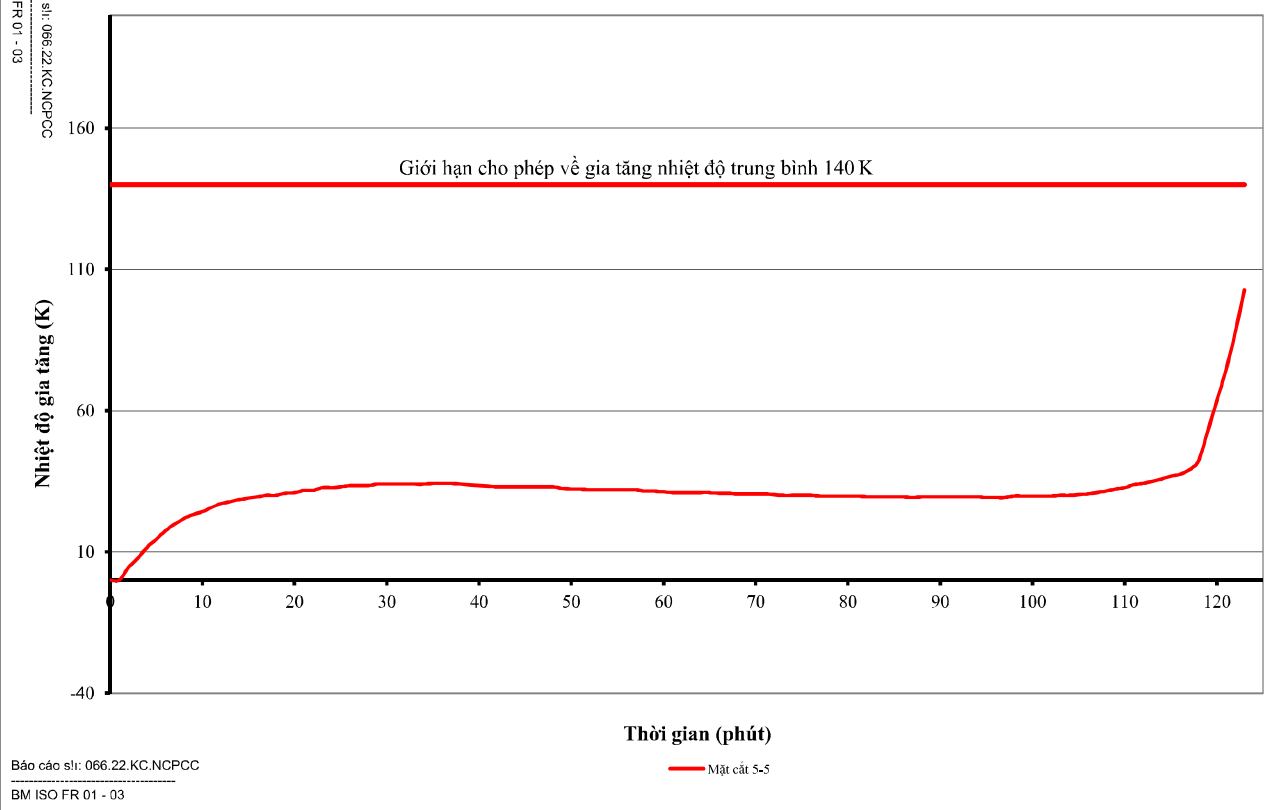
Test results from Building Material Institute

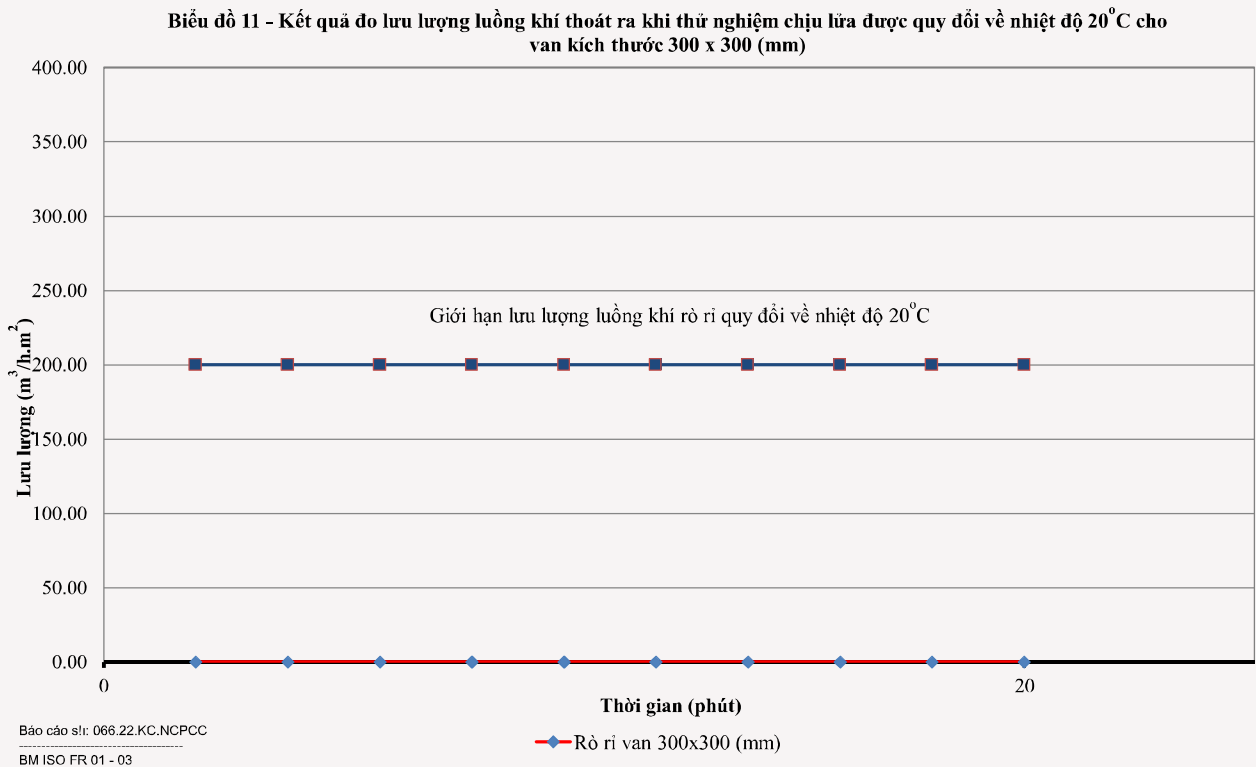
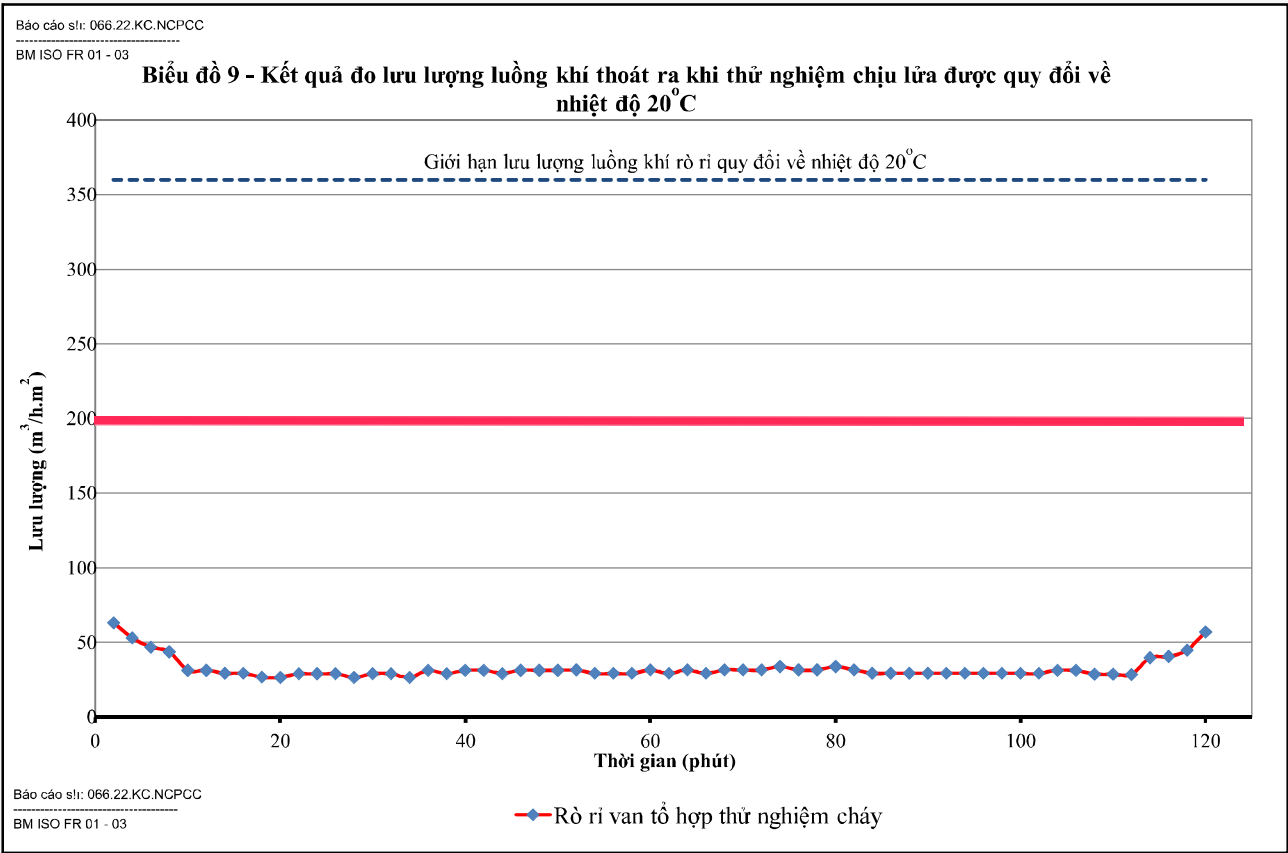


BIỂU ĐỒ 7 - KẾT QUẢ THEO DÕI SỰ GIA TĂNG NHIỆT ĐỘ TẠI CÁC ĐIỂM TRÊN BỀ MẶT KHÔNG LỘ LỬA MẶT CẮT 5-5



BIỂU ĐỒ 8 - KẾT QUẢ THEO DÕI SỰ GIA TĂNG NHIỆT ĐỘ TRUNG BÌNH CỦA BỀ MẶT KHÔNG LỘ LỬA MẶT CẮT 5-5





Some pictures during testing fire dampers

Test results from Building Material Institute



E 120 - Passed
EI 120 - Passed

Infrastructure & heavy industry projects
Nearly 100 projects over the country


Vinh Tan thermal power plant
Contractor: Posco E&C - KOREA



Nghi Sơn, Long Sơn oil filtration plant
Contractor: Temsco - Korea
Contractor: Deasun - Vietnam



Thái Bình thermal power plant
Contractor: Sigma - Vietnam



Hydroelectric power projects
Contractors: : Probuild, H2T, ... - Vietnam.



Nghi Sơn 2 thermal power plant - Thanh Hoa province
Contractor: Doosan Heavy Industries - Korea



Vinfest Automobile factory
Contractors: Cotecons, Unicons, Ricons - Vietnam



Nhổn metro station - Hanoi
Contractor: Colas Rails - France
Contractor: Tan Thanh An - Vietnam



Bến thành - Suối Tiên metro station
Contractor: Hitachi - Japan
Contractor: Đại Cơ - Vietnam

Industrial Projects

Over 200 projects over the country



ASCV cargo station Noibai airport - Hanoi
Contractor: Hawee - Vietnam



Panasonic Thanglong factory
Contractor: Takisha - Japan



ABB Vietnam factory
Contractor: Unicons - Vietnam



Vinsmart factory
Contractor: Doan Nhat - Vietnam



Cocacola Hanoi plant
Contractor: : Probuild



Kyocera factory
Contractor: Kinden - Japan



NISSIN Vietnam factory
Contractor: Yurtec - Japan



Phenikaa Hoa Lac factory
Contractor: Sigma - Việt Nam

Commercial projects
Over 500 skyscraper projects over the country


Vinfast Tower



Doji trade center



Vinhomes - Nguyen Chi Thanh



VP Bank Tower



Sun Thụy Khuê



Sun Quảng An Tây Hồ



Vinhomes Smart City



Vinhomes Symphony



Vinhomes Ocean Park



Vinhomes Skylake



Vinhomes West Point



Vinhomes Grand Park



Đại học FPT Hòa Lạc



Đại Học FPT Cầu Giấy



Vinhomes Green Bay



Vinhomes Gardenia



Newtecons Tower



Altara Qui Nhơn

Hotels, trade centers and office buildings

Over 200 projects of hotels, trade centers, complex buildings, resorts over the country



Marriotts Da Nang hotel



Hilton Hai Phong hotel



Vingroup Megamalls



Vingroup trade centers over the country



Hong Ngoc hospital and others



Anh Duong codotel and others



Viettel office tower and others



Hotels, resorts over the country

NOTES & VERIFICATION PROCEDURE

Fire and smoke damper is an item in the Fire Prevention and Firefighting Equipments directory that is regulated by the National Technical Regulation: QCVN 03:2021/BCA and is the goods that is mandatorily tested on safety over fire prevention and firefighting by the Safety on Fire Prevention and Firefighting Regulation QCVN 06:2021/BXD.

Fire dampers and smoke dampers must be produced by the manufacturers meeting concerning requirements, namely the following papers should be achieved:

1. Registration of production fields with mandatory requirements
2. Certificate of meeting requirements for fire damper production
3. Test reports of the products those are valid in 6 months.

DOCUMENTS FOR REGISTRATION OF VERIFICATION

1. The contract between manufacturer and customer that showing clearly quantity, types, sizes, dimensions and fire resistance classes in the index of the contract.
2. Test reports of the typical product on relative criteria (4 reports)
3. Name, address of the project
4. List of products/equipments as per the contract
5. Installation drawings of typical product conforming with intallation style as description in the test report.

PROCEDURE OF REGISTRATION FOR VERIFICATION

1. Submitting (online) the documentary files into the Fire Prevention and Fighfighting Guide Center (Tt2)
2. Booking appointment with Tt2 to do counting, assessing over the lot of product/equipment before shipping. Making the assessment record by the configuration of the typical specimen as mentionned in test reports of the manufacturer.
3. Notification of shipping and receiving
4. Time for finishing the certificate of verification: 60 days from the submitting date.

RESPONSIBILITIES OF MANUFACTURER

1. Testing typical sample as requirements of QCVN 03:2021/BCA
2. Producing and delivering products as per tested sample. Taking responsibility for quanlity of products.
3. Advancing contractor/investor about method of sealing conforming to the one applied in the test.
4. Inviting the concerning authorities to check and assess the lot of product/equipment before shipping.
5. Submitting registration of verification papers for the lot of product/equipment.

RESPONSIBILITY OF CONTRACTOR/INVESTOR

1. Selecting proper product code from the manufacturer as standardised configuration in product catalog
2. Sending the list of dimensions of products for the project to the manufacturer
3. Sending relative information of the project, project location, project name.
4. Receiving, accepting and storing products as regulated in the product catalog and taking responsibility for quality of the product after receipt.
5. Installing products properly in place, sealing method ... as guided in product catalog and description in test reports.
6. Using proper materials for sealing as manufacturer's recommendation in the test. These materials are not included in selling price of the product (such as fire resistant glue, fire resistant gasket, bolt...)

