



## PRODUCTS PROFILE

Specialized Factory for Steel Products

SIGMA Factory for Steel Products



ABOUT SFSP	2
CABLE MANAGEMENT SYSTEMS	10
EXPANDED METALS, PLASTERERS` BEADS	18
BLOCK WALL REINFORCEMENT	22
STEEL LINTELS & BLOCK WORK ACCESSORIES	24
PIPE CLAMPS & HANGERS	26
MARBLE & GRANITE FIXINGS	30
DRY WALL & CEILING PROFILES	32
METAL CEILING GRID SYSTEMS	35
GARBAGE & LINEN CHUTES	37



## SPECIALIZED FACTORY for Steel Products Co. Ltd

### SIGMA FACTORY for Steel Products

SFSP was first established in KSA in 1989 and has been expanding ever since through a variety of products and through its geographical presence.

Production at the factory is observed using modern practices of manufacturing methods in the steel construction industry with a definite compliance to international standards of fabrication.

SFSP has manufacturing facilities in KSA, UAE, Egypt, and Lebanon.

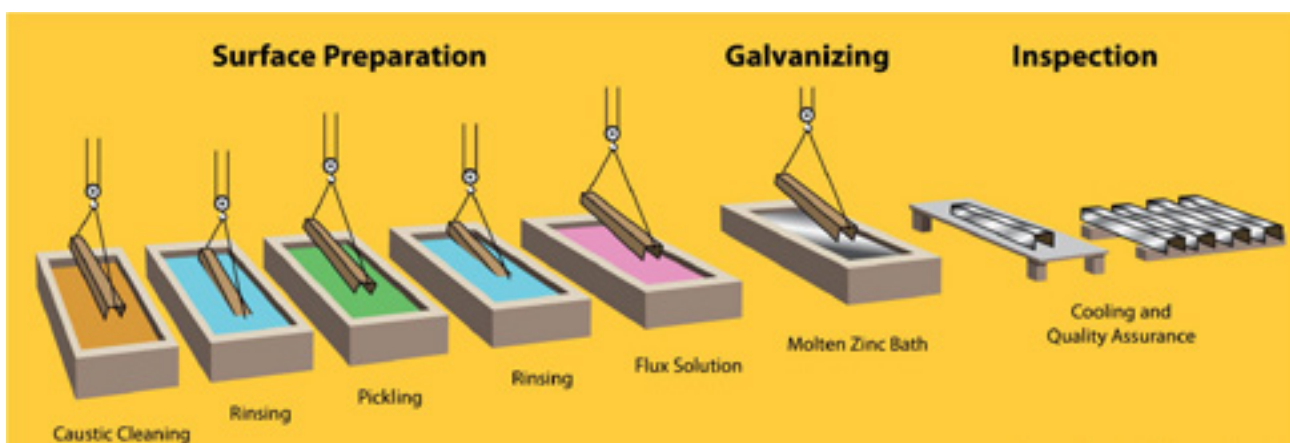
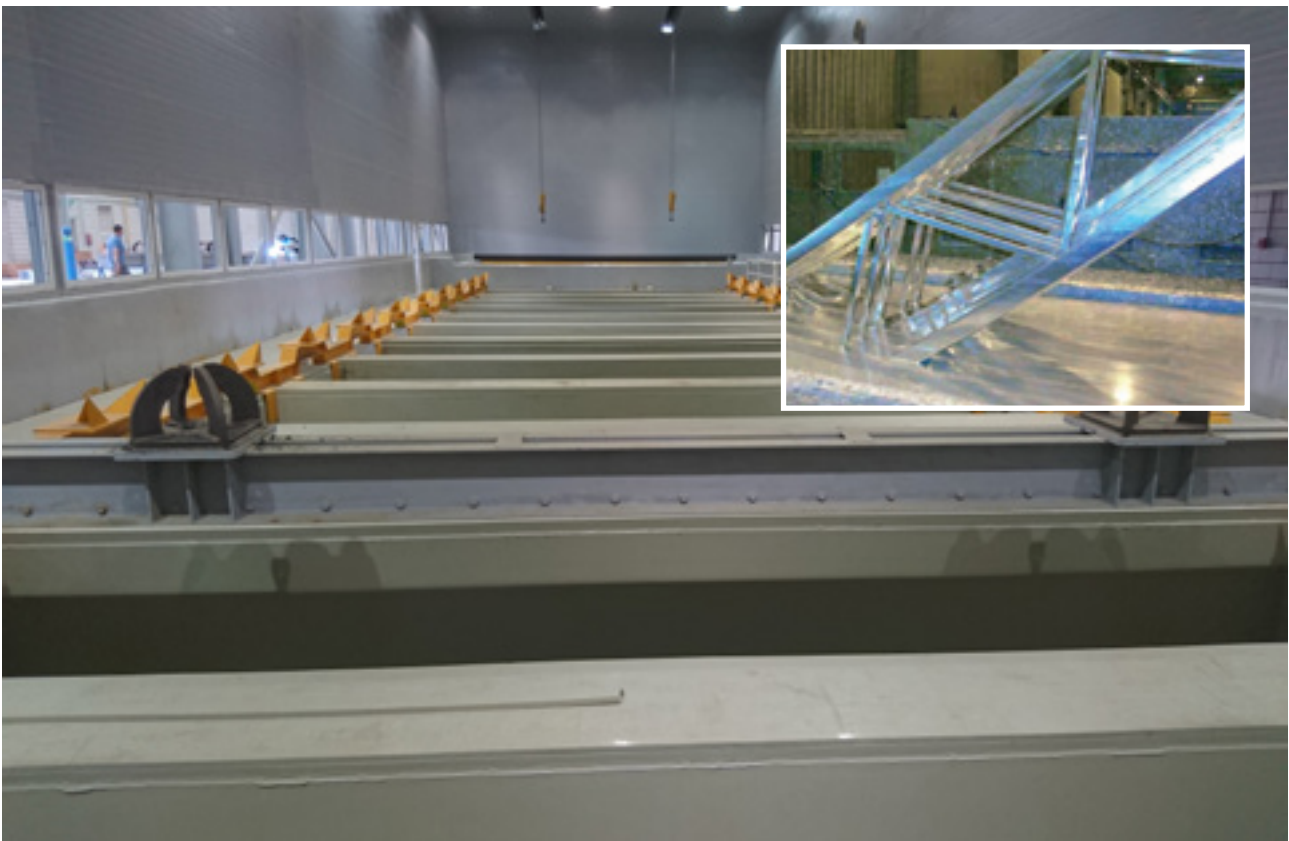
SFSP adapts quickly and easily to market demands and requirements.

The factory is operating a top of the line production machinery, fully automated with highest technology to ensure quality and maintain speed with delicacy.

Quality at SFSP is uncompromised; the factories have been able to acquire ISO 9001: 2015 Quality Management System, ISO 14001:2015 Environmental Management certified factory, and OHSAS 45001:2018 Occupational Health and Safety Management factory.

### HOT-DIP GALVANIZATION

SFSP has an in-house state of the art Hot-Dip Galvanization facility, which permits a full control of the quality of its finished products, offering better services to our clients globally.





## TECHNICAL SERVICES

A crucial factor in the job of a factory is to provide continuous technical services and consultations.

That's why SFSP has invested in a professional team of researchers and specialists.

SFSP has recruited brilliant graduates and experienced engineers having the appropriate knowhow on the on latest technology changes and development in the steel building materials industry.

The product range is developed and updated according to the relevant standards of fabrication across markets, whilst the business processes are evaluated to achieve maximum efficiency.

### SFSP R&D Core Objectives

- Carry out responsibilities effectively in a safe and healthy work environment.
- Develop and implement research programs relevant to the products and solutions introduced and ensure that the results are communicated clearly in-house and among the clients, concisely and accurately.



## DESIGN AND ENGINEERING OFFICE - GERMANY



Unitech Deutschland  
GmbH is the design office of  
Unitech for Building and  
Construction Materials and  
is situated in Stuttgart,  
Germany.

# Proof for Steel Cable Tray or Cable Trunking

Date: 01.01.2018-01.01.2018  
Type: (S) - (S) - (S) - (S) - (S) - (S)

(CEN 14492 for Steel)

Page: 1

allowed Types of side heights:

RP, RPD, CTI and CTD: YES  
STW: NO

calculated as an continuous beam

$l = 1.2 \text{ m}$

Distance of Supports  
Load on Cable Tray

$l = 1.20 \text{ m}$   
 $l = 1.20 \text{ m}$   
 $l = 1.20 \text{ m}$

Cable Tray  
Box 1:

$w = 100 \text{ mm}$   
 $h = 80 \text{ mm}$   
 $t = 1.26 \text{ mm}$

Center Load only possible for  $l \leq 1.0 \text{ m}$ !!

64.	Technical Properties	Equations	Figures	unit
1	Type of materials used	1.000 mm x 1.000 mm	0.200 mm	
2	Allow. 0.2 Yield Stress up to 50°C	$F_{y,0.2} = F_{y,0.2} \cdot 1.1$	21.82	kN/m <sup>2</sup>
3	Allow. Shear Stress		12.88	kN/m <sup>2</sup>
4	Allow. Deflection	2/200	6.88	mm
5	Modulus of Elasticity		21.88	kN/m <sup>2</sup>

Applied Loads	Equations	Figures	unit
1 Distance of Supports	$l = 1.2 \text{ m}$	120.00	mm
2 Self Weight Cable	$W_{cable} = 1.74 \text{ kN/m}$	1.74	kN/m
3 Self Weight Cable Tray	$W_{tray} = 1.76 \text{ kN/m}$	0.82	kN/m
4 Self Weight	$W_{total} = W_{cable} + W_{tray}$	1.76	kN/m

## Design of Elements

### 1 Cable Tray / Trunking

Description	Equations	Figures	unit
Geometrical Properties of Sec. 1			
Thickness	$t = 1.26 \text{ mm}$	1.26	mm
Width of Sec. 1	$w = 100.00 \text{ mm}$	100.00	mm
Radius in sheet	$R = 30.00 \text{ mm}$	30.00	mm
Area of sheet Sec. 1	$A = 0.98 \text{ cm}^2$	0.98	cm <sup>2</sup>
Min. Modulus of Sec. 1	$I_{min} = 1.74 \text{ cm}^4$	1.74	cm <sup>4</sup>
Moment of Inertia of Sec. 1	$I_{max} = 0.89 \text{ cm}^4$	0.89	cm <sup>4</sup>

### Applied Loads (safety factor)

Description	Equations	Figures	unit
Design Load	$F_{d,0.2} = 2.84 \text{ kN/m}$	2.84	kN/m
Span of Tray / Trunking	$l = 1.20 \text{ m}$	1.20	m
Bending Moment (Field)	$M_{f,0.2} = 0.36 \text{ kNm}$	0.36	kNm
Bending Moment (Center Load)	$M_{c,0.2} = 0.36 \text{ kNm}$	0.36	kNm
Bending Moment (Support)	$M_{s,0.2} = -0.36 \text{ kNm}$	-0.36	kNm

### Capacity Check up

Description	Equations	Figures	unit
Actual bending Stress (Field)	$\sigma_{f,0.2} = 17.44 \text{ MPa}$	17.44	MPa
Actual bending Stress (Support)	$\sigma_{s,0.2} = 17.44 \text{ MPa}$	17.44	MPa
Actual shear Stress (Support)	$\tau_{s,0.2} = 5.96 \text{ MPa}$	5.96	MPa
Actual combined Stress (Support)	$\sigma_{c,0.2} = 26.27 \text{ MPa}$	26.27	MPa
Actual Deflection (continuous beam)	$\delta_{c,0.2} = 2.48 \text{ mm}$	2.48	mm
Actual Deflection (single beam)	$\delta_{s,0.2} = 5.76 \text{ mm}$	5.76	mm

Safe

Safe

Submitted by:  
UNITECH DEUTSCHLAND GmbH  
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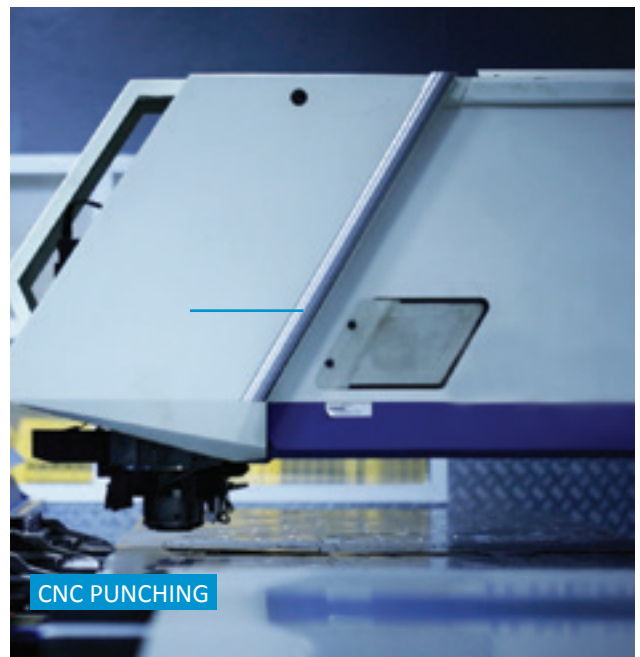
SFSP facilities are equipped with the most technologically advanced machinery amongst are Laser Cut Machines, Robot Bending Sets, Welding Robot Sets, sophisticated Cable Management Production Lines, as well as Specialized Industrial Sections for its Hot Dip Galvanization facilities.



## CNC MACHINES



WELDING  
ROBOT SETS



CNC PUNCHING



FIBER LASER  
CUT



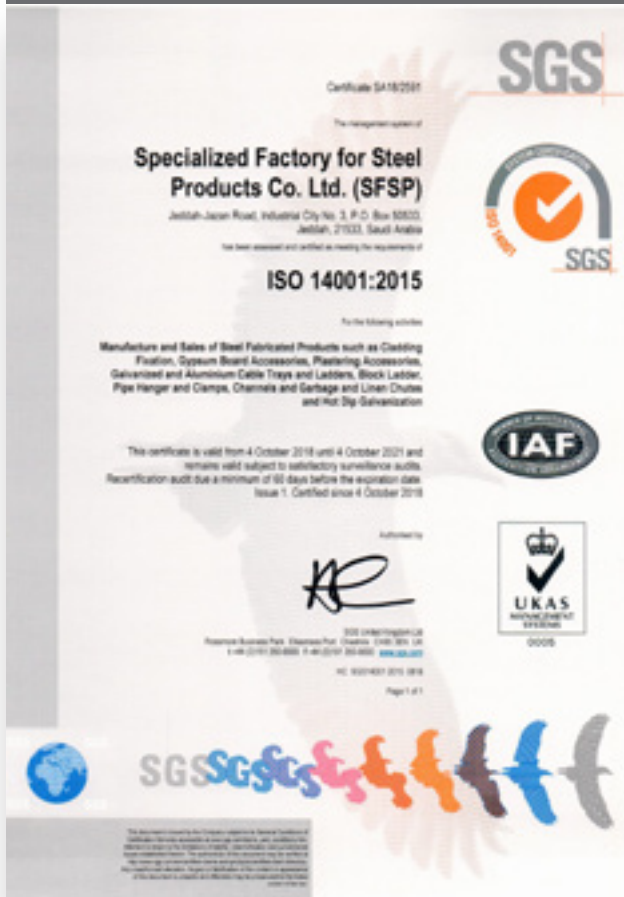
ROBOTIC  
BENDING CELL

# SFSP CERTIFICATION

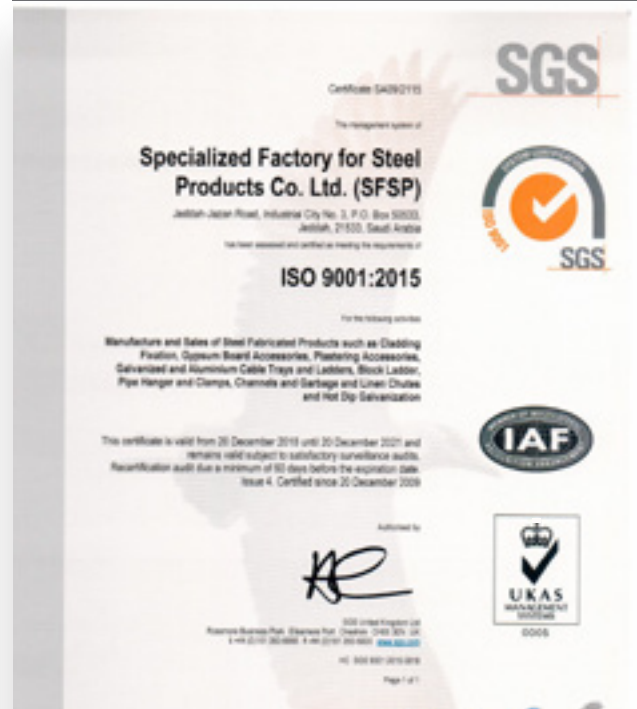
## ISO 45001: 2018 (Occupational Health & Safety)



