

Specialized Factory for Steel Products
SIGMA Factory for Steel Products



CABLE LADDER TRAY CATALOGUE

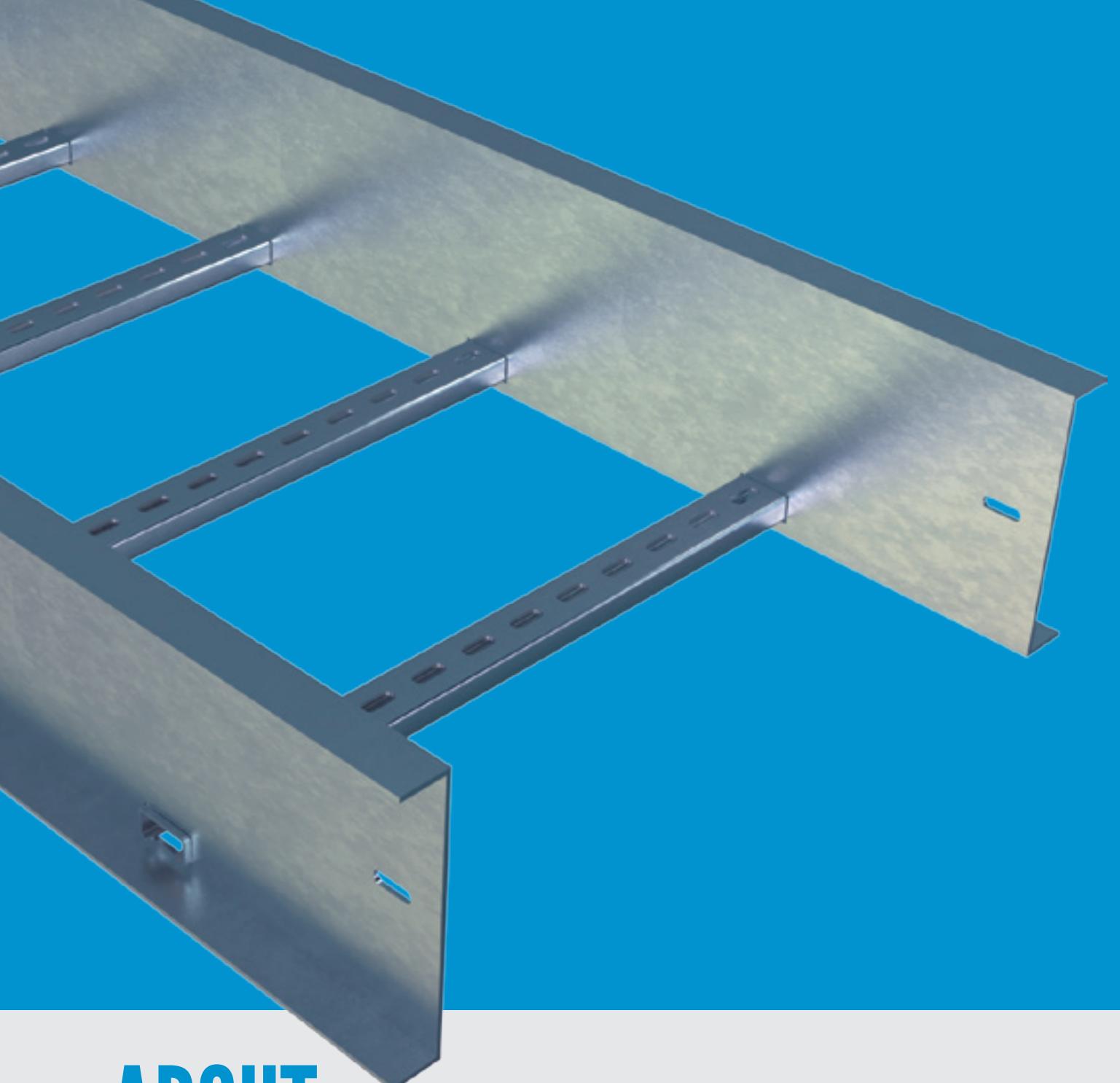


www.ikkgroup.com

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Cable Ladder Tray Catalogue

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ABOUT SFSP



www.sfsp-ikk.com



Specialized Factory for Steel Products Co. Ltd

Sigma Factory for Steel Products

www.sfsp-ikk.com

Specialized/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.

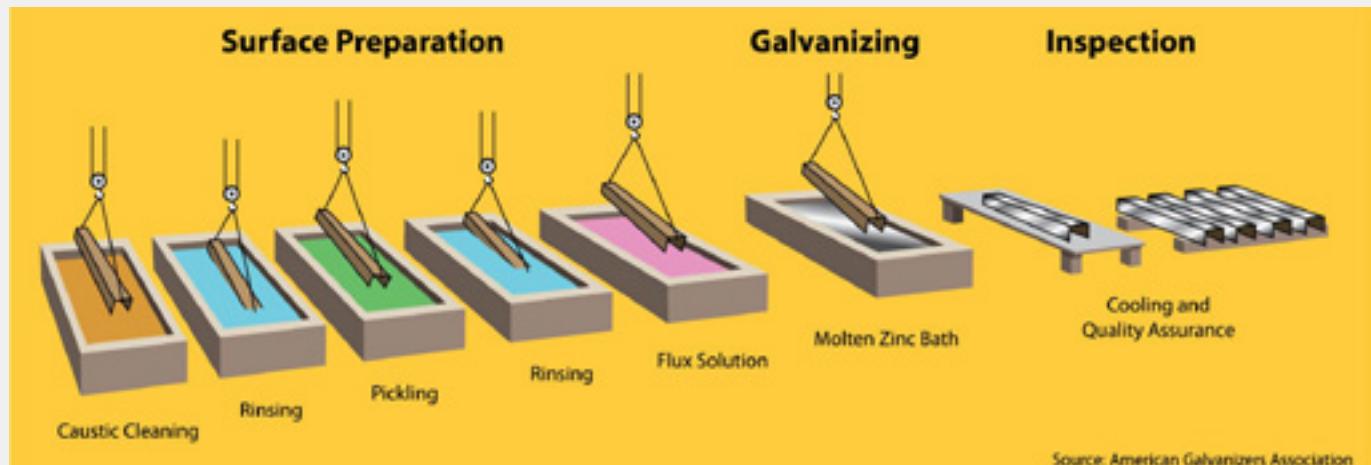
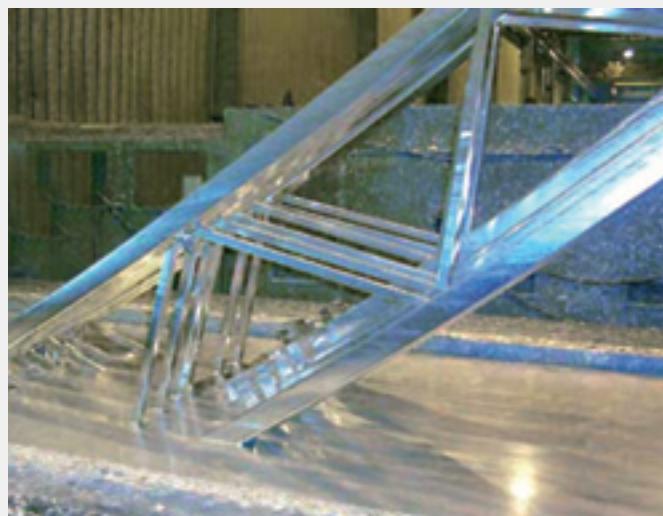
Production at the factory is observed using modern practices of manufacturing methods in the steel construction industry with a definite compliance to international standards of fabrication.

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 18001:2007 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.



Source: American Galvanizers Association



Specialized Factory for Steel Products Co. Ltd

www.sfsp-ikk.com

Specialized Factory for Steel Products Co., Ltd, which is part of Isam Khairi Kabbani Group of companies is a leading fabricator of steel construction products serving the Kingdom of Saudi Arabia since 1989.

The factory operates under TQM ISO modules, using the latest modern technology in the steel fabrication and manufacturing industry in conformity with International standards for safety and in compliance with the environmental regulations in the Kingdom.

The factory has inaugurated its new manufacturing facilities which is located in the 3rd Industrial Area of Jeddah with a total built facilities of 37,000 squared meters.

The facilities include two manufacturing areas, a hot dip galvanization advanced section, warehousing areas and administrative building. The project is an advanced environmental low emissions factory built with a definite consideration of the safety of its workers and visitors.





Specialized Factory for Steel Products Co. Ltd

Sigma Factory for Steel Products

www.sfsp-ikk.com

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.

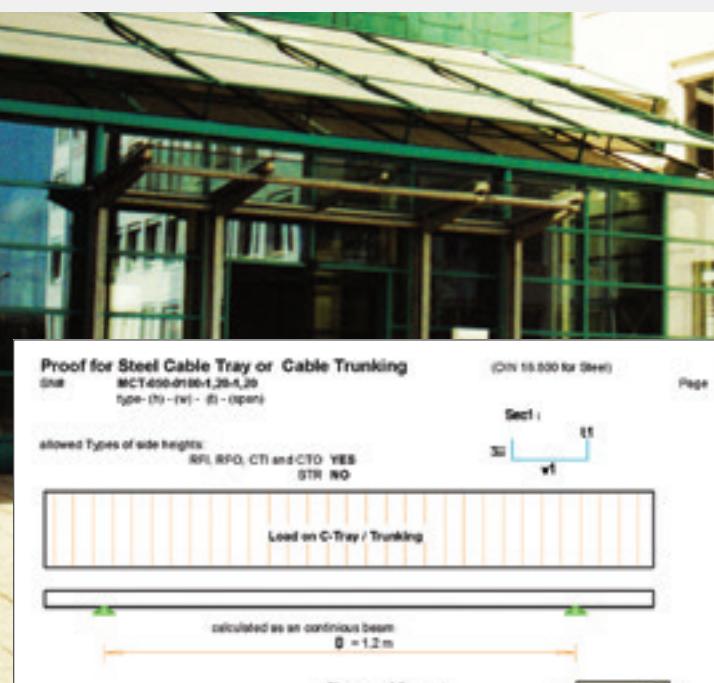
SFSP has recruited brilliant graduates and experienced engineers having the appropriate knowhow on the latest technology changes and development in the steel building materials industry.

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



The technical drawing shows a cross-section of a cable tray or trunking system. It includes a schematic diagram labeled 'Sect 1' with dimensions w_1 and h_1 . Below it is a diagram of a beam with a central load, labeled 'Load on C-Tray / Trunking'. A note states 'calculated as an continuous beam: $B = 1.2 \text{ m}$ '. To the right, there are tables for 'Distance of Supports' and 'Cable Tray Sect 1'. The 'Distance of Supports' table lists values for D (0.20m, 0.74m, 0.50m) and L (0.20m, 0.74m, 0.50m). The 'Cable Tray Sect 1' table lists values for w_1 (0.20m, 0.50m, 0.20m) and h_1 (0.20m, 0.50m, 0.20m). A note at the bottom says 'Center Load only possible for $w_1 < 300\text{mm}$!!'.

Proof for Steel Cable Tray or Cable Trunking
(DIN 18.800 for Sheet)
Sect 1
 w_1
 h_1

allowed Types of side heights:
RPI, RPO, CTI and CTD YES
GTR NO

Load on C-Tray / Trunking

calculated as an continuous beam:
 $B = 1.2 \text{ m}$

Distance of Supports
Load on Cable Tray

Cable Tray
Sect 1:

Mechanical Properties

SN.	Description	Equations	Figures	unit
1	Type of materials used	$D=25 \text{ mm} / 1000 \text{ N}$		
2	Allow. 0.2 Yield Stress up to 50°C	$F_{y,0} = F_{y,25} / 1.1$		21.82 kNm²
3	Allow. Shear Stress			12.60 kNm²
4	Allow. Deflection	$\Delta L = 0.005 \cdot h^2 / 1000$		6.00 mm
5	Modulus of Elasticity			21 000 kNm²

Applied Loads

1 Distance of Supports	$D =$	120.00 cm
2 Self Weight Cable	$W_{G,0} =$	1.74 kNm
3 Self Weight Cable Tray	$W_{G,1} =$	0.02 kNm
4 Self Weight	$W_{G,2} = W_{G,1} + W_{G,0}$	1.76 kNm

Design of Elements

1	2	3	4
Cable Tray / Trunking			
Description			
Equations			
Figures			
unit			

Geometrical Properties of Sect 1

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

SOCIAL RESPONSIBILITY

Being socially responsible is a part of who we are and how we do our business. We aim to provide useful products and services, to provide jobs and development opportunities for our communities, and to gain satisfaction through meaningful work.

We make a difference by acting on the values and principles of our societies and we inspire others to do so. At SFSP, we anticipate and reduce threats caused by environmental changes or natural disasters, and we are well adapted to significant social changes.

We contribute to a more sustainable society by means of value and support to our consumers, supply chains, and stakeholders. We are keen to identify ways they can improve our impacts on the people and places we work and live in, and thereby become more valuable and valued members of society.

- Organizational governance: We promote accountability and transparency at all levels, thus, promoting responsibility
- Human care: We treat individuals with respect; and make efforts to help members of vulnerable groups
- Labor practices: We provide just, safe and favorable conditions to workers
- Environment: At SFSP, we Identify and improve environmental impacts of our operations, including the resource use of natural resources and waste disposal.



- Fair operating practices: Practicing accountability and fairness in dealings with other businesses

At SFSP, we are committed to continuous improvement ongoing learning, process review and innovative thinking that foster new initiatives; and better practices. Our environmental programs evolve to meet today's changing needs while; protecting resources for future; generations.

HEALTH AND SAFETY

The Factory Management regard the health and safety of the employees, clients and all others that may be affected by their operations to be of a major importance.

In support of this, the management promotes health and safety throughout the Factory's operations and endeavour to engender a positive attitude in all employees towards the prevention of accidents and maintenance of healthy working arrangements.

The Factory satisfies the requirements of the Health, Safety and related legislation by setting out the responsibilities of all levels of staff and the arrangements for carrying out those responsibilities and in particular do what is reasonably practicable to:

1. Maintains safe & healthy working conditions.

2. Ensures that all facilities and equipment are safe and properly maintained.
3. Provides products that can be applied and used safely and without risk to health.
4. Provides and maintain working procedures, that are safe and without risk to health, throughout the its operations in respect of:
 - The use, handling, storage, transports and disposal of materials and substances.
 - The use of factory equipment.
 - Potential emergency situations, including first aid, fire and escape of substances.
5. Ensure the competence of employees.

The factory is an OHSAS 18001:2007 Occupational, Health and Safety Management certified Factory.



ENVIRONMENTAL AWARENESS

SFSP is committed to the following:

- Compliance with all statutory and regulatory requirements related to its activities, products and services and the environmental aspects.
- Identifying quality and environmental objectives by review and audit of the processes both in-house and on-site.
- Formally setting objectives based on the results of the process reviews and their significance in relation to their impact on the environment and the continual improvement of the quality and environmental management system.
- Implementing management programs to achieve these objectives.
- Investing in a well-trained and motivated workforce.
- Working closely with suppliers and customers to ensure mutual understanding and benefits of the environmental aspects consideration.
- Reviewing our policy and objectives as part of the Management Review Process.
- Communicating this policy to all persons working for or on behalf of the organization.
- Preventing and minimizing pollution to the environment.



SFSP operates under environmental management system certification BS EN ISO 14001:2004 and maintain it through registration and annual review.



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)



ISO 9001:2015
(Quality Management Systems)



14001: 2015
(Environmental Management System)



STD 096
(Q-Mark Certificate)



**CERTIFICATE OF
REGISTRATION**

This is to certify that

Sigma Factory for Steel Products

P.O. Box 37091
Dubai Industrial City
Dubai
United Arab Emirates

Meets the requirements of the Exova BM TRADA Q-Mark International Fire Door Manufacture scheme to **STD 096 - Issue 3 - 01/12/2015** which only operates in Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia and The United Arab Emirates for the products on the attached schedule



Karen Prendergast
Karen Prendergast
Sector Director - Certification
Exova BM TRADA

Certificate Number:
476
Date of Initial Certification:
16 June 2014
Date of last Issue:
13 October 2017
Date of Expiry:
15 June 2020

ISO 14001: 2015
(Environmental Management System)



CERTIFICATE OF REGISTRATION

This is to certify that

Sigma Factory for Steel Products

P.O. Box 37091
Saif Suhail - 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

Karen Prendergast
Karen Prendergast
Sector Director - Certification
Exova BM TRADA

Certificate number: 2524

Issue number: 2018-02
Certificate start date: 22 September 2018
Certificate expiry date: 21 September 2021
Date of initial certification: 22 September 2015

Exova (UK) Ltd, (T/A Exova BM TRADA), Chilham House, Stocking Lane, High Wycombe, Buckinghamshire, HP14 4HQ, UK
Registered Office: Exova (UK) Ltd, Lockheed Industrial Estate, Newbridge, Milton Keynes, MK9 8PL, United Kingdom, Reg No. SC039429.

This certificate remains the property of Exova (UK) Ltd. This certificate and all copies or reproductions of the certificate shall be returned to Exova (UK) Ltd or destroyed if requested. Further information regarding the use of this certificate is available through Exova (UK) Ltd or at the above address or at www.exovabctrada.com

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

OHSAS 18001: 2018
(Health & Safety Management System)



CERTIFICATE OF REGISTRATION

This is to certify that

Sigma Factory for Steel Products

P.O. Box 37091
Saif Suhail - 3, 4 Round About
Dubai Industrial City
Dubai
United Arab Emirates

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

Scope of certification:
Trading and Manufacturing of all kinds of Steel related Construction Materials

Certificate number: 1006

Issue number: 2018-01
Certificate start date: 22 September 2018
Certificate expiry date: 11 March 2021
Date of initial certification: 22 September 2015

Exova (UK) Ltd, (T/A Exova BM TRADA), Chilham House, Stocking Lane, High Wycombe, Buckinghamshire, HP14 4HQ, UK
Registered Office: Exova (UK) Ltd, Lockheed Industrial Estate, Newbridge, Milton Keynes, MK9 8PL, United Kingdom, Reg No. SC039429.
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ISO 9001: 2015
(Quality Management System)



CERTIFICATE OF REGISTRATION

This is to certify that

Sigma Factory for Steel Products

P.O. Box 37091
Saif Suhail - 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

Karen Prendergast
Karen Prendergast
Sector Director - Certification
Exova BM TRADA

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

Exova (UK) Ltd, (T/A Exova BM TRADA), Chilham House, Stocking Lane, High Wycombe, Buckinghamshire, HP14 4HQ, UK
Registered Office: Exova (UK) Ltd, Lockheed Industrial Estate, Newbridge, Milton Keynes, MK9 8PL, United Kingdom, Reg No. SC039429.
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SFSP CERTIFICATION

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

CERTIFICATE

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

Manufacturer/Licensee:
Sigma Factory for Steel Products (SFSP)
Saif Shuaib 3, 4/R/A, Dubai Industrial City,
Dubai, United Arab Emirates

Product : Cable management system
Trade name : SFSP
Type : 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 CIG 021
– a certification agreement with the number 215694

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

© Integral publication of this certificate is allowed

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 98 83000 F +31 88 98 83100 www.dekra-certification.com Registered Arnhem 09065396

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

CERTIFICATE

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

Manufacturer/Licensee:
Sigma Factory for Steel Products (SFSP)
Saif Shuaib 3, 4/R/A, Dubai Industrial City,
Dubai, United Arab Emirates

Product : Cable management system
Trade name : SFSP
Type : 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 BS EN 61537:2007 based on IEC 61537:2006
– an inspection of the production location according to CENELEC Operational Document CIG 021
– a certification agreement with the number 215694

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 as specified in this certificate for the duration of the KEMA-KEUR BS certification agreement and under the conditions of the KEMA-KEUR BS certification agreement.

This certificate is issued on: 3 February, 2014 and expires upon withdrawal of one of the above mentioned standards.

Certificate number: 2156954.02

DEKRA Certification B.V.


drs. G.J. Zoetbrood
Managing Director


H.R.M. Barends
Certification Manager

© Integral publication of this certificate is allowed

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 98 83000 F +31 88 98 83100 www.dekra-certification.com Registered Arnhem 09065396

UL Certification* (Cable Trays)

CERTIFICATE OF COMPLIANCE

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

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

This is to certify that representative samples of 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.

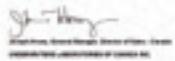
Standard(s) for Safety: ANSI/NFPA 70, "National Electrical Code" (NEC)
Additional Information: See the ULC Online Certification Directory at www.ulc.ca for additional information

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

The ULC Listing Mark generally includes the following elements: the symbol ULC in a circle  with the word "LISTED"; a control number (may be alphanumeric) assigned to ULC; and the product category name (product identifier) as indicated in the appropriate ULC Directory.

To confirm the status, validate the above information via the online directory.

Look for the ULC Listing Mark on the product.


Bruce Mavrinac, Director North American Certification Program
UL LLC



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
Saif 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 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.


Bruce Mavrinac, Director North American Certification Program
UL LLC
Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at www.ul.com/contactus.





SFSP PRODUCTS

SFSP produces a variety of products ranging from cable management systems; cable trays, cable ladders, basket trays, trunkings and support systems, to mechanical cladding fixations, steel lintels and block work accessories, plasterers' beads, expanded metal and block work reinforcement, strut channel systems, pipe clamps & hangers, gypsum profiles as well as garbage and linen chutes. With the introduction of new machines and the enhancement of production methods, SFSP continues to develop its production methods systematically as well as thoroughly. Its design office in Stuttgart, Germany provides a comprehensive design and calculation case studies, enabling the factory to have the safety factors required for the usage of its products.

CABLE TRAYS & ACCESSORIES

Cable Trays are designed to meet most requirements of cable and electrical wire installations and comply to local and international standards of fabrications and finishes.



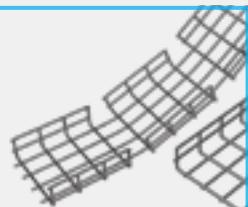
CABLE LADDERS (WELDED & SWAGED)

Cable Ladders of different side heights are available upon request.



BASKET TRAYS & ACCESSORIES

SFSP's Basket Tray systems make connections fast and simple with limited need for tools. Its design allows for continuous airflow, and prevents heating up of cables. SFSP's Basket Tray comes in a full range of sizes and is made with high-strength welded steel wires.



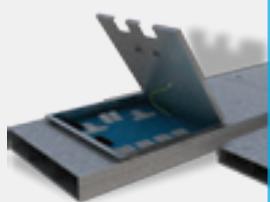
CABLE TRUNKINGS

Cable Trunkings and Accessories are offered in a comprehensive range. Mill galvanized, hot-dip galvanized, and powder coated are the various finishes produced in our factories.



UNDERFLOOR TRUNKING

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.



CABLE MANAGEMENT SUPPORT SYSTEMS

Cable Support Systems are well designed to provide necessary support for cable trays, cable ladders and trunkings. Cable supports are manufactured according to common standards from high quality raw materials.



C-CHANNEL STRUT SYSTEMS

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

Applications: - Pipe and Conduit Supports - Tunnel Pipe Stanchions - Racks and Shelvings - Wall Framings.



EXPANDED METALS, PLASTERERS` BEADS

Expanded Metals help the formation of joints, protection of corners and resistance against cracks, chips and impact damage.



BLOCK LADDER 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.

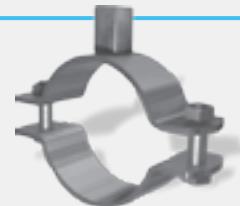


STEEL LINTELS & BLOCK WORK ACCESSORIES

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.

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.



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.



DRY WALL & CEILING PROFILES

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



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.



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 عاصم قباني وشركاه ملوا الأنشاء والتعمير المحدودة

BAHRAIN

Isam Kabbani Trading Est.
مؤسسة عاصم قباني التجارية

UAE

Issam Kabbani Trading Est.
مؤسسة عاصم قباني للتجارة

KUWAIT

Hassan Kabbani for General Contracting Est.
مؤسسة حسان قباني للمقاولات العامة للمباني

OMAN

Isam Kabbani & Partners Trading Co.
شركة عاصم قباني وشركاه للتجارة

EGYPT

UNITECH Egypt for Building Materials
شركة يونitech مصر ملوا البناء

JORDAN

Jordan Build Co. for Building & Construction Materials
شركة بناء الأردن ملوا الإنشاء والتعمير والكهرباء

LEBANON

UNITECH ME s.a.r.l
شركة يونitech ميدل إيست ش.م.م

SFSP CUSTOMER SERVICE CALL CENTER

KSA

+966 13 8590097, Ext. 3214

UAE

+971 4 8181925, Ext. 4269



IKK Group of Companies

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 ISAM KABBANI & PARTNERS FOR BUILDING & 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 Cable Management Systems. Calculations are provided by our design office in Stuttgart, Germany.

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

Cable Management Systems are economical wire and cable management systems designed to support and protect electrical wires and cables.

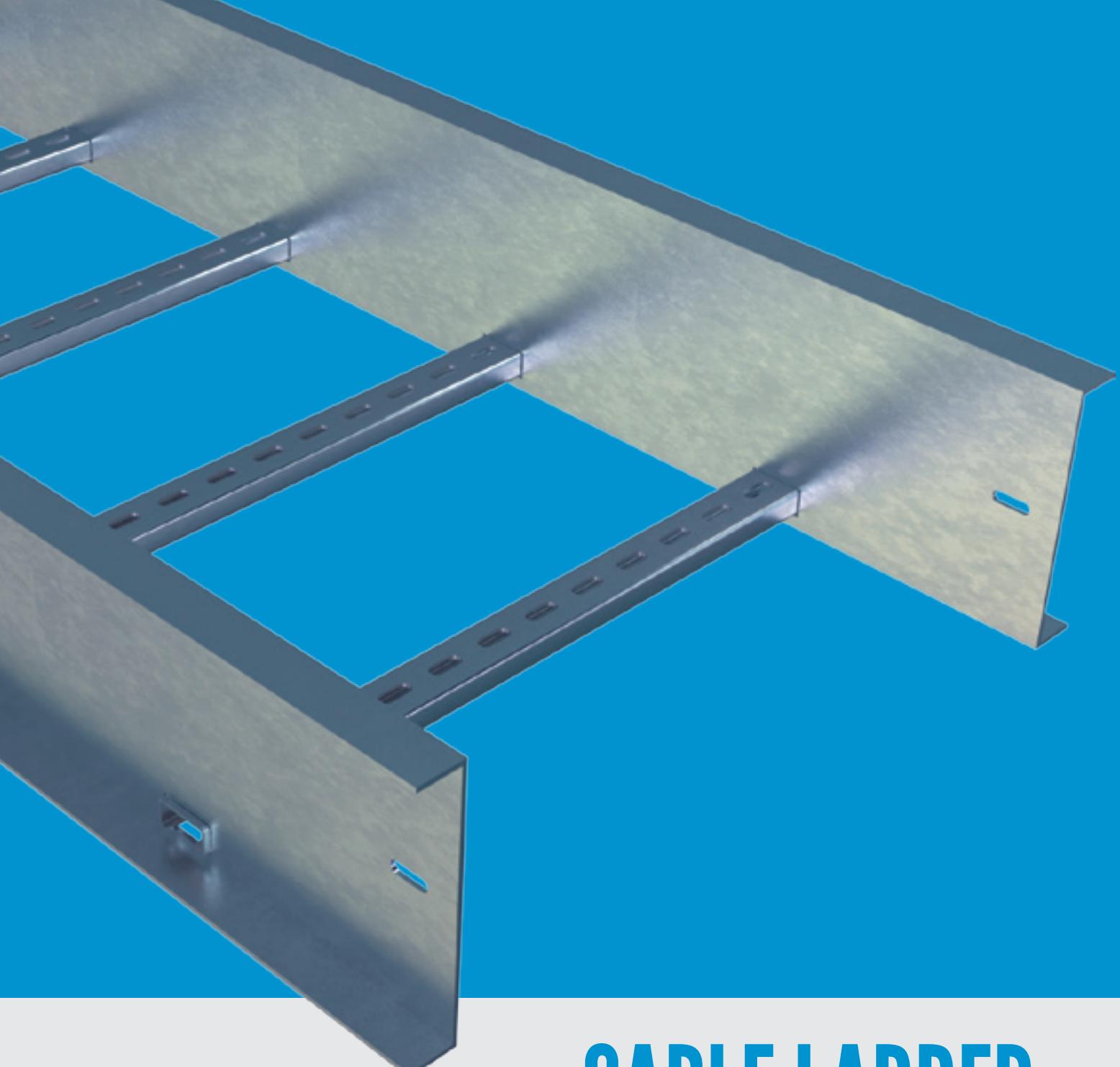
National Electric Code (NEC) permits Cable Trays in a wide variety of indoor and outdoor applications. The NEC also permits Cable Trays for use as equipment ground conductor.

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. This can provide significant savings in conductor costs. 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 61537:2007 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 - 2009 National Electrical Manufacturers Association.
 (Metal Cable Tray Systems)
- NEMA VE 2 - 2006 National Electrical Manufacturers Association.
 (Metal Cable Tray Installation Guide Lines)
- NEC (ANSI / NFPA 70) National Electric Code
 (Metal Cable Tray Guide Lines)



CABLE LADDER TRAYS

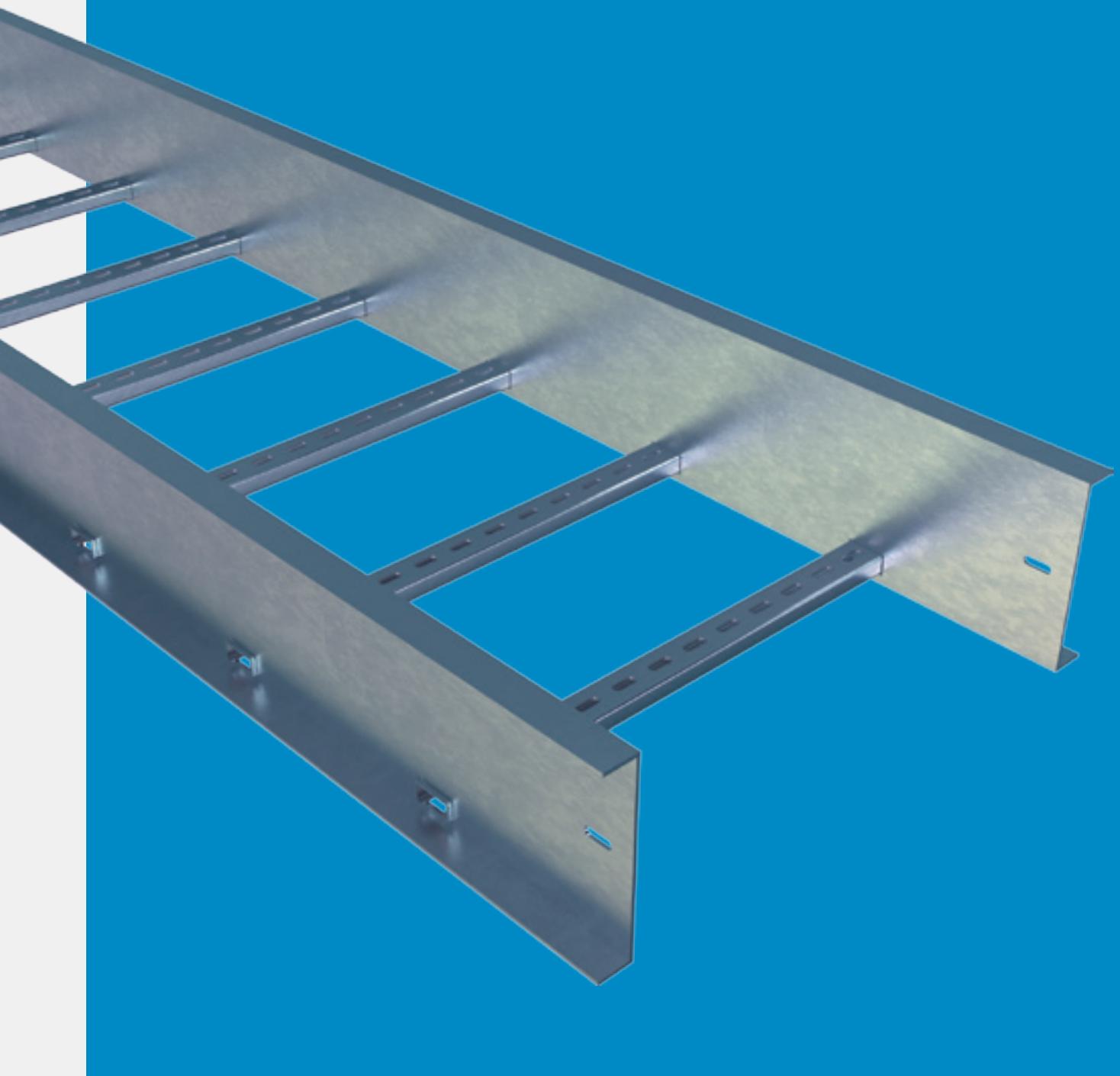


www.sfsp-ikk.com

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.

This catalogue is designed to be helpful to engineers and contractors in the application and selection of Ladder Tray products for construction and maintenance.

If a unique application requires a special product not included in this catalogue , SFSP engineering personnel are ready to furnish design consultation and realistic cost estimates. In addition, know-how are available for your convenience.



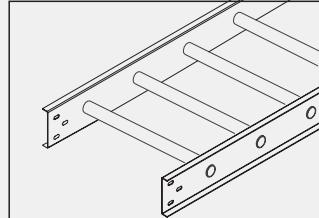
PRODUCTS RANGE

The different types of tray designs are described below:

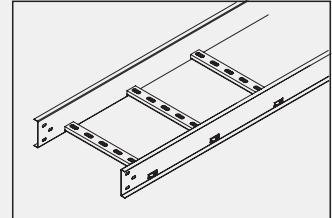
Ladder Tray (Cable Ladder)

Swaged rounded tubular (Aluminum or Steel) or welded c-channel (steel). A prefabricated metal structure consisting of two side rails connected by individual transverse embers or rungs. Cable Ladder Trays are the most common and the most economical types of trays.

They also provide maximum ventilation for cabling.



Swaged Rounded Tubular

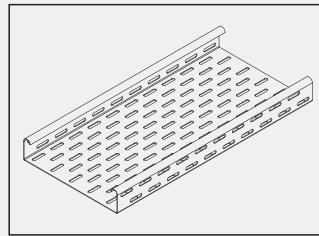


Welded C-Channel

Perforated Cable Tray (Cable Trays)

A prefabricated metal structure consisting of a bottom with openings within the cable bearing surface.

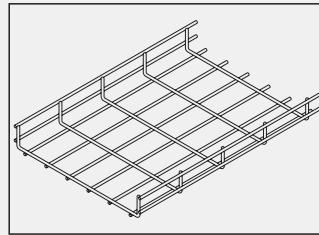
Solid bottom Cable Trays completely eliminate cable sagging and offer maximum protection for the cables.



Perforated Cable Tray

Wire Mesh (Basket Tray)

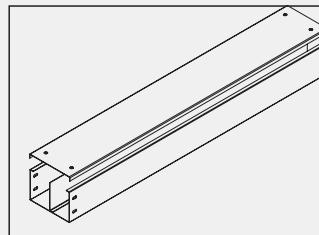
Is ideally suitable for light - to medium-duty commercial and industrial applications where space is at a premium. SFSP wire Basket Trays have a fast connection profile for installations requiring long runs of straight Cable Trays lengths. Applications : Network cabling, wiring closets, fiber-to-desktop applications and can often be used in suspended ceiling plenum areas and under computer room flooring.



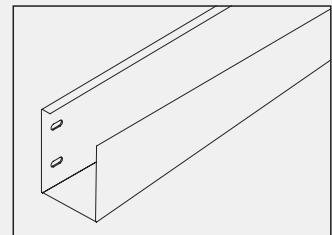
Wire Mesh

Solid (Cable Trunking)

A prefabricated metal structure consisting of a one-piece solid bottom channel section because we are reaching 600mm.



Cable Trunking



MATERIALS & FINISHES

Materials

Mild Steel - Plain

A. Hot Rolled Steel Plates, Sheets and Coils S235 JR, as per:

EN 10025 -2 / DIN 17100 / BS 4360 / ASTM A 653M / ASTM A 1011 / ASTM A 1011-01a
JIS 3101 / JIS 3106 / GB 700 / GB / T1591.

ASTM A 907 / ASTM A 1018M.

ASTM A 570M / ASTM A 572M.

B. Cold Rolled Steel DC 01, as per:

EN 10130 / DIN 1623, Part 2 / BS 1449:1 / ASTM A366 / ASTM A 1008 / JIS G 3141 / GB 699.

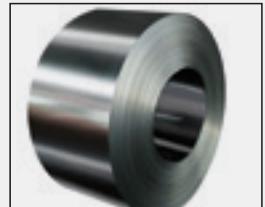
EN 10131 / ASTM A 568M



Mild Steel - Galvanized

C. Continuously Pre- Galvanized Hot-Dip Zinc Coated Steel DX 51D + Z, as per:

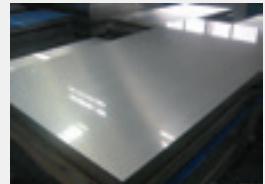
EN 10327 / DIN 17162 / BS 2989/ ASTM A 527M / ASTM A 653M / JIS G 3302.
EN 10326/ EN 10142 / ASTM A 526, 527, 528/ ASTM A 146



D. Electro Galvanized Steel (Electrolytic Coating) DC01 + ZE v, as per:

EN 10152 / DIN 17163 / ASTM A591 / JIS G 3313 / JIS G 3141/BS 1449:1

EN 10131



Aluminum

E. Aluminum 6063 T6

Stainless Steel

F.Austenitic Stainless Steels SS 304 & SS 316, as per:

ASTM A 240 /EN 10088-2/ DIN 17400 / BS 1449:2 / ASTM A480 / ASTM A666 / ISO 3506 / EN 10028-7 /JIS G 4304

F.1 Stainless Steel Fasteners EN 3506

F.2 Stainless Steel Wire BS 1554 ,ASTM A276

Finishes

1- Hot-DIP Galvanization after Fabrication

as per:

ASTM A 123 / ASTM A 153 / ISO 1461.

BS 729 / DIN 50976



2- Zinc Electroplating after Fabrication

as per:

ASTM B633 / EN 12329 / ISO 4042/ BS 1706 / BS 3382 / DIN 50961

3- Powder Coating

Epoxy / Polyester / Epoxy & Polyester

BS 3900 / ISO 2409 / ISO 1519 / ISO 1520

SFSP Cable Ladder Tray Systems, fittings and accessories from SFSP are manufactured in compliance with :

- IEC 61537 International Electrotechnical Commission
(Cable management – Cable tray systems and cable ladder systems)
- SASO IEC (61537/2007) Saudi Standard
(Cable management – Cable tray systems and cable ladder systems)
- NEMA VE 1 - 2009 National Electrical Manufacturers Association.
(Metal Cable Tray Systems)
- NEMA VE 1 class 20 C
- NEMA VE 2 - 2006 National Electrical Manufacturers Association.
(Metal Cable Tray Installation Guide Lines)
- NEC (ANSI / NFPA 70) National Electric Code
(Metal Cable Tray Guide Lines)

SFSP Cable Ladder Tray Systems 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 Systems are economical wire and cable management systems designed to support and protect electrical wires and cables.

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

The NEC also permits Cable Ladder for use as equipment ground conductor.

Cable Ladder 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 Ladder 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 Ladder Systems. This can provide significant savings in conductor costs.

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



TECHNICAL INFORMATION ACCORDING TO IEC 61537 STANDARD

Product under IEC 61537 - 2008 standard are in compliance with the requirement of the European directive.
This standard specifies the requirements for:

- Installation
- Load testing
- Classification
- Marking, dimensions
- Electrical Continuity

MATERIAL:	METALLIC:
Flame spreading resistance:	Non Flame Spreading
Electrical Conductivity Characteristics	With Conductivity
Electrical Continuity Characteristics	With Continuity

SFSP products meet electrical continuity requirement: Resistance \leq 5 milli Ohm/mm
without couplers
Resistance \leq 50 milli Ohm with splice plate

Splice Plate

The system components are designed to withstand. The stress likely to occur during recommended transport and storage. Cable tray system and cable ladder systems according to IEC are not intended to be used for human support.

Table 1

Classification for resistance against corrosion	
Class	Reference - Material and Finish
0 ^a	None
1	Electroplated to a minimum thickness of 5 μm
2	Electroplated to a minimum thickness of 12 μm
3	Pre-galvanised to grade 275 to EN 10327 and EN 10326
4	Pre-galvanised to grade 350 to EN 10327 and EN 10326
5	Post-galvanised tp a zinc mean coating thickness (minimum) of 45 μm according to ISO 1461 for zinc thickness only
6	Post-galvanised tp a zinc mean coating thickness (minimum) of 55 μm according to ISO 1461 for zinc thickness only
7	Post-galvanised tp a zinc mean coating thickness (minimum) of 70 μm according to ISO 1461 for zinc thickness only
8	Post-galvanised tp a zinc mean coating thickness (minimum) of 85 μm according to ISO 1461 for zinc thickness only (usually high silicon steel)
9A	Stainless steel manufactured to ASTM: A 240/A 240M - 95a designation S30400 or EN 10088 grade 1 - 4301 without a post-treatment ^b
9B	Stainless steel manufactured to ASTM: A 240/A 240M - 95a designation S31603 or EN 10088 grade 1 - 4301 without a post-treatment ^b
9C	Stainless steel manufactured to ASTM: A 240/A 240M - 95a designation S30400 or EN 10088 grade 1 - 4301 with a post-treatment ^b
9D	Stainless steel manufactured to ASTM: A 240/A 240M - 95a designation S31603 or EN 10088 grade 1 - 4404 with a post-treatment ^b

^a For materials which have no declared corrosion resistance classification

^b the post - treatment process is used to improve the protection against crevice crack corrosion and the contamination by other steels.

Table 2 Minimum temperature for the system component as given in [table 2](#)

Minimum Temperature Classification	
Minimum transport, storage, installation and application temperature °C	
+5	
-5	
-15	
-20	
-40	
-50	

Table 4

Perforation base area Classification	
Classification	Perforation in the base area
A	up to 2%
B	over 2 % and up to 15 %
C	over 15 % and up to 30 %
D	More than 30 %

NOTE Classification D relates to IEC 60364 - 5 - 52, Sub clause A.52.6.2, second paragraph

Table 3 Maximum temperature for the system component as given in [table 3](#)

Maximum Temperature Classification	
Maximum transport, storage, installation and application temperature °C	
+40	
+60	
+90	
+105	
+120	
+150	

Table 5

Free base area classification (Cable Ladder Length)	
Classification	Free base area
X	up to 80%
Y	over 80 % and up to 90 %
Z	More than 90 %

NOTE Classification Z relates to IEC 60364 - 5 - 52, Sub clause A.52.6.2, third paragraph

Table 6

Zinc coating thickness of reference materials			
Class	Minimum Thickness	Minimum coating thickness as given in EN 10327 or EN 10326	Mean coating thickness (minimum) to ISO 1461
	µm	µm	µm
0a	-	-	-
1	5	-	-
2	12	-	-
3	-	15	-
4	-	19	-
5	-	-	45
6	-	-	55
7	-	-	70
8	-	-	85

As declared by the manufacturer or responsible vendor

Table 7

Salt spray test duration	
Class (as detailed in Table 1)	Duration h
0	-
1	24
2	96
3	155
4	195
5	450
6	550
7	700
8	850

TECHNICAL INFORMATION ACCORDING TO IEC 61537 STANDARD

Products covered by this standard are, in normal use, passive in respect of electromagnetic influences, emission and immunity.
NOTE: When products covered by this standard are installed as part of a wiring installation, the installation may emit or may be influenced by electromagnetic signals. The degree of influence will depend on the nature of the installation within its operating environment and the apparatus connected by the wiring.

Power supply cables and signal cables can share the same cable conveyance systems (Trays, Channels, Etc.) Adequate separation need to be provided (by distance or shielding) between power cables and signal cables. Power cables and signal cables need to be cross at right angles. In order to prevent disturbances, the minimum separation between power cables and signal cables depends on many factors, such as following:

- a) The level of immunity from the various electromagnetic interference (surges, overcurrents, lighting impulses, ring waves, continuous waves, etc.) of the equipment connected to the signal cabling system.
- b) The connection of the equipment to the grounding system.
- c) The local electromagnetic environment (the simultaneous appearance of disturbances: for example, harmonics added to discharges and to continuous waves).
- d) The electromagnetic spectrum.
- e) The distances that the cables run parallel to each other (the coupling zone).
- f) The kind of cable.
- g) Cable attenuation against coupling.
- h) The quality of the connections between the connectors and the cable.
- f) The type of cable conveyance system and its accessories.

Separation between signal cabling and power cabling

Type of installation	Distance		
	Without a dividing wall or with a non metal divider ⁽¹⁾	Aluminum divider	Steel divider
Unshielded power cable and Unshielded signal cable	200 mm	100 mm	50 mm
Unshielded power cable and shielded signal cable ⁽²⁾	50 mm	20 mm	5 mm
shielded power cable and Unshielded signal cable	30 mm	10 mm	2 mm
shielded power cable and shielded signal cable	0 mm	0 mm	0 mm

1) It is assumed that in the event of a metal divider, the design of the cable conveyance system will provide shielding attenuation that is approximate to the material used in the divider.

2) Shielded signal cables have to be comply with the EN 50288 series.

Metal systems for cable conveyance: trays, channels, etc.

Metal systems for cable conveyance should always be connected to the local ground at both ends. Over long distances (more than 50 m), additional connections to the ground systems are recommended at irregular intervals. All ground should be a short as possible.