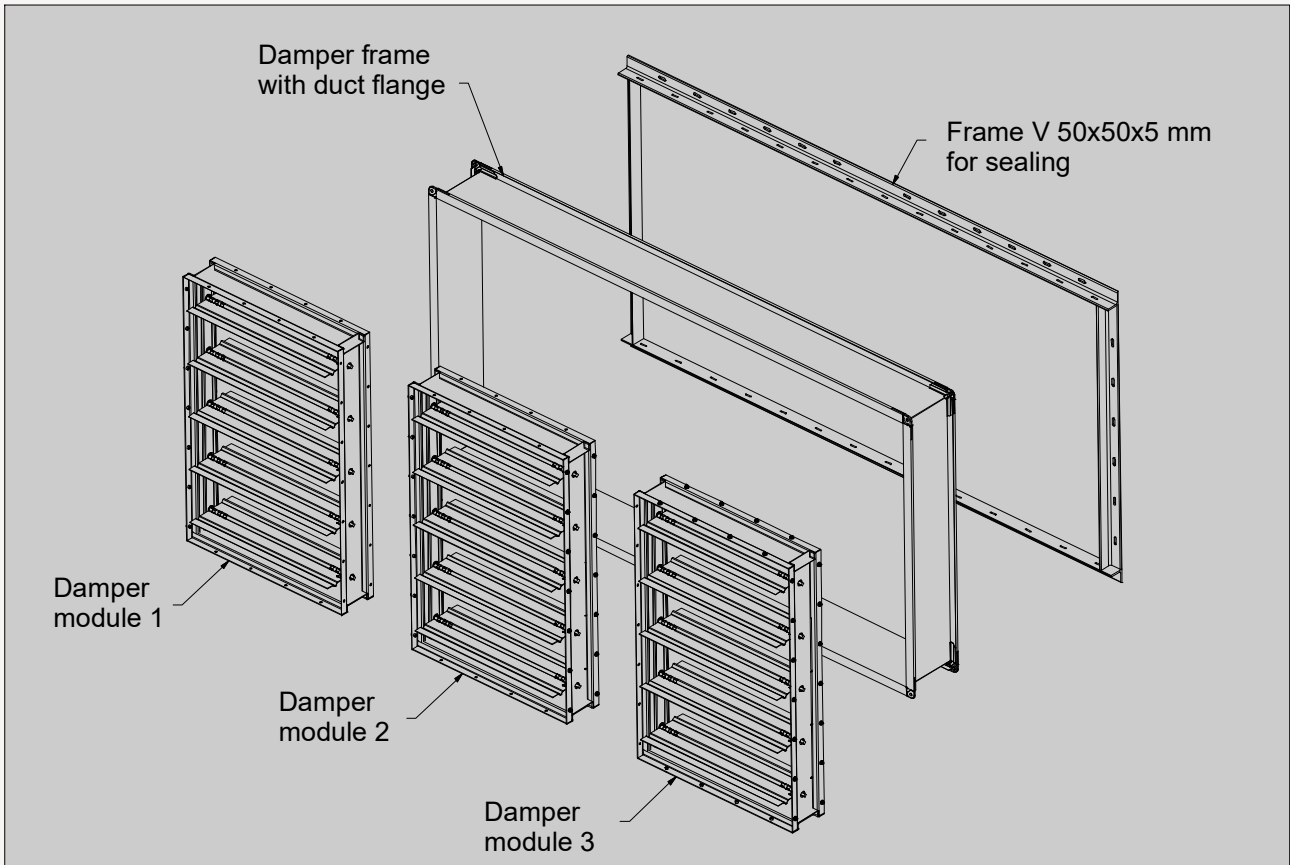
Note: The guides in this document shall be strictly followed. Read carefully test reports for double-checking information. Any requirement of altering to the described products will be unacceptable or the buyer will have to take full responsibility for those changes.

FIRE DAMPER (WITHOUT INSULATION)

E120

Fire resistance: 120 min

Standard construction: as per configuration of the manufacturer, conforming with tested sample to the regulation QCVN03:2021/BCA



Starduct fire damper E (without insulation) has passed the tests as required by the National Technical Regulation for fire resistant equipments (QCVN 03:2021/BCA), test report No. 213.21.KC.NCPCC, and has completed conditions to register verification for fire prevention and firefighting as requested by the National Regulation QCVN 06:2021/BXD for construction projects

Standard open/close mechanism:

Model: S-FD-M

5 YEAR WARRANTY

LISTED 84 DS TEMP. IND. & C REG. EQUIP. **UL US**

● **FSLF24(-S) NSA** ● **FSLF230(-S) NSA**
 Running time: 15 s Type: Normally open

Open/close by Belimo electric motor
activated by fire signal

Model: S-FD-FS

Signal cable connector

Blade handle
Quadrant
±7% steps

Fuse holder

Fuse

Activation temp. to close: 70 ±2 °C

Open/close by spring
activated by thermal fuse

FIRE DAMPER (WITHOUT INSULATION)

Fire resistance: 120 min

E120

Model : S-FD-FS

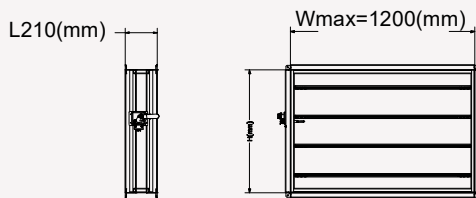


Test report No. 213.21.KC.NCPCC

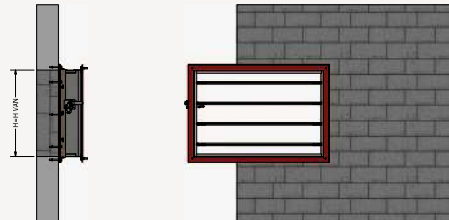
QCVN 03:2021/BCA

Minimum dimension: W100 x H100 (mm)

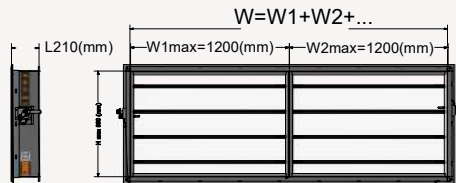
Single section damper: Wmax = 1200, Hmax = 800



Standard installation and sealing (*)



Multi-section damper: Automatic splitting into horizontal/vertical sections if W>1200, H>800

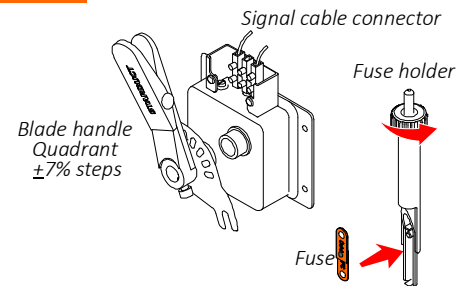


Materials:

Damper frame and blade :
Galvanized steel sheet, thickness 1.15mm
Flange : TDC 32mm
Frame for installing and sealing:
V 50 x 5mm
Glue for sealing: fire resist sealant
HILTI Hilti CP606

Control mechanism: thermal fuse

Model: S-FD-FS



Note : Order as per above configuration only

(*) : See more details for method described in the test report and implement equally

Download drawings: www.nasca.vn



Revit family



CAD drawing



PDF drawing

FIRE DAMPER (WITHOUT INSULATION)

Fire resistance: 120 min

E120

Model : S-FD-M

Equipped with Belimo activator, open/close running time 15s, auxiliary contact, return spring.
Made in USA (Fire and smoke actuator US series)

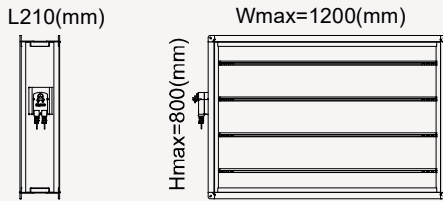


Test report No. 213.21.KC.NCPCC

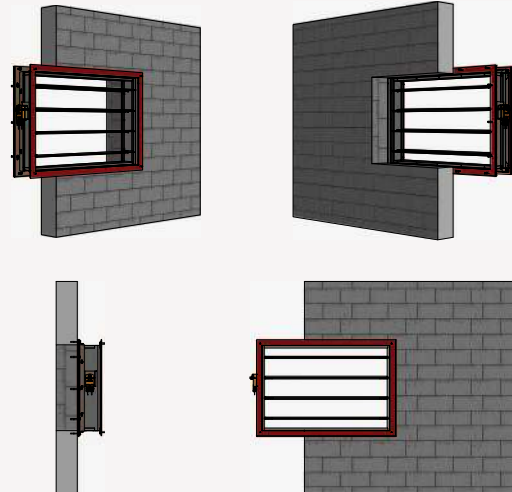
QCVN 03:2021/BCA

Minimum dimension: W100 x H100 (mm)

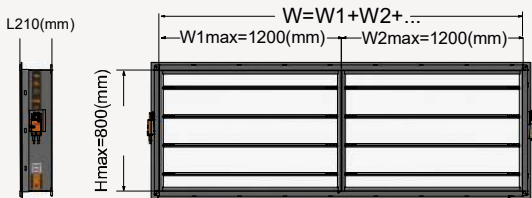
Single section damper. Wmax = 1200, Hmax = 800



Standard installation and sealing (*)



Multi-section damper. Automatic splitting into horizontal/vertical sections if W>1200, H>800



Materials:

Damper frame and blade : Galvanized steel sheet, thickness 1.15mm

Flange : TDC 32mm

Motor: **BELIMO**

Frame for installing and sealing:

V 50 x 5mm

Glue for sealing: fire resist glue

Hilti Cp606

Control mechanism: electric motor

Model: S-FD-M



● **FSLF24(-S) NSA** ● **FSLF230(-S) NSA**
Running time: 15 s Type: open - close

● Download drawings: www.nasca.vn

Note : Order as per above configuration only

(*) : See more details for method described in the test report and implement equally



Revit family



CAD drawing



PDF drawing

Installation methods for the "E" fire dampers

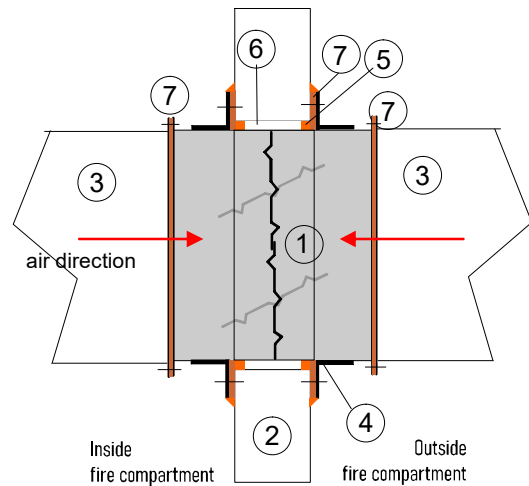
E120

INSTALLATION IN WALL : symmetric installing - L600 (mm)

Materials and method as standard

- 1 Damper
- 2 Fire resist rated wall
- 3 Duct
- 4 Installing and sealing frame V50, thickness 5mm
- 5 Fire resist glue: Hilti CP606
- 6 Mineral wool: 60kg/m³
- 7 Conn. flange with 5mm fire resist gasket (asbestos)

Note : Testing by request

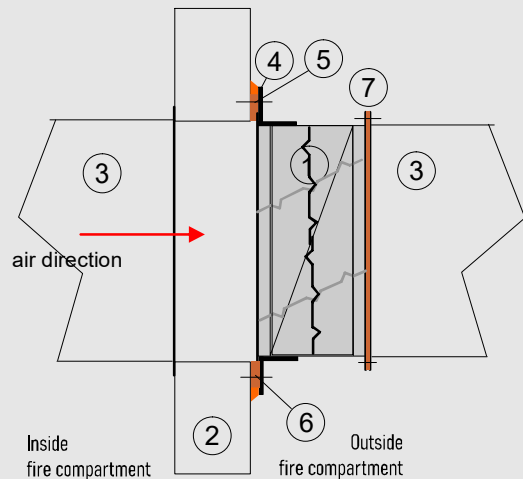


INSTALLATION ON WALL : non-symmetric installing - L210 (mm)

Materials and method as standard

- 1 Damper
- 2 Fire resist wall
- 3 Duct
- 4 Installing and sealing frame V50, thickness 5mm
- 5 Fire resist glue: Hilti CP606
- 6 5mm fire resist gasket (asbestos)
- 7 Conn. flange with 5mm fire resist gasket (asbestos)

Note: NSCA (Star Asia) has passed the test for this

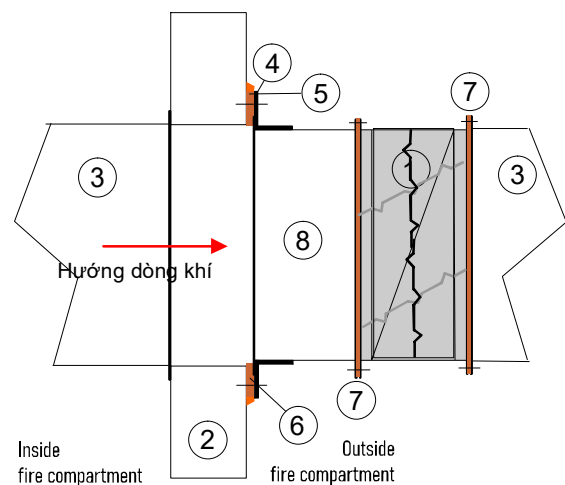


INSTALLATION OUTSIDE OF WALL : non-symmetric installing - L210 (mm)

Materials and method as standard

- 1 Damper
- 2 Fire resist wall
- 3 Duct
- 4 Installing and sealing frame V50, thickness 5mm
- 5 Fire resist glue: Hilti CP606
- 6 5mm fire resist gasket (asbestos)
- 7 Conn. flange with 5mm fire resist gasket (asbestos)
- 8 Connection duct

Note : Testing by request



INSULATED FIRE DAMPER
Fire resistance: 120 min

EI

Standard construction: as per configuration of the manufacturer, conforming with tested sample to the regulation QCVN03:2021/BCA



Starduct Insulated Fire damper (EI damper) has passed the tests as required by the National Technical Regulation for fire resistant equipments (QCVN 03:2021/BCA), test report No. 064.22.KC.NCPCC & 066.22.KC.NCPCC, and has completed conditions to register verification for fire prevention and firefighting as requested by the National Regulation QCVN 06:2021/BXD for construction projects

Standard open/close mechanism:
electric motor

Materials:

Model: SFMD



5
YEAR
WARRANTY





LISTED
94 DS
TEMP. IND. &
REG. EQUIP.

● **FSLF24(-S) NSA** ● **FSLF230(-S) NSA**

Running time: 15 s Type: open - close

Damper frame and blade : Galvanized steel sheet, thickness 1.15mm

Insulation: thickness 58mm

Motor:  **BELIMO**

Sealing material: heat-resist sealant
Hilti CP606 

Open/close by Belimo electric motor
activated by fire signal

Available fire resistance classes :

EI 30/45/60/90/120

Single-section EI Damper

Applied for damper size of \leq (W1200x H800)

Starduct single section insulated fire/smoke damper has only one blade, max. size W1200xH800xL600 (mm), passed the test of fire resistance and air tight in 120 minutes, under pressure up to 1500 Pa as requirement of the National Technical Regulation QCVN 06:2021/BXD. Damper house and blade are made of multi-layer insulation materials combining with metal frame. A layer of Hilti intumescent fire resist glue (made in Germany) is applied at critical areas, the glue will expand up to 5 times in volume at 2400C and upward to help the damper fully preventing fire and smoke in 4 hours as requirements of BS 476 part 20 and BS 476 part 12. Damper moving mechanism is equipped with heat resistant bearing from SKF, Belimo fast-reaction motor for US market, conforming with UL standard.

The product is made and finished at Starduct Mechanical Factory on modern production line to get uniform quality and international standards.