## 14001: 2015 (Environmental Management System)



## ISO 9001: 2015 (Quality Management Systems)



## STD 096 (Q-Mark Certificate)





## SFSP CERTIFICATION

### ISO 14001: 2015 (Environmental Management System)



#### CERTIFICATE OF REGISTRATION

This is to certify that

**Sigma Factory for Steel Products**  
P.O. Box 37991  
Saih Suhaib - 3, 4 Round About  
Dubai Industrial City  
Dubai  
United Arab Emirates



has been audited and found to meet the requirements of standard  
ISO 14001:2015 Environmental Management System

#### Scope of certification

Trading and Manufacturing of all kinds of Steel related Construction Materials

### OHSAS 18001: 2018 (Health & Safety Management System)



#### CERTIFICATE OF REGISTRATION

This is to certify that

**Sigma Factory for Steel Products**  
P.O. Box 37991  
Saih Suhaib - 3, 4 Round About  
Dubai Industrial City  
Dubai  
United Arab Emirates

has been audited and found to meet the requirements of standard  
OHSAS 18001:2007 Health & Safety Management System

#### Scope of certification

Trading and Manufacturing of all kinds of Steel related Construction Materials

### ISO 9001: 2015 (Quality Management System)



#### CERTIFICATE OF REGISTRATION

This is to certify that

**Sigma Factory for Steel Products**  
P.O. Box 37991  
Saih Suhaib - 3, 4 Round About  
Dubai Industrial City  
Dubai  
United Arab Emirates



has been audited and found to meet the requirements of standard  
ISO 9001:2015 Quality Management System

#### Scope of certification

Trading and Manufacturing of all kinds of Steel Related Construction Materials

### BS EN 61537:2007 (KEMA - KEUR Certified For Cable Management Products)

#### CERTIFICATE

Issued to:  
Applicant:  
**Isam Kabbani Trading Est. (Unitech)**  
Rashidiya  
Dubai, United Arab Emirates

Manufacturer/Licensee:  
**Sigma Factory for Steel Products (SFSP)**  
Saih Shuaib 3, 4RIA, Dubai Industrial City,  
Dubai, United Arab Emirates

Product : Cable management system  
Trade name : SFSP  
Types : IE-CT-X-10, IE-CT-X-12, IE-CT-X-15, IE-CT-X-20

The product and any acceptable variation thereto is specified in the Annex to this certificate and the documents therein referred to.

DEKRA hereby declares that the above-mentioned product has been certified on the basis of:  
- a type test according to the standard IEC 61537:2006 and EN 61537:2007  
- an inspection of the production location according to CENELEC Operational Document OIG 021  
- a certification agreement with the number 2156954

DEKRA hereby grants the right to use the KEMA-KEUR certification mark.

The KEMA-KEUR certification mark may be applied to the product as specified in this certificate for the duration of the KEMA-KEUR certification agreement and under the conditions of the KEMA-KEUR certification agreement.

This certificate is issued on: 20 January, 2014 and expires upon withdrawal of one of the above mentioned standards.

Certificate number: 2156954.01

DEKRA Certification B.V.

drs. G.J. Zoetbrood  
Managing Director

H.R.M. Barends  
Certification Manager

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ACCREDITED BY THE  
DUTCH ACCREDITATION  
COUNCIL



DEKRA Certification B.V., Meander 1051, 6825 MJ Arnhem P.O. Box 5185, 6802 ED Arnhem The Netherlands  
T +31 88 96 83000 F +31 88 96 83100 www.dekra-certification.com Registered Arnhem 09085396

Certificate number: 5965

Issue number: 2018-02

Certificate start date: 23 February 2018

Certificate expiry date: 22 February 2021

Date of initial certification: 23 February 2015

Karen Prendergast  
Sector Director - Certification  
Exova BM TRADA

Exova (UK) Ltd, (T/A Exova BM TRADA), Chiltern House, Stocking Lane, High Wycombe, Buckinghamshire, HP14 4ND, UK  
Registered Office: Exova (UK) Ltd, Luchford Industrial Estate, Hemel Hempstead, HX2 8PL, United Kingdom. Reg No. SC076429.

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The use of the UKAS accreditation mark indicates accreditation in respect of those activities covered by the accreditation certification 012



**BS EN 61537:2007 (KEMA - KEUR BS  
Certified For Cable Management Products)**

**UL Certification\*  
(Cable Trays)**

**CERTIFICATE**

Issued to:  
Applicant:  
Isam Kabbani Trading Est. (Unitech)  
Rashidiya  
Dubai, United Arab Emirates

Manufacturer:  
Sigma Factory  
Sah Shuaib 3  
Dubai, United

Product : Cable management system  
Trade name : SFSP  
Types : IE-CT-X-10, IE-CT-X-12, IE-CT-X-15, IE-CT-X-2

The product and any acceptable variation thereto is specified in the documents therein referred to.

DEKRA hereby declares that the above-mentioned product has been certified according to the standard BS EN 61537:2007 based on:  
- a type test according to the standard BS EN 61537:2007 based on  
- an inspection of the production location according to CENELEC O  
- a certification agreement with the number Z156954

DEKRA hereby grants the right to use the KEMA-KEUR BS certification mark.

The KEMA-KEUR BS certification mark may be applied to the product during the duration of the KEMA-KEUR BS certification agreement and under the certification agreement.

This certificate is issued on: 3 February, 2014 and expires upon withdrawal of the product.

Certificate number: 2156954.02

DEKRA Certification B.V.

drs. G.J. Zoetbrood  
Managing Director

H.R.M. Barends  
Certification Manager

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DEKRA Certification B.V. Meander 1051 6825 MJ Arnhem P.O. Box 5185 6802  
T +31 88 96 83000 F +31 88 96 83100 www.dekra-certification.com Registered #

**UL Certification\*  
(Chute Type Fire Doors)**

**CERTIFICATE OF COMPLIANCE**

Certificate Number: 20170811-R38825  
Report Reference: R38825-20170811  
Issue Date: 2017-AUGUST-11

Issued to: Sigma Factory for Steel Products  
Sah Shuaib 3, 4 R/A Dubai Industrial City  
Opposite DEWA Substation  
Dubai UNITED ARAB EMIRATES

This is to certify that  
representative samples of

CHUTE-TYPE FIRE DOORS  
Chute-type fire door and frame assembly of the insulated  
type, rated up to and including 2 hr, 450°F Temperature  
Rise Rating.

Have been investigated by UL in accordance with the  
Standard(s) indicated on this Certificate.

Standard(s) for Safety: ANSI/UL 10B, Fire Tests of Door Assemblies  
Additional Information: See the UL Online Certifications Directory at  
[www.ul.com/database](http://www.ul.com/database) for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's  
Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.

**CERTIFICATE OF COMPLIANCE**

Certificate Number: 20160816-E483358  
Report Reference: E483358-20160816  
Issue Date: 2016-AUGUST-16

Sigma Factory for Steel Products  
Sah Shuaib 3, 4 R/A Dubai Industrial City  
Opposite DEWA Substation  
Dubai UNITED ARAB EMIRATES

CABLE TRAYS  
Steel Channel Cable Tray, Ventilated, Heavy Duty (HCT),  
Very Heavy Duty (VCT) cable trays.

Have been investigated by UL in accordance with the  
Standard(s) indicated on this Certificate.

ANSI/NFPA 70, "National Electrical Code" (NEC)  
See the ULC Online Certification Directory at [www.ulc.ca](http://www.ulc.ca)  
for additional information

ULC Listing Mark should be considered as being covered by ULC's

includes the following elements: the symbol ULC in a circle, with  
there may be alphanumeric assigned by ULC, and the product  
as indicated in the appropriate ULC Directory.

above information via the online directory.

(the product)



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contact a local UL Customer Service Representative at [www.ul.com/customer-service](http://www.ul.com/customer-service)





SFSP Products are solely distributed by UNITECH for Building and Construction Materials

All Products Manufactured by SFSP are Solely Distributed by SFSP Sister Companies in the Following Countries

## KSA

Isam Kabbani & Partners for  
Building and Construction  
Materials Co., Ltd.

شركة عصام قباني وشركاه لمواد الأنشاء والتعمير  
المحدودة

## BAHRAIN

Isam Kabbani Trading Est.

مؤسسة عصام قباني التجارية

## UAE

Issam Kabbani Trading Est.

مؤسسة عصام قباني للتجارة

## KUWAIT

Hassan Kabbani for General Contracting Est.

مؤسسة حسان قباني للمقاولات العامة للمباني

## OMAN

Isam Kabbani & Partners Trading  
Co.

شركة عصام قباني وشركاه للتجارة

## EGYPT

UNITECH Egypt for Building Materials

شركة يونيتك مصر لمواد البناء

JORDAN

Jordan Build Co. for Building & Construction Materials

شركة بناء الأردن لمواد الإنشاء و التعمير و الكهرباء

## LEBANON

UNITECH ME s.a.r.l

شركة يونيتك ميدل إيست ش.م.م

## PAKISTAN

UNITECH IKK Pakistan  
(PVT.) LTD.

## SFSP CUSTOMER SERVICE CALL CENTER

## KSA

+966 13 8590097, Ext. 3214

## UAE

+971 4 8181925, Ext. 4269



The IKK Group is a major business institution, serving most of the Arab World in the industrial, construction and trading fields, as well as in specialized maintenance and services.

Today, the IKK Group of Companies is a pioneer in waterproofing, weatherproofing, building material supplies, UPVC and CPVC and high density polyethylene pipes and fittings and several other products for the construction industry. The Group is also represented in the sanitary products, steel production, kitchen manufacturing, telecommunications, food, decoration, re-insurance and real estate business domain.

Composed of 60 companies, the IKK Group operates through almost 200 divisions, branches and outlets; it is spread over 12 countries, covering all major cities in the region and employing around 13,000 employees.

**Our vision** is to maintain and improve our leading position as a contractor whose reputation is built on the ability to completely satisfy customers by providing high quality services. As specialists in their respective fields, our teams of professionals are dedicated to a standard of excellence for quality and performance, through continuous development, which will set standards in our industry.

We are simply providing solutions for a future of success.

**Our mission** is to provide our part of the Arab World with local and reliable services in a variety of sectors and products. To create employment to thousands of personnel and in-house training for hundreds of young Arab graduates in crucial sectors to the benefit of the IKK Group, the graduates themselves and their own communities. To set a good example of our basic business philosophy: "Hire well, train well, pay well and treat well."



# UNITECH

For Building and Construction Materials

Isam Kabbani & Partners for buildings & construction materials co. Ltd (UNITECH) which is part of the IKK group of companies is recognized and acknowledged for the quality and reliability of its products and services as well as for the commitment, professionalism and experience of its employees.

Isam Kabbani & partners for buildings & construction materials co. Ltd (UNITECH) core values are to offer value products and services to its clients, to work closely with them in a lasting business partnership that provides an outstanding performance.

A partnership based on trust, harmony, and a hard to beat services and solutions.

Our Factories have acquired, in addition to ISO 9001:2008 Quality Management System, the ISO 14001:2004 Environmental Management System.

Our care for the environment has been translated via Isam Kabbani & partners for buildings & construction materials co. Ltd (UNITECH)'s membership in the US Green Building Council as a Golden Member.

## Our Vision

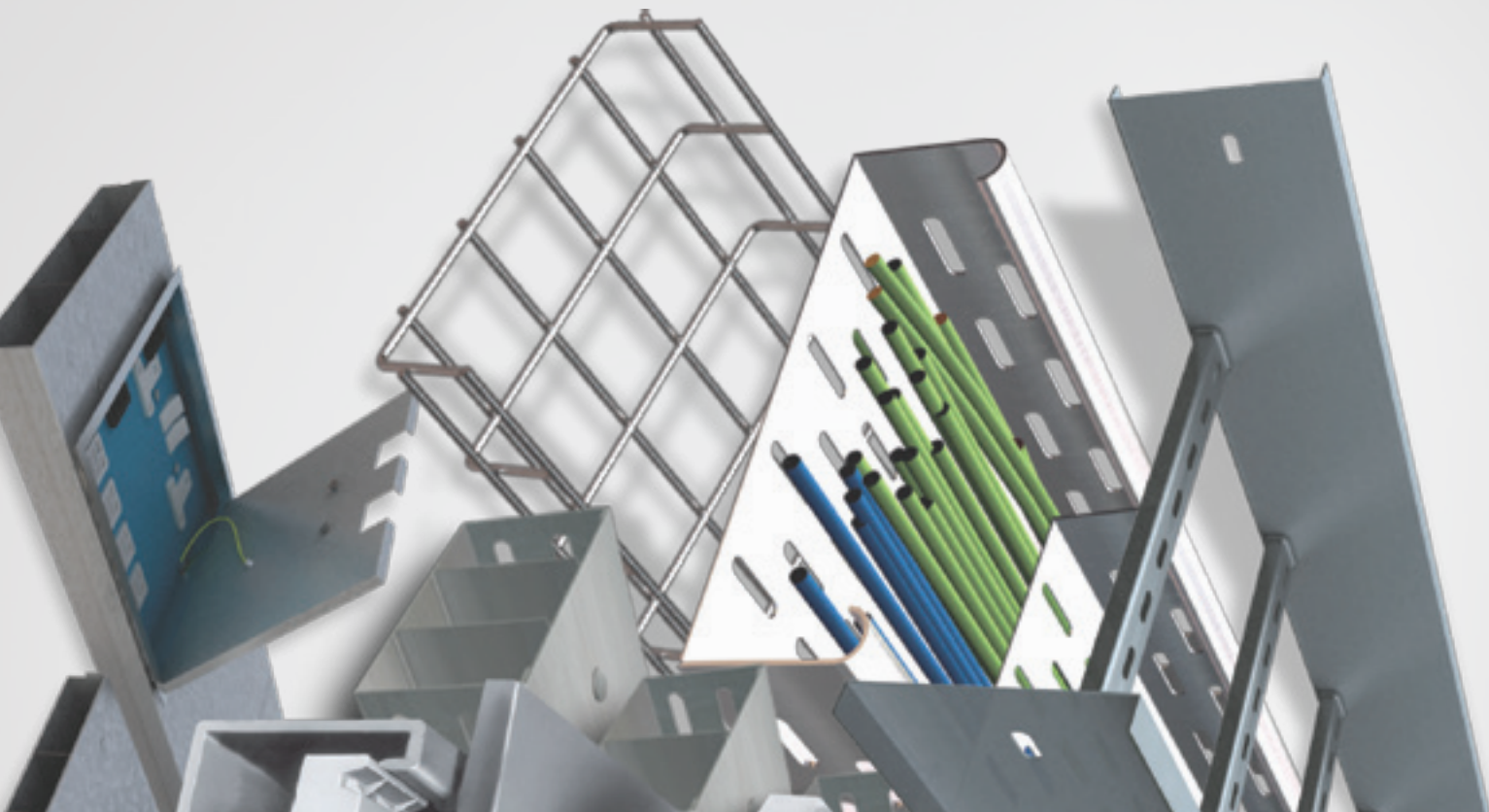
UNITECH to be the Customer's First Choice.

## Our Mission

We have the conviction to be the leader in building & construction industry through:

- Providing Excellence in Services with Passionate and Educated Sales Force
- Strengthen Culture through Unified Sense of Purpose
- Innovative Product Range which is Customer Centric
- Reputable and Quality Service Company
- Attracting, Engaging and Retaining Talent





# CABLE MANAGEMENT SYSTEMS

SFSP Cable Management Systems, fittings and accessories are manufactured in compliance with international standards. SFSP provides a wide range of products capable of providing the characteristics which respond to the proposed application, along with quality of assembly, speed of installation and cost-saving.

National Electric Code (NEC) permits Cable Trays in a wide variety of indoor and outdoor applications.

The NEC also permits Cable Trays for use as equipment ground conductor. Cable Management Systems can provide significant advantages in cable filling over other wiring methods.

This can provide savings in the size or number of raceways required, thereby, reducing both material and labor costs. In many cases, NEC permits greater conductor ampacities in Cable Tray Systems than for other wiring methods. Under certain conditions, the NEC allows "Free Air" rating of large, single conductor power cables (4/0 & larger) in ventilated Cable Management Systems.

Cable Management Systems permit much greater spacing between support hangers than most other systems, providing savings in support costs and installation labor.

