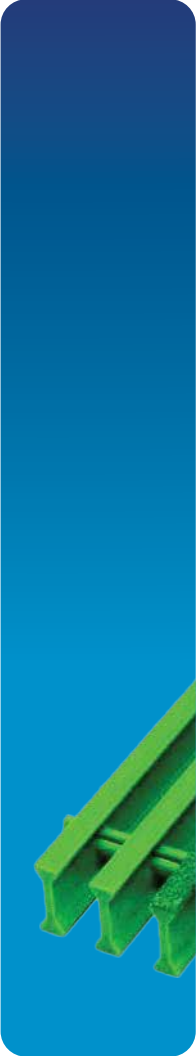




FRP GENERAL CATALOGUE

CABLE MANAGEMENT & SUPPORT SYSTEMS/GRATING/HANDRAIL



www.unitech-ikk.com
www.sfsp-ikk.com
www.ikkgroup.com



UNITECH

For Building and Construction Materials

CABLE MANAGEMENT SYSTEMS
FRP CABLE LADDERS, TRAYS



SPECIALIZED FACTORY FOR STEEL PRODUCTS
SIGMA FACTORY FOR STEEL PRODUCTS



FRP Cable Ladders, Trays and Support System

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**ABOUT
UNITECH**

Unitech Introduction

Unitech is a Saudi based Multinational Company providing building and construction solutions that is empowering the region's construction industry for the past 40+ years. We have been successfully providing solutions through mastering our main business activities: Design, Manufacture and Trade.



Design:

Provide Design & Engineering Solution to the construction sector, complying with international & local standards.



Manufacture:

Operating with Global Standards, we are widely recognized for our advanced light steel solutions and Hot-Dip Galvanization Facility.



Trade:

We are one of the region's largest Importer/Exporter of Building & Construction Materials.

Unitech is an **ISO QMS 9001:2015** certified company and is a member of the US Green Building Council. Our experienced teams and operations are present across the Middle-East North Africa regions (MENA) and Pakistan, giving us an extensive regional network that benefits our clients and partners. We are also present in Europe via our design and engineering office in Stuttgart.

For more information, please visit: www.unitech-ikk.com

Mission & Vision

Mission

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

- Providing excellence in services with passionate & 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

Vision

To be the Customer's First Choice...

Our Strategy

Unitech's strategy continues to focus on accelerating its business throughout the region, to service the construction sector via superior products & solutions, backed up by a group of highly experienced people in the field. Unitech also aims to enhance its geographical presence in its areas of interest and where opportunities exist.

We combine a deep understanding of building and construction materials markets with a successful history of upgrading our products and developing our processes.

We have the qualified employees, the know-how and the products to service major construction projects, medium sized to mega projects taking in care our positive contribution to our societies.

We thrive towards excellence by acknowledging:



Customer Satisfaction



Partner and Supplier Relations



Employee Retention



Positive Influence on Society and Environment

Our Employees

We are a company that prides itself on its 'family' culture and we seek out high-caliber people. We are a company that has, at its core, a team philosophy that is clearly apparent each and every day - there is a real sense of being there for one another.

We believe in nurturing the skills of our team members and providing growing levels of responsibility. Our people bring unique skills, energy, expertise, experience and perspectives to our workforce.

Unitech's family of employees consists of experienced, well-motivated and dedicated team of engineers, technicians, sales executives and management staff. This team is committed to serve our customers, with the best solutions available in the market.

Our Journey

40+ Years of Excellence

Since 1979, having been set to become an independent company under the framework developed by Sheikh Isam Kabbani, Unitech started its journey of success with confidence and enthusiasm, hard work and care to detail and a commitment to become the best within its industry.

Its dedicated people could only imagine what the future could bring to this newly established entity. Unitech's journey of success has been marked with outstanding achievements and superior accomplishments. Year by year, Unitech has been acknowledged as the "First Choice for Building & Construction Material" by major construction consultants in the region, governmental authorities, well-known contracting and project development corporations.

We have obtained invaluable knowledge about the construction industry in general, providing specialized solutions to construction projects throughout MENA region. From a couple of outlets in Saudi Arabia, Unitech today is present all over the Kingdom and in several countries throughout the region providing its products and solution to various locations worldwide.



Est. 1979

THE BEGINNING

Unitech was established in the Western Region of KSA as a Sales Company selling basic construction material.

During the same year, another branch was established in the heart of the kingdoms capital, Riyadh.



1980 to 1989

AGE OF GREAT RISK

Unitech Dammam was open for business in the oil-rich eastern coast of Saudi Arabia.

Within these 10 years the idea of in-house manufacturing facility was born and Specialized Factory for Steel Products (SFSP) was established in Riyadh.



1990 to 1999

AGE OF GROWTH

Branches of Unitech were established in Makkah, Madina, Khamis Mushayt and Jubail.

The need to increase its range of products and the necessity to have production lines for mass production lead to the decision to move the SFSP Factory from Riyadh to Jeddah.

Pioneering Construction Since 1979

We are constantly evolving in order to become more flexible in our operations, more sustainable in our societies, and more innovative in conducting our business.

By delivering superior products tailored to the specific construction needs, ambitious solutions, and an outstanding customer service, we serve today's needs through developing tomorrow's markets.

Helping construction projects experience success is what fueled its days. Unitech is keen to continue offering superior products, a wide spectrum of solutions, governed by our top-notch management style.

Such aspirations require trust in our responsibilities. Our Responsibilities for the future and with this in mind we continue to target excellence with committed efforts.



2000 to 2015

AGE OF CONSTRUCTION BOOM

Qassim, Hofuf and Yanbu Branches were inaugurated in KSA and branches outside KSA were established in UAE, Egypt, Lebanon, Oman, Jordan and Germany in order to facilitate the construction boom in the Middle East.

During this period SFSP state of the art facilities were launched in DIC UAE and Unitech thrived, marking some of the best years in business.



2016 to 2019

AGE OF GREAT CHANGE

This period, marked the age of great change in order to align with the economic shift in the GCC and the world in general.

Company wide right sizing initiatives were taken especially in KSA to align with the kingdom's ambitious vision 2030 and during this period the upgraded SFSP state of the art facilities were launched in JIC 3 KSA.



2020 & Beyond

NEW FRONTIER

This period marks the expansion of Unitech into the South and Central Asian territories. We aim to cater these markets and play an active role in these countries development.

During 2020, Unitech Pakistan was officially inaugurated and marked the entrance of Unitech into Asian Market.

Our Manufacturing Arm SFSP

SFSP is a leading manufacturer and fabricator of light steel construction products in the region, servicing the construction sector through its state of the art facilities which are spread all over the MENA region. Products of SFSP are manufactured from quality raw material according to the relevant international standards to meet all kinds of construction projects requirements, such as MEP, façade, blockwork & waste management systems.

Commitment to Quality

Our commitment to quality is clearly revealed in the way we do our business; our processes, our close interaction with our clients as well as the strict product inspection procedures. To achieve this, we have implemented quality systems & processes that are continually being improved to satisfy our customer's needs.

Product Development

Product development process is substantial to the success of our business. We leverage all resources to provide up-to-date reliable products, environmentally friendly, durable to withstand the toughest weather conditions. Our engineers are constantly testing the products, seeking to present a combination of performance and quality across all our product ranges.

For more information, please visit:
www.sfsp-ikk.com

Value Chain

Our value chain starts up with the quality of the raw materials and ends up in client satisfaction. Our business practices backed up by all technologically essential business elements are supported by an efficient logistics, warehousing and delivery system that maintains a valuable supply chain for products.

The value chain is integrated in our business module, giving us strength and preserving our good reputation gained through the past 4 decades.

Engineering Specialty

Our products development engineers integrate their vast knowledge to provide the perfect solution to projects within the required specifications and time-frame.

The products development department maintains highly skilled calibers with a dedication towards efficient and reliable solutions even in the most complicated cases where delicacy and skillful approaches are indispensable.

Design and Product Safety

Our design and engineering office in Stuttgart ensures our products comply with relevant European and international standards of fabrication, taking into attention the safety factors which govern the public safety of projects.

Sustainability and Responsibility

We are constantly working hard to reduce our environmental footprints while maintaining the high quality and safety standards. We have set our targets to become three times more efficient in the next 10 years. Our responsibility towards our stakeholders is valued through our positive contributions towards our colleagues, our business partners and our communities as well.

Our Design Office



UNITECH DEUTSCHLAND is a "Design & Engineering" Office. Unitech Germany support Unitech & SFSP operations through well-informed cadre of engineers. They help our customers from conception to the completion by delivering design, engineering and project management services.

Thanks to our multidisciplinary team in Unitech Germany and their expertise, we assist you in your ambition to develop your innovation, your engineering and your organization. Our goal is to serve our clients through these elements:

- Excellent in engineering ideas and solutions
- High quality in performance
- Firmness on meeting deadlines

SFSP Certifications

ISO 45001 : 2018
(Occupational Health & Safety)

ISO 45001:2018

ISO 9001 : 2015
(Quality Management Systems)

ISO 9001:2015

14001 : 2015
(Environmental Management System)

ISO 14001:2015

STD 096
(Q-Mark Certificate)

CERTIFICATE OF REGISTRATION

This is to certify that

Sigma Factory for Steel Products
P.O. Box 37991
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 9001 : 2015
(Quality Management System)



Certificate of Registration

This is to certify that the Management System of:

Sigma Factory for Steel Products

P.O. Box 37991, Saih Suhaib - 3, 4 Round About, Dubai Industrial City
Dubai, United Arab Emirates

has been approved by Alcumus ISOQAR and is compliant with the requirements of:

ISO 9001:2015



Certificate Number: 22244-Q15-001
Initial Registration Date: 23 February 2015
Previous Expiry Date: 22 February 2021
Recertification Date: 30 November 2020
Re-issue Date: 01 December 2022
Current Expiry Date: 22 February 2024

Scope of Registration:

Trading and Manufacturing of all kinds of Steel Related Construction Materials

Signed:
Alyn Franklin, Chief Executive Officer
(on behalf of Alcumus ISOQAR)

This certificate will remain current subject to the company maintaining its system to the required standard. This will be monitored regularly by Alcumus ISOQAR. Further clarification regarding the scope of this certificate and the applicability of the relevant standards' requirement may be obtained by consulting Alcumus ISOQAR.

ISO 14001 : 2015
(Environmental Management System)



Certificate of Registration

This is to certify that the Management System of:

Sigma Factory for Steel Products

P.O. Box 37991, Saih Suhaib - 3, 4 Round About, Dubai Industrial City
Dubai, United Arab Emirates

has been approved by Alcumus ISOQAR and is compliant with the requirements of:

ISO 14001:2015



Certificate Number: 22244-E15-001
Initial Registration Date: 22 September 2015
Previous Expiry Date: 21 September 2021
Recertification Date: 11-12 July 2021
Re-issue Date: 01 December 2022
Current Expiry Date: 21 September 2024

Scope of Registration:

Trading and Manufacturing of all kinds of Steel Related Construction Materials

Signed:
Alyn Franklin, Chief Executive Officer
(on behalf of Alcumus ISOQAR)

This certificate will remain current subject to the company maintaining its system to the required standard. This will be monitored regularly by Alcumus ISOQAR. Further clarification regarding the scope of this certificate and the applicability of the relevant standards' requirement may be obtained by consulting Alcumus ISOQAR.

OHSAS 45001 : 2018
(Health & Safety Management System)



Certificate of Registration

This is to certify that the Management System of:

Sigma Factory for Steel Products

P.O. Box 37991, Saih Suhaib - 3, 4 Round About, Dubai Industrial City
Dubai, United Arab Emirates

has been approved by Alcumus ISOQAR and is compliant with the requirements of:

ISO 45001:2018



Certificate Number: 22244-OHS-001
Initial Registration Date: 22 September 2015
Previous Expiry Date: 11 March 2021
Recertification Date: 11-12 July 2021
Re-issue Date: 01 December 2022
Current Expiry Date: 21 September 2024

Scope of Registration:

Trading and Manufacturing of all kinds of Steel Related Construction Materials

Signed:
Alyn Franklin, Chief Executive Officer
(on behalf of Alcumus ISOQAR)

This certificate will remain current subject to the company maintaining its system to the required standard. This will be monitored regularly by Alcumus ISOQAR. Further clarification regarding the scope of this certificate and the applicability of the relevant standards' requirement may be obtained by consulting Alcumus ISOQAR.

Alcumus ISOQAR Limited, Alcumus Certification, Cobra Court, 1 Blackmore Road, Stretford, Manchester M32 0QY
T: 0151 865 3699 F: 0161 865 3685 E: iso@alcumusgroup.com W: www.alcumusgroup.com/isoqar
This certificate is the property of Alcumus ISOQAR and must be returned on request.

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

CERTIFICATE

Issued to:
Applicant: **Isam Kabbani Trading Est. (Unitech)**
Rashidiya
Dubai, United Arab Emirates
Manufacturer/Licensee: **Sigma Factory for Steel Products (SFSP)**
Saih Suhaib 3, 4RA, Dubai Industrial City,
Dubai, United Arab Emirates

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

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

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

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

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

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

Certificate number: 2156954.01

DEKRA Certification B.V.

drs. G.J. Zoetbrood
Managing Director

H.R.M. Barends
Certification Manager

© 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 96 83000 F +31 88 96 83100 www.dekra-certification.com Registered Arnhem 09085396

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
 Saih 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 by 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.

Joseph Henry, General Manager, Director of Sales - Canada

UL CERTIFICATION LABORATORIES OF CANADA INC.

Any information and documentation involving UL Mark services are confidential and intended only for the recipient. Please contact UL's Customer Service Dept.

Page 1 of 1

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
 Saih 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.

UL Certification* (Fire Barrier)

CERTIFICATE OF COMPLIANCE

Certificate Number R40146
Report Reference R40146-20220524
Date 2022-May-25

Issued to: Sigma Factory for Steel Products
 Saih Shuaib 3, 4 R/A Dubai Industrial City
 Opposite DEWA Substation
 Dubai AE

This is to certify that representative samples of MECHANICAL JOINT ASSEMBLIES
 The products covered by this Section are mechanical joint assemblies designated Nexus Fire Barrier (NFB) for use in various joint systems described in the Fire Resistance Directory.

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

Standard(s) for Safety: UL 2079, Tests for Fire Resistance of Building Joint Systems

Additional Information: See the UL Online Certifications Directory at <https://iq.ulprospector.com> for additional information

This Certificate of Compliance does not provide authorization to apply the UL Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, 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 ul@ulprospector.com



© UL or any authorized licensee of UL. For questions, please



Certificate of Conformity NEMA FG-1

SGS (Malaysia) Sdn Bhd (Company No. 10871 - T)
 Wisma SGS, Lot 603, Leboh Raja Lama
 Kawasan Perindustrian PKNS
 Puchong, 47000 Port Klang
 Selangor, Malaysia
 Tel : 603 - 3165 2320
 Fax: 603 - 3165 1816

SGS ORIGINAL

Certificate No. : F580101/KL/IN/2884 (10001144) Date: 2nd September 2004
 Page 1/1

CERTIFICATE OF INSPECTION
INTECH FRP CABLE LADDER "LMH SERIES, 900mm W x 152mm H"

"We hereby certify that the INTECH FRP Cable Ladder was tested in our presence at Intralink Techno Sdn Bhd, Tanjong Jaya, Batacong, Selangor, Malaysia and findings are as follows.

Details of FRP Cable Ladders
 Span 3000

Details of Load Test
 Max load applied - 278.833kg/m
 Safe Working Load with SF1.5 as per NEMA FG1 - 185.888kg/m
 Total deflection - 71mm
 See attached Appendix A-1 for details of load test.

Application of load.
 The load was applied throughout the total length of the straight cable ladder gradually (evenly distributed weight) and deflection readings were taken.

Requirements as per NEMA FG1-1993, Revision 1, Table 3-1
 Load 148.8 kg/m
 Span 3.060m meters (10 Feet)
 Class Designation as per 3.1 BC

Details of Equipment used.
 Deflection Automatic Level Model Sokkia C-41, Serial No. 025329
 Measuring Staff - Model ALG-55

Weight Blocks Rectangular steel bars with an average weight of 4.41kg.
 Sand Bags with weights of 30 kg. and 2.5 kg.
 Steel Sheets with weights of 4.9kg and 8.7kg.

Date of Inspection : 27th August 2004

SGS (Malaysia) Sdn Bhd Industrial Services

SGSPAPER 01769465

SGS (Malaysia) Sdn Bhd (Company No. 10871 - T)
 Wisma SGS, Lot 603, Leboh Raja Lama
 Kawasan Perindustrian PKNS
 Puchong, 47000 Port Klang
 Selangor, Malaysia
 Tel : 603 - 3165 2320
 Fax: 603 - 3165 1816

SGS ORIGINAL

Certificate No. : F580101/KL/IN/2890 (10001144) Date: 2nd September 2004
 Page 1/1

CERTIFICATE OF INSPECTION
INTECH FRP CABLE LADDER "LMH SERIES, 900mm W x 152mm H"

"We hereby certify that the INTECH FRP Cable Ladder was tested in our presence at Intralink Techno Sdn Bhd, Tanjong Jaya, Batacong, Selangor, Malaysia and findings are as follows.

Details of FRP Cable Ladders
 Span 3660

Details of Load Test
 Max load applied - 239.672kg/m
 Safe Working Load with SF1.5 as per NEMA FG1 - 159.781kg/m
 Total deflection - 62mm
 See attached Appendix A-1 for details of load test.

Application of load.
 The load was applied throughout the total length of the straight cable ladder gradually (evenly distributed weight) and deflection readings were taken.

Requirements as per NEMA FG1-1993, Revision 1, Table 3-1
 Load 148.8 kg/m
 Span 3.660m meters (12 Feet)
 Class Designation as per 3.1 120

Details of Equipment used.
 Deflection Automatic Level Model Sokkia C-41, Serial No. 025329
 Measuring Staff - Model ALG-55

Weight Blocks Rectangular steel bars with an average weight of 4.41kg.
 Sand Bags with weights of 30 kg. and 2.5 kg.
 Steel Sheets with weights of 4.9kg and 8.7kg.

Date of Inspection : 27th August 2004

SGS (Malaysia) Sdn Bhd Industrial Services

SGSPAPER 01769471

EVALUATION REPORT TENSILE PROPERTIES OF INTECH GRP PRODUCTS

SIRIM Plastics Technology Group
 Advanced Polymer & Composites Programme
SIRIM Berhad
 (Company No. 367474-V)
 Tel: (603) 55446095/40 Fax: (603) 55446039

EVALUATION REPORT CONFIDENTIAL

Title: Tensile Properties of "INTECH GRP Product"

Report No.: PTC/ER07/498

Date: 3 December 2007

Project No.: P07582

Sample: "INTECH GRP Product"

Company Name: Intralink Techno Sdn. Bhd.

Address: Lot 7447 & 7980, Jalan PA11
 Bandar Teknologi Kajang
 Batu 18, Jalan Semenyih
 43500 Semenyih
 Selangor Darul Ehsan

Evaluated by:

 Ahmad Tarmizi Mat Yusoff

Checked by:

 Dr Norzalia Sulaiman

Approved by:

 Dr Ahmad Fuad Md. Yusoff
 Head of Programme
 Plastics Technology Group

Page 1 of 3

SIRIM Berhad
 Company No. 367474-V
 1, Persiaran Teknologi
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 60011 Cyberjaya
 MALAYSIA
 Tel: 603-55446095
 Fax: 603-55446039

SIRIM REPORT NO.: PTC/ER07/498

TOTAL NO. OF PAGES: 3 PAGE: 3

This report is NOT a Quality Assurance Certificate NOR an Approval Permit. This report covers only samples submitted by the clients. This report shall not be published/advertised in part or in full, without prior written approval from SIRIM Berhad.

Results:
 'INTECH GRP Product'

No.	Property	Results	Test Method
1	Tensile Strength, MPa	Specimen 1: 260 Specimen 2: 246 Specimen 3: 290 Specimen 4: 234 Specimen 5: 238 Mean: 254 S.D.: 11	ASTM D 638: 2003 Crosshead speed: 5 mm/minute Gauge length: 50 mm Sample size: 200 mm x 70 mm Sample thickness: 6 mm
2	Tensile Modulus, MPa	Specimen 1: 21.800 Specimen 2: 20.600 Specimen 3: 20.800 Specimen 4: 24.300 Specimen 5: 20.600 Mean: 21.600 S.D.: 1.580	



SIRIM Berhad
 Company No. 367474-V
 1, Persiaran Teknologi
 Sektor 2, P. O. Box 1088
 60011 Cyberjaya
 MALAYSIA
 Tel: 603-55446095
 Fax: 603-55446039

CONFIRMATION OF PRODUCT TYPE APPROVAL FRP CABLE TRAYS

Certificate Number: 18-SG1734784-PDA
05/OCT/2018



Confirmation of Product Type Approval

Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product. This certificate reflects the information on the product in the ABS Records as of the date and time the certificate is printed.

Pursuant to the Rules of the American Bureau of Shipping (ABS), the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) with expiration date of 19-APR-2023. The continued validity of the Manufacturing Assessment is dependent on completion of satisfactory audits as required by the ABS Rules.

And; a Product Design Assessment (PDA) valid until subject to continued compliance with the Rules or standards used in the evaluation of the product.