Ground and equipotential connections

Overview, the basic purposes of connection and grounding applicable to unshielded and shielded wiring systems are as follow:

- **Safety:** to limit contact voltage and provide a return path in the event of a fault to ground;
- **EMC:** to have zero potential and equipotentiality, which provide a shielding effect.

1. Terms and definition:

1.1 Cable tray system or cable ladder tray system assembly of cable supports consisting of cable tray lengths or cable ladder lengths and other systems components.

1.2 System Component

Parts used with in the system components are as follows:

- a) Cable tray length or cable ladder tray length
- b) Cable tray fitting or cable ladder tray fitting
- c) Support device
- d) Mounting device
- e) System accessory

1.3 Fitting System component used to join, change direction, change dimension or terminate cable tray length (couplers, bends, tees, crosses).

1.4 Support device System component designed to provide mechanical support and which may limit movement of cable runway.

1.5 Mounting device System component used to attach or fix other devices to the cable runway.

1.6 Internal fixing device Device for joining and for fixing system components to other system components.

1.7 External fixing device Device used for fixing a support device to walls, ceiling or other structural parts.

2. Mechanical properties:

2.1 Mechanical strength: SFSP cable tray systems and cable ladder tray systems provide adequate mechanical strength.

The SWL (safe working load) has been tested .The load has been increased to 1.7 times the SWL (according to IEC).

3. Electrical properties:

3.1 Electrical continuity

Cable tray system and cable ladder tray systems have adequate electrical continuity to ensure equipotential bonding and connections to earth.

3.2 Electrical non-conductivity

Cable tray system components and cable ladder tray system components have been declared electrically non conductive.

An overall accuracy of surface resistance has been guarantee: surface resistivity= $R_x \times p/g$

γ = surface resistivity in Ohm, R_x = Measured surface Resistance, P = twice the width of cable tray (mm), g = Distance between electrodes in mm.

All necessary information for a proper and safe installation and use of the cable tray system and cable ladder system has been provided. The safe working load and impact resistance is valid for the whole temperature declared.

The information include:

- a) Instructions for the assembly and installation of system components and for the precautions required to avoid excessive transverse deflection which could cause damage to the cables.

Transverse deflection:

Vertical deflection across the width of the base area, omitting the longitudinal deflection, when mounted horizontally.

The transverse deflection of each span at the safe working load shall not exceed 1/20th of the cantilever.

Mid-Span deflection:

The practical mid-span deflection as SWL shall not exceed 1/100th of the span.

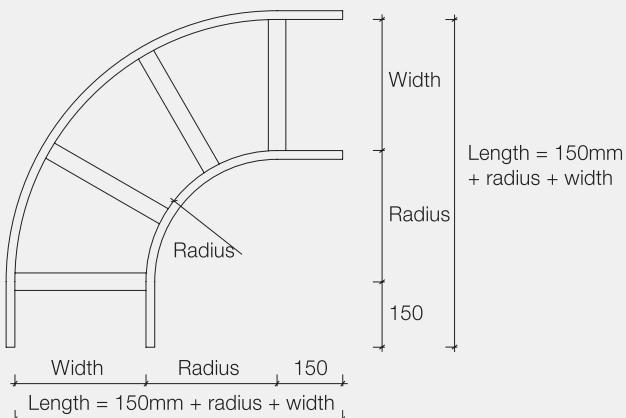
If the span is greater than the cable tray length or cable ladder the joint shall be placed at min span.

CABLE LADDER SYSTEMS

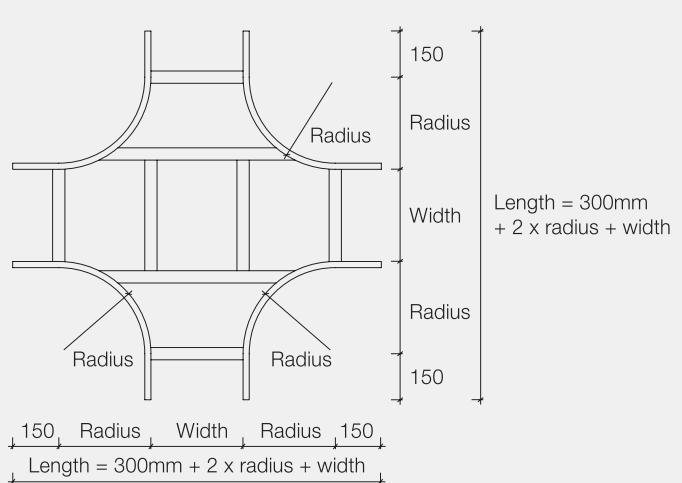
Product footprint

Cable ladder tray — accessory foot print standard radius is 300 mm.

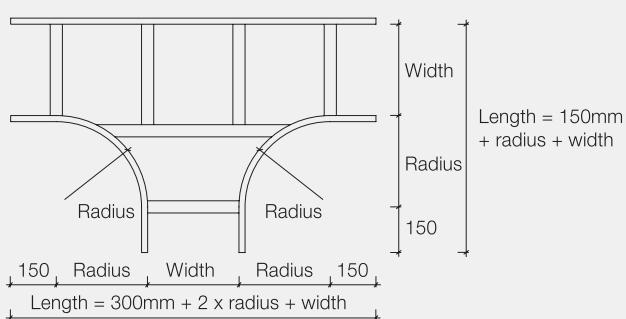
90 Degree Flat Bend



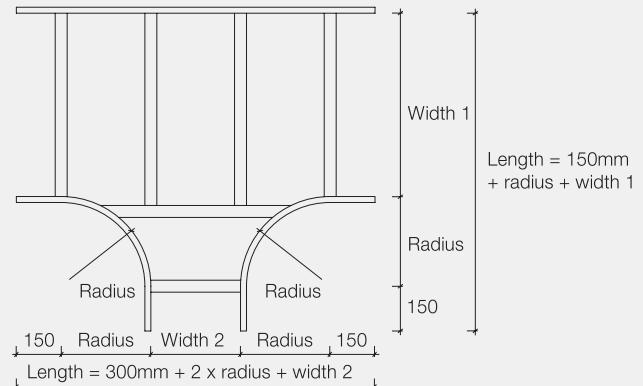
Crossover



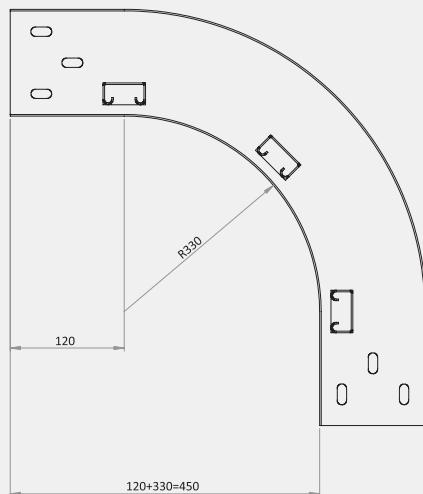
Equal Tee



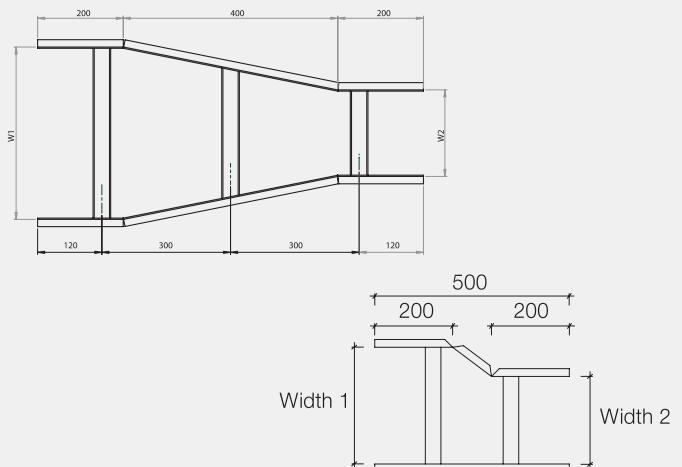
Unequal Tee



Outside Riser



Central, right, or left hand reducer



NEMA VE1 / SELECTION PROCESS

The following factors shall be considered when determining the appropriate Cable Trays Systems:

- Materials and Finishes
- Types of Cable Trays
- NEMA Classification
- NEMA Classes
- Cavity Size – Load Depth/Width of Tray

NEMA CLASSIFICATION

The National Electrical Manufacturers Association (NEMA VE-1) USA, classifications for Cable Trays were established to simplify and standardize the specifications of Cable Trays. This classification is based on the working load (the total weight of the cables), and the support span (the distance between supports).

Cable Load/Working Load

The Cable load or the working load is the total weight of the cables to be placed in the tray.

The NEMA classes are based on cable loads of 50Lbs/Ft., (74 kg/m), 75Lbs/Ft. (112 kg/m), and 100Lbs/Ft. (149 kg/m) .

This is the total weight of cables in the tray.

For purposes of selecting a suitable tray, this weight shall be rounded off to the next higher NEMA working (allowable) load.

Support Spans

Support span is the distance between the supports.

The NEMA standard support spans are based on 8' (2.4m), 12' (3.7m), 16' (4.9m) and 20' (6.0m).

NEMA CLASSES

The following table summarizes the NEMA classes based on cable/working load and support span described previously.

Table 1

NEMA Load/Span Designations				
Class Designation	Support Span Feet		Working Load	
	Feet	m	Lbs./Ft.	Kg/m
8A	8	2.4	50	74
8B	8	2.4	75	112
8C	8	2.4	100	149
12A	12	3.7	50	74
12B	12	3.7	75	112
12C	12	3.7	100	149
16A	16	4.9	50	74
16B	16	4.9	75	112
16C	16	4.9	100	149
20A	20	6.0	50	74
20B	20	6.0	75	112
20C	20	6.0	100	149
D	20	6.0	45	67

NEMA CLASSES

Other Loading Considerations

Destruction Load Capacity

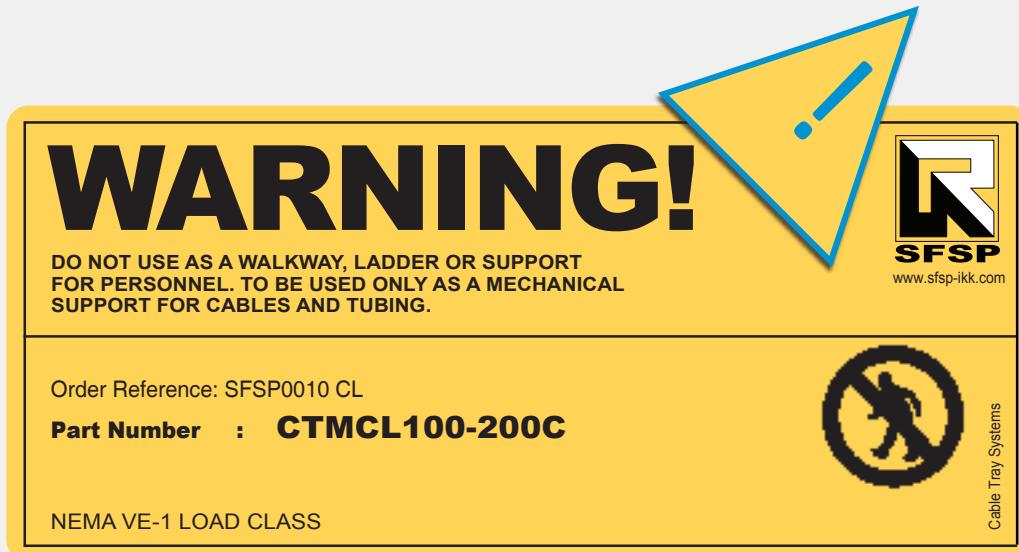
The total weight in the tray which causes the tray to collapse, is called the "destruction load capacity". When trays do collapse, they generally do so by premature lateral buckling (compression) of the top flange.

Concentrated Loads

A concentrated load is a static weight applied between the side rails at mid span. When specified, these concentrated static loads may be converted to an equivalent uniform load (We), in pounds per linear foot or Kg/m, using the following formula:

$$We = \frac{2 \times \text{Concentrated Load}}{\text{Support Span in mm}}$$

This load is added to the static weight of the cable before selecting the appropriate NEMA load span designation.
Please note per the NEMA VE-1 guidelines all SFSP Cable Ladder Trays are labeled as follows:



Safety Factor

All loads stated in the selection charts have a 1.5 safety factor, in accordance with the NEMA VE-1 guidelines. A safety factor is the reserve strength, above the actual cable loading, for which a tray system was designed.

Conversion of Safety Factor from 1.5 to 2.0

The loads stated in the selection charts have a safety factor of 1.5 per the NEMA VE-1 guidelines. To convert the load carrying capabilities, as listed in these charts, to a 2.0 safety factor, multiply the stated loads by 0.75.

Testing Methods

Loading data stated in the catalogue have been derived from actual testing of the tray systems, or by means of structural calculations. These figures are based on simple beam calculation, per the NEMA VE-1 guidelines.

When tray is supported as a simple beam, the load causes bending moments all along the beam resulting in deflection, called sag, inducing stress in the beam. The material above the longitudinal center line (neutral axis) is compressed.

Material below, is stretched and is in tension. The maximum stress in a simple beam is at the center of the span. Failure of Cable Trays will occur in compression before tension. This is why tray rails often have stiffened top flanges.

A simple beam is present when a single straight section of tray is supported on each end. When a series of straight sections are connected and supported by more than one support it is referred to as a continuous beam.

The NEMA VE-1 standards consider only a simple beam for testing purposes, due to the following reasons:

1. It requires maximum properties for a given load and support spacing.
2. It is the easiest when it comes to approximation by calculation.
3. It represents the most severe or worst case loading.
4. Destruction load capacities can be easily verified.

Deflection vs. Economy

Cable Ladder Trays meet all performance and dimensional criteria with safety factor. When deflection limitations are imposed, a less economical tray system may result. If deflection is a concern, SFSP recommends these maximum limits for the optimum design.

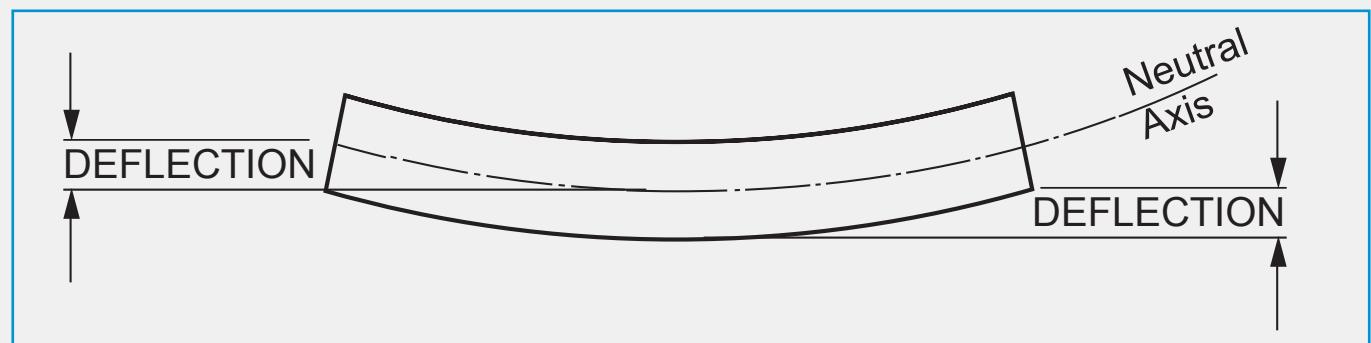


Table 2

	Simple Beam Span (m 3.60) '12	(m 6.00) '20
STEEL	1/100	1/75
ALUMINUM	1/75	1/50

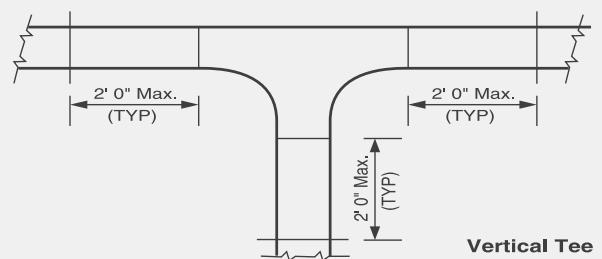
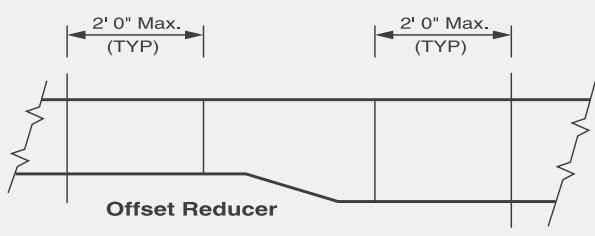
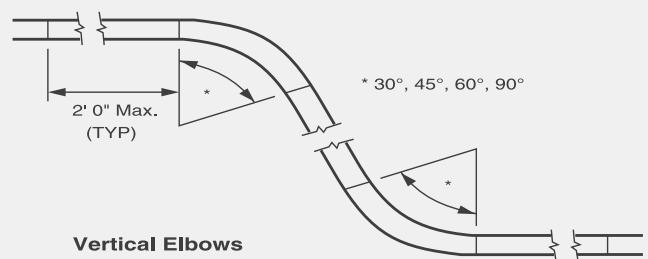
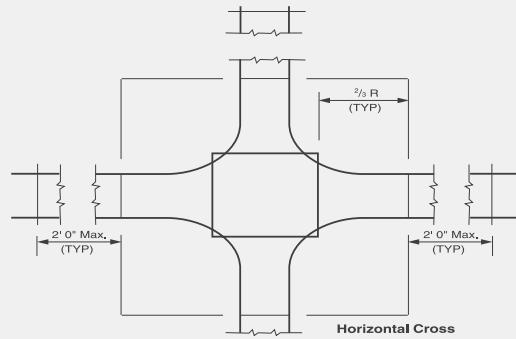
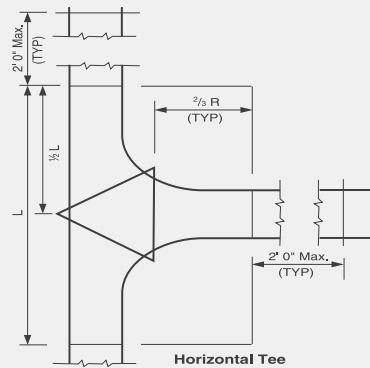
Continuous beams (such as installed tray) deflect approximately as much as 1/2 of Welded Cable Ladder Trays of simple beams.



CAVITY SIZE LOAD DEPTH/WIDTH OF TRAY

Select the Fittings

Fittings are used to change the size or direction of the Cable Ladder Trays. The most important decision to be made in fitting design concerns radius. The radius of the bend, whether horizontal or vertical, can be 305mm, 607mm, 914mm and 1219 mm, or even greater on a custom basis. The selection requires a compromise with the considerations being available space, minimum bending radius of cables, ease of cable pulling, and cost. The typical radius is 607mm. When a standard angle will not work, field fittings or adjustable elbows can be used. It may be necessary to add supports to the tray at these points. Refer to NEMA VE2 Installation Guidelines for suggested support locations. Note that fittings are not subject to NEMA/CSA load ratings.



Location of Couplings

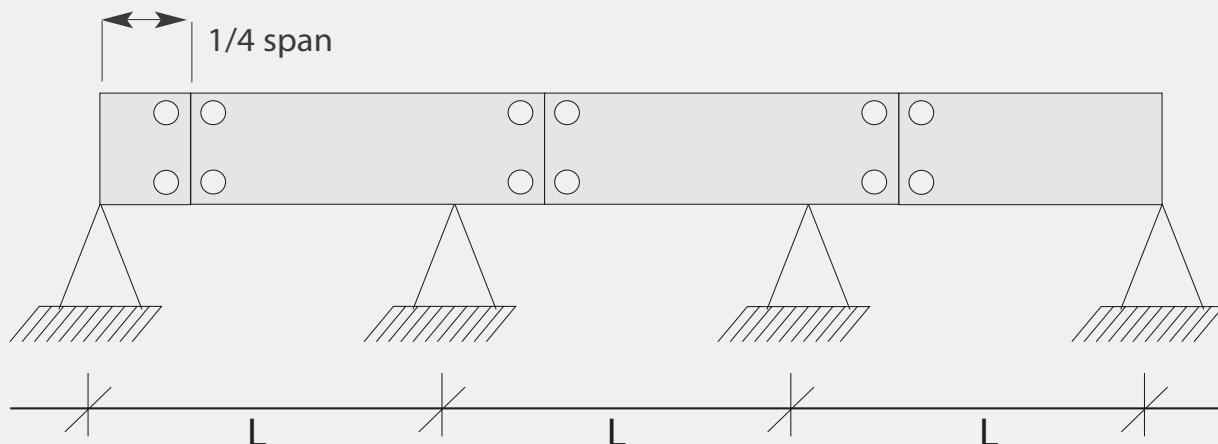
Since different bending moments are created in each span, there is no simple factor to approximate deflection as the number of spans increases. It is possible to calculate these deflections at any given point by using second integration of the basic differential equation for beams. Testing shows that the center span of a three-tray continuous beam can deflect less than 10 % of its simple beam deflection.

Couplers at 1/4 from Support Span

The support span cant be greater than the straight section length, to ensure no more than one splice is located between supports.

Location of Couplers. The location of the coupler dramatically affects the deflection of a Cable Ladder Trays System under equal loading conditions. Testing indicates that the maximum deflection of the center span of a three-span tray run can decrease four times if the couplers are moved from one-quarter span to above the supports. This can be a major concern for designers considering modular systems for tray and pipe racks.

Support Locations for Fittings



LENGTHS OF STRAIGHT SECTIONS

Cable Ladder Trays are available in 12'(3.7m) and 24'(7.4m) lengths in accordance with the NEMA Standards. Customized lengths are also available upon request.

The following factors need to be considered when specifying the lengths of the trays:

Support Span

- The support span shall not be greater than the tray length. This ensures that the two splice plate connections will not fall within one support span.

Space Constraints

- When installing trays in a limited space, as often encountered in commercial applications, 10' (3.0m) and 12' (3.7m) lengths of tray are easier to handle and therefore are better suited for those applications.

Labor Costs

- Where trays are being installed in an industrial facility, where space is not a significant issue, handling 20' (6.1m) and 24' (7.4m) lengths may be more economical. In this instance, half as many tray connections need to be made. Additionally, if the proper tray system is specified, support spans may be lengthened.

RADIUS OF FITTINGS

Cable Ladder Tray fittings are used to change directions both horizontally and vertically.

The standard radii for Cable Ladder Tray fittings are 12"(305mm), 24"(610mm), and 36"(915mm).

The radii of the fittings shall be based upon minimum bending radius of the cables.

This information can be obtained from the cable manufacturer.

Based on the total number of cables to be placed in the tray it may be more practical to use the next higher radius.

CABLE LADDER TRAY SUPPORT POSITIONS

Straight Sections

A general rule of thumb is that the splice plates shall not fall beyond the 1/4 point of the span, or the distance between supports. For example: On a 20' (6.1m) support span, the splice plates shall not be further than 5' (1.5m) away from the support location. Under no circumstances shall two Cable Ladder Tray splices fall between any pair of supports. For special applications, mid-span splice plates can be furnished. Please contact the factory.

Fittings

Supports for Cable Ladder Tray elbows are critical. It is important to note that the Cable Ladder Tray will come under its greatest stress when cables are being pulled into the tray. Therefore, proper placement of supports is necessary to ensure that the integrity of the tray system is maintained during the cable pulling operation.

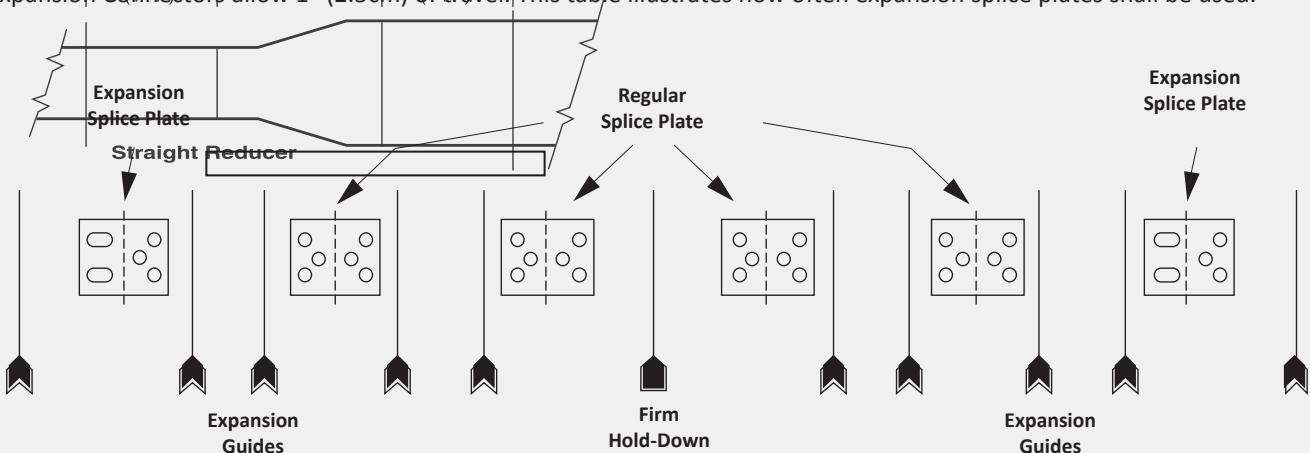
The diagrams on page 2-10 show the recommended support locations for fittings.

Thermal Expansion and Contraction

It is important to use expansion connectors when installing long runs of Cable Ladder Trays. The number of expansion connectors required will depend on:

- (1) the maximum temperature difference
- (2) the tray material being installed

Expansion Connectors allow 1" (2.5cm) of travel. This table illustrates how often expansion splice plates shall be used.

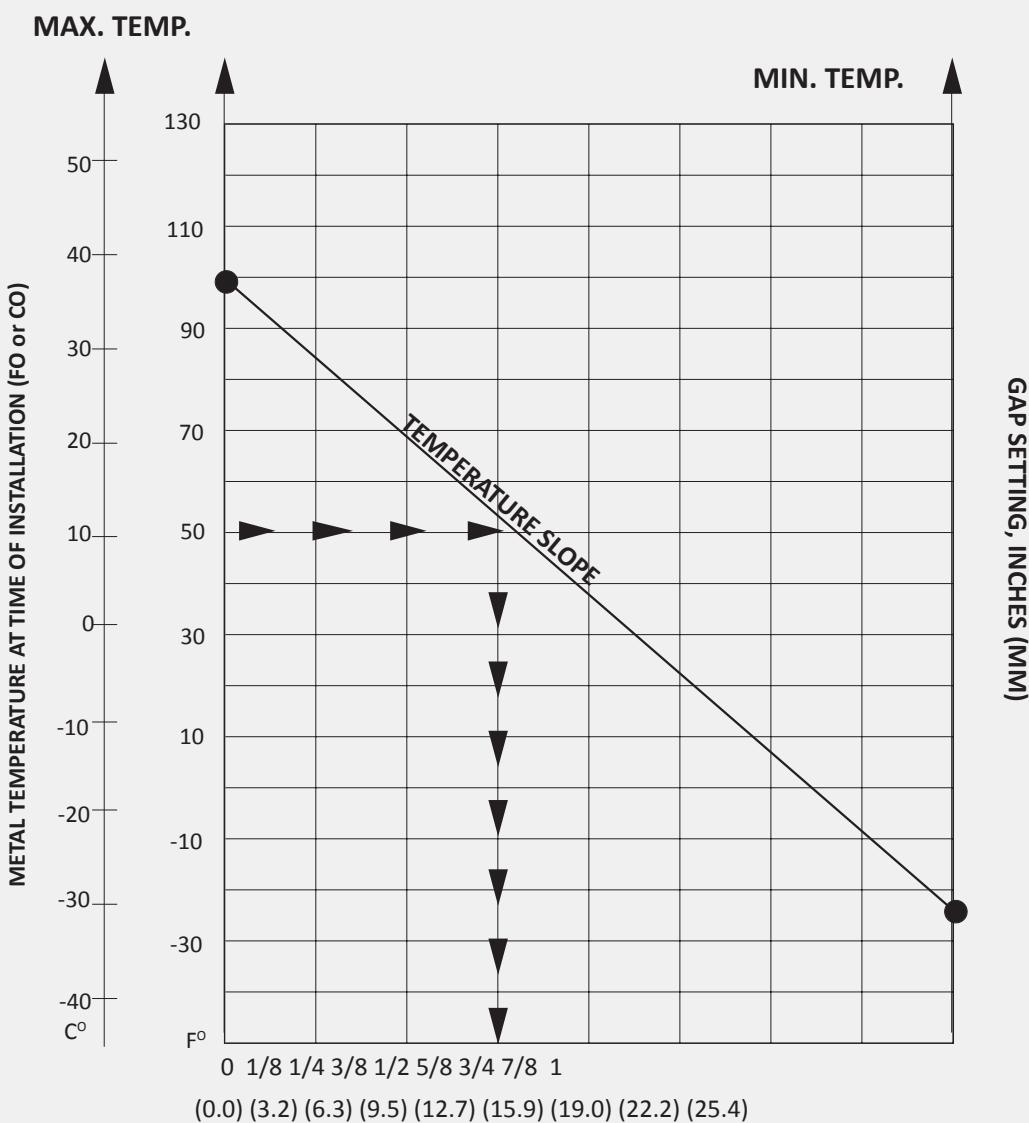


CABLE LADDER TRAY SUPPORT POSITIONS

The below mentioned table is used to determine the proper gap setting between trays. The metal temperature determines the proper gap setting at the time of installation. Establish maximum and minimum temperatures in summer and winter for the area. Draw a line connecting them.

Using the metal temperature at time of installation ($^{\circ}\text{C}$ or $^{\circ}\text{F}$) draw a horizontal to temperature slope and plot straight down to find the gap distance at expansion joint.

This diagram illustrates the proper installation of an expansion system. It is important to note that Cable Ladder Trays grounding straps are required when expansion connections are made. This will ensure proper grounding continuity.



Temperature Difference		Distance between Expansion Joints					
		Steel		Aluminum		Copper	
25°F	(14°C)	512'	(156m)	260'	(79m)	363'	(111m)
50°F	(28°C)	256'	(78m)	130'	(40m)	182'	(55m)
75°F	(42°C)	171'	(52m)	87'	(27m)	121'	(37m)
100°F	(56°C)	128'	(39m)	65'	(20m)	90'	(27m)
125°F	(70°C)	102'	(31m)	52'	(16m)	72'	(22m)
150°F	(83°C)	85'	(26m)	43'	(13m)	60'	(18m)
175°F	(97°C)	73'	(22m)	37'	(11m)	52'	(16m)

Table 3

ELECTRICAL GROUNDING

NEC (ANSI / NFPA 70), Article 318-7 allows for Cable Trays to be used as an equipment grounding conductor in commercial and industrial establishments. The following table lists specific ampere ratings and the minimum cross sectional area requirements for each rating.

SFSP produces Cable Tray Systems which meet the National Electrical Code (ANSI/NFPA 70), these can be used for any project worldwide except where another standard may take precedence, such as the Canadian Standards Association (CSA).

When required, Cable Trays can be installed per the Canadian Electrical Code Parts I and II (CEC). Trays and splice plates meet the bonding requirements of the CSA Standards and the CEC.

The cross-sectional area for each Cable Trays System, straight sections and fittings can be found on the appropriate selection charts contained within this publication. In addition, all Cable Trays, straight sections and fittings are supplied with pressure sensitive labels indicating the cross sectional area of both side rails, as required by the (NEC) National Electrical Code.

Table 4

Max. Fuse Amp Rating Circuit Breaker Amp Trip Setting or Relay Amp Trip Setting for Ground Fault Protection of any Cable Trays Circuit In the Cable Trays Systems	Minimum Cross Sectional Area of Metal* Steel Cable Trays		Aluminum Cable Trays	
	In ²	mm ²	In ²	mm ²
60	0.2	129	0.2	129
100	0.4	258	0.2	129
200	0.7	452	0.2	129
400	1	645	0.4	258
600	1.50**	968	0.4	258
1,000	-		0.6	387
1,200	-		1	645
1,600	-		1.5	968
2,000	-		2.00**	1,290

*Total cross sectional area of both side rails for ladder trough type trays, or the minimum cross-sectional area for metal in channel type Cable Trays or Cable Trays of one piece construction.

Bonding Jumpers / Straps

Cable Tray connections made with standard rigid splice plates, these rigid type connections do not require electrical bonding straps. Electrical bonding straps are required where Cable Trays are joined by connectors which allow movement, such as: vertical adjustable connectors, horizontal adjustable connectors and expansion connectors.

Proper grounding is also necessary where Cable Trays run parallel to each other, are stacked upon one another and in other instances where tray runs are discontinuous.

Summary

You are now ready to select the best Cable Trays System to meet your needs. By now, we hope you've decided to select the system using the NEMA CLASSIFICATION (8A, 12B, 20C, etc.) which makes your work so much easier.

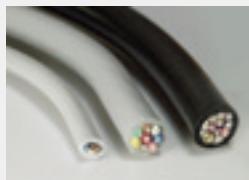
Selection is also possible using physical dimensions, performance or any combination of these data listed NEMA oriented.

CABLE SPECIFICATIONS

Most cable manufacturers offer a very accurate method of calculating cable weights, and appropriate lists or tables can be obtained from them.

Important: The tables only provide a rough overview. They are average values, which may vary from manufacturer to manufacturer. Please refer to the manufacturer's specifications for the exact values.

Actual cable weights of different cable types



Insulated power cables		Insulated power cables				Telecommunication Cables	
Type	Cable load kg/m	Type	Cable load kg/m	Type	Cable load kg/m	Type	Cable load kg/m
1 x 4	0.08	1 x 10	0.18	4 x 50	2.3	2 x 2 x 0,6	0.03
1 x 6	0.105	1 x 16	0.24	4 x 70	3.1	4 x 2 x 0,6	0.035
1 x 10	0.155	1 x 25	0.35	4 x 95	4.2	6 x 2 x 0,6	0.05
1 x 16	0.23	1 x 35	0.46	4 x 120	5.2	10 x 2 x 0,6	0.065
1 x 25	0.33	1 x 50	0.6	4 x 150	6.4	20 x 2 x 0,6	0.11
3 x 1,5	0.135	1 x 70	0.8	4 x 185	8.05	40 x 2 x 0,6	0.2
3 x 2,5	0.19	1 x 95	1.1	4 x 240	11	60 x 2 x 0,6	0.275
3 x 4	0.265	1 x 120	1.35	5 x 1,5	0.27	100 x 2 x 0,6	0.445
4 x 1,5	0.16	1 x 150	1.65	5 x 2,5	0.35	200 x 2 x 0,6	0.87
4 x 2,5	0.23	1 x 185	2	5 x 6	0.61	2 x 2 x 0,8	0.04
4 x 4	0.33	1 x 240	2.6	5 x 10	0.55	4 x 2 x 0,8	0.055
4 x 6	0.46	1 x 300	3.2	5 x 16	1.25	6 x 2 x 0,8	0.08
4 x 10	0.69	3 x 1,5	0.19	5 x 25	1.95	10 x 2 x 0,8	0.115
4 x 16	1.09	3 x 2,5	0.24	5 x 35	2.4	20 x 2 x 0,8	0.205
4 x 25	1.64	3 x 10	0.58	5 x 50	3.5	40 x 2 x 0,8	0.38
4 x 35	2.09	3 x 16	0.81			60 x 2 x 0,8	0.54
5 x 5,1	0.19	3 x 50	1.8			100 x 2 x 0,8	0.875
5 x 2,5	0.27	3 x 70	2.4			200 x 2 x 0,8	1.79
5 x 4	0.41	3 x 120	4				
5 x 6	0.54	4 x 1,5	0.22				
5 x 10	0.85	4 x 2,5	0.29				
5 x 16	1.35	4 x 6	0.4				
5 x 25	1.99	4 x 16	1.05				
7 x 1,5	0.24	4 x 25	1.6				
7 x 2,5	0.35	4 x 35	1.75				



IT cables type cat		Coax cable (Standard)	
Type	Cable load kg/m	Type	Cable load kg/m
Cat. 5/Cat. 6	0.06	SAT/BK cable	0.06

CABLE SPECIFICATIONS

External diameter and cross section



Insulated power cables			Insulated power cables			Telecommunication Cables		
Type	Ø mm	Useful cross-section cm ²	Type	Ø mm	Useful cross-section cm ²	Type	Ø mm	Useful cross-section cm ²
1 x 4	6.50	0.42	1 x 10	10.50	1.10	2 x 2 x 0,6	5.00	0.25
1 x 6	7.00	0.49	1 x 16	11.50	1.32	4 x 2 x 0,6	5.60	0.30
1 x 10	8.00	0.64	1 x 25	12.50	1.32	6 x 2 x 0,6	6.50	0.42
1 x 16	9.50	0.90	1 x 35	13.50	1.82	10 x 2 x 0,6	7.50	0.56
1 x 25	12.50	1.56	1 x 50	15.50	2.40	20 x 2 x 0,6	9.00	0.81
3 x 1.5	8.50	0.72	1 x 70	16.50	2.72	40 x 2 x 0,6	11.00	1.12
3 x 2.5	9.50	0.90	1 x 95	18.50	3.42	60 x 2 x 0,6	13.00	1.69
3 x 4	11.00	1.21	1 x 120	20.50	4.20	100 x 2 x 0,6	17.00	2.89
4 x 1.5	9.00	0.81	1 x 150	22.50	5.06	200 x 2 x 0,6	23.00	5.29
4 x 2.5	10.50	1.10	1 x 185	25.00	6.25	2 x 2 x 0,8	6.00	0.36
4 x 4	2.50	1.54	1 x 240	28.00	7.84	4 x 2 x 0,8	7.00	0.49
4 x 6	13.50	1.82	1 x 300	30.00	9.00	6 x 2 x 0,8	8.50	0.72
4 x 10	16.50	2.72	3 x 1,5	11.50	1.32	10 x 2 x 0,8	9.50	0.90
4 x 16	19.00	3.61	3 x 2,5	12.50	1.56	20 x 2 x 0,8	13.00	1.69
4 x 25	23.50	5.52	3 x 10	17.50	3.06	40 x 2 x 0,8	16.50	2.72
4 x 35	26.00	6.76	3 x 16	19.50	3.80	60 x 2 x 0,8	20.00	4.00
5 x 5.1	9.50	0.90	3 x 50	26.00	6.76	100 x 2 x 0,8	25.50	6.50
5 x 2.5	11.00	1.21	3 x 70	30.00	9.00	200 x 2 x 0,8	32.00	10.24
5 x 4	13.50	1.82	3 x 120	36.00	12.96			
5 x 6	14.50	2.10	4 x 1,5	12.50	1.56			
5 x 10	18.00	3.24	5 x 2,5	13.50	1.82			
5 x 16	21.50	4.62	4 x 6	16.50	2.72			
5 x 25	26.00	6.76	4 x 10	18.50	3.42			
7 x 1.5	10.50	1.10	4 x 16	21.50	4.62			
7 x 2.5	13.00	1.69	4 x 25	25.50	6.50			
			4 x 35	28.00	7.84			
			4 x 50	30.00	9.00			
			4 x 70	34.00	11.56			
			4 x 95	39.00	15.21			
			4 x 120	42.00	17.64			
			4 x 150	47.00	22.00			
			4 x 185	52.00	27.00			
			4 x 240	58.00	33.60			
			5 x 1,5	13.50	1.82			
			5 x 2,5	14.50	2.10			
			5 x 6	18.50	3.42			
			5 x 10	20.50	4.20			
			5 x 16	22.50	5.06			
			5 x 25	27.50	7.65			
			5 x 35	34.00	11.56			
			5 x 50	40.00	16.00			

The choice is made under consideration of:

- 1- The number of cable to be passed in a Cable Tray (Load carrying capacity of the tray).
- 2- The load of cable to be passed in a cable tray and support distance.

Cable Capacity

For the estimation of cable area, the table shown below is used to help.

Table 1

Space needed for cable to type NYY for example:

Cable	Diameter	Area per cable x Number of cable	Usable area
NYY	mm	cm ²	cm ²
4 x 1,5	12,5	1,5 x 1	1,5
4 x 2,5	14,0	1,8 x 1	1,8
4 x 6,0	16,5	3,0 x 1	3,0
4 x 16	22	5,0 x 1	5,0
4 x 35	31	12,0 x 1	12,0
4 x 70	41	16,0 x 1	16,0
			$A \geq \sum 39,30 \text{ cm}^2$

For cables of any size the area per cable is multiplied with the number of cables , whereas the sum(A) is the total area of the cables. The result is the needed cross section area of the Cable Tray .

Example

For the cable shown in table 1 (using 1 cable of each type) we need min. a Cable tray of 40.0 cm² .

Table 2

Weight of cables type NYY (Power Cable)

Cable	Cable weight	x	Number of Cables (variable)	=	Total weight
NYY	N/m				N/m
4 x 1,5	1,6	x	1	=	1,6
4 x 2,5	2,3	x	1	=	2,3
4 x 6,0	4,6	x	1	=	4,6
4 x 16	10,9	x	1	=	10,9
4 x 35	20,9	x	1	=	20,9
4 x 70	31,0	x	1	=	31,0

Cable Weight

To determine the total weight, each cable weight is multiplied with the its number. The result is the estimated cable load (F).

The highest possible cable load is decisive. This is calculated by multiplication of the usable diameter with the specific cable weight.

According to DIN VDE 0639

Type of Cable Support	Cable	Specific Cable weight
Cable Ladder	Control line cables	Usable section x 2,8N/m x cm ²
Cable Tray	Voltage line cables	Usable section x 1,5 N/m x cm ²

Supporting structures

The supporting structures for Cable Tray or Cable Ladder contain

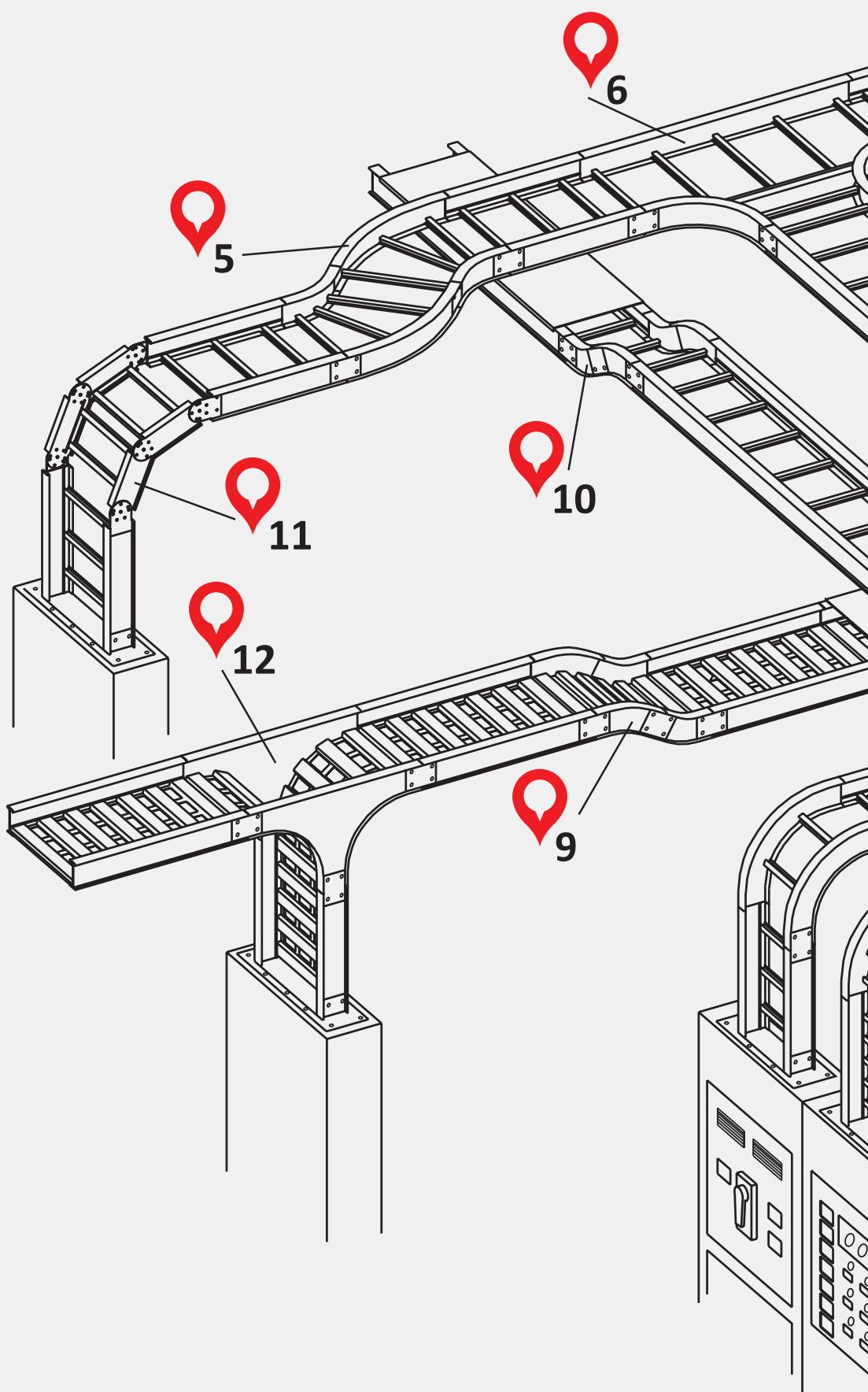
- a) On walls: bracket support or wall bracket
- b) On ceiling: ceiling bracket support

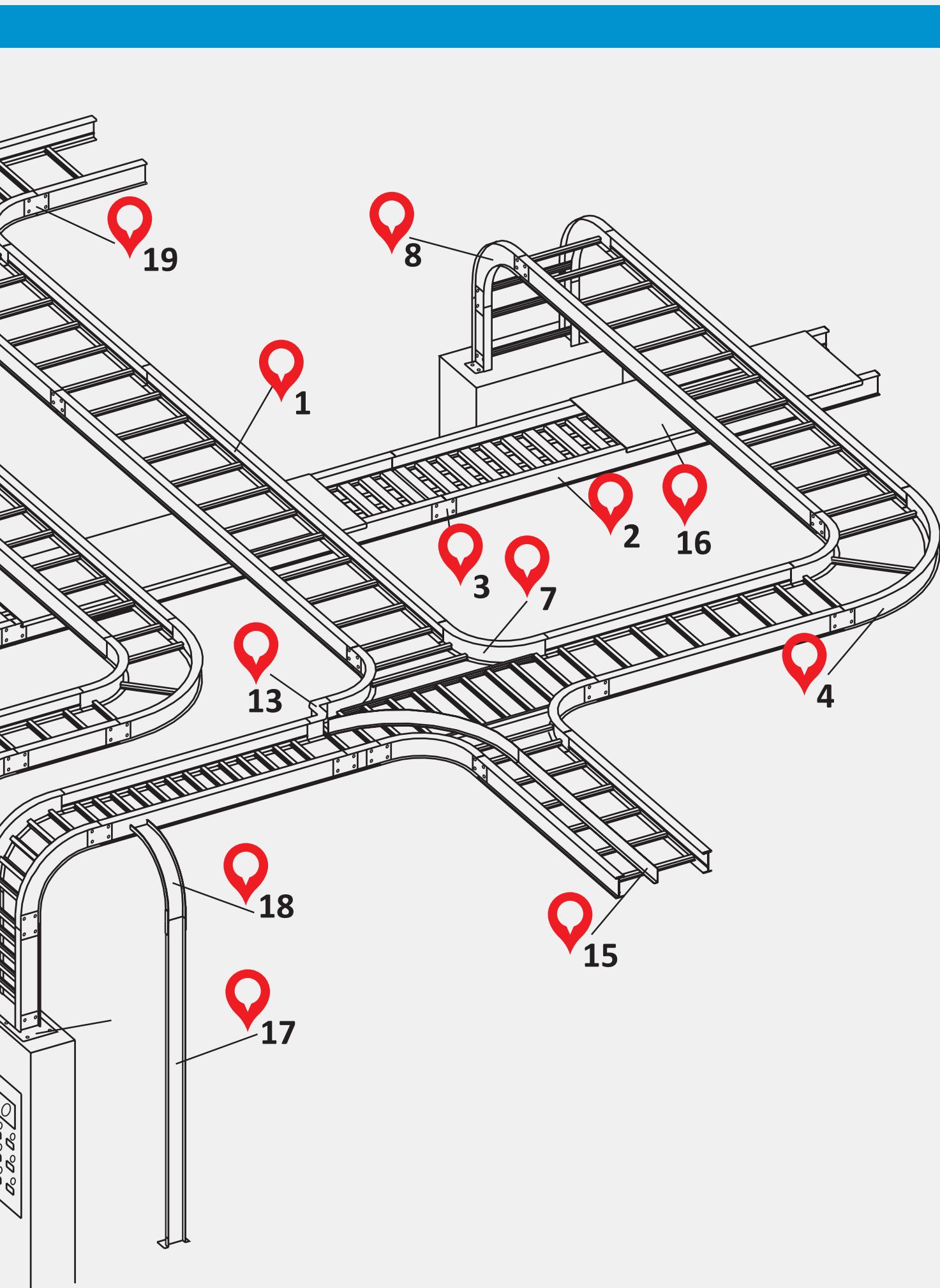
In order to choose construction pieces of sufficient weight load ability, the load of each Cable Tray or Cable Ladder at the support point has to be determined.