Cable Management Systems` types fittings and accessories from SFSP are manufactured in compliance with :

- |                         |   |
|-------------------------|---|
| - IEC 61537:2006        | International Electrotechnical Commission                       |
| - BS EN 61537:2007      | (Cable management, Cable tray systems and cable ladder systems) |
| - SASO IEC (61537:2006) | Saudi Standard  |
|                         | (Cable management, Cable tray systems and cable ladder systems) |
| - NEMA VE 1 - 2017      | National Electrical Manufacturers Association.                  |
|                         | (Metal Cable Tray Systems)                                      |
| - NEMA VE 2 - 2013      | National Electrical Manufacturers Association.                  |
|                         | (Metal Cable Tray Installation Guide Lines)                     |
| - NEC (ANSI / NFPA 70)  | National Electric Code  |
|                         | (Metal Cable Tray Guide Lines)                                  |

# CABLE TRAYS & ACCESSORIES

SFSP cable trays and accessories from SFSP are manufactured in compliance with BS EN 61537:2007/BS EN 10130/BS EN 10131/ BS EN 10051 and NEMA standards. And, as per cabling standards CENELEC EN 50173-1; EIA/ITA 568 A; ISO/ IEC 11801-1:2017.

We manufacture a wide range of products capable of providing the characteristics which respond to the proposed application, along with quality of assembly, speed of installation, and cost-saving cable trays.

## MATERIALS

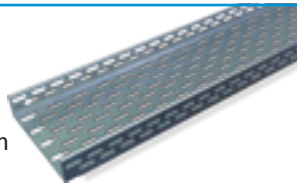
Pre-Galvanized, Hot-Dip Galvanized, and Stainless Steel

## MATERIAL THICKNESS

1.00 mm | 1.20 mm | 1.50 mm | 2.00 mm  
\* Other Thickness Available Under Request

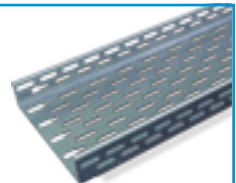
### Light Duty - LCT - 100

Thickness : 1.00 mm  
Side Height : 50 mm  
Length : 2440 mm / 3000 mm  
Width : 50 - 1000 mm



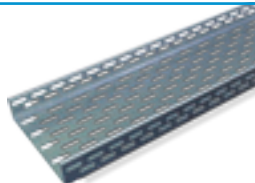
### Medium Duty - MCT - 120

Thickness : 1.20 mm  
Side Height : 50 ,75 and 100 mm  
Length : 2440 mm / 3000 mm  
Width : 50 - 1000 mm



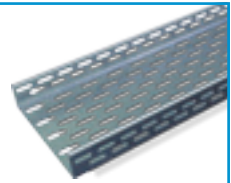
### Heavy Duty - HCT - 150

Thickness : 1.50 mm  
Side Height : 50 ,75 and 100 mm  
Length : 2440 mm / 3000 mm  
Width : 50 - 1000 mm



### Very Heavy Duty - VCT - 200

Thickness : 2.00 mm  
Side Height : 50 ,75 and 100 mm  
Length : 2440 mm / 3000 mm  
Width : 50 - 1000 mm



## TYPES OF SIDE HEIGHTS

STR

Straight

RFI

Return Flange  
Inside

RFO

Return Flange  
Outside

CTI

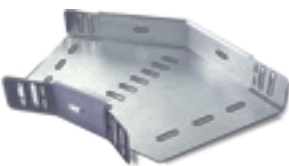
C-Type Inside

CTO

C-Type Outside

## FITTINGS

### BEND 45°



### BEND 90°



### INTERSECTION



### OUTSIDE RISER BEND 45°



### INSIDE RISER BEND 45°



### OUTSIDE RISER BEND 90°



### INSIDE RISER BEND 90°



### REDUCER



### TEE BRANCH



# CABLE LADDERS (WELDED & SWAGED)

Cable Ladder Trays, are designed to meet most requirements of cable and electrical wire installations and comply to local and international standards of fabrication and finishing. Cable Ladder Trays consist of two longitudinal side rails connected by rungs. SFSP designs are very popular due to their versatility and low costs. They also provide: maximum ventilation for conductor cooling, smooth edges on side rails and rungs to protect cables and slots for easy cable fastening when required. Various rung spacings are available to provide support for most cables, from small flexible cables to the most rigid interlocked armor power cable

## LADDER TYPE RUNS ALUMINUM SECTION

### Swaged Tubular Rung

**ALUMINUM 6063 T6**

Thickness : 2.00 and 2.5 mm  
Height : 110, 136, 162 AND 188 mm  
Load Depth : 80, 106, 132 and 158 mm  
Width: 150, 225, 300, 450, 600, 750, 900 mm



## STEEL LADDER TYPE RUNS STEEL SECTION

### Swaged Tubular Rung

**STEEL S235 JRG2**

Thickness : 2.00 and 2.5 mm  
Height : 105, 130, 155 mm  
Load Depth : 75, 100, 125 mm  
Width: 150, 225, 300, 450, 600, 750, 900 mm

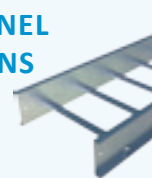


## WELDED C-CHANNEL LADDER TYPE RUNS SECTION

### Welded C-Channel

**STEEL S235 JRG2**

Thickness : 2.00 and 2.5 mm  
Height : 105, 130, 155 mm  
Load Depth : 75, 100, 125 mm  
Width: 150, 225, 300, 450, 600, 750, 900 mm



## FITTINGS

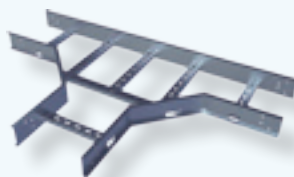
### BEND 45° CORNERED



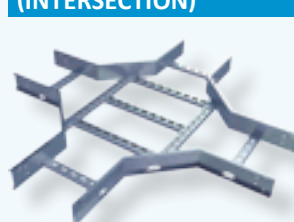
### BEND 90° CORNERED



### TEE BRANCH



### HORIZONTAL CROSS (INTERSECTION)



### INSIDE VERTICAL EL-BOW (INSIDE RISER)



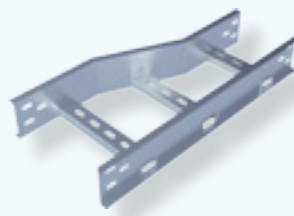
### OUTSIDE VERTICAL EL-BOW (OUTSIDE RISER)



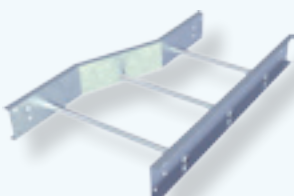
### STRAIGHT CENTRAL REDUCERS



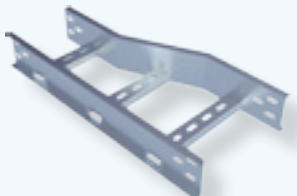
### RIGHT HAND REDUCERS



### RIGHT HAND REDUCERS



### LEFT HAND REDUCERS





# BASKET TRAYS SYSTEMS

SFSP's Basket Tray Systems enable fast and simple connections with limited need for tools. SFSP's design allows continuous airflow, and prevents the buildup of dust, contaminants and bacterial proliferation. Strong, flexible and adaptable, SFSP's Basket Trays come in a full range of sizes and is made with high-strength welded steel wires. Support accessories for any application or situation are available. Basket Tray is produced by first welding a net, forming the channel and then finishing after fabrication.

## System Overview

### BASKET TRAYS

**Side Height:** 55 mm, 80 mm, 105 mm and 150 mm

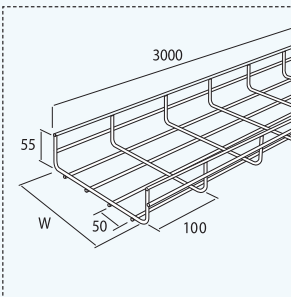
**Widths:** From 50 to 800 mm

**Materials:** Stainless steel, hot-dip galvanized to DIN EN ISO 1461

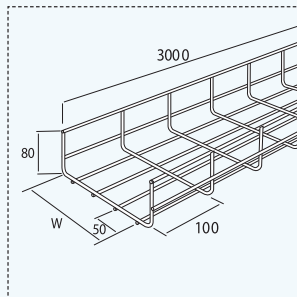
**Wire Ø:** 4mm

Basket Trays and accessories are also available in other dimensions and additional plastic coating upon request.

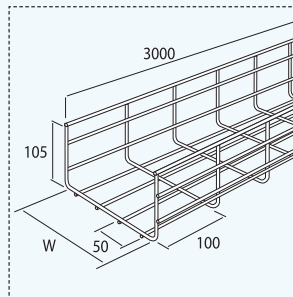
BT 55 | Height 55 mm



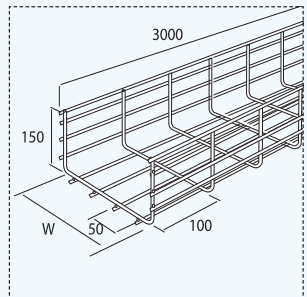
BT 80 | Height 80 mm



BT 105 | Height 105 mm

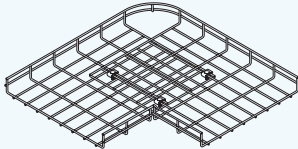


BT 150 | Height 150 mm

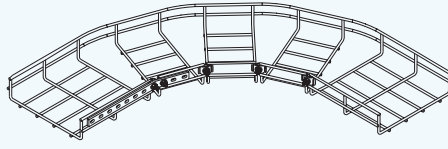


### 90° HORIZONTAL BENDS

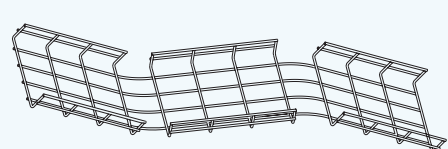
SHORT RADIUS



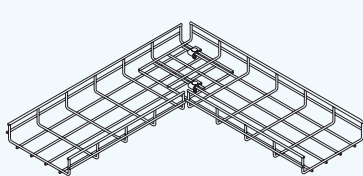
LONG RADIUS



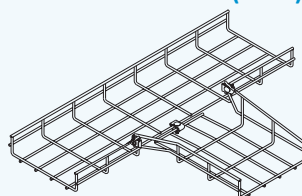
OUTSIDE INSIDE BENDS



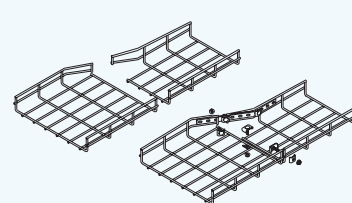
STRAIGHT SECTIONS



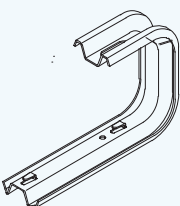
HORIZONTAL TEES (cross)



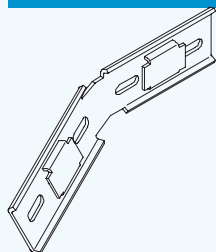
REDUCERS



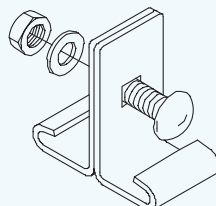
BRACKETS



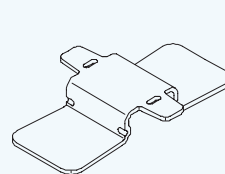
MOUNTING BRACKETS



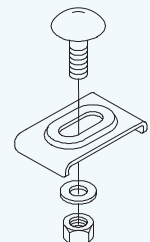
CENTRAL HANGER



CONNECTORS



CLAMPS



# CABLE TRUNKINGS

Cable Trunkings are designed to meet most requirements of cable and electrical wire installations and comply to local and international standards of fabrication and finishing.

Cable Trunkings and Accessories are offered in a comprehensive range, also available within various thicknesses from 0.9 mm to 2 mm according to the specific projects' specifications and as per customers' request.

## - BS EN 50085-1 -2005

Cable trunking systems and cable ducting systems for electrical installations  
(General requirements)

## - BS EN 50085-2 -2006

Cable trunking systems and cable ducting systems for electrical installations  
(Particular requirements)

## - SASO IEC (61084/2008)

Saudi Standard  
(Cable trunking systems and cable ducting systems for electrical installations)

## - NEC (ANSI / NFPA 70)

National Electric Code  
(Metal cable tray guidelines)

## - CSI Code 26 05 33

Raceway and Boxes for Electrical Systems

*\* BS 4678-1 is replaced by BS EN 50085-1 :2005 and BS EN 50085-2 :2006*

## TECHNICAL INFORMATION

### Thicknesses:

1 mm - 1.2 mm - 1.5 mm

### Available trunkings' lengths are:

2440 mm / 3000 mm

### Dimensions:

50x50, 75x50, 75x75, 100x50, 100x75,  
100x100, 150x50, 150x75, 150x100,  
150x150, 200x100, 300x100, 450x100,  
600x100 mm



### SINGLE COMPARTMENT



### DOUBLE COMPARTMENT



### TRIPLE COMPARTMENT



# UNDERFLOOR TRUNKING

SFSP, Underfloor Trunking Systems solutions incorporate a range of products for the distribution of power and data services, it is a coordinated set of containments that protect, segregate, contain, and route cables within a given environment. Raised Floor Trunking Systems are increasingly adopted in new commercial buildings. Cable containment services are in modular design for the day-to-day changes within the office premises, for the ease of cable termination for the various services, such as computer / data / voice and BMS / CCMS structured cabling, where the raised floor makes a new level for cables containment in the floor void.

## 1- FLUSH FLOOR TRUNKING SYSTEM

Flush floor trunking system combines robustness and reliability, allowing power and data distribution throughout concrete floors. The system facilitates frequent maintenance operations or eventual changes of floor box locations. Different accessories ensure quick installation and perfect integration into the concrete floor.

### Flush Trunking and Accessories

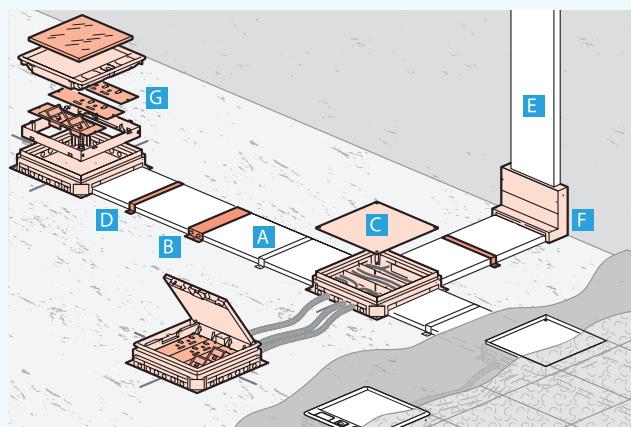
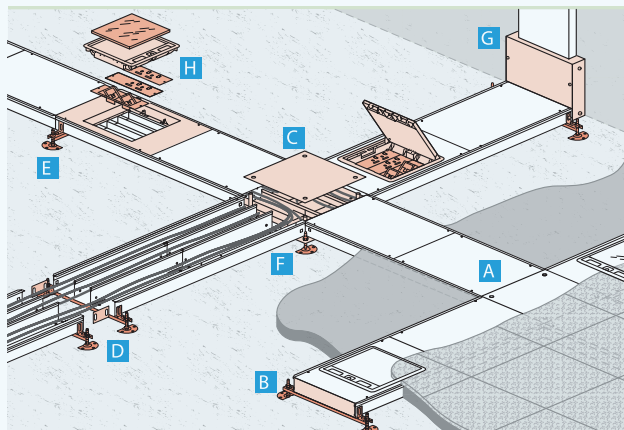
**Material:** pre-galvanised steel sheet

**Standard Length (L):** 2440 / 3000 mm

**Number of Compartments:** 3 and 4 compartments

**Standard Height (H):** 65 mm

**Standard Thickness:** 1.5 mm for body/2.5 mm for covers/1 mm for dividers



## 2- SCREED FLOOR TRUNKING SYSTEM

Screed metallic trunkings are a quick and easy way to install power and data distribution throughout screed floors. These systems are particularly robust and are designed to support superior loads. Junction boxes and risers allow easy access when installing cables or for extensions.

### Screed Floor Trunking System

**Material:** pre-galvanised steel sheet

**Standard length:** 2440 / 3000 mm

**Number of Compartments:** 3 and 4 compartments

**Standard Height:** 25 mm and 38 mm

**Standard Thickness:** 1.2 mm for body/1 mm for dividers

## 3- RAISED ACCESS FLOOR SYSTEM

Different solutions for all your projects integrating raised access floor allow you to make well

Organized and functional offices and save time and money during installation or future reconfiguration.

Our solutions have been designed for reliability, ease of installation and maximum flexibility.

This trunking system is compatible with any traditional raised access floor and has been especially designed to ensure fast installation, reliability, robustness and flexibility.