Product features:

- Damper frame: 1.15 mm galvanised steel sheet
Insulation layers: 10mm + 38mm + 10mm
Connection flange : TDC 32
- Insulation blade (3-layer) : 10mm+38mm+10mm
Blade stopper: Galvanised steel sheet + inox air tight gasket.
- Shaft : Round steel bar D20 made by CNC lathe
Rotating : #204 bearings
- Crank : 5mm steel plate
- Motor : Belimo, running time 15 sec. with return spring, auxiliary contact. Model : FSLF-NSA (Made in USA).
UL standard, 5-year guaranty
- Certification code of QCVN 06:2021/BXD :

Running time: 15 sec.



Motor and controlling device UL from Belimo, Switzerland, US series



Intumescent sealant expanding under high temp. Preventing fire and smoke in 4 hours

Size Range

Minimum size : W300 x H300 (mm)

- Standard step for calculation : 50mm
- Max and Min dimensions of single section damper:

$$300 \times 300 \leq W_n \times H_n \leq 1200 \times 800$$

- Overall dimension:

$$W+96 \times H+96$$

- Motor dimension : see p.14

$$a \text{ (mm)} - b \text{ (mm)}$$

- Protrusion over damper face of blade: X

Hn	600	650	700	750	800
X	100	75	50	25	0

- Download family và bản vẽ :



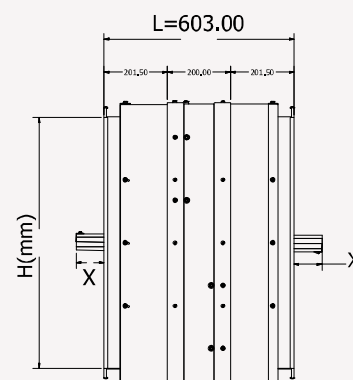
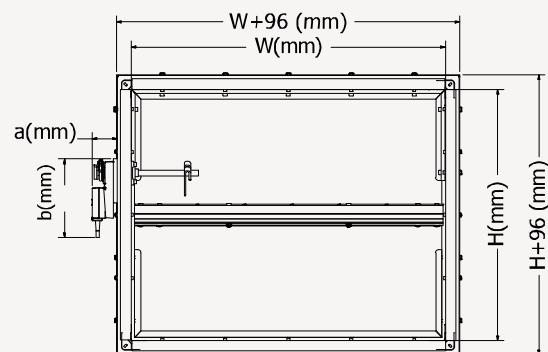
Revit family



CAD drawing



PDF drawing



Multi-section EI 120 Damper

Applied for damper size of > (W1200x H800)

Starduct multi-section insulated fire/smoke damper is made by combination some small dampers (known as module) by open assessment of BS-EN 15882-1. Each module in the multi-sention is equal a single section damper with full features as described in prior page.

Max. dimention of a module should be W1200xH800xL600 (mm). Running mechanism including #204 bearings from SKF, Belimo fast-reaction motor for US market, conforming with UL standard.

The product is made and finished at Starduct Mechanical Factory on modern production line to get uniform quality and international standards.

Product features:

- Damper frame: 1.15 mm galvanised steel sheet
Insulation layers: 10mm + 38mm + 10mm
Connection flange : TDC 32
- Insulation blade (3-layer) : 10mm+38mm+10mm
Blade stopper: Galvanised steel sheet + inox air tight gasket.
- Shaft : Round steel bar D20 made by CNC lathe
Rotating : #204 bearings
- Crank : 5mm steel plate
- Motor : Belimo, running time 15 sec. with return spring, auxiliary contact. Model : FSLF-NSA (Made in USA).
UL standard, 5-year guaranty

● **Certification code of QCVN 06:2021/BXD :**

Running time: 15 sec.



Motor and controlling device UL from Belimo, Switzerland, US series



Intumescent sealant expanding under high temp. Preventing fire and smoke in 4 hours

Size Range

- Standard step for calculation : 50mm if W > 1200, H > 800 (mm)
- Width x Height (W x H) :

$$W = (W-90)/n.$$

$$H = (H-90)/n.$$

● Overall dimension: **W+96 x H+96**

● Motor size : see p14

● Protrusion over damper face of blade: X

Hn	600	650	700	750	800
X	100	75	50	25	0

● **Download family và bản vẽ**



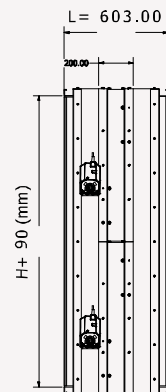
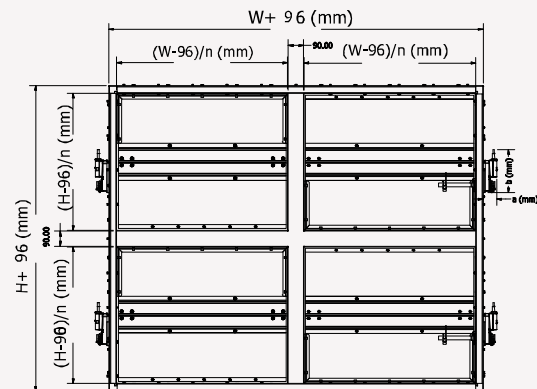
Revit family



CAD drawing



PDF drawing



Principle for breaking down multi-section El Damper

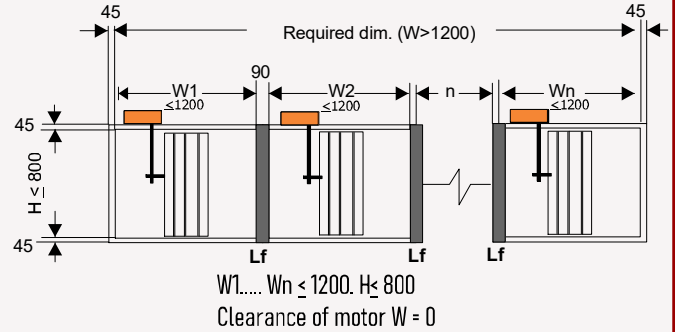
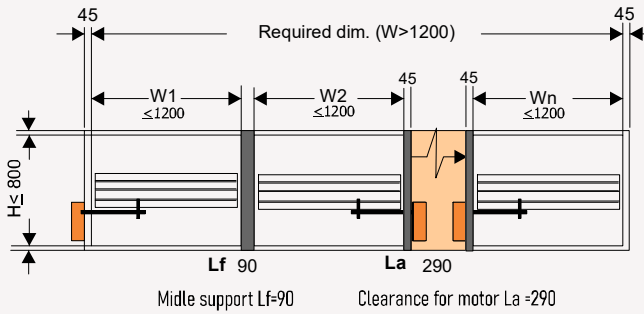
Applied for damper size of $> (W1200 \times H800)$

Starduct multi-section insulated fire/smoke damper is made by combination some small dampers (known as module) by open assessment of BS-EN 15882-1 and could be applied for big size as market requirements.

Herein are alternatives for combination upto base sizes from customer. Star Asia Jsc. will automatically apply this splitting principle to get an appropriate arrangement equal to tested samples.

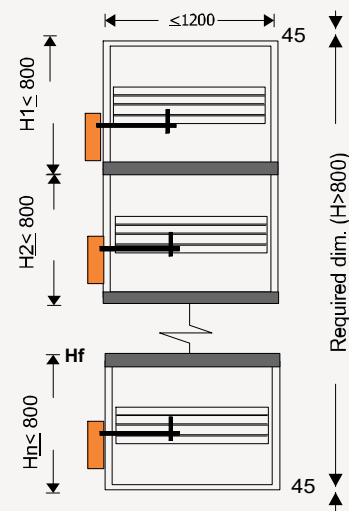
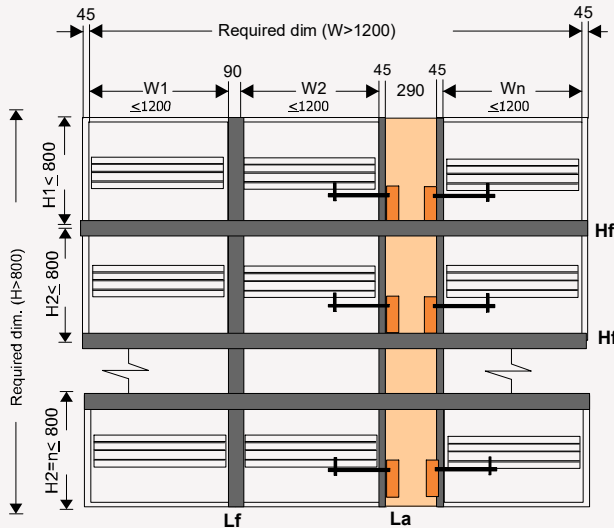
Horizontal breakdown with clearance for motor (horizon blade)

Horizontal breakdown without clearance for motor (vertical blade)

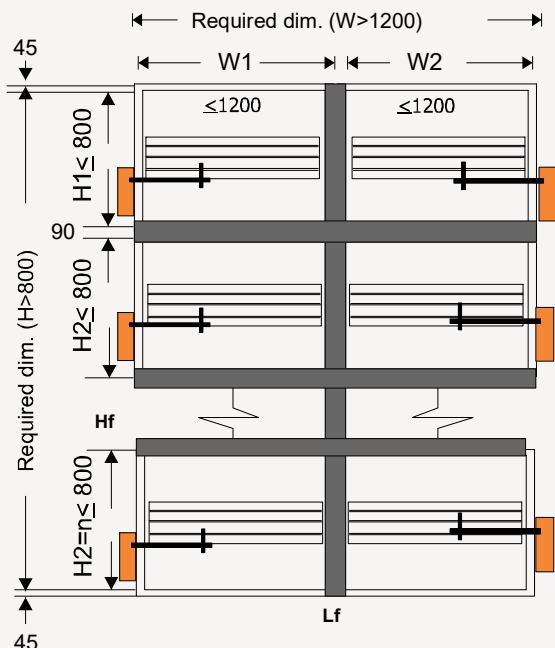


Horizontal breakdown with clearance for motor

Vertical breakdown without clearance for motor



Vertical and horizontal breakdown without clearance for motor



● Download drawings: www.nasca.vn



Revit family



CAD drawing



PDF drawing

Installing locations and methods - insulated fire damper

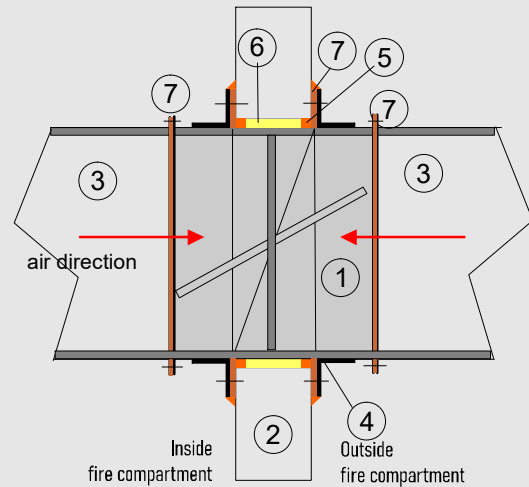
EI 120

INSTALLATION IN WALL : symmetric installing - L600 (mm)

Materials and method as standard

- 1 El Damper
- 2 Fire resist rated wall
- 3 Insulated fire-resist duct (EI)
- 4 Sealing plate for prevent fire spread - 10mm
- 5 Fire resist glue: Hilti Cp606
- 6 Mineral wool: 60kg/m3
- 7 Conn. flange with 5mm fire resist gasket (asbestos)

Note : Star Asia has passed this test

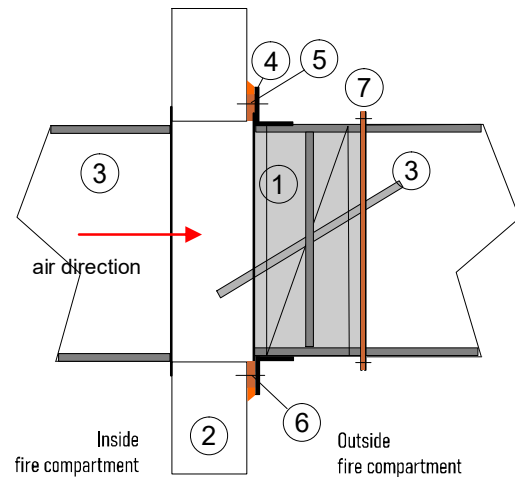


INSTALLATION ON WALL : non-symmetric installing - L210 (mm)

Materials and method as standard

- 1 El Damper
- 2 Fire resist rated wall
- 3 Insulated fire-resist duct (EI)
- 4 Sealing plate for prevent fire spread - 10mm
- 5 Fire resist glue: Hilti Cp606
- 6 5mm fire resist gasket (asbestos)
- 7 Conn. flange with 5mm fire resist gasket (asbestos)

Note : Testing by request

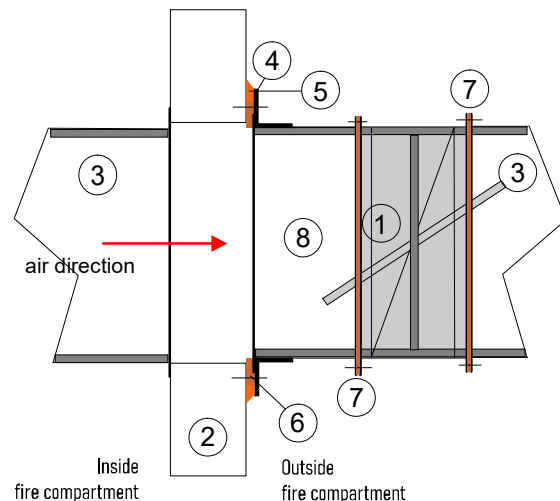


INSTALLATION OUTSIDE OF WALL : non-symmetric installing - L210 (mm)

Materials and method as standard

- 1 El Damper
- 2 Fire resist rated wall
- 3 Insulated fire-resist duct (EI)
- 4 Sealing plate for prevent fire spread - 10mm
- 5 Fire resist glue: Hilti Cp606
- 6 5mm fire resist gasket (asbestos)
- 7 Conn. flange with 5mm fire resist gasket (asbestos)
- 8 Connection duct

Note : Testing by request



Round insulated fire damper (EI)

EI 90

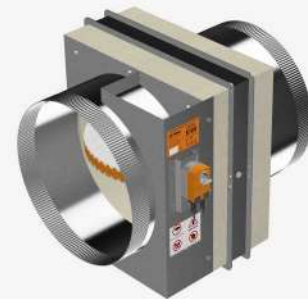
Starduct round insulated fire damper EI is a complicated and expensive damper.

Beside conforming with National Technical Regulation for fire prevention and firefighting equipment, the round damper should be appropriate for easy installation and connectable to round ducts

Star Asia has researched, produced and tested successfully round insulated fire damper.

The damper is equipped with electric motor or thermal fuse, open/close by spring.

Running time: 15 sec.