CABLE LADDER TRAYS SYSTEM DESIGN

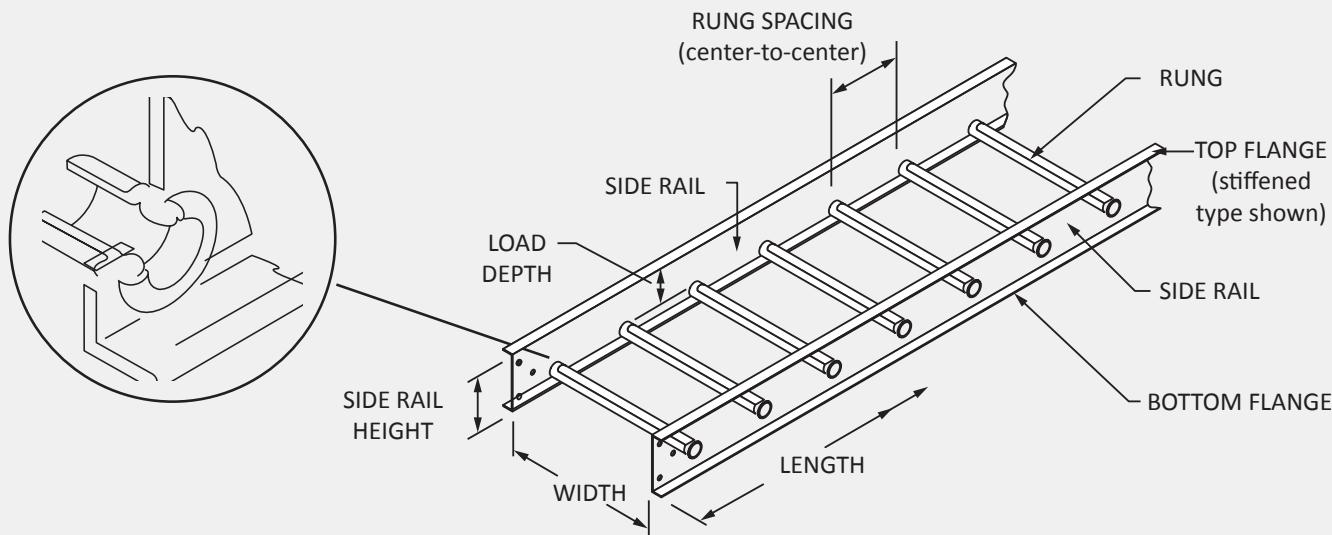
Nomenclature

1. Cable Ladder Trays
2. Ventilated Cable Ladder Trays
3. Joint Plate / Fish Plate
4. 90°Horizontal Bend
5. 45°Horizontal Bend
6. Horizontal Tee
7. Horizontal Cross
8. 90°Vertical Outside Bend
9. 45°Vertical Outside Bend
10. 45°Vertical Inside Bend
11. Vertical Bend
12. Vertical Tee
13. Left Reducer
14. Frame Type Box Connector
15. Barrier Strip
16. Solid Flanged Tray Cover
17. Channel Straight Section
18. Channel Cable Ladder Trays, 90°Vertical Outside
19. Expansion Connectors





Is a structure consisting of two side rails, connected by individual rungs and is manufactured in accordance with NEMA Standard #VE-1. Rungs are fastened to the side members by an exclusive swaging process. This assembly method ensures a superior mechanical and electrical connection.



Side Members

- Side members are designed with top and bottom flanges turned outwards. This simplifies fastening the Cable Ladder Trays to the supports. Cable Ladder Trays with outward facing flanges allow complete access within the cable loading area and eliminate the possibility of cable damage from sharp edges within the cable area. The return on the top flange strengthens the side member and allows cables to be smoothly dropped over the side.

Rung

- Ladder rungs are 1.00"(25mm) diameter tubings flattened on top to provide a cable bearing surface. This construction allows cables to drop out anywhere without contacting a sharp edge.

Rung Spacing

- The interval at which rungs are swaged to the side member. This is measured from center line of rung to center line of rung. SFSP manufactures straight lengths with four standard rung spacings: 6"(150mm), 9"(229mm), 12"(305mm) and 18"(457mm). Rung spacing is generally determined by the size and type of the cable being supported. When in doubt, 9"(229mm) rung spacing is a generally accepted compromise.

Length

- The longitudinal dimensions of standard Cable Ladder Trays are 10'(3.0m), 12'(3.7m), 20'(6.1m) and 24'(7.4m).

Width

- The transverse dimensions of Cable Ladder Trays are measured inside (from side member web to side member web) and are furnished in seven standard widths: 6"(150mm), 9"(229mm), 12"(305mm), 18"(457mm), 24"(610mm), 30"(750mm) and 36"(915mm).

Overall Width

- Overall ladder width is equal to the inside or nominal width plus the width of the side member flanges.

Load Depth

- Measured from top surface of rung to the top of the side member. This is not to be confused with the overall height. SFSP manufactures four loading depths: 3"(75mm), 4"(100mm), 5"(125mm) and 6"(150mm) in accordance with NEMA Standard VE-1.

Overall Height

- Overall height is equal to the loading depth plus 1.25"(30mm).

Fittings

- For changing direction horizontally and vertically, SFSP manufactures elbows, tees and crosses in all widths and loading depths. Fittings are available in three standard radii; 12"(305mm), 24"(610mm) and 36"(915mm). Maintain a nominal 9"(229mm) rung spacing through the center line of all fittings.

Swaged Rounded Tubular Cable Ladder Trays Features:

1. Universal Curvilinear Splice Plate System

The splice plates for rigid connections have a slight curve so that they can be used on straight sections or fittings. Tightening of the fastener pulls the plate flush with the side rail ,which makes the fasteners snug and the joint becomes superior structurally and electrically. Even when hand-tight, there is pressure on the fastener to hold it securely.

Note: Heavy Duty and Mid Span Splice Plates are available upon request .

2. New Zero Tangent Fittings

Tangent as referred to on Cable Ladder Trays fittings is the straight part at the end of the curve to accommodate a flat splice plate. This wastes space in tightly packed areas, such as spreader rooms, where the heat of thousands of cables accumulate. Eliminating tangents allows more tray runs to distribute the heat. Zero tangent fittings can save up to 12' (3.7m) per row of tray.

3. Swaged Rung Cable Ladder Trays System Process

The heart of the design is the tubular rung and its connection to the side rail by cold swaging, a process where special machinery compresses and locks the tubular rung material around both the inside and outside of the Cable Trays' side rails. This connection is made without the use of heat which can potentially disturb the molecular structure of the metal and weaken it.

The tubular rung is flattened during the swaging process to ensure a proper cable bearing surface.

Swage Advantages

- Swaging allows the side rails to be turned outwards, simplifying cable installation and providing 100% access to the cables. Cold swaging yields the most rigid tray systems in the industry. The swaged rung connection resists stresses in all directions: up or down, side to side or in and out. The swaged ladder also resists the camber and warping effects encountered in a typical weld system.

The increased rigidity means that a 24'(7.4m) section of tray can be lifted on one end with little or no twisting or bending of the tray section. This rigid construction makes the trays safer for field personnel to handle and reduces shipping damage.

Electrical Properties

- Electrically, the 106 tons of pressure in the swaging process virtually eliminates the interstices and a homogenous electrical path results in the following:
Resistance of Aluminum Swaged Tray: 31 microohms
Resistance of Steel Swaged Tray: 37.3 microohms
Resistance of Popular Aluminum Welded Tray: 101 microohms

Conclusion

- Cold swaging yields a very strong, efficient and aesthetically pleasing system that stands the test of time and offers installation savings due to its ease of handling.

Is a prefabricated metal structure consisting of reinforced Welded Cable Ladder Trays -shaped rungs, arc welded to the side rails and is manufactured according to NEMA Standard VE-1. Welded Cable Ladder Trays' rungs are fastened to the side rails with an automatic, self-indexing MIG-arc-welding system, plug welding a 0.5"(12.5mm) diameter zone. The superior strength of the plug weld withstands the rigors of shipping, handling, erection and cable support service.

Side Members

Welded Cable Ladder Trays' side members are designed with top and bottom flanges turned inwards. This minimizes the space requirements of the Cable Trays Systems, and allows a very low side rail height for each NEMA Standard VE-1 load depth.

Slotted Rungs

Slotted shaped rungs are provided on trays 6"(150mm), 9"(229mm), 12"(305mm), 18"(457mm) and 24"(610mm) wide. All slotted rungs are 2.5"(63mm), and provide a 1.25"(30mm) cable bearing surface. Slots provide a neat, convenient option for cable tie down requirements. Slots are 5/16"(6.25mm) wide and 5/8"(12.5mm) in length, and are located on 1"(25mm) centers across the entire width of the rung

Solid Rungs

Solid shaped Rungs are provided on trays 30"(750mm) and 36"(915mm) wide. Solid Rungs for steel trays are 2.25"(58mm) wide and provide a 7/8"(22mm) cable bearing surface.

Rung Spacing

SFSP manufactures straight lengths with four standard rung spacings; 6"(150mm), 9"(229mm), 12"(305mm) and 18"(457mm). The 6"(150mm) rung spacing results in a 3.75"(94mm) opening between rungs allowing the tray to be classified as a ventilated trough per NEMA Standard VE-1.

Length

The longitudinal dimensions of standard Welded Cable Ladder Trays are 10'(3.0m), 12'(3.7m), 20'(6.1m) and 24'(7.4m).

Width

The transverse dimensions of Welded Cable Ladder Trays are measured from the inside and are furnished in seven standard widths: 6"(150mm), 9"(229mm), 12"(305mm), 18"(457mm), 24"(610mm), 30"(750mm) and 36"(915mm).

Overall Width

Overall tray width is equal to the inside or nominal width plus the thickness of the two side rail webs. Overall Tray Width = Nominal + 3/16"(5mm) Width.

Load Depth

Measured from the top surface of the rungs to the top of the side member.

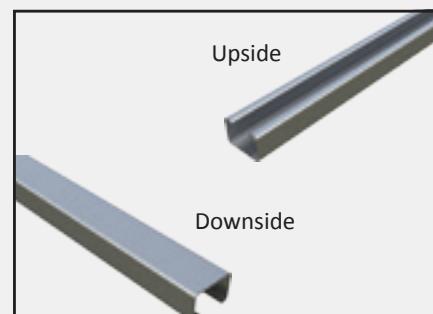
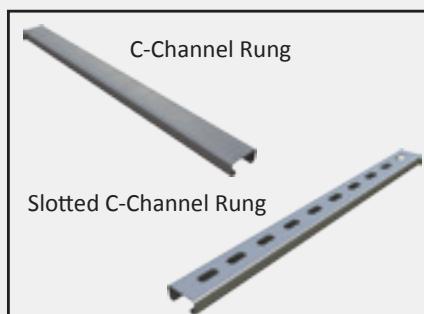
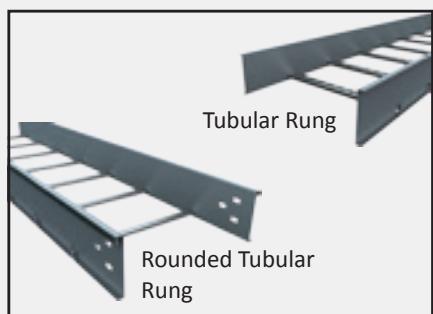
SFSP manufactures four load depths; 2 7/8"(73mm), 3 5/8"(101mm), 4 5/8"(127mm) and 5 5/8"(153mm) corresponding to the four nominal load depths in NEMA Standard 1"(25mm), 3"(75mm), 4"(100mm), 5" (125mm) and 6"(150mm).

Overall Height

Welded Cable Ladder Trays' overall height is equal to the load depth plus 1.25"(30mm).

Fittings

For changing direction both horizontally and vertically, **SFSP** manufactures tees and crosses in all widths and load depths. Standard fittings maintain a nominal 9"(229mm) rung spacing through the center line of the fitting.



Welded Ladder Cable Tray Features:

1. Compact Economical System

Welded Cable Ladder Trays are an extremely compact economical flange in Cable Trays Systems which allow the designer to utilize these Cable Trays in tight locations. The extremely low profile Welded Cable Ladder Trays Rungs (5/8" high) minimize the required side rail height while maintaining NEMA Standard VE-1 nominal load depths. Overall system height is only 5/8" greater than the actual load depth.

2. Universal Curvilinear Splice Plate System

The splice plates for rigid connections have a slight curve so they can be used on straight sections or fittings. Tightening of the fastener pulls the plate flush with the side rail. The fasteners are snug and the joint is superior structurally and electrically. Even when hand-tight, there is pressure on the fastener to hold it securely.

Note: Heavy Duty and Mid Span Splice Plates are available upon request.

3. Zero Tangent Fittings

"Tangent" as referred to on Cable Tray fittings is the straight part at the end of the curve to accommodate a flat splice plate. This wastes space in tightly packed areas, such as spreader rooms, where the heat of thousands of cables accumulate. Eliminating tangents allows more tray runs to distribute the heat.

Inspection of proper installation of splice plates is done visually.

If the plate is bowed away from the rail, nuts shall be tightened.

4. Welded Assembly System

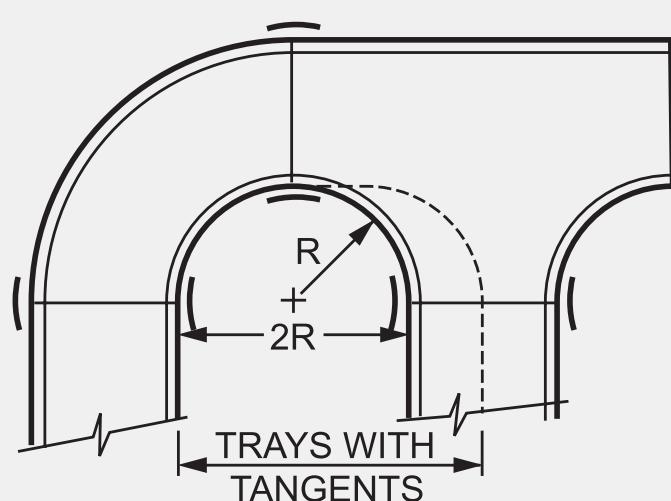
- Welded Cable Ladder Trays rungs on straight sections are assembled to the side rails using an automatic, these welds are 700% larger and stronger than the common resistance (spot) weld in use today. Electrical properties of the assembly are unequalled; are well within the NEMA requirements due to the continuous electrical path.

The mechanical strength of this welded assembly withstands the rigors of shipping, handling, erection and service.

The size of the weld keeps the vertical axis of the side rail from sloping inwards under load. The weld maintains the 90° angle between the side rail and bottom. This allows full use of the section properties. Spot welds do not permit this.

Also, stresses on spot welds (barely 1/8" (3mm) in diameter) are so severe that breakage often occurs during shipping and erection.

Welded Cable Ladder Trays fittings are also assembled by MIG-arc welding.



CABLE LADDER TRAY SYSTEMS OVERVIEW

SFSP's Cable Ladder Trays Systems are available in a variety of finishes, and in varying width and load depth for many applications including primary service entrances, main power feeders, branch wirings, instruments and communications cables.

Applications:

- Industrial:

Gas facilities, Oil facilities, Power Plants, Petrochemical Plants, Automotive Plants, Paper Plants, Food Processing, Power Plants, Refineries, Manufacturing, Mining.

- Commercial:

Shopping Centers, Control Buildings, Schools, Hospitals, Office Buildings, Airports, Stadiums

Features:

- Rounded side rail flanges protect cables.
- All designs permit easy cable dropout with no sharp edges to damage insulation.
- Slotted C-Channel rungs allow simple cable fastening.
- High strength splices allow random locations between supports (full sections used on all simple beams).
- Standard straight section length is 3000 mm. • Complete line of fittings and accessories.

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.

SWAGED CABLE LADDER TRAYS (ALUMINUM)

Aluminum 6063 T6 - Side Rails

Design Data						
Side Rail	Height (mm)	Load Depth Fd (mm)	Thickness (mm)	F (mm)	W cm ³	I cm ⁴
A1	110	80	2.0	20	8.12	46.06
A2	136	106	2.0	20	11.24	78.95
A3	162	132	2.0	20	14.78	123.85
A4	188	158	2.5	20	23.14	224.70

Aluminum 6063 T6 Load Classes			
Side Rail	Load kg/m	Span (m)	Classes NEMA
A1	52	3.0	A
A2	89	3.0	C
A3	74	3.70	12A
A4	134	3.70	12B

SFSP's Swaged Cable Ladder Trays consist of 2 outside rails that are connected by a round tubular rung of 25 mm outside diameter.

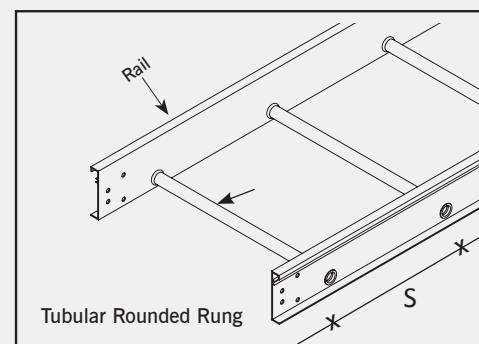
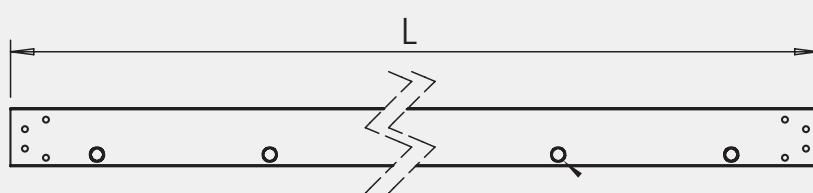
- SFSP's Swaged Cable Ladder Trays are manufactured in widths (w): 150 mm, 225 mm, 300 mm, 450 mm, 500 mm, 600 mm, 750 mm and 900 mm.

Other dimensions are available upon request.

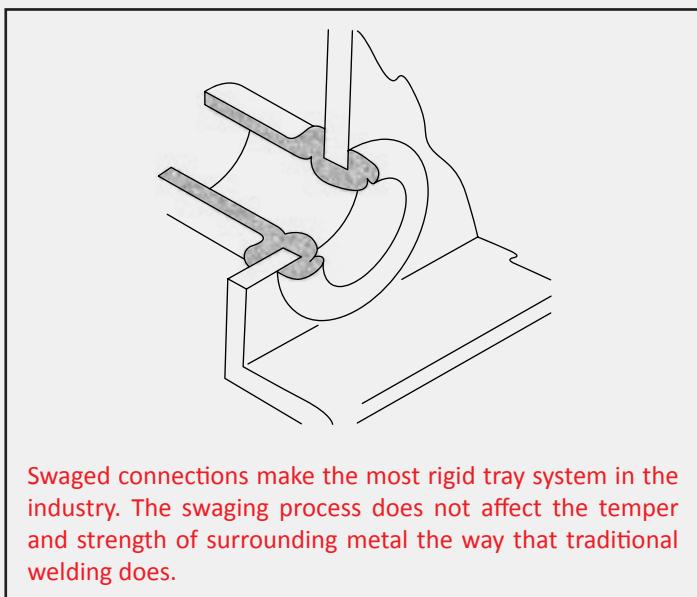
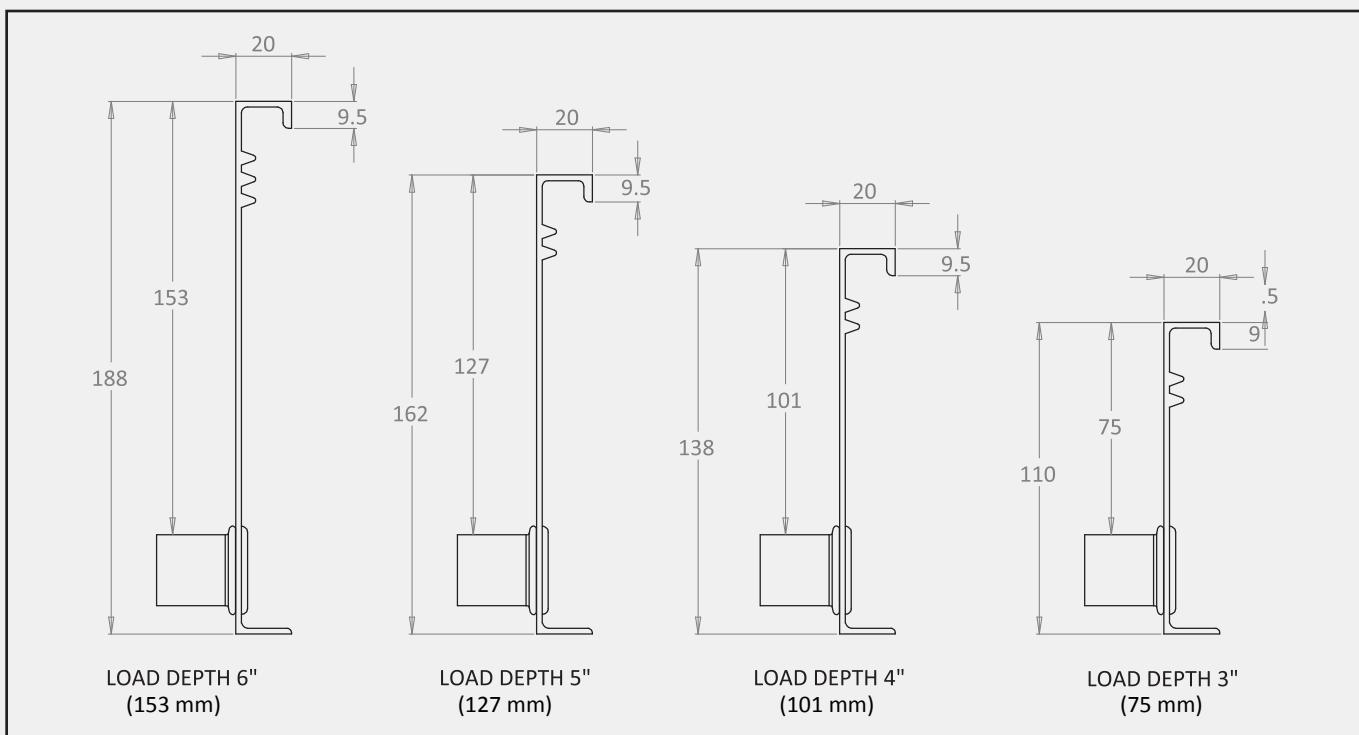
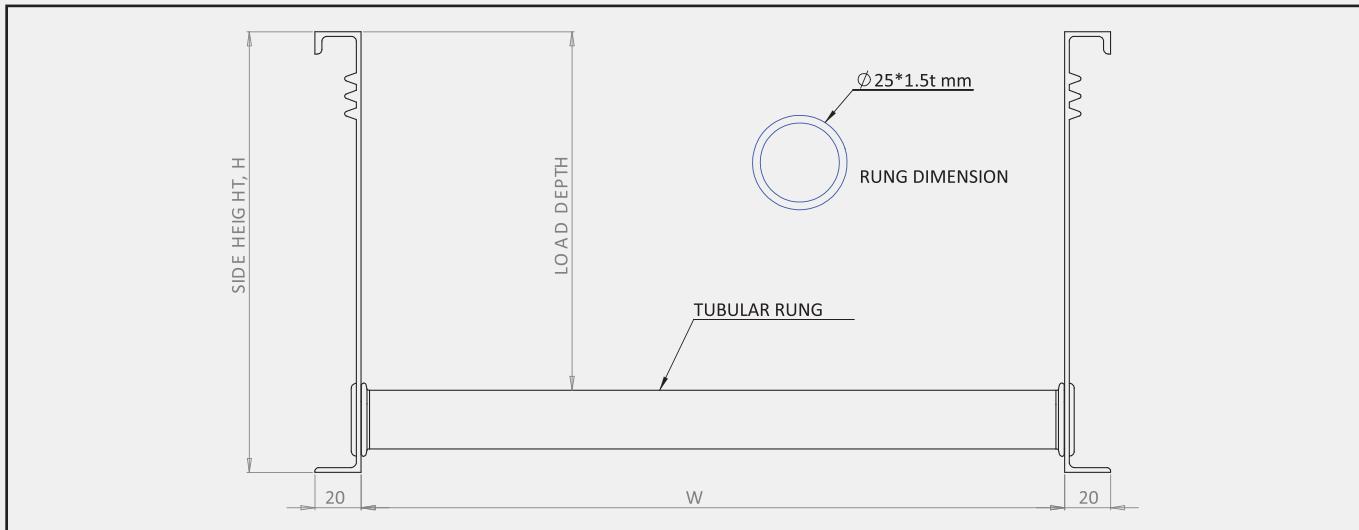
Tubular Rungs

The available distance spacing (S) between the rungs is 229 mm. Length (L): 2440/3000 mm. Side height of the side rail is 110 mm, 136 mm, 162 mm and 188 mm. *Other dimensions are available upon request.*

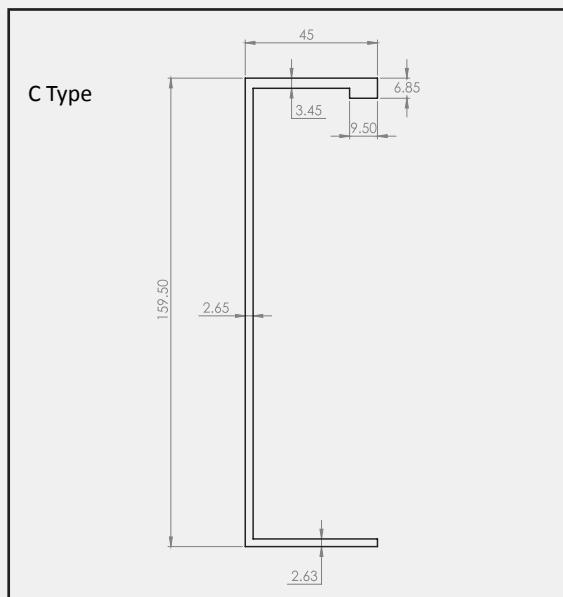
Swaged Cable Ladder Trays are available in: Aluminum 6063 T6



SWAGED CABLE LADDER TRAYS (ALUMINUM)

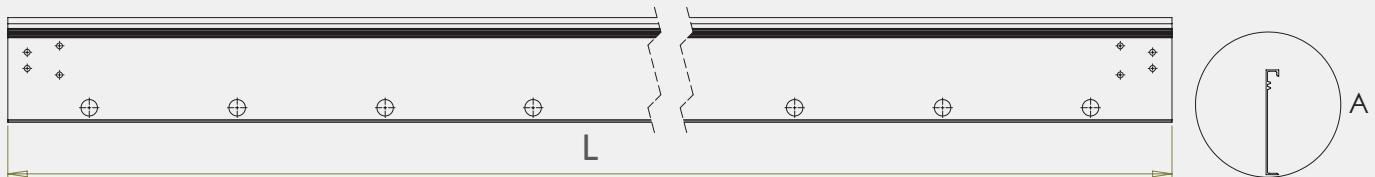


Swaged connections make the most rigid tray system in the industry. The swaging process does not affect the temper and strength of surrounding metal the way that traditional welding does.

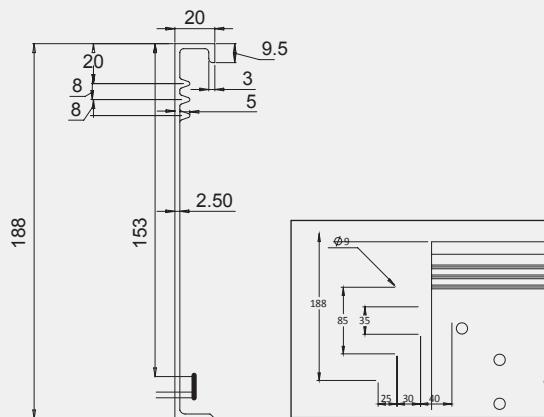


SWAGED CABLE LADDER TRAYS (ALUMINUM)

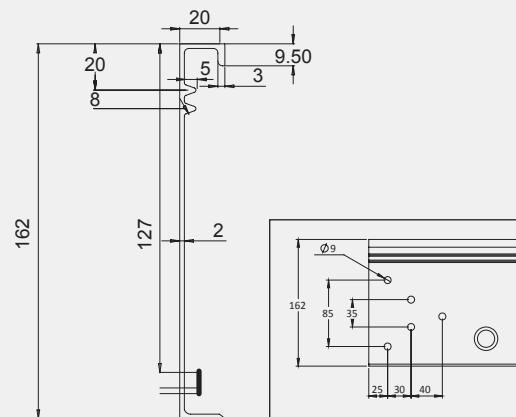
Aluminum Cable Ladder Trays - General Overview



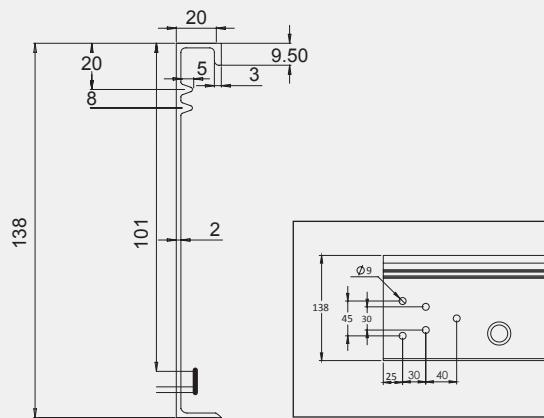
C.Ladder Side Rail 6"



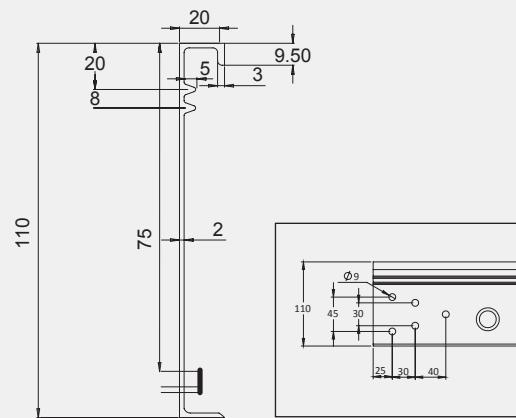
C.Ladder Side Rail 5"



C.Ladder Side Rail 4"



C.Ladder Side Rail 3"



SFSP can make modifications and design materials or finishes as it deems necessary or desirable.

All illustrations, drawings and descriptive material in this publication are of a generally informative nature only, and do not form a complete package of the specifications or description of the goods . Most of the dimensions shown are nominal .

STEEL CABLE LADDER TRAYS (STEEL S235 JRG2)

RUNG TYPES (Swaged and Channel)

Swaged Type (Aluminum & Steel)

- Rounded tubular with 25 mm diameter
- Rung standard spacing 229 mm

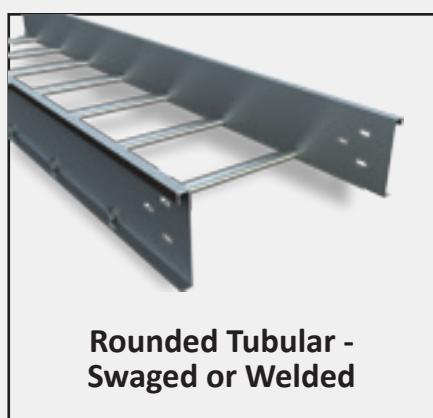
Channel Type (Steel)

- Plain or slotted, and can be mounted upwards or downwards.
- Rung standard spacing 229 mm

RAIL TYPES

Types of Rail:

- C-Type, Z-Type and R-Type



Rounded Tubular -
Swaged or Welded



Plain Channel (Steel)



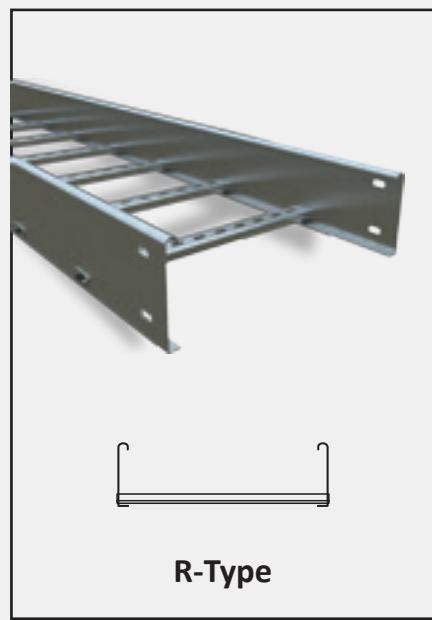
Slotted Channel (Steel)



Z-Type



C-Type



R-Type

MATERIALS

- Pre-Galvanized / Stainless Steel

FINISHES

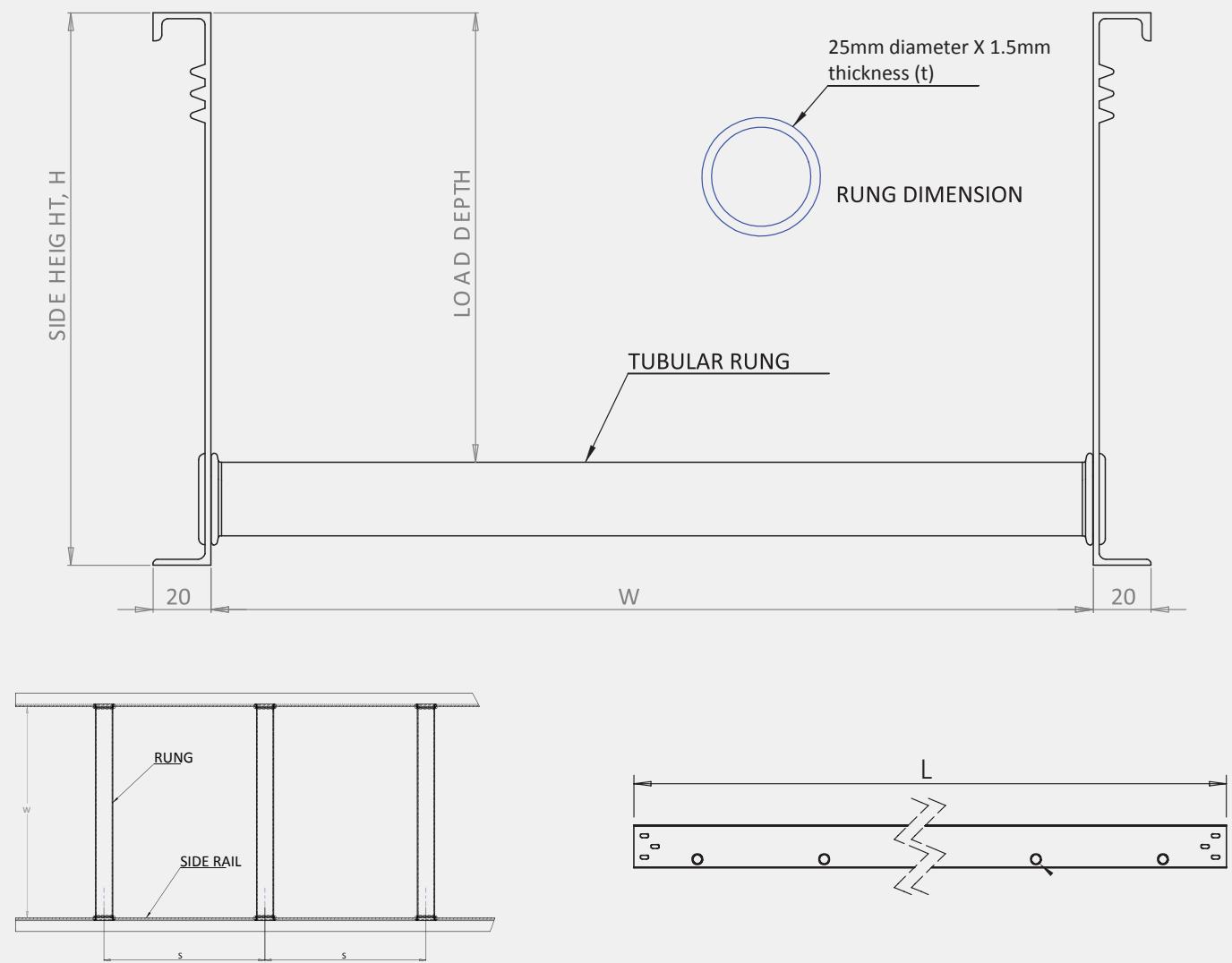
- Hot-Dip Galvanized, Zinc Electroplating and Epoxy Powder Coating.