The above entitle the product to be called Product Type Approved.

The Product Design Assessment is valid for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Product Name: Cable, Trays & Ladders

Model Name(s): INTECH FRP Cable Ladder LH Series 152 Ht, LSH Series 152 Ht, LMH series 152 Ht, LM Series 152 Ht; INTECH C Type Cable Tray 50 Ht & 110 Ht; INTECH U Type Cable Tray 50 Ht & 55 Ht

Presented to:
INTRALINK TECHNO SDN BHD
LOT 7447 & 7980, JALAN P4/1
BANDAR TEKNOLOGI KAJANG, BATU 18
JALAN SEMENYIH
SELANGOR 43500
Malaysia

Intended Service: Cable Support System for Marine and Offshore Environment

Description: FRP Cable Tray

Tier: 3

Ratings: See Attachment for SWL

Service Restrictions: Unit certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments: The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

Notes / Documentation: SGS Mechanical & Hardgoods Lab, IMO Resolution MSC.307(88) The International Code for Application of Fire Test Procedures 2010, Annex 1 Part 2 Smoke and Toxicity, Test Report No. HLD0470/2012 dated 08 Jan 2013, Revision:; Pages 04 SGS Mechanical & Hardgoods Lab, IEC 60092-101:2002

10/05/2018 2:02:11 AM

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Page 1 of 2

Certificate Number: 18-SG1734784-PDA

Term of Validity:

Clause 2.28.2 Flame-retardant test. Test Report No. HL90519/2012 dated 15 Oct 2012, Revision:; Pages 02 SGS (Malaysia) Sdn Bhd, Certificate of Load Test, Certificate No. 5801/105002/KL/IN/2327 (40.1074) dated 13 September 2000, Revision:; Pages 03 Southwest Research Institute (SwRI), ASTM E 84-00 Standard Test Method for Surface Burning Characteristics of Building Materials", Test Report No. 01.04017.01.271 dated 06 September 2001, Revision:; Pages 05

This Product Design Assessment (PDA) Certificate 18-SG1734784-PDA, dated 20/Apr/2018 remains valid until 19/Apr/2023 or until the Rules or specifications used in the assessment are revised (whichever occurs first). This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product. Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA. Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

ABS Rules:

ABS Rules for Conditions of Classification (2018) 1-1-4/7.7, 1-1-A3 and A4 which covers the following: 2018 Rules for Building and Classing Steel Vessels 4-8-4/21.9.4 2018 Rules for Building and Classing Offshore Support Vessels 4-8-4/21.9.4 ABS Rules for Conditions of Classification – Offshore Units and Structures (2018) 1-1-4/9.7, 1-1-A2 and A3, which covers the following: 2018 Rules for Building and Classing Mobile Offshore Drilling Units 4-3-3/5.9.3 ABS Rules for Conditions of Classification – High Speed Craft (2018) 1-1-4/11.9, 1-1-A2 and A3, which covers the following: 2018 Rules for Building and Classing High-Speed Craft 4-6-3/5.9.3

National Standards:

NEMA Standard Publication VE1-2017, Metal Cable Tray Systems (published on 24-May-2017) Canadian Standards Association Publication CSA C22.2 NO. 128.1-17 Metal cable tray systems (published on 01-July-2017)

International Standards:

Government Authority:

EUMED:

Others:

Model Certificate	Model Certificate No	Issue Date	Expiry Date
PDA	18-SG1734784-PDA	29-APR-2018	19-APR-2023

ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rules, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product, Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.

CONFIRMATION OF PRODUCT TYPE APPROVAL FRP CABLE TRAYS

TEST REPORT

Your Ref. - Date: 24 Jan 2006

Our Ref: 54S060323/OKH Page: 1 of 5

DID: 68653783 Fax: 68621433

NOTE: This report is issued subject to PSB Corporation's "Terms and Conditions Governing Technical Services". The terms and conditions governing the issue of this report are set out as attached within this report.

SUBJECT:

Large scale surface spread of flame test on "INTECH (Type LSNTF)" Fiberglass Reinforced Plastic panel material submitted by Intralink Techno Sdn. Bhd. on 27 Dec 2005.

TESTED FOR:

Intralink Techno Sdn. Bhd.
9, Jalan Tanming 12
Taman Tanming Jaya
43300 Balakong
Selangor
Malaysia

Attn: Mr Ng Eng Boon

DATE OF TEST:

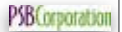
12 Jan 2006

PURPOSE OF TEST:

To determine the tendency of the surface of a material or a combination of materials to support the spread of flame across its surface and to classify the surface according to the test given in British Standard 476 : Part 7 : 1997. The test was conducted at PSB Corporation fire test laboratory located at No. 10 Tuas Avenue 10, Singapore 639134.



54S060323/OKH



Classification of Surface Spread of Flame

Classification	Spread of flame at 1.5 min.		Final spread of flame	
	Limit (mm)	Limit for one specimen in sample (mm)	Limit (mm)	Limit for one specimen in sample (mm)
Class 1	165	165 + 25	165	165 + 25
Class 2	215	215 + 25	455	455 + 45
Class 3	265	265 + 25	710	710 + 75
Class 4	Exceeding the limits for class 3			

CONCLUSION:

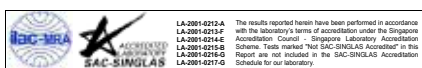
In accordance with the class definitions specified in the Standard, the test results show that the sample tested has a Class One Surface Spread of Flame.

REMARKS:

- The test results relate only to the behaviour of the test specimens of the product under the particular conditions of test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.
- The sample was tested with the smooth face exposed to the heat and backed with calcium silicate board.

Mah Poh Huat
Associate Engineer

Chan Ling Toa
Product Manager
(Fire Safety & Security Products)
Mechanical



Head Office: PSB Corporation • Testing Group • 1 Science Park Drive Singapore 118221 • Hotline: +65 6886 1333 • Fax: +65 6779 9725 • Email: testing@psbcorp.com • Website: www.psbcorp.com
Reg. No.: 195002667R • Regional Offices: Bangkok • Guangzhou • Jakarta • Kuala Lumpur • Qingdao • Shanghai • Tianjin

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.



MEP Solutions

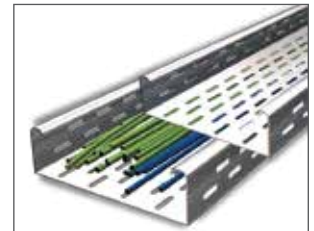
Cable Management Systems

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



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.



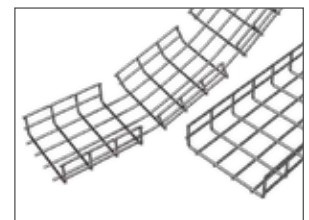
Cable Ladders (Welded & Swaged)

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.



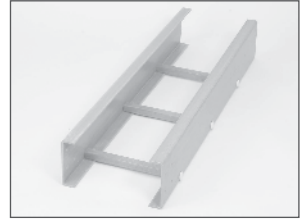
Underfloor Trunking

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.



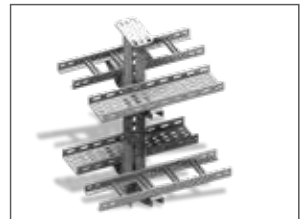
Fiberglass Reinforced Plastic (FRP) Cable Tray / Ladder

SFSP Fiberglass Reinforced Plastic (FRP) Cable Management Systems are designed, manufactured, and tested to be installed in most harsh environmental conditions of onshore and offshore facilities for several industries including Oil and Gas, Petrochemicals, Manufacturing, Mining and others.



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

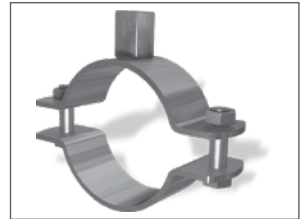
SFSP's Metal Framing Systems provide an economical solution for electrical, mechanical and industrial supports with a wide variety of applications in the construction industry.

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



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.



Galvanized Threaded Rods and Accessories

Threaded rod, often referred to as a stud, is a rod of varying length that is threaded in a helical structure. Similar in appearance to a screw, the threading extends around and along the rod to cause rotational movements when in use.



Access Panels by FEROX

Ferox Access Panels provides complete solutions of several types of access panels including Hook Type, Pivot Type, Tiled Type as well as fire rated access panels and hygienic access panels. A variety of finishes are available including stainless steel of different grades, galvanized steel with powder coating.

Ferox Access Panels are manufactured from high quality material and assembled with stainless steel hardware.



Roof hatches by FEROX

Roof hatch provides safe and convenient access to commercial building roof areas using interior ladders and stairs for maintenance work. It can be installed on flat roofs with a maximum slope of 30°. Made of steel frames, doors and stainless steel hardware. Powder coated to provide corrosion resistance and outstanding exterior durability.





Architectural & Finishing Solutions

Mechanical Cladding Fixation (Stangle)

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.



Aluminium System for Stone Cladding

SFSP aluminum systems are designed and calculated to provide a practical & safe solutions of stone cladding. Wide range of aluminum profiles with different shapes to support different types of stone cladding.



Waste Management Sys. (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.



Dry Wall & Ceiling Profiles

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



Metal Ceiling Grid Systems

SFSP Ceiling Grid System is a practical, convenient ceiling system. It has a complete range of main c-channel sections and complementary parts so that you can adapt the modules to suit your design needs and load requirements.



Expansion Joint System by Nexus

Our variety of expansion joints includes profiles for walls and floors, profiles for seismic movements, watertight profiles. Our products suit pedestrian as well as heavy load traffic areas.



Entrance Matting System by Nexus

Nexus Entrance matting systems provides heavy duty entrance mats, composed of aluminium profiles with carpet, brushes or rubber inserts. For any design of any shape, being round, square, oval, or any other symmetrical or asymmetrical shape, Nexus offers a variety of entrance matting profiles



Profiles by Nexus

Nexus offer comprehensive solutions for the construction industry ranging from Expansion Joint Covers and Fire Barriers to Entrance Matting Systems, Wall and Floor Profiles, Tactile Solutions, etc... NEXUS range of products is manufactured according to most common international standards to meet the requirements of commercial, residential, governmental, transportation, healthcare and educational projects.



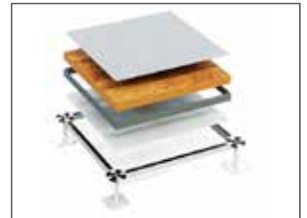
Phenolic Compartment by CUBIX

CUBIX phenolic compartment and partition systems are manufactured and customized to meet the precise needs of simple to complicated projects with its top-notch finish, quality of material and within a timely delivery. A complete solution with a wide selection of colors and textures are available.



Raised Access Flooring by PIXEL

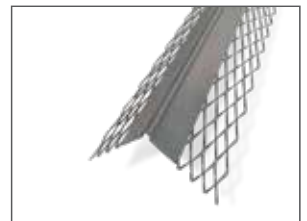
PIXEL Raised Access Flooring offers comprehensive solutions of High Tech Raised Access Flooring Systems for the construction industry. PIXEL Raised Access Flooring are manufactured according to most common international standards to meet the requirements of commercial, residential, governmental, transportation, healthcare, and educational projects.



Civil Solutions

Expanded Metals, Plasterers' Beads

Expanded Metals help the formation of joints, protection of corners and resistance against cracks, chips and impact damage. SFSP manufactures in accordance with BS EN 13658 - 2, ASTM C847-18, BS EN 845-3:2003+A1:2008, ASTM A 951/A 951M - 2016 standards.



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. SFSP manufactures Steel Lintel in accordance with BS EN 845-2:2013+A1:2016 and according to relevant standards BS 5977 Part 2:1983.



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

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

KSA

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

شركة عصام قباني وشركاه لمواد الإنشاء والتعمير المحدودة

BAHRAIN

Isam Kabbani Trading Est.

مؤسسة عصام قباني التجارية

UAE

Issam Kabbani Trading Company LL

شركة عصام قباني للتجارة

EGYPT

Unitech Egypt for Building Materials

شركة يونيتك مصر لمواد البناء

OMAN

Isam Kabbani & Partners Trading Co.

شركة عصام قباني وشركاه للتجارة

QATAR

Unitech Qatar for Building & Construction Materials Ltd., W.L.L

شركة يونيتك قطر لمواد الإنشاء والتعمير المحدودة

KUWAIT

Hassan Kabbani for General Contracting Est.

مؤسسة حسان قباني للمقاولات العامة للمباني

LEBANON

Unitech ME s.a.r.l

شركة يونيتك ميدل إيست ش.م.م

PAKISTAN

Unitech IKK Pakistan (PVT.) LTD.

شركة يونيتك ميدل إيست ش.م.م

SFSP CUSTOMER SERVICE CALL CENTER

KSA

+966 13 8590097, Ext. 3214

UAE

+971 4 8181925, Ext. 4269



GENERAL INFORMATION

Advantages of FRP

Our FRP cable management system has been designed to work in most extreme environments. Products are designed and manufactured to the highest quality standards while at the same time offering exceptional values to our customers. FRP products have many advantages, some of which are shown below.



CORROSION RESISTANCE

Resistant to a range of chemicals including salt water.



STRONG

Pultruded profiles have high loading capacity.



LOW MAINTENANCE

Resists corrosion, which eliminates the need for continual maintenance and cleaning. Provides a cost effective long term solution.



CONDUCTIVITY

Low thermal and electrical conductivity properties and high dielectric strength. Options for increased electrical conductivity are also available.



WEATHER RESISTANT

FRP is highly resistant of cold temperatures and performs exceptionally well in even the harshest climates.



LIGHT WEIGHT

High strength to weight ratio compared to traditional metallic support systems.



EMI AND RFI TRANSPARENCY

Non-conductive resins are transparent to electromagnetic and radio signal interference.



QUICK AND EASY INSTALLATION

Installation is simple and some items can be fabricated or modified on site, reducing the complications caused by late project changes. Installation and modifications are carried out with standard tools.

Intech - SFSP FRP Cable Management System

SFSP-INTECH FRP Cable Management System has an extensive standard FRP product range, much of which is stocked in strategic global locations. However, we also appreciate that many project require tailor made solutions to overcome unique challenges. In order to deliver standardization with flexibility, our FRP product range and manufacturing systems are designed to offer flexibility.

- FRP profiles (including straight sections of Cable Tray and Cable Ladder) can be supplied in custom lengths.
- Cable Trays and Cable Ladder fittings can be provided in a wide variety of special angles and radius.
- Cable Ladder can be produced in custom widths between 150 and 900 mm.
- Cable Ladders can be produced with a variety of rung spacing.
- Risers can be easily adjusted so that an inside Riser can be used as an outside Riser and vice versa.
- Straight Cable Ladder sections can be supplied in kit form to save on shipping volume.
- The majority of accessories can be supplied in SS or FRP material.
- We have standardized our products so that even after delivery it is possible for fastener and accessory material type to be changed without the need for any additional modifications. (This is applicable to the majority of our products).
- FRP products are easy to cut and drill on site and by using our Smart Jigs you can ensure that perforations for splice connectors are drilled in the correct location.

Complete FRP Product Line

As a complete system provider of cable management and multi discipline support systems in many material types, with world wide references, our recommendations are trustworthy and focused. You can be confident that when you are next in the market for a non-metallic support system, our System FRP ladder tray will be your best choice for value, ease of installation and technical quality.

FRP Composite Materials

Our System offers a range of resins to match the needs of our customers.

From our standard polyester resin to our high performance olstar resin, we can meet your chemical, fire, smoke and toxicity requirements. To specify the desired resin, the standard FRP article numbers are prefixed with the resin code shown below.

POLYESTER

Polyester is the most widely used resin system. It offers good weathering properties with resistance to ultraviolet light and has good corrosion resistance. The resin can also be formulated to meet specific fire and smoke standards and can be supplied with conductive properties. Our standard polyester resin product range is UL approved.

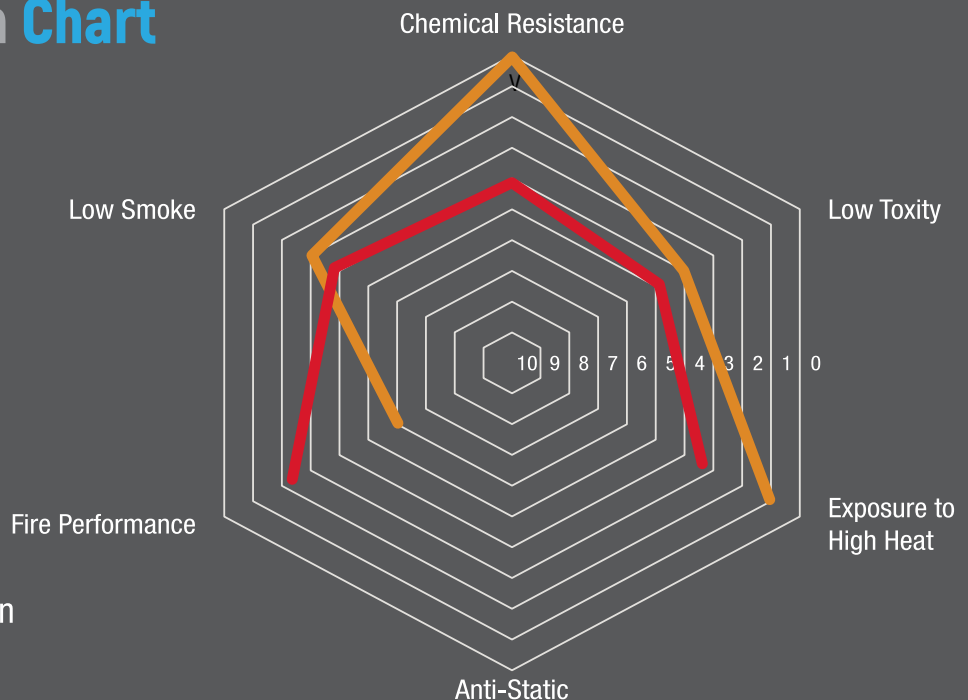


VINYL ESTER

Vinyl Ester resins offer better corrosion resistance and heat resistance than polyester resin. It is suitable in industries using heavy chemical and caustic materials.



Resin Selection Chart



Fiberglass Reinforced Plastic Cable Management Systems

SFSP-INTECH Fiberglass Reinforced Plastic Cable Management System is designed, manufactured, and tested to be installed in most harsh environmental conditions of onshore and offshore facilities for several industries including Oil and Gas, Petrochemicals, Manufacturing, Mining and others. FPR Cable Management System is required in the most corrosive conditions as a reliable and efficient alternative to the commonly used Steel Cable Management Systems making it ideal for caustic, harsh and marine environments. Its properties are well suited to withstand daily exposures to wind, weather and saltwater. SFSP-INTECH Fiberglass Reinforced Plastic Cable Management System provides the load capacity of steel plus through a non-magnetic and corrosion-resistant alternative. With minimal on-site maintenance requirements, SFSP-INTECH FRP Cable Management System is the best solution when looking for an ideal replacement of Steel Cable Management Systems wherever needed. SFSP-INTECH Fiberglass Reinforced Plastic Cable Management System is available with a full range of fittings, splices, covers, accessories and support channels of cantilever and trapeze junctions. Our system is designed to fulfill the following standards' requirements:

SPECIFICATIONS AND MECHANICAL PERFORMANCE

- 1- NEMA FG-1:2002
- 2- UL 568:2019

INSTALLATION

- 1- NEMA VE2
- 2- NFPA 70:2023

FIRE PERFORMANCE

- 1- BS 476 Part 7: 1997
- 2- ASTM E-84, Class 1: 2021

ELECTRICAL PERFORMANCE

- 1- ASTM D149-20

Effect On Strength With Temperature

The strength properties of reinforced plastics are reduced when the material is continually exposed to high temperatures. Loading shall be reduced based on the below table. Percentages shown are approximates.

Temperature	Polyester Resin % of Strength	Vinyl Ester Resin% of Strength
24°C	100%	100%
38°C	90%	100%
52°C	78%	100%
66°C	68%	90%
79°C	60%	90%
93°C	52%	75%

*The test values in this chart are obtained from laboratory testing.

When high temperatures are present please consult the manufacturer for application advice. Freezing temperatures do not effect the load rating of cable ladders and the cable management system as the FRP material does not become fragile. Special consideration is required when service temperatures are over 94° Celsius.

Thermal Contraction and Expansion

The table to the below compares the thermal contraction and expansion based on various temperature differentials for fiberglass, steel and aluminium cable trays. The values shown represent the length of cable tray that will produce a 16 mm movement between expansion connectors for the indicated temperature differential. Fiberglass has the least movement and requires least expansion joints. This simplifies the design and installation and minimizes expansion dynamic forces on the structure.

Temperature Differential	m	m	m
14°C	126	97	49
28°C	63	48	25
42°C	42	48	16
56°C	32	24	12
69°C	25	19	10
83°C	21	16	8
97°C	17	13	6

Corrosion Guide

The information shown in this corrosion guide is based on full immersion laboratory tests and data generated from resin manufacturers. It should be noted that in some of the environments listed, splashes and spills may result in a more corrosive situation than indicated due to the evaporation of water. Regular wash down is recommended in these situations.

All data represents the best available information and is believed to be correct. The data should not be construed as a warranty of performance for that product as presented in these tables. User tests should be performed to determine suitability of service if there is any doubt or concern.