Product features:

- Damper frame: 1.15 mm galvanised steel sheet
Insulation layers: 10mm + 38mm + 10mm
Connection flange : TDC 32
- Insulation blade (3-layer) : 10mm+38mm+10mm
Blade stopper: Galvanised steel sheet + inox air tight gasket.
- Shaft : Round steel bar D20 made by CNC lathe
Rotating : #204 bearings
Crank : 5mm steel plate
- Motor : Belimo, running time 15 sec. with return spring, auxiliary contact. Model : FSLF-NSA (Made in USA).
UL standard, 5-year guaranty
- **QCVN 06:2021/BXD TEST CODE :**

Size range **QCVN 03: 2021/BCA** **Minimum size : D 200 (mm)**

- Size step : 50mm

● Dimension

Min. size : D200
Max. size : D600

● Overall dim. :

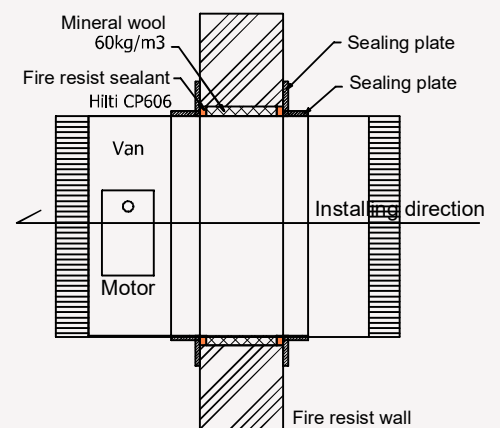
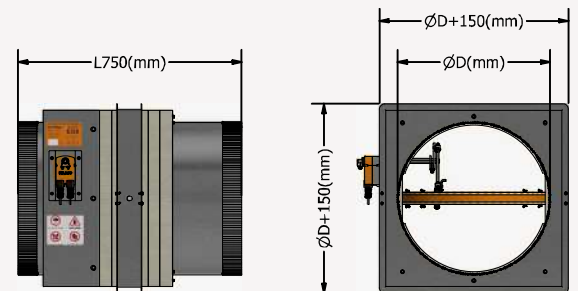
D+90 x D+90

● Motor size :

a (mm) - b (mm)

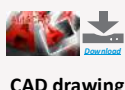
● Protrusion over damper face : X

Dn	<400	<450	<500	550	600
X	0	0	0	0	5



Intalling and sealing method

● Download drawings: www.nasca.vn



Revit family

CAD drawing

PDF drawing

Controlling motor UL (US Series)

Fire and Smoke Spring Return Actuator FSLF24(-S) US

- AC 24V 50/60Hz, DC 24V* : FSLF24(-S) US or NSA
- AC 120V 50/60Hz : FSLF120(-S) US or NSA
- AC 230V 50/60Hz : FSLF230(-S) US or NSA

- Meet requirement of UL555(S) when tested as an assembly with suitable dampers
- Torque: 3.5Nm @ 177°C(350°F) for 30 minutes
- Running time: 15s
- Control: Open/Close



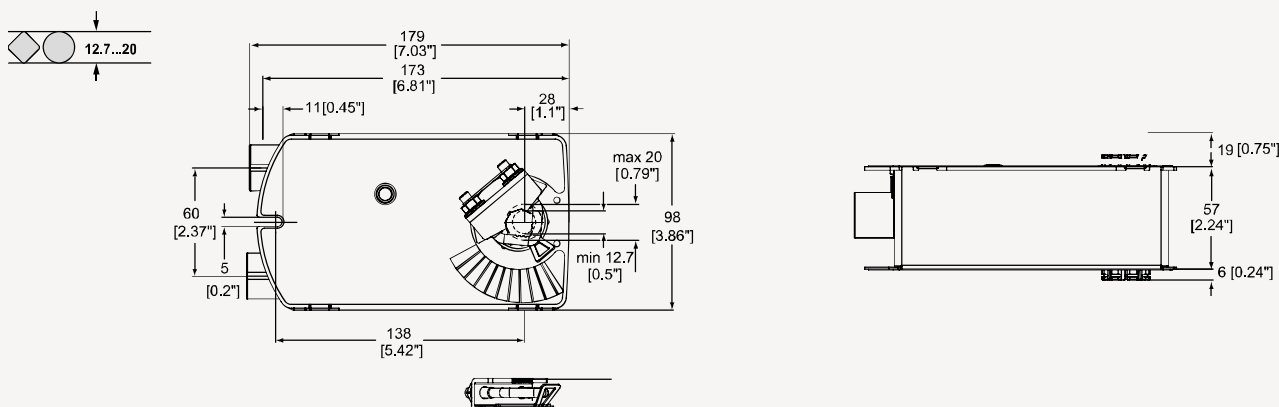
Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V*	
	Nominal voltage range	AC 19.2...26.4V, DC 24...36V*	
	Power consumption	15VA @ running / 3.5VA @ holding	
	For transformer sizing	25VA	
	Fusing	1A slow blow	
	Connection	-Motor -Auxiliary Switch	1m, 18ga, 2 colour coded leads 1m, 18ga, 4 appliance leads 1/2" conduit connector
Functional data	Torque	3.5Nm (0°C to 177°C) @ nominal voltage	
	Direction of rotation	Selectable by CW/CCW installation	
	Angle of rotation	Max. 95°	
	Auxiliary switch	-FSLF24-S	2 SPST, 1mA @ DC 5V, 3(0.5)A, 120/250V □ fixed at 10°◁, 85°◁
	Running time	-Motor -Spring Return	<15s at rated voltage and torque <15s
	Position indicator		Mechanical
Safety	Protection class	Class 2 supply	
	Degree of protection	IP30 / NEMA type 1	
	Mode of operation	Type 1.AA.B	
	Ambient temperature	-Normal Duty -Safety Duty	0...+50°C 3 Open/Close cycles after 1/2hr @177°C
	Storage temperature		-40...+80°C
	Humidity test		95% RH, non-condensing
Dimensions / weight	Maintenance		Maintenance-free
	Dimensions (L x W x H)		179 x 98 x 82mm
	Shaft diameter		12.7...20mm**
	Weight	-FSLF24 -FSLF24-S	Approx. 1.6kg Approx. 1.7kg
	Safety note		AC 24V: Connect via safety isolating transformer, class 2 supply

* Filtered and regulated DC 24V power supplies is needed.

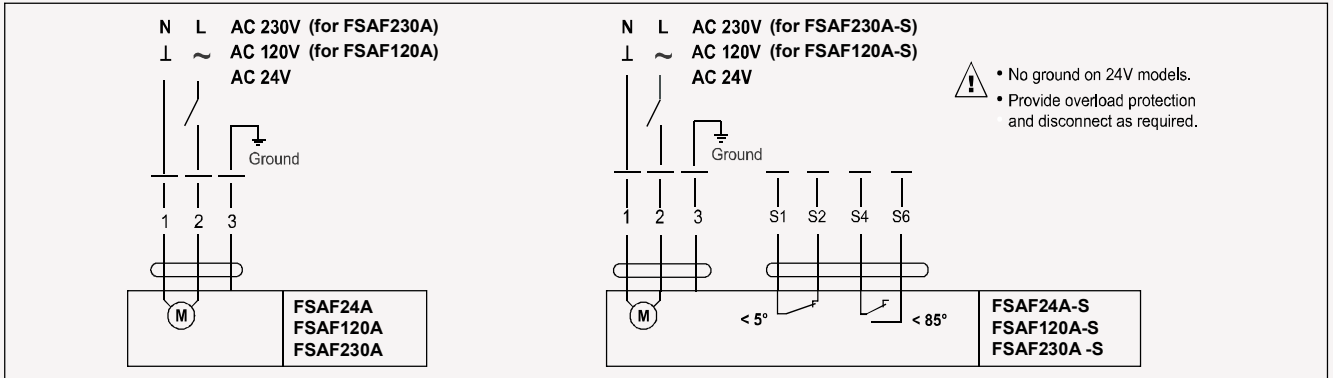
** For damper spindles ø16...20mm, use K6-1

Dimensions [mm/inches]



Wiring diagram - Model : FSAF
Notes :

- Parallel connection of several actuator is possible
Power consumption must be observed


Wiring diagram - Model: FSLF24/230 (-S) US/NSA
Accessories

BAE165 US	165° F electric thermal sensor, SPST, normally closed.
S2A-F US	Auxiliary switch, 2x SPDT, 3A (0.5A inductive) @250 VAC max.

Typical Specification

All smoke and combination fire and smoke dampers shall be provided with Belimo FSTF, FSLF, FSNF, or FSAF actuators. All substitutions must be approved before submission of bid. Damper and actuator shall have UL 555S Listing for 250°F (350°F). Actuator shall have been tested to UL 2043 per requirements of IMC 602.2 and NEC 300.22 (c). Where position indication is required -S models with auxiliary switches or damper blade switches will be provided per code requirements.

Wiring Diagrams
APPLICATION NOTES

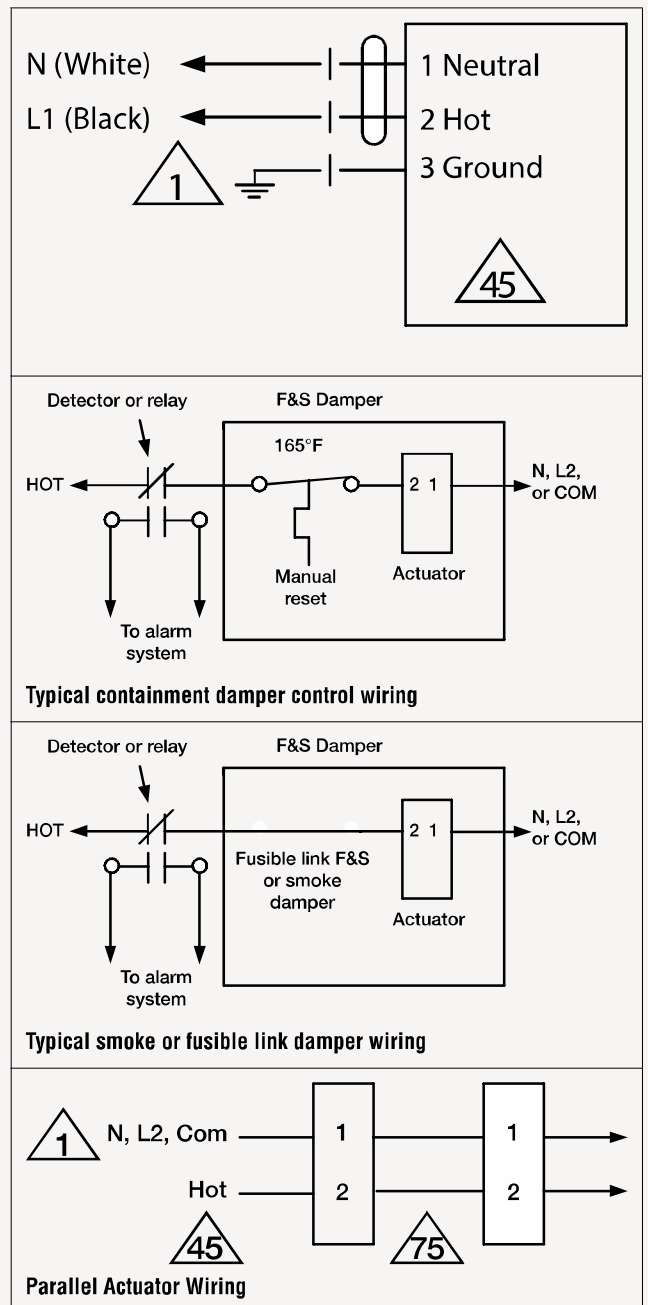
- Provide overload protection and disconnect as required.
- Actuators may be powered in parallel. Power consumption must be observed.
- Ground present on some models.

Typical Specification

All Staduct EI dampers shall be provided with Belimo FSTF, FSLF, FSNF, FSAF actuators. All substitutions must be approved by NSCA (Star Asia Jsc.) before ordering.

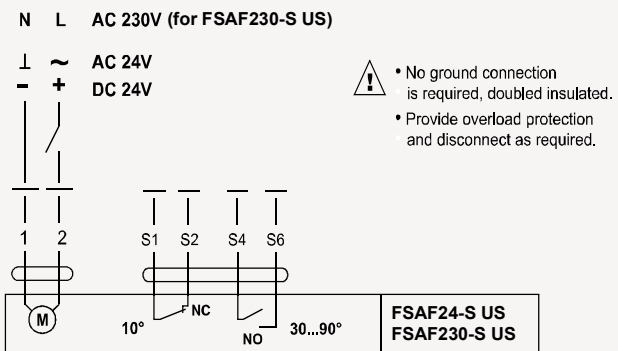
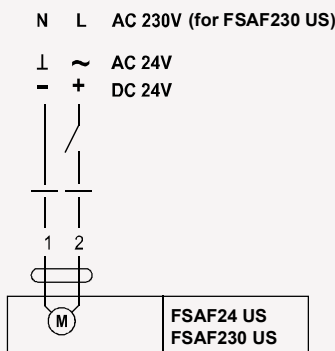
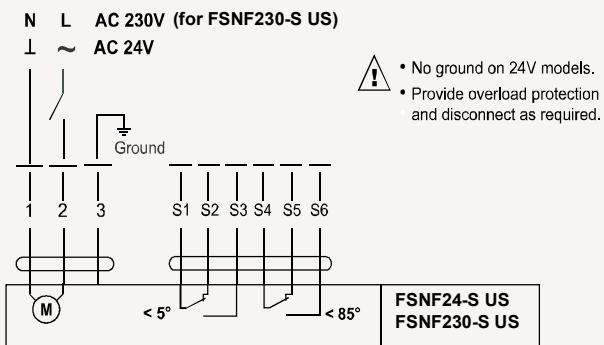
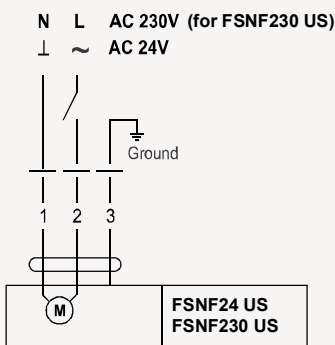
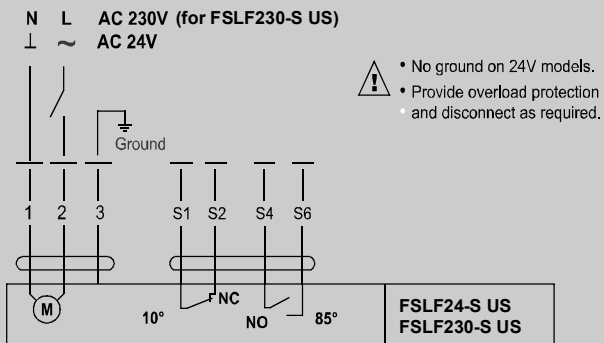
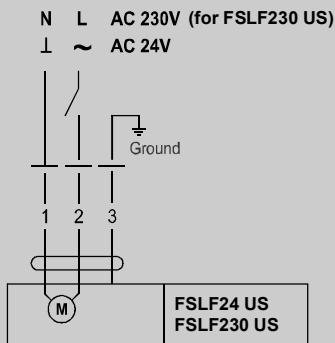
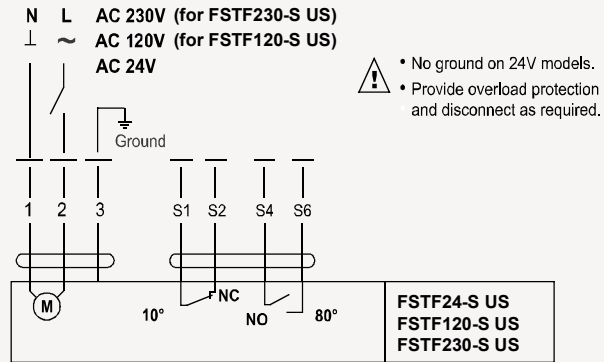
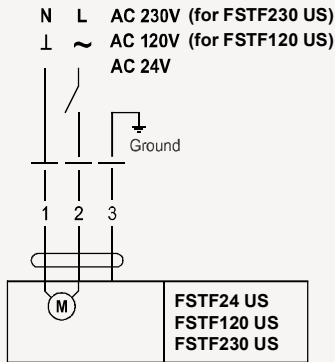
All alternative motors must be UL certificated ones and tested to UL 2043 as requirements of IMC 602.2 v à NEC 300.22®