MATERIAL THICKNESS

1.50 mm 2.00 mm 2.50 mm

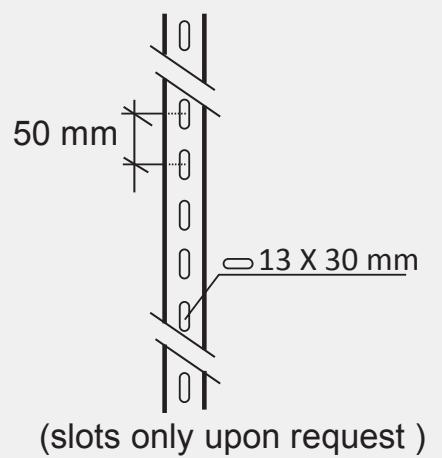
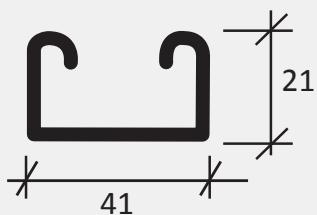
STEEL CABLE LADDER TRAYS - GENERAL OVERVIEW

Tubular Rounded Rung

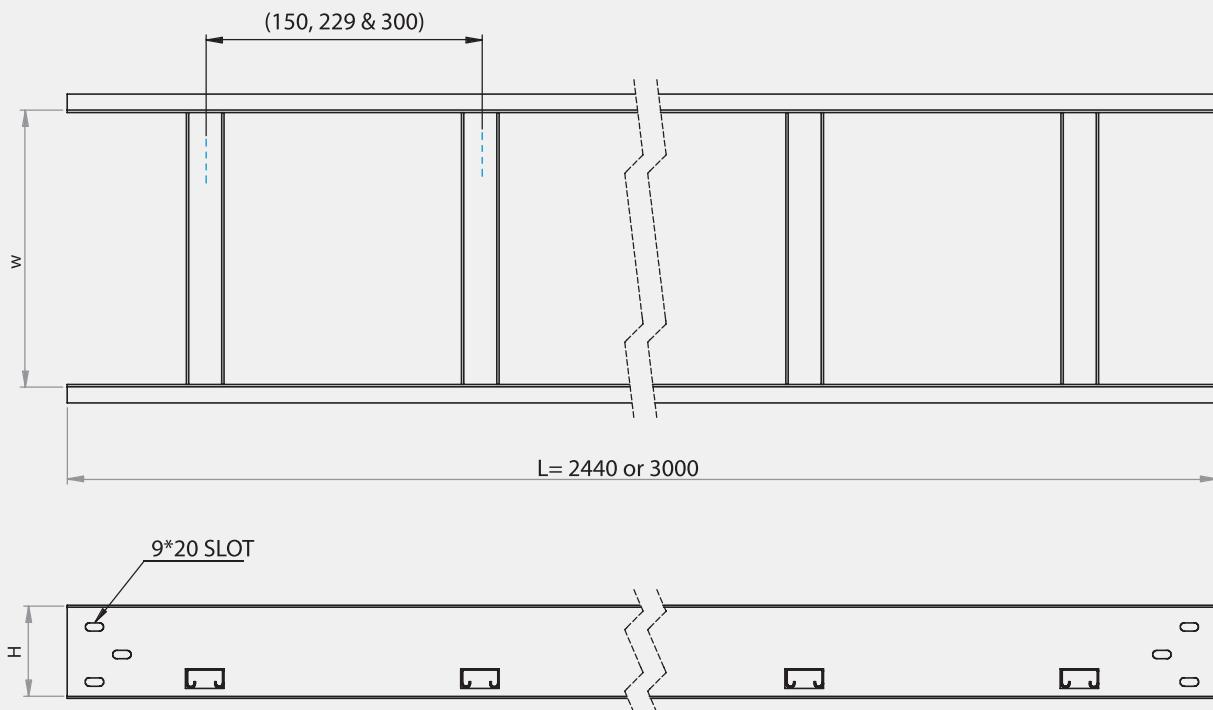


Rung Types and Dimensions

Rung Thicknesses: 1.5 mm, 2.0 mm and 2.5mm

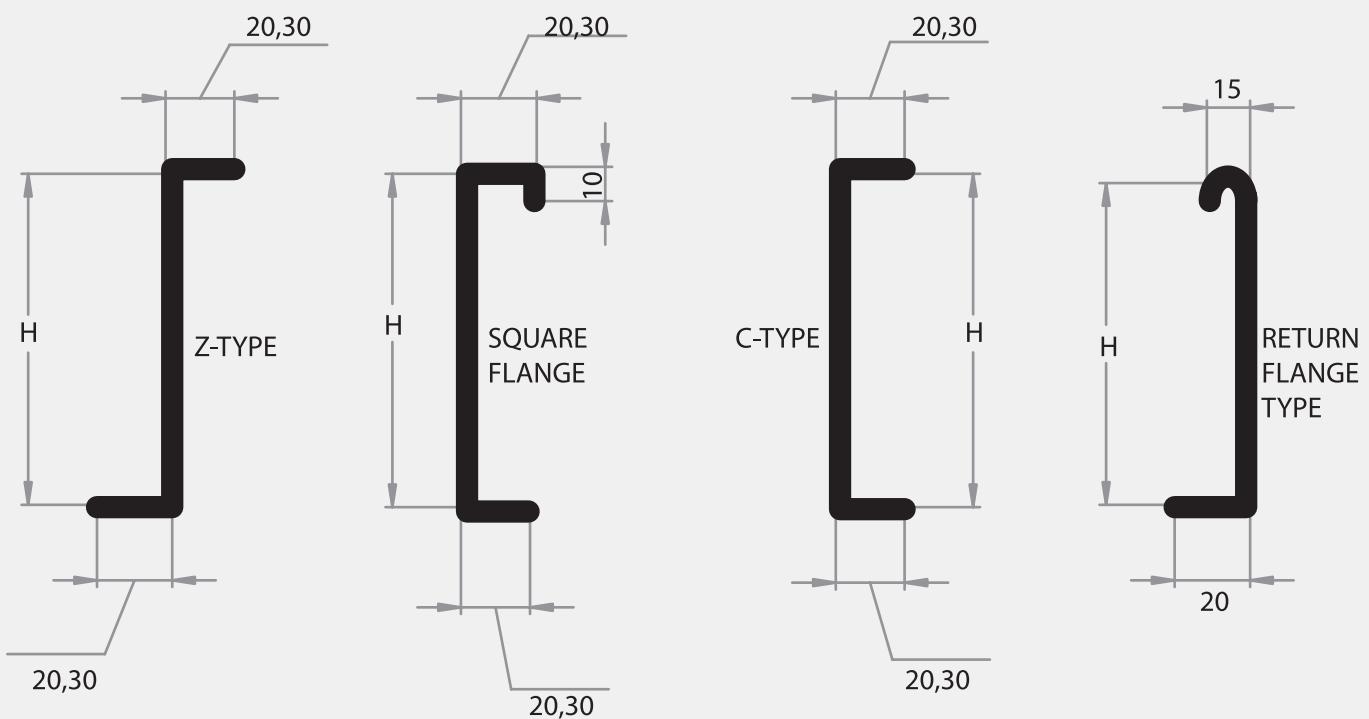


Length and Rung Spacing

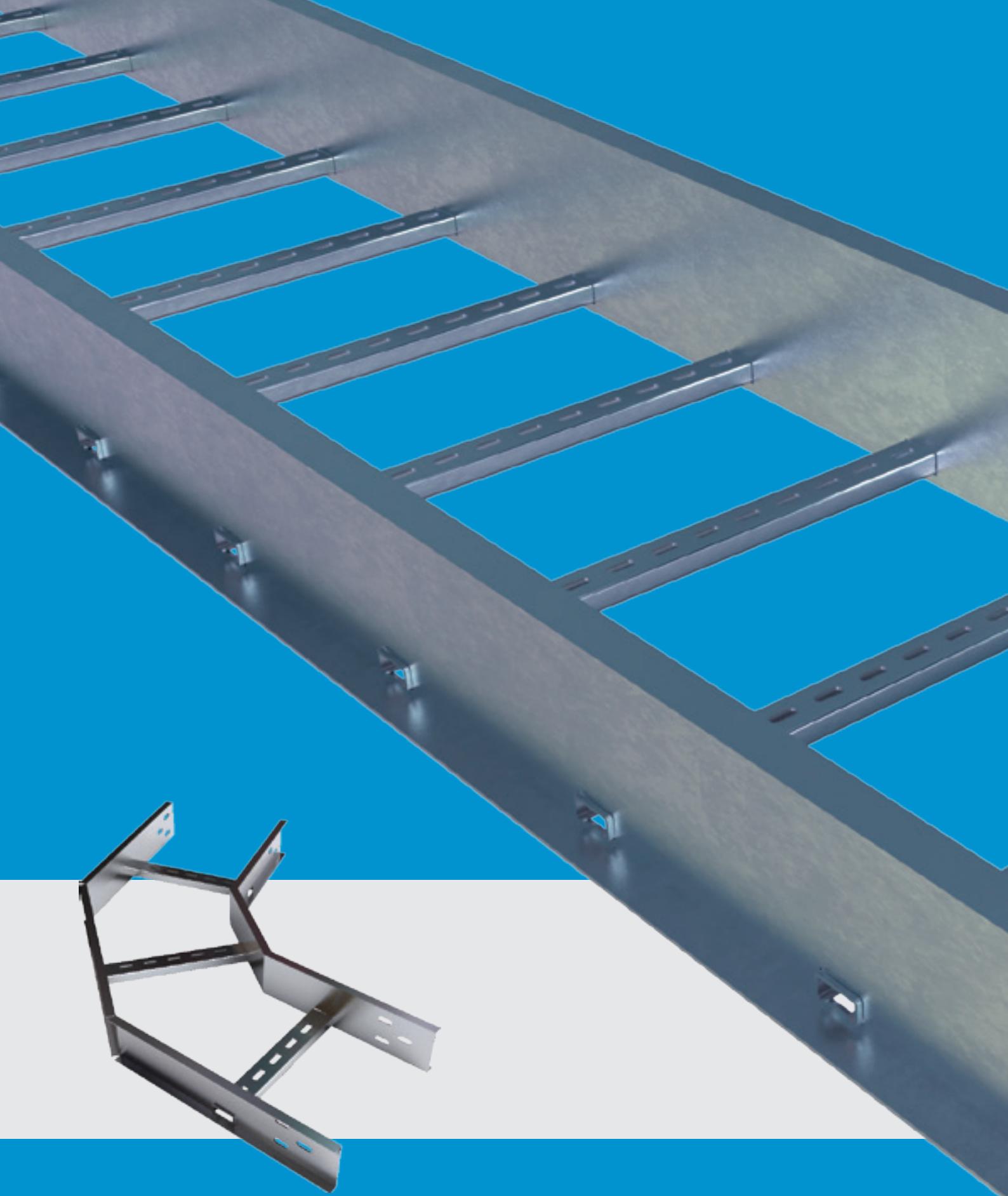


Side Rail Types

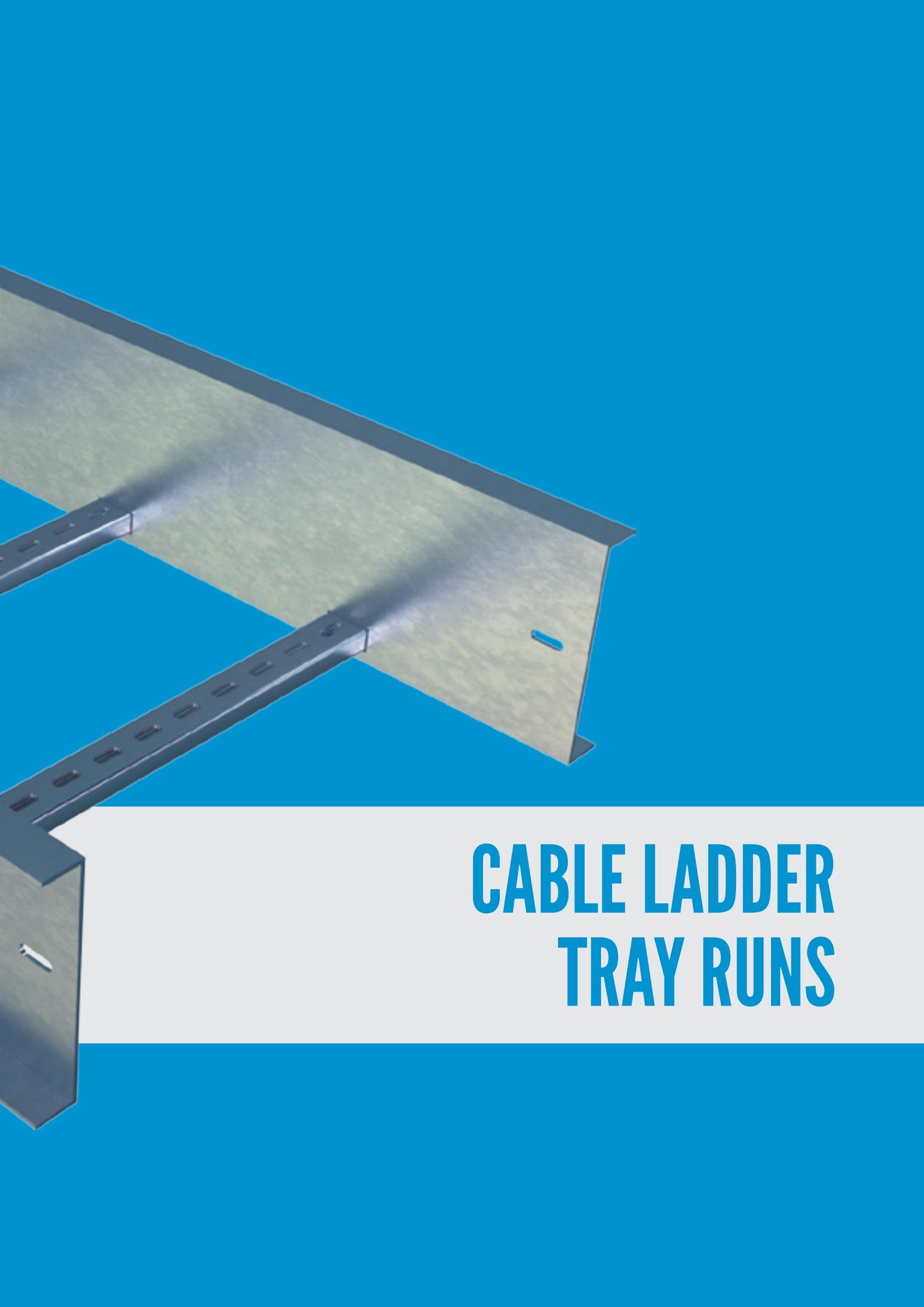
Height of rail 50mm - 150mm



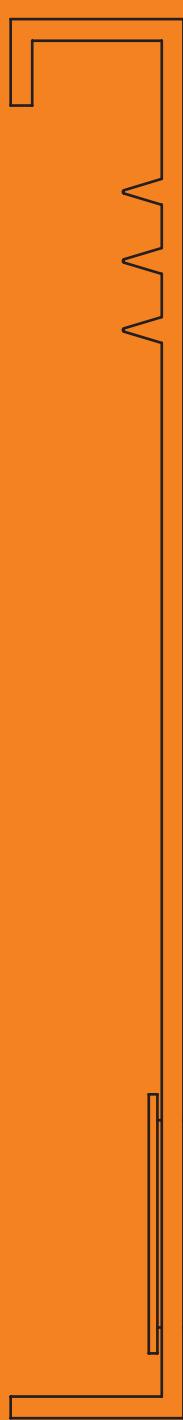
All Units are in (mm)



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CABLE LADDER TRAY RUNS

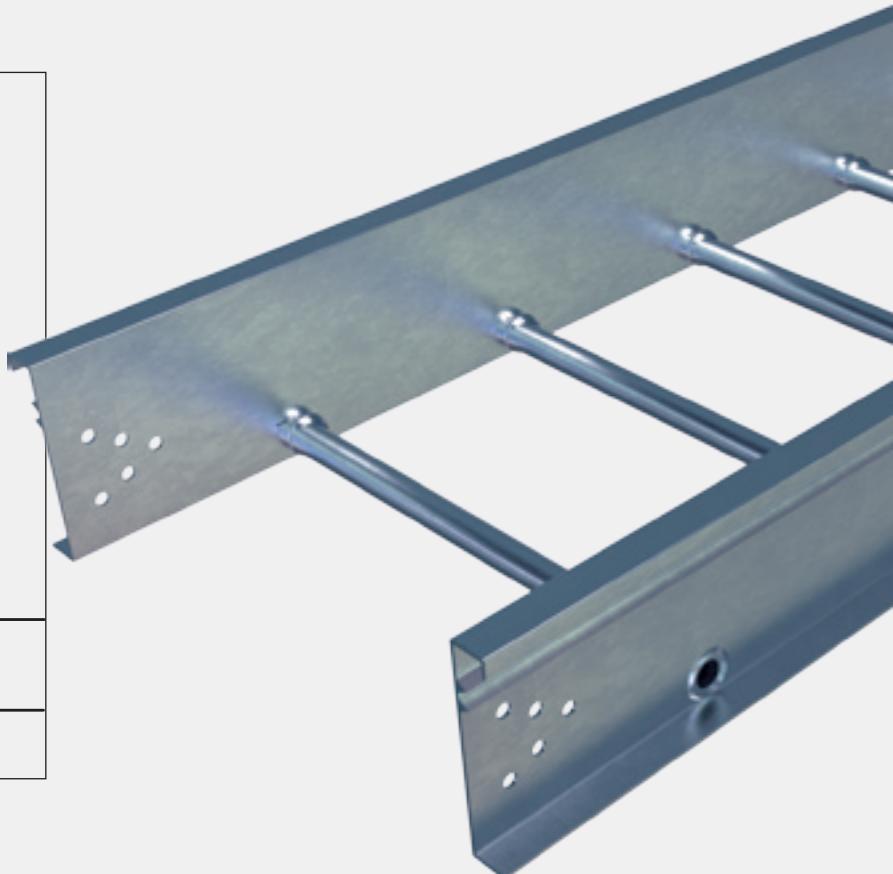
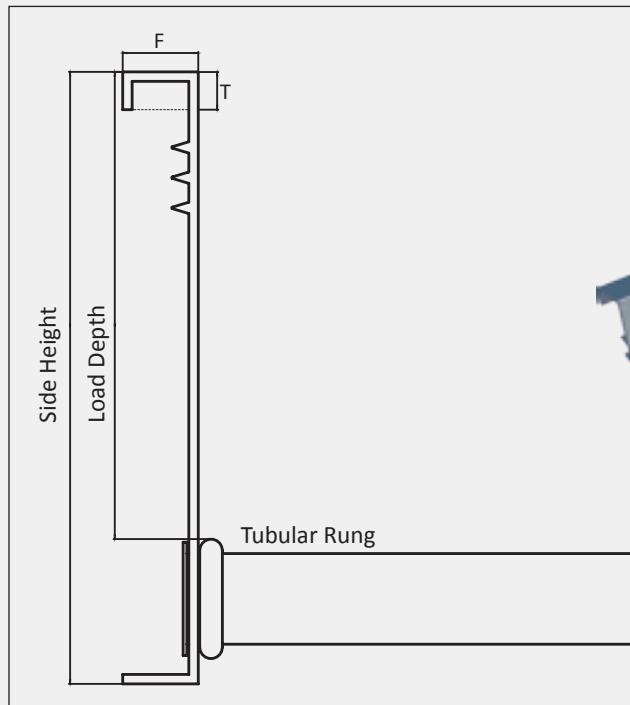


LADDER
TYPE RUNS
ALUMINUM
SECTION

SWAGED TUBULAR RUNG

ALUMINUM 6063 T6

- NEMA Class A (52 kg/m by 3.0m) and 8A (95 kg/m by 2.40m)
- NEMA Class C (97.0 kg/m by 3.0 m)
- NEMA Class 12 A (74 kg/m by 3.70 m)
- NEMA Class 12 B (134 kg/m by 3.70 m)



Aluminum 6063 T6 - Side Rails

Design Data

Side Rail	Height (mm)	Load Depth Fd (mm)	Thickness (mm)	F (mm)	W cm ³	I cm ⁴
A1	110	80	2.0	20	8.12	46.06
A2	138	106	2.0	20	11.24	78.95
A3	162	132	2.0	20	14.78	123.85
A4	188	158	2.5	20	23.14	224.70

Load Classes

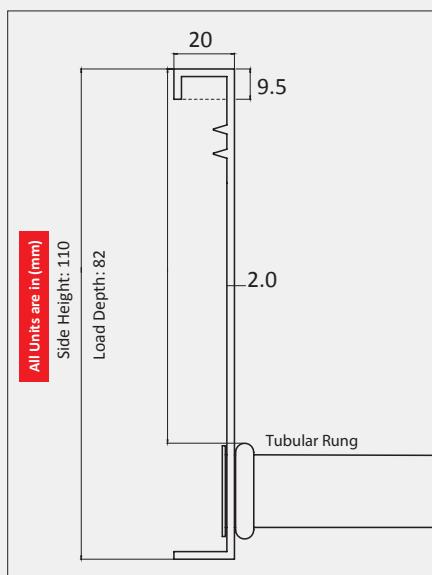
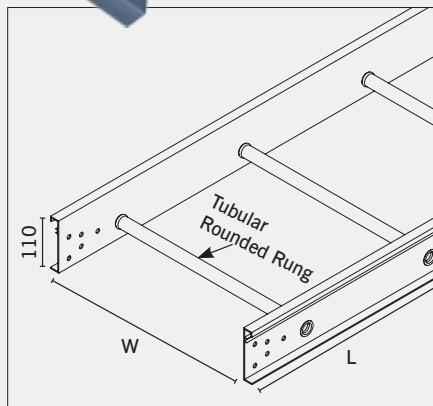
Side Rail	Load kg/m	Span (m)	Classes NEMA
A1	52	3.0	A
A2	97	3.0	C
A3	74	3.70	12A
A4	134	3.70	12B

ALT - A1 (SWAGED ROUNDED TUBULAR)

2.00 mm Thickness

(Side Height 110 mm)

- NEMA Class A (52 kg/m by 3,0m) and 8A (95 kg/m by 2,40m)
- Side Rail: A1
- Height: 110 mm
- Load Depth: 82 mm
- Rung Spacing: 229 mm



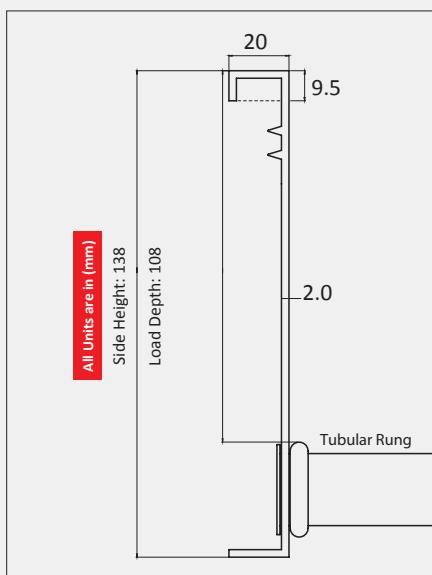
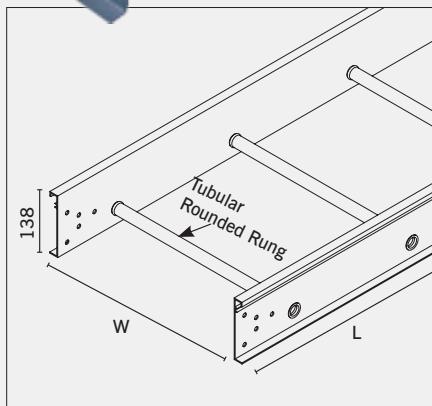
Item Code	NEMA CLASS 12A	Width (mm)	Support Distance (m)	Load KN/m	Deflection		Side Rail A1
					Rung (mm)	Rail (mm)	
SVCLA1_F_00150110	150	110 X 20 X 2.0	2.40	1.35	0.02	7.96	Rung 25x1.5 mm
			3.0	0.66	0.01	9.95	
			3.70	0.32	0.00	12.22	
			4.90	0.10	0.00	16.10	
SVCLA1_F_00225110	225	110 X 20 X 2.0	2.40	1.34	0.06	7.99	Rung 25x1.5 mm
			3.0	0.65	0.03	9.93	
			3.70	0.31	0.01	12.15	
			4.90	0.09	0.00	15.86	
SVCLA1_F_00300110	300	110 X 20 X 2.0	2.40	1.32	0.13	7.99	Rung 25x1.5 mm
			3.0	0.64	0.06	9.93	
			3.70	0.30	0.03	12.08	
			4.90	0.08	0.01	15.62	
SVCLA1_F_00450110	450	110 X 20 X 2.0	2.40	1.25	0.42	7.97	Rung 25x1.5 mm
			3.0	0.61	0.21	9.87	
			3.70	0.29	0.10	12.31	
			4.90	0.07	0.02	16.12	
SVCLA1_F_00600110	600	110 X 20 X 2.0	2.40	1.15	0.92	7.99	Rung 25x1.5 mm
			3.0	0.58	0.46	9.92	
			3.70	0.27	0.22	12.27	
			4.90	0.05	0.04	15.65	
SVCLA1_F_00750110	750	110 X 20 X 2.0	2.40	1.01	1.57	7.94	Rung 25x1.5 mm
			3.0	0.54	0.84	9.96	
			3.70	0.25	0.39	12.28	
			4.90	0.04	0.06	16.16	
SVCLA1_F_00900110	900	110 X 20 X 2.0	2.40	0.86	2.31	7.93	Rung 25x1.5 mm
			3.0	0.49	1.32	9.95	
			3.70	0.22	0.59	12.01	
			4.90	0.02	0.05	15.66	

ALT - A2 (SWAGED ROUNDED TUBULAR)

2.00 mm Thickness

(Side Height 138 mm)

- NEMA Class C (97.0 kg/m by 3.0 m)
- Side Rail: A2
- Height: 138 mm
- Load Depth: 108 mm
- Rung Spacing: 229 mm



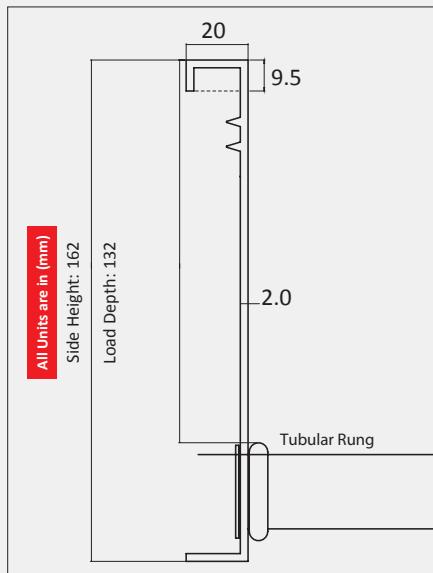
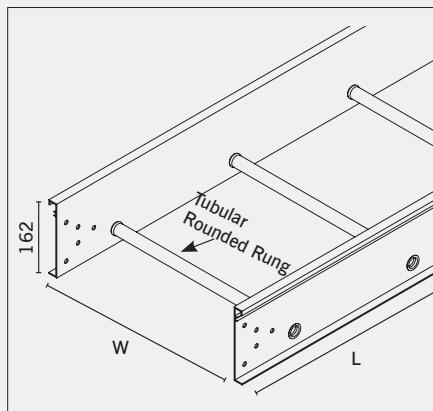
Item Code	NEMA CLASS 12A	Width (mm)	Support Distance (m)	Load KN/m	Deflection		Side Rail A2
					Rung (mm)	Rail (mm)	
SVCLA2_F_00150138	150	138 X 20 X 2.0	2.40	2.35	0.04	7.98	Tubular Rung: 25x1.5 mm
			3.0	1.17	0.02	9.94	
			3.70	0.59	0.01	12.18	
			4.90	0.22	0.00	16.29	
SVCLA2_F_00225138	225	138 X 20 X 2.0	2.40	2.32	0.13	8.00	Tubular Rung: 25x1.5 mm
			3.0	1.16	0.06	9.96	
			3.70	0.58	0.03	12.16	
			4.90	0.21	0.01	16.16	
SVCLA2_F_00300138	300	138 X 20 X 2.0	2.40	2.25	0.29	7.96	Tubular Rung: 25x1.5 mm
			3.0	1.1	0.15	9.95	
			3.70	0.57	0.07	12.15	
			4.90	0.20	0.03	16.03	
SVCLA2_F_00450138	450	138 X 20 X 2.0	2.40	2.06	0.91	8.0	Tubular Rung: 25x1.5 mm
			3.0	1.09	0.48	10.-	
			3.70	0.55	0.24	12.23	
			4.90	0.18	0.08	15.80	
SVCLA2_F_00600138	600	138 X 20 X 2.0	2.40	1.85	1.55	8.00	Tubular Rung: 25x2.0 mm
			3.0	1.02	0.85	9.93	
			3.70	0.52	0.44	12.14	
			4.90	0.17	0.18	16.18	
SVCLA2_F_00750138	750	138 X 20 X 2.0	2.40	1.70	1.95	7.95	Tubular Rung: 30x1.5 mm
			3.0	0.98	1.12	10	
			3.70	0.50	0.57	12.19	
			4.90	0.15	0.17	15.89	
SVCLA2_F_00900138	900	138 X 20 X 2.0	2.40	1.29	2.55	7.26	Tubular Rung: 30x1.5 mm
			3.0	0.88	1.74	9.93	
			3.70	0.47	0.93	12.27	
			4.90	0.14	0.28	16.28	

ALT - A3 (SWAGED ROUNDED TUBULAR)

2.00 mm Thickness

(Side Height 162 mm)

- NEMA Class 12 A (74 kg/m by 3.70 m)
- Side Rail: A3
- Height: 162 mm
- Load Depth: 132 mm
- Rung Spacing: 229 mm



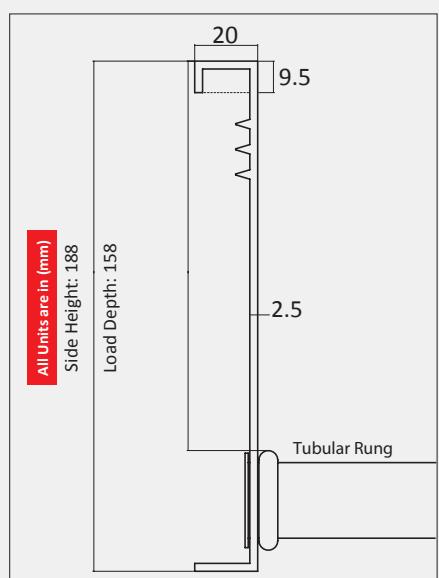
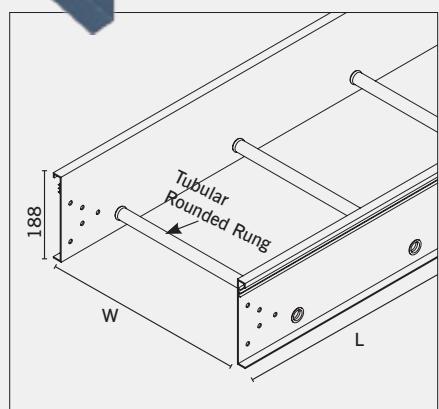
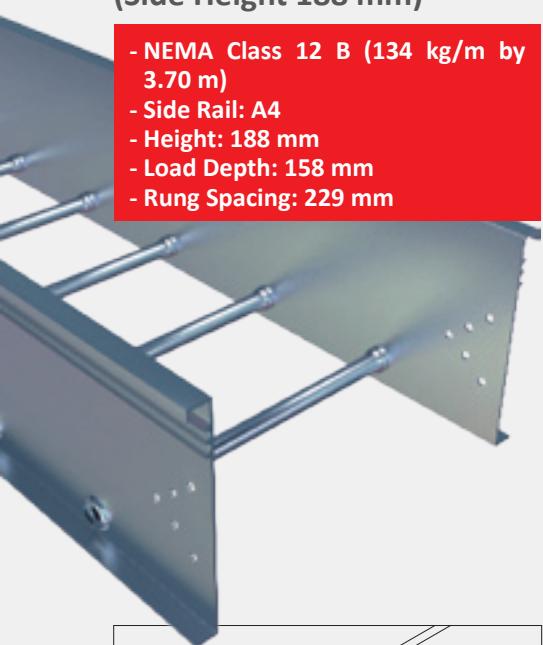
Item Code	NEMA CLASS 12A	Width (mm)	Support Distance (m)	Load KN/m	Deflection		Side Rail A3
					Rung (mm)	Rail (mm)	
SVCLA3_F_00150162	150	110X20 X2.0	2.40	3.67	0.06	7.92	Tubular Rung: 25x1.5 mm
			3.0	1.87	0.03	9.97	
			3.70	0.97	0.02	12.31	
			4.90	0.38	0.01	16.27	
SVCLA3_F_00225162	225	110X20 X2.0	2.40	3.63	0.20	7.99	Tubular Rung: 25x1.5 mm
			3.0	1.85	0.10	9.97	
			3.70	0.96	0.05	12.32	
			4.90	0.37	0.02	16.19	
SVCLA3_F_00300162	300	110X20 X2.0	2.40	3.50	0.46	7.99	Tubular Rung: 25x1.5 mm
			3.0	1.80	0.24	9.99	
			3.70	0.94	0.12	12.24	
			4.90	0.36	0.05	16.13	
SVCLA3_F_00450162	450	110X20 X2.0	2.40	3.17	1.12	7.99	Tubular Rung: 25x1.5 mm
			3.0	1.73	0.61	9.98	
			3.70	0.91	0.3	12.26	
			4.90	0.34	0.15	16.05	
SVCLA3_F_00600162	600	110X20 X2.0	2.40	2.88	1.69	7.98	Tubular Rung: 25x2.0 mm
			3.0	1.64	0.96	9.95	
			3.70	0.88	0.52	12.28	
			4.90	0.33	0.19	16.27	
SVCLA3_F_00750162	750	110X20 X2.0	2.40	2.45	2.14	7.07	Tubular Rung: 30x1.5 mm
			3.0	1.55	1.36	9.96	
			3.70	0.85	0.74	12.33	
			4.90	0.31	0.36	16.25	
SVCLA3_F_00900162	900	110X20 X2.0	2.40	1.70	2.57	6.44	Tubular Rung: 30x1.5 mm
			3.0	1.39	2.10	9.96	
			3.70	0.79	1.19	12.24	
			4.90	0.29	0.44	16.15	

ALT - A4 (SWAGED ROUNDED TUBULAR)

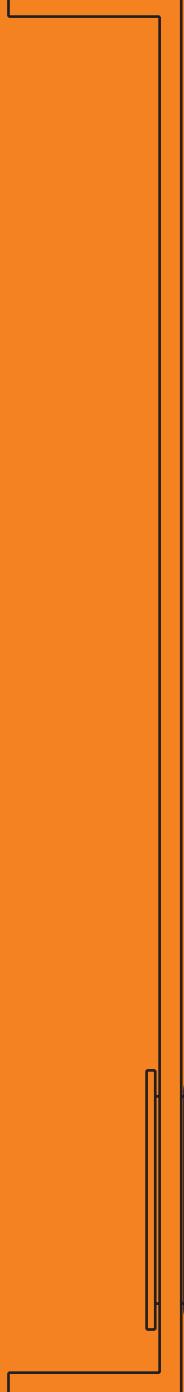
2.50 mm Thickness

(Side Height 188 mm)

- NEMA Class 12 B (134 kg/m by 3.70 m)
- Side Rail: A4
- Height: 188 mm
- Load Depth: 158 mm
- Rung Spacing: 229 mm



Item Code	NEMA CLASS 12A	Width (mm)	Support Distance (m)	Load KN/m	Deflection		Side Rail A4
					Rung (mm)	Rail (mm)	
SVCLA4_F_00150188	150	110 X 20 X 2.0	2.40	4.55	0.06	5.41	Tubular Rung: 25x1.5 mm
			3.0	3.45	0.04	10.0	
			3.70	1.81	0.02	12.31	
			4.90	0.74	0.01	16.23	
SVCLA4_F_00225188	225	110 X 20 X 2.0	2.40	4.55	0.19	5.55	Tubular Rung: 25x2.0 mm
			3.0	3.40	0.14	9.98	
			3.70	1.79	0.08	12.28	
			4.90	0.73	0.03	16.20	
SVCLA4_F_00300188	300	110 X 20 X 2.0	2.40	4.55	0.45	5.82	Tubular Rung: 30x1.5 mm
			3.0	3.33	0.33	9.99	
			3.70	1.77	0.18	12.30	
			4.90	0.72	0.07	16.19	
SVCLA4_F_00450188	450	110 X 20 X 2.0	2.40	4.55	1.23	6.61	Tubular Rung: 30x2.0 mm
			3.0	3.13	0.84	9.98	
			3.70	1.71	0.46	12.29	
			4.90	0.70	0.19	16.21	
SVCLA4_F_00600188	600	110 X 20 X 2.0	2.40	3.82	1.71	6.27	Tubular Rung: 30x1.5 mm
			3.0	2.95	1.32	9.99	
			3.70	1.65	0.74	12.27	
			4.90	0.68	0.30	16.23	
SVCLA4_F_00750188	750	110 X 20 X 2.0	2.40	3.09	2.14	5.87	Tubular Rung: 30x2.0 mm
			3.0	2.73	1.89	9.98	
			3.70	1.58	1.09	12.27	
			4.90	0.66	0.46	16.28	
SVCLA4_F_00900188	900	110 X 20 X 2.0	2.40	2.14	2.56	5.21	Tubular Rung: 30x2.0 mm
			3.0	2.14	2.56	9.02	
			3.70	1.47	1.76	12.32	
			4.90	0.63	0.75	16.27	



STEEL LADDER TYPE RUNS STEEL SECTION

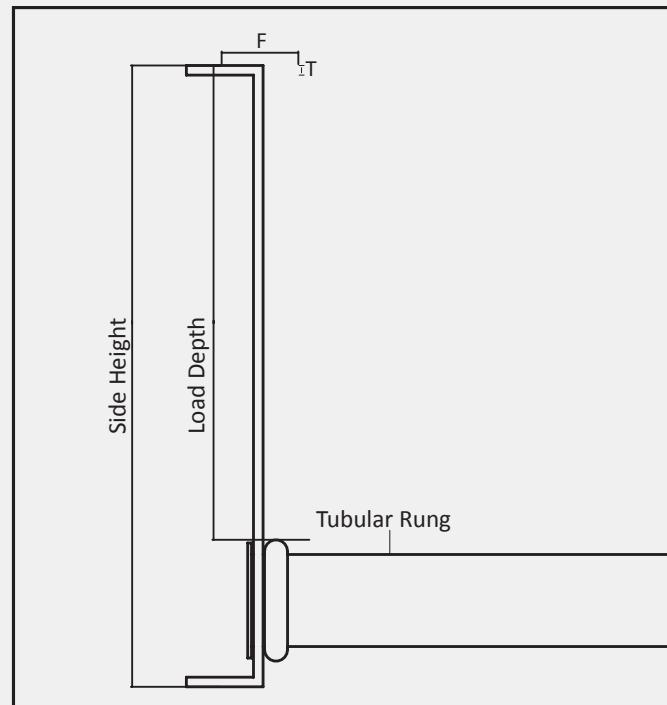
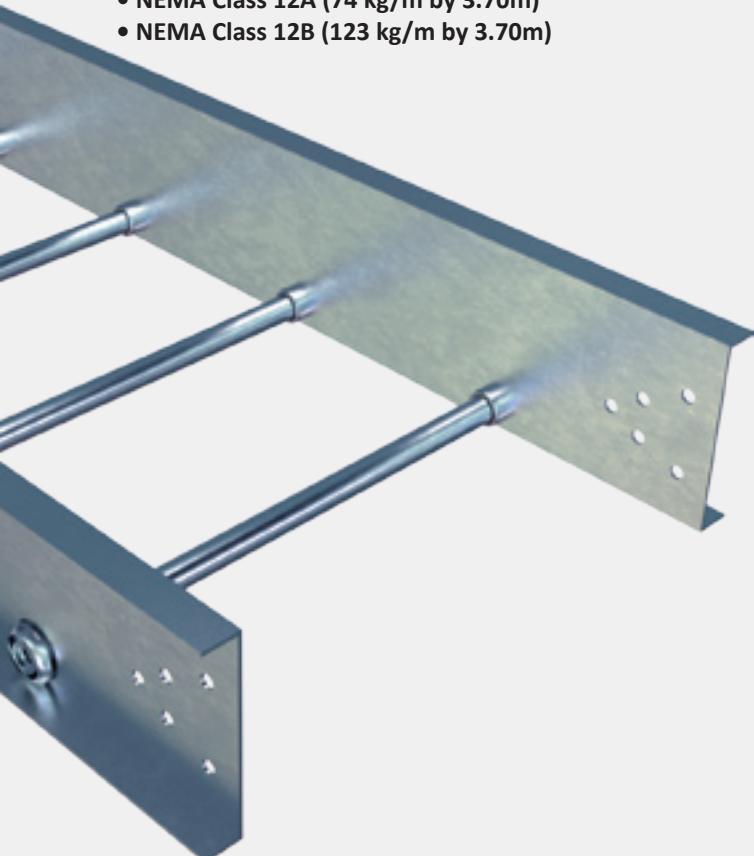


SWAGED TUBULAR RUNG

STEEL S235 JRG2

- NEMA Class 8C (149 kg/m by 2.40m)
- NEMA Class 12A (74 kg/m by 3.70m)
- NEMA Class 12B (118 kg/m by 3.70m)
- NEMA Class 12A (74 kg/m by 3.70m)
- NEMA Class 12B (123 kg/m by 3.70m)

- NEMA Class 16A (82 kg/m by 4.90m)
- NEMA Class 12A (87 kg/m by 3.70m)
- NEMA Class 12C (150 kg/m by 3.70m)
- NEMA Class D (67 kg/m by 6.0m)



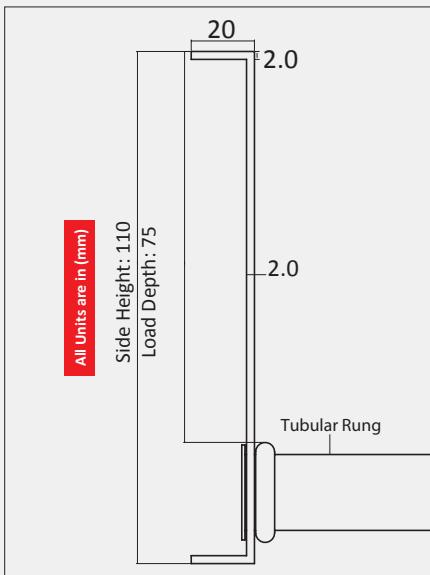
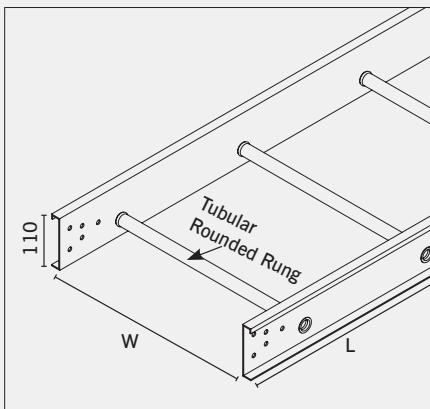
Steel S235 JRG2 - Side Rails

Design Data							Classes	
Side Rail	Height (mm)	Load Depth (mm)	Thickness (mm)	F (mm)	W cm³	I cm⁴	Span	NEMA Class
S1	110	75	2.0	22	6.83	35.87	3.70	12A
S2	138	100	2.0	22	9.55	62.08	3.70	12B
S3	162	125	2.0	22	12.67	98.17	4.90	16A
S4	110	75	2.5	22	8.34	43.81	3.70	12A
S5	138	100	2.5	22	11.71	76.15	3.70	12C
S6	162	125	2.5	22	15.58	120.75	6.0	D

Load Classes			
Side Rail	Load kg/m	Span (m)	Classes NEMA
S1	74	3.70	12A
S2	123	3.70	12B
S3	82	4.90	16A
S4	87	3.70	12A
S5	150	3.70	12C
S6	67	6.00	D

2.00 mm Thickness**(Side Height 110 mm)**

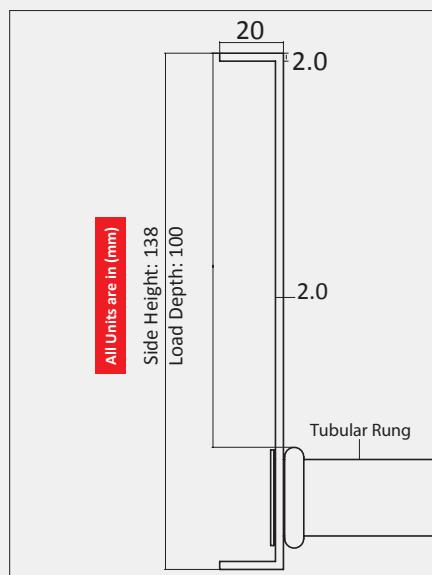
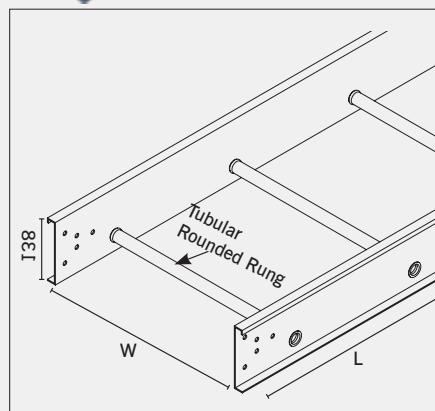
- NEMA Class 12A (74 kg/m by 3.70m)
- Side Rail: S1
- Height: 110 mm
- Load Depth: 75 mm
- Rung - Spacing: 229 mm



Item Code	NEMA CLASS 12A	Width (mm)	Support Distance (m)	Load KN/m	Deflection		Side Rail S1
					Rung (mm)	Rail (mm)	
SVCLS1_F_00150110	150	110 X 20 X 2.0	2.40	2.72	0.01	6.32	Tubular Rung: 25 X 1.5 mm
			3.0	1.74	0.01	9.99	
			3.70	0.89	0.00	12.22	
			4.90	0.35	0.00	16.33	
SVCLS1_F_00225110	225	110 X 20 X 2.0	2.40	2.71	0.04	6.34	Tubular Rung: 25 X 1.5 mm
			3.0	1.73	0.02	9.99	
			3.70	0.89	0.01	12.32	
			4.90	0.34	0.00	16.24	
SVCLS1_F_00300110	300	110 X 20 X 2.0	2.40	2.71	0.09	6.41	Tubular Rung: 25 X 1.5 mm
			3.0	1.71	0.06	9.95	
			3.70	0.88	0.03	12.31	
			4.90	0.33	0.01	16.14	
SVCLS1_F_00450110	450	110 X 20 X 2.0	2.40	2.69	0.30	6.61	Tubular Rung: 25 X 1.5 mm
			3.0	1.67	0.19	9.94	
			3.70	0.86	0.10	12.31	
			4.90	0.31	0.03	15.97	
SVCLS1_F_00600110	600	110 X 20 X 2.0	2.40	2.68	0.71	7.03	Tubular Rung: 25 X 1.5 mm
			3.0	1.62	0.43	9.99	
			3.70	0.83	0.22	12.24	
			4.90	0.30	0.08	16.21	
SVCLS1_F_00750110	750	110 X 20 X 2.0	2.40	2.66	1.38	7.69	Tubular Rung: 25 X 1.5 mm
			3.0	1.53	0.79	9.94	
			3.70	0.80	0.41	12.25	
			4.90	0.28	0.15	16.08	
SVCLS1_F_00900110	900	110 X 20 X 2.0	2.40	2.43	2.18	8.00	Tubular Rung: 25 X 1.5 mm
			3.0	1.43	1.28	9.96	
			3.70	0.77	0.69	12.33	
			4.90	0.26	0.23	15.97	

2.00 mm Thickness**(Side Height 138 mm)**

- NEMA Class 12B (123 kg/m by 3.70m)
- Side Rail: S2
- Height: 138 mm
- Load Depth: 100 mm
- Rung Spacing: 229 mm

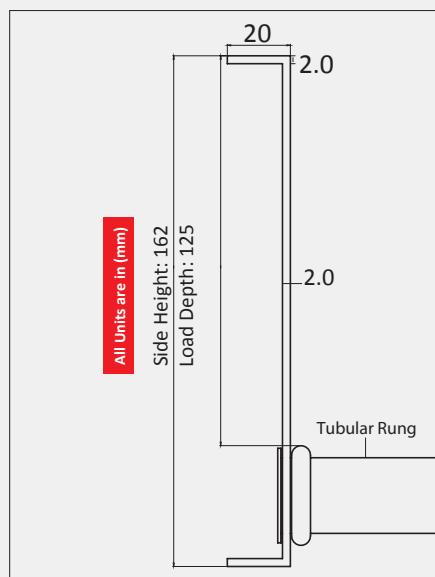
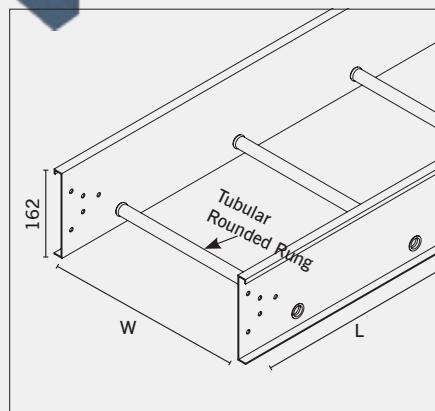


Item Code	NEMA CLASS 12A	Width (mm)	Support Distance (m)	Load KN/m	Deflection		Side Rail S2
					Rung (mm)	Rail (mm)	
SVCLS2_F_00150138	150	2.40	3.76	0.02	5.05		
			2.43	0.01	8.02		
			1.59	0.01	12.30		
			0.64	0.00	16.11		
SVCLS2_F_00225138	225	2.40	3.76	0.05	5.09		
			2.43	0.03	8.07		
			1.58	0.02	12.30		
			0.64	0.01	16.29		
SVCLS2_F_00300138	300	2.40	3.75	0.12	5.16		
			2.42	0.08	8.11		
			1.57	0.05	12.31		
			0.63	0.02	16.25		
SVCLS2_F_00450138	450	2.40	3.74	0.42	5.46		
			2.41	0.27	8.31		
			1.54	0.17	12.32		
			0.61	0.07	16.18		
SVCLS2_F_00600138	600	2.40	3.72	0.99	6.02		
			2.39	0.63	8.66		
			1.49	0.40	12.28		
			0.59	0.16	16.15		
SVCLS2_F_00750138	750	2.40	3.71	1.92	6.97		
			2.38	1.23	9.28		
			1.43	0.74	12.29		
			0.57	0.30	16.18		
SVCLS2_F_00900138	900	2.40	2.86	2.56	6.51		
			2.32	2.08	9.98		
			1.35	1.21	12.28		
			0.55	0.49	16.26		

Tubular Rung:
25 X 1.5 mm

2.00 mm Thickness**(Side Height 162 mm)**

- NEMA Class 16A (82 kg/m by 4.90m)
- Side Rail: S3
- Height: 162 mm
- Load Depth: 125 mm
- Rung Spacing: 229 mm