Such variables as concentration, temperature, time of exposure and combined chemical effects of mixtures of chemicals make it impossible to specify the exact suitability of fiber-reinforced plastics in all environments. Thomas & Betts will be happy to supply material samples for testing.

These recommendations should only be used as a guide and Thomas & Betts does not take responsibility for design or suitability of materials for service intended. In no event will Thomas & Betts be liable for any consequential or special damages for any defective material or workmanship including, without limitation, labor charges or other expenses or damage to property resulting from loss of materials or profits or increased expenses of operations.

CHEMICAL ENVIRONMENT	POLYESTER		VINYLESTER	
	Max Wt. %	Max Oper. Temp °C	Max Wt. %	Max Temp. °C
Acetic Acid	10	87.78	10	98.89
Acetic Acid	50	51.67	50	82.22
Acetone	N/R	N/R	100	23.89
Aluminum Chloride	SAT	76.67	SAT	93.33
Aluminum Hydroxide	SAT	71.11	SAT	76.67
Aluminum Nitrate	SAT	65.56	SAT	76.67
Aluminum Sulfate	SAT	82.22	SAT	93.33
Ammonium Chloride	SAT	76.67	SAT	87.78
Ammonium Hydroxide	1	37.78	10	65.56
Ammonium Hydroxide	28	N/R	28	37.78
Ammonium Carbonate	N/R	N/R	SAT	65.56
Ammonium Bicarbonate	15	51.67	SAT	54.44
Ammonium Nitrate	SAT	71.11	SAT	87.78
Ammonium Per sulfate	SAT	N/R	SAT	65.56
Ammonium Sulfate	SAT	76.67	SAT	93.33
Amyl Alcohol	ALL	N/R	ALL	32.22
Amyl Alcohol Vapor	–	60.00	–	48.89
Benzene	N/R	N/R	100	60.00
Benzene Sulfonic Acid	25	43.33	SAT	93.33
Benzoic Acid	SAT	65.56	SAT	93.33
Benzoyl Alcohol	100	N/R	100	N/R
Borax	SAT	76.67	SAT	93.33
Calcium Carbonate	SAT	76.67	SAT	93.33
Calcium Chloride	SAT	76.67	SAT	93.33
Calcium Hydroxide	25	21.11	25	73.89
Calcium Nitrate	SAT	82.22	SAT	93.33
Calcium Sulfate	SAT	82.22	SAT	93.33

CHEMICAL ENVIROMENT	POLYESTER		VINYLESTER	
	Max Wt. %	Max Oper. Temp °C	Max Wt. %	Max Temp. °C
Carbon Disulfide	N/R	N/R	N/R	N/R
Carbonic Acid	SAT	54.44	SAT	82.22
Carbon Dioxide Gas	–	93.33	–	93.33
Carbon Monoxide Gas	–	93.33	–	93.33
Carbon Tetrachloride	N/R	N/R	100	23.89
Chloride, Dry Gas	–	60.00	–	76.67
Chloride, Wet Gas	–	N/R	–	82.22
Chlorine Water	SAT	26.67	SAT	82.22
Chromic Acid	5	21.11	10	48.89
Citric Acid	SAT	76.67	SAT	93.33
Copper Chloride	SAT	76.67	SAT	93.33
Copper Cyanide	SAT	76.67	SAT	93.33
Copper Nitrate	SAT	76.67	SAT	93.33
Crude Oil, Sour	100	76.67	100	93.33
Cyclohexane	N/R	N/R	N/R	N/R
Cyclohexane, Vapor	ALL	37.78	ALL	54.44
Diesel Fuel	100	71.11	100	82.22
Diethyl Ether	N/R	N/R	N/R	N/R
Dimethyl Phthalate	N/R	N/R	N/R	N/R
Ethanol	50	23.89	50	32.22
Ethyl Acetate	N/R	N/R	N/R	N/R
Ethylene Chloride	N/R	N/R	N/R	N/R
Ethylene Glycol	100	32.22	100	93.33
Fatty Acids	SAT	82.22	SAT	93.33
Ferric Chloride	SAT	76.67	SAT	93.33
Ferric nitrate	SAT	76.67	SAT	93.33
Ferric Sulfate	SAT	76.67	SAT	93.33
Ferrous Chloride	SAT	76.67	SAT	93.33
Fluoboric Acid	N/R	N/R	SAT	73.89
Fluosilicic Acid	N/R	N/R	SAT	21.11
Formaldehyde	50	23.89	50	37.78
Formic Acid	N/R	N/R	50	37.78
Gasoline	100	26.67	100	65.56
Glucose	100	76.67	100	93.33
Glycerin	100	65.56	100	93.33
Heptanes	100	43.33	100	93.33
Hexane	100	32.22	100	54.44
Hydrotropic Acid	50	48.89	50	48.89
Hydrochloric Acid	10	65.56	10	93.33
Hydrochloric Acid	20	60.00	20	87.78
Hydrochloric Acid	37	23.89	37	35.00
Hydrochloric Acid	N/R	N/R	15	26.67
Hydrogen Bromide, Dry	100	87.78	100	93.33

CHEMICAL ENVIROMENT	POLYESTER		VINYLESTER	
	Max Wt. %	Max Oper. Temp °C	Max Wt. %	Max Temp. °C
Hydrogen Bromide, Wet	100	23.89	100	54.44
Hydrogen Chloride	–	48.89	–	93.33
Hydrogen Peroxide	5	37.78	30	37.78
Hydrogen Sulfide, Dry	100	76.67	100	98.89
Hydrogen Sulfide, Wet	100	76.67	100	98.89
Hypochlorus Acid	20	26.67	20	65.56
Isopropyl Alcohol	N/R	N/R	15	26.67
Kerosene	100	60.00	100	82.22
Lactic Acid	SAT	76.67	SAT	93.33
Lead Acetate	SAT	76.67	SAT	93.33
Lead Chloride	SAT	60.00	SAT	93.33
Lead Nitrate	SAT	N/R	SAT	93.33
Linseed Oil	100	65.56	100	87.78
Lithium Chloride	SAT	65.56	SAT	87.78
Magnesium Carbonate	SAT	60.00	SAT	76.67
Magnesium Chloride	SAT	76.67	SAT	93.33
Magnesium Hydroxide	SAT	65.56	SAT	87.78
Magnesium Nitrate	SAT	60.00	SAT	82.22
Magnesium Sulfate	SAT	76.67	SAT	87.78
Mercuric Chloride	SAT	65.56	SAT	87.78
Mercurous Chloride	SAT	60.00	SAT	82.22
Methyl Ethyl Ketene	N/R	N/R	N/R	N/R
Mineral Oils	100	76.67	100	93.33
Monochlorobenze	N/R	N/R	N/R	N/R
Naphtha	100	60.00	100	76.67
Nickel Chloride	SAT	76.67	SAT	93.33
Nickel Nitrate	SAT	76.67	SAT	93.33
Nickel Sulfate	SAT	76.67	SAT	93.33
Nitric Acid	5	60.00	5	65.56
Nitric Acid	20	-17.78	20	-17.78
Oleic Acid	100	21.11	100	37.78
Oxalic Acid	ALL	76.67	ALL	87.78
Paper Mill Liquors	–	23.89	–	48.89
Perchlorethylene	100	37.78	100	48.89
Perchloric Acid	N/R	N/R	10	N/R
Perchloric Acid	N/R	N/R	30	65.56
Phosporic Acid	10	N/R	10	26.67
Phosporic Acid	100	71.11	100	93.33
Potassium Aluminum Sulfate	SAT	48.89	SAT	93.33
Potassium Bicarbonate	50	76.67	50	93.33
Potassium Carbonate	10	26.67	10	60.00
Potassium Chloride	SAT	N/R	SAT	48.89
		76.67		93.33

CHEMICAL ENVIROMENT	POLYESTER		VINYLESTER	
	Max Wt. %	Max Oper. Temp °C	Max Wt. %	Max Temp. °C
Potassium Hydroxide	N/R	N/R	25	65.56
Potassium Nitrate	SAT	76.67	SAT	93.33
Potassium Permanganate	100	26.67	100	98.89
Potassium Sulfate	SAT	76.67	SAT	93.33
Propylene Glycol	ALL	76.67	ALL	93.33
Phthalic Acid	–	N/R	SAT	93.33
Sodium Acetate	SAT	71.11	SAT	93.33
Sodium Bicarbonate	SAT	71.11	SAT	79.44
Sodium Bisulfate	ALL	76.67	ALL	93.33
Sodium Bromide	ALL	76.67	ALL	93.33
Sodium Carbonate	10	26.67	35	71.11
Sodium Chloride	SAT	76.67	SAT	93.33
Sodium Cyanide	SAT	76.67	SAT	93.33
Sodium Hydroxide	N/R	N/R	50	65.56
Sodium Hydroxide	N/R	N/R	25	26.67
Sodium Hypochloride	N/R	N/R	10	65.56
Sodium Monophosphate	SAT	76.67	SAT	93.33
Sodium Nitrate	SAT	76.67	SAT	93.33
Sodium Sulfate	SAT	76.67	SAT	93.33
Sodium Thiosulfate	ALL	37.78	ALL	48.89
Stannic Chloride	SAT	71.11	SAT	87.78
Styrene	N/R	N/R	N/R	N/R
Sulfated Detergent	0/50	76.67	0/50	93.33
Sulfur Dioxide	100	26.67	100	93.33
Sulfur Trioxide	100	26.67	100	93.33
Sulfuric Acid	93	N/R	93	N/R
Sulfuric Acid	50	N/R	50	82.22
Sulfuric Acid	25	23.89	25	87.78
Sulfurous Acid	SAT	26.67	N/R	N/R
Tartaric Acid	SAT	76.67	SAT	93.33
Tetrachloroethylene	N/R	N/R	FUM	23.89
Toluene	N/R	N/R	N/R	N/R
Trisodium Phosphate	N/R	N/R	SAT	79.44
Urea	SAT	54.44	SAT	60.00
Vinegar	100	76.67	100	93.33
Water, Distilled	100	76.67	100	87.78
Water, Tap	100	76.67	100	87.78
Water, Sea	SAT	76.67	SAT	87.78
Xylene	N/R	N/R	N/R	N/R
Zinc Chloride	SAT	76.67	SAT	93.33
Zinc Nitrate	SAT	76.67	SAT	93.33
Zinc Sulfate	SAT	76.67	SAT	93.33

Typical Properties of Pultruded Components

FRP Cable Ladder Tray systems are manufactured from glass fiber-reinforced plastic shapes that meet ASTM E-84, Class 1 Flame Rating and self-extinguishing requirements of ASTM D-635. A surface veil is applied during pultrusion to ensure a resin-rich surface and ultraviolet resistance.

Properties	Test Method	Unit/Value	76.2. & 101.6 mm. Cable Channel		152.4 mm Cable Tray	
			Longitudinal	Transverse	Longitudinal	Transverse
Tensile Strength	ASTM D638	psi	30,000	7,000	40,000	4,500
Tensile Modulus	ASTM D638	psi x 106	2.5	0.8	3.2	0.6
Flexural Strength	ASTM D790	psi	30,000	10,000	40,000	10,000
Flexural Modulus	ASTM D790	psi x 106	1.6	0.8	2.1	0.8
Izod Impact	ASTM D256	ft-lbs/in	28	4	28	4
Compressive Strength	ASTM D695	psi	30,000	15,000	40,000	10,000
Compressive Modulus	ASTM D695	psi x 106	2.5	1	3.2	0.7
Barcol Hardness	ASTM D2583	-	45	45	45	45
Shear Strength	ASTM D732	psi	5,500	5,500	5,500	5,500
Density	ASTM D1505	lbs/in ³	0.058-0.62	-	0.072-0.076	-
Coefficient of Thermal Expansion	ASTM D696	in/in/°F	5.0 x 10 ⁻⁶	-	5.0 x 10 ⁻⁶	-
Water Absorption	ASTM D570	Max %	0.5	-	0.5	-
Dielectric Strength	ASTM D149	V/mil (vpm)	200	-	200	-
Flammability Classification	UL94	VO	-	-	-	-
Flame Spread	ASTM E-84	20 Max	-	-	-	-

Flame Rating Results

Test	Ignition	Burning	Rating
Flame Resistance (FTMS 406-2023)	75 seconds	75 seconds	-
Intermittent Flame Test (HLT- 15)	-	-	100
Flammability Test (ASTM D635)	None	0 second	-

Effect of Temperature

Strength properties of reinforced plastics are reduced when continuously exposed to elevated temperatures. Working loads shall be reduced based on the following:

Temperature in Degrees F	Approximate Percent of Strength
75	100
100	90
125	78
150	68
175	60
200	52

Historical Load/Span Class Designation

(See Clause 4.6.1, 4.6.2, and 6.1.2(c))

Load		Span		
kg/lin m	lb/lin ft.	2.4 m	3.7 m	4.9 m
37	25	–	–	–
67	45	–	–	–
74	50	8A	12A	16A
97	65	–	–	–
112	75	8B	12B	16B
149	100	8C	12C	16C
179	120	–	–	–
299	200	–	–	–

NOTE–8A/B/C, 12A/B/C, 16A/B/C and 20A/B/C have been NEMA designations. A, C, D, and E have been CSA designations.

Cable ladders/Trays Installation Guide

Installation of SFSP-INTECH fiberglass cable tray should be made in accordance with the standards set by NEMA Publication VE-2, Cable Tray Installation Guide, and National Electrical Code, Article 318.

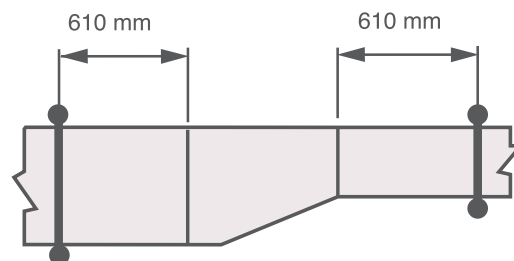
- Always observe common safety practices when assembling tray and fittings. Installations generally require some field cutting. Dust created during fabrication presents no serious health hazard, but skin irritation may be experienced by some workers.
- Operators of saws and drills should wear masks, long sleeve shirts or coveralls.
- Fabrication with fiberglass is relatively easy and comparable to working with wood. Ordinary hand tools may be used in most cases.
- Avoid excessive pressure when sawing or drilling. Too much force can rapidly dull tools and also produce excessive heat which softens the bonding resin in the fiberglass resulting in a ragged edge rather than a clean-cut edge.
- Field cutting is simple and can be accomplished with a circular power saw with an abrasive cut-off wheel (masonry type) or hack saw (24 to 32 teeth per inch).
- Drill fiberglass as you would drill hard wood. Standard twist drills are more than adequate.
- Any surface that has been drilled, cut, sanded or otherwise broken, must be sealed with a compatible resin.
- Carbide tipped saw blades and drill bits are recommended when cutting large quantities.
- Support the fiberglass material firmly during cutting operations to keep material from shifting which may cause chipping at the cut edge.
- Each tray section length should be equal to or greater than the support span.
- When possible, the splice should be located at quarter span.
- Fittings should be supported as per NEMA FG-1.

Support Locations For Fittings

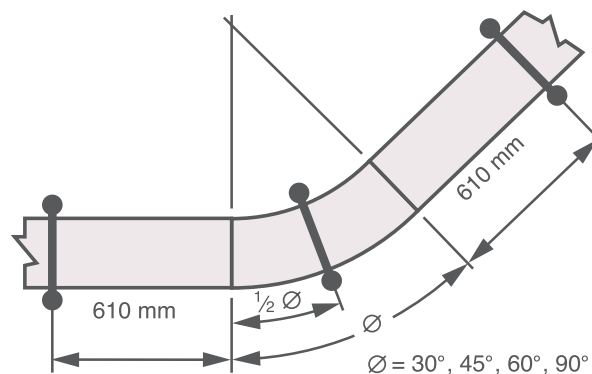
Select the Fittings

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.

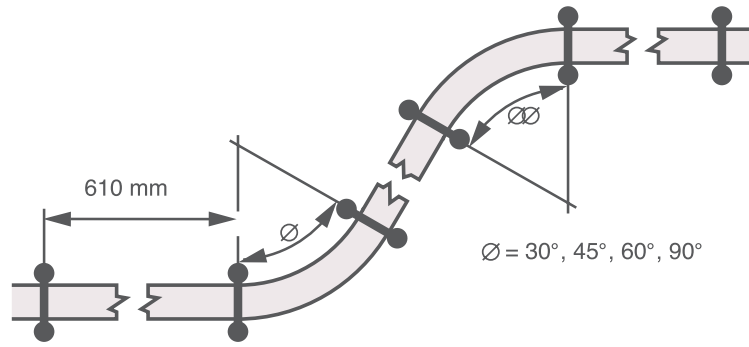
OFFSET REDUCER



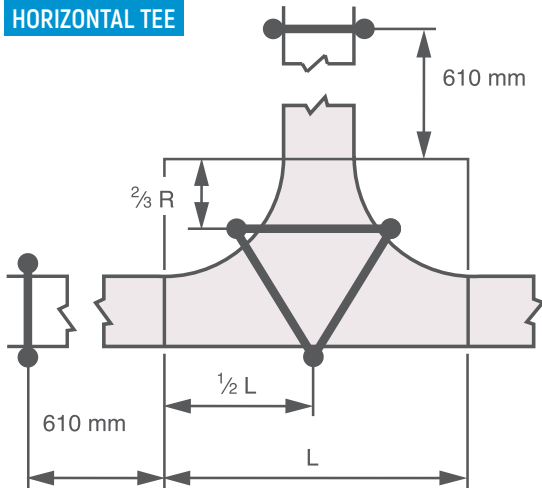
HORIZONTAL ELBOWS



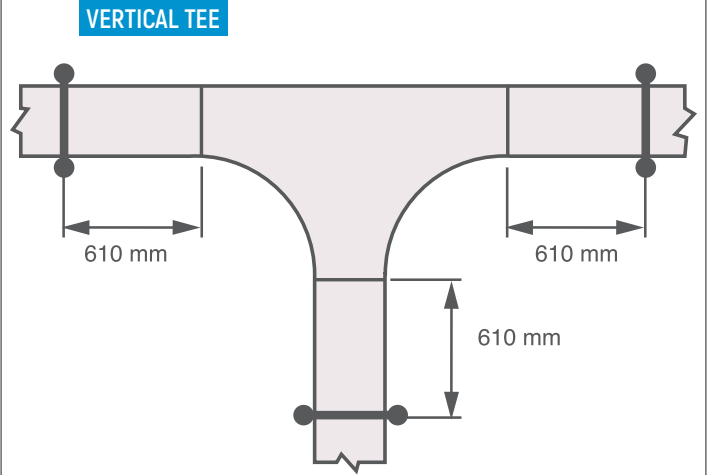
VERTICAL ELBOWS



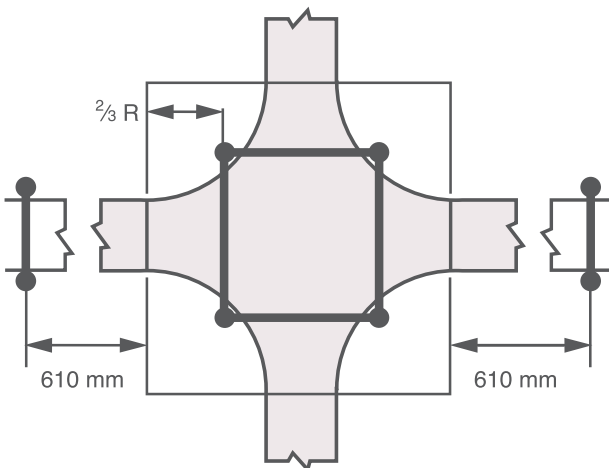
HORIZONTAL TEE



VERTICAL TEE



HORIZONTAL CROSS



Lengths of Straight Sections

Cable Ladder Trays are available in 3 meters length 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, 3 meters length of tray are easier to handle and therefore are better suited for those applications.

Radius of Fittings

FRP Cable Ladders/Trays fittings are used to change directions both horizontally and vertically. The standard radius for FRP Cable Ladders/Trays fittings is 12" (305mm). Other radii of 24" (610mm), and 36" (915mm) can be manufactured upon request. 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 Ladders/Trays 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 Ladders/Trays elbows are critical. It is important to note that the Cable Ladders/Trays 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.

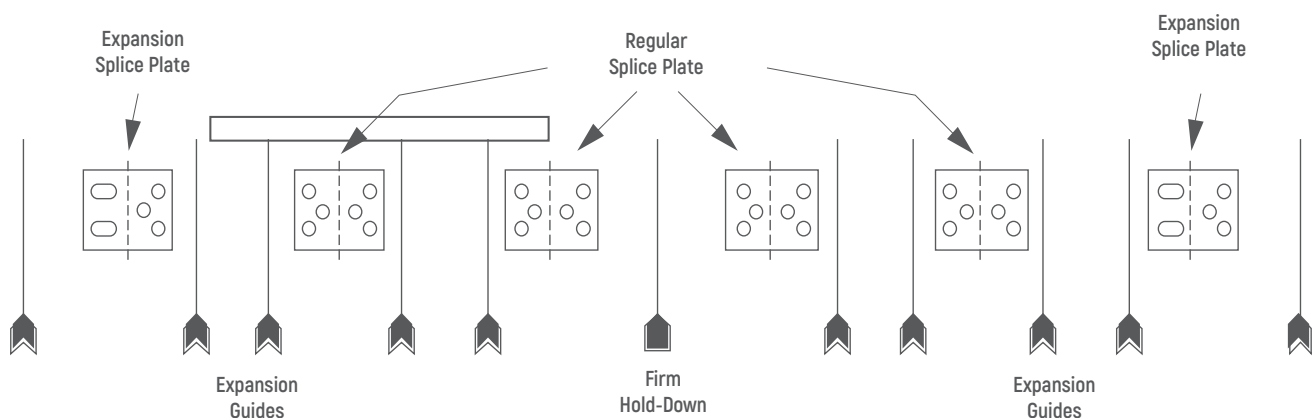
The diagrams on page 2-10 show the recommended support locations for fittings.