Model -S should be supplied if position indication of blade is required



Notes :

- Parallel connection of several actuator is possible
- Power consumption must be observed



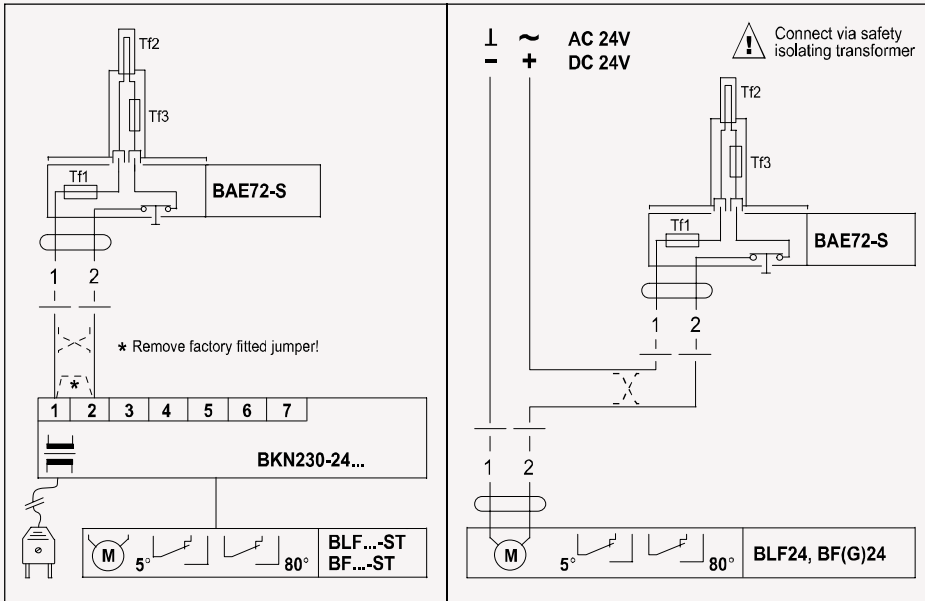
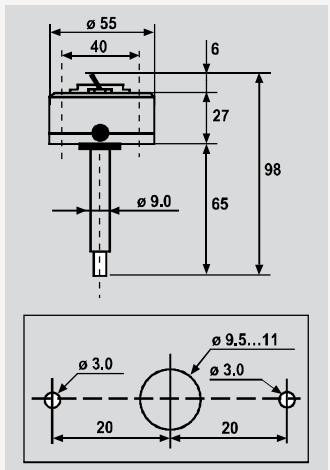
Thermoelectric Tripping Device BAE72(-S)
Not included in price

- Thermolectric tripping device
- BAE72-S, without LED (order separately)
- BAE72B-S, with LED (not available for order separately, only integrated with actuator)



Electrical data : Rated voltage AC/DC 24V

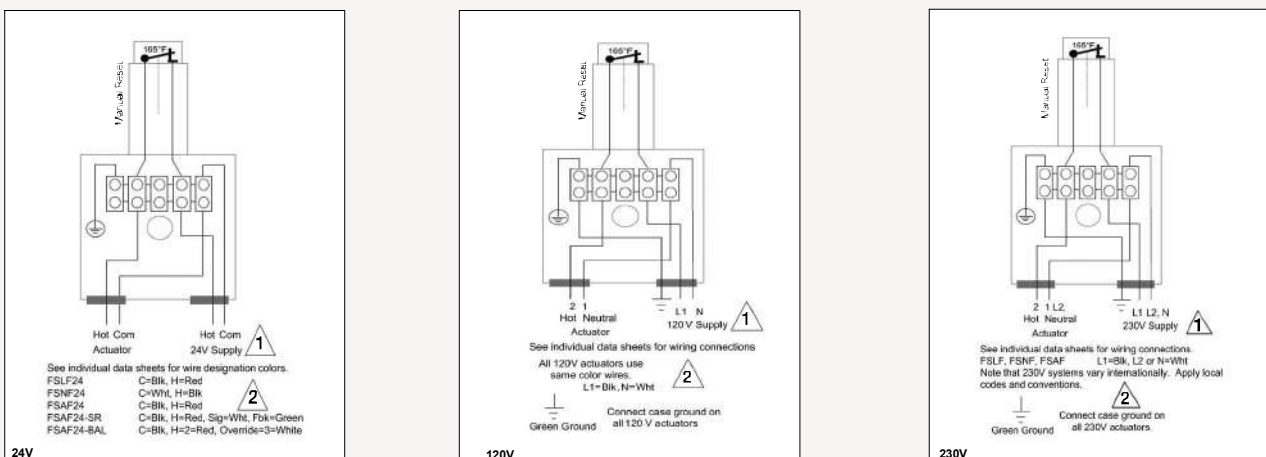
 Operating temperature thermal trips Tf1: duct outside temp. 72°C
 Tf2, Tf3: activated when inside temp. at 72°C (replaceable)

Wiring diagram

Dimensions [mm]


- Spare parts:
- T thermal trip Tf2/Tf3 **ZBAE72**
 - T thermal trip Tf2/95°C **ZBAE95**

Thermoelectric resettable tripping device BAE165 US
Not included in price

Rate voltage	AC/DC 24...240V
Rated current	1A
Through resistance	<1Ω
Connection	Terminal strip
Operating temp. thermal trips	Tf: Nhiệt độ trong thân van tới 74°C
Agency listing	cULus listed according to: UL 873 and CSA C22.2 NO. 24-93


Wiring diagram


1 Provide overload protection and disconnect as required.

2 Actuators may be connected in parallel. Power consumption below 1 A must be observed.

Weather Shield

not included in price

ZS-100 WEATHER SHIELD



Application:

the ZS-100 weather shield provides moderate protection to actuators which are mounted outdoors. This product is not designed as a water tight enclosure. The weather shield will work with all damper actuators.

Installation:

The ZS-100 weather shield is supplied disassembled. Supplying it in this manner makes it applicable to a wider range of field applications.

It may be assembled with 2 sides, 2 ends and the cover to completely conceal the actuator. A hole punch can be used to provide a hole to mount a wire conduit. A foam gasket is also provided to achieve better seal between the cover and sides or from the base to the mounting surface.

If desired, a side or end can be deleted from the assembly to provide easy access from the bottom of the enclosure

Accessories : ZS-101 base mounting plate

WEATHER SHIELD ZS-260

Applied for FSAF, FSNF, FSLF Series Actuators



ZS-150 WEATHER SHIELD



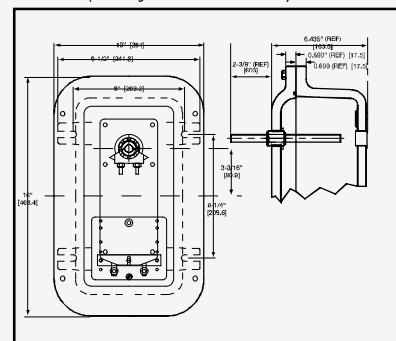
Application:

The ZS-150 weather shield provides moderate protection to actuators which are mounted outdoors. This product is not designed as a water tight enclosure. The one piece, smoke tinted, polycarbonate housing allows easy mounting over all damper actuator. The tinted clear housing allows easy viewing of the actuator in operation.

Installation:

The ZS-100 weather shield is supplied as one piece enclosure. Two 7/8 inch wiring holes are pre-drilled to allow easy connection of conduit to the housing. If connections must be made to a different spot on the enclosure or only one hole is required, two plastic plug are provided to seal the holes. A foam gasket is also provided to achieve a better seal between the base of the enclosure to the mounting surface.

Dimensions (All ratings in brackets are metric.)



Technical Data Application

Material	Housing: cast, copper-free, aluminum Cover boldt : stainless steel Operating shaft : stainless steel
Conduit holes	D20 - 2 holes (see note 1)
Operating shaft dia.	12.7mm
Operating shaft location	Front or rear side of housing (field selected)
Housing case	3/8"-16 x 1.5" SS
Approved application	UL and CSA; class I, Zone 1&2 Group B, C, D (Nema 7), class II, Zone 1&2. Nhóm E, F và G (Nema 9), class III, Hazardous (classified) Location, outdoor application NEMA 4
Weight :	14.0 kg (without actuator)

Note 1: Fittings that meet the requirements of the hazardous location must be used. All application must comply with applicable local and/or national electric code.
Note: since conditions of use of this product are outside the control of Belimo, the purchaser should determine suitability of the product for their intended use, and assumes all risk and liability in connection therewith.

The ZS-260 enclosure is designed so that the required actuator may be easily field mounted into the enclosure.

The actuator is fastened on to the internal portion of the operating shaft and secured at the end with an anti-rotation strap. A crank-arm, such as the KH8, is mounted to the external portion of the operating shaft for connection to connect to the damper linkage.

ZG-109 right angle and ZG-110 standoff mounting brakets may be used.

The ZS-260 is designed so that the operating shaft can be mounted on either the front or rear side of the housing.

Accessories

KH8	Universal crankarm	ZG-109	Right angle mounting bracket
KG8	Universal ball joint	ZG-110	Stand-off mounting bracket
KG10	Universal ball joint		

Storage and handling

As fire damper is a safety element, it should be stored and handled with care

Avoid:

- Any kind of impact or damage
- Contact with water
- Deformation of the casing

Recommendations for Star Asia :

- To unload in a dry area
- Not to flip or roll the product to move it
- Not use the damper as a scaffold, working table etc.
- Do not store smaller damper inside large one
- Do not stand or seat on the product



Dry unload and storage



Sharp edge



Do not walk, step on



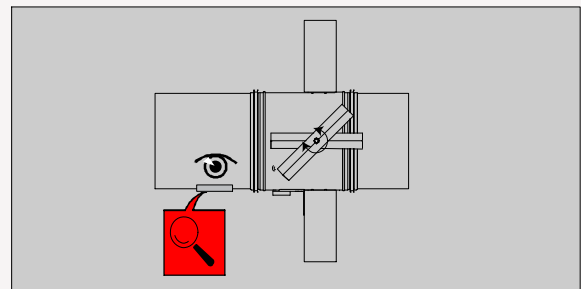
Do not drop, flip, roll

Important notes when installation

General :

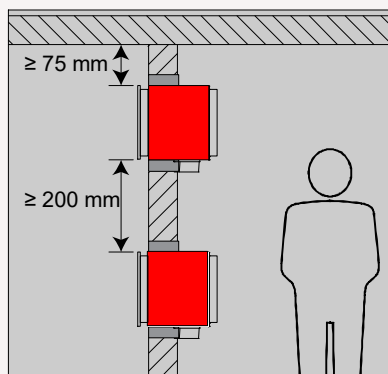
- The installation must comply with the installation manual delivered with the product and the classification report.
- Axis orientation: see the declaration of performance
- Avoid obstruction of adjoining ducts.
- Product installation: always doing with closed damper blade
- Verify if the blade can move freely
- Please observe safety distances with respect to other construction elements. The operating mechanism must also remain accessible: allow for a clearance of 200 mm around the housing.
- The air tightness class will be maintained if the damper is installed according to the installation manual.
- The fire dampers are always tested in standardised constructions according to QCVN 60:2021/BXD. The achieved results are valid for similar supporting constructions with a fire resistance, thickness and density equal or superior to the supporting construction used during the test.
- The damper must remain accessible for inspection and maintenance.
- Schedule at least two running checks each year.

EACH 6 MONTHS	
2021	<input type="checkbox"/> <input type="checkbox"/>
2022	<input type="checkbox"/> <input type="checkbox"/>
2023	<input type="checkbox"/> <input type="checkbox"/>
2024	<input type="checkbox"/> <input type="checkbox"/>
2025	<input type="checkbox"/> <input type="checkbox"/>



Installation at a minimal distance from another damper or from an adjacent supporting construction

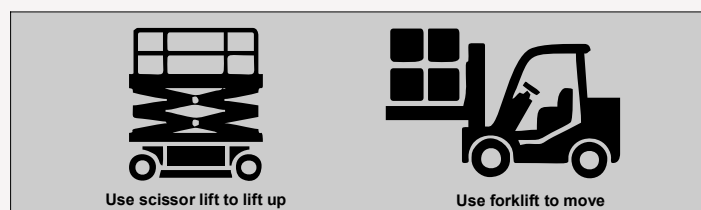
1



1. Principle according to the test standard:

Minimum distance of ≥ 75 mm from the ceiling

Minimum distance ≥ 200 mm to an adjacent damper





HILTI FIRESTOP AND FIRE PROTECTION SYSTEM

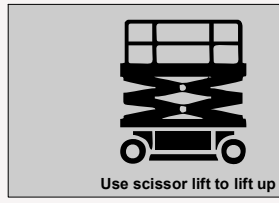
Installation steps

Damper size (W x H) should be connect to the same size duct (W x H = inner dimension)

INSTALLATION



DO NOT OPEN the damper while moving and installing



Step 1 - Checking opening dimensions
Be sure the dim. opening = (W+150) x (H+150)

- Check dimensions and balance, clean the opening

Step 2: Installing and positioning the damper

- Insert the damper in the opening, balance, level the damper by supporting wedges so that all the gaps between damper sides and hole sides are equal. Use additional support (if necessary)

Step 3: Fill the gap with mineral wool 60kg/m3

- Press the wool by hand or tools into the gap. Reserve a 2 cm deep groove along damper perimeter

Step 4 : Caulk the 2cm groove with heat resist sealant Hilti CP606.

Step 5: Install the fire resist plate 10mm over wall face to prevent fire going out.

Step 6 : Install the fire resist plate 10mm over damper frame to prevent fire going out. Caulk around the plate with Hilti CP606

- Be sure the gap between damper sides and opening is caulked tightly and thoroughly
- Use caulking gun to make sealant get filled tightly over the wool. Flat and clean.
- Do not use sharp tools.
- Do not use any other caulking, sealing materials than recommended ones.
- Be sure there are not foreign things left in the damper after installation.
- The damper must be mounted independtly in the wall without any additional supports
- Check around to delete any risk to the damper and tag warning if neccessary
- Check for safety running before connecting the damper to duct.



REQUIREMENTS FOR INSTALLING AND SEALING MATERIALS

CONSTRUCTION OF STARDUCT EI INSULATED FIRE DAMPER AND INSTALLATION AND SEALING METHOD

Test Reports No. D64.22.KC.NCPCC & No. D66.22.KC.NCPCC conducted by IBST – CONSTRUCTION MINISTRY conforming to National Technical Regulation QCVN 06:2021/BXD

LEGEND

- Fire resist board
10mm, density 950kg/m³
- Heat-resist insulation board
38mm, density 380kg/m³
- Support frames
2-4mm steel sheet
- Caulking/Sealing material
heat-resist sealant Hilti CP606
- Fire stop intumescent sealant
Hilti FS One Max
- Gap filler: mineral wool
thickness 30mm,
density 65kg/m³
- Furnace wall: 200mm
clay brick, fire-resist

DAMPER DIMENSIONS AND FLANGE TYPES Single-section damper size: $200 \times 200 < W \times H < 1200 \times 800$ (mm)

W < 500 - 10F

500 < W < 1000 - V30 flange

Multi-section damper - V40 flange

AVAILABLE EI CLASSES: EI 45, EI 60, EI 90, EI 120

Designed by	Checked by	Approved by	Date	Date
				10/6/2021
CÔNG TY NGÔI SAO CHÂU Á NHÀ MÁY C & KHÍ STARDUCT				
				Edition
				Sheet
				1 / 1



Ordering Code

S-MFSD- WxH/ØD - EI 60/90/120 - 24VAC/DC/120AC/230AC

Controlling motor
see p.