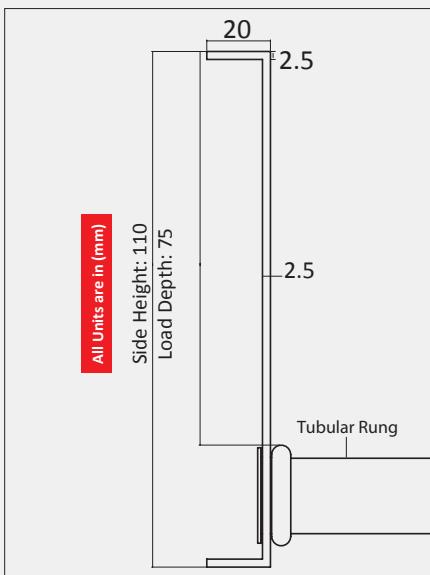
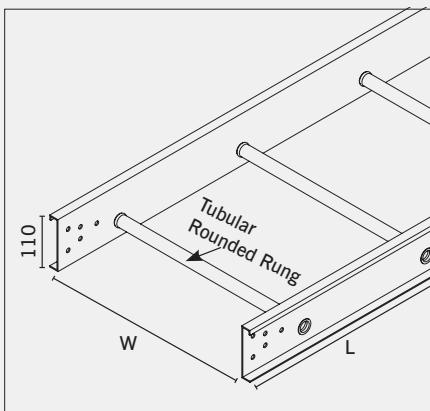


Item Code	NEMA CLASS 12A	Width (mm)	Support Distance (m)	Load KN/m	Deflection		Side Rail S3
					Rung (mm)	Rail (mm)	
SVCLS3_F_00150162	150	2.40	4.93	0.02	4.19		
			3.0	3.21	0.01	6.69	
			3.70	2.12	0.01	10.32	
			4.90	1.06	0.00	16.33	
SVCLS3_F_00225162	225	2.40	4.92	0.07	4.24		
			3.0	3.20	0.04	6.72	
			3.70	2.11	0.03	10.33	
			4.90	1.05	0.01	16.31	
SVCLS3_F_00300162	300	2.40	4.92	0.16	4.34		
			3.0	3.19	0.11	6.77	
			3.70	2.11	0.07	10.40	
			4.90	1.04	0.03	16.29	
SVCLS3_F_00450162	450	2.40	4.90	0.55	4.72		
			3.0	3.18	0.36	7.04	
			3.70	2.09	0.23	10.54	
			4.90	1.02	0.11	16.30	
SVCLS3_F_00600162	600	2.40	4.87	1.29	5.45		
			3.0	3.17	0.84	7.53	
			3.70	2.08	0.55	70.89	
			4.90	0.99	0.26	16.23	
SVCLS3_F_00750162	750	2.40	4.10	2.13	5.66		
			3.0	3.15	1.63	8.31	
			3.70	2.07	1.07	11.43	
			4.90	0.96	0.50	16.25	
SVCLS3_F_00900162	900	2.40	2.86	2.56	5.07		
			3.0	2.86	2.56	8.68	
			3.70	2.05	1.84	12.17	
			4.90	0.92	0.82	16.21	

Tubular Rung:
25 X 1.5 mm

2.50 mm Thickness**(Side Height 110 mm)**

- NEMA Class 12A (87 kg/m by 3.70m)
- Side Rail: S4
- Height: 110 mm
- Load Depth: 75 mm
- Rung Spacing: 229 mm

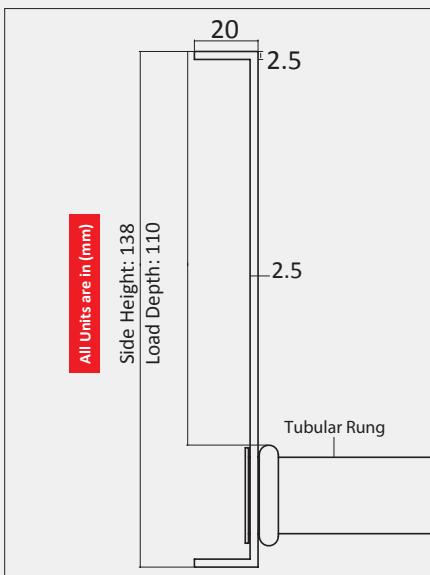
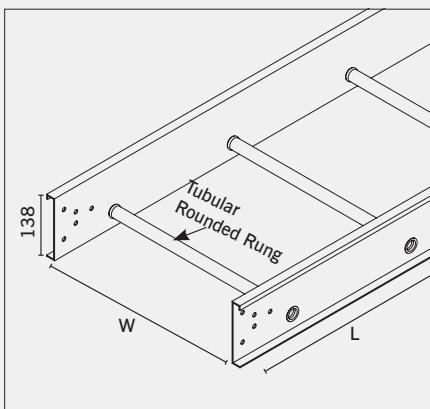


Item Code	NEMA CLASS 12A	Width (mm)	Support Distance (m)	Load KN/m	Deflection		Side Rail S4
					Rung (mm)	Rail (mm)	
SVCLS4_F_00150110	150	110 X 20 X 2.5	2.40	3.34	0.01	6.33	
			3.0	2.14	0.01	9.99	
			3.70	1.11	0.00	12.31	
			4.90	0.44	0.00	16.27	
SVCLS4_F_00225110	225	110 X 20 X 2.5	2.40	3.33	0.05	6.35	
			3.0	2.13	0.03	10.00	
			3.70	1.10	0.02	12.29	
			4.90	0.43	0.01	16.19	
SVCLS4_F_00300110	300	110 X 20 X 2.5	2.40	3.33	0.11	6.43	
			3.0	2.11	0.07	9.98	
			3.70	1.09	0.04	12.29	
			4.90	0.42	0.01	16.12	
SVCLS4_F_00450110	450	110 X 20 X 2.5	2.40	3.32	0.37	6.70	
			3.0	2.06	0.23	9.98	
			3.70	1.07	0.12	12.32	
			4.90	0.41	0.05	16.31	
SVCLS4_F_00600110	600	110 X 20 X 2.5	2.40	3.30	0.88	7.20	
			3.0	1.98	0.53	9.98	
			3.70	1.04	0.28	12.32	
			4.90	0.39	0.10	16.21	
SVCLS4_F_00750110	750	110 X 20 X 2.5	2.40	3.27	1.70	7.99	
			3.0	1.87	0.97	10.0	
			3.70	1.0	0.52	12.30	
			4.90	0.37	0.19	16.13	
SVCLS4_F_00900110	900	110 X 20 X 2.5	2.40	2.81	2.52	7.99	
			3.0	1.72	1.54	9.96	
			3.70	0.95	0.85	12.26	
			4.90	0.35	0.31	16.10	

Tubular Rung:
25 X 1.5 mm

2.50 mm Thickness**(Side Height 138 mm)**

- NEMA Class 12C (150 kg/m by 3.70m)
- Side Rail: S5
- Height: 138 mm
- Load Depth: 100 mm
- Rung Spacing: 229 mm

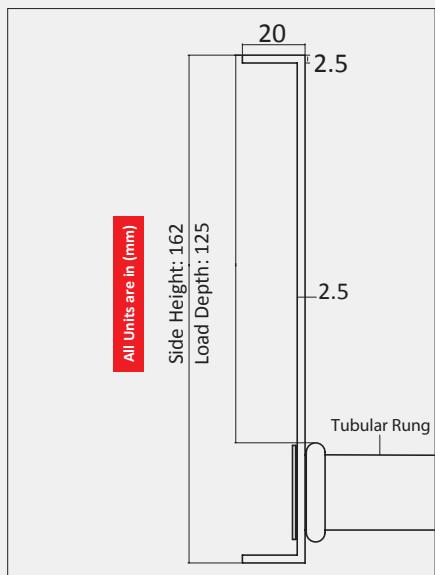
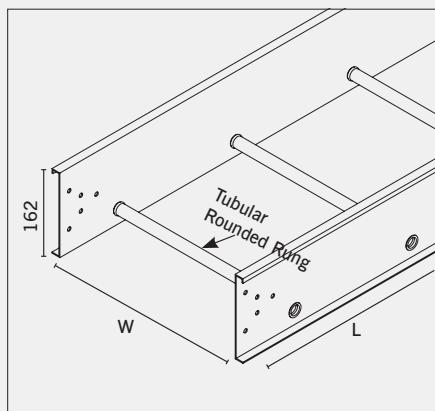


Item Code	NEMA CLASS 12A	Width (mm)	Support Distance (m)	Load KN/m	Deflection		Side Rail S5
					Rung (mm)	Rail (mm)	
SVCLS5_F_00150138	150	138 X 20 X 2.5	2.40	4.64	0.02	5.06	
			3.0	3.0	0.01	8.03	
			3.70	1.97	0.01	12.33	
			4.90	0.81	0.00	16.30	
SVCLS5_F_00225138	225	138 X 20 X 2.5	2.40	4.63	0.06	5.11	
			3.0	3.0	0.04	8.08	
			3.70	1.95	0.03	12.28	
			4.90	0.80	0.01	16.26	
SVCLS5_F_00300138	300	138 X 20 X 2.5	2.40	4.63	0.15	5.20	
			3.0	2.99	0.10	8.13	
			3.70	1.94	0.06	12.30	
			4.90	0.79	0.03	16.23	
SVCLS5_F_00450138	450	138 X 20 X 2.5	2.40	4.61	0.52	5.56	
			3.0	2.98	0.33	8.38	
			3.70	1.90	0.21	12.29	
			4.90	0.77	0.09	16.20	
SVCLS5_F_00600138	600	138 X 20 X 2.5	2.40	4.60	1.22	6.27	
			3.0	2.96	0.79	8.82	
			3.70	1.84	0.49	12.30	
			4.90	0.75	0.20	16.22	
SVCLS5_F_00750138	750	138 X 20 X 2.5	2.40	4.12	2.14	6.69	
			3.0	2.95	1.53	9.58	
			3.70	1.76	0.91	12.33	
			4.90	0.73	0.38	16.31	
SVCLS5_F_00900138	900	138 X 20 X 2.5	2.40	2.86	2.56	5.78	
			3.0	2.74	2.46	9.99	
			3.70	1.65	1.48	12.32	
			4.90	0.70	0.63	16.28	

Tubular Rung:
25 X 1.5 mm

2.50 mm Thickness**(Side Height 162 mm)**

- NEMA Class D (67 kg/m by 6.0m)
- Side Rail: S6
- Height: 162 mm
- Load Depth: 125 mm
- Rung - Spacing: 229 mm



Item Code	NEMA CLASS 12A	Width (mm)	Support Distance (m)	Load KN/m	Deflection		Side Rail S5
					Rung (mm)	Rail (mm)	
SVCLS6_F_00150162	150	162 X 20 X 2.5	2.40	6.09	0.03	4.20	Tubular Rung: 25 X 1.5 mm
			3.0	3.97	0.02	6.71	
			3.70	2.62	0.01	10.31	
			4.90	1.31	0.01	16.23	
SVCLS6_F_00225162	225	162 X 20 X 2.5	2.40	6.08	0.09	4.26	Tubular Rung: 25 X 1.5 mm
			3.0	3.96	0.06	6.74	
			3.70	2.61	0.04	10.33	
			4.90	1.31	0.02	16.33	
SVCLS6_F_00300162	300	162 X 20 X 2.5	2.40	6.08	0.20	4.38	Tubular Rung: 25 X 1.5 mm
			3.0	3.95	0.13	6.81	
			3.70	2.60	0.09	10.37	
			4.90	1.30	0.04	16.32	
SVCLS6_F_00450162	450	162 X 20 X 2.5	2.40	6.07	0.68	4.87	Tubular Rung: 25 X 1.5 mm
			3.0	3.94	0.44	7.13	
			3.70	2.60	0.29	10.63	
			4.90	1.27	0.14	16.25	
SVCLS6_F_00600162	600	162 X 20 X 2.5	2.40	5.16	1.37	4.95	Tubular Rung: 25 X 1.5 mm
			3.0	3.93	1.04	7.74	
			3.70	2.58	0.69	11.00	
			4.90	1.24	0.33	16.26	
SVCLS6_F_00750162	750	162 X 20 X 2.5	2.40	4.13	2.14	5.03	Tubular Rung: 25 X 2.0 mm
			3.0	3.91	2.03	8.72	
			3.70	2.57	1.33	11.67	
			4.90	1.20	0.62	16.26	
SVCLS6_F_00900162	900	162 X 20 X 2.5	2.40	3.57	2.57	5.09	Tubular Rung: 25 X 2.0 mm
			3.0	3.57	2.57	8.72	
			3.70	2.56	1.84	12.20	
			4.90	1.17	0.84	16.30	



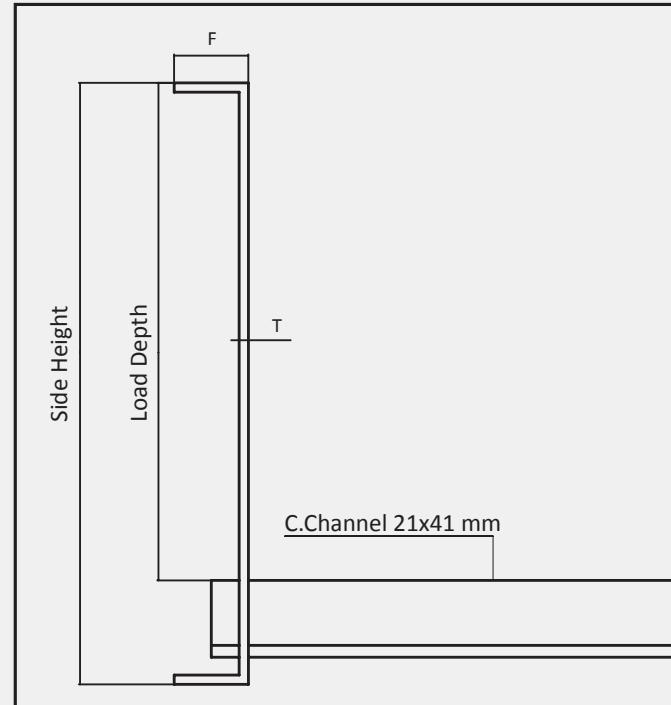
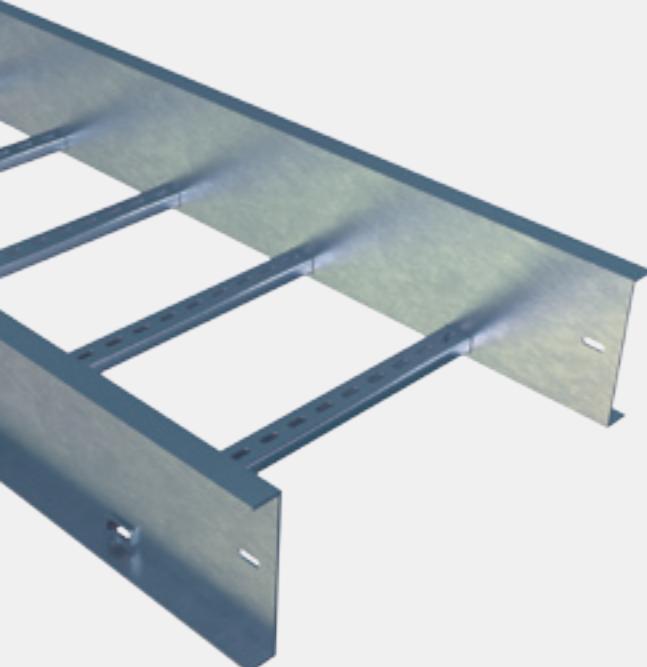
WELDED C-CHANNEL LADDER TRAYS TYPE RUNS SECTION

WELDED C-CHANNEL - LADDER TYPE RUNS

STEEL S235 JRG2

- NEMA Class 8C (149 kg/m by 2.40m)
- NEMA Class 12A (74 kg/m by 3.70m)
- NEMA Class 12B (118 kg/m by 3.70m)
- NEMA Class 12A (74 kg/m by 3.70m)
- NEMA Class 12B (123 kg/m by 3.70m)

- NEMA Class 16A (82 kg/m by 4.90m)
- NEMA Class 12A (87 kg/m by 3.70m)
- NEMA Class 12C (150 kg/m by 3.70m)
- NEMA Class D (67 kg/m by 6.0m)



Steel S235 JRG2 - Side Rails

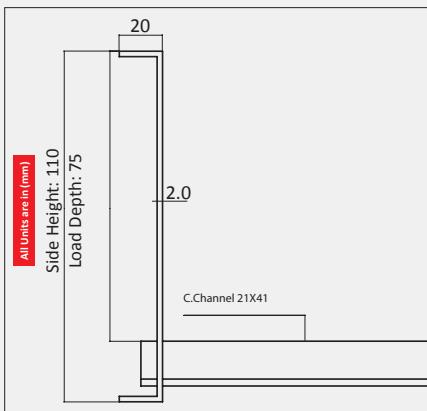
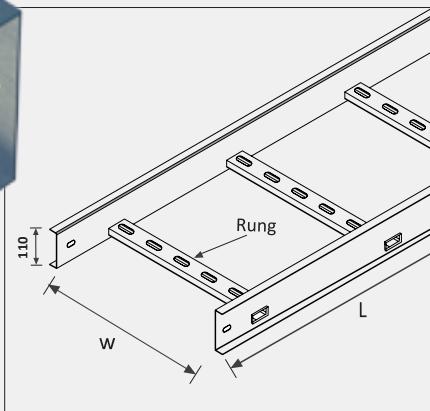
Design Data							Classes	
Side Rail	Height (mm)	Load Depth	Thickness (mm)	F (mm)	W cm³	I cm⁴	Span	NEMA Class
S1	110	75	2.0	22	6.83	35.87	3.70	12A
S2	138	100	2.0	22	9.55	62.08	3.70	12B
S3	162	125	2.0	22	12.67	98.17	4.90	16A
S4	110	75	2.5	22	8.34	43.81	3.70	12A
S5	138	100	2.5	22	11.71	76.15	3.70	12C
S6	162	125	2.5	22	15.58	120.75	6.0	D

Load Classes

Side Rail	Load kg/m	Span (m)	Classes NEMA
S1	74	3.70	12A
S2	123	3.70	12B
S3	82	4.90	16A
S4	87	3.70	12A
S5	150	3.70	12C
S6	67	6.00	D

2.00 mm Thickness**(Side Height 110 mm)**

- NEMA Class 12A (74 kg/m by 3.70m)
- Side Rail: S1
- Height: 110 mm
- Load Depth: 75 mm
- Rung - Spacing: 229 mm

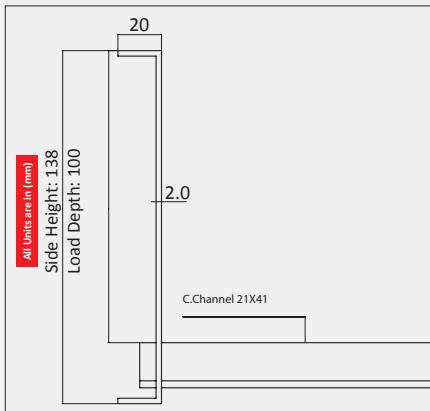
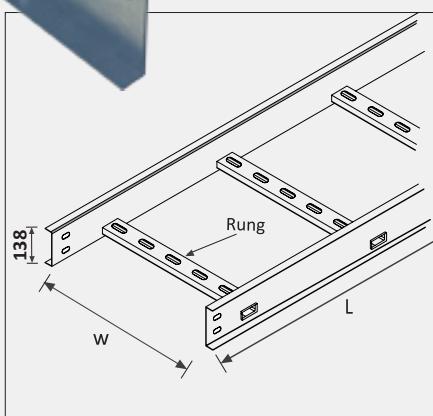
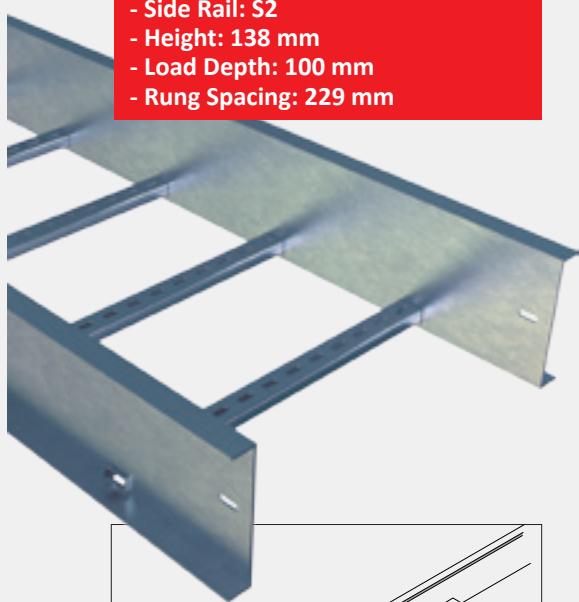


Item Code	NEMA CLASS 12A	Width (mm)	Support Distance (m)	Load KN/m	Deflection		Side Rail S1
					Rung (mm)	Rail (mm)	
SVCLBS_F_00188539	150	2.40	2.69	0.01	6.33		
		3.0	1.70	0.01	9.96		
		3.70	0.86	0.00	12.28		
		4.90	0.31	0.00	16.13		
SVCLBS_F_00217587	225	2.40	2.69	0.04	6.36		
		3.0	1.70	0.03	9.98		
		3.70	0.86	0.01	12.29		
		4.90	0.31	0.00	16.14		
SVCLBS_F_00188535	300	2.40	2.69	0.10	6.42		
		3.0	1.69	0.06	9.96		
		3.70	0.86	0.03	12.31		
		4.90	0.31	0.01	14.14		
VCLBS_F_00188547	450	2.40	2.69	0.33	6.65		
		3.0	1.67	0.21	9.99		
		3.70	0.85	0.1	12.26		
		4.90	0.31	0.04	26.17		
SVCLBS_F_00217591	600	2.40	2.69	0.75	3.10		
		3.0	1.62	0.47	3.98		
		3.70	0.84	0.25	12.27		
		4.90	0.31	0.09	16.22		
SVCLBS_F_00189829	750	2.40	2.69	1.53	7.85		
		3.0	1.54	0.88	9.95		
		3.70	0.82	0.47	10.24		
		4.90	0.31	0.18	10.31		
SVCLBS_F_00188457	900	2.40	2.39	2.36	7.99		
		3.0	1.45	1.43	10.00		
		3.70	0.80	0.79	12.30		
		4.90	0.30	0.30	16.03		

Rung
41 x 21
x 1.5
mm

2.00 mm Thickness**(Side Height 138 mm)**

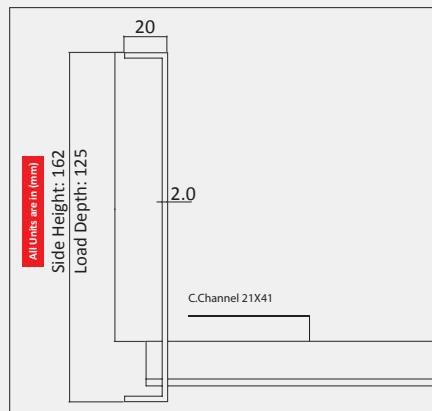
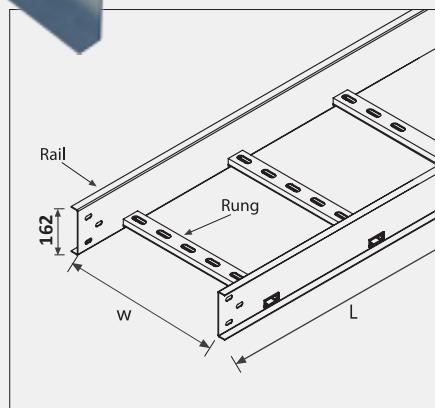
- NEMA Class 12B (123 kg/m by 3.70m)
- Side Rail: S2
- Height: 138 mm
- Load Depth: 100 mm
- Rung Spacing: 229 mm



Item Code	NEMA CLASS 12A	Width (mm)	Support Distance (m)	Load KN/m	Deflection		Side Rail S1
					Rung (mm)	Rail (mm)	
SVCLBS_F_00156079	150	2.40	3.73	0.02	5.05		Rung 41 x 21 x 1.5 mm
		3.0	2.40	0.01	8.01		
		3.70	1.55	0.01	12.27		
		4.90	0.60	0.00	16.00		
SVCLBS_F_00217595	225	2.40	3.73	0.06	5.09		Rung 41 x 21 x 1.5 mm
		3.0	2.40	0.04	8.06		
		3.70	1.55	0.02	12.28		
		4.90	0.60	0.01	16.01		
SVCLBS_F_00156071	300	2.40	3.73	0.14	5.17		Rung 41 x 21 x 1.5 mm
		3.0	2.40	0.09	8.11		
		3.70	1.55	0.06	12.31		
		4.90	0.60	0.02	16.02		
SVCLBS_F_00156067	450	2.40	3.73	0.46	5.50		Rung 41 x 21 x 1.5 mm
		3.0	2.40	0.30	8.32		
		3.70	1.53	0.19	12.30		
		4.90	0.60	0.07	16.07		
SVCLBS_F_00156063	600	2.40	3.73	1.09	6.13		Rung 41 x 21 x 1.5 mm
		3.0	2.40	0.70	8.73		
		3.70	1.50	0.44	12.32		
		4.90	0.60	0.18	16.17		
SVCLBS_F_00156059	750	2.40	3.73	2.13	7.17		Rung 41 x 21 x 1.5 mm
		3.0	2.40	1.37	9.40		
		3.70	1.44	0.82	12.26		
		4.90	0.59	0.34	13.10		
SVCLBS_F_00156055	900	2.40	3.27	2.56	7.0		Rung 41 x 21 x 1.5 mm
		3.0	2.30	2.27	9.97		
		3.70	1.36	1.34	12.19		
		4.90	0.58	0.57	16.11		

2.00 mm Thickness**(Side Height 162 mm)**

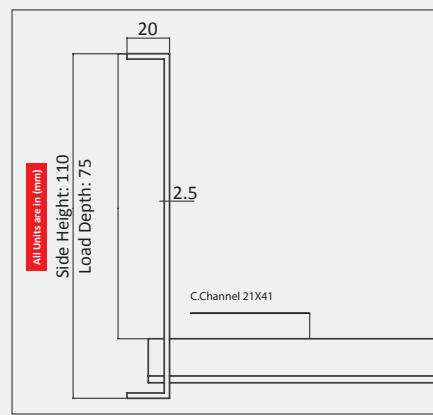
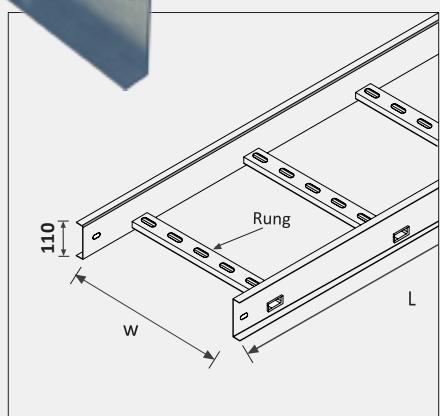
- NEMA Class 16A (82 kg/m by 4.90m)
- Side Rail: S3
- Height: 162 mm
- Load Depth: 125 mm
- Rung Spacing: 229 mm



Item Code	NEMA CLASS 12A	Width (mm)	Support Distance (m)	Load KN/m	Deflection		Side Rail S1
					Rung (mm)	Rail (mm)	
SVCLBS_F_00217605	150	2.40	4.90	0.02	4.20		Rung 41 x 21 x 1.5 mm
		3.0	3.18	0.01	6.70		
		3.70	2.09	0.01	10.34		
		4.90	1.02	0.00	16.24		
SVCLBS_F_00217609	225	2.40	4.90	0.08	4.25		Rung 41 x 21 x 1.5 mm
		3.0	3.18	0.05	6.74		
		3.70	2.09	0.03	10.37		
		4.90	1.02	0.02	16.27		
SVCLBS_F_00217645	300	2.40	4.90	0.18	4.36		Rung 41 x 21 x 1.5 mm
		3.0	3.18	0.12	6.81		
		3.70	2.09	0.08	10.41		
		4.90	1.02	0.04	16.29		
SVCLBS_F_00217649	450	2.40	4.90	0.60	4.78		Rung 41 x 21 x 1.5 mm
		3.0	3.18	0.39	7.08		
		3.70	2.09	0.26	10.59		
		4.90	1.00	0.12	16.09		
SVCLBS_F_00217653	600	2.40	4.90	1.43	5.61		Rung 41 x 21 x 1.5 mm
		3.0	3.18	0.93	7.62		
		3.70	2.09	0.61	10.94		
		4.90	1.0	0.29	16.26		
SVCLBS_F_00217661	750	2.40	4.90	2.14	6.17		Rung 41 x 41 x 1.5 mm
		3.0	3.18	1.81	8.50		
		3.70	2.09	1.19	18.53		
		4.90	0.98	0.56	16.23		
SVCLBS_F_00217669	900	2.40	4.90	0.87	5.05		Rung 41 x 41 x 1.5 mm
		3.0	3.18	2.45	9.18		
		3.70	2.09	1.64	11.97		
		4.90	0.97	0.76	16.29		

2.50 mm Thickness**(Side Height 110 mm)**

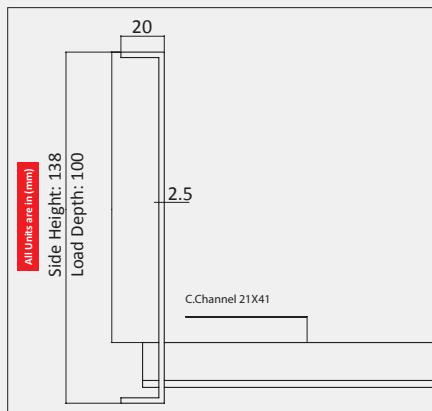
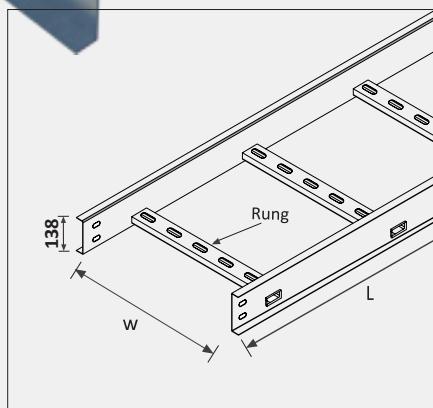
- NEMA Class 12A (87 kg/m by 3.70m)
- Side Rail: S4
- Height: 110 mm
- Load Depth: 75 mm
- Rung Spacing: 229 mm



Item Code	NEMA CLASS 12A	Width (mm)	Support Distance (m)	Load KN/m	Deflection		Side Rail S1
					Rung (mm)	Rail (mm)	
SVCLBS_F_00217697	150	2.40	3.30	0.02	6.32		Rung 41 x 21 x 1.5 mm
		3.0	2.10	0.01	9.97		
		3.70	1.07	0.00	12.26		
		4.90	0.40	0.00	16.11		
SVCLBS_F_00217701	225	2.40	3.30	0.05	6.35		Rung 41 x 21 x 1.5 mm
		3.0	2.10	0.03	9.99		
		3.70	1.07	0.02	12.27		
		4.90	0.40	0.01	14.11		
SVCLBS_F_00217705	300	2.40	3.30	0.12	6.42		Rung 41 x 21 x 1.5 mm
		3.0	2.09	0.08	9.99		
		3.70	1.07	0.04	12.29		
		4.90	0.40	0.01	16.12		
SVCLBS_F_00217709	450	2.40	3.30	0.41	6.71		Rung 41 x 21 x 1.5 mm
		3.0	2.05	0.25	9.98		
		3.70	1.06	0.13	12.28		
		4.90	0.40	0.05	16.15		
SVCLBS_F_00217713	600	2.40	3.22	1.84	7.99		Rung 41 x 21 x 1.5 mm
		3.0	1.98	0.58	9.99		
		3.70	1.02	0.58	12.31		
		4.90	0.40	0.23	10.33		
VCLBS_F_00063477	750	2.40	3.22	1.84	7.99		Rung 41 x 21 x 2.0 mm
		3.0	1.87	1.07	9.98		
		3.70	1.02	0.58	12.31		
		4.90	0.40	0.23	12.33		
SVCLBS_F_00063473	900	2.40	2.95	2.31	7.97		Rung 41 x 21 x 2.0 mm
		3.0	1.78	1.40	9.90		
		3.70	1.0	0.99	12.50		
		4.90	0.39	0.38	16.17		

2.50 mm Thickness**(Side Height 138 mm)**

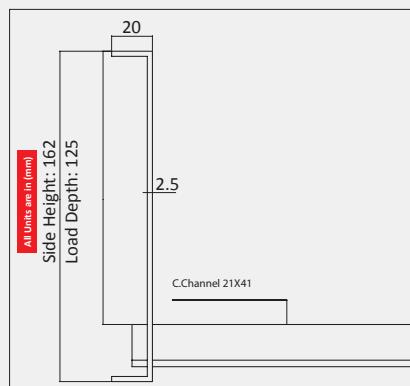
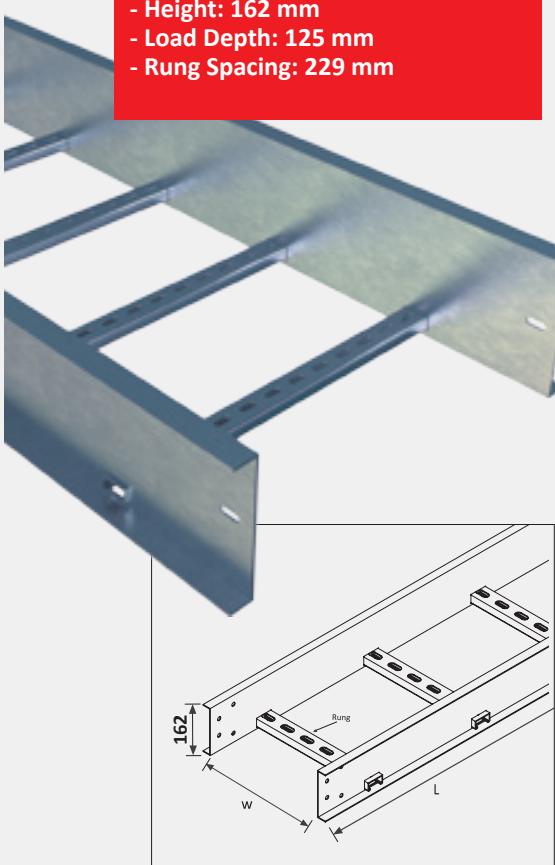
- NEMA Class 12C (150 kg/m by 3.70m)
- Side Rail: S5
- Height: 138 mm
- Load Depth: 100 mm
- Rung Spacing: 229 mm



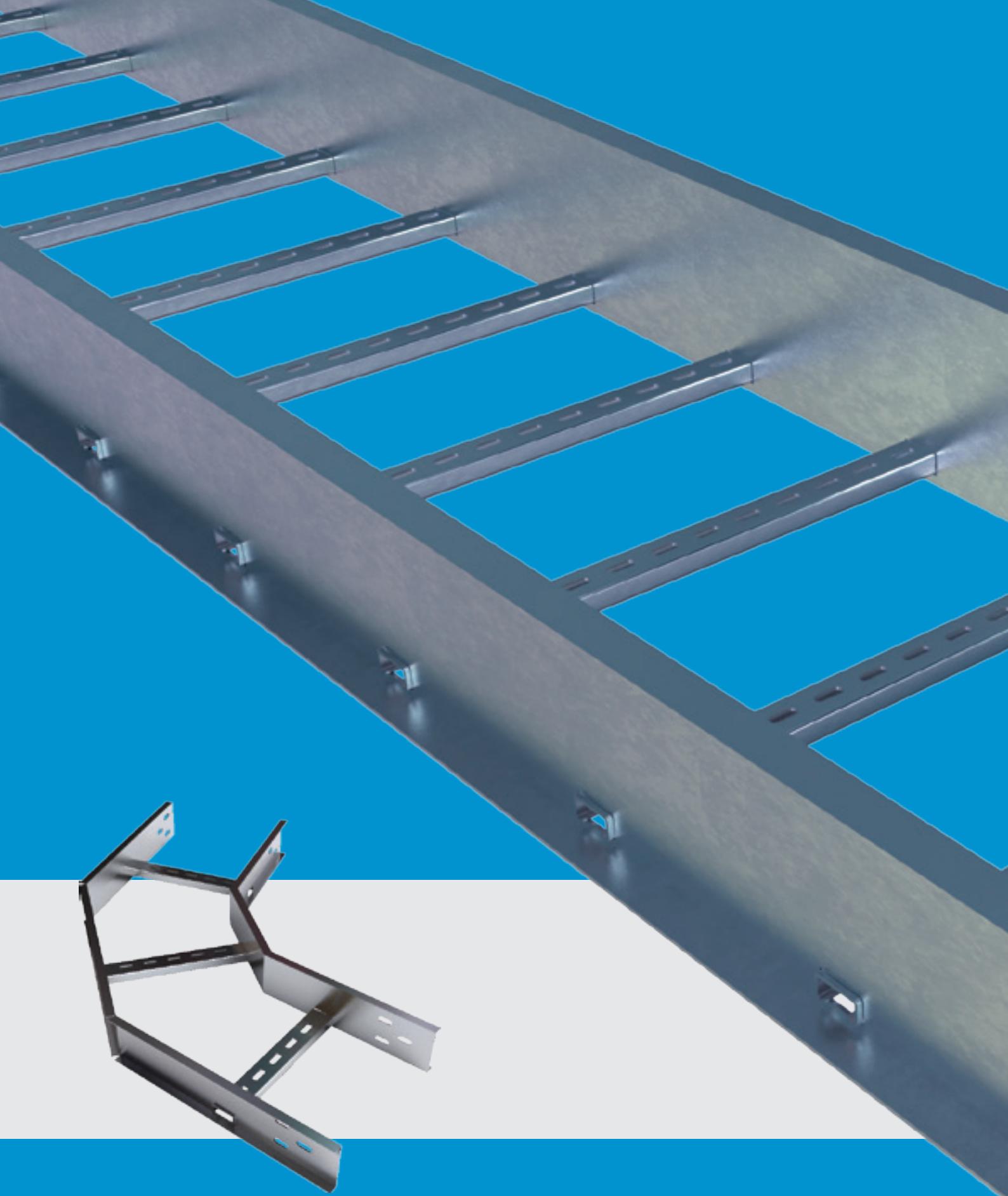
Item Code	NEMA CLASS 12A	Width (mm)	Support Distance (m)	Load KN/m	Deflection		Side Rail S1
					Rung (mm)	Rail (mm)	
SVCLBS_F_00217717	150	2.40	4.6	0.02	5.07	Rung 41 x 21 x 1.5 mm	
		3.0	2.97	0.01	8.05		
		3.70	1.93	0.01	12.30		
		4.90	0.77	0.00	16.21		
SVCLBS_F_00217721	225	2.40	4.61	0.07	5.12	Rung 41 x 21 x 1.5 mm	
		3.0	2.97	0.05	8.05		
		3.70	1.93	0.03	12.32		
		4.90	0.77	0.01	16.22		
SVCLBS_F_00217725	300	2.40	4.6	0.17	5.22	Rung 41 x 21 x 1.5 mm	
		3.0	2.97	0.11	8.14		
		3.70	1.92	0.07	12.30		
		4.90	0.77	0.03	16.23		
SVCLBS_F_00213173	450	2.40	4.61	0.57	5.62	Rung 41 x 21 x 2.0 mm	
		3.0	2.97	0.37	8.40		
		3.70	1.89	0.23	12.28		
		4.90	0.77	0.09	16.30		
SVCLBS_F_00212753	600	2.40	4.61	1.35	6.40	Rung 41 x 21 x 2.0 mm	
		3.0	2.97	0.87	8.90		
		3.70	1.84	0.54	12.29		
		4.90	0.76	0.22	16.24		
SVCLBS_F_00156059	750	2.40	4.61	2.09	7.84	Rung 41 x 21 x 2.0 mm	
		3.0	2.97	1.69	9.73		
		3.70	1.76	1.00	12.27		
		4.90	0.75	0.43	16.26		
SVCLBS_F_00217729	900	2.40	4.61	0.82	5.87	Rung 41 x 41 x 1.5 mm	
		3.0	2.86	2.24	9.99		
		3.70	1.66	1.64	12.30		
		4.90	0.73	0.72	16.18		
SVCLBS_F_00156055							

2.50 mm Thickness**(Side Height 162 mm)**

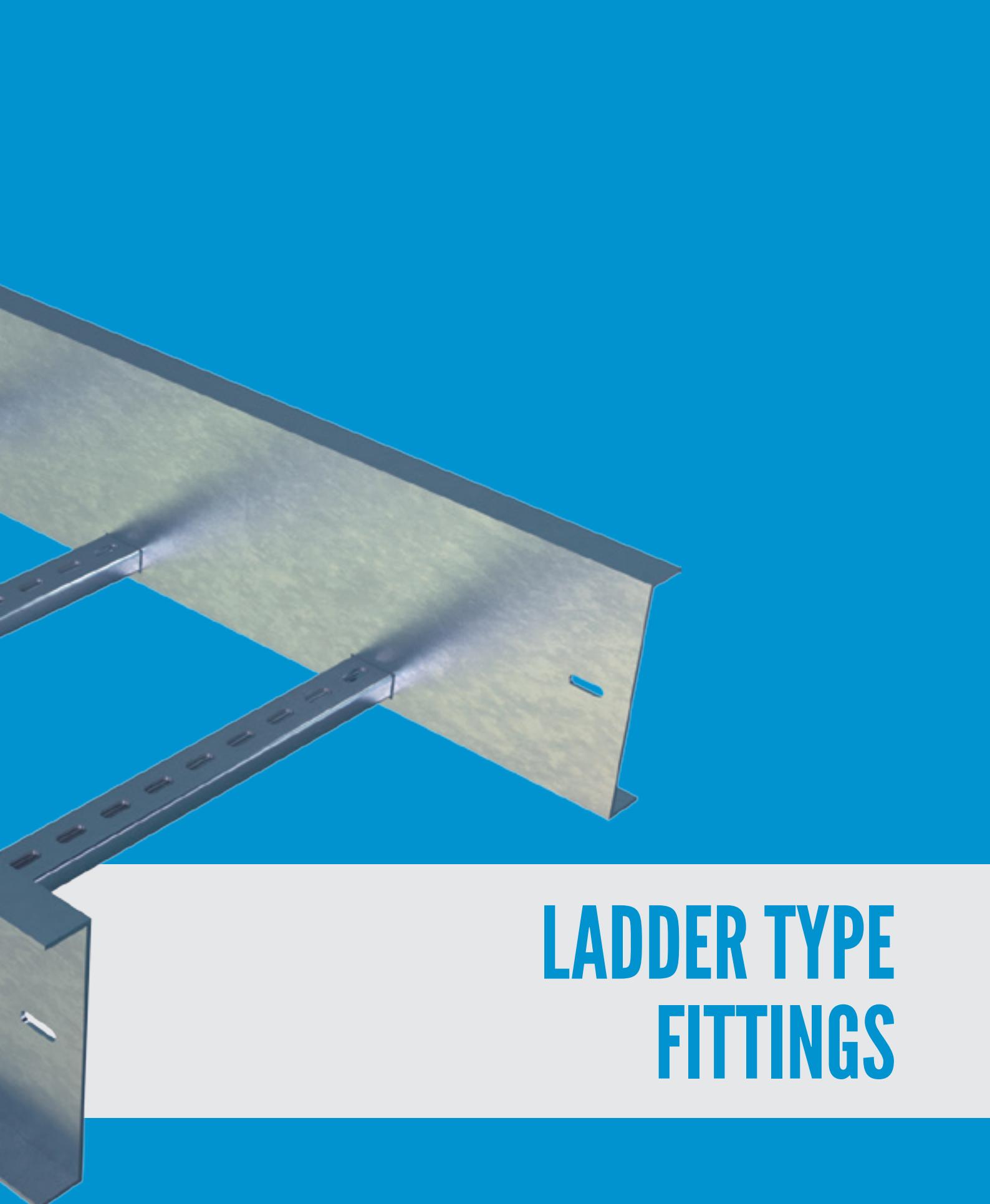
- NEMA Class Steel S9
- Side Rail: S6
- Height: 162 mm
- Load Depth: 125 mm
- Rung Spacing: 229 mm



Item Code	NEMA CLASS 12A	Width (mm)	Support Distance (m)	Load KN/m	Deflection		Side Rail S1
					Rung (mm)	Rail (mm)	
SVCLBS_F_00217739	150	2.40	6.06	0.03	4.21	Rung 41 x 21 x 1.5 mm	
			3.0	3.94	0.02	6.72	
			3.70	2.59	0.01	1.33	
			4.90	1.28	0.01	16.29	
SVCLBS_F_00217743	225	2.40	6.06	0.09	4.28	Rung 41 x 21 x 1.5 mm	
			3.0	3.94	0.06	6.76	
			3.70	2.59	0.04	10.36	
			4.90	1.28	0.02	16.30	
SVCLBS_F_00217747	300	2.40	6.06	0.22	4.40	Rung 41 x 21 x 1.5 mm	
			3.0	3.94	0.14	6.24	
			3.70	2.59	0.09	10.41	
			4.90	1.28	0.05	16.33	
SVCLBS_F_00217751	450	2.40	6.06	0.75	4.93	Rung 41 x 21 x 1.5 mm	
			3.0	3.94	0.49	10.8	
			3.70	2.59	0.32	10.64	
			4.90	1.27	0.16	16.32	
SVCLBS_F_00217755	600	2.40	6.06	1.41	5.59	Rung 41 x 21 x 2.0 mm	
			3.0	3.94	1.15	7.35	
			3.70	2.59	0.76	11.07	
			4.90	1.25	0.37	16.29	
SVCLBS_F_00217759	750	2.40	6.06	0.63	4.21	Rung 41 x 41 x 1.5 mm	
			3.0	3.94	1.79	8.49	
			3.70	2.50	1.48	11.80	
			4.90	1.22	0.70	16.27	
SVCLBS_F_00217775	900	2.40	6.06	1.08	5.26	Rung 41 x 41 x 1.5 mm	
			3.0	3.94	2.64	9.34	
			3.70	2.47	2.43	12.29	
			4.90	1.18	1.16	16.27	