### Floor Boxes

Conforms to IEC 60670-23 and to BS EN 50 085-2.2

Compatible with dush door trunking systems ,screed door systems and raised access door trunking systems.





# C-CHANNEL STRUT SYSTEMS

SFSP Metal Framing system provides an economical solution for electrical, mechanical and industrial supports with a wide variety of applications in the construction industry.

## Metal Framing / Electrical Applications

- Pipe & conduit supports
- Tunnel pipe stanchions
- Beam attachments
- Pipe risers

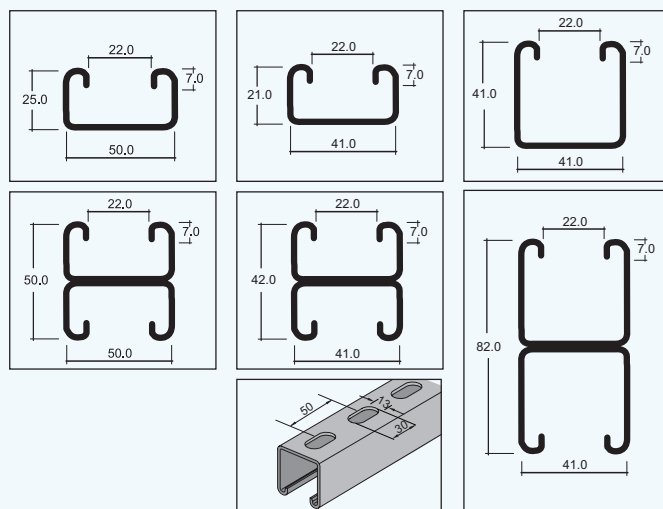
## Metal Framing / Industrial Applications

- Racks and shelvings
- Production line supports
- Trolley systems
- Wall framings

## Metal Framing Channels

### Selection Chart

Part No	Channel Dimensions		Thickness
	Height "H"	Width "W"	
CCH - 220/221	21.0 mm	41.0 mm	1.5 mm
CCH - 240/241	41.0 mm	41.0 mm	1.5 mm
CCH - 260/261	25.0 mm	50.0 mm	1.5 mm
CCH - 320/321	21.0 mm	41.0 mm	2.0 mm
CCH - 340/341	41.0 mm	41.0 mm	2.0 mm
CCH - 360/361	25.0 mm	50.0 mm	2.0 mm
CCH - 420/421	21.0 mm	41.0 mm	2.5 mm
CCH - 440/441	41.0 mm	41.0 mm	2.5 mm
CCH - 460/461	25.0 mm	50.0 mm	2.5 mm



**CCH 320**

**3** **2** **0** **T**

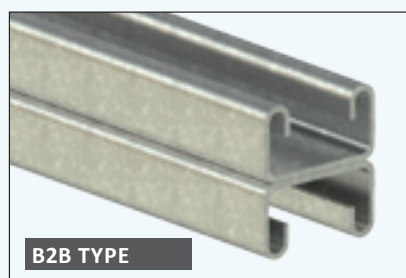
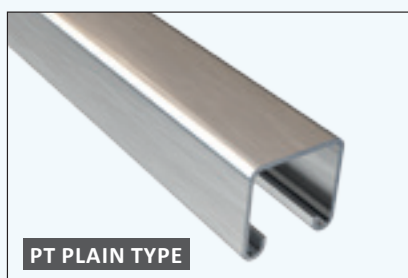
Material Thickness: 2 for 1.5 mm, 3 for 2.0 mm, 4 for 2.5 mm

Size: 2 - 21/41 mm, 4 - 41/41 mm, 6 - 25/50 mm

Channel Patterns: 0 - PT, 1 - ST, 2 - B2B

Toothed channel

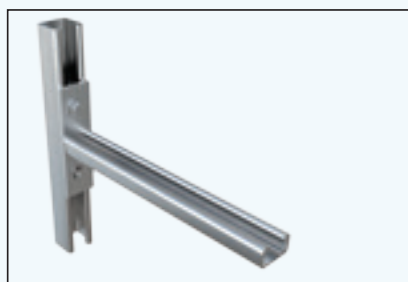
## CHANNEL HOLE PATTERNS



## TOOTHED CHANNEL



## CANTILEVER ARM BRACKETS - SCA



## CANTILEVER ARM BRACKET B2B - SCA



# FIBERGLASS REINFORCED PLASTIC CABLE MANAGEMENT SYSTEMS

SFSP Fiberglass Reinforced Plastic Cable Management Systems are designed, manufactured, and tested to be installed in most harsh environmental conditions of onshore and offshore facilities for several industries including Oil and Gas, Petrochemicals, Manufacturing, Mining and others. FPR Cable Management Systems are required in the most corrosive conditions as a reliable and efficient alternative to the commonly used Steel Cable Management Systems making it ideal for caustic, harsh and marine environments. Its properties are well suited to withstand daily exposures to wind, weather and saltwater. SFSP Fiberglass Reinforced Plastic Cable Management Systems provides the load capacity of steel plus through a non-magnetic and corrosion-resistant alternative.

Our systems are designed to fulfill the following standards' requirements:

- A. NEMA FG 1-2002 Non-Metallic Cable Tray Systems
- B. NEMA VE 2-2002 Cable Tray Installation Guidelines
- C. ANSI/NFPA 70 National Electrical Code

## FIBERGLASS CABLE LADDER TRAYS SYSTEM

FRP Cable Ladder Trays System is chosen by engineers, designers, contractors, installers and end users for multiple reasons on top is its durability, resistance to corrosion, low-maintenance cost, and cost efficiency. FRP Cable Ladder Trays System is available in a variety of sizes and styles.

### OVERVIEW

#### MATERIALS

Polyester and Vinyl Ester

#### MATERIAL THICKNESS

3.00 mm | 4.00 mm

### RUNS

#### Side Height 75mm (3")

Thickness : 3.00 / 4.00 mm  
Side Height : 75 mm  
Length : 3000 mm / 6000 mm  
Width : 150-900 mm  
Rung : 41x21x1.5mm

#### Side Height 100mm (4")

Thickness : 3.00 / 4.00 mm  
Side Height : 100 mm  
Length : 3000 mm / 6000 mm  
Width : 150-900 mm  
Rung : 41x21x1.5mm



#### Side Height 125mm (5")

Thickness : 3.00 / 4.00 mm  
Side Height : 125 mm  
Length : 3000 mm / 6000 mm  
Width : 150-900 mm  
Rung : 41x21x1.5mm

#### Side Height 150mm (6")

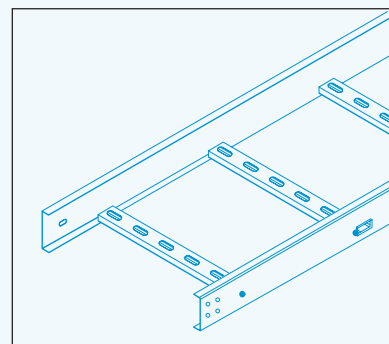
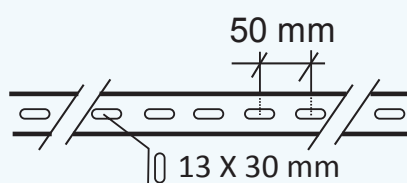
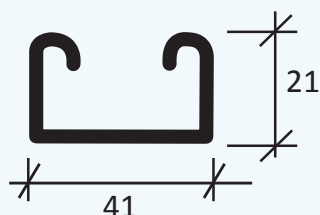
Thickness : 3.00 / 4.00 mm  
Side Height : 150 mm  
Length : 3000 mm / 6000 mm  
Width : 150-900 mm  
Rung : 41x21x1.5mm

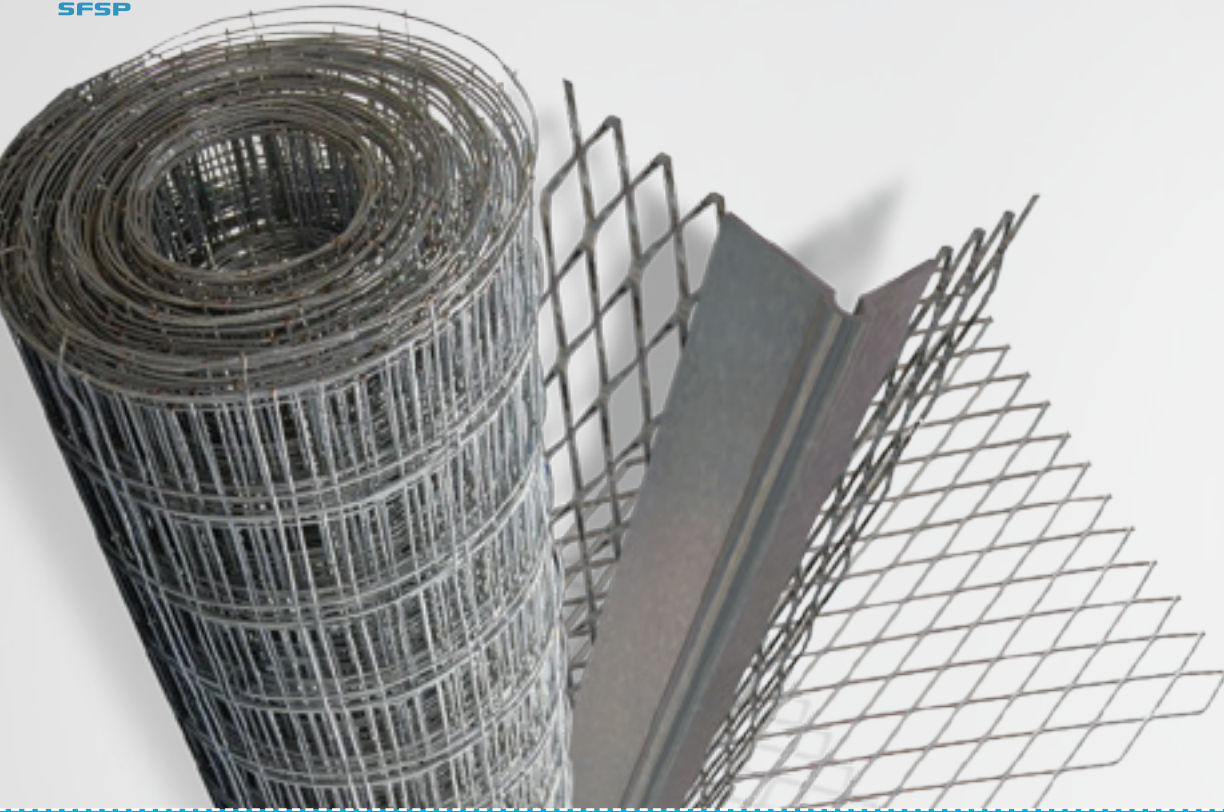
#### Side Height 175mm (7")

Thickness : 3.00 / 4.00 mm  
Side Height : 175 mm  
Length : 3000 mm / 6000 mm  
Width : 150-900 mm  
Rung : 41x21x1.5mm

### RUNG TYPES AND DIMENSIONS

Rung Thicknesses: 1.5 mm





## 2/ EXPANDED METALS, PLASTERERS' BEADS

Expanded Metals help the formation of joints, protection of corners and resistance against cracks, chips and impact damage. Calculations are provided by our design office in Stuttgart, Germany.

- For interior applications:  
Galvanized Steel according to BS EN 10327 superseded by BS EN 10346:2009, zinc coated on both sides.
- For exterior applications and humid environment:  
Austenitic stainless steel according to BS EN 10088- Mat.No.1.4301

### Technical Specifications

#### Metal Beads

Relevant Standards:

- BS EN 13914- 2 : 2005 Design , Preparation and Application of External Rendering and Internal Plastering
- BS EN 13658-1 : 2005 Metal Lath and Beads – Definitions , Requirements and Test Methods , Internal Plastering Supersedes BS 1369-1 :1987 and BS 6452-1 : 1984
- BS EN 13658 – 2 : 2005 Metal Lath and Beads – Definitions , Requirements and Test Methods , External Plastering Supersedes BS 1369-2 :1987 and BS 6452-2 : 1984
- ASTM C841 – Standard Specification for Installation of Interior Lathing and Furring
- ASTM C847 - Standard Specification for Metal Lath
- ASTM C1063 – Standard Specification for Installation of Lathing and Furring for Portland Cement – Based Plaster
- International Building Code , ( IBC ) Chapter 25
- International Residential Code , ( IRC ) Chapter 7

Galvanized Steel:

- BS EN 10346:2009 (formerly BS EN 10142: 1991) coating type: Z180-275 ASTM A 653/A 653M

Stainless Steel:

- BS EN 10088-2:2005 (which was directly equivalent to formerly BS 1449:Part 2:1983 in Grade 304 2B FINISH
- ASTM A240/A240M in Grade 304 2B FINISH

## Expanded Metal Lath & Block Work Expanded Mesh

### Relevant Standards:

- BS EN 13658-1 & 2:2005 (formerly BS 1369:Part 1:1987)
- ASTM C 847

### Galvanized Steel:

- BS EN 10346:2009 (formerly BS EN 10142:1991)  
coating type:  
Z180-275
- ASTM A 653/A 653M

### Stainless Steel:

- BS EN 10088-2:2005, which was directly equivalent to formerly  
BS 1449:Part 2:1983 in Grade 304 2B FINISH
- ASTM A240/A240M in Grade 304 2B FINISH

## Reinforcement Mesh

### Relevant Standards:

- BS EN 845-3:2003  
ASTM A 951/A 951M

### Cold drawn steel for concrete/masonry reinforcement

- BS 4482:2005  
ASTM A 496/A 496M, ASTM A 82/A 82M

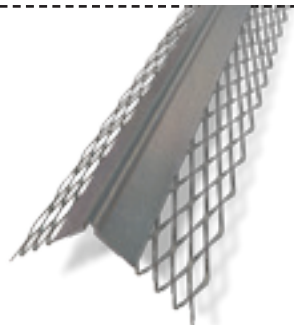
### Pre galvanized steel wire

- BS EN 10244-2:2001 formerly BS 443  
ASTM A 641/A 641M

### Stainless Steel wire

- BS EN 10088-3:2005 (which was direct equivalent to formerly  
BS 1554:1990)  
BS 1449:Part 2:1983 in Grade 304 2B FINISH  
ASTM A 1022/A 1022M

Angle beads provide with its solid metal nose a straight corner. Expanded diamond mesh wings allow for keying the plaster right up to the nose of the bead. It is designed to protect the corners.



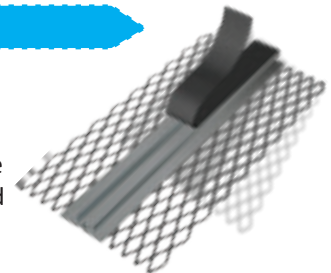
## PLASTER STOP BEAD

Plaster stop bead provides a straight accurate line, it is used to reinforce the plaster or render on its edge. Plaster stop bead is designed as a universal plaster stop used at wall ends, door and window openings to make a neat, flush frame.



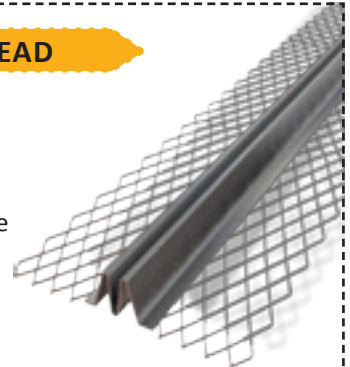
## MOVEMENT BEAD

Movement Beads are used to relieve the stress and strain in large plaster areas of wall and ceiling stucco areas and to allow for movement between adjoining surface finishes.



## CONTROL JOINT BEAD

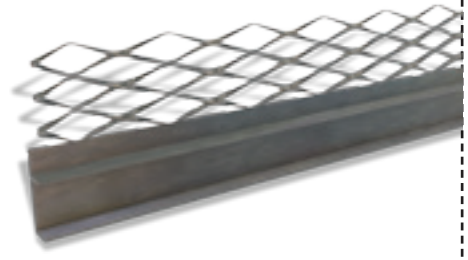
Designed to minimize the plaster cracking and to allow movement in the plaster. They provide for the basic expansion and contraction that can be expected in the stucco membrane, such as initial shrinkage during curing and minor thermal expansion and contraction.





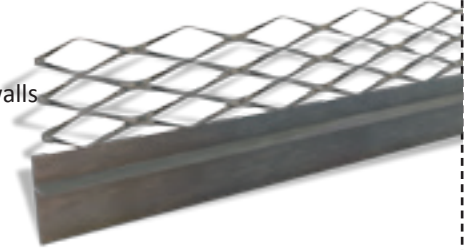
### ARCHITRAVE BEAD WITH FLANGE

Mainly used for decorative purposes to give a channel gap or a shadow between different walls finishes.