Fire resist - insulation classes
EI 45/60/90/120

Ordered size
see pages 09; 10; 13

Starduct damper code

PRINCIPAL FOR MULTI-SECTION DAMPER

See pages 9-10-11 or

use soft copy of doc. and download here:



INSTALLATION

As in instruction of design document or

use soft copy of doc. and download here:



GENERAL REQUIREMENTS

As in instruction of design document or

use soft copy of doc. and download here:



EXAMPLE :

S-MFSD(500x300)-230V/AC - EI 120 - G30

S-MFSD(500x300) :

Damper size: W500 x H300 x L600

Motor type : 230 V/AC

Fire resistance, insulation class : EI 120

Connection flange : TDF G30

Pg40 : Steel flange V40

Pg30 : Flange TDF 32

Pg20 : Flange TDF 25

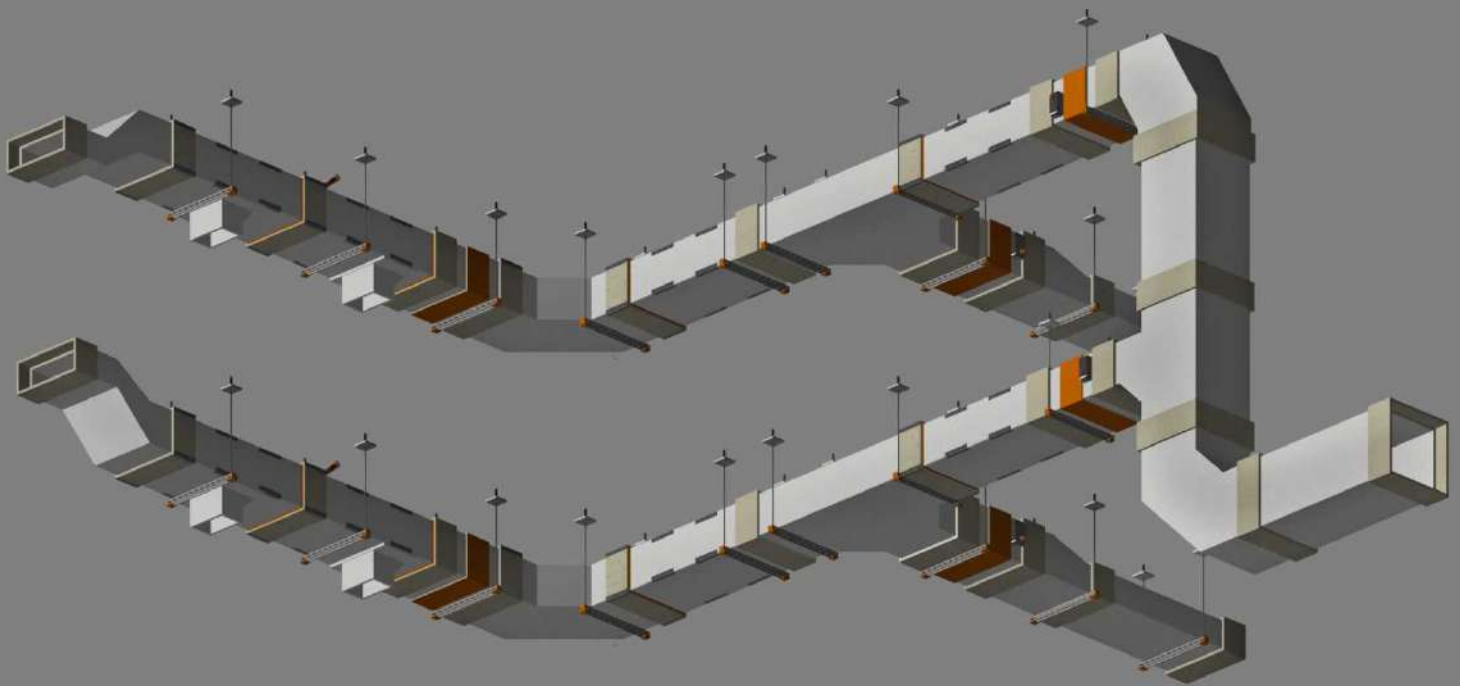
PM : S clip

PP : no flange

PRJ : rubber round flange

PPT : Grille/ Louver

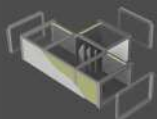
SMOKE EXHAUST DUCT



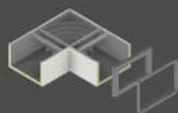
National Code of Firefighting Equipment :

QCVN 06:2021/BXD

Class EI : 30-45-60-90



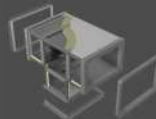
oziron



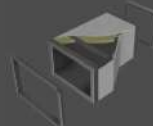
Hozirontal Elbow



Vertical Elbow



Vertical Tee



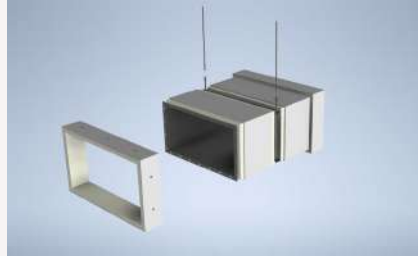
High Quality Materials



Thermal insulation & mineral wool thickness by EI class

Duct "A" & "B" are insulated by insulation board and fire resist board for 2 way protection (I-O-I)

Table 1


EI-30

Thickness of insulation board 38mm+10
Insulation board density 250kg/m³

EI-45

Thickness of insulation board 38mm+10
Insulation board density 280kg/m³

EI-60

Thickness of insulation board 38mm+10
Insulation board density 300kg/m³

EI-90

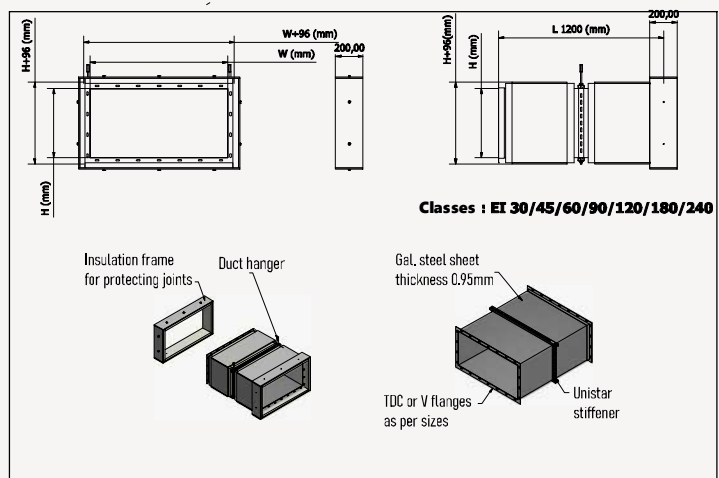
Thickness of insulation board 38mm+10
Insulation board density 320kg/m³

EI-120

Thickness of insulation board 48mm+10
Insulation board density 320kg/m³

EI-180

Thickness of insulation board 58mm+10
Insulation board density 320kg/m³


Outstanding Features :

The EI grades have a uniform structure in terms of outer dimensions

Convenient in connecting the system between other EI levels together and connected to the Starduct fire dampers

Thickness of galvanized steel sheet and support frame by duct size

Table 2

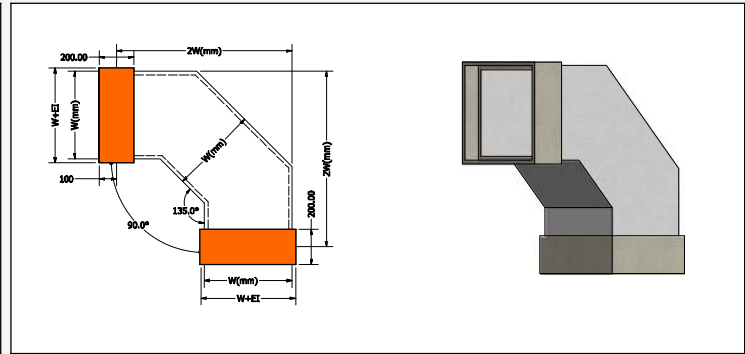
Width (mm)	Duct Gal. Steel Thickness (mm)	Supports Thickness (mm)	Others requirements
$W \leq 800$	0,95	U4 121- 1.5	./.
$800 < W \leq 1000$	0,95	U4 121- 1.5	./.
$1000 < W \leq 1500$	0,95	U4 121- 1.5	1 hàng tiren chống
$1500 < W \leq 2500$	0,95	U4 141- 2.0	2 hàng tiren chống
$2500 < W \leq 3000$	0,95	U4 141- 2.0	3 hàng tiren chống
$3000 < W \leq 6000$	0,95	U4 141- 2.0	4 hàng tiren chống

Vertical equal elbow 90

Includes :

- 1 elbow as requested size
- 2 equal flanges - EI

The dimensions are defaulted as Starduct standard

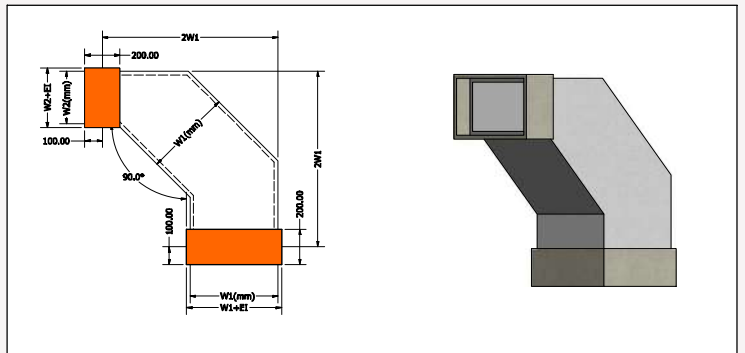


Vertical reduce elbow 90

Includes :

- 1 elbow as requested size
- 2 equal flanges - EI

The dimensions are defaulted as Starduct standard

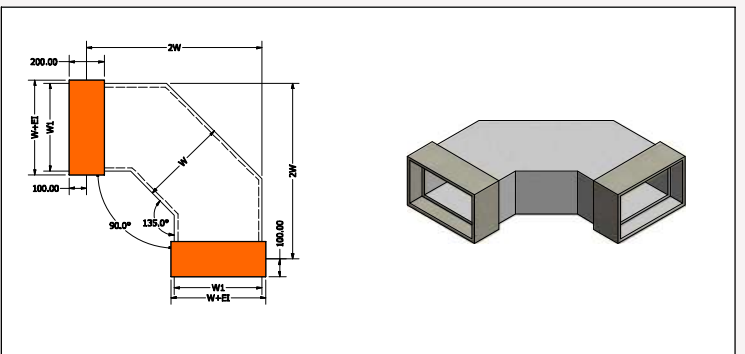


Horizontal equal elbow 90

Includes :

- 1 elbow as requested size
- 2 equal flanges - EI

The dimensions are defaulted as Starduct standard

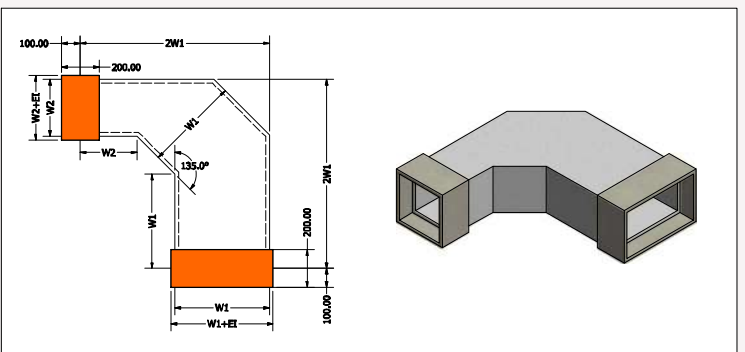


Horizontal reduce 90

Includes :

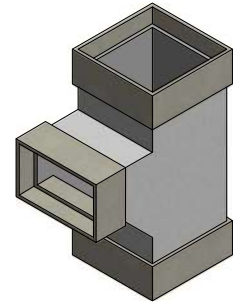
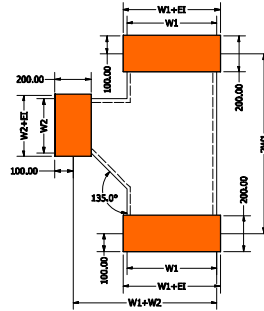
- 1 reduce elbow as requested size
- 2 unequal flanges - EI

The dimensions are defaulted as Starduct standard



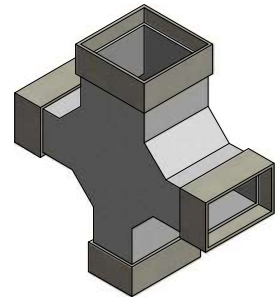
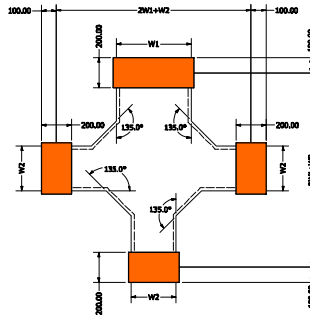
Vertical Tee

- Includes :
- 1 Tee as requested size
 - 3 flanges - EI
- The dimensions are defaulted as Starduct standard



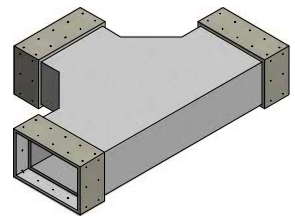
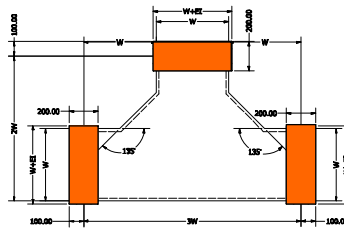
Cross

- Includes :
- 1 Cross fitting as requested sizes
 - 4 flanges - EI
- The dimensions are defaulted as Starduct standard



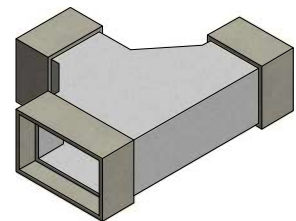
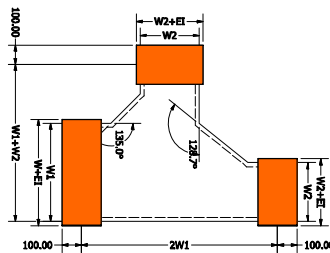
Horizontal equal Tee

- Includes :
- 1 Tee as requested sizes
 - 3 flanges - EI
- The dimensions are defaulted as Starduct standard


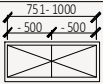
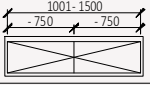
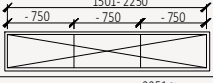
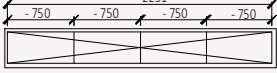


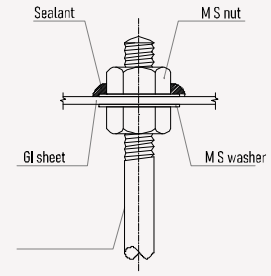
Horizontal unequal Tee

- Includes :
- 1 Tee as requested sizes
 - 3 flanges - EI
- The dimensions are defaulted as Starduct standard