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LADDER TYPE FITTINGS

BEND 45°

WELDED CORNERED

THICKNESSES: 2.00

Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.0	NEMA CLASS 12A 138 X 20 X 2.0	NEMA CLASS 12A 162 X 20 X 2.0	
Side Height 110	Side Height 138	Side Height 162	
SVCLBA_F_00231201	SVCLBA_F_00215881	SVCLBA_F_00231333	150 mm
SVCLBA_F_00231273	SVCLBA_F_00231269	SVCLBA_F_00231337	225 mm
SVCLBA_F_00231209	SVCLBA_F_00215901	SVCLBA_F_00231341	300 mm
SVCLBA_F_00231213	SVCLBA_F_00231481	SVCLBA_F_00231345	450 mm
SVCLBA_F_00231217	SVCLBA_F_00191029	SVCLBA_F_00231349	600 mm
SVCLBA_F_00231221	SVCLBA_F_00215065	SVCLBA_F_00231353	750 mm
SVCLBA_F_00231225	SVCLBA_F_00215905	SVCLBA_F_00231357	900 mm



WELDED CORNERED

THICKNESSES: 2.50

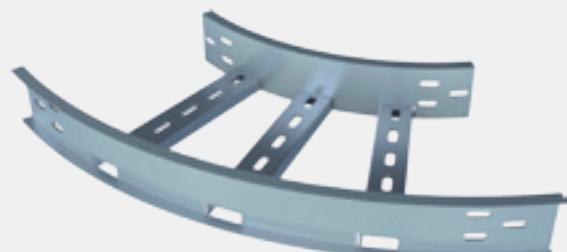
Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.5	NEMA CLASS 12A 138 X 20 X 2.5	NEMA CLASS 12A 162 X 20 X 2.5	
Side Height 110	Side Height 138	Side Height 162	
SVCLBA_F_00231233	SVCLBA_F_00231293	SVCLBA_F_00231373	150 mm
SVCLBA_F_00231277	SVCLBA_F_00231297	SVCLBA_F_00231377	225 mm
SVCLBA_F_00231245	SVCLBA_F_00231301	SVCLBA_F_00231381	300 mm
SVCLBA_F_00231253	SVCLBA_F_00231305	SVCLBA_F_00231385	450 mm
SVCLBA_F_00231257	SVCLBA_F_00231309	SVCLBA_F_00231389	600 mm
SVCLBA_F_00231261	SVCLBA_F_00231313	SVCLBA_F_00231393	750 mm
SVCLBA_F_00231265	SVCLBA_F_00231317	SVCLBA_F_00231397	900 mm



WELDED CURVED

THICKNESSES: 2.00

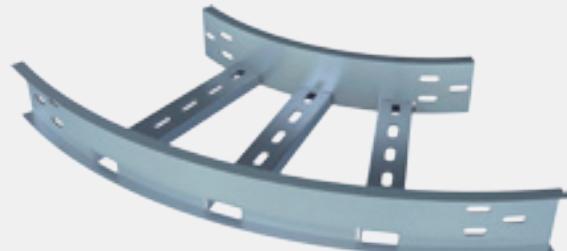
Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.0	NEMA CLASS 12A 138 X 20 X 2.0	NEMA CLASS 12A 162 X 20 X 2.0	
Side Height 110	Side Height 138	Side Height 162	
SVCLBA_F_00231401	SVCLBA_F_00231467	SVCLBA_F_00231561	150 mm
SVCLBA_F_00231405	SVCLBA_F_00231471	SVCLBA_F_00231565	225 mm
SVCLBA_F_00231409	SVCLBA_F_00231475	SVCLBA_F_00231569	300 mm
SVCLBA_F_00231413	SVCLBA_F_00231489	SVCLBA_F_00231577	450 mm
SVCLBA_F_00231417	SVCLBA_F_00231495	SVCLBA_F_00231581	600 mm
SVCLBA_F_00231421	SVCLBA_F_00231505	SVCLBA_F_00231585	750 mm
SVCLBA_F_00231425	SVCLBA_F_00231511	SVCLBA_F_00231589	900 mm

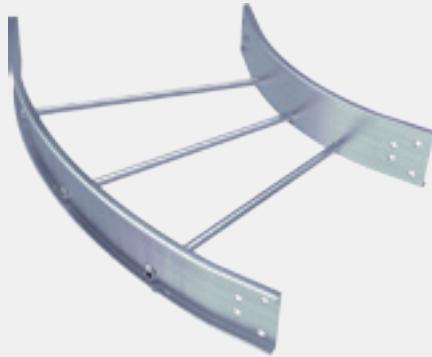


WELDED CURVED

THICKNESSES: 2.50

Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.5	NEMA CLASS 12A 138 X 20 X 2.5	NEMA CLASS 12A 162 X 20 X 2.5	
Side Height 110	Side Height 138	Side Height 162	
SVCLBA_F_00231429	SVCLBA_F_00231519	SVCLBA_F_00231597	150 mm
SVCLBA_F_00231439	SVCLBA_F_00231523	SVCLBA_F_00231601	225 mm
SVCLBA_F_00231443	SVCLBA_F_00231527	SVCLBA_F_00231605	300 mm
SVCLBA_F_00231447	SVCLBA_F_00231531	SVCLBA_F_00231609	450 mm
SVCLBA_F_00231451	SVCLBA_F_00231535	SVCLBA_F_00231613	600 mm
SVCLBA_F_00231455	SVCLBA_F_00231539	SVCLBA_F_00231617	750 mm
SVCLBA_F_00231463	SVCLBA_F_00231543	SVCLBA_F_00231625	900 mm





SWAGED TUBULAR RUNG

THICKNESSES: 2.00

Item Code						Width mm	
NEMA CLASS 12A 110 X 20 X 2.0		NEMA CLASS 12A 138 X 20 X 2.0		NEMA CLASS 12A 162 X 20 X 2.0			
Side Height 110		Side Height 138		Side Height 162			
Aluminum	Steel	Aluminum	Steel	Aluminum	Steel		
SVCLA1_F_BD150110	SVCLS1_F_BD150110	SVCLA2_F_BD150110	SVCLS2_F_BD150110	SVCLA3_F_BD150110	SVCLS3_F_BD150110	150 mm	
SVCLA1_F_BD225110	SVCLS1_F_BD225110	SVCLA2_F_BD225110	SVCLS2_F_BD225110	SVCLA3_F_BD225110	SVCLS3_F_BD225110	225 mm	
SVCLA1_F_BD300110	SVCLS1_F_BD300110	SVCLA2_F_BD300110	SVCLS2_F_BD300110	SVCLA3_F_BD300110	SVCLS3_F_BD300110	300 mm	
SVCLA1_F_BD450110	SVCLS1_F_BD450110	SVCLA2_F_BD450110	SVCLS2_F_BD450110	SVCLA3_F_BD450110	SVCLS3_F_BD450110	450 mm	
SVCLA1_F_BD600110	SVCLS1_F_BD600110	SVCLA2_F_BD600110	SVCLS2_F_BD600110	SVCLA3_F_BD600110	SVCLS3_F_BD600110	600 mm	
SVCLA1_F_BD750110	SVCLS1_F_BD750110	SVCLA2_F_BD750110	SVCLS2_F_BD750110	SVCLA3_F_BD750110	SVCLS3_F_BD750110	750 mm	
SVCLA1_F_BD900110	SVCLS1_F_BD900110	SVCLA2_F_BD900110	SVCLS2_F_BD900110	SVCLA3_F_BD900110	SVCLS3_F_BD900110	900 mm	

SWAGED TUBULAR RUNG

THICKNESSES: 2.50

Item Code						Width mm	
NEMA CLASS 12A 110 X 20 X 2.5		NEMA CLASS 12A 138 X 20 X 2.5		NEMA CLASS 12A 162 X 20 X 2.5			
Side Height 110		Side Height 138		Side Height 162			
Aluminum	Steel	Aluminum	Steel	Aluminum	Steel		
SVCLS4_F_BD150110		SVCLS5_F_BD150110		SVCLS6_F_BD150110		150 mm	
SVCLS4_F_BD225110		SVCLS5_F_BD225110		SVCLS6_F_BD225110		225 mm	
SVCLS4_F_BD300110		SVCLS5_F_BD300110		SVCLS6_F_BD300110		300 mm	
SVCLS4_F_BD450110		SVCLS5_F_BD450110		SVCLS6_F_BD450110		450 mm	
SVCLS4_F_BD600110		SVCLS5_F_BD600110		SVCLS6_F_BD600110		600 mm	
SVCLS4_F_BD750110		SVCLS5_F_BD750110		SVCLS6_F_BD750110		750 mm	
SVCLS4_F_BD900110		SVCLS5_F_BD900110		SVCLS6_F_BD900110		900 mm	

BEND 90°

WELDED CORNERED

THICKNESSES: 2.00

Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.0	NEMA CLASS 12A 138 X 20 X 2.0	NEMA CLASS 12A 162 X 20 X 2.0	
Side Height 110	Side Height 138	Side Height 162	
SVCLBA_F_00188597	SVCLBA_F_00215851	SVCLBA_F_00231821	150 mm
SVCLBA_F_00231629	SVCLBA_F_00231749	SVCLBA_F_00231825	225 mm
SVCLBA_F_00231629	SVCLBA_F_00168247	SVCLBA_F_00231837	300 mm
SVCLBA_F_00188587	SVCLBA_F_00186619	SVCLBA_F_00231849	450 mm
SVCLBA_F_00231637	SVCLBA_F_00231753	SVCLBA_F_00231853	600 mm
SVCLBA_F_00221825	SVCLBA_F_00231757	SVCLBA_F_00231857	750 mm
SVCLBA_F_00188577	SVCLBA_F_00186609	SVCLBA_F_00231861	900 mm



WELDED CORNERED

THICKNESSES: 2.50

Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.5	NEMA CLASS 12A 138 X 20 X 2.5	NEMA CLASS 12A 162 X 20 X 2.5	
Side Height 110	Side Height 138	Side Height 162	
SVCLBA_F_00231673	SVCLBA_F_00231773	SVCLBA_F_00231957	150 mm
SVCLBA_F_00231681	SVCLBA_F_00231777	SVCLBA_F_00231965	225 mm
SVCLBA_F_00231689	SVCLBA_F_00231781	SVCLBA_F_00231969	300 mm
SVCLBA_F_00231705	SVCLBA_F_00231785	SVCLBA_F_00231973	450 mm
SVCLBA_F_00231713	SVCLBA_F_00231797	SVCLBA_F_00231977	600 mm
SVCLBA_F_00231729	SVCLBA_F_00231801	SVCLBA_F_00231981	750 mm
SVCLBA_F_00231737	SVCLBA_F_00231805	SVCLBA_F_00231985	900 mm

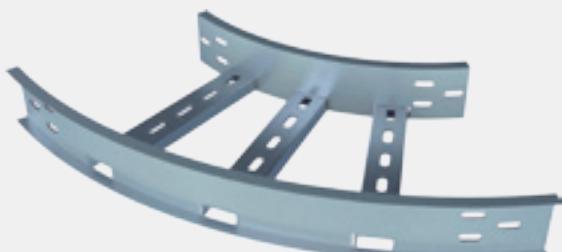


BEND 90°

WELDED CURVED

THICKNESSES: 2.00

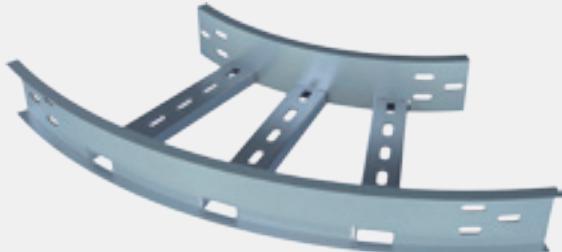
Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.0	NEMA CLASS 12A 138 X 20 X 2.0	NEMA CLASS 12A 162 X 20 X 2.0	
Side Height 110	Side Height 138	Side Height 162	
SVCLBA_F_00231989	SVCLBA_F_00232049	SVCLBA_F_00232105	150 mm
SVCLBA_F_00231993	SVCLBA_F_00232053	SVCLBA_F_00232109	225 mm
SVCLBA_F_00231997	SVCLBA_F_00232057	SVCLBA_F_00232113	300 mm
SVCLBA_F_00232001	SVCLBA_F_00232061	SVCLBA_F_00232117	450 mm
SVCLBA_F_00232005	SVCLBA_F_00232065	SVCLBA_F_00232121	600 mm
SVCLBA_F_00232009	SVCLBA_F_00232069	SVCLBA_F_00232125	750 mm
SVCLBA_F_00232013	SVCLBA_F_00232073	SVCLBA_F_00232129	900 mm

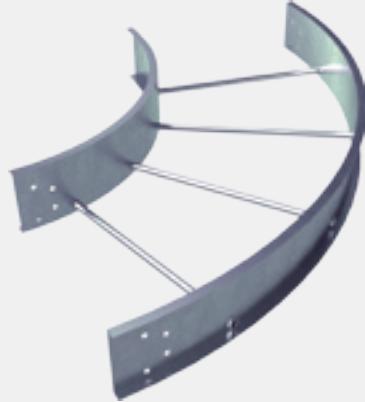


WELDED CURVED

THICKNESSES: 2.50

Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.5	NEMA CLASS 12A 138 X 20 X 2.5	NEMA CLASS 12A 162 X 20 X 2.5	
Side Height 110	Side Height 138	Side Height 162	
SVCLBA_F_00232017	SVCLBA_F_00232077	SVCLBA_F_00232133	150 mm
SVCLBA_F_00232021	SVCLBA_F_00232081	SVCLBA_F_00232137	225 mm
SVCLBA_F_00232025	SVCLBA_F_00232085	SVCLBA_F_00232141	300 mm
SVCLBA_F_00232145	SVCLBA_F_00232089	SVCLBA_F_00232149	450 mm
SVCLBA_F_00232037	SVCLBA_F_00232093	SVCLBA_F_00232153	600 mm
SVCLBA_F_00232041	SVCLBA_F_00232097	SVCLBA_F_00232157	750 mm
SVCLBA_F_00232045	SVCLBA_F_00232101	SVCLBA_F_00232161	900 mm





SWAGED TUBULAR RUNG

THICKNESSES: 2.00

Item Code						Width mm	
NEMA CLASS 12A 110 X 20 X 2.0		NEMA CLASS 12A 138 X 20 X 2.0		NEMA CLASS 12A 162 X 20 X 2.0			
Side Height 110		Side Height 138		Side Height 162			
Aluminum	Steel	Aluminum	Steel	Aluminum	Steel		
SVCLA1_F_BN150110	SVCLS1_F_BN150110	SVCLA2_F_BN150110	SVCLS2_F_BN150110	SVCLA3_F_BN150110	SVCLS3_F_BN150110	150 mm	
SVCLA1_F_BN225110	SVCLS1_F_BN225110	SVCLA2_F_BN225110	SVCLS2_F_BN225110	SVCLA3_F_BN225110	SVCLS3_F_BN225110	225 mm	
SVCLA1_F_BN300110	SVCLS1_F_BN300110	SVCLA2_F_BN300110	SVCLS2_F_BN300110	SVCLA3_F_BN300110	SVCLS3_F_BN300110	300 mm	
SVCLA1_F_BN450110	SVCLS1_F_BN450110	SVCLA2_F_BN450110	SVCLS2_F_BN450110	SVCLA3_F_BN450110	SVCLS3_F_BN450110	450 mm	
SVCLA1_F_BN600110	SVCLS1_F_BN600110	SVCLA2_F_BN600110	SVCLS2_F_BN600110	SVCLA3_F_BN600110	SVCLS3_F_BN600110	600 mm	
SVCLA1_F_BN750110	SVCLS1_F_BN750110	SVCLA2_F_BN750110	SVCLS2_F_BN750110	SVCLA3_F_BN750110	SVCLS3_F_BN750110	750 mm	
SVCLA1_F_BN900110	SVCLS1_F_BN900110	SVCLA2_F_BN900110	SVCLS2_F_BN900110	SVCLA3_F_BN900110	SVCLS3_F_BN900110	900 mm	

SWAGED TUBULAR RUNG

THICKNESSES: 2.50

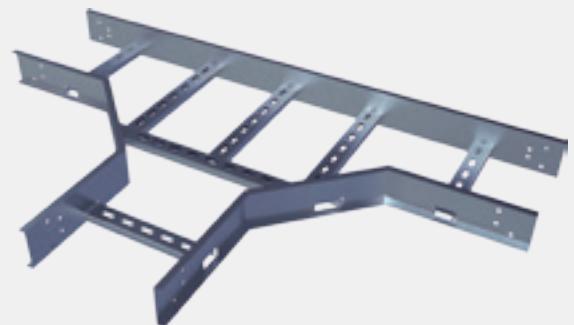
Item Code				Width mm	
NEMA CLASS 12A 110 X 20 X 2.5		NEMA CLASS 12A 138 X 20 X 2.5			
Side Height 110		Side Height 138			
SVCLS4_F_BN150110	SVCLS5_F_BN150110	SVCLS6_F_BN150110	SVCLS6_F_BN150110	150 mm	
SVCLS4_F_BN225110	SVCLS5_F_BN225110	SVCLS6_F_BN225110	SVCLS6_F_BN225110	225 mm	
SVCLS4_F_BN300110	SVCLS5_F_BN300110	SVCLS6_F_BN300110	SVCLS6_F_BN300110	300 mm	
SVCLS4_F_BN450110	SVCLS5_F_BN450110	SVCLS6_F_BN450110	SVCLS6_F_BN450110	450 mm	
SVCLS4_F_BN600110	SVCLS5_F_BN600110	SVCLS6_F_BN600110	SVCLS6_F_BN600110	600 mm	
SVCLS4_F_BN750110	SVCLS5_F_BN750110	SVCLS6_F_BN750110	SVCLS6_F_BN750110	750 mm	
SVCLS4_F_BN900110	SVCLS5_F_BN900110	SVCLS6_F_BN900110	SVCLS6_F_BN900110	900 mm	

TEE BRANCH

WELDED CORNERED

THICKNESSES: 2.00

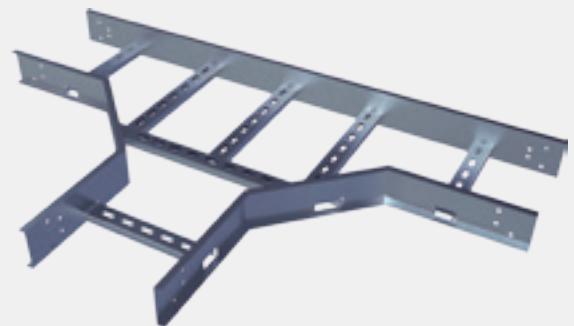
Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.0	NEMA CLASS 12A 138 X 20 X 2.0	NEMA CLASS 12A 162 X 20 X 2.0	
Side Height 110	Side Height 138	Side Height 162	
SVCLBA_F_00232165	SVCLBA_F_00215925	SVCLBA_F_00232295	150 mm
SVCLBA_F_00232169	SVCLBA_F_00232235	SVCLBA_F_00232299	225 mm
SVCLBA_F_00188637	SVCLBA_F_00168271	SVCLBA_F_00232303	300 mm
SVCLBA_F_00232209	SVCLBA_F_00168257	SVCLBA_F_00232307	450 mm
SVCLBA_F_00221841	SVCLBA_F_00168197	SVCLBA_F_00232319	600 mm
SVCLBA_F_00188627	SVCLBA_F_00215075	SVCLBA_F_00232323	750 mm
SVCLBA_F_00188617	SVCLBA_F_00215939	SVCLBA_F_00232327	900 mm



WELDED CORNERED

THICKNESSES: 2.50

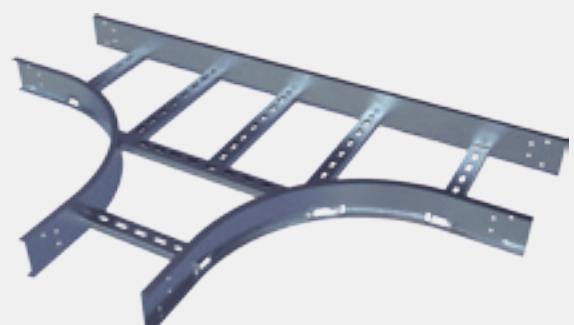
Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.5	NEMA CLASS 12A 138 X 20 X 2.5	NEMA CLASS 12A 162 X 20 X 2.5	
Side Height 110	Side Height 138	Side Height 162	
SVCLBA_F_00232189	SVCLBA_F_00232251	SVCLBA_F_00232343	150 mm
SVCLBA_F_00232197	SVCLBA_F_00232255	SVCLBA_F_00232347	225 mm
SVCLBA_F_00232205	SVCLBA_F_00232259	SVCLBA_F_00232351	300 mm
SVCLBA_F_00232263	SVCLBA_F_00232267	SVCLBA_F_00232355	450 mm
SVCLBA_F_00232223	SVCLBA_F_00232271	SVCLBA_F_00232359	600 mm
SVCLBA_F_00063545	SVCLBA_F_00232275	SVCLBA_F_00232363	750 mm
SVCLBA_F_00232231	SVCLBA_F_00232279	SVCLBA_F_00232367	900 mm



WELDED CURVED

THICKNESSES: 2.00

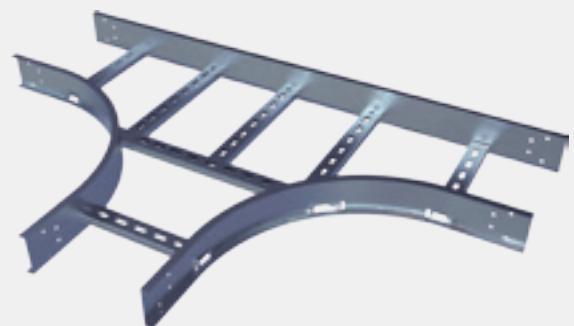
Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.0	NEMA CLASS 12A 138 X 20 X 2.0	NEMA CLASS 12A 162 X 20 X 2.0	
Side Height 110	Side Height 138	Side Height 162	
SVCLBA_F_00232433	SVCLBA_F_00232493	SVCLBA_F_00232549	150 mm
SVCLBA_F_00232437	SVCLBA_F_00232497	SVCLBA_F_00232553	225 mm
SVCLBA_F_00232441	SVCLBA_F_00232501	SVCLBA_F_00232557	300 mm
SVCLBA_F_00232445	SVCLBA_F_00232505	SVCLBA_F_00232561	450 mm
SVCLBA_F_00232449	SVCLBA_F_00232509	SVCLBA_F_00232565	600 mm
SVCLBA_F_00232453	SVCLBA_F_00232513	SVCLBA_F_00232569	750 mm
SVCLBA_F_00232457	SVCLBA_F_00232517	SVCLBA_F_00232573	900 mm



WELDED CURVED

THICKNESSES: 2.50

Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.5	NEMA CLASS 12A 138 X 20 X 2.5	NEMA CLASS 12A 162 X 20 X 2.5	
Side Height 110	Side Height 138	Side Height 162	
SVCLBA_F_00232461	SVCLBA_F_00232521	SVCLBA_F_00232577	150 mm
SVCLBA_F_00232465	SVCLBA_F_00232529	SVCLBA_F_00232581	225 mm
SVCLBA_F_00232469	SVCLBA_F_00232525	SVCLBA_F_00232585	300 mm
SVCLBA_F_00232473	SVCLBA_F_00232533	SVCLBA_F_00232589	450 mm
SVCLBA_F_00232481	SVCLBA_F_00232537	SVCLBA_F_00232593	600 mm
SVCLBA_F_00232485	SVCLBA_F_00232541	SVCLBA_F_00232597	750 mm
SVCLBA_F_00232489	SVCLBA_F_00232545	SVCLBA_F_00232601	900 mm





SWAGED TUBULAR RUNG

THICKNESSES: 2.00

Item Code						Width mm	
NEMA CLASS 12A 110 X 20 X 2.0		NEMA CLASS 12A 138 X 20 X 2.0		NEMA CLASS 12A 162 X 20 X 2.0			
Side Height 110		Side Height 138		Side Height 162			
Aluminum	Steel	Aluminum	Steel	Aluminum	Steel		
SVCLA1_F_TB150110	SVCLS1_F_TB150110	SVCLA2_F_TB150110	SVCLS2_F_TB150110	SVCLA3_F_TB150110	SVCLS3_F_TB150110	150 mm	
SVCLA1_F_TB225110	SVCLS1_F_TB225110	SVCLA2_F_TB225110	SVCLS2_F_TB225110	SVCLA3_F_TB225110	SVCLS3_F_TB225110	225 mm	
SVCLA1_F_TB300110	SVCLS1_F_TB300110	SVCLA2_F_TB300110	SVCLS2_F_TB300110	SVCLA3_F_TB300110	SVCLS3_F_TB300110	300 mm	
SVCLA1_F_TB450110	SVCLS1_F_TB450110	SVCLA2_F_TB450110	SVCLS2_F_TB450110	SVCLA3_F_TB450110	SVCLS3_F_TB450110	450 mm	
SVCLA1_F_TB600110	SVCLS1_F_TB600110	SVCLA2_F_TB600110	SVCLS2_F_TB600110	SVCLA3_F_TB600110	SVCLS3_F_TB600110	600 mm	
SVCLA1_F_TB750110	SVCLS1_F_TB750110	SVCLA2_F_TB750110	SVCLS2_F_TB750110	SVCLA3_F_TB750110	SVCLS3_F_TB750110	750 mm	
SVCLA1_F_TB900110	SVCLS1_F_TB900110	SVCLA2_F_TB900110	SVCLS2_F_TB900110	SVCLA3_F_TB900110	SVCLS3_F_TB900110	900 mm	

SWAGED TUBULAR RUNG

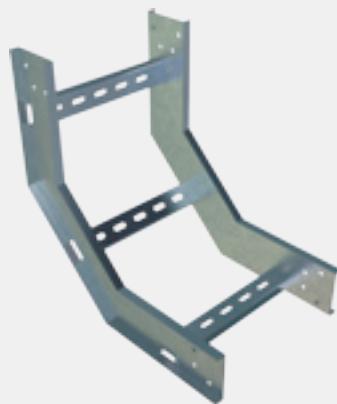
THICKNESSES: 2.50

Item Code						Width mm	
NEMA CLASS 12A 110 X 20 X 2.5		NEMA CLASS 12A 138 X 20 X 2.5		NEMA CLASS 12A 162 X 20 X 2.5			
Side Height 110		Side Height 138		Side Height 162			
SVCLS4_F_TB150110		SVCLS5_F_TB150110		SVCLS6_F_TB150110		150 mm	
SVCLS4_F_TB225110		SVCLS5_F_TB225110		SVCLS6_F_TB225110		225 mm	
SVCLS4_F_TB300110		SVCLS5_F_TB300110		SVCLS6_F_TB300110		300 mm	
SVCLS4_F_TB450110		SVCLS5_F_TB450110		SVCLS6_F_TB450110		450 mm	
SVCLS4_F_TB600110		SVCLS5_F_TB600110		SVCLS6_F_TB600110		600 mm	
SVCLS4_F_TB750110		SVCLS5_F_TB750110		SVCLS6_F_TB750110		750 mm	
SVCLS4_F_TB900110		SVCLS5_F_TB900110		SVCLS6_F_TB900110		900 mm	

INSIDE VERTICAL ELBOW (INSIDE RISER)

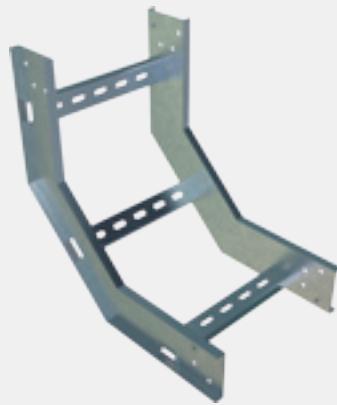
WELDED CORNERED

THICKNESSES: 2.00



WELDED CORNERED

THICKNESSES: 2.50



WELDED CURVED

THICKNESSES: 2.00



WELDED CURVED

THICKNESSES: 2.50





SWAGED TUBULAR RUNG

THICKNESSES: 2.00

Item Code						Width mm	
NEMA CLASS 12A 110 X 20 X 2.0		NEMA CLASS 12A 138 X 20 X 2.0		NEMA CLASS 12A 162 X 20 X 2.0			
Side Height 110		Side Height 138		Side Height 162			
Aluminum	Steel	Aluminum	Steel	Aluminum	Steel		
SVCLA1_F_VB150110	SVCLS1_F_VB150110	SVCLA2_F_VB150110	SVCLS2_F_VB150110	SVCLA3_F_VB150110	SVCLS3_F_VB150110	150 mm	
SVCLA1_F_VB225110	SVCLS1_F_VB225110	SVCLA2_F_VB225110	SVCLS2_F_VB225110	SVCLA3_F_VB225110	SVCLS3_F_VB225110	225 mm	
SVCLA1_F_VB300110	SVCLS1_F_VB300110	SVCLA2_F_VB300110	SVCLS2_F_VB300110	SVCLA3_F_VB300110	SVCLS3_F_VB300110	300 mm	
SVCLA1_F_VB450110	SVCLS1_F_VB450110	SVCLA2_F_VB450110	SVCLS2_F_VB450110	SVCLA3_F_VB450110	SVCLS3_F_VB450110	450 mm	
SVCLA1_F_VB600110	SVCLS1_F_VB600110	SVCLA2_F_VB600110	SVCLS2_F_VB600110	SVCLA3_F_VB600110	SVCLS3_F_VB600110	600 mm	
SVCLA1_F_VB750110	SVCLS1_F_VB750110	SVCLA2_F_VB750110	SVCLS2_F_VB750110	SVCLA3_F_VB750110	SVCLS3_F_VB750110	750 mm	
SVCLA1_F_VB900110	SVCLS1_F_VB900110	SVCLA2_F_VB900110	SVCLS2_F_VB900110	SVCLA3_F_VB900110	SVCLS3_F_VB900110	900 mm	

SWAGED TUBULAR RUNG

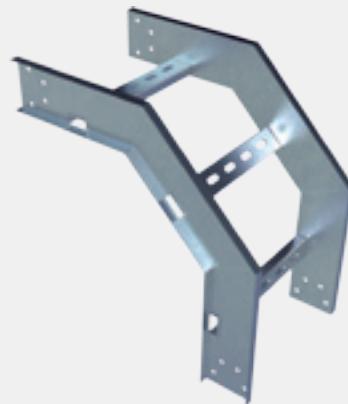
THICKNESSES: 2.50

Item Code						Width mm	
NEMA CLASS 12A 110 X 20 X 2.5		NEMA CLASS 12A 138 X 20 X 2.5		NEMA CLASS 12A 162 X 20 X 2.5			
Side Height 110		Side Height 138		Side Height 162			
SVCLS4_F_VB150110	SVCLSS_F_VB150110	SVCLSS_F_VB150110	SVCLSS_F_VB150110	SVCL6_F_VB150110	SVCL6_F_VB150110	150 mm	
SVCLS4_F_VB225110	SVCLSS_F_VB225110	SVCLSS_F_VB225110	SVCLSS_F_VB225110	SVCL6_F_VB225110	SVCL6_F_VB225110	225 mm	
SVCLS4_F_VB300110	SVCLSS_F_VB300110	SVCLSS_F_VB300110	SVCLSS_F_VB300110	SVCL6_F_VB300110	SVCL6_F_VB300110	300 mm	
SVCLS4_F_VB450110	SVCLSS_F_VB450110	SVCLSS_F_VB450110	SVCLSS_F_VB450110	SVCL6_F_VB450110	SVCL6_F_VB450110	450 mm	
SVCLS4_F_VB600110	SVCLSS_F_VB600110	SVCLSS_F_VB600110	SVCLSS_F_VB600110	SVCL6_F_VB600110	SVCL6_F_VB600110	600 mm	
SVCLS4_F_VB750110	SVCLSS_F_VB750110	SVCLSS_F_VB750110	SVCLSS_F_VB750110	SVCL6_F_VB750110	SVCL6_F_VB750110	750 mm	
SVCLS4_F_VB900110	SVCLSS_F_VB900110	SVCLSS_F_VB900110	SVCLSS_F_VB900110	SVCL6_F_VB900110	SVCL6_F_VB900110	900 mm	

OUTSIDE VERTICAL ELBOW (OUTSIDE RISER)

WELDED CORNERED

THICKNESSES: 2.00



WELDED CORNERED

THICKNESSES: 2.50



WELDED CURVED

THICKNESSES: 2.00



WELDED CURVED

THICKNESSES: 2.50





SWAGED TUBULAR RUNG

THICKNESSES: 2.00

Item Code						Width mm	
NEMA CLASS 12A 110 X 20 X 2.0		NEMA CLASS 12A 138 X 20 X 2.0		NEMA CLASS 12A 162 X 20 X 2.0			
Side Height 110		Side Height 138		Side Height 162			
Aluminum	Steel	Aluminum	Steel	Aluminum	Steel	150 mm	
SVCLA1_F_DB150110	SVCLS1_F_DB150110	SVCLA2_F_DB150110	SVCLS2_F_DB150110	SVCLA3_F_DB150110	SVCLS3_F_DB150110		
SVCLA1_F_DB225110	SVCLS1_F_DB225110	SVCLA2_F_DB225110	SVCLS2_F_DB225110	SVCLA3_F_DB225110	SVCLS3_F_DB225110		
SVCLA1_F_DB300110	SVCLS1_F_DB300110	SVCLA2_F_DB300110	SVCLS2_F_DB300110	SVCLA3_F_DB300110	SVCLS3_F_DB300110		
SVCLA1_F_DB450110	SVCLS1_F_DB450110	SVCLA2_F_DB450110	SVCLS2_F_DB450110	SVCLA3_F_DB450110	SVCLS3_F_DB450110		
SVCLA1_F_DB600110	SVCLS1_F_DB600110	SVCLA2_F_DB600110	SVCLS2_F_DB600110	SVCLA3_F_DB600110	SVCLS3_F_DB600110		
SVCLA1_F_DB750110	SVCLS1_F_DB750110	SVCLA2_F_DB750110	SVCLS2_F_DB750110	SVCLA3_F_DB750110	SVCLS3_F_DB750110		
SVCLA1_F_DB900110	SVCLS1_F_DB900110	SVCLA2_F_DB900110	SVCLS2_F_DB900110	SVCLA3_F_DB900110	SVCLS3_F_DB900110		

SWAGED TUBULAR RUNG

THICKNESSES: 2.50

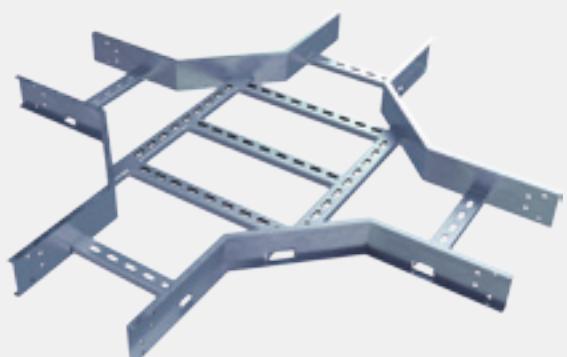
Item Code				Width mm	
NEMA CLASS 12A 110 X 20 X 2.5		NEMA CLASS 12A 138 X 20 X 2.5			
Side Height 110		Side Height 138			
SVCLS4_F_DB150110		SVCLS5_F_DB150110		SVCLS6_F_DB150110	150 mm
SVCLS4_F_DB225110		SVCLS5_F_DB225110		SVCLS6_F_DB225110	
SVCLS4_F_DB300110		SVCLS5_F_DB300110		SVCLS6_F_DB300110	
SVCLS4_F_DB450110		SVCLS5_F_DB450110		SVCLS6_F_DB450110	
SVCLS4_F_DB600110		SVCLS5_F_DB600110		SVCLS6_F_DB600110	
SVCLS4_F_DB750110		SVCLS5_F_DB750110		SVCLS6_F_DB750110	
SVCLS4_F_DB900110		SVCLS5_F_DB900110		SVCLS6_F_DB900110	

HORIZONTAL CROSS (INTERSECTION)

WELDED CORNERED

THICKNESSES: 2.00

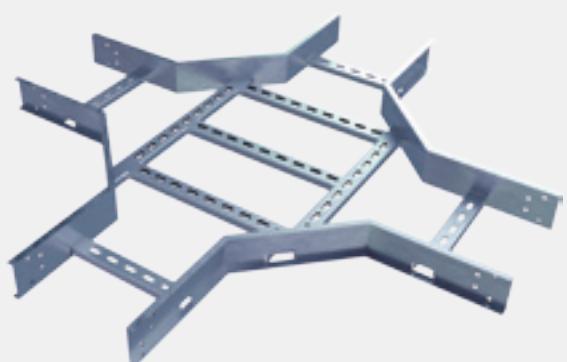
Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.0	NEMA CLASS 12A 138 X 20 X 2.0	NEMA CLASS 12A 162 X 20 X 2.0	
Side Height 110	Side Height 138	Side Height 162	
SVCLS4_F_HC150110	SVCLS4_F_HC150138	SVCLS4_F_HC150162	150 mm
SVCLS4_F_HC225110	SVCLS4_F_HC225138	SVCLS4_F_HC225162	225 mm
SVCLS4_F_HC300110	SVCLS4_F_HC300138	SVCLS4_F_HC300162	300 mm
SVCLS4_F_HC450110	SVCLS4_F_HC450138	SVCLS4_F_HC450162	450 mm
SVCLS4_F_HC600110	SVCLS4_F_HC600138	SVCLS4_F_HC600162	600 mm
SVCLS4_F_HC750110	SVCLS4_F_HC750138	SVCLS4_F_HC750162	750 mm
SVCLS4_F_HC900110	SVCLS4_F_HC900138	SVCLS4_F_HC900162	900 mm



WELDED CORNERED

THICKNESSES: 2.50

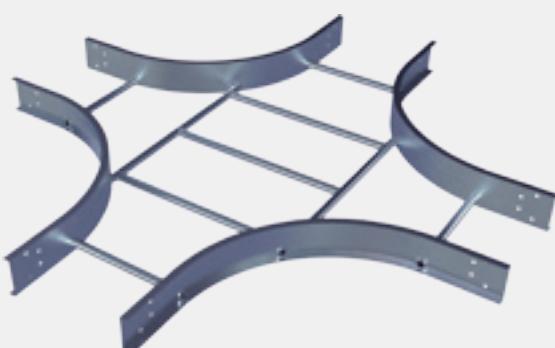
Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.5	NEMA CLASS 12A 138 X 20 X 2.5	NEMA CLASS 12A 162 X 20 X 2.5	
Side Height 110	Side Height 138	Side Height 162	
SVCLSS_F_HC150110	SVCLSS_F_HC150138	SVCLSS_F_HC150162	150 mm
SVCLSS_F_HC225110	SVCLSS_F_HC225138	SVCLSS_F_HC225162	225 mm
SVCLSS_F_HC300110	SVCLSS_F_HC300138	SVCLSS_F_HC300162	300 mm
SVCLSS_F_HC450110	SVCLSS_F_HC450138	SVCLSS_F_HC450162	450 mm
SVCLSS_F_HC600110	SVCLSS_F_HC600138	SVCLSS_F_HC600162	600 mm
SVCLSS_F_HC750110	SVCLSS_F_HC750138	SVCLSS_F_HC750162	750 mm
SVCLSS_F_HC900110	SVCLSS_F_HC900138	SVCLSS_F_HC900162	900 mm

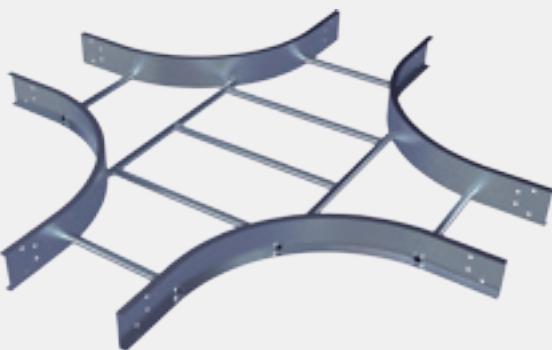


SWAGED TUBULAR RUNG

THICKNESSES: 2.00

Item Code						Width mm	
NEMA CLASS 12A 110 X 20 X 2.0		NEMA CLASS 12A 138 X 20 X 2.0		NEMA CLASS 12A 162 X 20 X 2.0			
Side Height 110		Side Height 138		Side Height 162			
Aluminum	Steel	Aluminum	Steel	Aluminum	Steel		
SVCLA1_F_IN150110	SVCLS1_F_IN150110	SVCLA2_F_IN150110	SVCLS2_F_IN150110	SVCLA3_F_IN150110	SVCLS3_F_IN150110	150 mm	
SVCLA1_F_IN225110	SVCLS1_F_IN225110	SVCLA2_F_IN225110	SVCLS2_F_IN225110	SVCLA3_F_IN225110	SVCLS3_F_IN225110	225 mm	
SVCLA1_F_IN300110	SVCLS1_F_IN300110	SVCLA2_F_IN300110	SVCLS2_F_IN300110	SVCLA3_F_IN300110	SVCLS3_F_IN300110	300 mm	
SVCLA1_F_IN450110	SVCLS1_F_IN450110	SVCLA2_F_IN450110	SVCLS2_F_IN450110	SVCLA3_F_IN450110	SVCLS3_F_IN450110	450 mm	
SVCLA1_F_IN600110	SVCLS1_F_IN600110	SVCLA2_F_IN600110	SVCLS2_F_IN600110	SVCLA3_F_IN600110	SVCLS3_F_IN600110	600 mm	
SVCLA1_F_IN750110	SVCLS1_F_IN750110	SVCLA2_F_IN750110	SVCLS2_F_IN750110	SVCLA3_F_IN750110	SVCLS3_F_IN750110	750 mm	
SVCLA1_F_IN900110	SVCLS1_F_IN900110	SVCLA2_F_IN900110	SVCLS2_F_IN900110	SVCLA3_F_IN900110	SVCLS3_F_IN900110	900 mm	





SWAGED TUBULAR RUNG

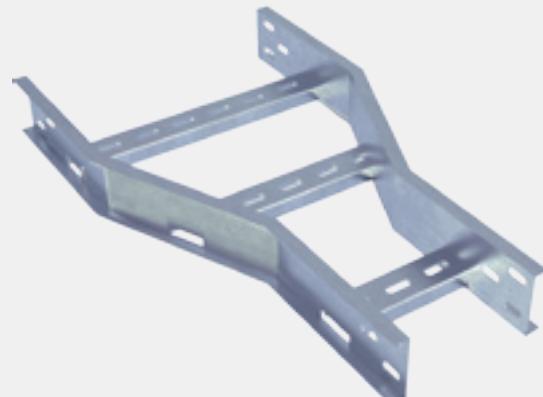
THICKNESSES: 2.50

Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.5	NEMA CLASS 12A 138 X 20 X 2.5	NEMA CLASS 12A 162 X 20 X 2.5	
Side Height 110	Side Height 138	Side Height 162	
SVCLS4_F_IN150110	SVCLS5_F_IN150110	SVCLS6_F_IN150110	150 mm
SVCLS4_F_IN225110	SVCLS5_F_IN225110	SVCLS6_F_IN225110	225 mm
SVCLS4_F_IN300110	SVCLS5_F_IN300110	SVCLS6_F_IN300110	300 mm
SVCLS4_F_IN450110	SVCLS5_F_IN450110	SVCLS6_F_IN450110	450 mm
SVCLS4_F_IN600110	SVCLS5_F_IN600110	SVCLS6_F_IN600110	600 mm
SVCLS4_F_IN750110	SVCLS5_F_IN750110	SVCLS6_F_IN750110	750 mm
SVCLS4_F_IN900110	SVCLS5_F_IN900110	SVCLS6_F_IN900110	900 mm

STRAIGHT CENTRAL REDUCERS

THICKNESSES: 2.00

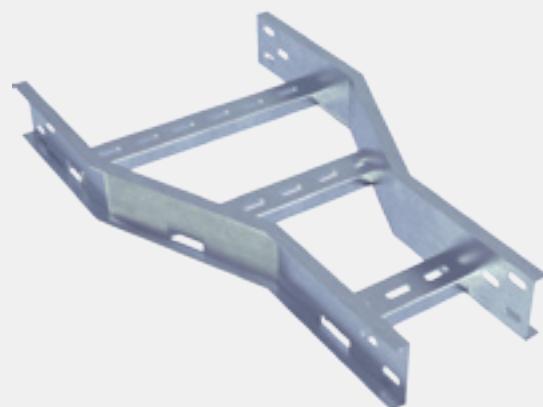
Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.0	NEMA CLASS 12A 138 X 20 X 2.0	NEMA CLASS 12A 162 X 20 X 2.0	
Side Height 110	Side Height 138	Side Height 162	
SVCLS4_F_SR150110	SVCLS4_F_SR150138	SVCLS4_F_SR150162	150 mm
SVCLS4_F_SR225110	SVCLS4_F_SR225138	SVCLS4_F_SR225162	225 mm
SVCLS4_F_SR300110	SVCLS4_F_SR300138	SVCLS4_F_SR300162	300 mm
SVCLS4_F_SR450110	SVCLS4_F_SR450138	SVCLS4_F_SR450162	450 mm
SVCLS4_F_SR600110	SVCLS4_F_SR600138	SVCLS4_F_SR600162	600 mm
SVCLS4_F_SR750110	SVCLS4_F_SR750138	SVCLS4_F_SR750162	750 mm
SVCLS4_F_SR900110	SVCLS4_F_SR900138	SVCLS4_F_SR900162	900 mm