Thermal Expansion and Contraction

It is important to use expansion connectors when installing long runs of Cable Ladders/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.

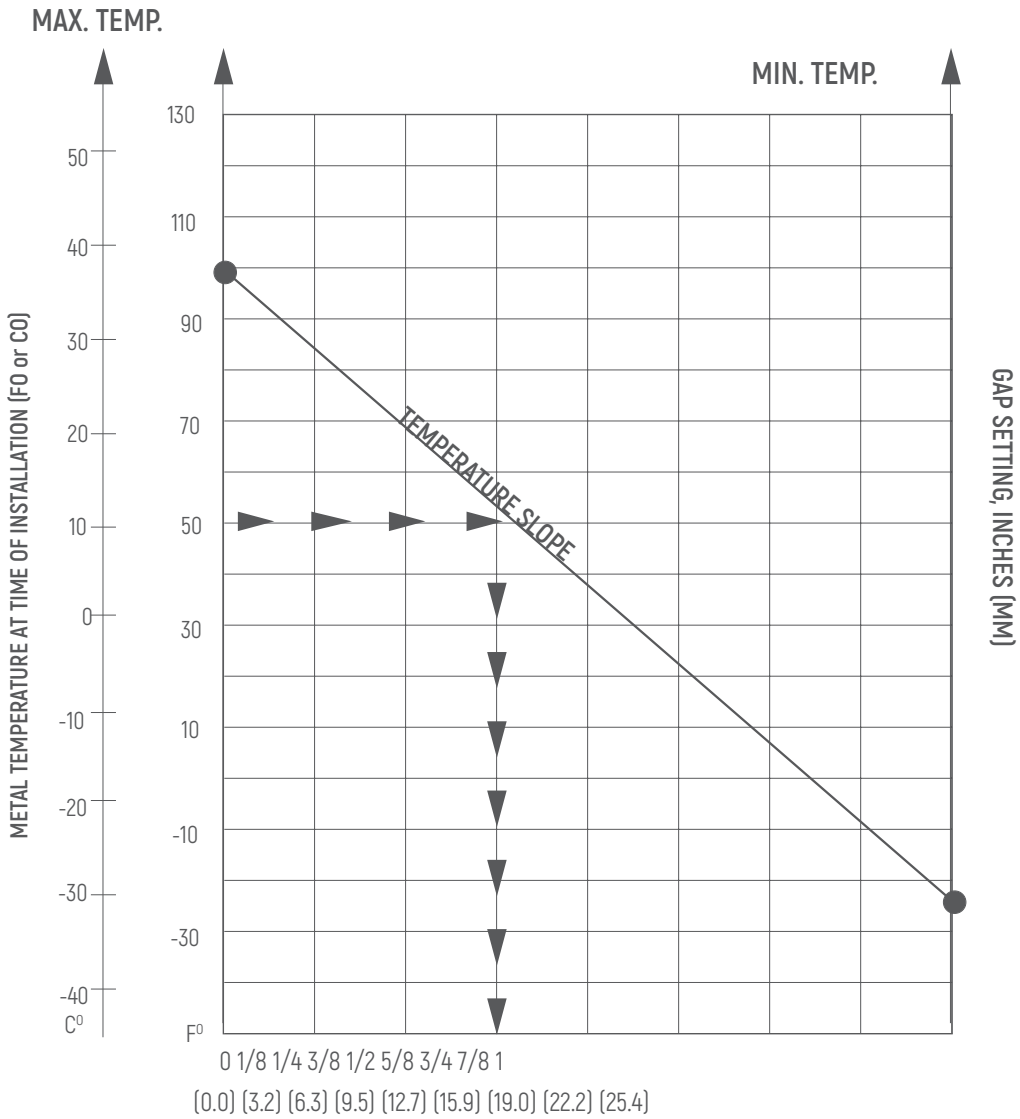


Cable Ladders/Trays Support Positions

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 (C° or 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.

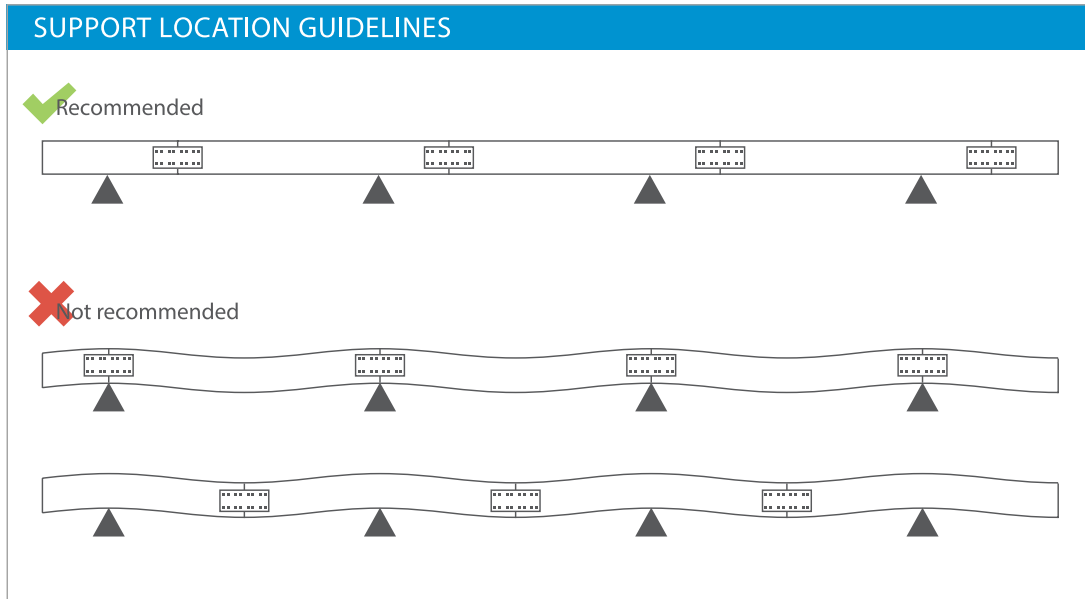


Temperature Difference		Distance between Expansion Joints					
		Steel		Aluminum		Copper	
25°F	(14°C)	51'	(156m)	26'	(79m)	36'	(111m)
50°F	(28°C)	25'	(78m)	13'	(40m)	18'	(55m)
75°F	(42°C)	17'	(52m)	8'	(27m)	12'	(37m)
100°F	(56°C)	12'	(39m)	6'	(20m)	9'	(27m)
125°F	(70°C)	10'	(31m)	5'	(16m)	7'	(22m)
150°F	(83°C)	8'	(26m)	4'	(13m)	6'	(18m)
175°F	(97°C)	7'	(22m)	3'	(11m)	5'	(16m)

FRP Installation Guidelines

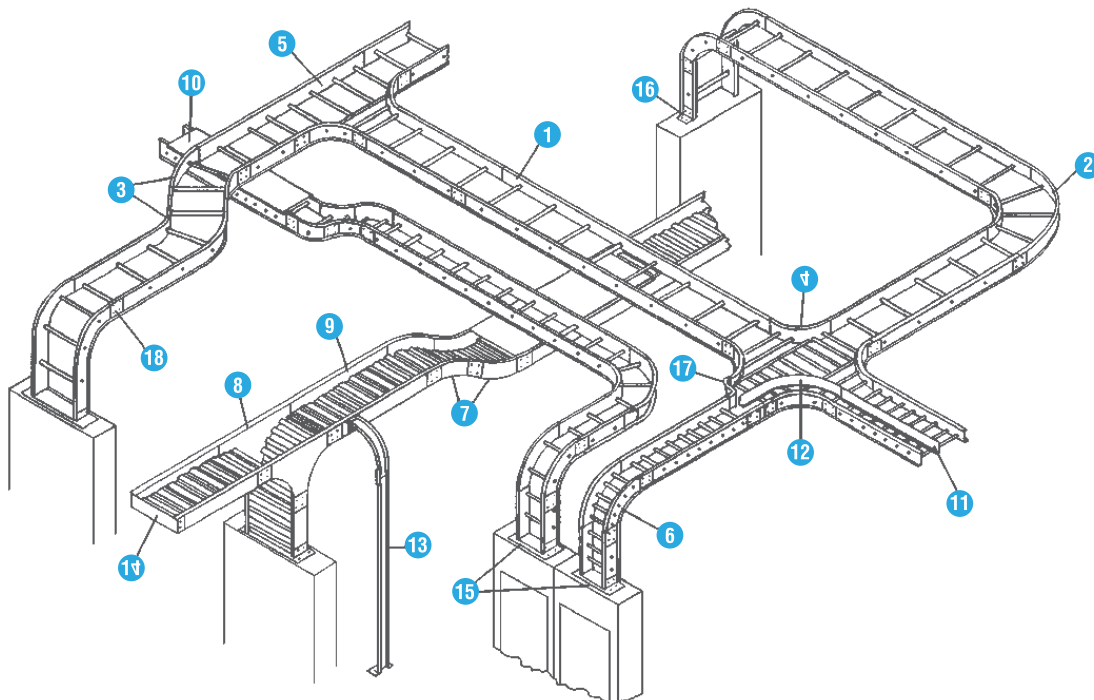
Installing Cable Ladders Trays Correctly

In order to minimize deflection and maximize the safe working load, the cable ladders or cable trays should be installed so that splice joints between horizontal runs sit at the quarter point of the span as illustrated below.



Cable Ladders/Trays System Drawing Legend

- | | |
|---|---|
| 1 Straight Section, Ladder (SL) | 10 Flanged Solid Cover (FS) |
| 2 Horizontal Elbow, 90°, Ladder Type (9F) | 11 Barrier Strip-Straight Section (SB) |
| 3 Horizontal Elbow, 30° (3F), 45° (4F) or 60° (6F) | 12 Barrier Strip-Flexible-Horizontal Fitting (FB) |
| 4 Horizontal Cross, Ladder Type (FC) | 13 Straight Section, Channel (SL) |
| 5 Horizontal Tee, Ladder Type (FT) | 14 Blind End (BE) |
| 6 Vertical Elbow, Outside, 90° (90) | 15 Box Connector (BC) |
| 7 Vertical Elbow, Outside & Inside, 30° (30, 3I), 45° (40, 4I), or 60° (60, 6I) | 16 Angle Connector (CA) |
| 8 Vertical Tee, Solid Bottom Trof Type (VT) | 17 Reducing Connector (CO) |
| 9 Straight Section, Solid Bottom Trof (SL) | 18 Universal Curvilinear Connector (RC) |

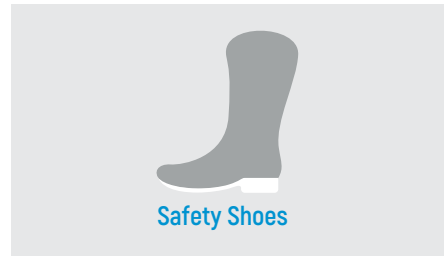
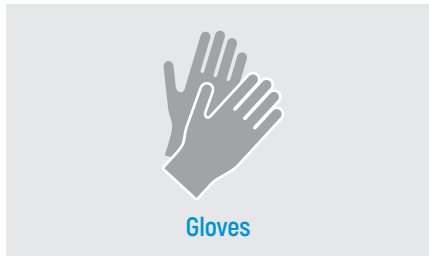
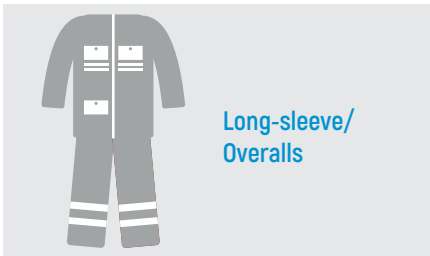
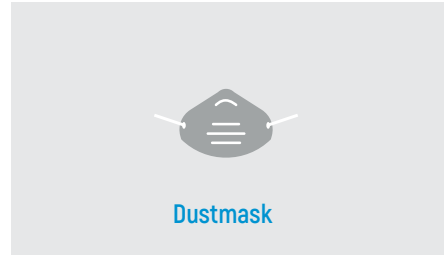
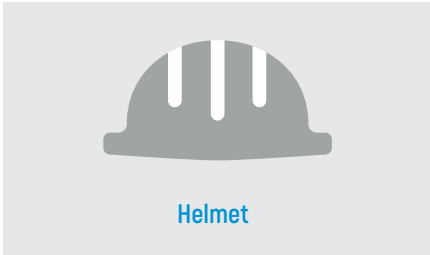


FRP Installation Guidelines

FRP products are inherently stable and safe to handle. The dust created when cutting FRP can however cause skin and respiratory irritation. This is avoided using standard personal protective equipment as shown.

All installations must adhere to local, national, international and branch health, safety and environmental regulations. Unless appropriate safety measures are taken, cutting and grinding operations can be hazardous activities, with significant risk of personal injury or installation damage. Any installation should be carried out by competent persons according to planned work schedules and appropriate safety measures must be taken to avoid hazardous situations. Always wear protective gear when cutting or grinding fiberglass. Even though the dust created is non-toxic, it can still cause skin irritations and itching.

Recommended Protective Gear



Selecting the Right Tools

- On-site cutting is easily done with the use of a circular power saw.
- Diamond or carbide grit edged saw blades and carbide tip drill bits are best suited for fiberglass.
- Fiberglass is easy to work with and only requires regular hand-tools for installation.

Cutting and Drilling

- When cutting, grinding or sanding fiberglass it is important to wear appropriate clothing to protect the operator. Safety glasses, dust mask and gloves are necessary.
- We also recommend wearing a long-sleeved shirt or overalls when working with fiberglass. Because the non-toxic dust that is created can cause skin irritations. The amount of irritant varies among different individuals, and is easily reduced or eliminated by wearing protective clothing.
- Avoid excessive pressure when sawing or drilling, because this force can wear down the tools.
- Refrain from generating excessive heat in any sawing or drilling operation. The heat can soften the resin and produce a rough edge. Excessive heat will also burn the resin and fiberglass.
- Provide rigid support for the profile material during the cutting or drilling process. Movement may cause chipping at the profile edges.
- Use the offered Oglænd System drilling jigs in order to perform proper productive and precise perforations. Do not use a profile member that has been perforated or damaged in wrong positions that may reduce its structural strength.

Selecting the Right Tools

- On-site cutting is easily done with the use of a circular power saw.
- Diamond or carbide grit edged saw blades and carbide tip drill bits are best suited for fiberglass.
- Fiberglass is easy to work with and only requires regular hand-tools for installation.

After Treatment and Installation

- From our extensive testing and on-site experience, the quality of our FRP profiles are such that cut ends and holes do not require sealant in most harsh environments. The requirement for additional sealant applied to cut ends and holes should be considered by the specifier, engineering company or owner based on their environmental evaluation, and specified as a scope of work for the installation contractor.
- When installing cable ladders or cable trays from SFSP System, ensure that you only use original parts, which make up part or all of the main support system. This includes for example splice plates, fittings, fixing clamps and FRP supports. Using non SFSP System products will affect the loading performance and warranty of the whole system.

FRP CABLE LADDER TRAYS SYSTEMS

LH SERIES

LH

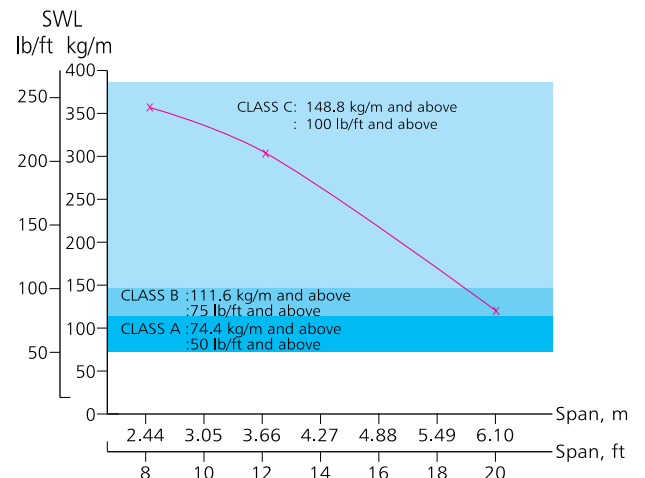
- Side Rail Height (H) : 152mm
- Widths (W): 150mm, 300mm, 450mm, 600mm, 750mm, 900mm
- Rung Spacing: 300 mm
- Rung Dimensions: 25x25 mm
- Standard Thickness: 6 mm
- Standard Lengths (L) : 3000 mm



SAFE WORKING LOAD-CABLE LADDER

FRP Cable Ladder Load Test SFSP-INTECH LH Series, 152 Ht

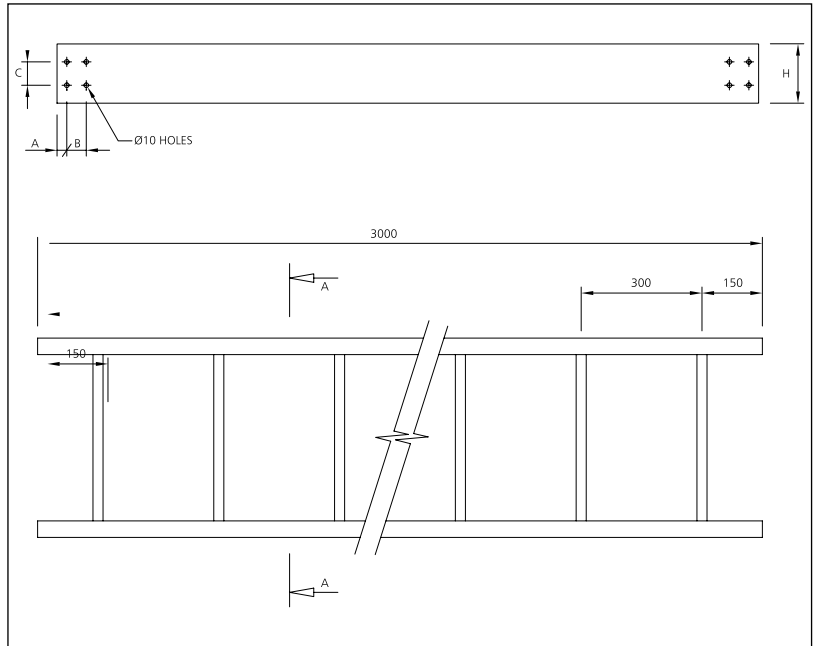
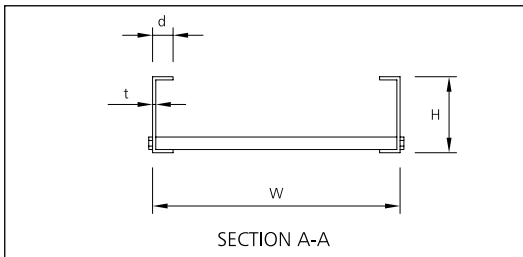
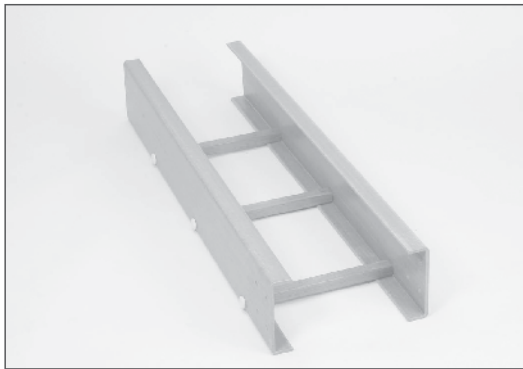
LH SERIES 152 HT	Span (mm)	Class	Classification
	3000	8C	*NEMA FG1 20B
	3660	12C	
	6096	20C	



Item Code	Width	Height	Length	Thickness
	mm	mm	m	mm
SF-ITLH-SS-150-N	150	152	3m	6.0
SF-ITLH-SS-300-N	300	152	3m	6.0
SF-ITLH-SS-450-N	450	152	3m	6.0
SF-ITLH-SS-600-N	600	152	3m	6.0
SF-ITLH-SS-750-N	750	152	3m	6.0
SF-ITLH-SS-900-N	900	152	3m	6.0