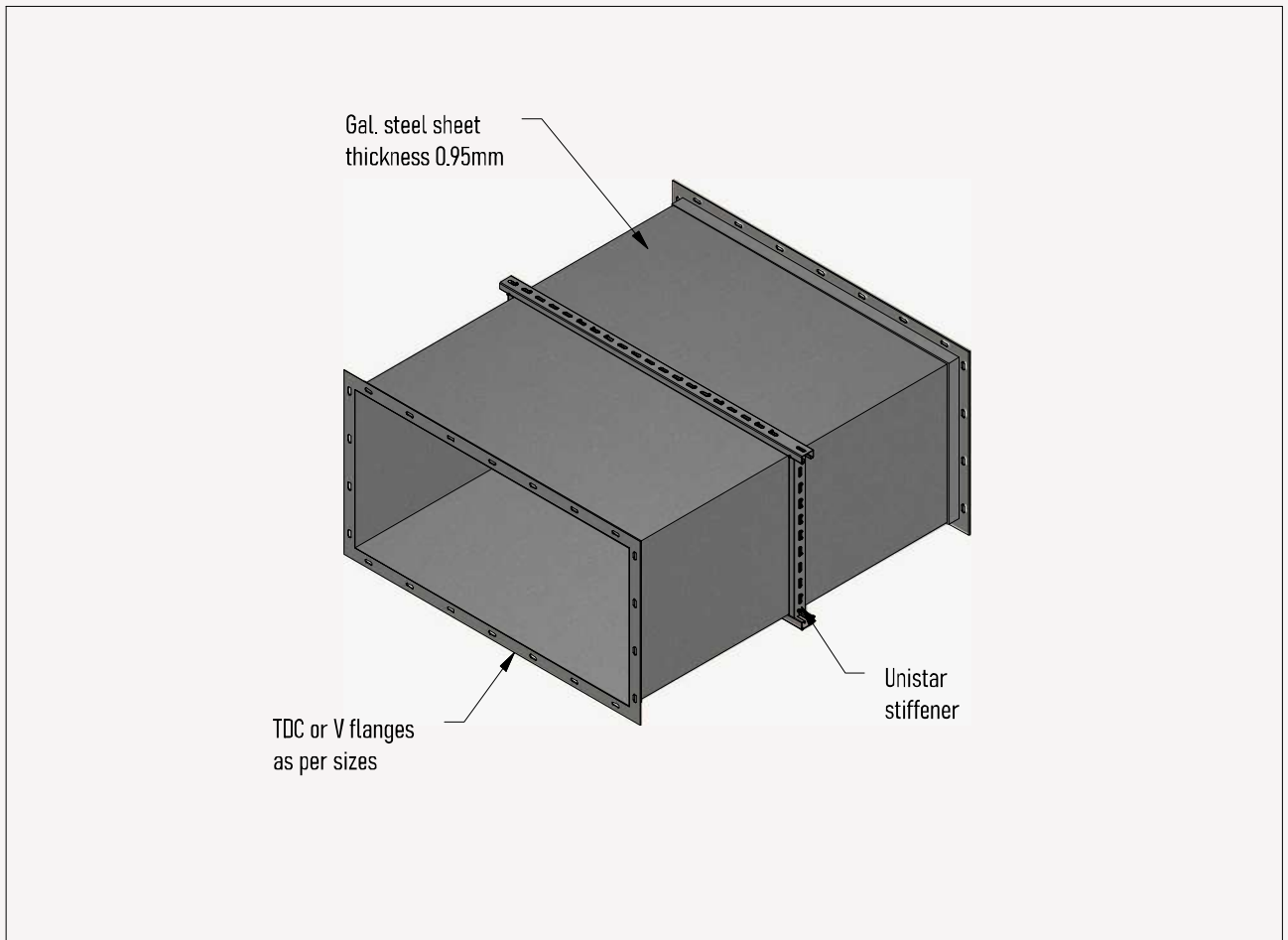


REINFORCEMENT FOR DUCT

REF.	MAX DIMENSION OF DUCT (mm)	No. of tie-rod standard duct length 1200mm
A	 < 750	1
B	 751-1000	1
C	 1001-1500	1
D	 1501-2250	2
E	 2251 <	3

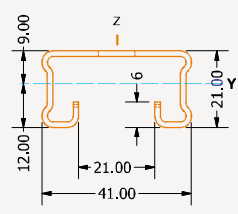
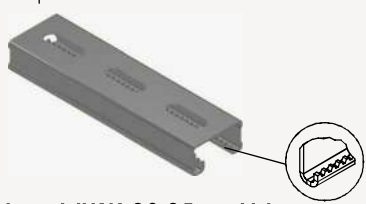
ROD DIAMETER


Length of tie-rod (mm)	
	M10
	M12



U channel: U4121, 1.5mm thick

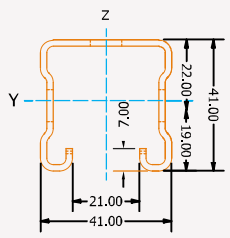
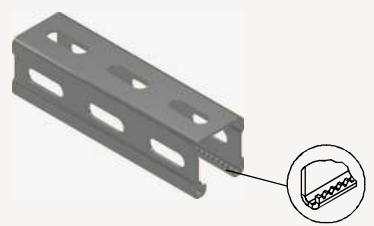
Length as requested
End cap & buffer incl.



Mass: 1.26kg/m

U channel: U4141, 2.0-2.5mm thick

Length as requested
End cap & buffer incl.



Mass: 2.32 kg/m



Unistar multi-purpose rod & accessories

Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Finish	Finish	Finish
M6	M8	M10	M12	M16	ZP	SS	SS	HG
M6x1M	M8x1M	M10x1M	M12x1M	M16x1M	•	•	•	•
M6x2M	M8x2M	M10x2M	M12x2M	M16x2M	•	•	•	•
M6x3M	M8x3M	M10x3M	M12x3M	M16x3M	•	•	•	•

Grade 4.6

L= 1, 2 & 3 M [ZP,SS]
L= 1 M [HG]

STUDDING **ZP** **SS** **HG**

Part No.	Finish	G	SW	L		
	ZP	SS	mm	mm		
6334M6	•	•	M6	10	18	50
6334M8	•	•	M8	13	24	50
6334M10	•	•	M10	17	30	50
6334M12	•	•	M12	19	36	50
6334M16	•	•	M16	24	48	50
SP3838	•		3/8"	19	35	50
SP1212	•		1/2"	27	35	50

L=3xd

ROD CONNECTOR **ZP** **SS**

EAW **ZP**

EA **ZP** **SS**

Part No.	Part No.
EAWH6	EAM6
EAWH8	EAM8
EAWH6x40	EAM6x40
EAWH10	EAM10
EAWH12	EAM12
EAWH16	EAM16
EAWH20	EAM20

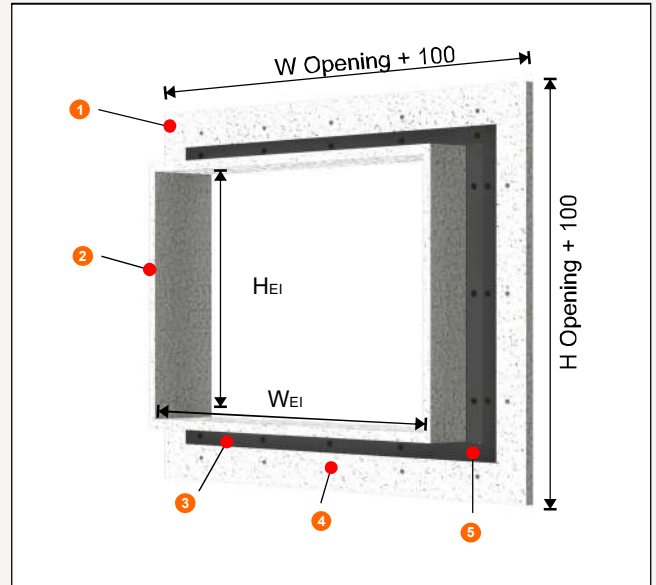
Part No.	Finish	Class	D	L	ø mm	G	e (mm)			Approval:
	ZP		mm	mm			min	max		
EAM6	•	-	8	25	8	M6	6	11	100	
EAM8	•	1.8kN*	10	30	10	M8	8	13	100	VdS
EAM8x40	•	3kN*	10	40	10	M8	8	13	50	VdS FM
EAM10	•	3.6kN*	12	40	12	M10	10	17	50	VdS FM
EAM12	•	5.7kN*	15	50	15	M12	12	18	25	VdS FM
EAM16	•	7.4kN*	20	65	20	M16	16	21	20	VdS FM
EAM20	•	11.3kN*	25	80	25	M20	20	30	10	VdS FM

Wall opening collars

Duct accessories

Openings thru walls and slab for running ducts are critical details. They need special and professional solutions and materials to ensure a fast, properly and effectively installation.

- 1 El class board 1
- 2 El class colar (board)
- 3 V30 bar support frame
- 4 Holes for M8 expansion bolts
- 5 Self-tapping screw M5/L10



Products fittings

$W \leq 6000\text{mm}, H \leq 2500\text{mm}$

Original dimension : Wmm x Hmm x L1200

Overlap dimension : Original dimension + El Boardx2 + Mineral wool thickness x2 (by El class-see table 1)

Price is quoted by unit/piece (VND/pc)

5b Note: Where the width over >1500mm, a crosswise U-frame (5b) need to be added and continued every 500mm

* The above structure applies to both of duct types exposed to external fire and to internal fire

Floor opening collars

- 1 Fire-resistant supporting frame
- 2 Floor penetration sleeve

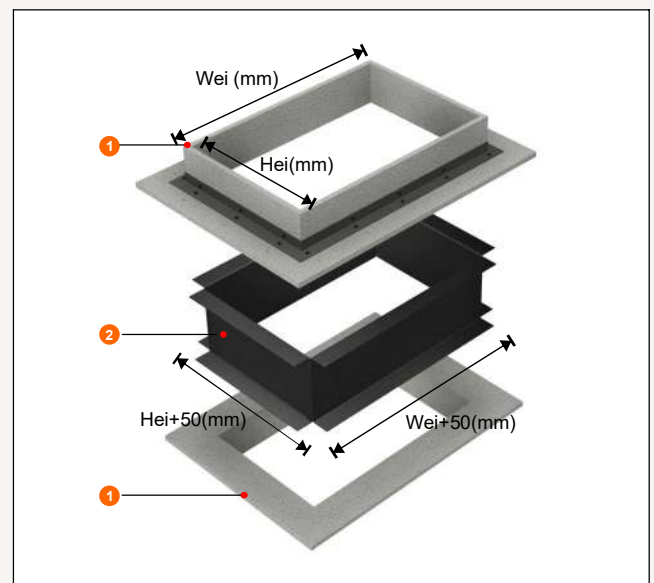
Dimension

Fire-resistant supporting frame:

We_i = outer width of the El duct
 He_i = outer height of the El duct

Floor penetration sleeve

Width = We_i + 50 (mm)
 Height = He_i + 50 (mm)



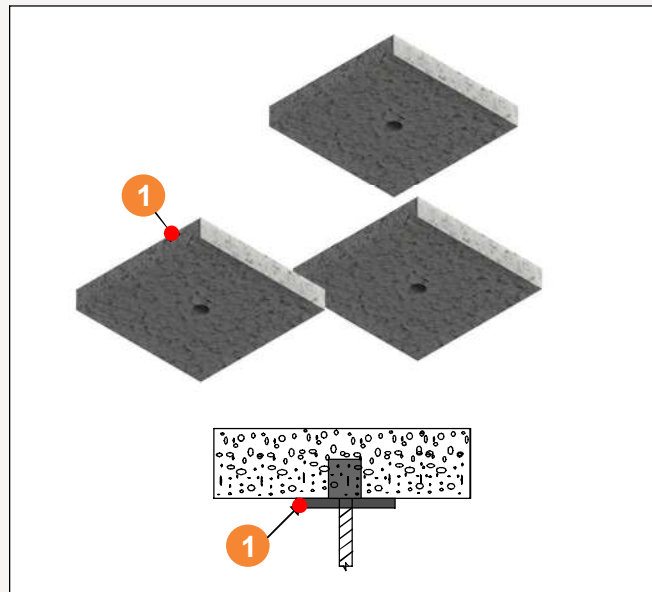
Accessories

1 Fire-protection pad for anchor expansion bolt

The anchor expansion bolt in concrete slabs is a critical point. This bolt has to bears full load of the duct system.

In fire, the linkage between concrete and bolt can be quickly loosen then cause the collapse to duct system sooner than planned.

So, heat-protection for these critical points by fire-protection pads is a must and recommended by Starduct.


P s fittings

$W \leq 6000\text{mm}$, $H \leq 2500\text{mm}$

Original dimension : $W\text{mm} \times H\text{mm} \times L1200$

Overlap dimension : Original dimension + EI Board $\times 2$ + Mineral wool thickness $\times 2$ (by EI class-see table 1)

Price is quoted by unit/piece (VND/pc)

5b Note: Where the width over $>1500\text{mm}$, a crosswise U-frame (5b) need to be added and continued every 500mm

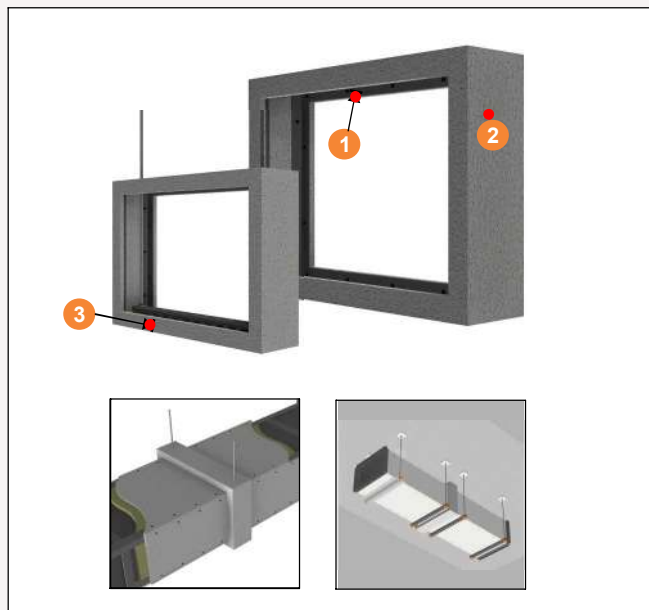
* The above structure applies to both of duct types exposed to external fire and to internal fire

Fire-protection frame for duct joints & hangers

- 1** V30/2 mm steel bar frame
- 2** Fire-protect & Thermal insulation board
- 3** Trapeze hanger

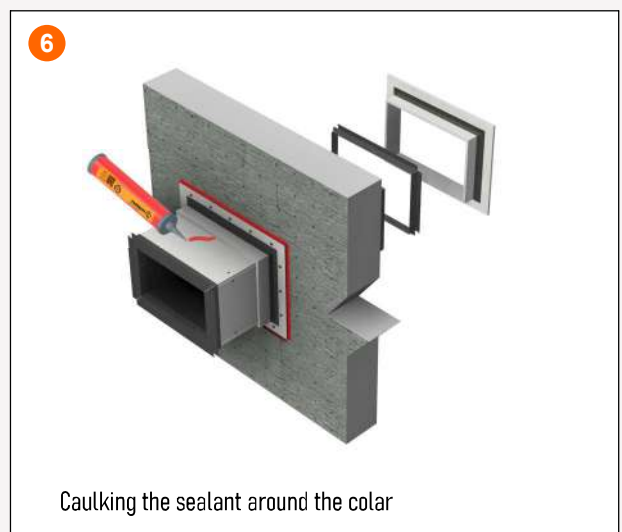
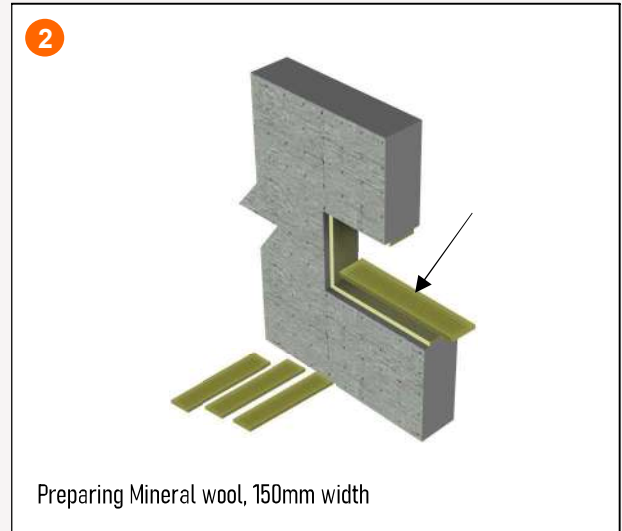
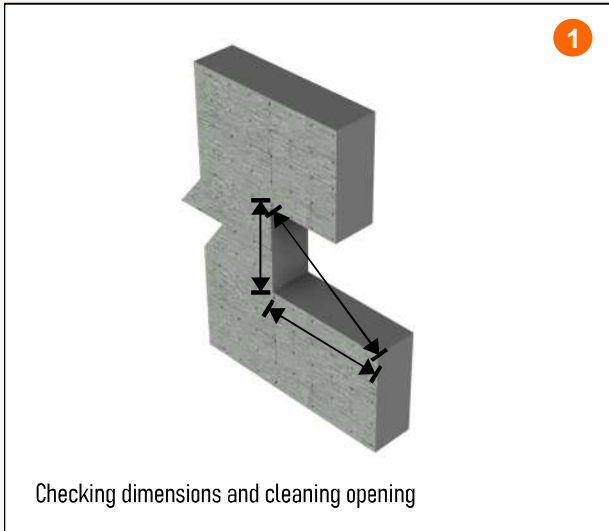
The joints made from galvanized steel are designed to be open for easier installation, but they will be directly exposed to flame in case of fire from the outside. The same will happen to trapeze hangers.