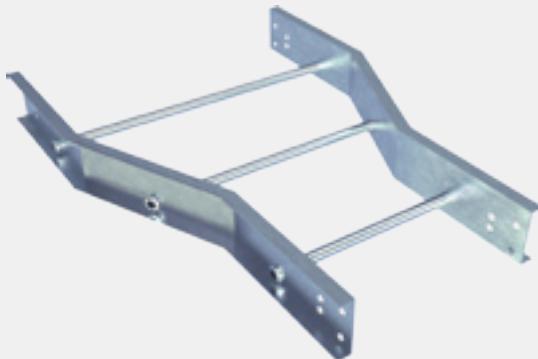
WELDED CORNERED

THICKNESSES: 2.50

Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.5	NEMA CLASS 12A 138 X 20 X 2.5	NEMA CLASS 12A 162 X 20 X 2.5	
Side Height 110	Side Height 138	Side Height 162	
SVCLS5_F_SR150110	SVCLS5_F_SR150138	SVCLS5_F_SR150162	150 mm
SVCLS5_F_SR225110	SVCLS5_F_SR225138	SVCLS5_F_SR225162	225 mm
SVCLS5_F_SR300110	SVCLS5_F_SR300138	SVCLS5_F_SR300162	300 mm
SVCLS5_F_SR450110	SVCLS5_F_SR450138	SVCLS5_F_SR450162	450 mm
SVCLS5_F_SR600110	SVCLS5_F_SR600138	SVCLS5_F_SR600162	600 mm
SVCLS5_F_SR750110	SVCLS5_F_SR750138	SVCLS5_F_SR750162	750 mm
SVCLS5_F_SR900110	SVCLS5_F_SR900138	SVCLS5_F_SR900162	900 mm



STRAIGHT CENTRAL REDUCERS



SWAGED TUBULAR RUNG

THICKNESSES: 2.00

Item Code						Width mm	
NEMA CLASS 12A 110 X 20 X 2.0		NEMA CLASS 12A 138 X 20 X 2.0		NEMA CLASS 12A 162 X 20 X 2.0			
Side Height 110		Side Height 138		Side Height 162			
Aluminum	Steel	Aluminum	Steel	Aluminum	Steel		
SVCLA1_F_CR150110	SVCLS1_F_CR150110	SVCLA2_F_CR150110	SVCLS2_F_CR150110	SVCLA3_F_CR150110	SVCLS3_F_CR150110	150 mm	
SVCLA1_F_CR225110	SVCLS1_F_CR225110	SVCLA2_F_CR225110	SVCLS2_F_CR225110	SVCLA3_F_CR225110	SVCLS3_F_CR225110	225 mm	
SVCLA1_F_CR300110	SVCLS1_F_CR300110	SVCLA2_F_CR300110	SVCLS2_F_CR300110	SVCLA3_F_CR300110	SVCLS3_F_CR300110	300 mm	
SVCLA1_F_CR450110	SVCLS1_F_CR450110	SVCLA2_F_CR450110	SVCLS2_F_CR450110	SVCLA3_F_CR450110	SVCLS3_F_CR450110	450 mm	
SVCLA1_F_CR600110	SVCLS1_F_CR600110	SVCLA2_F_CR600110	SVCLS2_F_CR600110	SVCLA3_F_CR600110	SVCLS3_F_CR600110	600 mm	
SVCLA1_F_CR750110	SVCLS1_F_CR750110	SVCLA2_F_CR750110	SVCLS2_F_CR750110	SVCLA3_F_CR750110	SVCLS3_F_CR750110	750 mm	
SVCLA1_F_CR900110	SVCLS1_F_CR900110	SVCLA2_F_CR900110	SVCLS2_F_CR900110	SVCLA3_F_CR900110	SVCLS3_F_CR900110	900 mm	

SWAGED TUBULAR RUNG

THICKNESSES: 2.50

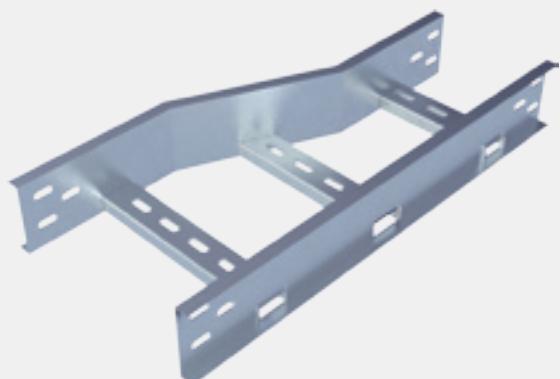
Item Code				Width mm	
NEMA CLASS 12A 110 X 20 X 2.5		NEMA CLASS 12A 138 X 20 X 2.5			
Side Height 110		Side Height 138			
SVCLS4_F_CR150110		SVCLS5_F_CR150110		SVCLS6_F_CR150110	
SVCLS4_F_CR225110		SVCLS5_F_CR225110		SVCLS6_F_CR225110	
SVCLS4_F_CR300110		SVCLS5_F_CR300110		SVCLS6_F_CR300110	
SVCLS4_F_CR450110		SVCLS5_F_CR450110		SVCLS6_F_CR450110	
SVCLS4_F_CR600110		SVCLS5_F_CR600110		SVCLS6_F_CR600110	
SVCLS4_F_CR750110		SVCLS5_F_CR750110		SVCLS6_F_CR750110	
SVCLS4_F_CR900110		SVCLS5_F_CR900110		SVCLS6_F_CR900110	

RIGHT HAND REDUCERS

WELDED CORNERED

THICKNESSES: 2.00

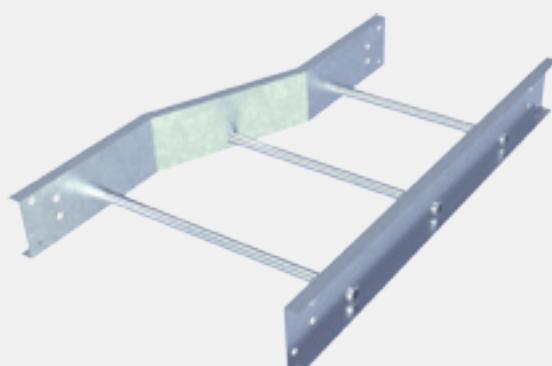
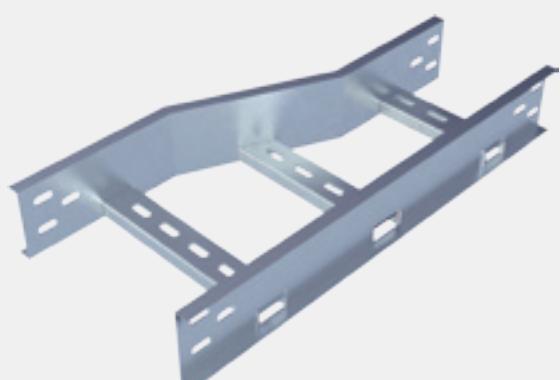
Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.0	NEMA CLASS 12A 138 X 20 X 2.0	NEMA CLASS 12A 162 X 20 X 2.0	
Side Height 110	Side Height 138	Side Height 162	
SVCLS4_F_RH150110	SVCLS4_F_RH150138	SVCLS4_F_RH150162	150 mm
SVCLS4_F_RH225110	SVCLS4_F_RH225138	SVCLS4_F_RH225162	225 mm
SVCLS4_F_RH300110	SVCLS4_F_RH300138	SVCLS4_F_RH300162	300 mm
SVCLS4_F_RH450110	SVCLS4_F_RH450138	SVCLS4_F_RH450162	450 mm
SVCLS4_F_RH600110	SVCLS4_F_RH600138	SVCLS4_F_RH600162	600 mm
SVCLS4_F_RH750110	SVCLS4_F_RH750138	SVCLS4_F_RH750162	750 mm
SVCLS4_F_RH900110	SVCLS4_F_RH900138	SVCLS4_F_RH900162	900 mm



WELDED CORNERED

THICKNESSES: 2.50

Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.5	NEMA CLASS 12A 138 X 20 X 2.5	NEMA CLASS 12A 162 X 20 X 2.5	
Side Height 110	Side Height 138	Side Height 162	
SVCL5_F_RH150110	SVCL5_F_RH150138	SVCL5_F_RH150162	150 mm
SVCL5_F_RH225110	SVCL5_F_RH225138	SVCL5_F_RH225162	225 mm
SVCL5_F_RH300110	SVCL5_F_RH300138	SVCL5_F_RH300162	300 mm
SVCL5_F_RH450110	SVCL5_F_RH450138	SVCL5_F_RH450162	450 mm
SVCL5_F_RH600110	SVCL5_F_RH600138	SVCL5_F_RH600162	600 mm
SVCL5_F_RH750110	SVCL5_F_RH750138	SVCL5_F_RH750162	750 mm
SVCL5_F_RH900110	SVCL5_F_RH900138	SVCL5_F_RH900162	900 mm

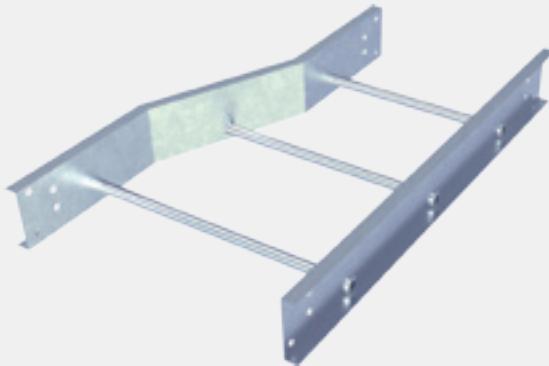


SWAGED TUBULAR RUNG

THICKNESSES: 2.00

Item Code						Width mm	
NEMA CLASS 12A 110 X 20 X 2.0		NEMA CLASS 12A 138 X 20 X 2.0		NEMA CLASS 12A 162 X 20 X 2.0			
Side Height 110		Side Height 138		Side Height 162			
Aluminum	Steel	Aluminum	Steel	Aluminum	Steel		
SVCLA1_F_RR150110	SVCLS1_F_RR150110	SVCLA2_F_RR150110	SVCLS2_F_RR150110	SVCLA3_F_RR150110	SVCLS3_F_RR150110	150 mm	
SVCLA1_F_RR225110	SVCLS1_F_RR225110	SVCLA2_F_RR225110	SVCLS2_F_RR225110	SVCLA3_F_RR225110	SVCLS3_F_RR225110	225 mm	
SVCLA1_F_RR300110	SVCLS1_F_RR300110	SVCLA2_F_RR300110	SVCLS2_F_RR300110	SVCLA3_F_RR300110	SVCLS3_F_RR300110	300 mm	
SVCLA1_F_RR450110	SVCLS1_F_RR450110	SVCLA2_F_RR450110	SVCLS2_F_RR450110	SVCLA3_F_RR450110	SVCLS3_F_RR450110	450 mm	
SVCLA1_F_RR600110	SVCLS1_F_RR600110	SVCLA2_F_RR600110	SVCLS2_F_RR600110	SVCLA3_F_RR600110	SVCLS3_F_RR600110	600 mm	
SVCLA1_F_RR750110	SVCLS1_F_RR750110	SVCLA2_F_RR750110	SVCLS2_F_RR750110	SVCLA3_F_RR750110	SVCLS3_F_RR750110	750 mm	
SVCLA1_F_RR900110	SVCLS1_F_RR900110	SVCLA2_F_RR900110	SVCLS2_F_RR900110	SVCLA3_F_RR900110	SVCLS3_F_RR900110	900 mm	

RIGHT HAND REDUCERS



SWAGED TUBULAR RUNG

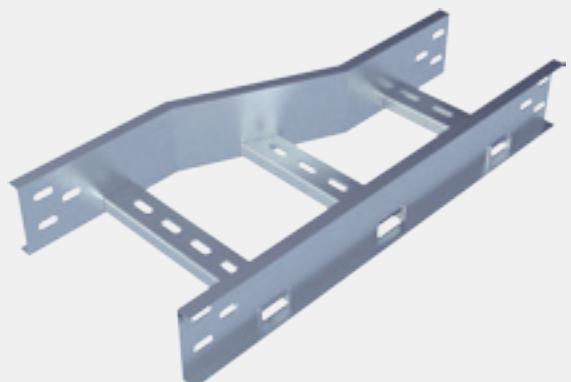
THICKNESSES: 2.50

Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.5	NEMA CLASS 12A 138 X 20 X 2.5	NEMA CLASS 12A 162 X 20 X 2.5	
Side Height 110	Side Height 138	Side Height 162	
SVCLS4_F_RR150110	SVCLS5_F_RR150110	SVCLS6_F_RR150110	150 mm
SVCLS4_F_RR225110	SVCLS5_F_RR225110	SVCLS6_F_RR225110	225 mm
SVCLS4_F_RR300110	SVCLS5_F_RR300110	SVCLS6_F_RR300110	300 mm
SVCLS4_F_RR450110	SVCLS5_F_RR450110	SVCLS6_F_RR450110	450 mm
SVCLS4_F_RR600110	SVCLS5_F_RR600110	SVCLS6_F_RR600110	600 mm
SVCLS4_F_RR750110	SVCLS5_F_RR750110	SVCLS6_F_RR750110	750 mm
SVCLS4_F_RR900110	SVCLS5_F_RR900110	SVCLS6_F_RR900110	900 mm

LEFT HAND REDUCERS

THICKNESSES: 2.00

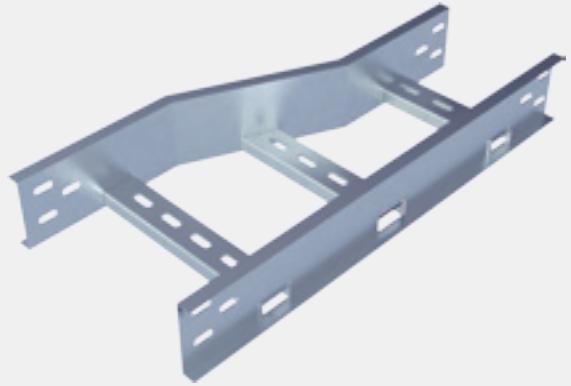
Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.0	NEMA CLASS 12A 138 X 20 X 2.0	NEMA CLASS 12A 162 X 20 X 2.0	
Side Height 110	Side Height 138	Side Height 162	
SVCLS4_F_LH150110	SVCLS4_F_LH150138	SVCLS4_F_LH150162	150 mm
SVCLS4_F_LH225110	SVCLS4_F_LH225138	SVCLS4_F_LH225162	225 mm
SVCLS4_F_LH300110	SVCLS4_F_LH300138	SVCLS4_F_LH300162	300 mm
SVCLS4_F_LH450110	SVCLS4_F_LH450138	SVCLS4_F_LH450162	450 mm
SVCLS4_F_LH600110	SVCLS4_F_LH600138	SVCLS4_F_LH600162	600 mm
SVCLS4_F_LH750110	SVCLS4_F_LH750138	SVCLS4_F_LH750162	750 mm
SVCLS4_F_LH900110	SVCLS4_F_LH900138	SVCLS4_F_LH900162	900 mm



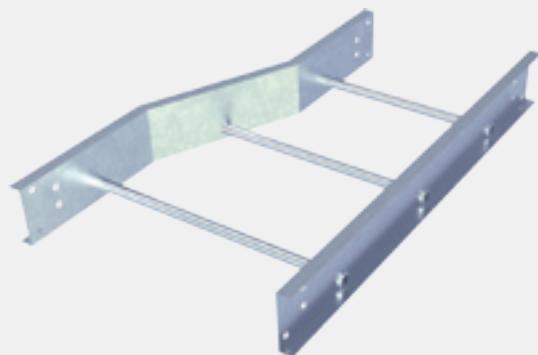
WELDED CORNERED

THICKNESSES: 2.50

Item Code			Width mm
NEMA CLASS 12A 110 X 20 X 2.5	NEMA CLASS 12A 138 X 20 X 2.5	NEMA CLASS 12A 162 X 20 X 2.5	
Side Height 110	Side Height 138	Side Height 162	
SVCLS5_F_LH150110	SVCLS5_F_LH150138	SVCLS5_F_LH150162	150 mm
SVCLS5_F_LH225110	SVCLS5_F_LH225138	SVCLS5_F_LH225162	225 mm
SVCLS5_F_LH300110	SVCLS5_F_LH300138	SVCLS5_F_LH300162	300 mm
SVCLS5_F_LH450110	SVCLS5_F_LH450138	SVCLS5_F_LH450162	450 mm
SVCLS5_F_LH600110	SVCLS5_F_LH600138	SVCLS5_F_LH600162	600 mm
SVCLS5_F_LH750110	SVCLS5_F_LH750138	SVCLS5_F_LH750162	750 mm
SVCLS5_F_LH900110	SVCLS5_F_LH900138	SVCLS5_F_LH900162	900 mm



LEFT HAND REDUCERS



SWAGED TUBULAR RUNG

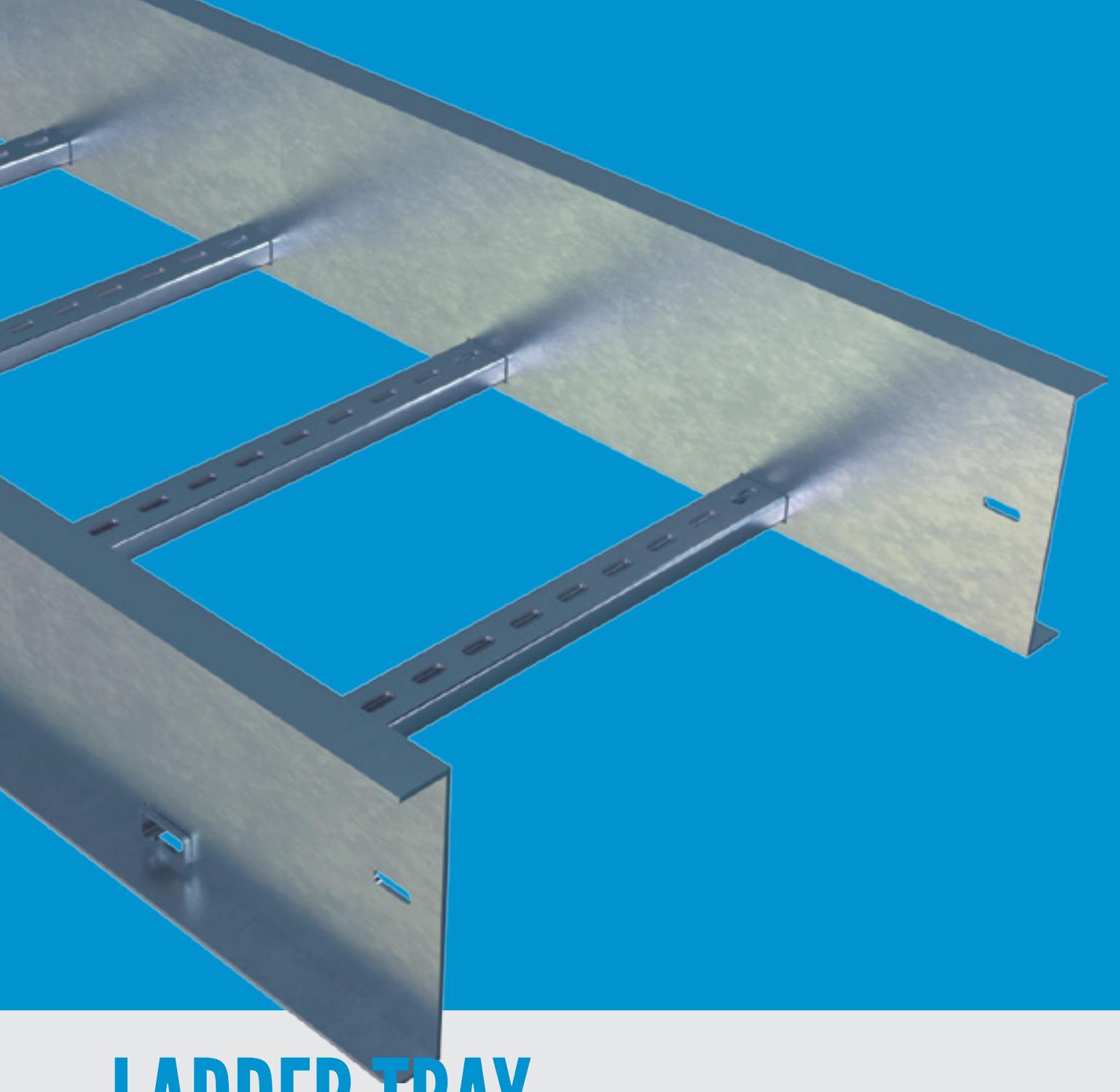
THICKNESSES: 2.00

Item Code						Width mm	
NEMA CLASS 12A 110 X 20 X 2.0		NEMA CLASS 12A 138 X 20 X 2.0		NEMA CLASS 12A 162 X 20 X 2.0			
Side Height 110		Side Height 138		Side Height 162			
Aluminum	Steel	Aluminum	Steel	Aluminum	Steel	150 mm	
SVCLA1_F_LR150110	SVCLS1_F_LR150110	SVCLA2_F_LR150110	SVCLS2_F_LR150110	SVCLA3_F_LR150110	SVCLS3_F_LR150110		
SVCLA1_F_LR225110	SVCLS1_F_LR225110	SVCLA2_F_LR225110	SVCLS2_F_LR225110	SVCLA3_F_LR225110	SVCLS3_F_LR225110		
SVCLA1_F_LR300110	SVCLS1_F_LR300110	SVCLA2_F_LR300110	SVCLS2_F_LR300110	SVCLA3_F_LR300110	SVCLS3_F_LR300110		
SVCLA1_F_LR450110	SVCLS1_F_LR450110	SVCLA2_F_LR450110	SVCLS2_F_LR450110	SVCLA3_F_LR450110	SVCLS3_F_LR450110		
SVCLA1_F_LR600110	SVCLS1_F_LR600110	SVCLA2_F_LR600110	SVCLS2_F_LR600110	SVCLA3_F_LR600110	SVCLS3_F_LR600110		
SVCLA1_F_LR750110	SVCLS1_F_LR750110	SVCLA2_F_LR750110	SVCLS2_F_LR750110	SVCLA3_F_LR750110	SVCLS3_F_LR750110		
SVCLA1_F_LR900110	SVCLS1_F_LR900110	SVCLA2_F_LR900110	SVCLS2_F_LR900110	SVCLA3_F_LR900110	SVCLS3_F_LR900110		

SWAGED TUBULAR RUNG

THICKNESSES: 2.50

Item Code						Width mm	
NEMA CLASS 12A 110 X 20 X 2.5		NEMA CLASS 12A 138 X 20 X 2.5		NEMA CLASS 12A 162 X 20 X 2.5			
Side Height 110		Side Height 138		Side Height 162			
SVCLS4_F_LR150110		SVCLS5_F_LR150110		SVCLS6_F_LR150110		150 mm	
SVCLS4_F_LR225110		SVCLS5_F_LR225110		SVCLS6_F_LR225110		225 mm	
SVCLS4_F_LR300110		SVCLS5_F_LR300110		SVCLS6_F_LR300110		300 mm	
SVCLS4_F_LR450110		SVCLS5_F_LR450110		SVCLS6_F_LR450110		450 mm	
SVCLS4_F_LR600110		SVCLS5_F_LR600110		SVCLS6_F_LR600110		600 mm	
SVCLS4_F_LR750110		SVCLS5_F_LR750110		SVCLS6_F_LR750110		750 mm	
SVCLS4_F_LR900110		SVCLS5_F_LR900110		SVCLS6_F_LR900110		900 mm	



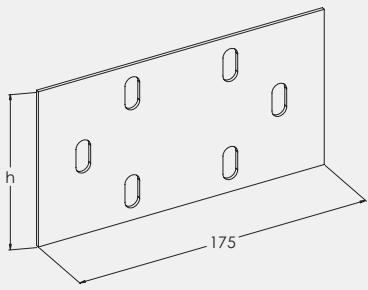
LADDER TRAY ACCESSORIES



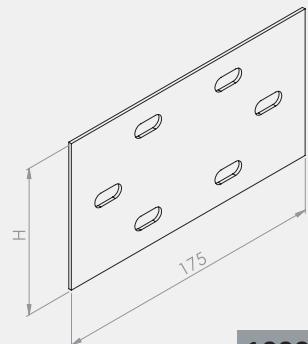
www.sfsp-ikk.com

CONNECTORS

Straight connector / 1000 - 1000 R



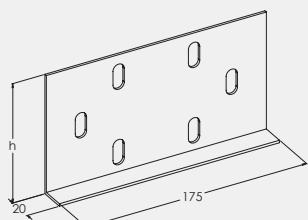
1000



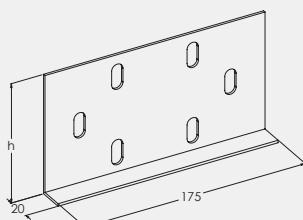
1000R

Order Example		
Item	(h)	(t)
1000	050	2
1000R	100	2

Angle connector / 1010 - 1010 R



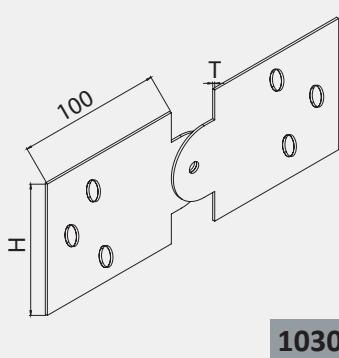
1010



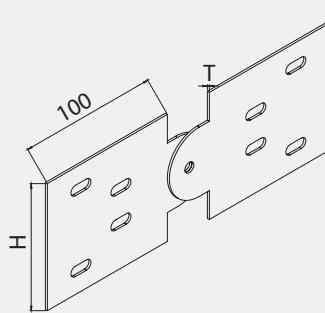
1010R

Order Example		
Item	(h)	(t)
1010	050	2
1010R	100	2

Adjustable Vertical Connector 1030 / 1030 R



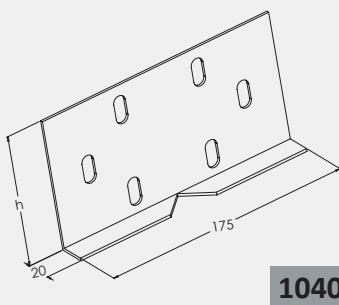
1030



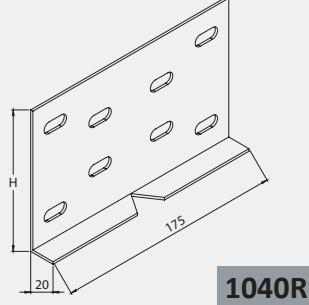
1030R

Order Example		
Item	(h)	(t)
1030	050	2
1030R	100	2

Adjustable Horizontal Connector 1040 / 1040 R



1040

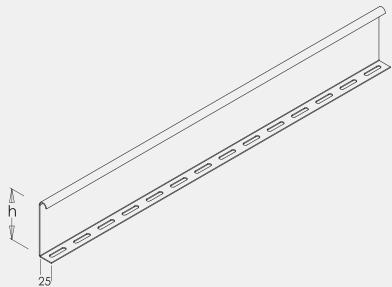


1040R

Order Example		
Item	(h)	(t)
1040	050	2
1040R	100	2

Barrier Strip 1070

For Cable Trays

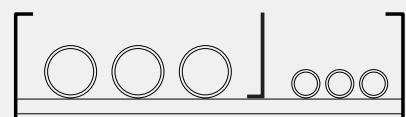


1070

For Cable Ladders



Available Lengths: 2440 / 3000 mm



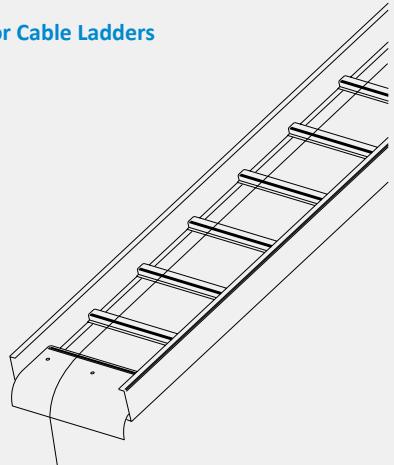
Available Lengths: 2440 / 3000 mm

Drop-out plate / 1110

For Cable Trays

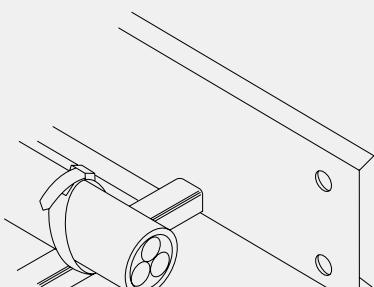
1110

For Cable Ladders



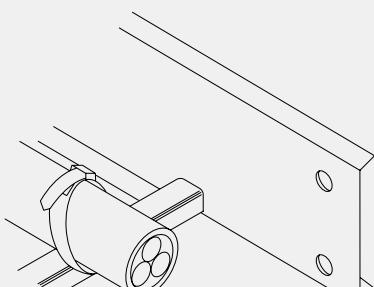
Cable Tie / 1120

For Cable Trays



1120

For Cable Ladders



1120

 ELEMATIC

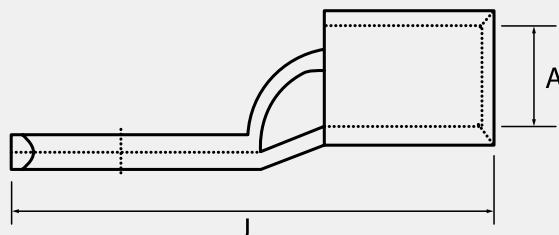
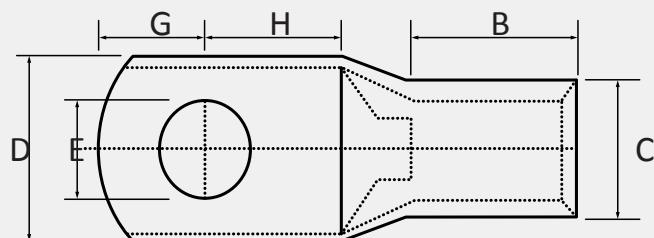
Nylon ties provide easy attachment of Ladder
Cable Tray rungs



Crimping Type Copper / 2100

Tubular Cable Terminal Ends

2100



Cable mm	Stud Hole	Dimensions (mm)						
		A	C	D	G	H	B	J
1.5	6.5	1.8	3.7	10	4	6	6	18
2.5	6.5	2.4	4	10	5	6	8	21
	8.4	2.4	4.2	12	6	9	8	26
4	6.5	3.1	4.8	10	5	6	8	21
	8.4	3.1	5.0	12	6	9	8	26
6	6.5	3.8	5.5	10	5	6	10	24
	8.4	3.8	5.5	12	6	9	10	28
10	6.5	4.5	6.2	11	6	7	10	26
	8.4	4.5	6.2	12	6	9	10	28
16	6.5	5.4	7.1	12	7	7	12	30
	8.4	5.4	7.1	12	7	7	12	30
20	8.4	6	7.7	12	7	7	12	32
25	6.5	6.8	8.8	13	7	7	12	30
	8.4	6.8	8.8	13	7	7	12	30

Tinned Copper Flexible Braids / 2200

Crimped with Connectors/ Terminals

2200



HFT- crimped with lugs

Size, mm	Dimensions (mm)			Current rating AMP
	J	E1	E2	
4	50	6	6	50
	100	6	6	50
	150	6	6	50
	200	6	6	50
10	50	6	6	90
	100	6	6	90
	150	6	6	90
	200	6	6	90
16	100	8.5	8.5	125
	150	8.5	8.5	125
	200	8.5	8.5	125
	250	8.5	8.5	125
	300	8.5	8.5	125
25	100	10	10	160
	150	10	10	160
	200	10	10	160
	250	10	10	160
	300	10	10	160

COVERS

Functions

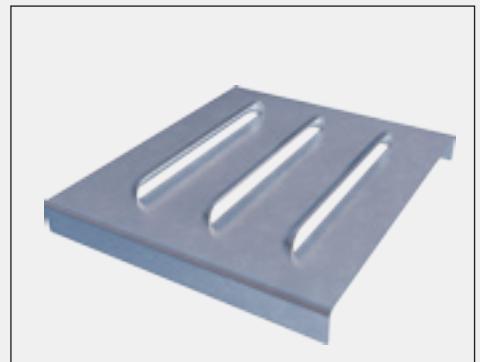
Ladder Cable Tray covers shall be considered for any of the following purposes:

- Protection from falling objects or debris, as may occur beneath personnel walkways.
- Shielding from ultraviolet rays of the sun and guarding against other weathering elements.
- Minimizing accumulation of foreign contaminants such as ash or other industrial deposits.
- Protection of cables and personnel where a riser tray penetrates a floor or grating.

Solid Cover / 2000



Ventilated Cover / 2010



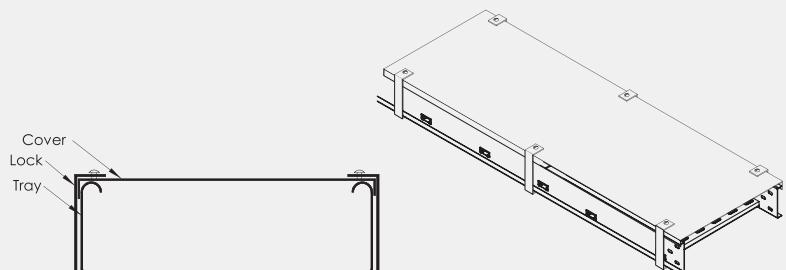
Covers Side Height Types :

- Solid without flange - (SOF)
- Solid with flange - (SWF)
- Ventilated without flange - (VOF)
- Ventilated with flange - (VWF)

Width (mm)	Order Example			
	Item	Type	(W)	(t)
2000	SWF	050	2	50

- Cable covers are supplied with or without a 15 mm down turned flange.
- Straight section covers are furnished 3000 mm long. All fitting covers are furnished in solid design only.

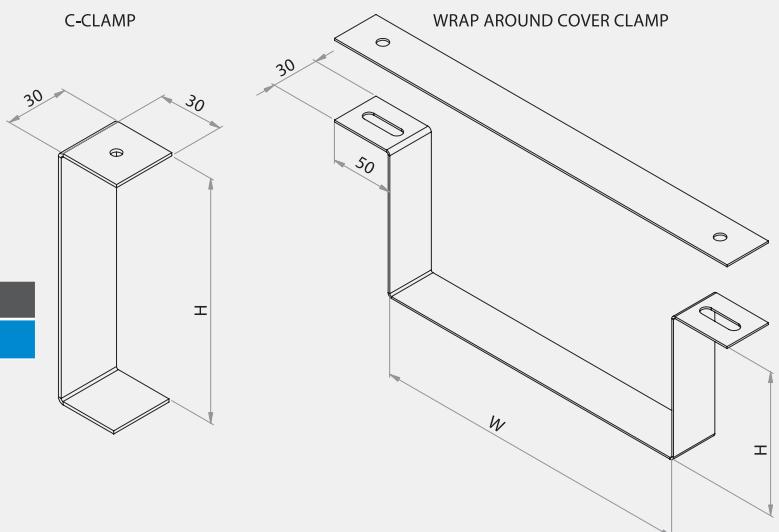
Ladder Cable Tray Covers with Locking Clamp 2100



Covers' Side Height Types :

- Solid without flange - (VOF)
- Solid with flange - (VWF)

Width (mm)	Order Example			
	Item	(W)	(t)	
50	2100	050	2	



FRAMING SYSTEMS

ASTM F436

Washers (SRW) | DIN 125 | ASTM F436

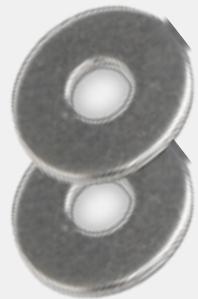
Zinc Plated	Stainless Steel	D (mm)	d (mm)	S (mm)
M6	M6	12	6.4	1.6
M8	M8	16	8.4	1.6
M10	M10	21	10.5	2
M12	M12	24	13	2.5
M16	M16	30	17	3
M18	M18	34	19	3.2
M20	M20	39	20.5	3.6



Round Washers DIN 440, DIN 9021

Washers (SRW) | DIN 440 | DIN 9021

DIN	Zinc Plated	Stain-less Steel	D (mm)	d (mm)	S (mm)
440	M6		22	6.6	2
9021	M8	M8	24	8.4	2
9021	M10	M10	30	10.5	2.5
440	M12		45	13.5	4
9021	M12	M12	37	13	3
9021	M16	M16	50	17	3



Square Washers SSW

Square Washers (SSW)

H.D. Galvanized Bolt	Stainless Steel Bolt	a x b x d (mm)	SSW 40/40 for all channels 41/21 Series	SSW 41/41 for all channels 41/41 Series
M8	M10	40 x 40 x (4-5-6)	a b d	a b c
M10	M12	40 x 40 x (4-5-6)		
M12	M16	40 x 40 x (4-5-6)		

Round Head Machine Screws

Round Head (SRH) | DIN 7985

Zinc Plated Thread	Length (mm)	d (mm)
M6	30-40	6.0
M8	30-40	8.0
M10	20-60	10.0



Fully Threaded Rods Grade 4.6 DIN 975

ASTM A 36, A193

Threaded Rod (STR) - DIN 975 - ASTM A36

Zinc Plated Thread	Length (mm)	Load cap. (kN)
M6	2000/3000	2.2
M8	2000/3000	4.0
M10	2000/3000	6.4
M12	2000/3000	12.9
M16	2000/3000	17.3
M18	2000	22.0
M20	2000	27.0



Coupler Sleeves Rounded

Coupler Sleeves (SCS)

Electro-plated Thread	Stain-less Steel Thread	D (mm)	L (mm)	Load Capacity (kN)
M6	M6	10/10	15	2.2
M8	M8	12/14	20	4.0
M10	M10	13/16	25	6.4
M12	M12	16/20	30	9.3
M16	M16	21/25	40	17.3
M20	M20	26/32	50	27.0



Roofing Bolts

Roofing Bolts (SRB)

- Materials : low carbon steel , carbon steel
- Steel S235 , grade 4.6 , 4.8 and 8.8
- Surfaces : plain , black and zinc plated
- Length = X (mm) – Y (mm)

Thread Size	M4 x - y (mm)	M5 x - y (mm)	M6 x - y (mm)	M8 x - y (mm)
Length	10 - 50	10 - 80	12 - 120	16 - 150



Carriage Bolts with Nut Below Head DIN 603

Carriage Bolts (STC)



Zinc Plated	H.D. Galvanized Grade 4.6	Head	Head	Square Width	Square Depth
(E)	(E)	(A) mm	(H) mm	(O) mm	(P) mm
M5	M5	12.0	3.0	5.0	3.2
M6	M6	15.1	3.70	6.40	4.0
M8	M8	18.3	4.50	8.23	4.75
M10	M10	21.44	5.30	9.86	5.56
M16	M16	34.14	8.74	16.3	8.74

Hexagon Nuts DIN 934, DIN EN 24032, ASTM A 563

Hexagon nut (SHN) | DIN 934 or ISO 4032
(= DIN EN 24032) | ASTM A563

Zinc Plated Thread	Stainless Steel Thread	S/m DIN (mm)	S/m ISO (mm)	e (mm)
M6	M6	10/5	10/6	11.5
M8	M8	13/6.5	13/7.5	15.0
M10	M10	17/8	16/9.5	19.6
M12	M12	19/10	18/12	21.9
M16	M16	24/13	24/15.5	27.7
M18	M18	26/16	26/16	22.0
M20	M20	30/18	29/20.5	27.0



Hexagonal Rod Coupler Grade 8.8 ASTM a 563

Hexagonal Rod Coupler with view hole (SHR)

Electro-plated Thread	Stainless Steel Thread	D (mm)	L (mm)	Load capacity (kN)
(mm)	(mm)	(mm)	(mm)	(kN)
M10	M10	13	40	6.4
M12	M12	17	40	9.3
M16	M16	22	50	17.3
M 18	M 18	23	60	22.0
M 20	M 20	25	70	27.0
M18	M18	26/16	26/16	22.0
M20	M20	30/18	29/20.5	27.0

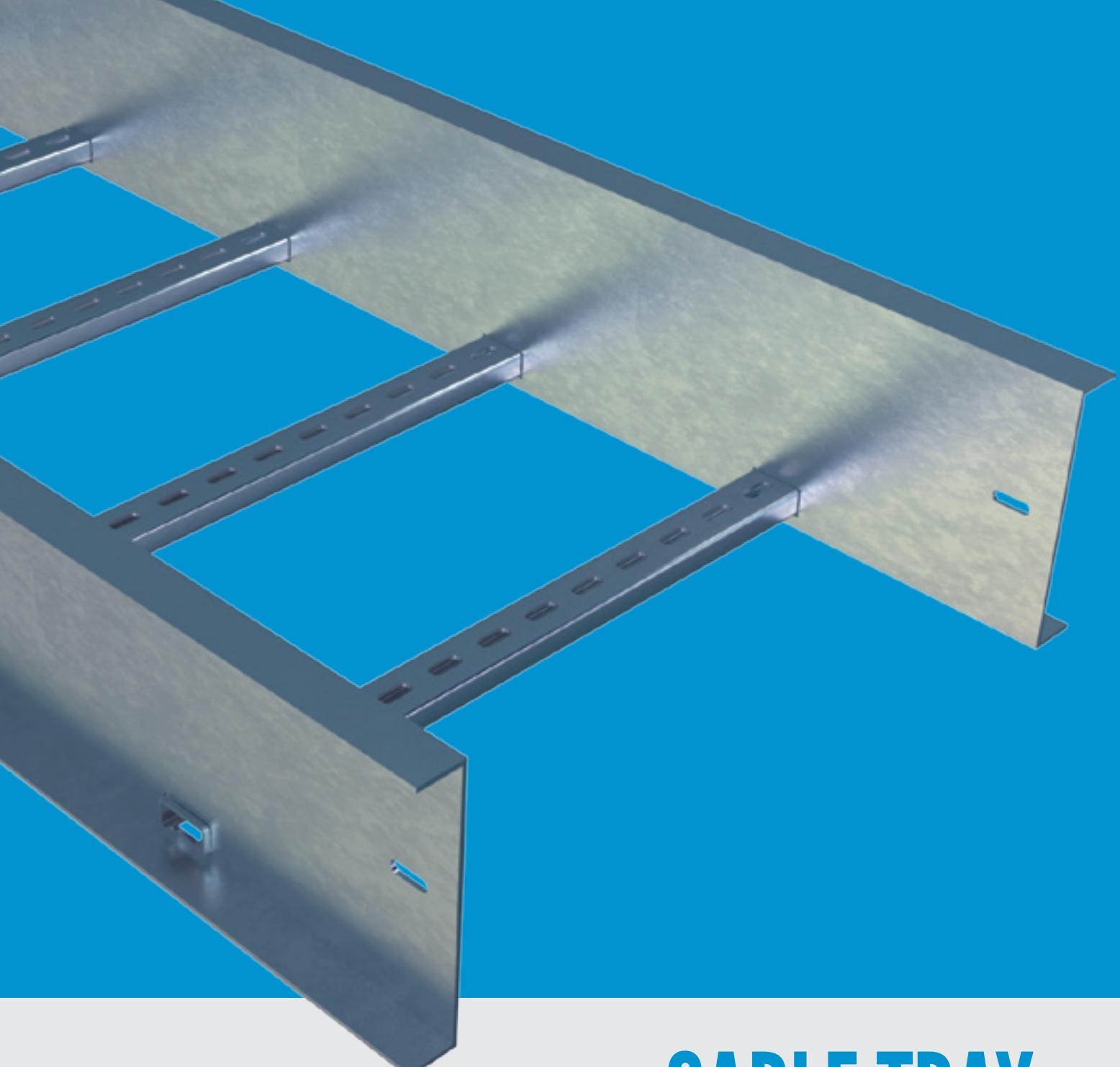


DIN 933, DIN 24017, ASTM A307, A449

Hex Head Bolt (SHB) | DIN 933 or EN 24017 ASTM A307, A449 (without nut)

Zinc Plated Dimension	Stainless Steel Dimension	S DIN (mm)	S EN (mm)	M 16 x 40	M 16 x 40	24	24
		(mm)	(mm)	M 16 x 60	M 16 x 60		
M 6 x 12		10	10	M 16 x 90	M 16 x 90		
M 6 x 25				M 18 x 40	M 18 x 40		
M 8 x 25	M 8 x 25	13	13	M 18 x 50	M 18 x 50	27	26
M 8 x 40				M 18 x 60	M 18 x 60		
M 10 x 20				M 18 x 80	M 18 x 80		
M 10 x 30	M 10 x 30			M 20 x 40	M 20 x 40	32	32
M 10 x 45	M 10 x 45	17	16	M 20 x 50	M 20 x 50		
M 10 x 60				M 20 x 60	M 20 x 60		
M 10 x 70				M 20 x 80	M 20 x 80		
M 12 x 22							
M 12 x 25	M 12 x 25						
M 12 x 30	M 12 x 30						
M 12 x 40	M 12 x 40	19	18				
M 12 x 50							
M 12 x 60	M 12 x 60						
M 12 x 80	M 12 x 80						
M 12 x 90							





CABLE TRAY SUPPORT SYSTEM



www.sfsp-ikk.com

Channel

SFSP's metal framing channel is cold formed on modern rolling machines from low carbon steel manufactured according to BS 6946:1988. A continuous slot provides the ability to make attachments at any point.

Finishes

Standard Finishes: Pre-Galvanized finish (ASTM A653M coating G90 and G60). Hot Dip Galvanized after fabrication (ASTM A123 or BS EN ISO1461:2009). Other custom coatings are available upon request.

Lengths

Standard length: 3000mm with \pm 3.2mm length tolerance.