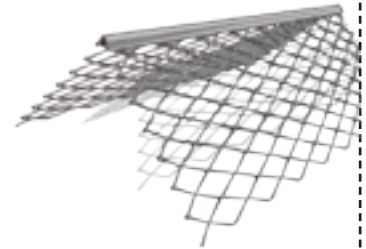
### ARCHITRAVE BEAD WITHOUT FLANGE

Mainly used for decorative purposes to give a shadow between different walls finishes.



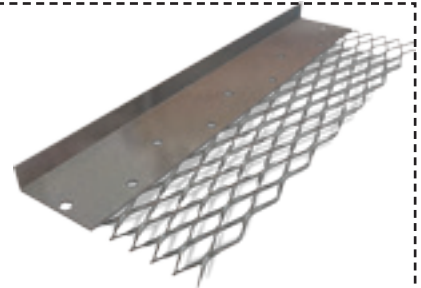
### MICRO ANGLE BEAD

Micro angle beads are designed for thin coat plaster and are used at corners for protection. Micro angle beads are popular thin coat beads with fine mesh wings. Fix either by galvanized nails or using plaster dabs.



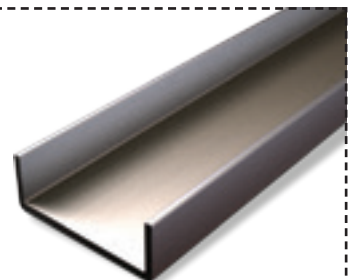
### MICRO PLASTER STOP BEAD

Micro plaster stops are designed for thin coat edge protection at openings. They provide abutment of plastered areas of other wall finishes. Micro plaster stops provide efficient keying and excellent finishes.



### ALUMINUM CHANNEL

The Aluminum Channel is a versatile product, commonly used for groove making; a decorative purpose for plaster finishes.



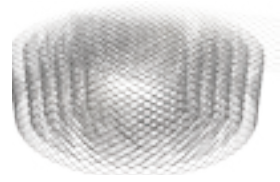
### STRIP MESH

Strip Mesh Lathes are used along stress lines where cracking is likely. Strip mesh provides reinforcement to the plaster to prevent crack over joints of different materials.



### BR MESH

Block reinforcement meshes are produced for brick and block work reinforcement. Their primary usage is to prevent cracking. Brick reinforcement meshes increase resistance to tensional stress.



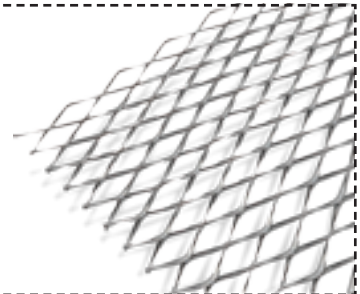
### CORNER MESH

Corner mesh lathes are used to prevent cracking in the plaster.



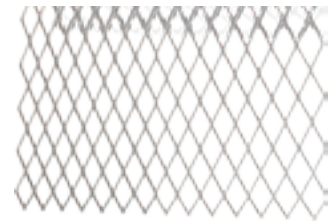
### COIL LATH

An easy to fix lath, provides a secure key for plaster and render applications as well as offering effective joint and crack reinforcement.



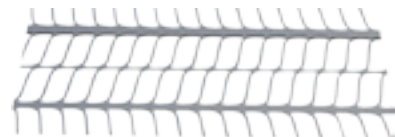
### METAL SHEET LATH

Sheet lath is produced as a key for plaster when applied on suspended ceiling and walls. Sheet lath is used for encasing steel column and beams, assisting in the protection from fire.



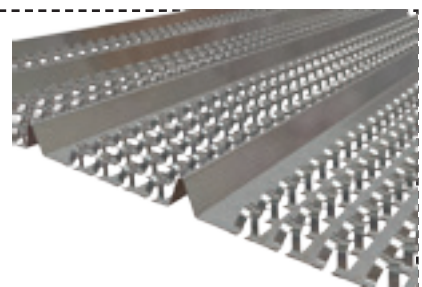
### METAL RIB LATH

Rib lathes are expanded metal lathes stiffened with longitudinal ribs. The furring design of the mesh provides efficient background plaster for construction of partition, suspend ceiling and refurbishment works.



### HY-RIB LATH

Manufactured from Pre-galvanized steel to BSEN 10327. Hy Rib is available using stainless steel to BSEN 10088-2 type 1 .4301 . The profile of Hy Rib open mesh in combination with its ribs provide an inherently stiff sheet along its length.





## 3/BLOCK WALL REINFORCEMENT

SFSP ladder and truss types are used for the reinforcement of brick and block masonry to give improved tensile strength to walls subjected to lateral loading e.g. wind and seismic.

SFSP block reinforcements reduces the risk of cracking either at stress concentration around opening. Calculations are provided by our design office in Stuttgart, Germany.

### SPECIFICATIONS

SFSP reinforcement truss type are manufactured by resistance welding of ASTM A82 cold drawn steel wire deformed at predetermined centers conforming to BS 4483:2005.

### DIMENSIONS

- Hot-dip galvanized.
  - Main wire diameter = 4.0 mm 4.8 mm
  - Rung and diagonal wire diameter = 4.0 mm 4.8 mm
  - Rung wire centers = 400 mm
- Stainless steel AISI 304
  - Main wire diameter = 4.0 mm 4.8 mm
  - Rung and diagonal wire diameter = 4.0 mm 4.8 mm
  - Round wire centers = 400 mm

The production of cold reduced steel wires complies to BS 4483:2005 and ASTM A951 / A951M - 11 Standard Specification for Steel Wire for Masonry Joint Reinforcement

- a) Mechanical Properties
  - Specified characteristic strength: 460 N/mm<sup>2</sup> (Mpa)
  - Tensile strength min 510 N/mm<sup>2</sup> (Mpa)
- b) Chemical composition of steel
  - Carbon C max. 0,25 %, Sulphur S: max 0.06 %
  - Carbon equivalent value Ceq: max 0.4 %,  $Ceq = C + Mn/6 + (Cr + V + Mo)/5 + (Cu \times Ni)/15$

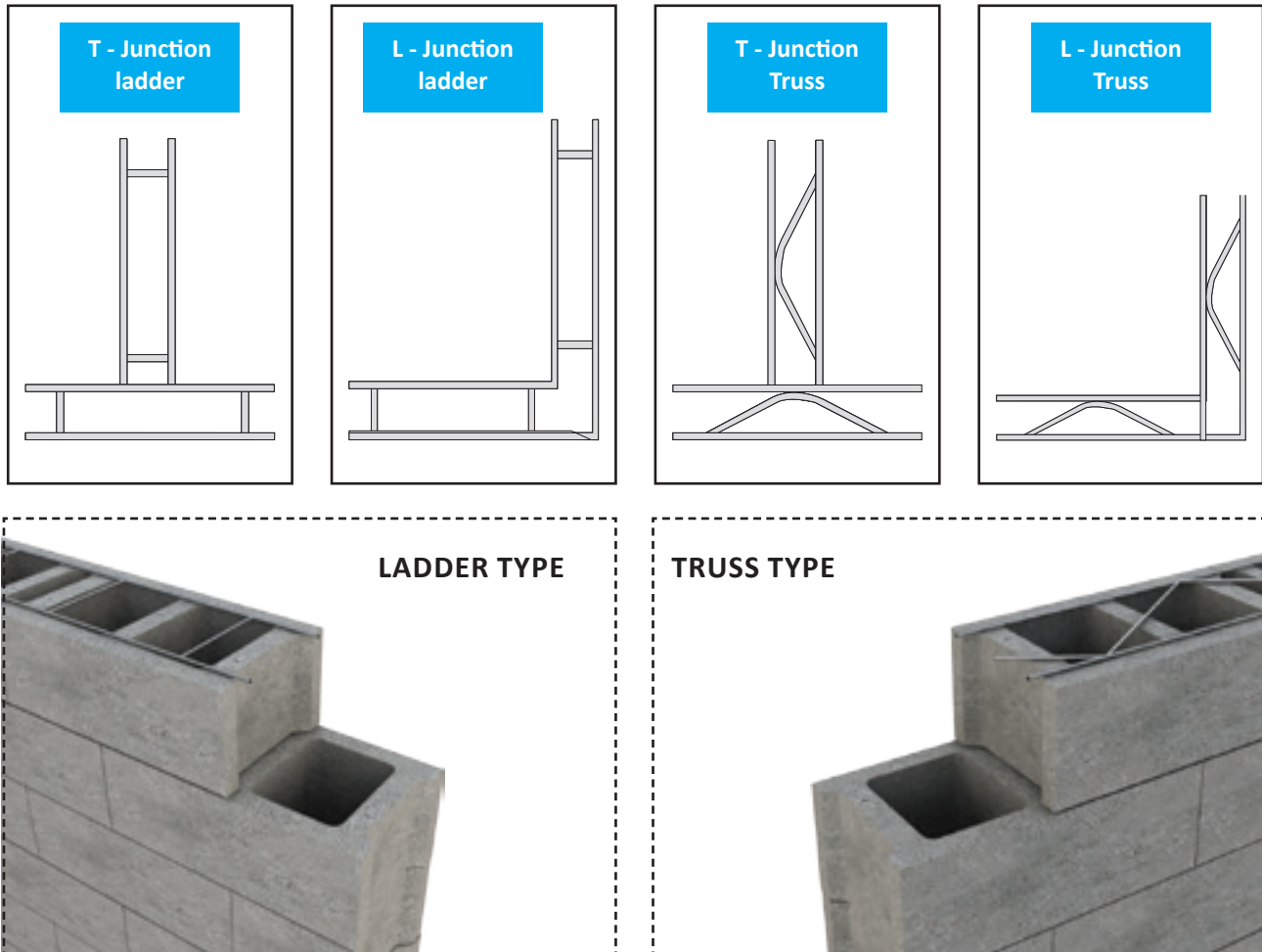
SFSP Block ladder (Ladder type and Truss type) are continuous lengths of joint reinforcement that are embedded into the horizontal joints of masonry walls.

Block reinforcement offers the following benefits:

- Increases lateral flexural strength.
- Reduces cracking that can arise from thermal stresses.
- Bonds exterior and interior masonry withes together in composite or cavity walls.
- Bonds masonry at intersecting walls and corners.
- Increases performance of masonry wall under various stresses



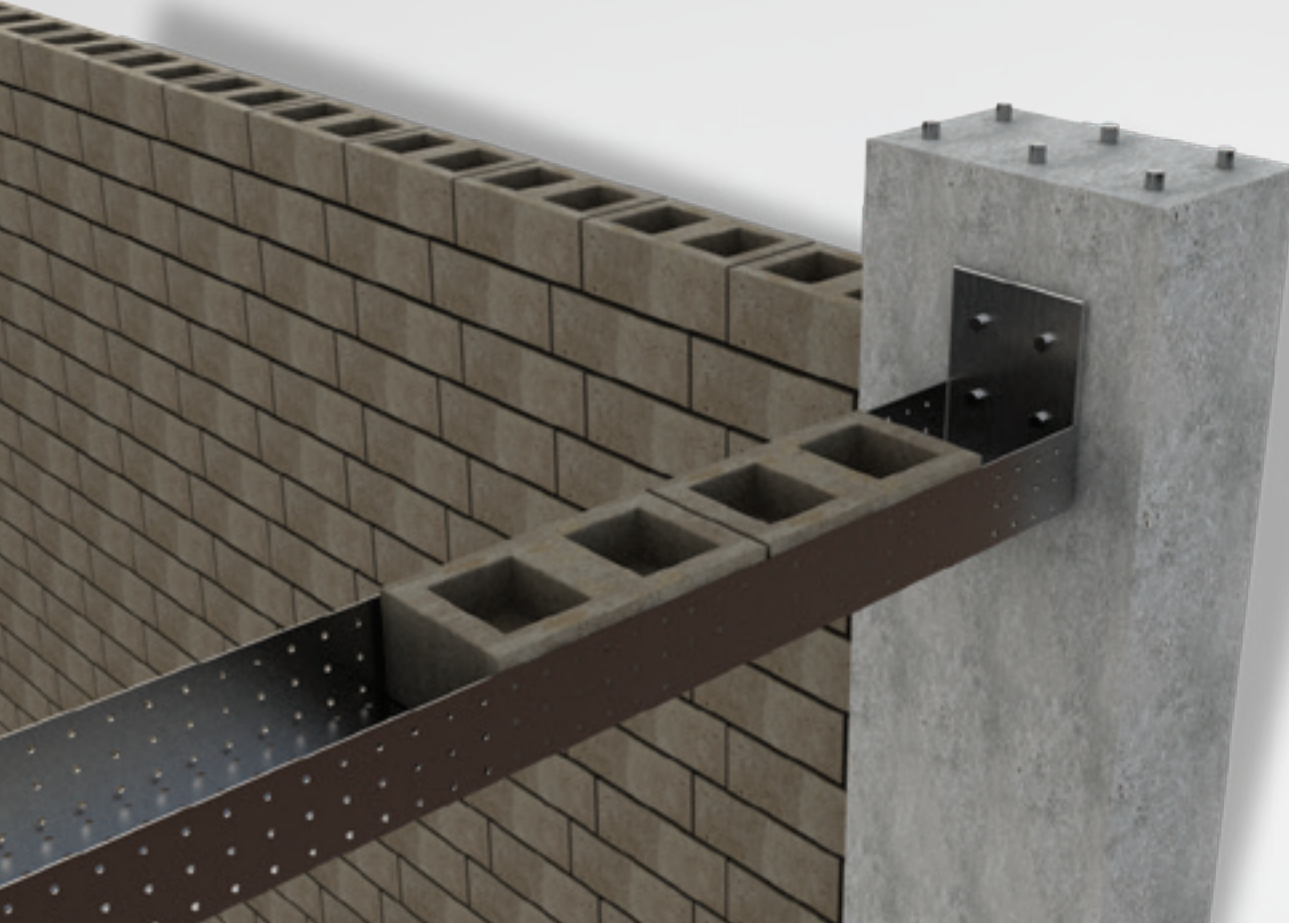
SFSP ladder and truss types are used for the reinforcement of brick and block masonry to give improved tensile strength to walls subjected to lateral loading e.g. wind and seismic. SFSP block reinforcements reduces the risk of cracking either at stress concentration around opening. They can also be beneficial in reducing the effects if vibration and differential movement. The longitudinal steel wires are flattened to ensure good mortar cover, even when lapped or used with wall ties.



The GI Pullout Box is supplied in retainer boxes made from galvanized sheet steel, for the reliable transmission of shear forces. The GI Pullout Box, designed to ensure the exact distance between rods, in which the holes are made slightly bigger than the rod diameter.

Material Used: Galvanized sheet, different zinc coatings.  
 Gi Pullout Box Length: 1.2m, 2.44m, 3m (other length can be manufactured upon request.)  
 Gi Pullout Box Width: 100mm, 400mm (other widths, smaller or larger can be arranged.)  
 Hole Diameter: 10mm, 25mm (other punching required, can be done.)  
 Material Thickness: 0.4mm 1.5mm as standard (other thicknesses can be manufactured upon request)  
 Covers: According to the requirements.

**PULLOUT  
BOX**



## STEEL LINTELS & BLOCK WORK ACCESSORIES

Steel Lintels provide a combination of strength and light weight, resulting in efficient load bearing performance and increased productivity on site. They are characterized by their ease of installation in addition to time as well as money saving. Calculations are provided by our design office in Stuttgart, Germany.

### **MATERIAL & FINISHES**

- Hot rolled steel S235JR as per EN 10025 / ASTM A-1011 CS Type B (formerly ASTM A569 or ASTM A570)
- Cold rolled steel DC01 as per EN 10130:2006 / ASTM A1008 CS Type B ( formerly ASTM A-366) and then:
  - Hot-dip galvanized as per BS EN ISO 1461:2009 (formerly BS 729 ) / ASTM A123 or
  - Electro plated as per EN 12329 / ASTM B633 (Electrodeposited coatings of zinc on iron and steel)

- Pre-galvanized steel DX51D±Z as per EN 10346:2009 G120, G180 (G275 is available upon special request) which supersedes EN 10327 which is a replacement of EN 10142 which in turn supersedes BS 2989 / ASTM A653M zinc coated (hot-dip galvanized) iron and steel CS (commercial) or SS (structural) quality G60 and G90 is available upon special request (formerly ASTM A527M) / ASTM A924 (coating) (formerly A525)

- Stainless steel 1.4301 as per EN 10088 - 2:2005 (formerly BS 1449 Part 2 / ASTM A240M, Grade AISI 304)

### **SPECIFICATIONS**

- Steel Lintels - manufactured to BS 5977: Part 2 :1983 / BS EN 845-2:2003.
- Wall Ties - manufactured to BS EN 845-1:2003 ( Formerly BS 1234 ).
- Block Reinforcement Ladder and Truss - manufactured as per ASTM A82 / ASTM A951 / BS 845-3:2003 DIN 488.