LH SERIES RUNS

LH Series-Straight Run

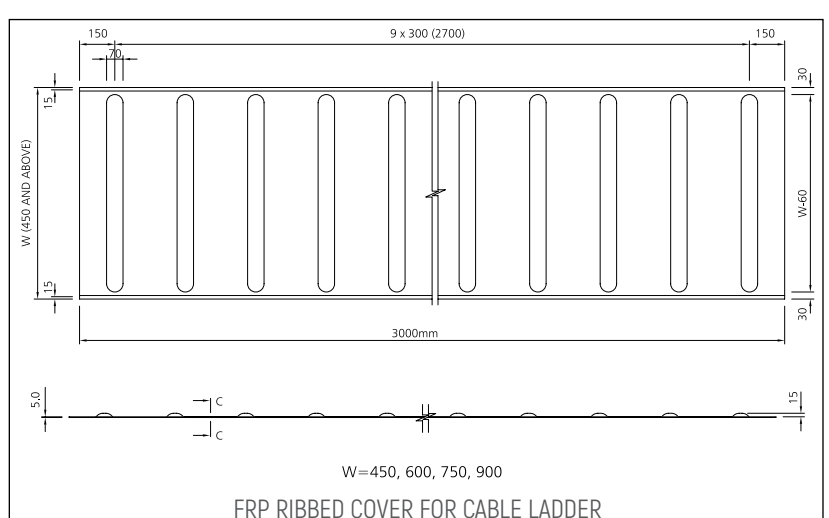
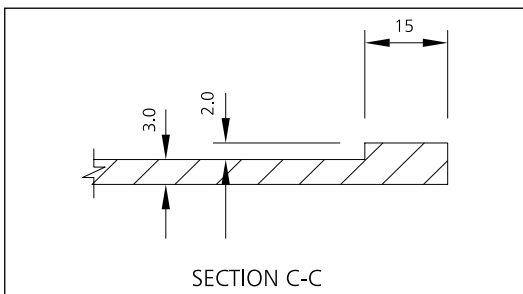
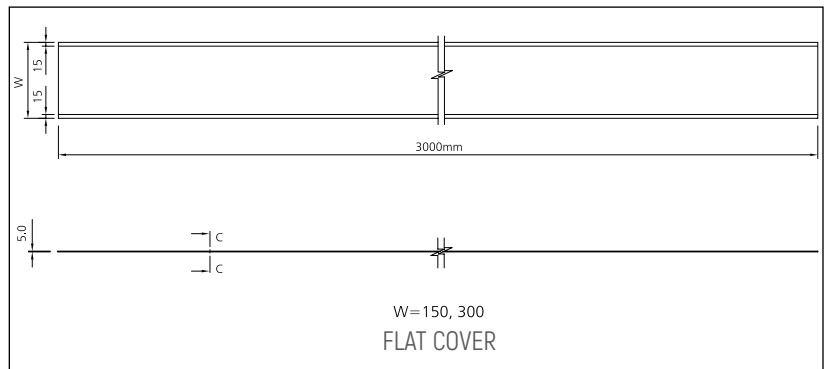


Dimensions

TYPE	H	d	t	A	B	C	REMARKS
LH	152	41	6.0	24	50	60	W=150, 300, 450, 600, 750, 900 mm

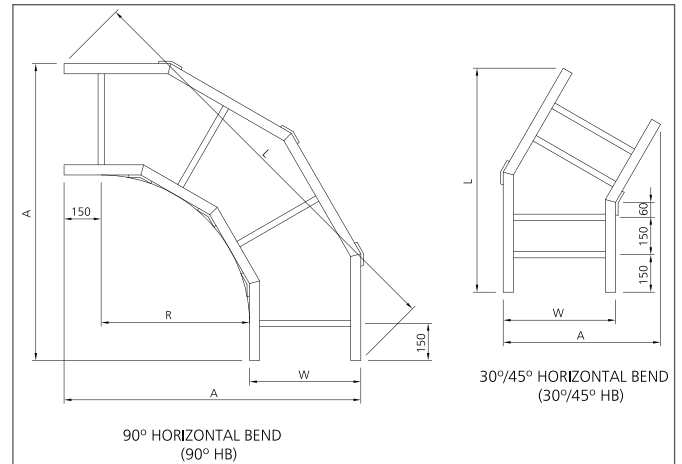
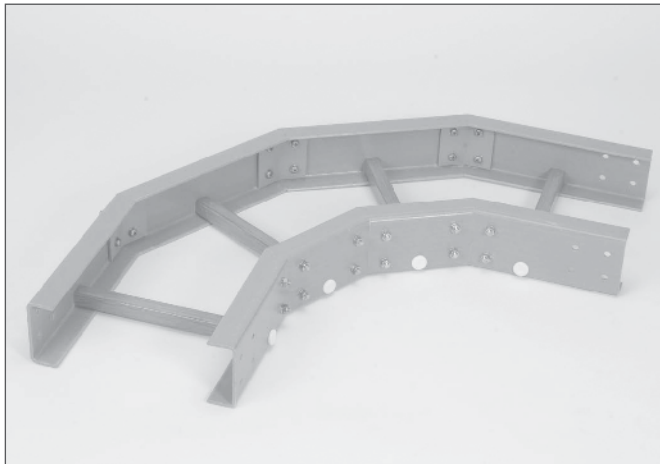
LH Series-Cover

Thickness of FRP side rail for LH Series is 6mm unless otherwise specified.



LH SERIES FITTINGS

LH Series-Horizontal Bend



90° HORIZONTAL BEND

ITEM CODE	W	R = 305	
		A	L
SF-ITLH-HB-90-300R-150-N	150	600	849
SF-ITLH-HB-90-300R-300-N	300	750	1061
SF-ITLH-HB-90-300R-450-N	450	900	1273
SF-ITLH-HB-90-300R-600-N	600	1050	1485
SF-ITLH-HB-90-300R-750-N	750	1200	1697
SF-ITLH-HB-90-300R-900-N	900	1350	1909

ITEM CODE	W	R = 610	
		A	L
SF-ITLH-HB-90-600R-150-N	150	900	1273
SF-ITLH-HB-90-600R-300-N	300	1050	1485
SF-ITLH-HB-90-600R-450-N	450	1200	1697
SF-ITLH-HB-90-600R-600-N	600	1350	1909
SF-ITLH-HB-90-600R-750-N	750	1500	2121
SF-ITLH-HB-90-600R-900-N	900	1650	2333

ITEM CODE	W	R = 915	
		A	L
SF-ITLH-HB-90-900R-150-N	150	1200	1697
SF-ITLH-HB-90-900R-300-N	300	1350	1909
SF-ITLH-HB-90-900R-450-N	450	1500	2121
SF-ITLH-HB-90-900R-600-N	600	1650	2333
SF-ITLH-HB-90-900R-750-N	750	1800	2546
SF-ITLH-HB-90-900R-900-N	900	1950	2758

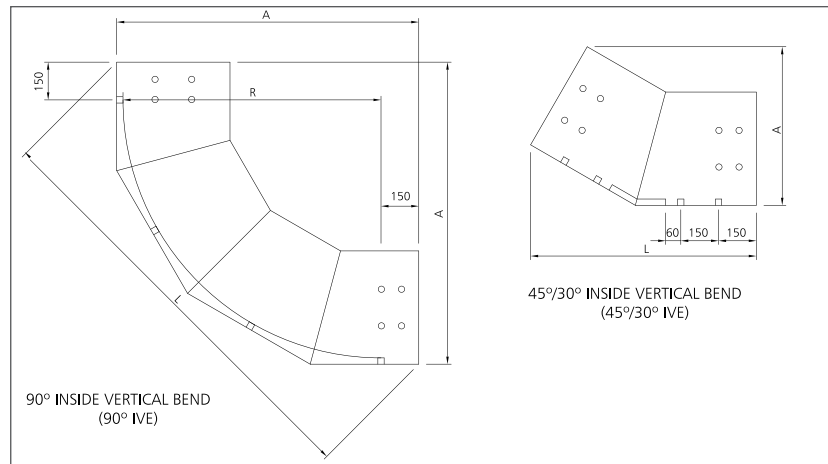
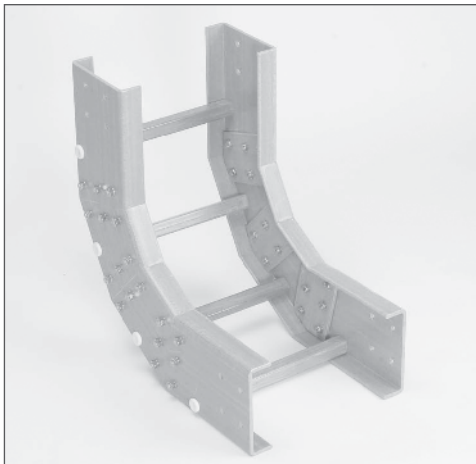
45° HORIZONTAL BEND

ITEM CODE	W	A	L
SF-ITLH-HB-45-300R-150-N	150	405	721
SF-ITLH-HB-45-300R-300-N	300	555	827
SF-ITLH-HB-45-300R-450-N	450	705	933
SF-ITLH-HB-45-300R-600-N	600	855	1039
SF-ITLH-HB-45-300R-750-N	750	1005	1145
SF-ITLH-HB-45-300R-900-N	900	1155	1251

30° HORIZONTAL BEND

ITEM CODE	W	A	L
SF-ITLH-HB-30-300R-150-N	150	320	747
SF-ITLH-HB-30-300R-300-N	300	480	822
SF-ITLH-HB-30-300R-450-N	450	630	897
SF-ITLH-HB-30-300R-600-N	600	780	972
SF-ITLH-HB-30-300R-750-N	750	930	1047
SF-ITLH-HB-30-300R-900-N	900	1080	1122

LH Series-Inside Vertical Bend



90° INSIDE VERTICAL BEND

		R = 305	
ITEM CODE	W	A	L
SF-ITLH-IVB-90-300R-150-N	150	475	672
SF-ITLH-IVB-90-300R-300-N	300	475	672
SF-ITLH-IVB-90-300R-450-N	450	475	672
SF-ITLH-IVB-90-300R-600-N	600	475	672
SF-ITLH-IVB-90-300R-750-N	750	475	672
SF-ITLH-IVB-90-300R-900-N	900	475	672

		R = 610	
ITEM CODE	W	A	L
SF-ITLH-IVB-90-600R-150-N	150	775	1096
SF-ITLH-IVB-90-600R-300-N	300	775	1096
SF-ITLH-IVB-90-600R-450-N	450	775	1096
SF-ITLH-IVB-90-600R-600-N	600	775	1096
SF-ITLH-IVB-90-600R-750-N	750	775	1096
SF-ITLH-IVB-90-600R-900-N	900	775	1096

		R = 915	
ITEM CODE	W	A	L
SF-ITLH-IVB-90-900R-150-N	150	1075	1520
SF-ITLH-IVB-90-900R-300-N	300	1075	1520
SF-ITLH-IVB-90-900R-450-N	450	1075	1520
SF-ITLH-IVB-90-900R-600-N	600	1075	1520
SF-ITLH-IVB-90-900R-750-N	750	1075	1520
SF-ITLH-IVB-90-900R-900-N	900	1075	1520

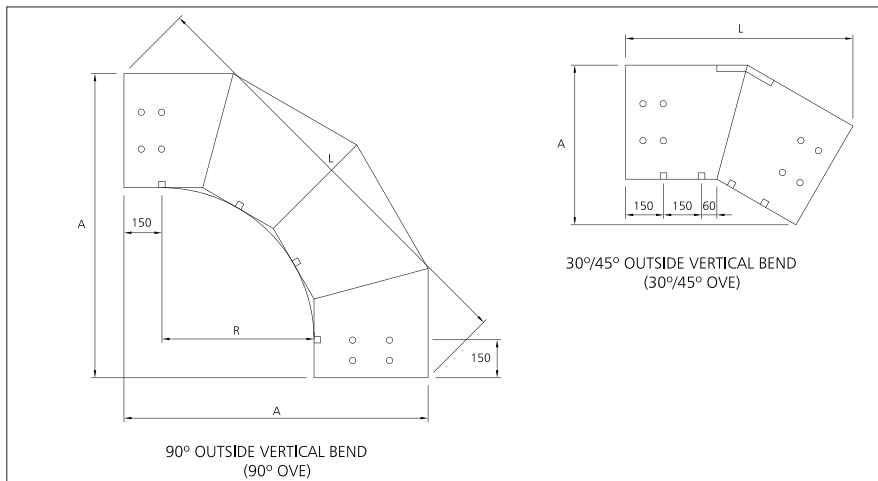
45° INSIDE VERTICAL BEND

ITEM CODE	W	A	L
SF-ITLH-IVB-45-300R-150-N	150	309	486
SF-ITLH-IVB-45-300R-300-N	300	309	486
SF-ITLH-IVB-45-300R-450-N	450	309	486
SF-ITLH-IVB-45-300R-600-N	600	309	486
SF-ITLH-IVB-45-300R-750-N	750	309	486
SF-ITLH-IVB-45-300R-900-N	900	309	486

30° INSIDE VERTICAL BEND

ITEM CODE	W	A	L
SF-ITLH-HB-30-300R-150-N	150	250	442
SF-ITLH-HB-30-300R-300-N	300	250	442
SF-ITLH-HB-30-300R-450-N	450	250	442
SF-ITLH-HB-30-300R-600-N	600	250	442
SF-ITLH-HB-30-300R-750-N	750	250	442
SF-ITLH-HB-30-300R-900-N	900	250	442

LH Series-Outside Vertical Bend



90° OUTSIDE VERTICAL BEND

		R = 305	
ITEM CODE	W	A	L
SF-ITLH-OVB-90-300R-150-N	150	602	851
SF-ITLH-OVB-90-300R-300-N	300	602	851
SF-ITLH-OVB-90-300R-450-N	450	602	851
SF-ITLH-OVB-90-300R-600-N	600	602	851
SF-ITLH-OVB-90-300R-750-N	750	602	851
SF-ITLH-OVB-90-300R-900-N	900	602	851

		R = 610	
ITEM CODE	W	A	L
SF-ITLH-OVB-90-600R-150-N	150	902	1276
SF-ITLH-OVB-90-600R-300-N	300	902	1276
SF-ITLH-OVB-90-600R-450-N	450	902	1276
SF-ITLH-OVB-90-600R-600-N	600	902	1276
SF-ITLH-OVB-90-600R-750-N	750	902	1276
SF-ITLH-OVB-90-600R-900-N	900	902	1276

		R = 915	
ITEM CODE	W	A	L
SF-ITLH-OVB-90-900R-150-N	150	1202	1700
SF-ITLH-OVB-90-900R-300-N	300	1202	1700
SF-ITLH-OVB-90-900R-450-N	450	1202	1700
SF-ITLH-OVB-90-900R-600-N	600	1202	1700
SF-ITLH-OVB-90-900R-750-N	750	1202	1700
SF-ITLH-OVB-90-900R-900-N	900	1202	1700

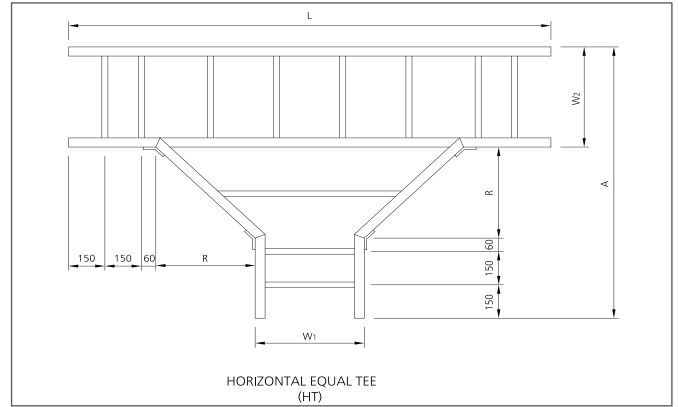
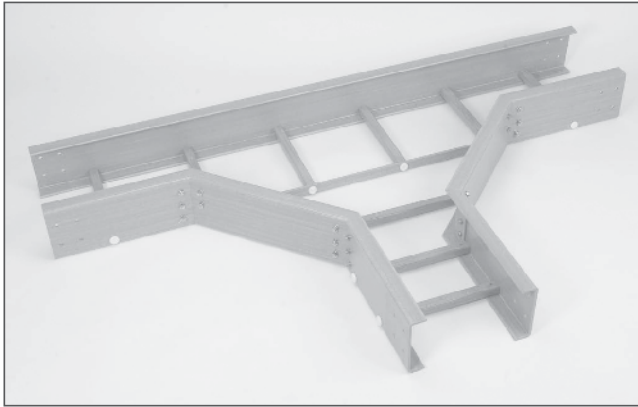
45° OUTSIDE VERTICAL BEND

ITEM CODE	W	A	L
SF-ITLH-OVB-45-300R-150-N	150	346	576
SF-ITLH-OVB-45-300R-300-N	300	346	576
SF-ITLH-OVB-45-300R-450-N	450	346	576
SF-ITLH-OVB-45-300R-600-N	600	346	576
SF-ITLH-OVB-45-300R-750-N	750	346	576
SF-ITLH-OVB-45-300R-900-N	900	346	576

30° OUTSIDE VERTICAL BEND

ITEM CODE	W	A	L
SF-ITLH-OVB-30-300R-150-N	150	267	506
SF-ITLH-OVB-30-300R-300-N	300	267	506
SF-ITLH-OVB-30-300R-450-N	450	267	506
SF-ITLH-OVB-30-300R-600-N	600	267	506
SF-ITLH-OVB-30-300R-750-N	750	267	506
SF-ITLH-OVB-30-300R-900-N	900	267	506

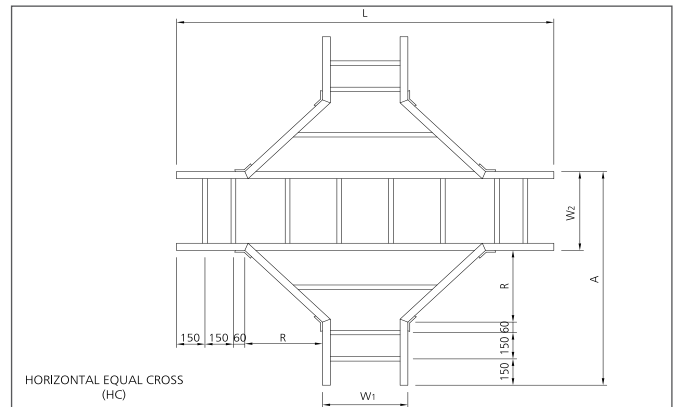
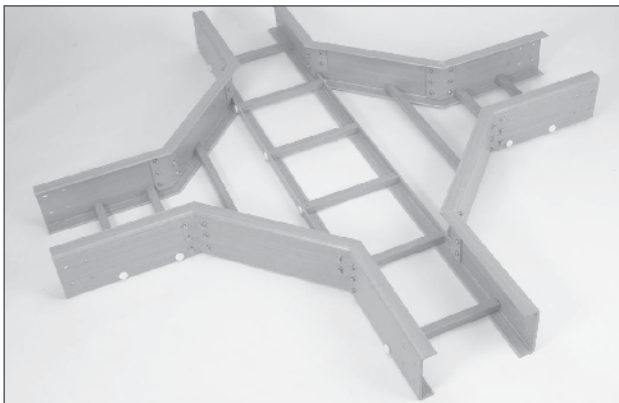
LH Series-Horizontal Tee



90° HORIZONTAL TEE

R = 305				R = 610				R = 915			
ITEM CODE	W	A	L	ITEM CODE	W	A	L	ITEM CODE	W	A	L
SF-ITLH-HT-300R-150-N	150	810	1470	SF-ITLH-HT-600R-150-N	150	1110	2070	SF-ITLH-HT-900R-150-N	150	1410	2670
SF-ITLH-HT-300R-300-N	300	960	1620	SF-ITLH-HT-600R-300-N	300	1260	2220	SF-ITLH-HT-900R-300-N	300	1560	2920
SF-ITLH-HT-300R-450-N	450	1110	1770	SF-ITLH-HT-600R-450-N	450	1410	2370	SF-ITLH-HT-900R-450-N	450	1710	2970
SF-ITLH-HT-300R-600-N	600	1260	1920	SF-ITLH-HT-600R-600-N	600	1560	2520	SF-ITLH-HT-900R-600-N	600	1860	3120
SF-ITLH-HT-300R-750-N	750	1410	2070	SF-ITLH-HT-600R-750-N	750	1710	2670	SF-ITLH-HT-900R-750-N	750	2021	3270
SF-ITLH-HT-300R-900-N	900	1560	2220	SF-ITLH-HT-600R-900-N	900	1860	2820	SF-ITLH-HT-900R-900-N	900	2160	3420

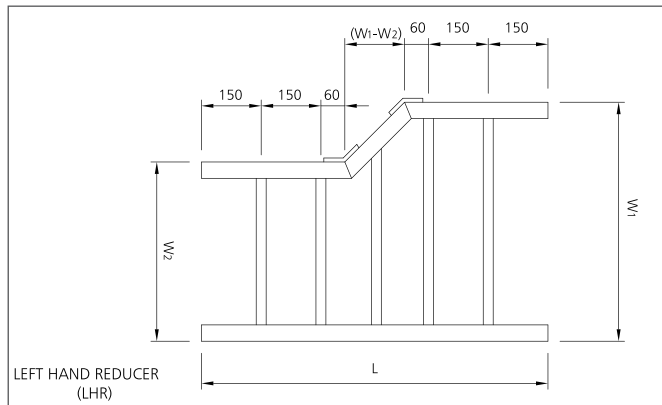
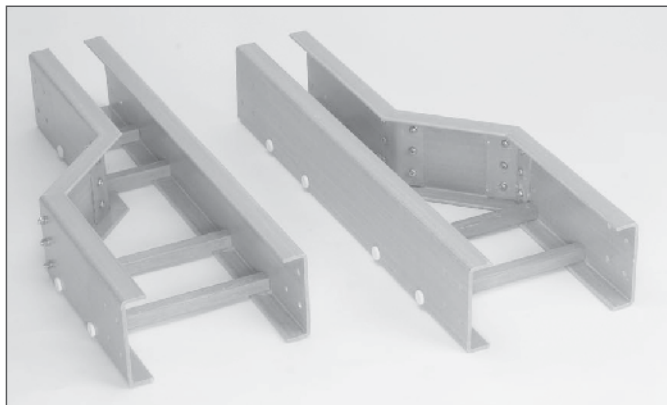
LH Series-Horizontal Cross