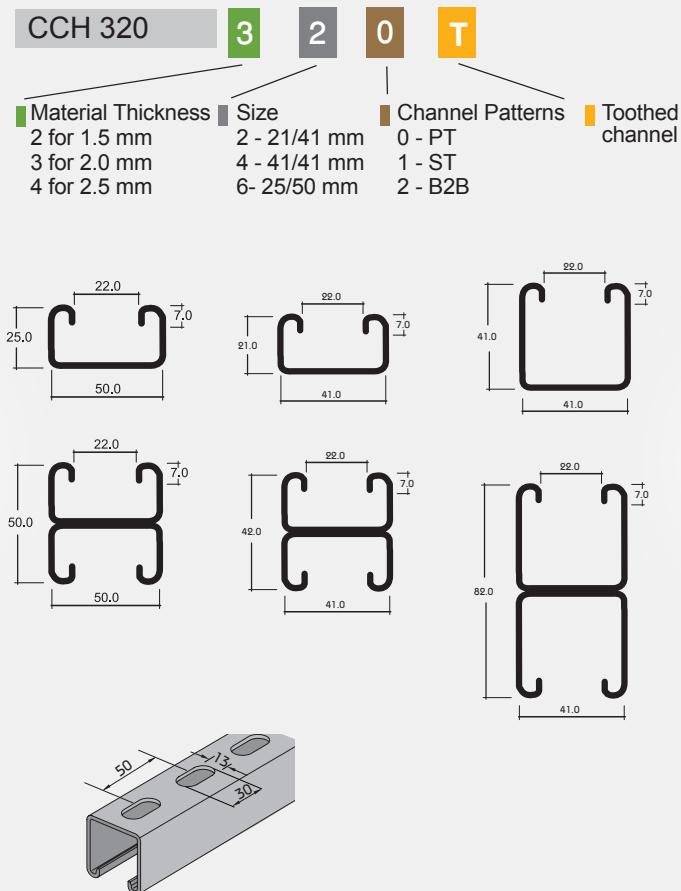
Custom lengths available upon request.

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

For Toothed Channel add "T" after the Part no. ex: CCH-220T



CHANNEL HOLE PATTERNS

PT Type Channel

Part No	Thick. mm.	Height "H"
CCH-220	1.5	21.0
CCH-240	1.5	41.0
CCH-260	1.5	25.0
CCH-320	2.0	21.0
CCH-340	2.0	41.0
CCH-360	2.0	25.0
CCH-420	2.5	21.0
CCH-440	2.5	41.0
CCH-460	2.5	25.0

PT Plain Type



ST Type Channel

Part No	Thick. mm.	Height "H"
CCH-221	1.5	21.0
CCH-241	1.5	41.0
CCH-261	1.5	25.0
CCH-321	2.0	21.0
CCH-341	2.0	41.0
CCH-361	2.0	25.0
CCH-421	2.5	21.0
CCH-441	2.5	41.0
CCH-461	2.5	25.0

ST Slotted Type



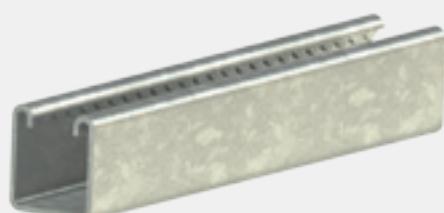
B2B Type Channel

Part No	Thick. mm.	Height "H"
CCH-222	1.5	42.0
CCH-242	1.5	82.0
CCH-262	1.5	50.0
CCH-322	2.0	42.0
CCH-342	2.0	82.0
CCH-362	2.0	50.0
CCH-422	2.5	42.0
CCH-442	2.5	82.0
CCH-462	2.5	50.0

B2B Type



Toothed channel type

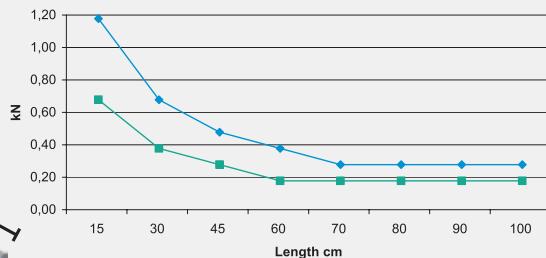
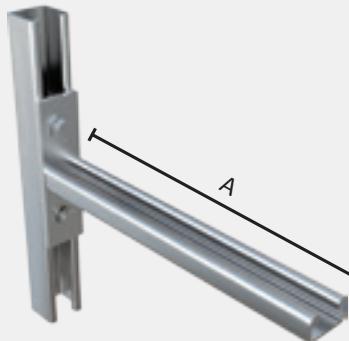


For Toothed Channel add "T" after the Part no. ex: CCH-220T

CANTILEVER ARM BRACKET

Cantilever Arm Brackets - SCA

CCH421 41x21x2.5

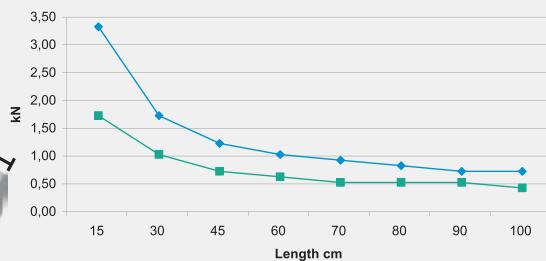
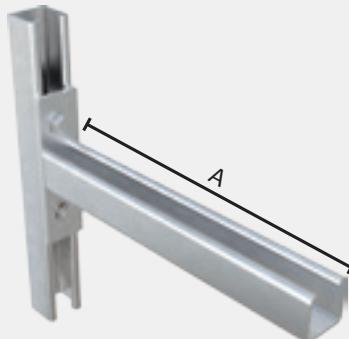


Length	Allowable Load		
	A (mm)	F ₁ * (kN)	F ₂ * (kN)
150	1.10	0.60	3.10
300	0.60	0.30	3.10
450	0.40	0.20	3.10
600	0.30	0.10	3.10
700	0.20	0.10	3.10
800	0.20	0.10	3.10
900	0.20	0.10	3.10
1000	0.20	0.10	3.10

Base plate : height (h) x width (b) x thickness (t)
100 50 8

- In the case of concrete support frame, use anchor M10
- In the case of concrete C-Channel frame, Hex bolt M8 .

** Connection force (pull-out force) : 3.10 (kN)



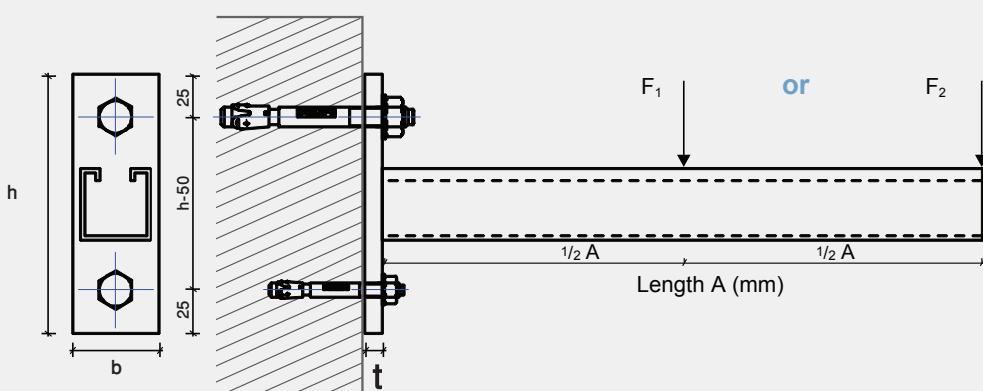
Length	Allowable Load		
	A (mm)	F ₁ * (kN)	F ₂ * (kN)
150	3.10	1.50	7.50
300	1.50	0.80	7.50
450	1.00	0.50	7.50
600	0.80	0.40	7.50
700	0.70	0.30	7.50
800	0.60	0.30	7.50
900	0.50	0.30	7.50
1000	0.50	0.20	7.50

Base plate : height (h) x width (b) x thickness (t)
140 50 10

- In the case of concrete support frame, use anchor M16 .
- In the case of concrete C-Channel frame, Hex bolt M8.

** Connection force (pull-out force) : 7.50 (kN)

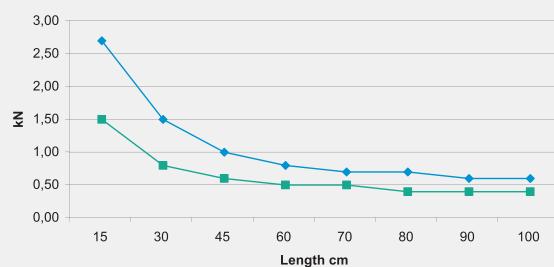
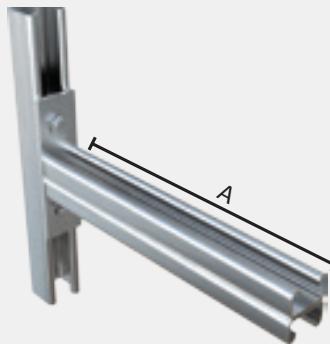
* Given Loads are always in [kN] " Allowable characteristic live load "



CANTILEVER ARM BRACKET

Cantilever Arm Brackets - SCA

CCH422 41x21x2.5 B2B



Length	Allowable Load		
	F ₁ [*]	F ₂ [*]	F _z ^{**}
150	2.50	1.30	4.80
300	1.30	0.60	4.80
450	0.80	0.40	4.80
600	0.60	0.30	4.80
700	0.50	0.30	4.80
800	0.50	0.20	4.80
900	0.40	0.20	4.80
1000	0.40	0.20	4.80

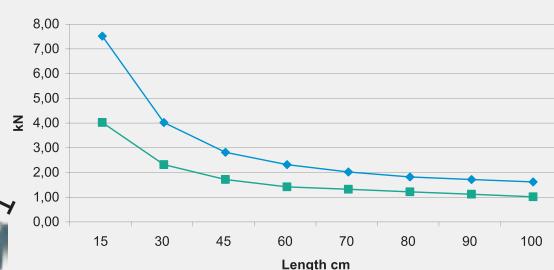
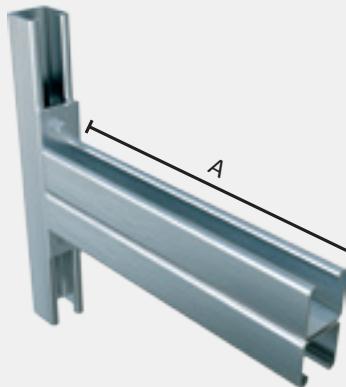
Base plate : height (h) x width (b) x thickness (t)

140 50 10

- In the case of concrete support frame, use anchor M12.
- In the case of concrete C-Channel frame, Hexbolt M8.

** Connection force (pull-out force) : 4,8 (kN)

CCH442 41x41x2.5 B2B



Length	Allowable Load		
	F ₁ [*]	F ₂ [*]	F _z ^{**}
150	7.00	3.50	8.30
300	3.50	1.80	8.30
450	2.30	1.20	8.30
600	1.80	0.90	8.30
700	1.50	0.80	8.30
800	1.30	0.70	8.30
900	1.20	0.60	8.30
1000	1.10	0.50	8.30

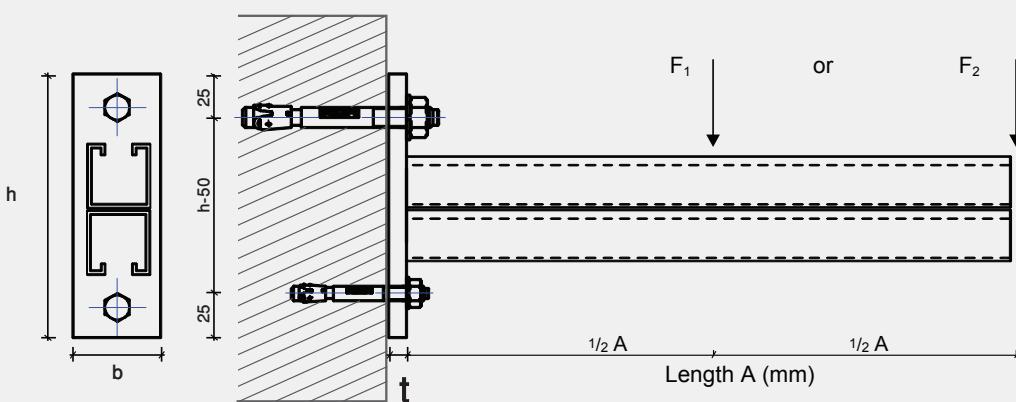
Base plate : height (h) x width (b) x thickness (t)

180 60 12

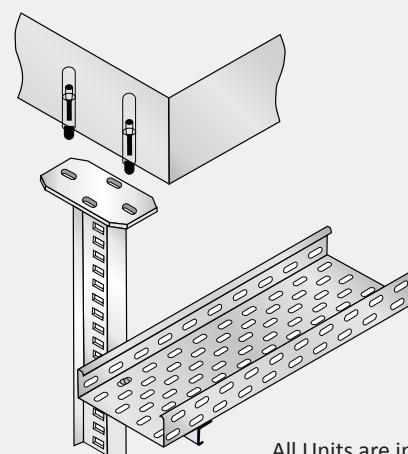
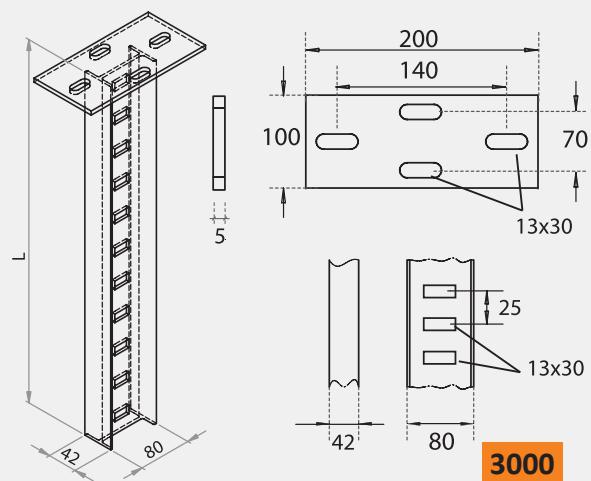
- In the case of concrete support frame, use anchor M16.
- In the case of concrete C-Channel frame, Hex bolt M10 .

** Connection force (pull-out force) : 8,30 (kN)

* Given Loads are always in [kN] " Allowable characteristic live load "



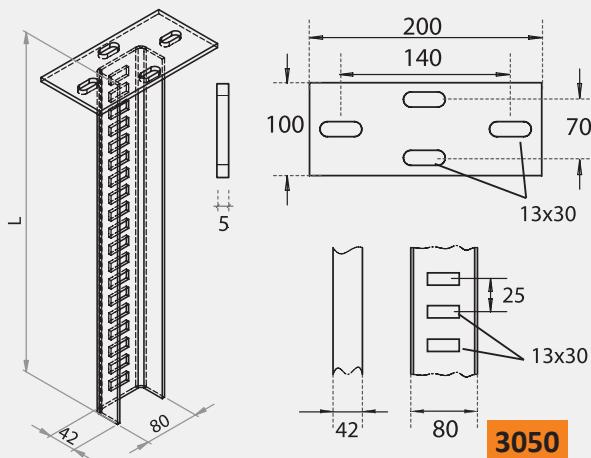
U - Support / 3000



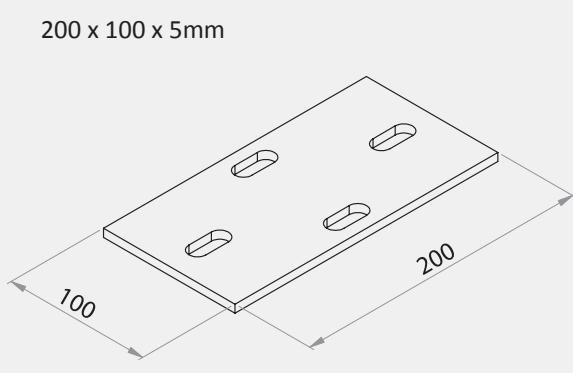
All Units are in (mm).

U-Support with welded-on head plate 200 x 100 x 5mm

I - Support / 3050



Head Plate / 3100

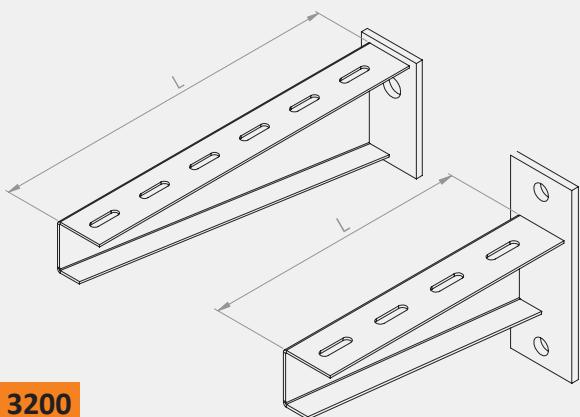


All Units are in (mm).

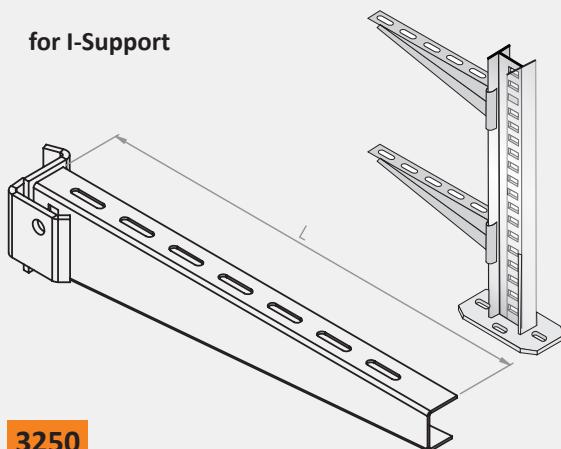
U-Support with welded-on head plate 200 x 100 x 5mm

Wall Bracket / 3200 - 3250

For U-Support | Thickness 5 mm

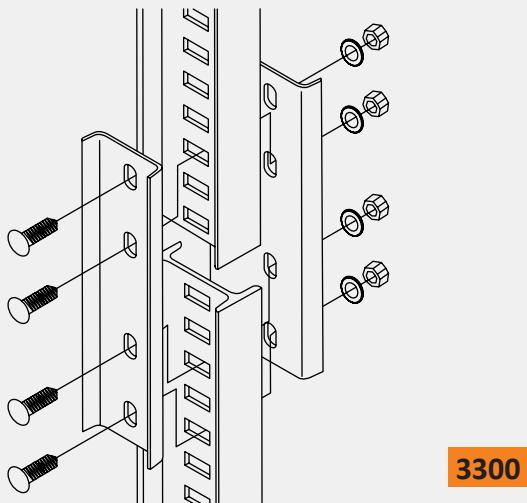


for I-Support

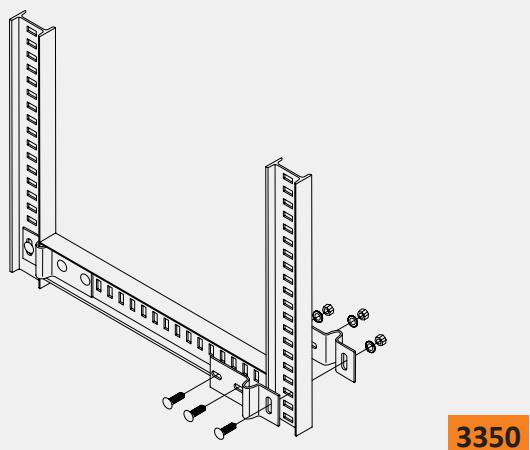


U-Support with welded-on head plate 200 x 100 x 5mm

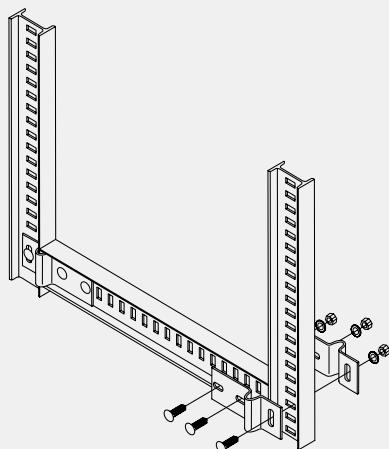
Support Connectors / 3300



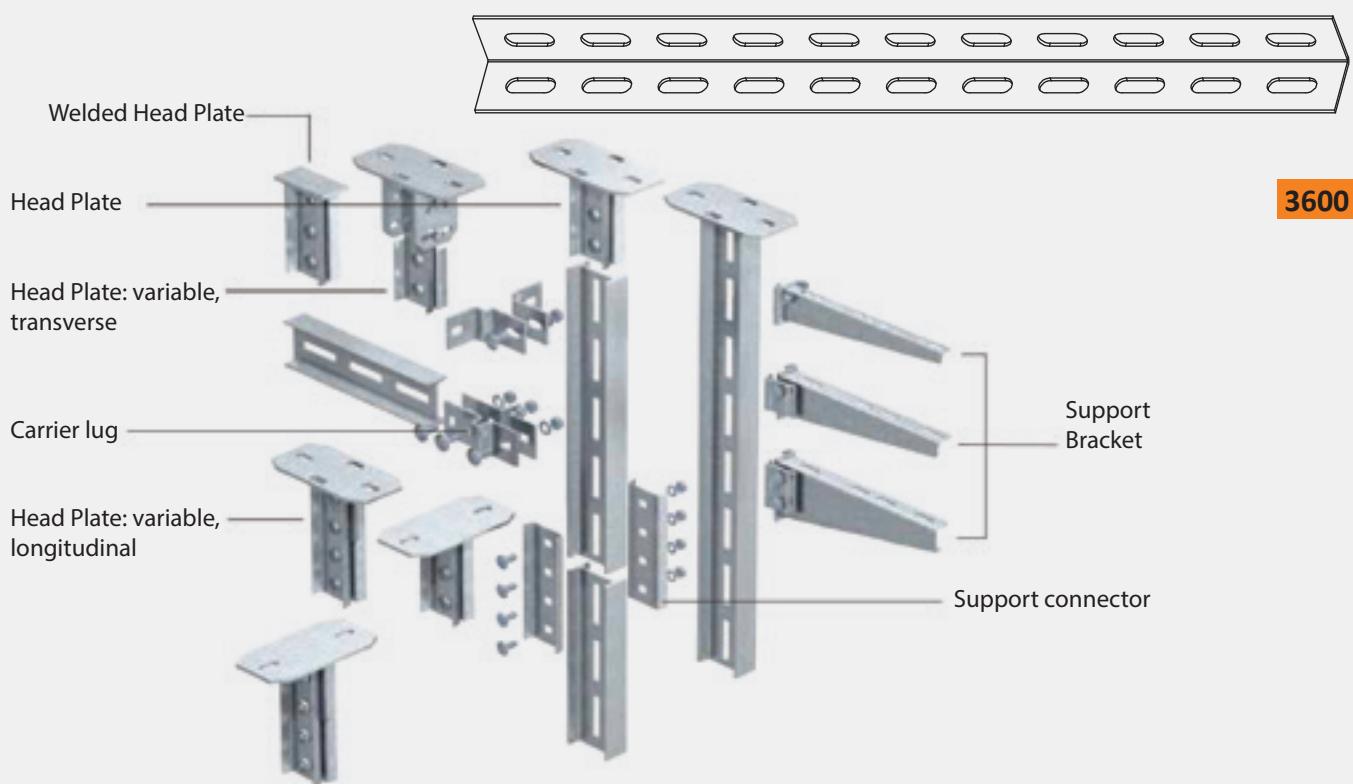
Clamping Plates / 3350



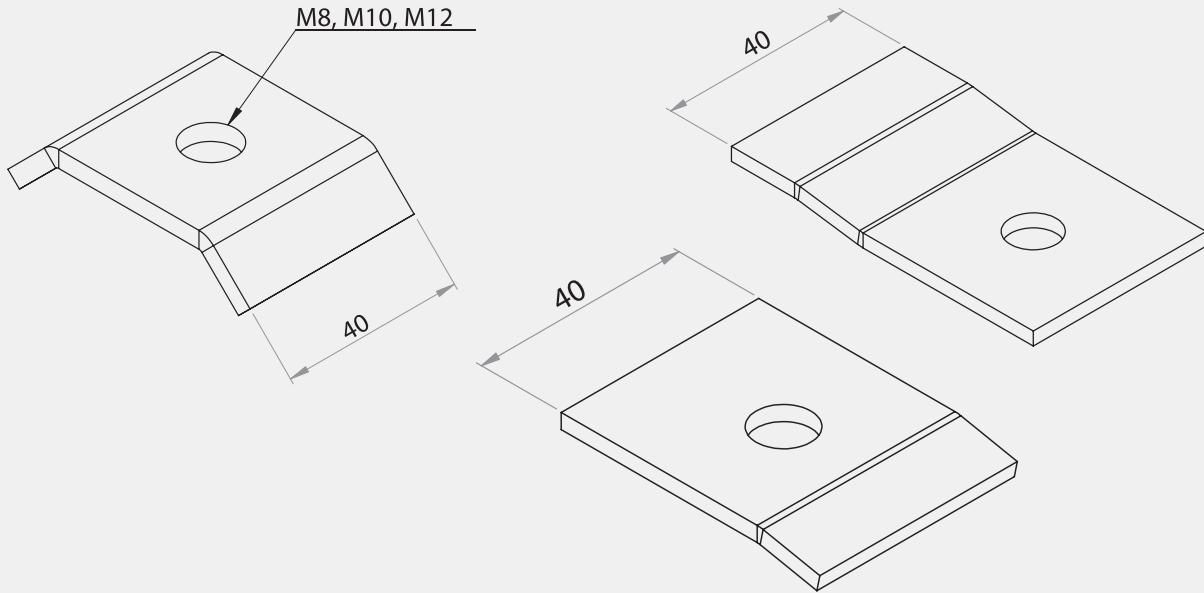
Support Plates / 3400



Angles / 3600

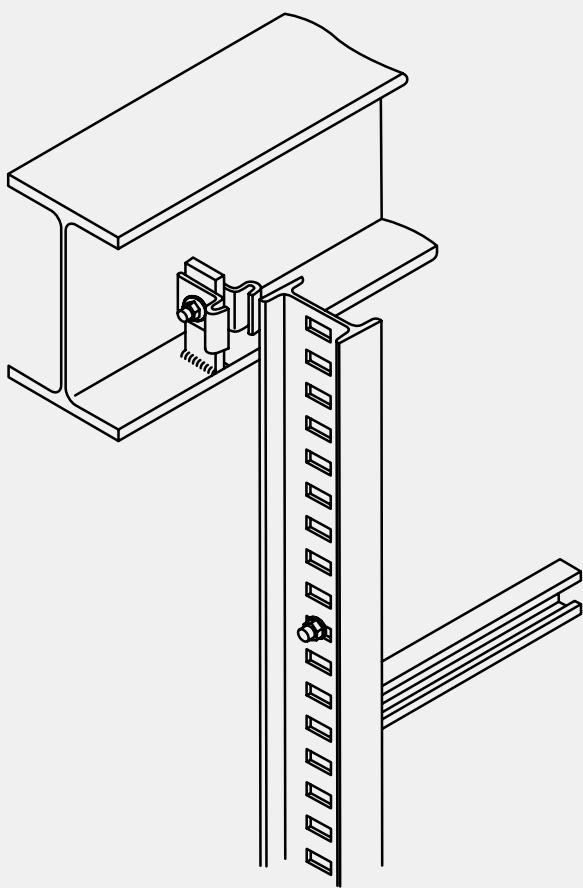


Hold Down Clamp

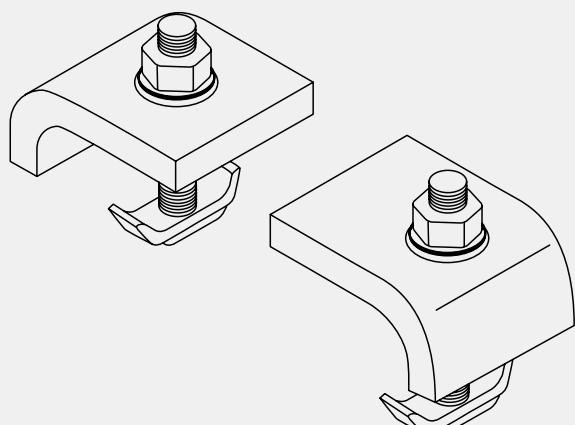


Support Clamps / 3450

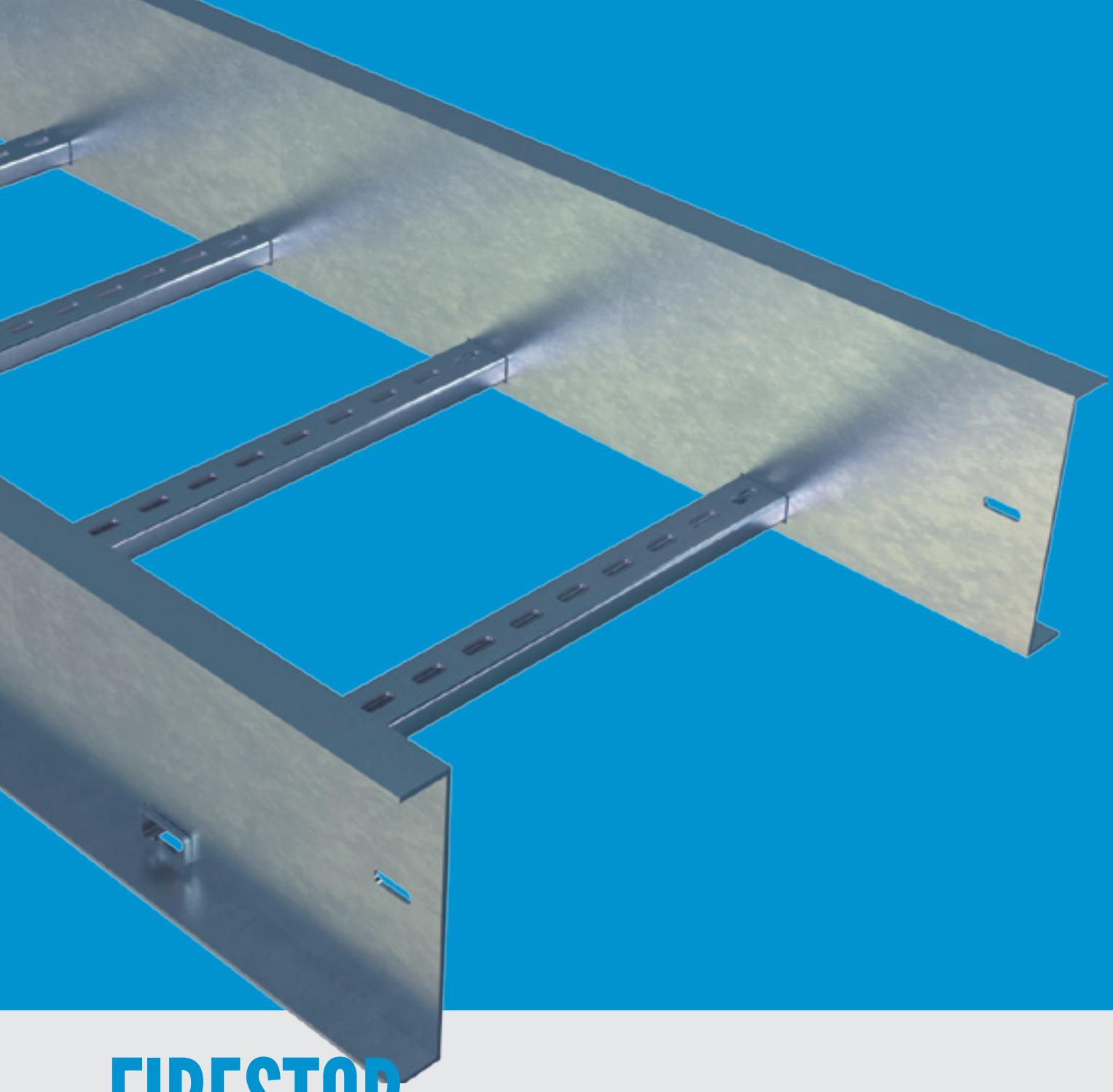
Clamping Angles / 3550



3450



3550



FIRESTOP SYSTEMS



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PRODUCT DESCRIPTION: • BASIC USE • COMPOSITION & MATERIALS

PRODUCT SELECTOR: • FIRESTOP SEALANTS • COMPOSITE SHEET • FIRESTOP MORTAR • FIRESTOP PUTTY • FIRESTOP PILLOWS
• PATHWAYS • PUTTY PADS • FIRE PROTECTIVE CABLE COATING

BETA CONTECH

Beta Contech is specialized in advanced architectural and industrial products, ranging from raised access to flooring systems, architectural expansion joint systems, architectural impact protection systems, firestopping systems and others. The company operates within the GCC and MENA countries and has a wide reputation among contractors.

STI FIRESTOP

Specified Technologies is an industry leader solely committed to the development of innovative, reliable firestopping solutions that help stop the spread of fire smoke and toxic fumes . Beta Contech's innovative firestop solutions are for all types of new construction and retrofit applications.

PRODUCT DESCRIPTION

Basic Usage

These products are used solely or in combination to construct firestop systems effective in sealing through-penetrations, construction joints and high traffic openings against the spread of fire, smoke or hot gasses. A wide range of tested systems is available for standard constructions and penetrants with ratings up to 4 hours.

These products and systems are suitable for sealing electrical, plumbing, mechanical or data/communications penetrations, including:

Pipes, Conduits or Ducts

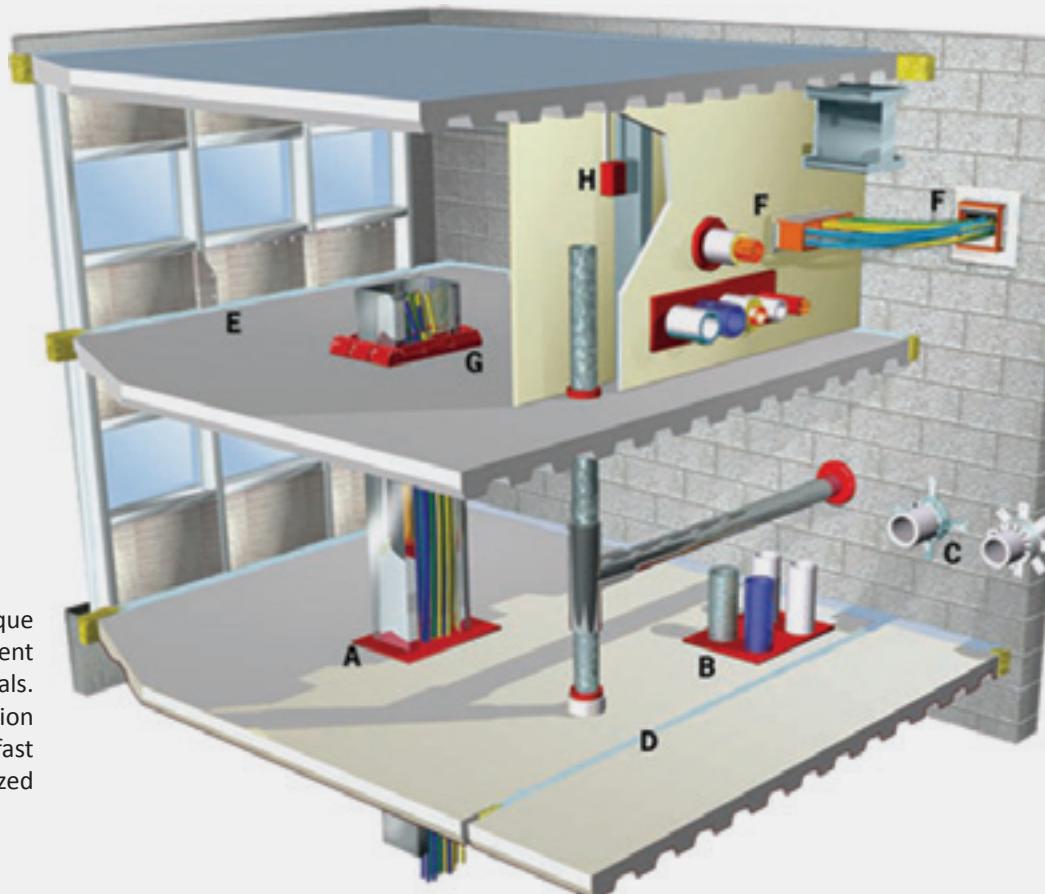
- Metallic
- Nonmetallic
- Insulated

Cables

- Telephone
- Power
- Data and Control

Cable Trays and Bus Ducts

- Steel
- Aluminum and Copper
- Construction Joints



Composition & Materials

STI Firestop products are a unique combination of passive and intumescent (expands when heated) materials. Products utilizing this expansion mechanism exhibit unusually fast and aggressive, highly directionalized expansion.

PRODUCT DESCRIPTION

Firestop Sealants



Triple S® Intumescent Sealant

Premium grade, water-based firestop caulk featuring STI's patented two-stage intumescent technology. The perfect choice for the broadest array of combustible and non-combustible electrical penetrants requiring a permanent, durable seal.

Firestop Sealants



LCI Intumescing Sealant

Standard grade, water-based firestop caulk engineered to address most common combustible and noncombustible electrical applications typically found in light commercial construction.

Pathways



EZ-Path® Fire Rated Pathway

A mechanical cable pathway system utilizing a self-contained, self-sealing firestop system. Easy moves, adds and changes with no firestopping required ever. Three sizes and a full range of accessories adapt this system to virtually any application.

Putty Pads



SSP Putty Pads

When used with both metallic and non-metallic switch and receptacle boxes, pads are UL Tested and Classified to permit larger boxes and reduced spacing.

Composite Sheet



Intumescent Composite Sheet

Lightweight, easily fabricated panel surface mounts to walls and floors to provide a neat, clean seal for medium to large openings typically used for Cable Trays, bus ducts, and conduit banks.

Fire Protective Cable Coating



CS Cable Spray

Water-based spray applied coating used to provide short term circuit integrity and improved flame spread characteristics for grouped electrical cables.

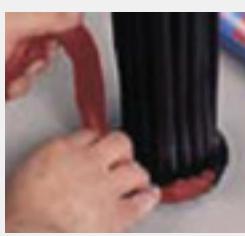
Firestop Mortar



SSM Firestop Mortar

A strong, lightweight and cementitious mortar designed for large openings typically used for Cable Trays or banks of conduits.

Firestop Putty



SSP Intumescent Putty

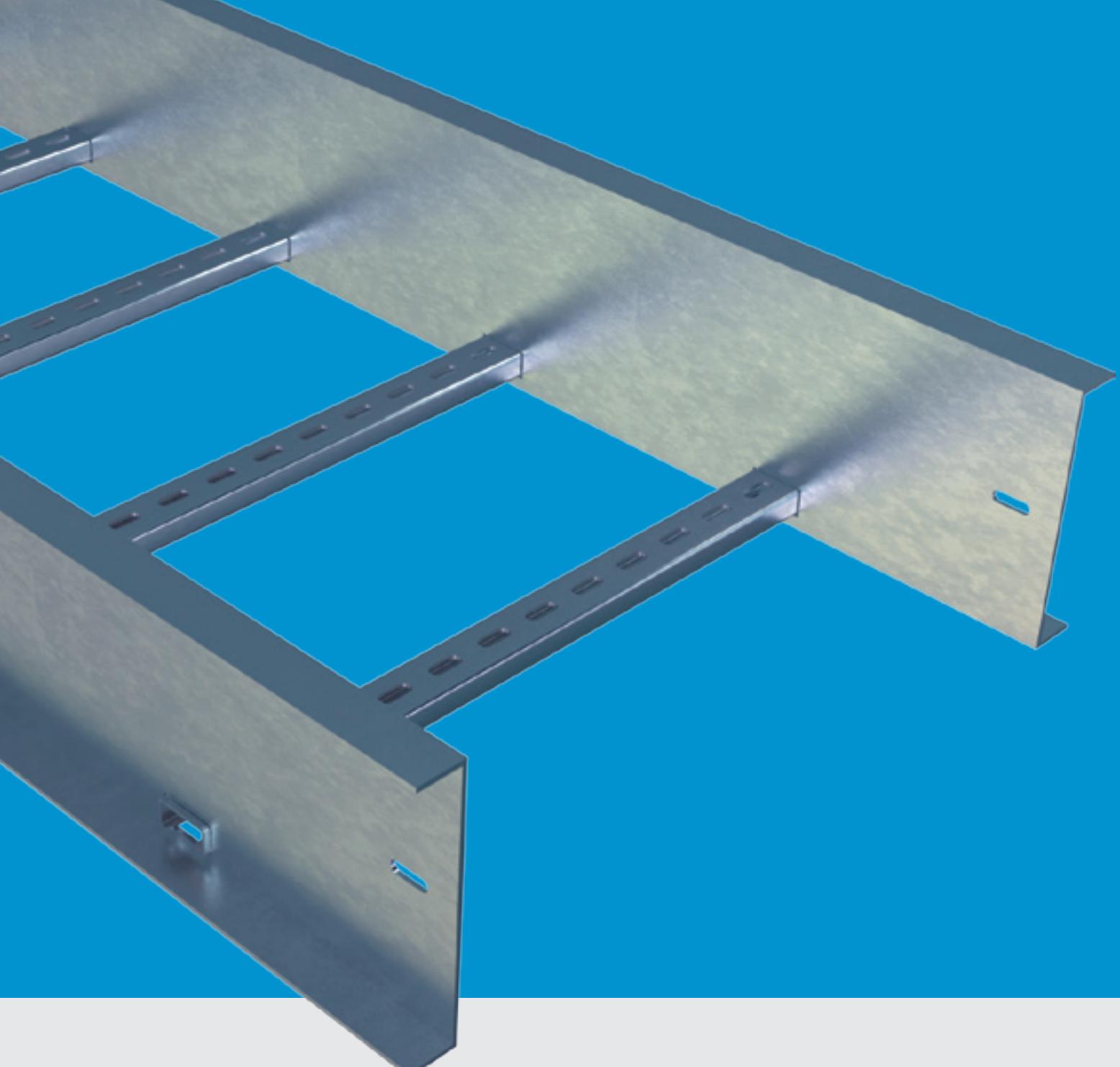
Non-hardening intumescent putty which is easily installed and removed making it the perfect choice for cable penetrations requiring occasional retrofitting.

Firestop Pillows



SSB Intumescent Firestop Pillows

Compressible cushions are easily installed and removed. The perfect firestop solution for medium to large openings including cable bundles, Cable Trays, bus ducts and multiple conduits.



LOCATIONS



www.sfsp-ikk.com

LOCATIONS

KIGDOM OF SAUDI ARABIA

unitech.ksa@ikkgroup.com

Jeddah

Tel : +966 12 627 8222
Fax: +966 12 627 8722

Mak kah/Taif

Tel : +966 12 541 1206
Fax: +966 12 532 1675

Riyadh

Tel : +966 11 292 8200
Fax: +966 11 456 6627

Qassim / Buraidah

Tel : +966 16 382 3946
Fax: +966 16 385 2186

Skakah / Qurayyat

Tel : +966 14 626 3904
Fax: +966 14 626 3905

Tabuk

Tel : +966 14 423 5203
Fax: +966 14 423 5203

Khamis Mushayt

Tel : +966 17 237 5929
Fax: +966 17 237 8783

Gizan

Tel : +966 17 321 6660
Fax: +966 17 321 0665

Mad inah

Tel : +966 14 842 1095
Fax: +966 14 842 1090

Yanbu

Tel : +966 14 390 1499
Fax: +966 14 322 7101

Dammam

Tel : +966 13 859 0097
Fax: +966 13 857 8177

Jubail

Tel : +966 13 361 4390
Fax: +966 13 362 4499

Hofuf

Tel : +966 13 530 1474
Fax: +966 13 530 7144

FACTORIES

SFSP - KSA

sfsp.jeddah@ikkgroup.com

Specialized Factory for Steel Products

3rd Industrial City / Jeddah

Tel: +966 12 637 4482
Fax: +966 12 636 1963

SFSP / UAE

sfsp.uae@ikkgroup.com

SIGMA Factory for Steel Products

DIC (Dubai Industrial City)

Tel : +971 4 818 1919

SFSP / Egypt

sfsp.cairo@ikkgroup.com

Specialized Factory for Steel Products

6th of October City Giza

Tel : +20 2 3820 6477
Fax: +20 2 3820 6036

SFSP / Lebanon

sfsp.lebanon@ikkgroup.com

Specialized Factory for Steel Products

Tanayel, Bekaa

Tel: +961 8 514 290
Fax: +961 8 514 291

BAHRAIN

unitech.bahrain@ikkgroup.com

Manama

Tel : +973 17 874 897
Fax: +973 17 789 470

KUWAIT

unitech.kuwait@ikkgroup.com

Kuwait City

Tel : +965 2 4924 937
Fax: +965 2 4924 938

UNITED ARAB EMIRATES

unitech.uae@ikkgroup.com

Dubai - Al Rashidiyah

Tel : +971 4 2591 773
Fax : +971 4 2591 774

Abu Dhabi - Musaffah

Tel: +971 2 552 3393
Fax: +971 2 552 5499

OMAN

unitech.omans@ikkgroup.com

Muscat

Tel : +968 24 591 006
Fax : +968 24 597 006

JORDAN

unitech.jordan@ikkgroup.com

Amman

Tel : +962 6 556 3030
Fax: +962 6 554 7911

Aqaba

Tel : +962 6 556 3030
Fax: +962 6 554 7911

PAKISTAN

unitech.pakistan@ikkgroup.com

Lahore - Punjab

Tel: +92 42 32301578

ENGINEERING, DESIGN, MARKETING & MULTIMEDIA

Unitech Deutschland GmbH

Germany

unitech.germany@ikkgroup.com

Stuttgart

Tel : +49 711 6868 7222
Fax: +49 711 6868 7223

Multi-D s.a.r.l

Lebanon

multi-d@ikkgroup.com

Multi-d Beirut

Tel : +961 1 841 155
Fax: +961 1 841 156

EGYPT

unitech.egypt@ikkgroup.com

Cairo 6th of October City

Tel : +20 2 3820 6477
Fax: +20 2 3820 6036

LEBANON

unitech.lebanon@ikkgroup.com

Beirut

Tel : +961 1 858 277
Fax: +961 1 858 276

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