Therefore, Starduct recommends that customers to use a fire-protection frame for duct joints and hangers if the duct system located in or running through fire zones.



Suggestion for penetrated walls instalation

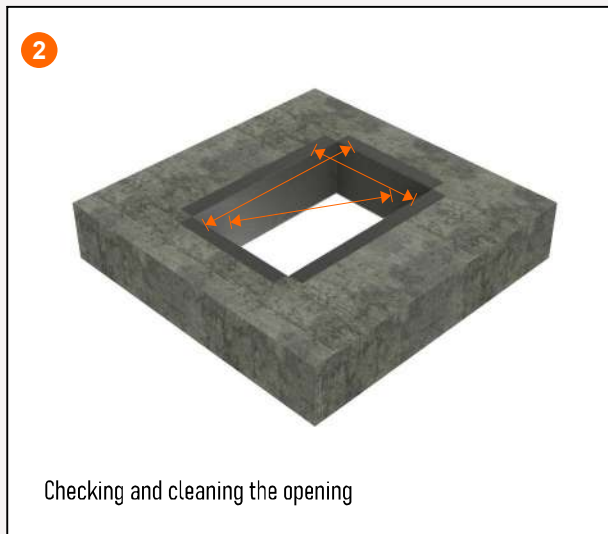
Duct accessories



Suggestion for penetrated floors instalation



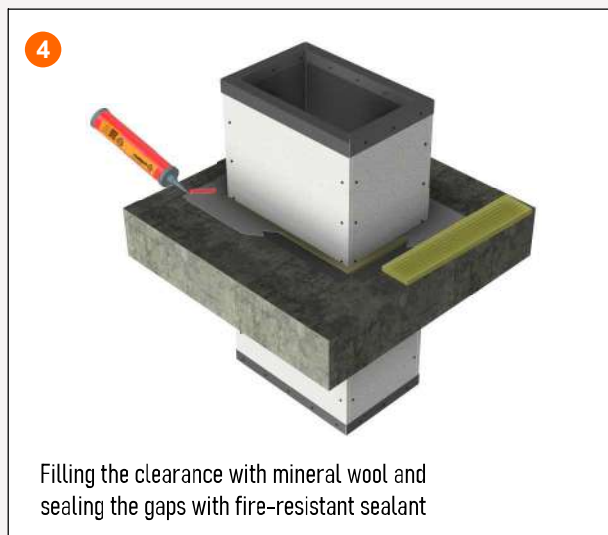
Installing sleeve before casting concrete



Checking and cleaning the opening



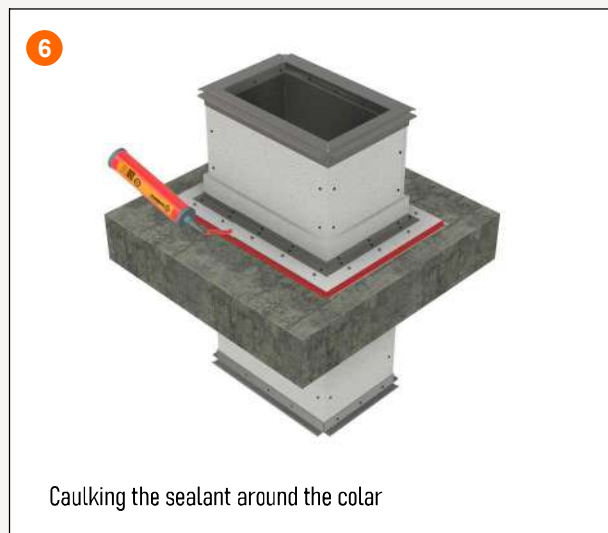
Checking and preparing accessories



Filling the clearance with mineral wool and sealing the gaps with fire-resistant sealant



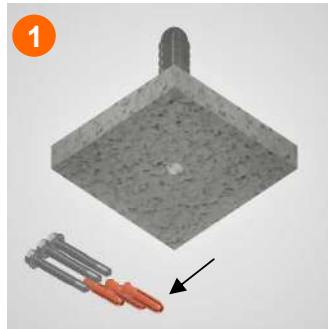
Install floor colar



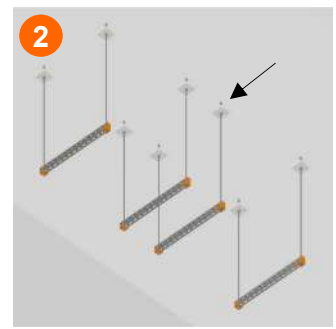
Caulking the sealant around the colar

Hanging and connecting the duct

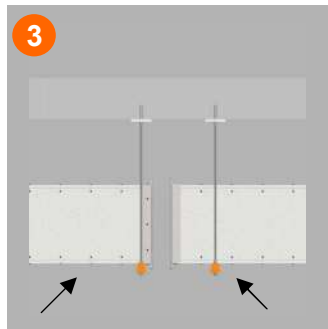
Determine the plan of duct system and install anchor bolts. Sizes of anchor bolts as in the instructions for load. Use heat-resistant pads to protect the anchor expansion bolts.



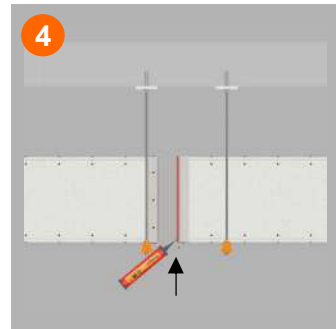
Install trapeze hanger and adjust them straight ahead. Fix the heat-resistant pads on the ceiling surface by nuts on the rod and apply sealant.



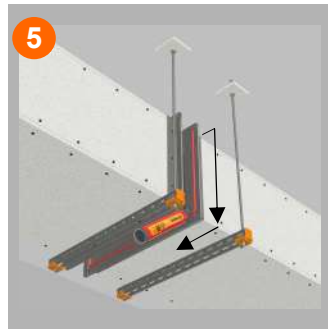
Pass ducts through the hangers in place. Adjust the ducts straight ahead. Take with care to avoid damaging insulation layers.



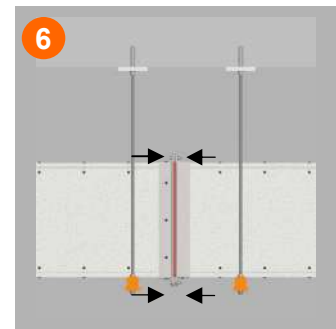
Apply heat resistant sealant over one surface of flanges. Sealant should be the same EI class as ducts.



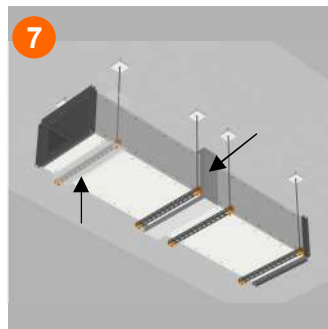
Sealant should be applied enough to seal tightly the 2 surfaces of flange.



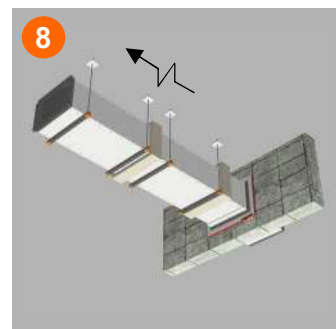
Fixing the 2 ducts in 2-3 min. after applying sealant by bolts or cleats. Take with care to get uniform and airtight layer of sealant.



Install the fire-protection frames for joints with M5/L10 self-tapping screws. Apply heat-resistant sealant over gaps (if any).



Repeat the procedure to next joints while adjusting the entire system to meet requirements.



Recommended added materials for sealing ducts

HEAT-RESISTANT SEALANT

Sealing is an important work in installing HVAC system and fire-protection system.

First requirement is airtightness for the HVAC system, so that, no pressure loss available during working time. In the other hand, the fire-protection requires that the above safe situation must be retmained in at least 2 hours.

In case of fire, the sealants must stand for extreme conditions, so they need appropriate quality and to be thoroughly tested as requirements of national and international standards. In Vietnam, the QCVB 06: 2012/BXD standard is mandatory.

Beside properly installation, sealing materials are the ultra important factor for the effectiveness of the works.

The materials include heat-resistant sealants (glue), intumescent sealant, fire stop motar.



FIRE STOP MOTAR

Hướng dẫn tính khối lượng sản phẩm ngăn cháy lan”

Chất làm kín ngăn cháy CP 606

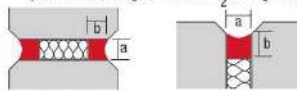
Thể tích ống = 310 ml (CP 606)

a = độ rộng khe liên kết (cm)

b = độ sâu sản phẩm bơm vào (cm)

Độ dài thi công tính bằng mét cho mỗi ống = $\frac{\text{thể tích ống (ml)}}{a \times b}$

(Đối với khe dùng CP 606, $b = \frac{1}{2}a$ tổng thể)



VD: sản có khe rộng 20mm, bơm sản phẩm sâu 10mm, thể tích mỗi ống là 310ml.
Vậy độ dài thi công mỗi ống = $310 / (1 \times 2) = 1,55$ mét mỗi ống cho một phía sản.

	Tường	Sàn
Rộng khe (mm)	0-15	16-20 21-30
Sâu của khe (mm)	6	10 15

Chất làm kín ngăn cháy lan tương nỡ FS-ONE MAX

Loại ống = 580 ml (FS-ONE MAX)

Số ống cần là, $n = \frac{V_s}{\text{thể tích ống (ml)}}$

Thể tích bịt kín cho ứng dụng tường

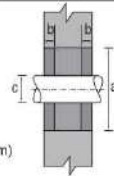
(thi công cho cả hai phía) $V_s = \frac{\pi}{4} \times (a^2 - c^2) \times 2b$

(chỉ thi công một phía) $V_s = \frac{\pi}{4} \times (a^2 - c^2) \times b$

a = đường kính lỗ (cm)

b = chiều sâu thi công (cm) (theo khảo chứng chỉ)

c = đường kính ngoài của ống hoặc đường kính bó cáp (cm)



Vữa ngăn cháy lan CP 636

bao 20 kg tạo ra 22,2 lít

a = chiều sâu lỗ mở (cm)

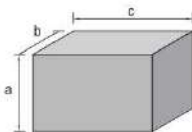
b = chiều dài lỗ mở (cm)

c = độ rộng lỗ mở (cm)

Lỗ mở trống,

Số bao cần = $\frac{a \times b \times c}{22.000}$

VD: sản dày 65 mm có lỗ mở 1 mét x 1 mét:
Theo đó, số lượng bao cần = $\frac{6,5 \times 100 \times 100}{22.000} = 3$ bao



FIRE STOP COATING

Hướng dẫn tính khối lượng cho sơn ngăn cháy lan CFS-SP WB (Dựa trên chiều dày thi công 3mm khi còn ướt)

Bề rộng khe (mm)	Giáp mí 12.5mm hai bên (mm)	Chiều dài thi công cho mỗi thùng 19 lít (m)
25	50	110
50	75	75
100	125	45
150	175	35
200	225	30





STARDUCT





STARDUCT

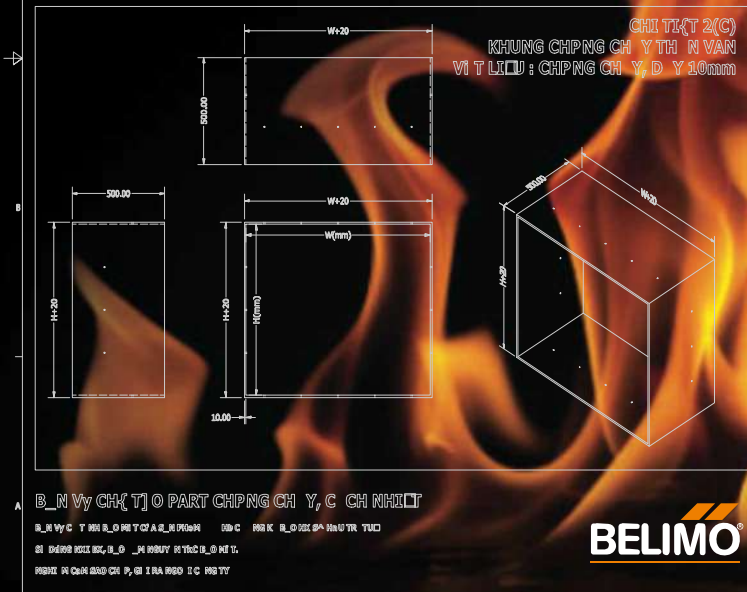
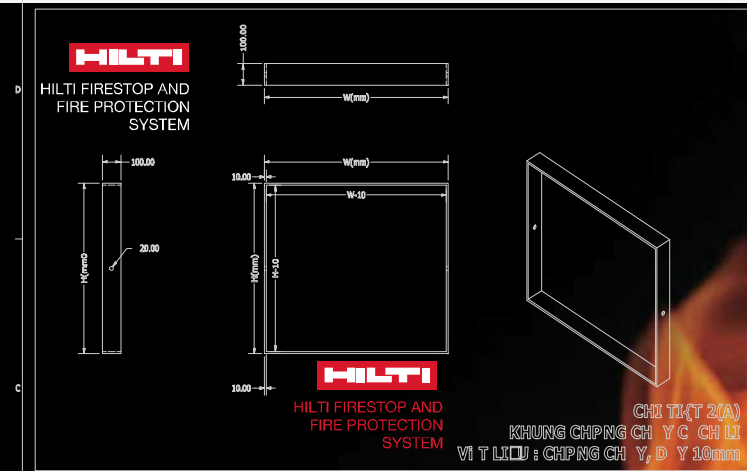
Certified Manufacturers



Mô tơ và thiết bị điều khiển chuẩn UL của Belimo, Thụy Sĩ, dòng xuất Mỹ (US series)



Lớp vật liệu tương phòng dưới nhiệt độ cao Duy trì ngăn cháy và khói trong 4 giờ cháy



STAR ASIA JOINT STOCK COMPANY

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Hanoi - Vietnam