## STEEL LINTELS

### SPECIFICATIONS

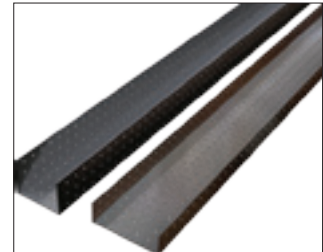
SFSP steel lintels offers an economical, efficient and timely effective solution when compared to ordinary lintels. Manufactured according to BS EN 845-2:2003, SFSP steel lintels range have safe working loads as detailed in each applicable loading table to ensure the most safe application for installers, taking into account the different loading arrangements which are common to traditional solid wall construction.

SFSP lintels are made from:

- Pre-galvanized steel complying with:
    - BS EN 10143
    - ASTM A527 - A653
    - DIN EN 10327
  - Mild steel sheet complying with:
    - BS 1449 : sec 1.1 to 1.15
    - ASTM A36
  - Steel paint finish
  - Powder coated finish
  - Stainless steel complying with:
    - BS 1449 : part 2
    - AISI 304, A2
    - DIN, material no. 1.4301
    - EN 10088
- Then hot-dip galvanized in accordance with:
- BS EN ISO 1461
  - ASTM A123

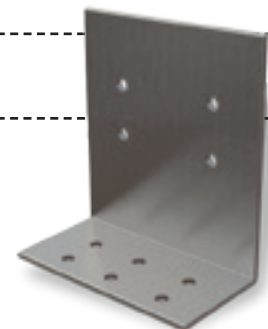
### INSTALLATION

- 20 cm end bearing recommended at each side.



## LINTEL BRACKETS

Brackets are supplied with fixing holes to suit metal expansion anchor sizes



## CRAMPS AND TIES

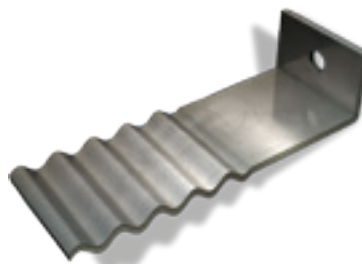
### Head End Options

These ends have been manufactured to fit standard channel sections that is preset into concrete or surface fixed to any inner skin or structural ground



### Tail End Options

The most common method of anchoring a tie to a slab facing, is by means of a round dowel into a drilled hole, split tangs on the tie may also be used. For bonding into brickwork the "Fishtailed" end is the traditional.

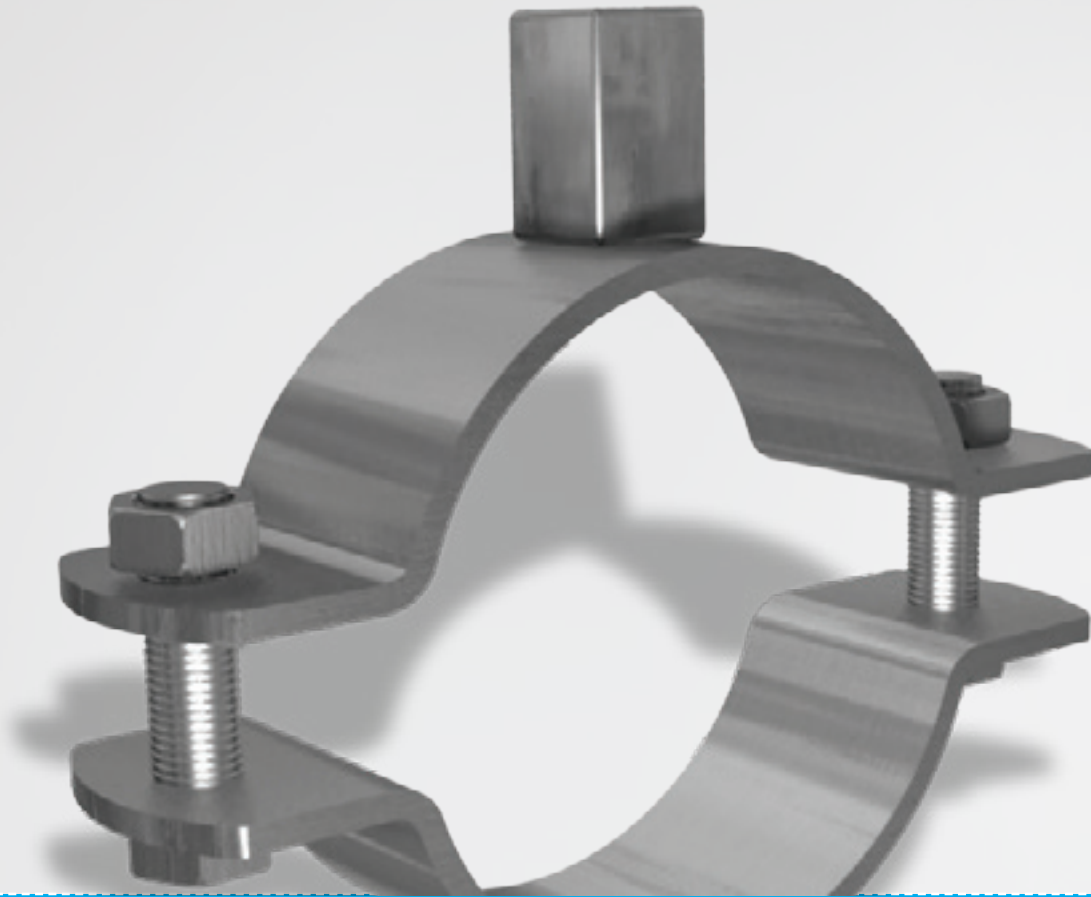


### Shank Options

Shanks may be plain or may include a drip to stop the passage of moisture across.







## 5/ PIPE CLAMPS & HANGERS

Pipe Clamps and Hangers from SFSP used in the support of pipes and equipments are manufactured according to the highest standards of fabrication. A diversified choice of Pipe Hangers, Pipe Clamps, EMT Straps, Omega Clamps, Beam Clamps, J and U-Bolts and Threaded Accessories. Calculations are provided by our design office in Stuttgart, Germany.

### APPLICABLE STANDARDS

- BS 3974 Specifications for pipe hangers and support
- ASTM F 708 (standard practice for design and installation of rigid pipe hangers)
- Federal Specifications  
WW-H-171 E (Hanger and Support)  
A-A-1192 A (Bracket, Pipe)
- Manufacturers Standardization Society (MSS)

ANSI/MSS SP-58 Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation  
MSS SP-69 Pipe Hangers and Support-Selection and Application

MSS SP-77 Guidelines for Pipe Support Contractual Relationships

MSS SP-89 Pipe Hangers and Support-Fabrication and Installation Practices

MSS SP-90 Guidelines for Terminology for Pipe Hangers and Support

MSS SP-127 Bracing for Piping Systems Seismic - Wind - Dynamic Design, Selection, Application

Pipe hangers offered in this section are designed to support pipes allowing for vertical adjustment and limited movement in the piping system.

- Material: Carbon Steels are used in the manufacturing of pipe hangers.
- Load Data: The load data published includes a safety factor of 4.0 unless noted (safety factor = ratio of ultimate load to the design load).

### **SPLIT PIPE CLAMP WITH LONG NUT M8/ M10 WITHOUT RUBBER GASKET**

- Material: Steel S235
- Service: Multifunction screw with hexagonal combination head (slot & crosshead), c/ w retaining washer
- Finish: Electro Zinc Plated Split Pipe Clamp with Long Nut M8/ M10 without rubber gasket



### **SPLIT PIPE CLAMP WITH STANDARD NUT M8 WITHOUT RUBBER GASKET**

- Material: Steel S235
- Service: Economy option
- Finish: Electro Zinc Plated



### **SPLIT PIPE CLAMP WITH RUBBER WITH LONG NUT M8/ M10**

- Material: Steel S235
- Service: EPDM rubber insulation for sound reduction compliant with DIN 4109
- Finish: Electro Zinc Plated



### **SPLIT PIPE CLAMP WITH RUBBER WITH STANDARD NUT M8**

- Material: Steel S235
- Service: EPDM rubber insulation for sound reduction compliant with DIN 4109
- Finish: Electro Zinc Plated



### **OMEGA CONDUIT & PIPE CLAMP**

- Material: Steel S235
- Service: Designed for hanging conduit (rigid or EMT) to beam clamps, available with or without closure bolt
- Finish: Electro Zinc Plated



### **CHANNEL CLAMP**

- Material: Steel S235
- Service: For mounting (rigid or EMT) and steel pipes on C-Channels
- Finish: Electro Zinc Plated or Hot-dip Galvanized



## PIPE STRAP

- Two-Hole Pipe Strap/ U-Clip
- Material: Steel S235
- Service: Designed for supporting pipe runs on walls and on C-Channels
- Finish: Electro Zinc Plated



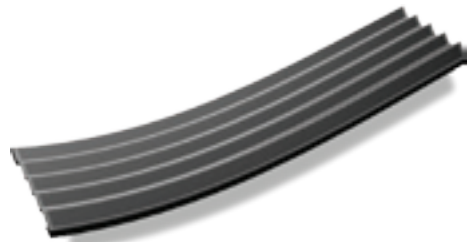
## ONE-HOLE PIPE STRAP <SNAP TYPE>

- Material: Steel S235
- Service: Designed for supporting standard conduits, cable and steel pipes on walls or sides of beams or on C-Channels
- Finish: Electro Zinc Plated



## NOISE SUPPRESSION PROFILE

- Material: EPDM. Rubber
- Load Data: At normal frequency and pressure range, noise suppression 20 dB(A) & the temperature-resistant from -40 °C to + 100 °C
- Electrical values: Specific resistance:  $2 \times 10^9$  M ohm  $\text{cm}^2$  & the Surface resistance:  $2 \times 10^9$  M ohm



## CLEVIS HANGER

- Material: Steel S235
- Finish: Electro Zinc Plated or Hot-dip Galvanized



## ADJUSTABLE BAND HANGER

- Material: Steel S235
- Finish: Electro Zinc Plated or Hot-dip Galvanized



### OFFSET PIPE CLAMP

- Material: Steel S235
- Service: Designed for supporting and stabilizing vertical pipe runs
- Finish: Electro Zinc Plated or Hot-dip Galvanized



### C-CLAMP

- Material: Malleable Cast Iron Zinc plated
- Casting tolerance according to DIN 1684 GTA/17 with hexagon head screw DIN 933 8.8, threaded end with cup point according to EN ISO 4753 and locknut DIN 439 for sprinkler systems, heating, ventilation and air conditioning, acoustic tubes and sanitary installation machines and steel constructions. Safety Factor



### STEEL BEAM CLAMP OPEN

- Material: Steel S235
- Service: Designed for attaching hanger rods to the top or bottom flange of a beam
- Finish: Hot-dip Galvanized
- Ordering: Specify flange width and thickness
- Steel Size: 5X30 mm



### STEEL BEAM CLAMP CLOSED

- Material: Steel S235
- Service: Designed for attaching hanger rods to the top or bottom flange of a beam
- Finish: Hot-dip Galvanized
- Ordering: Specify flange width and thickness
- Steel Size: 5X30 mm, 5X40 mm



### WINDOW BEAM CLAMP

- Material: Steel S235
- Service: Designed for attaching C-Channel to a top or bottom flange of a beam
- Finish: Electro Zinc Plated
- Steel Size: 6x90 mm







## MARBLE & GRANITE FIXINGS

Stangle Cladding Fixation includes design, calculation and production of several types of mechanical fixings and accessories used for cladding purposes. Stainless and galvanized steel are among the various materials used in the fabrication. Calculations are provided by our design office in Stuttgart, Germany.

### INTERNATIONAL STANDARDS FOR CLADDING DESIGN

#### Design & Calculation Standards

Reference is made to the following standards for the design and structural calculations of Natural Stone Fixing Systems.

#### American Standards:

- Uniform Building Code 1997-Volume 2
- ASTM A 276 Standard specification for stainless steel bars and shapes.
- ASTM 666 Standard specification for annealed or cold-worked austenitic stainless steel sheets.
- ASTM C1354 / C1354M - 09 Standard Test Method for Strength of Individual Stone Anchorages in Dimension Stone

#### British Standards:

- BS 8298 Design and installation of natural stone cladding.
- BS 1449 Part 2 Steel plates, sheets and strips stainless and

heat resisting.

- BS 6105 Corrosion resistant stainless steel fasteners.
- BS 5950 Structural use of steel work in building.
- CP3, Chapter 5, Part 2 Wind loads.
- BS 970 Part 3 1991, Mechanical properties for stainless steel.

#### German Standards:

- DIN 1045 Concrete and reinforced concrete, design and dimensioning.
- DIN 1053 Masonry, design and dimensioning.
- DIN 1055 Design loads for buildings.
- DIN 18 516 Cladding for external walls.
- DIN 18 800 Steel structures, design and dimensioning.
- DIN 18 801 Steel framed structures.

## TYPES OF FIXINGS

### Principles for the Fixing of Building Cladding

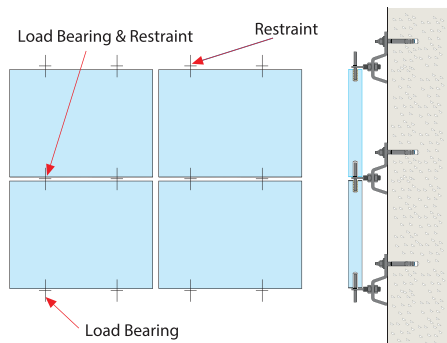
The fixing systems for building cladding are composed of several elements (angles, expansion bolts, screws, nuts, washers, etc), each of which shall present the appropriate mechanical features in respect to the requirements posed by the specific project.

Any type of cladding, once fixed, is subject to two primary types of load:

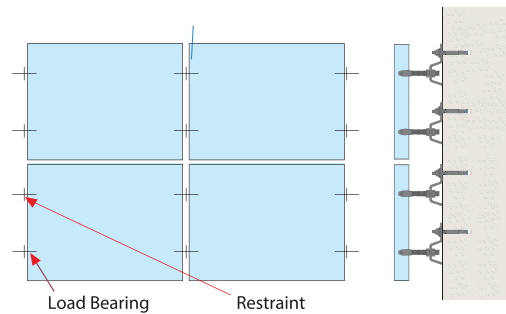
- Permanent load (the dead load), due to the weight of the cladding itself;
- Variable load (applied loads), due to the wind, thermal expansions, seismic motions, etc.