90° HORIZONTAL CROSS

R = 305				R = 610				R = 915			
ITEM CODE	W	A	L	ITEM CODE	W	A	L	ITEM CODE	W	A	L
SF-ITLH-HEC-300R-150-N	150	1470	1470	SF-ITLH-HEC-600R-150-N	150	2070	2070	SF-ITLH-HEC-900R-150-N	150	2670	2670
SF-ITLH-HEC-300R-300-N	300	1620	1620	SF-ITLH-HEC-600R-300-N	300	2220	2220	SF-ITLH-HEC-900R-300-N	300	2920	2920
SF-ITLH-HEC-300R-450-N	450	1770	1770	SF-ITLH-HEC-600R-450-N	450	2370	2370	SF-ITLH-HEC-900R-450-N	450	2970	2970
SF-ITLH-HEC-300R-600-N	600	1920	1920	SF-ITLH-HEC-600R-600-N	600	2520	2520	SF-ITLH-HEC-900R-600-N	600	3120	3120
SF-ITLH-HEC-300R-750-N	750	2070	2070	SF-ITLH-HEC-600R-750-N	750	2670	2670	SF-ITLH-HEC-900R-750-N	750	3270	3270
SF-ITLH-HEC-300R-900-N	900	2220	2220	SF-ITLH-HEC-600R-900-N	900	2820	2820	SF-ITLH-HEC-900R-900-N	900	3420	3420

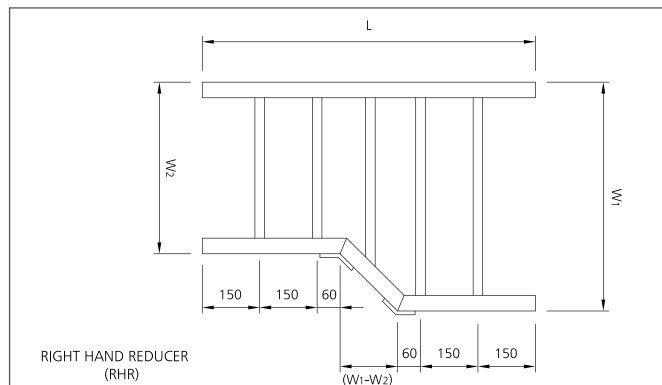
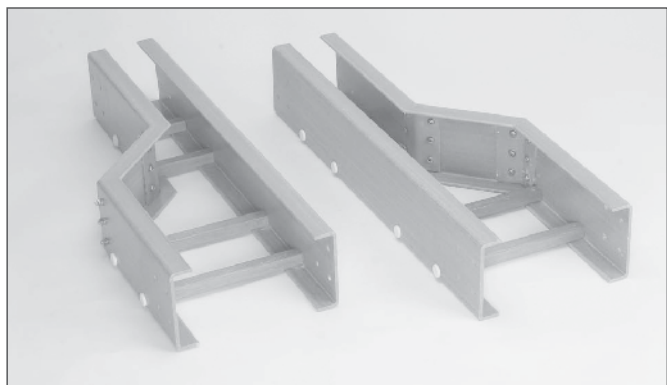
LH Series-Left Hand Reducer



ITEM CODE	W1	W2	L
SF-ITLH-LHR-900-750-N	900	750	870
SF-ITLH-LHR-900-600-N	900	600	1020
SF-ITLH-LHR-900-450-N	900	450	1170
SF-ITLH-LHR-900-300-N	900	300	1320
SF-ITLH-LHR-900-150-N	900	150	1470
SF-ITLH-LHR-750-600-N	750	600	870
SF-ITLH-LHR-750-450-N	750	450	1020
SF-ITLH-LHR-750-300-N	750	300	1170

ITEM CODE	W1	W2	L
SF-ITLH-LHR-750-150-N	750	150	1320
SF-ITLH-LHR-600-450-N	600	450	870
SF-ITLH-LHR-600-300-N	600	300	1020
SF-ITLH-LHR-600-150-N	600	150	1170
SF-ITLH-LHR-450-300-N	450	300	870
SF-ITLH-LHR-450-150-N	450	150	1020
SF-ITLH-LHR-300-150-N	300	150	870

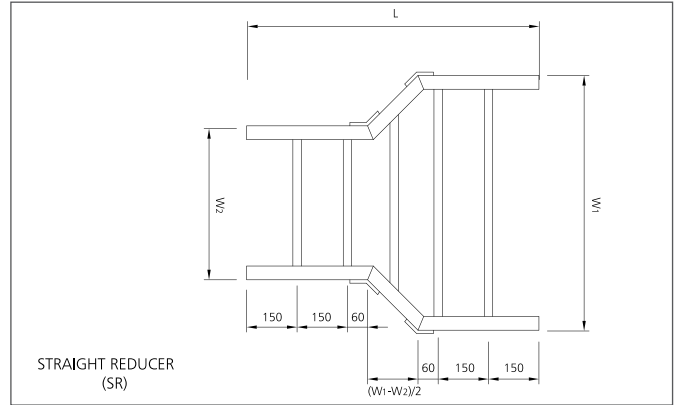
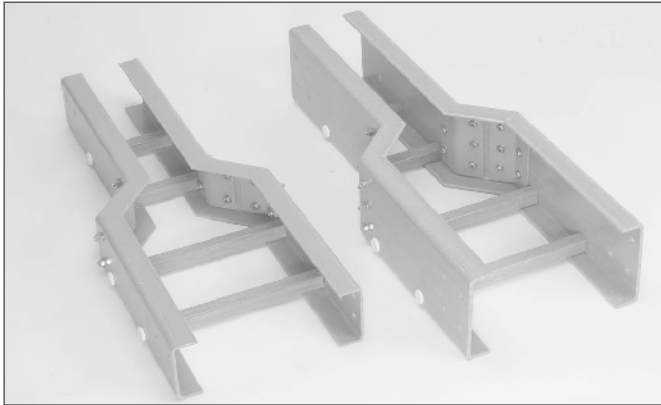
LH Series-Right Hand Reducer



ITEM CODE	W1	W2	L
SF-ITLH-RHR-900-750-N	900	750	870
SF-ITLH-RHR-900-600-N	900	600	1020
SF-ITLH-RHR-900-450-N	900	450	1170
SF-ITLH-RHR-900-300-N	900	300	1320
SF-ITLH-RHR-900-150-N	900	150	1470
SF-ITLH-RHR-750-600-N	750	600	870
SF-ITLH-RHR-750-450-N	750	450	1020
SF-ITLH-RHR-750-300-N	750	300	1170

ITEM CODE	W1	W2	L
SF-ITLH-RHR-750-150-N	750	150	1320
SF-ITLH-RHR-600-450-N	600	450	870
SF-ITLH-RHR-600-300-N	600	300	1020
SF-ITLH-RHR-600-150-N	600	150	1170
SF-ITLH-RHR-450-300-N	450	300	870
SF-ITLH-RHR-450-150-N	450	150	1020
SF-ITLH-RHR-300-150-N	450	150	870

LH Series-Straight Reducer

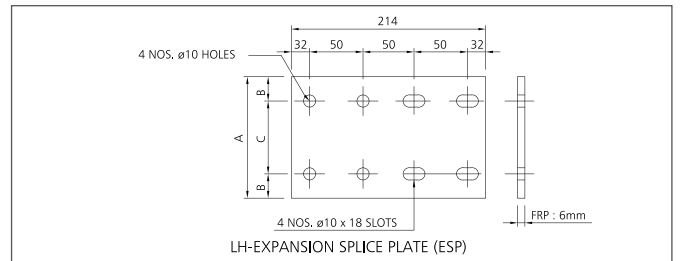
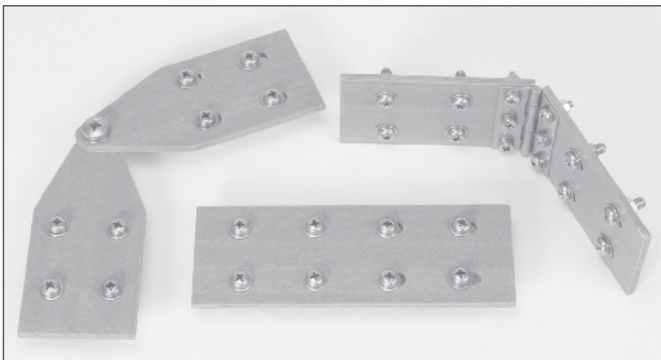


ITEM CODE	W1	W2	L
SF-ITLH-SR-900-750-N	900	750	795
SF-ITLH-SR-900-600-N	900	600	870
SF-ITLH-SR-900-450-N	900	450	945
SF-ITLH-SR-900-300-N	900	300	1020
SF-ITLH-SR-900-150-N	900	150	1095
SF-ITLH-SR-750-600-N	750	600	795
SF-ITLH-SR-750-450-N	750	450	870
SF-ITLH-SR-750-300-N	750	300	945

ITEM CODE	W1	W2	L
SF-ITLH-SR-750-150-N	750	150	1070
SF-ITLH-SR-600-450-N	600	450	795
SF-ITLH-SR-600-300-N	600	300	870
SF-ITLH-SR-600-150-N	600	150	945
SF-ITLH-SR-450-300-N	450	300	795
SF-ITLH-SR-450-150-N	450	150	870
SF-ITLH-SR-300-150-N	300	150	795

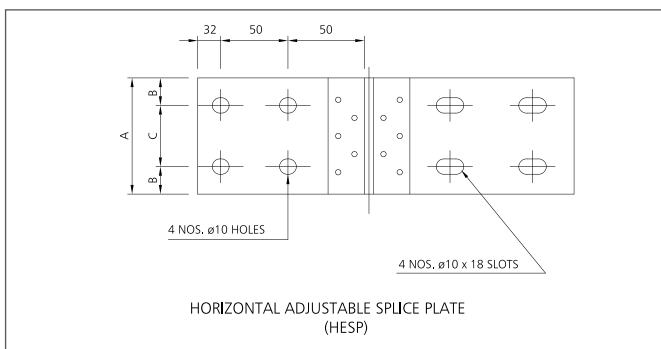
LH SERIES ACCESSORIES

LH Series-Splice Plate

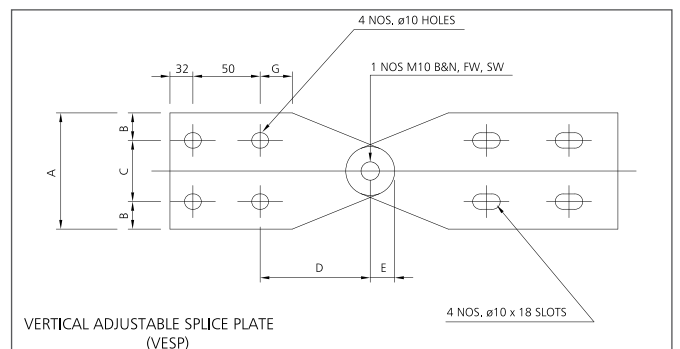


LADDER TYPE	A	B	C
LH	125	32.5	60

*Splice Plate is available in FRP and Stainless Steel of grades 304 and 316

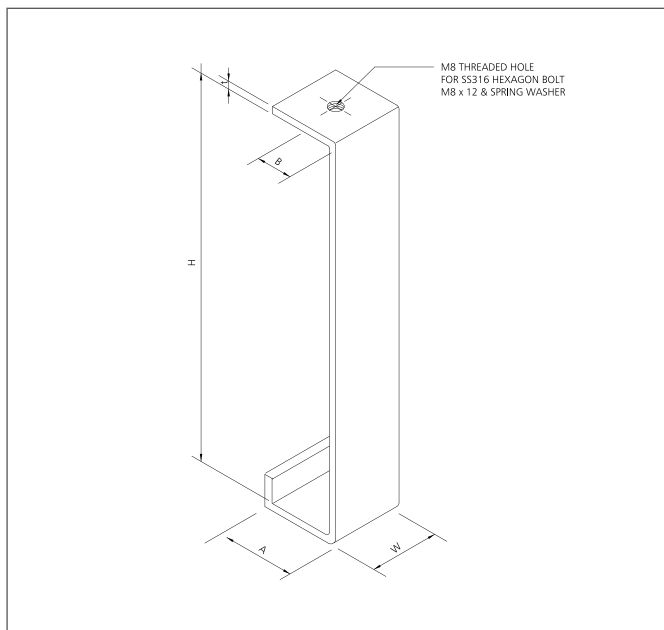


LADDER TYPE	A	B	C
LH	125	32.5	60



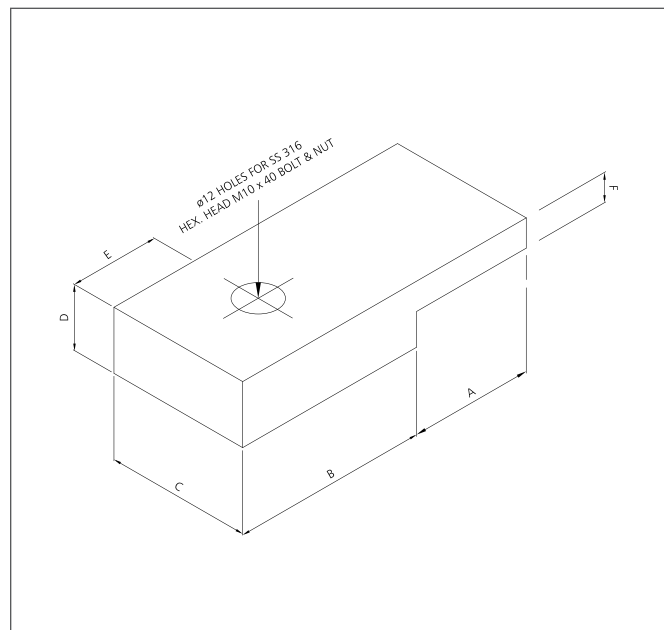
LADDER TYPE	A	B	C	D	E	F
LH	125	32.5	60	75	16	15

LH Series-Cover Clamp-SS316 (CC-SS)



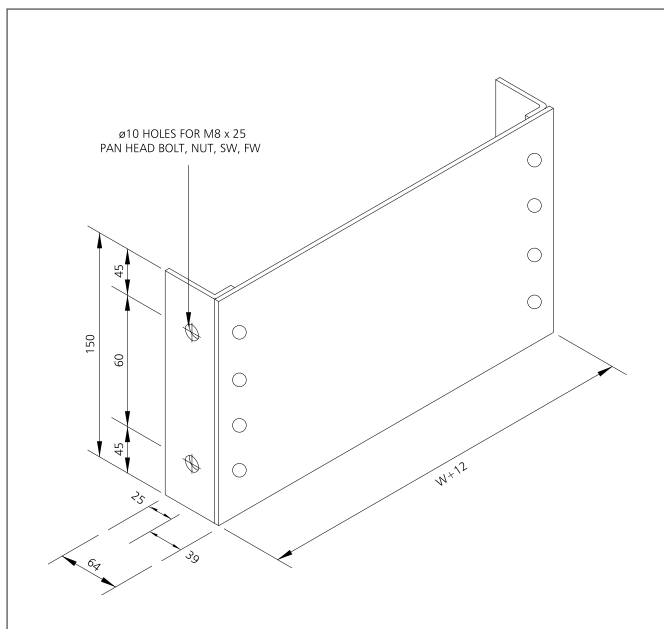
LADDER TYPE	H	W	t	A	B
LH	160	30	2.0	45	24

LH Series-Hold Down Clamp (HDC)

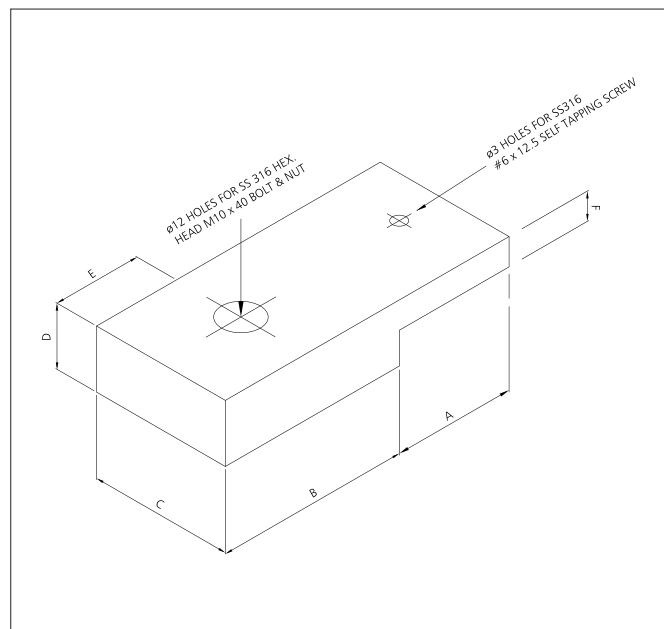


LADDER TYPE	A	B	C	D	E	F
LH	27	40	40	12.2	25	6

LH Series-Blind End Plate (BEP)



LH Series-Vertical Fixing Clamp (VFC)



LADDER TYPE	A	B	C	D	E	F
LH	27	40	40	12.2	25	6

LMH SERIES

LMH

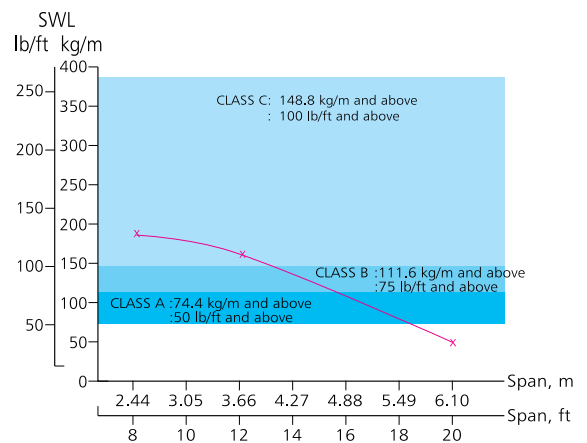
- Side Rail Height (H) : 152mm
- Widths (W): 150mm, 300mm, 450mm, 600mm, 750mm, 900mm
- Rung Spacing: 300 mm
- Rung Dimensions: 25x25 mm
- Standard Thickness: 4.5 mm
- Standard Lengths (L) : 3000 mm



SAFE WORKING LOAD-CABLE LADDER

FRP Cable Ladder Load Test SFSP-INTECH LMH Series, 152 Ht

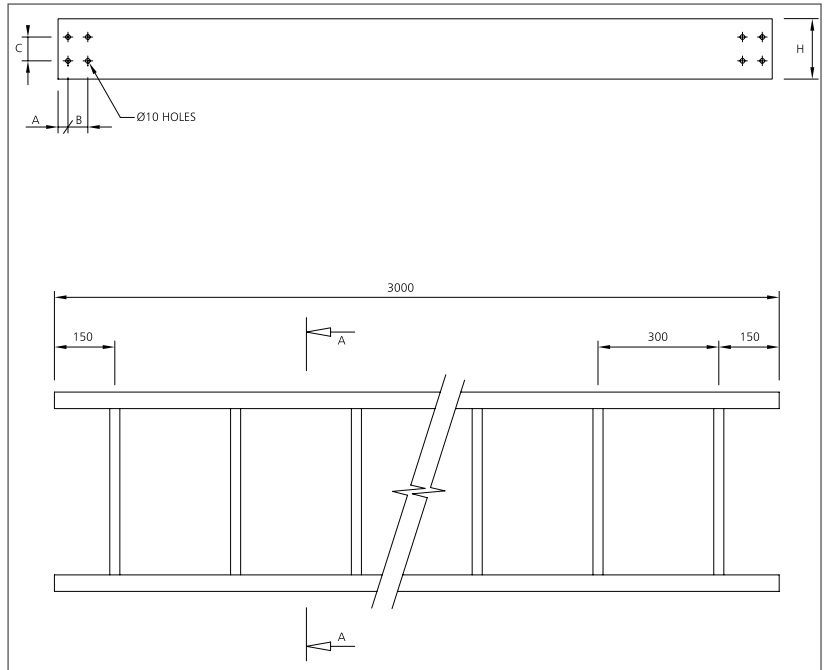
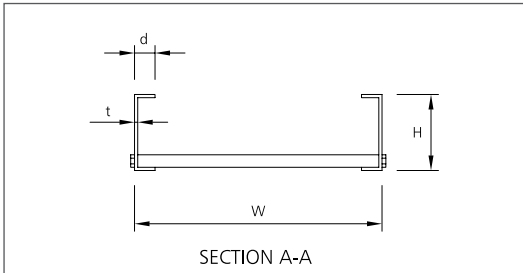
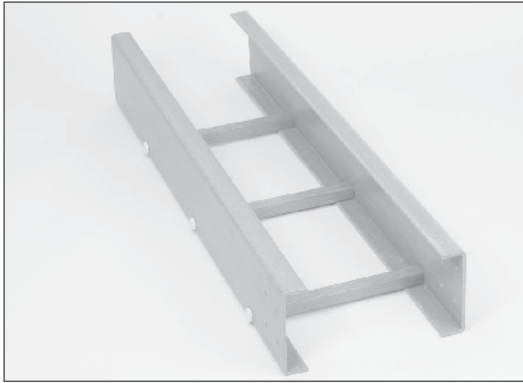
	Span, ft	Class	Classification
LMH SERIES 152 HT	3000	8C	*NEMA FG1 12C
	3660	12C	
	6096	20A	



Item Code	Width	Height	Length	Thickness
	mm	mm	m	mm
SF-ITLMH-SS-150-N	150	152	3m	6.0
SF-ITLMH-SS-300-N	300	152	3m	6.0
SF-ITLMH-SS-450-N	450	152	3m	6.0
SF-ITLMH-SS-600-N	600	152	3m	6.0
SF-ITLMH-SS-750-N	750	152	3m	6.0
SF-ITLMH-SS-900-N	900	152	3m	6.0

LMH SERIES RUNS

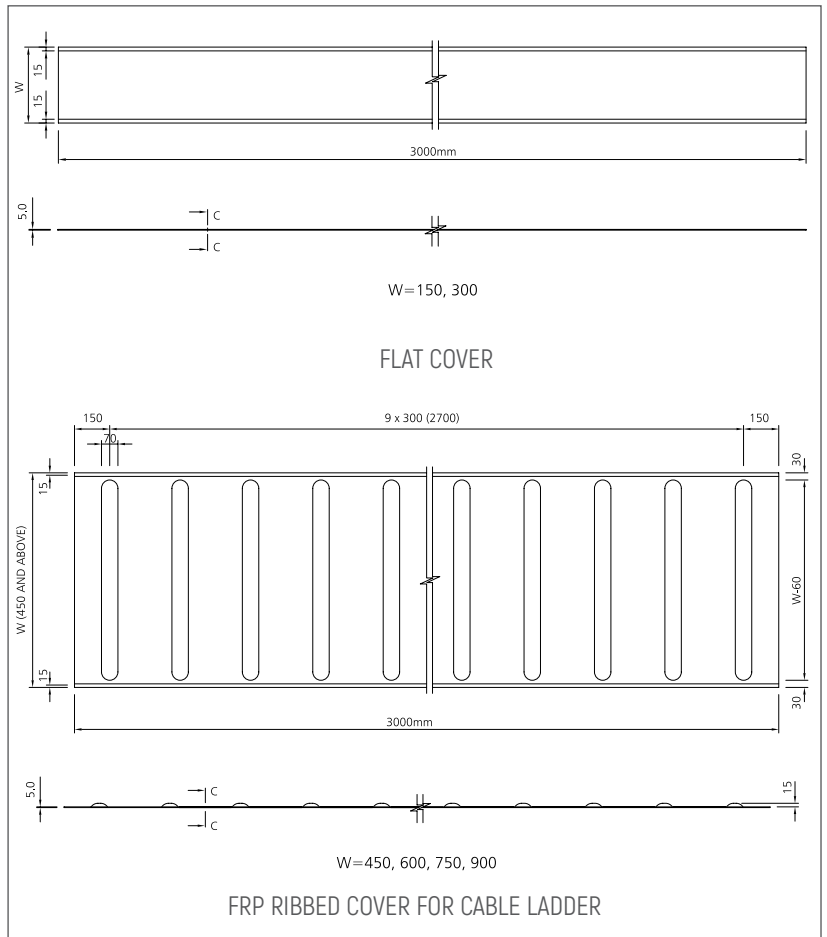
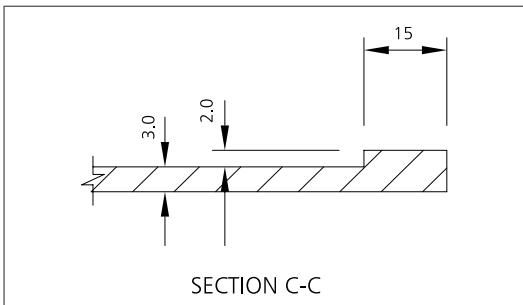
LMH Series-Straight Run



TYPE	H	d	t	A	B	C	REMARKS
LMH	152	41	4.5	24	50	60	W=150, 300, 450, 600, 750, 900 mm

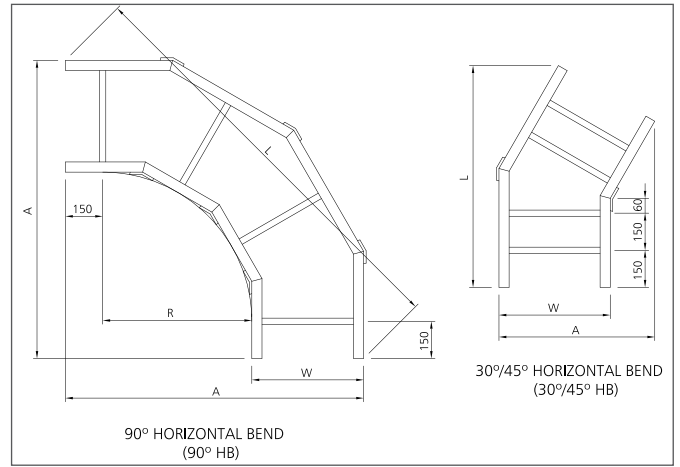
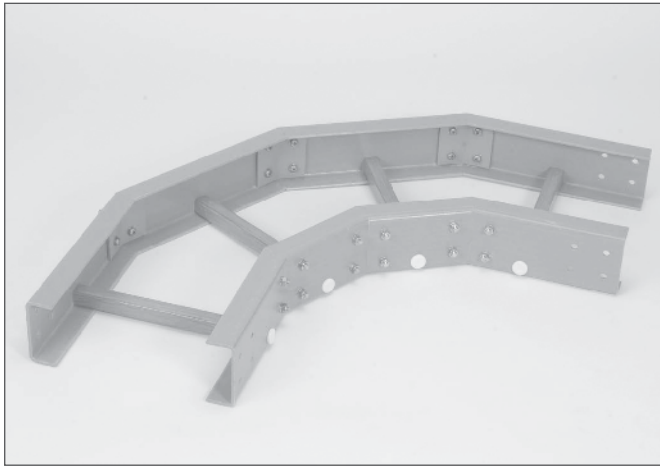
LMH Series-Cover

Thickness of FRP side rail for LMH Series is 4.5 mm unless otherwise specified.



LMH SERIES FITTINGS

LMH Series-Horizontal Bend



90° HORIZONTAL BEND

		R = 305	
ITEM CODE	W	A	L
SF-ITLMH-HB-90-300R-150-N	150	600	849
SF-ITLMH-HB-90-300R-300-N	300	750	1061
SF-ITLMH-HB-90-300R-450-N	450	900	1273
SF-ITLMH-HB-90-300R-600-N	600	1050	1485
SF-ITLMH-HB-90-300R-750-N	750	1200	1697
SF-ITLMH-HB-90-300R-900-N	900	1350	1909

		R = 610	
ITEM CODE	W	A	L
SF-ITLMH-HB-90-600R-150-N	150	900	1273
SF-ITLMH-HB-90-600R-300-N	300	1050	1485
SF-ITLMH-HB-90-600R-450-N	450	1200	1697
SF-ITLMH-HB-90-600R-600-N	600	1350	1909
SF-ITLMH-HB-90-600R-750-N	750	1500	2121
SF-ITLMH-HB-90-600R-900-N	900	1650	2333

		R = 915	
ITEM CODE	W	A	L
SF-ITLMH-HB-90-900R-150-N	150	1200	1697
SF-ITLMH-HB-90-900R-300-N	300	1350	1909
SF-ITLMH-HB-90-900R-450-N	450	1500	2121
SF-ITLMH-HB-90-900R-600-N	600	1650	2333
SF-ITLMH-HB-90-900R-750-N	750	1800	2546
SF-ITLMH-HB-90-900R-900-N	900	1950	2758

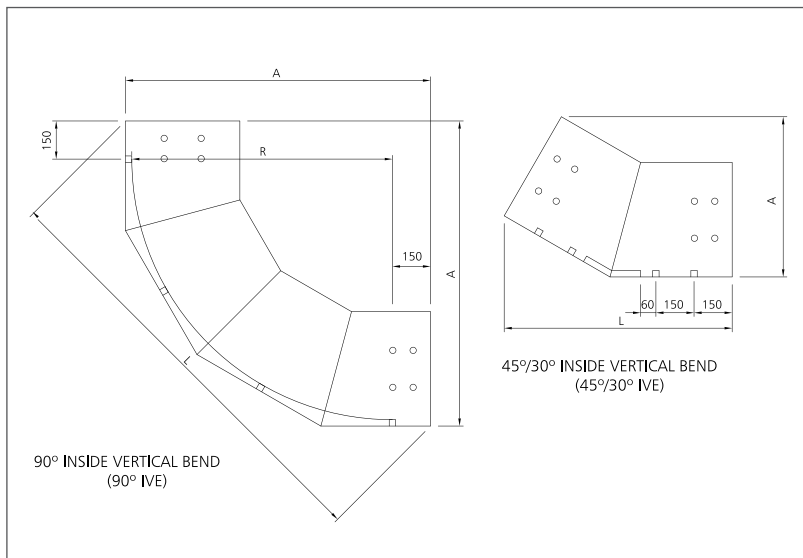
45° HORIZONTAL BEND

ITEM CODE	W	A	L
SF-ITLMH-HB-45-300R-150-N	150	405	721
SF-ITLMH-HB-45-300R-300-N	300	555	827
SF-ITLMH-HB-45-300R-450-N	450	705	933
SF-ITLMH-HB-45-300R-600-N	600	855	1039
SF-ITLMH-HB-45-300R-750-N	750	1005	1145
SF-ITLMH-HB-45-300R-900-N	900	1155	1251

30° HORIZONTAL BEND

ITEM CODE	W	A	L
SF-ITLMH-HB-30-300R-150-N	150	320	747
SF-ITLMH-HB-30-300R-300-N	300	480	822
SF-ITLMH-HB-30-300R-450-N	450	630	897
SF-ITLMH-HB-30-300R-600-N	600	780	972
SF-ITLMH-HB-30-300R-750-N	750	930	1047
SF-ITLMH-HB-30-300R-900-N	900	1080	1122

LMH Series-Inside Vertical Bend



90° INSIDE VERTICAL BEND

		R = 305	
ITEM CODE	W	A	L
SF-ITLMH-IVB-90-300R150-N	150	475	672
SF-ITLMH-IVB-90-300R300-N	300	475	672
SF-ITLMH-IVB-90-300R450-N	450	475	672
SF-ITLMH-IVB-90-300R600-N	600	475	672
SF-ITLMH-IVB-90-300R750-N	750	475	672
SF-ITLMH-IVB-90-300R900-N	900	475	672

		R = 610	
ITEM CODE	W	A	L
SF-ITLMH-IVB-90-600R150-N	150	775	1096
SF-ITLMH-IVB-90-600R300-N	300	775	1096
SF-ITLMH-IVB-90-600R450-N	450	775	1096
SF-ITLMH-IVB-90-600R600-N	600	775	1096
SF-ITLMH-IVB-90-600R750-N	750	775	1096
SF-ITLMH-IVB-90-600R900-N	900	775	1096

		R = 915	
ITEM CODE	W	A	L
SF-ITLMH-IVB-90-900R150-N	150	1075	1520
SF-ITLMH-IVB-90-900R300-N	300	1075	1520
SF-ITLMH-IVB-90-900R450-N	450	1075	1520
SF-ITLMH-IVB-90-900R600-N	600	1075	1520
SF-ITLMH-IVB-90-900R750-N	750	1075	1520
SF-ITLMH-IVB-90-900R900-N	900	1075	1520

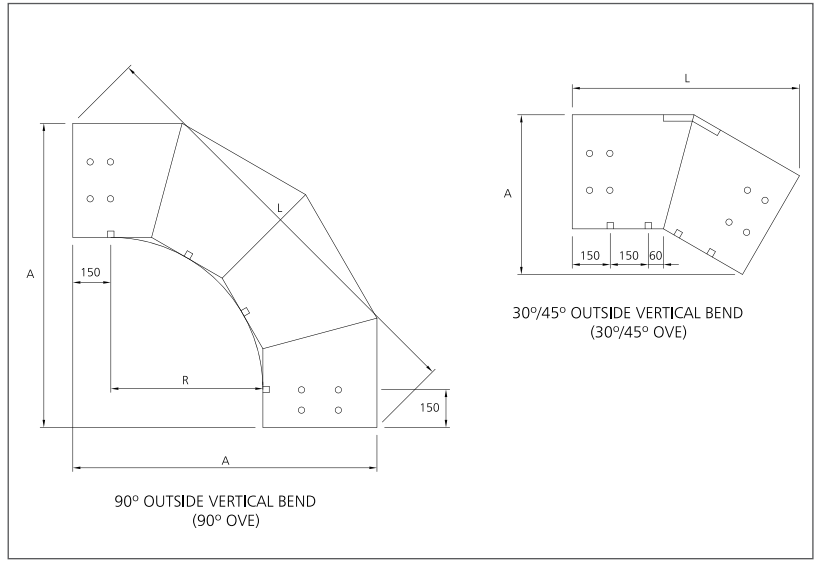
45° INSIDE VERTICAL BEND

ITEM CODE	W	A	L
SF-ITLMH-IVB-45-300R150-N	150	299	722
SF-ITLMH-IVB-45-300R300-N	300	299	722
SF-ITLMH-IVB-45-300R450-N	450	299	722
SF-ITLMH-IVB-45-300R600-N	600	299	722
SF-ITLMH-IVB-45-300R750-N	750	299	722
SF-ITLMH-IVB-45-300R900-N	900	299	722

30° INSIDE VERTICAL BEND

ITEM CODE	W	A	L
SF-ITLMH-IVB-30-300R150-N	150	200	748
SF-ITLMH-IVB-30-300R300-N	300	200	748
SF-ITLMH-IVB-30-300R450-N	450	200	748
SF-ITLMH-IVB-30-300R600-N	600	200	748
SF-ITLMH-IVB-30-300R750-N	750	200	748
SF-ITLMH-IVB-30-300R900-N	900	200	748

LMH Series-Outside Vertical Bend



90° OUTSIDE VERTICAL BEND

		R = 305	
ITEM CODE	W	A	L
SF-ITLMH-OVB-90-300R150-N	150	602	851
SF-ITLMH-OVB-90-300R300-N	300	602	851
SF-ITLMH-OVB-90-300R450-N	450	602	851
SF-ITLMH-OVB-90-300R600-N	600	602	851
SF-ITLMH-OVB-90-300R750-N	750	602	851
SF-ITLMH-OVB-90-300R900-N	900	602	851

		R = 610	
ITEM CODE	W	A	L
SF-ITLMH-OVB-90-600R150-N	150	902	1276
SF-ITLMH-OVB-90-600R300-N	300	902	1276
SF-ITLMH-OVB-90-600R450-N	450	902	1276
SF-ITLMH-OVB-90-600R600-N	600	902	1276
SF-ITLMH-OVB-90-600R750-N	750	902	1276
SF-ITLMH-OVB-90-600R900-N	900	902	1276

		R = 915	
ITEM CODE	W	A	L
SF-ITLMH-OVB-90-900R150-N	150	1202	1700
SF-ITLMH-OVB-90-900R300-N	300	1202	1700
SF-ITLMH-OVB-90-900R450-N	450	1202	1700
SF-ITLMH-OVB-90-900R600-N	600	1202	1700
SF-ITLMH-OVB-90-900R750-N	750	1202	1700
SF-ITLMH-OVB-90-900R900-N	900	1202	1700

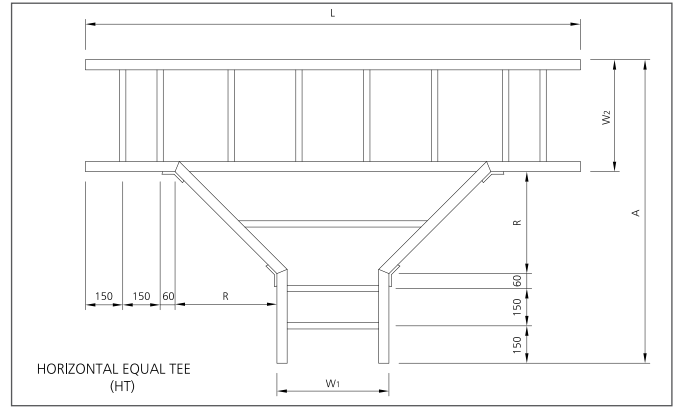
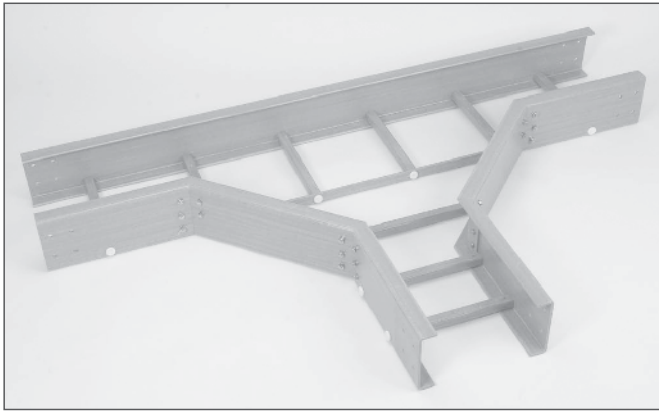
45° OUTSIDE VERTICAL BEND

ITEM CODE	W	A	L
SF-ITLMH-OVB-45-300R150-N	150	407	722
SF-ITLMH-OVB-45-300R300-N	300	407	722
SF-ITLMH-OVB-45-300R450-N	450	407	722
SF-ITLMH-OVB-45-300R600-N	600	407	722
SF-ITLMH-OVB-45-300R750-N	750	407	722
SF-ITLMH-OVB-45-300R900-N	900	407	722

30° OUTSIDE VERTICAL BEND

ITEM CODE	W	A	L
SF-ITLMH-OVB-30-300R150-N	150	332	748
SF-ITLMH-OVB-30-300R300-N	300	332	748
SF-ITLMH-OVB-30-300R450-N	450	332	748
SF-ITLMH-OVB-30-300R600-N	600	332	748
SF-ITLMH-OVB-30-300R750-N	750	332	748
SF-ITLMH-OVB-30-300R900-N	900	332	748

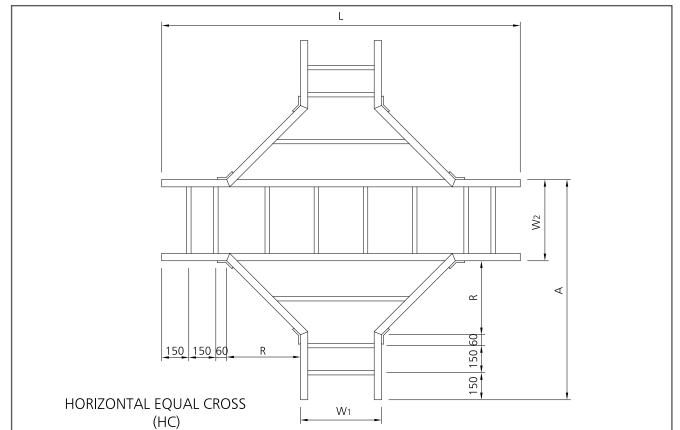
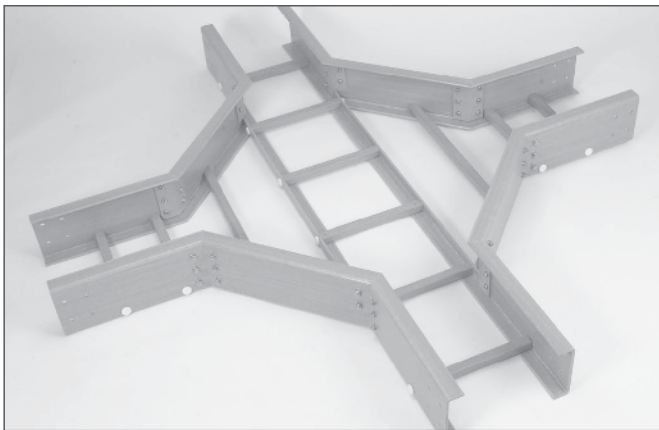
LMH Series-Horizontal Tee



90° HORIZONTAL TEE

R = 305				R = 610				R = 915			
ITEM CODE	W	A	L	ITEM CODE	W	A	L	ITEM CODE	W	A	L
SF-ITLMH-HT-300R-150-N	150	810	1470	SF-ITLMH-HT-600R-150-N	150	1110	2070	SF-ITLMH-HT-900R-150-N	150	1410	2670
SF-ITLMH-HT-300R-300-N	300	960	1620	SF-ITLMH-HT-600R-300-N	300	1260	2220	SF-ITLMH-HT-900R-300-N	300	1560	2920
SF-ITLMH-HT-300R-450-N	450	1110	1770	SF-ITLMH-HT-600R-450-N	450	1410	2370	SF-ITLMH-HT-900R-450-N	450	1710	2970
SF-ITLMH-HT-300R-600-N	600	1260	1920	SF-ITLMH-HT-600R-600-N	600	1560	2520	SF-ITLMH-HT-900R-600-N	600	1860	3120
SF-ITLMH-HT-300R-750-N	750	1410	2070	SF-ITLMH-HT-600R-750-N	750	1710	2670	SF-ITLMH-HT-900R-750-N	750	2021	3270
SF-ITLMH-HT-300R-900-N	900	1560	2220	SF-ITLMH-HT-600R-900-N	900	1860	2820	SF-ITLMH-HT-900R-900-N	900	2160	3420