### FIXING VARIATIONS

- Fixing in the horizontal joint

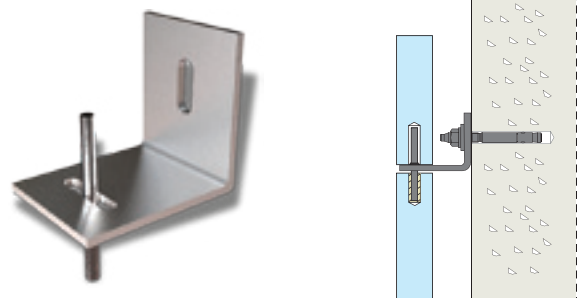


- Fixing in the vertical joint



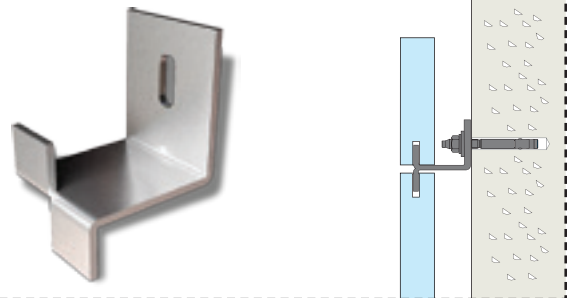
#### L-BRACKET (STANDARD & SERRATED) TYPE ST- 500 1100 WITH PIN

Materials: SS304, SS316, SS316L, SS316TI, S235JR-MG, S235JR-HDG



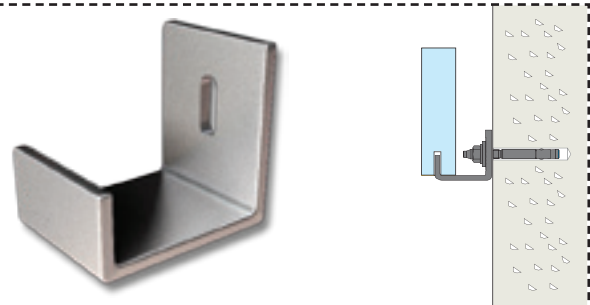
#### L-BRACKET (STANDARD & SERRATED) TYPE ST- 500 1200 UP AND DOWN ANGLE

Materials: SS304, SS316, SS316L, SS316TI, S235JR-MG, S235JR-HDG



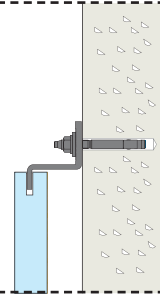
#### L-BRACKET TYPE ST- 500 1300 UP ANGLE

Materials: SS304, SS316, SS316L, SS316TI, S235JR-MG, S235JR-HDG



### **L-BRACKET TYPE ST- 500 1400 DOWN ANGLE**

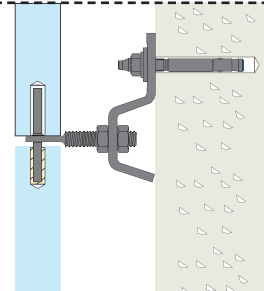
Materials: SS304, SS316, SS316L, SS316TI, S235JR-MG, S235JR-HDG



### **Z-BRACKET WITH BACK LEG TYPE ST- 600 1100**

Horizontal Joint

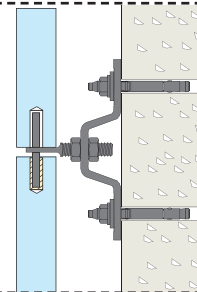
Materials: SS304, SS316, SS316L, SS316TI, S235JR-MG, S235JR-HDG



### **OMEGA BRACKET TYPE ST- 700 1100**

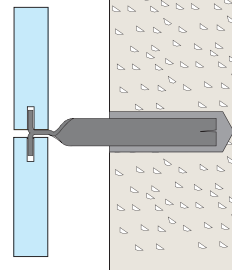
Vertical Joint

Materials: SS304, SS316, SS316L, SS316TI, S235JR-MG, S235JR-HDG



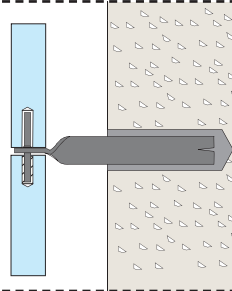
### **TYPE ST- 800 1100 FISHTAIL UP & DOWN**

Materials: SS304, SS316, SS316L, SS316TI, S235JR-MG, S235JR-HDG  
Fixing in Concrete and solid block



### **TYPE ST- 800 1200 FISHTAIL WITH PIN**

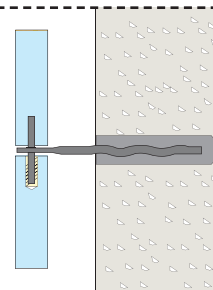
Materials: SS304, SS316, SS316L, SS316TI, S235JR-MG, S235JR-HDG  
Fixing in Concrete and solid block



### **TYPE ST- 900 1100**

Load bearing and restraining  
corrugated stud.

Material: SS304, SS316, SS316L, SS316TI, S235JR-MG, S235JR-HDG





## 7/ DRY WALL & CEILING PROFILES

Gypsum Boards are considered among the most economic and ideal way for wall partitioning. Easy to install, saves time and money, gypsum boards can be used as a backing for wall treatments such as wall paper, fabric, tile and wood paneling or it can simply be painted.

SFSP provides a complete product range for drywall and ceiling constructions. SFSP Studs, Runners, Furring Channels, Ceiling Channels, and wall Angles are among the range of products produced according to relevant standards to service the dry wall installers.

### MATERIALS

Made of :

Pre-galvanized steel complying with:

- BS 2989: Zinc grade Z2, zinc coating type G180, G120 and G275.
- ASTM C645 G90 (275 g/sqm) - G60 (180 g/sqm) - G40 (120 g/sqm) - G20 (60 g/sqm)
- ASTM C754 G90 (275 g/sqm) - G60 (180 g/sqm) - G40 (120 g/sqm) - G20 (60 g/sqm)
- DIN EN 10147

References:

ASTM C1047 : Standard specification for Gypsum Wallboard and Gypsum Veneer Base Accessories.

### PARTITION PROFILES

**STUDS** are vertical profiles inserted into the RUNNERS; bearing profiles of the partition; used for fixing of partition covering (Gypsum Boards).

**RUNNERS** are horizontal profiles to fix the partition to floor and ceiling.



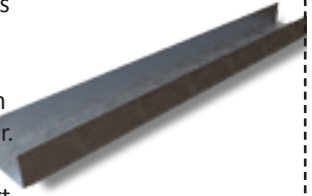
## STUDS & RUNNERS

STUDS are vertical profiles inserted into the RUNNERS; bearing profiles of the partition; used for fixing of partition covering (Gypsum Boards).  
RUNNERS are horizontal profiles to fix the partition to floor and ceiling.



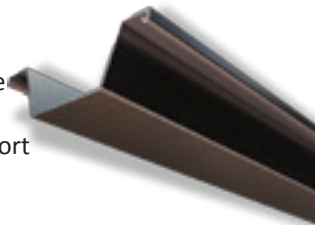
## MAIN CEILING CHANNEL

The metal framing members of the ceiling grid are called main ceiling channel. Main ceiling channel is hung from above by suspension hanger. They run between the wall angles and form the support system for the suspended ceiling.



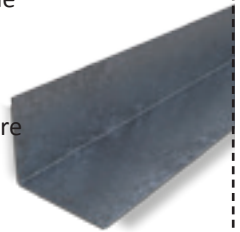
## FURRING CHANNEL

Furring channel: also known as cross furring. They run perpendicular to the main ceiling channel and are connected to it with a wire connection clip. Furring channels are used to support the ceiling panel (Gypsum Board)



## WALL ANGLE

This "L" shaped mouldings form the perimeter of ceiling. They ensure a finished edge where the ceiling meets the wall and establish the level of ceiling. Perimeter angles are set on all sides of the ceiling and should overlap on inside corners- Miter the wall angle on outside corners.



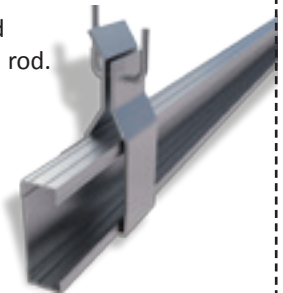
## CHANNEL CLAMP

38 mm channel clamp to hold channel to ceiling by threaded rod



## CHANNEL BRACKET

38mm channel bracket to hold channel to ceiling by threaded rod.



## DOUBLE SPRING CLIP

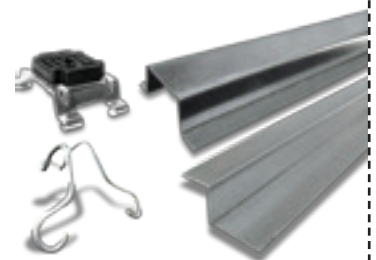
Double spring adjustable clip ceiling level.



## FURRING CLIP

(Connecting clip)

2.5mm dia preformed wire clip to fit furring channel and main ceiling channel.





## 8/METAL CEILING GRID SYSTEMS

Gypsum Boards are considered among the most economic and ideal way for wall partitioning. Easy to install, saves time and money, gypsum boards can be used as a backing for wall treatments such as wall paper, fabric, tile and wood paneling or it can simply be painted.

SFSP provides a complete product range for drywall and ceiling constructions. SFSP Studs, Runners, Furring Channels, Ceiling Channels, and wall Angles are among the range of products produced according to relevant standards to service the dry wall installers.

### MATERIALS

Made of :

Pre-galvanized steel complying with:

- BS 2989: Zinc grade Z2, zinc coating type G180, G120 and G275.
- ASTM C645 G90 (275 g/sqm) - G60 (180 g/sqm) - G40 (120 g/sqm) - G20 (60 g/sqm)
- ASTM C754 G90 (275 g/sqm) - G60 (180 g/sqm) - G40 (120 g/sqm) - G20 (60 g/sqm)
- DIN EN 10147

References:

ASTM C1047 : Standard specification for Gypsum Wallboard and Gypsum Veneer Base Accessories.

### PARTITION PROFILES

**STUDS** are vertical profiles inserted into the **RUNNERS**; bearing profiles of the partition; used for fixing of partition covering (Gypsum Boards).

**RUNNERS** are horizontal profiles to fix the partition to floor and ceiling.

SFSP Ceiling Grid System is a practical, convenient ceiling system. It has a complete range of main c-channel sections and complementary parts so that you can adapt the modules to suit your design needs and load requirements. The design of SFSP Ceiling Grid System components ensures easy assembly, reliability, and the ability to be adjusted or replaced without damage. All components have been designed and tested by SFSP engineers to meet the requirements of ceiling grid support systems. SFSP main c-channel is cold formed on modern rolling machines from low carbon steel manufactured according to BS 6946:1988. With a continuous slot type, it provides the ability to make attachments at any point.

## SYSTEMS

Material: S 235 JRG2  
Finish : Hot Dip Galvanized, Powder Coated

C-Channel Type: Slotted or plain

### STANDARD CEILING GRID SYSTEM

#### CG-100 CSS

**C-Channel Type** : 41x21x1.5mm  
**Threaded Rod** : M10  
**Bracket Thickness** : 3mm  
**Maximum Distance** : 50 cm  
**Allowable Load** : 40 kg/m<sup>2</sup>

#### CG-120 CSS

**C-Channel Type** : 41x21x1.5mm  
**Threaded Rod** : M12  
**Bracket Thickness** : 3mm  
**Maximum Distance** : 50 cm  
**Allowable Load** : 65 kg/m<sup>2</sup>

### ADVANCED CEILING GRID SYSTEM

#### CG-1000 CAS

**C-Channel Type** : 41x21x2.0mm  
**Threaded Rod** : M10  
**Bracket Thickness** : 4 mm  
**Maximum Distance** : 40 cm  
**Allowable Load** : 90 kg/m<sup>2</sup>

#### CG-1200 CAS

**C-Channel Type** : 41x21x2.5mm  
**Threaded Rod** : M12  
**Bracket Thickness** : 4 mm  
**Maximum Distance** : 40 cm  
**Allowable Load** : 150 kg/m<sup>2</sup>

#### CG-1300 CAS

**C-Channel Type** : 41x41x2.0mm  
**Threaded Rod** : M12  
**Bracket Thickness** : 4 mm  
**Maximum Distance** : 40 cm  
**Allowable Load** : 245 kg/m<sup>2</sup>

### EXTREME CEILING GRID SYSTEM

#### CG-2000 CES

**C-Channel Type** : 41x21x2.5mm  
**Threaded Rod** : M12  
**Bracket Thickness** : 4 mm  
**Maximum Distance** : 40 cm  
**Allowable Load** : 300 kg/m<sup>2</sup>

#### CG-2200 CES

**C-Channel Type** : 41x41x2.5mm  
**Threaded Rod** : M10  
**Bracket Thickness** : 4 mm  
**Maximum Distance** : 40 cm  
**Allowable Load** : 350 kg/m<sup>2</sup>

#### Accessories

- Spring Nuts
- Bolts
- Couplers
- T Bracket Connectors
- L Bracket Connectors

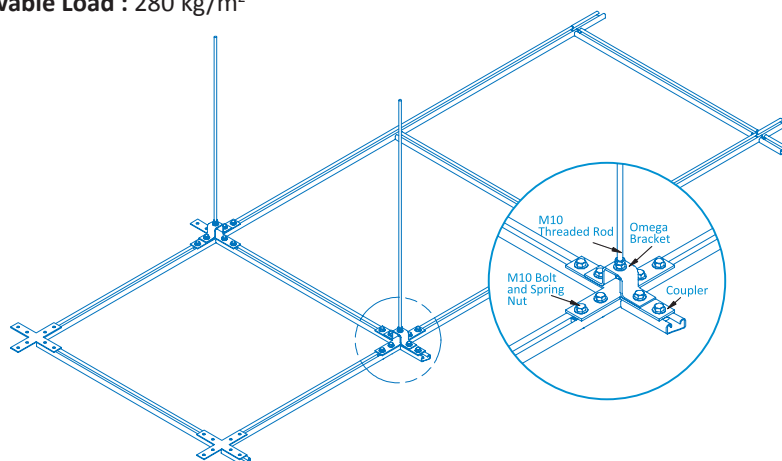
### BACK TO BACK CEILING GRID SYSTEM

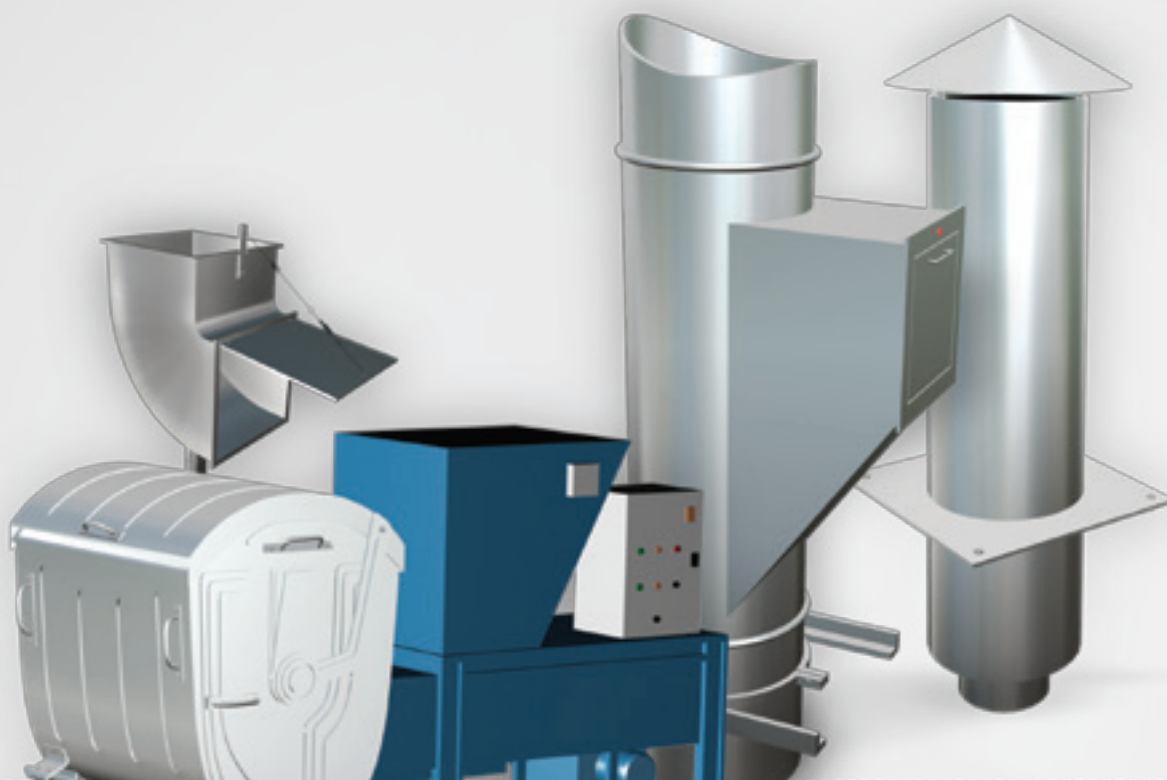
#### CG-3000 BES

**C-Channel Type** : 41x21x2.5mm  
**Threaded Rod** : M12  
**Bracket Thickness** : 4 mm  
**Maximum Distance** : 100 cm  
**Allowable Load** : 250 kg/m<sup>2</sup>

#### CG-3200 BES

**C-Channel Type** : 41x41x2.5mm  
**Threaded Rod** : M12  
**Bracket Thickness** : 4 mm  
**Maximum Distance** : 100 cm  
**Allowable Load** : 280 kg/m<sup>2</sup>





## GARBAGE & LINEN CHUTES

Chutes from SFSP are very convenient, simple and low cost method of controlling and disposing of refuse and linen. Chutes meet the most stringent requirements of environmental health and safety. Chutes are used as original equipment in new buildings, such as: Hotels, Hospitals, High Rises and Residential Towers.

### CHOICES OF MATERIALS

SFSP provides refuse and linen chutes from the following high quality materials:

- **Stainless Steel:** SFSP strongly recommends the use of stainless steel for the manufacture of refuse chutes. Stainless is highly resistant to the humidity, acid and alkalis contained within refuse.
- **Galvanized Steel:** Galvanized steel does not have the same protective characteristics of stainless steel, yet, it is used extensively for refuse chutes.

### MATERIAL THICKNESS & GAUGES

SFSP provides the following material gauges:

- 1.5mm (16 Gauge)
- 2.0mm (14 Gauge)
- 3.0mm (11 Gauge) (when specified).

### INDOOR CHUTES

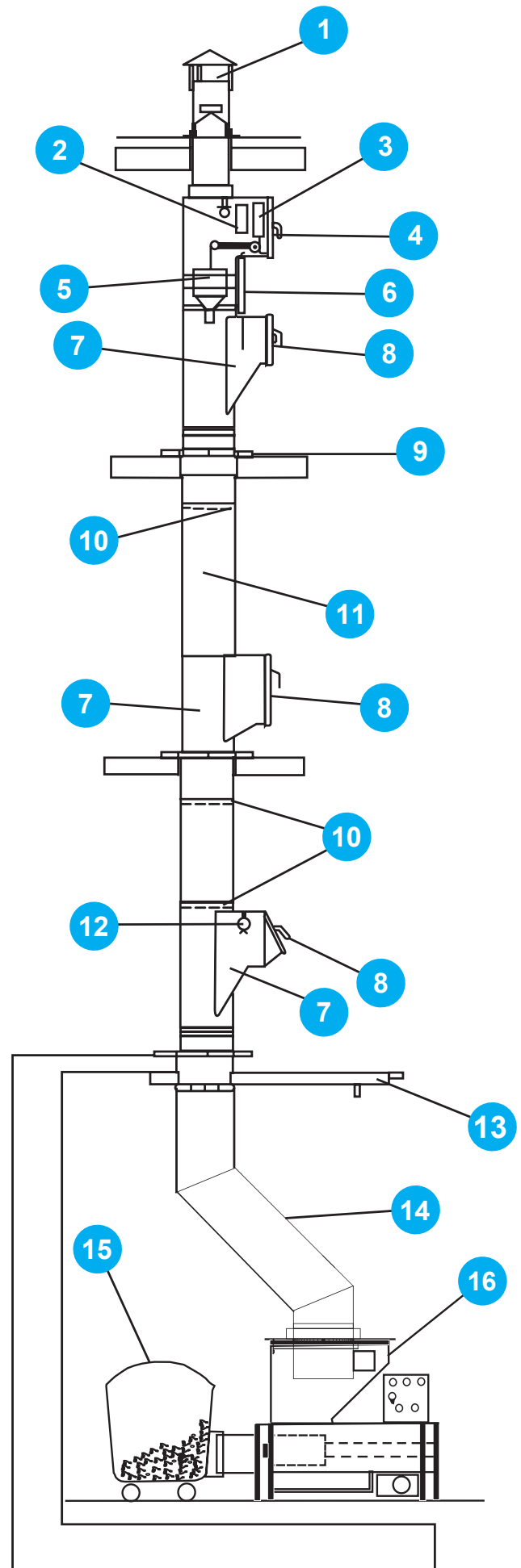
The majority of refuse chutes are fitted internally within a building. SFSP chutes can either pass through the floor slab of the building or be fixed within a vertical shaft.

### OUTDOOR CHUTES

SFSP refuse chutes can be fixed externally to most types of building, particularly useful when a refuse chute has to be provided after the building has been finished or where it is not possible to replace in the same location. External refuse chutes can be single or double skinned.

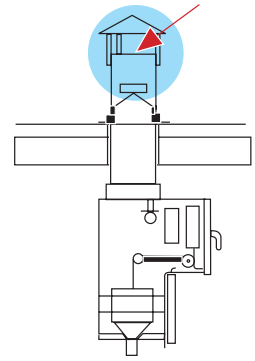


1.	Vent Tube with Insect Screen & Exhaust Fan
2.	Solenoid Valve
3.	Disinfecting & Sanitizing Unit
4.	Access Door
5.	Cleaning System & Brushing Device
6.	Control Panel
7.	Intake Throat
8.	Hopper Door
9.	Clamp Ring & Supporting Frame
10.	Swaged Joint
11.	Chute Tube
12.	Cleaning & Fire Sprinklers
13.	Fire Cut Off Door
14.	Elbow
15.	Garbage Container
16.	Compactor



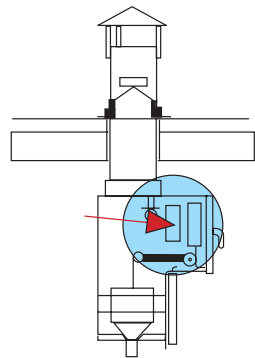
## 1/ VENT TUBE WITH INSECT SCREEN & EXHAUST FAN

Vents are installed at the top of the chutes, usually above roof level this ventilator maintains a smooth flow of fresh air within the refuse chute. The foul air exhaust fan helps prevent the escape of any bad odours or gases released by the garbage material.



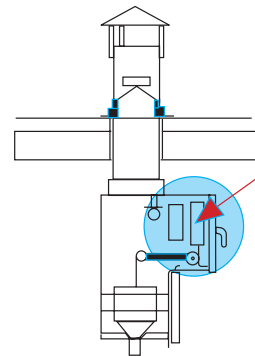
## 2/ SOLENOID VALVE

Electrically operated valve controlling the flow of water to the sanitizing unit.



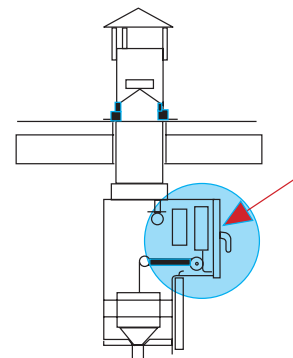
## 3/ DISINFECTING & SANITIZING UNIT

It is part of the automatic cleaning system of the chute, the sanitizing unit mixes soap along with the water where by the interior surfaces are sprinkled with water from alternate floors by sprinklers of ½" Capacity. It is recommended for use with every chute installation where proper operation and maintenance of the sanitizing unit reduces the immersion of strong odours and germs.



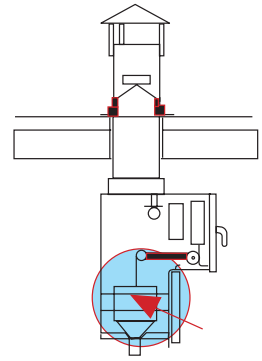
## 4/ ACCESS DOOR

Access door is located below the vent tube on the last floor. It is used for accessing the equipment in case of maintenance or revision of the chute. When opening the access door, the equipment located inside consists of the motor unit, solenoid valve, brush, disinfecting and sanitizing unit, designed to give manual or automatic brushing of the internal surface of chute.



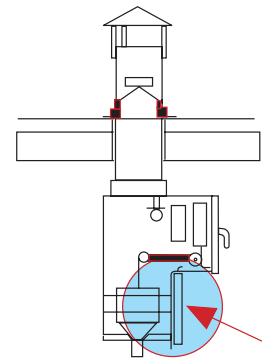
## 5/ CLEANING SYSTEM & BRUSHING DEVICE

Chute cleaning system specifically designed to clean the total vertical length of the internal surface of all chutes, where by it includes brush unit and motor unit.



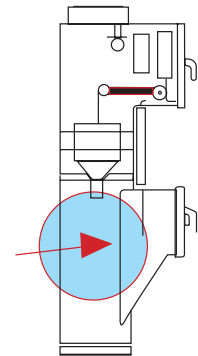
## 6/ CONTROL PANEL

Controls the entire automated systems within the chute; operates the cleaning system, controls the function of electromagnetic door locks with the presence of an emergency button which isolates electricity and stop all the running functions.



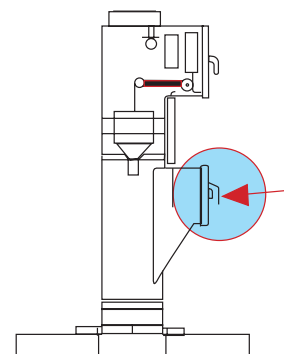
## 7/ INTAKE THROAT

For each floor there is an intake throat for the hopper door...



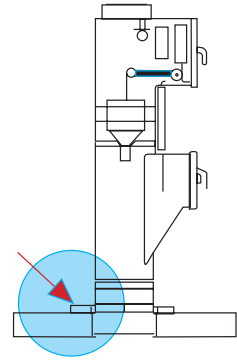
## 8/ HOPPER DOOR

Hopper doors are provided in the service room on each floor and are designed to eject loose or bagged refuse (discharge garbage) directly into a refuse chute or a container. Hopper doors have an effective self-sealing system.



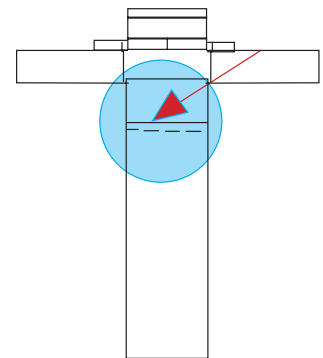
## 9/ CLAMP RING & SUPPORTING FRAME

Cut, shaped and drilled from 35x35x3 mm or (other sizes are applicable for use) Mild steel angle with a rigid, welded construction.  
The frame holds a metal clamp band. The frame is rust proof for internal use and hot dip galvanized for external use.



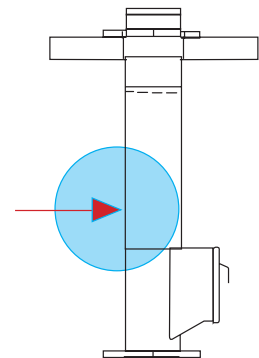
## 10/ SWAGED JOINT

Used to join certain section of duct.



## 11/ CHUTE TUBE & SOUND DAMPING

Chute Tube gives an unimpeded dumping of refuse within a chute, the best shape has proved to be circular.



## 12/ SPRINKLERS

### **Automatic Fire Sprinkler Cleaning Sprinklers**

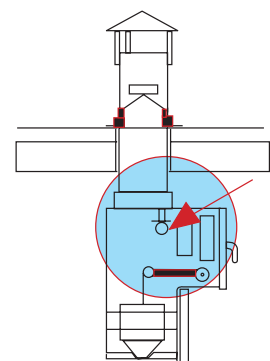
Spray head located in all floors behind the door opening for cleaning issues.

**Fire Sprinkler:** Glass bulb sprinklers installed for fire detection inside the chute in each floor.

1/2" IPS, 68°C (165°F).

Glass Sprinklers can be used in conjunction with a normal water supply at a pressure of up to 8 bar.

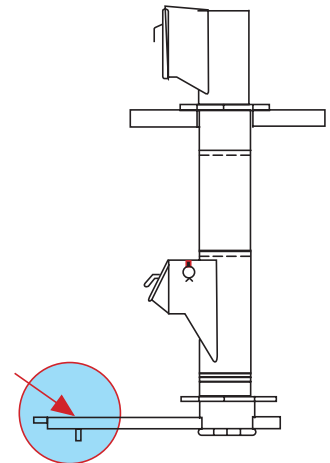
**Smoke Detection System:** This system shall be provided by the fire alarm subcontractor.





### 13/ FIRE CUT OFF DOOR

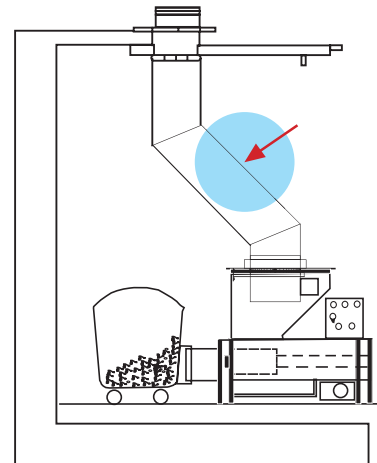
Fire Cut Off Door has a horizontal rolling door held by a spring on each side connected to a fusible link. In case of excessive heat (or fire) the link gets fused at 165° F (68°C) causing the door to roll shut. The discharge is 1.5 hours fire rated.



### 14/ ELBOW

#### Offsets

Factory fabricated from the same material as the refuse chute, but in a heavier gauge to withstand the impact of falling bags. Offsets should not be less than 45° from the horizontal. Offsets are fabricated to all diameters of refuse and linen chutes provided by SFSP.



### GARBAGE CONTAINER

#### TYPE MGB

**CAPACITY:** 1.1m<sup>3</sup>  
**MATERIAL:** Hot-dip  
galvanized steel  
(DIN 30700)

#### TYPE MGD 2.5

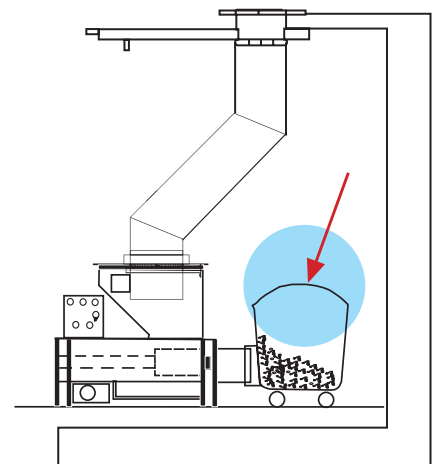
**CAPACITY:** 2.5 m<sup>3</sup>  
**MATERIAL:** DIN  
30738 hot-dip  
galvanized steel

#### TYPE MGD 4.5

**CAPACITY:** 4.5 m<sup>3</sup>  
**MATERIAL:**  
Galvanized steel

#### TYPE MGC

**CAPACITY:** 1.53m<sup>3</sup>  
**MATERIAL:** Powder  
coated



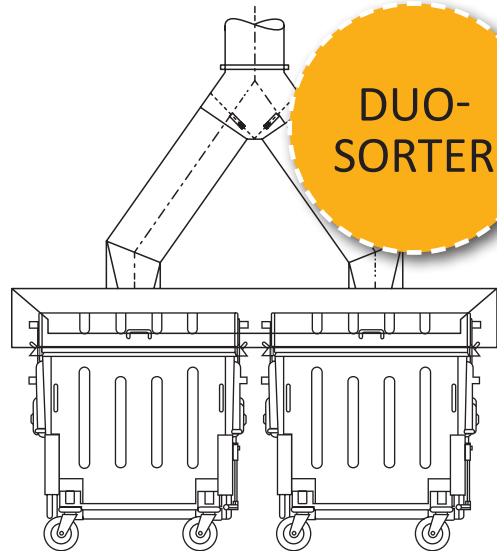
## 16/ COMPACTORS TYPE H 150

- 1.Operation: Automatic hydraulically operated.
- 2.Operating Pressure: 40, 000 lbs.
- 3.Compaction: Compacts refuse 15-20% of original volume.
- 4.Packaging: Packages refuse directly into heavy gauge plastic sacks or containers.
5. Capacity: 750kg/hr.
- 6.Compaction Chamber: 0.20 m<sup>3</sup> with a machine cycle time of 40 seconds giving a theoretical compaction volume of 8 m<sup>3</sup>/hr.
- 7.Construction Compactor: Strengthened 10mm steel plate.
- 8.Compacting Ram: The compacting ram is made from 6mm plate with the face of the ram increased to 25mm plate to effectively handle the 18 ton pressure.
- 9.Compaction chamber: Shall have hardened steel shearing blades.
- 10.Hydraulic Power Pack: Pre-packed fully connected integrally mounted system to develop over 3000 PSI. Normal operating pressure 1000 PSI (Approximately).
11. Motor: 40 Second cycle. Time 4 kw-1450 RPM.
12. Pump: Pressure balanced, external oval gear type.
13. Electrical control: Housed in a keyed access cabinet.
14. Other Feature: Repeat hammer action and automatic attendant alarm.

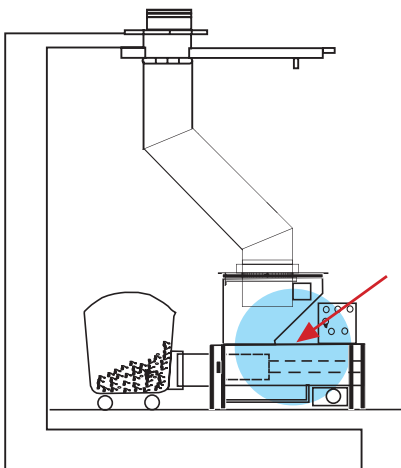
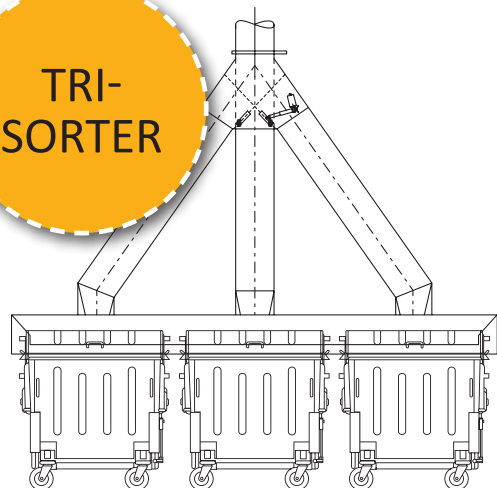


### GARBAGE CHUTES SORTERS

**DUO-SORTER**



**TRI-SORTER**



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