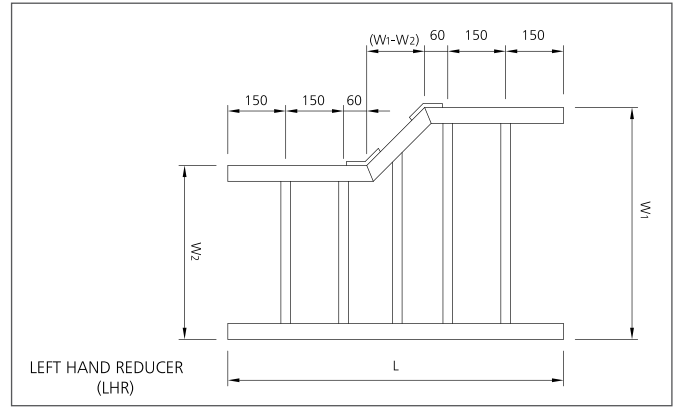
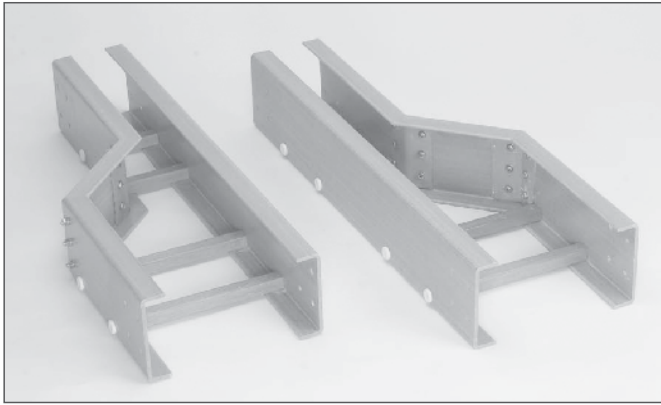
LMH Series-Horizontal Cross



90° HORIZONTAL CROSS

R = 305				R = 610				R = 915			
ITEM CODE	W	A	L	ITEM CODE	W	A	L	ITEM CODE	W	A	L
SF-ITLMH-HEC-300R-150-N	150	810	1470	SF-ITLMH-HEC-600R-150-N	150	1110	2070	SF-ITLMH-HEC-900R-150-N	150	1410	2670
SF-ITLMH-HEC-300R-300-N	300	960	1620	SF-ITLMH-HEC-600R-300-N	300	1260	2220	SF-ITLMH-HEC-900R-300-N	300	1560	2920
SF-ITLMH-HEC-300R-450-N	450	1110	1770	SF-ITLMH-HEC-600R-450-N	450	1410	2370	SF-ITLMH-HEC-900R-450-N	450	1710	2970
SF-ITLMH-HEC-300R-600-N	600	1260	1920	SF-ITLMH-HEC-600R-600-N	600	1560	2520	SF-ITLMH-HEC-900R-600-N	600	1860	3120
SF-ITLMH-HEC-300R-750-N	750	1410	2070	SF-ITLMH-HEC-600R-750-N	750	1710	2670	SF-ITLMH-HEC-900R-750-N	750	2021	3270
SF-ITLMH-HEC-300R-900-N	900	1560	2220	SF-ITLMH-HEC-600R-900-N	900	1860	2820	SF-ITLMH-HEC-900R-900-N	900	2160	3420

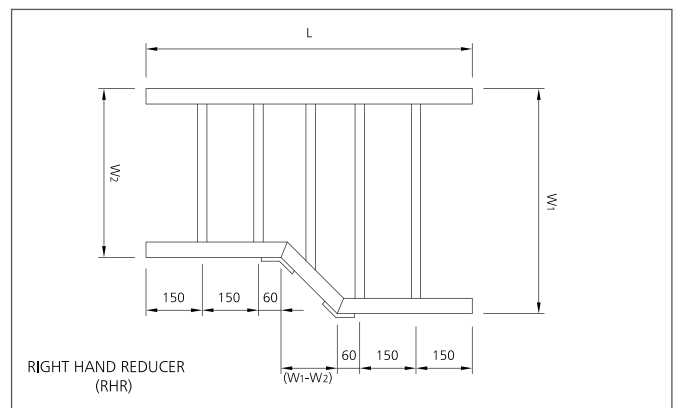
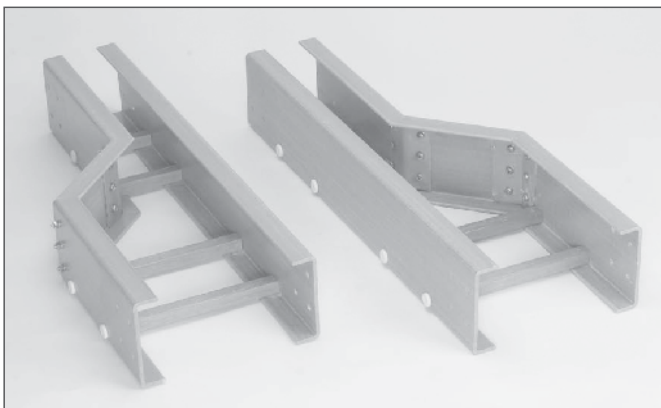
LMH Series-Left Hand Reducer



ITEM CODE	W1	W2	L
SF-ITLMH-LHR-900-750-N	900	750	870
SF-ITLMH-LHR-900-600-N	900	600	1020
SF-ITLMH-LHR-900-450-N	900	450	1170
SF-ITLMH-LHR-900-300-N	900	300	1320
SF-ITLMH-LHR-900-150-N	900	150	1470
SF-ITLMH-LHR-750-600-N	750	600	870
SF-ITLMH-LHR-750-450-N	750	450	1020
SF-ITLMH-LHR-750-300-N	750	300	1170

ITEM CODE	W1	W2	L
SF-ITLMH-LHR-750-150-N	750	150	1320
SF-ITLMH-LHR-600-450-N	600	450	870
SF-ITLMH-LHR-600-300-N	600	300	1020
SF-ITLMH-LHR-600-150-N	600	150	1170
SF-ITLMH-LHR-450-300-N	450	300	870
SF-ITLMH-LHR-450-150-N	450	150	1020
SF-ITLMH-LHR-300-150-N	300	150	870

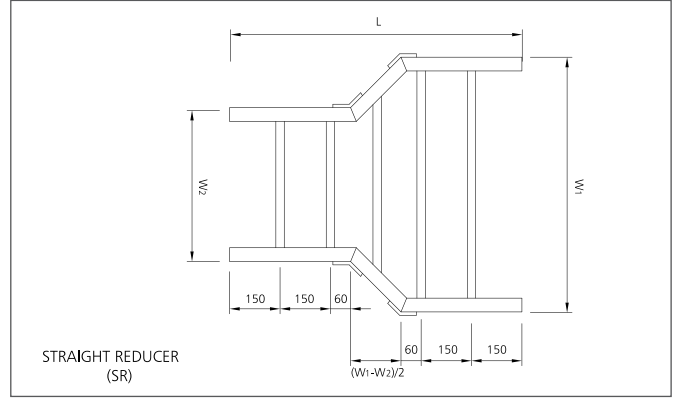
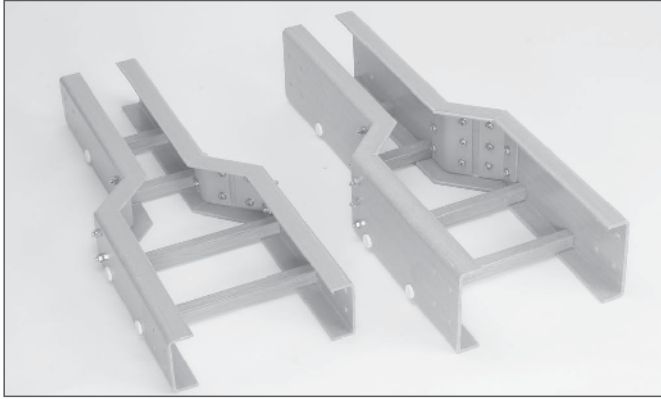
LMH Series-Right Hand Reducer



ITEM CODE	W1	W2	L
SF-ITLMH-RHR-900-750-N	900	750	870
SF-ITLMH-RHR-900-600-N	900	600	1020
SF-ITLMH-RHR-900-450-N	900	450	1170
SF-ITLMH-RHR-900-300-N	900	300	1320
SF-ITLMH-RHR-900-150-N	900	150	1470
SF-ITLMH-RHR-750-600-N	750	600	870
SF-ITLMH-RHR-750-450-N	750	450	1020
SF-ITLMH-RHR-750-300-N	750	300	1170

ITEM CODE	W1	W2	L
SF-ITLMH-RHR-750-150-N	750	150	1320
SF-ITLMH-RHR-600-450-N	600	450	870
SF-ITLMH-RHR-600-300-N	600	300	1020
SF-ITLMH-RHR-600-150-N	600	150	1170
SF-ITLMH-RHR-450-300-N	450	300	870
SF-ITLMH-RHR-450-150-N	450	150	1020
SF-ITLMH-RHR-300-150-N	300	150	870

LMH Series-Straight Reducer

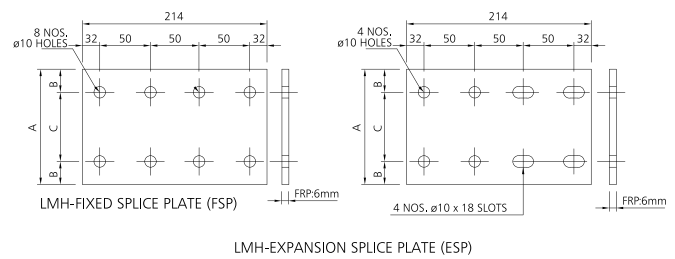
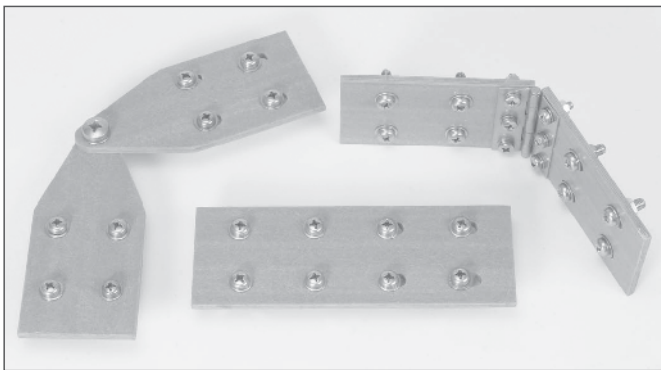


ITEM CODE	W1	W2	L
SF-ITLMH-SR-900-750-N	900	750	795
SF-ITLMH-SR-900-600-N	900	600	870
SF-ITLMH-SR-900-450-N	900	450	945
SF-ITLMH-SR-900-300-N	900	300	1020
SF-ITLMH-SR-900-150-N	900	150	1095
SF-ITLMH-SR-750-600-N	750	600	795
SF-ITLMH-SR-750-450-N	750	450	870
SF-ITLMH-SR-750-300-N	750	300	945

ITEM CODE	W1	W2	L
SF-ITLMH-SR-750-150-N	750	150	1070
SF-ITLMH-SR-600-450-N	600	450	795
SF-ITLMH-SR-600-300-N	600	300	870
SF-ITLMH-SR-600-150-N	600	150	945
SF-ITLMH-SR-450-300-N	450	300	795
SF-ITLMH-SR-450-150-N	450	150	870
SF-ITLMH-SR-300-150-N	300	150	795

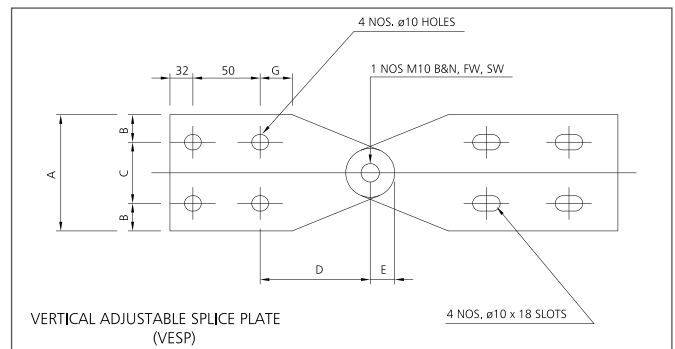
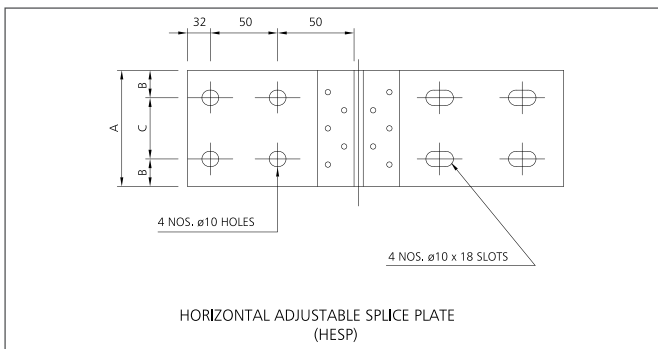
LMH SERIES ACCESSORIES

LMH Series-Splice Plate



*Splice Plate is available in FRP and Stainless Steel of grades 304 and 316

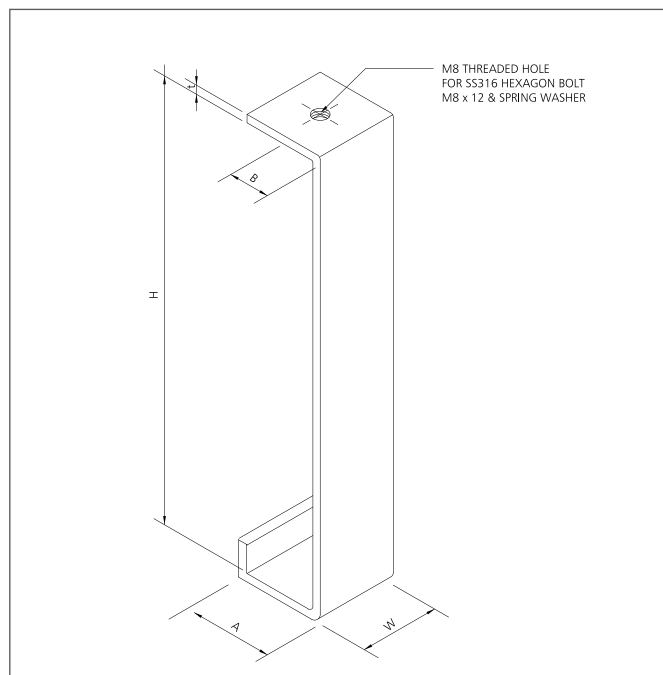
LADDER TYPE	A	B	C
LMH	125	32.5	60



LADDER TYPE	A	B	C
LMH	125	32.5	60

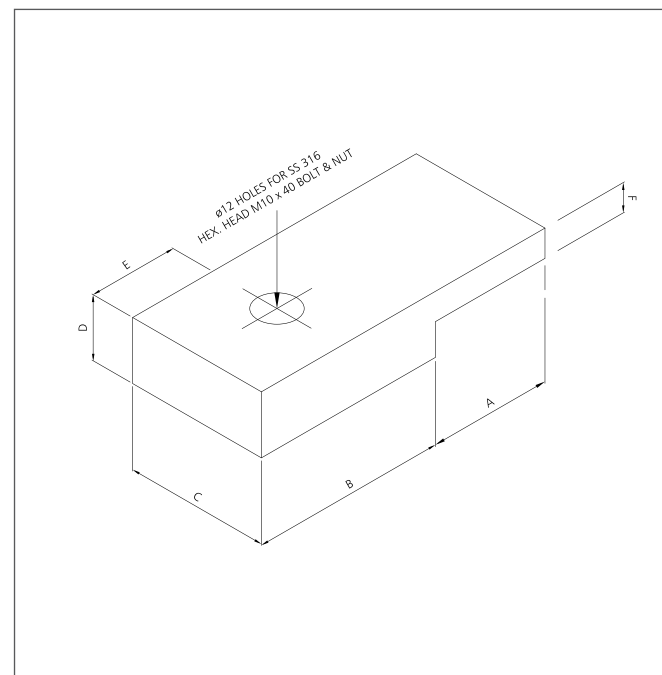
LADDER TYPE	A	B	C	D	E	F
LMH	125	32.5	60	75	16	15

LMH Series-Cover Clamp-SS316 (CC-SS)



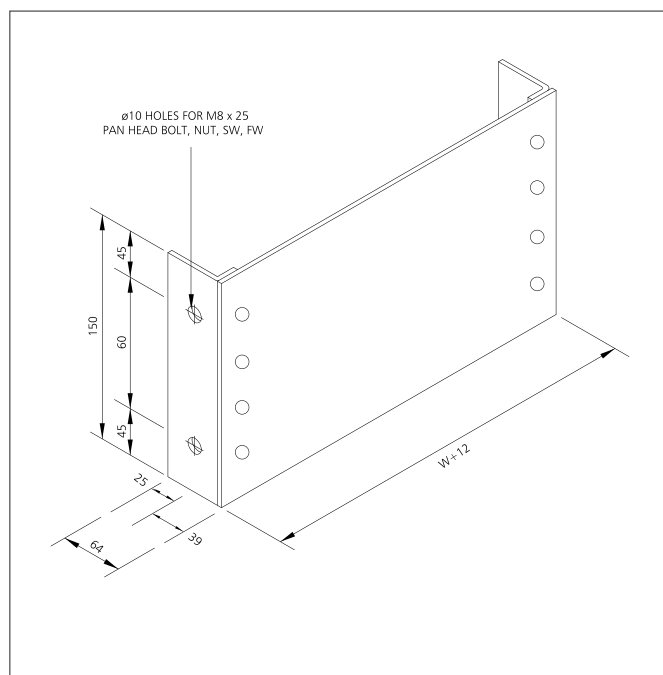
LADDER TYPE	H	W	t	A	B
LMH	160	30	2.0	48	24

LMH Series-Hold Down Clamp (HDC)

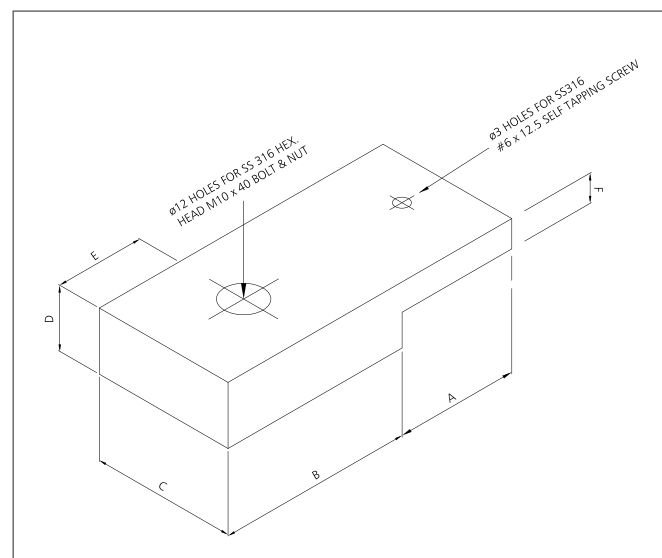


LADDER TYPE	A	B	C	D	E	F
LMH	27	37	40	10.7	25	6

LMH Series-Blind End Plate (BEP)



LMH Series-Vertical Fixing Clamp (VFC)



LADDER TYPE	A	B	C	D	E	F
LMH	27	37	40	10.7	25	6

LM SERIES

LM SERIES

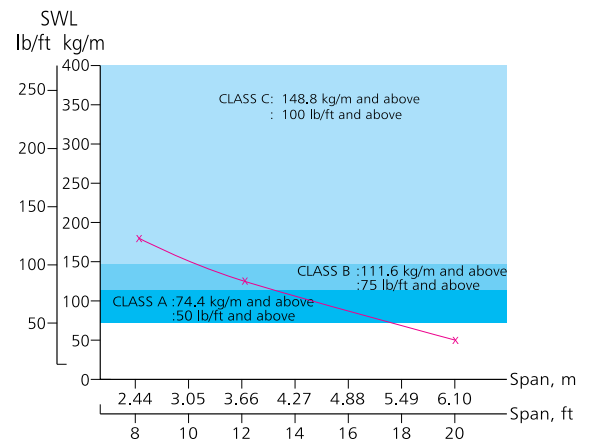
- Side Rail Height (H) : 102mm
- Widths (W): 150mm, 300mm, 450mm, 600mm, 750mm, 900mm
- Rung Spacing: 300 mm
- Rung Dimensions: 25x25 mm
- Standard Thickness: 4.8 mm
- Standard Lengths (L) : 3000 mm



SAFE WORKING LOAD-CABLE LADDER

FRP Cable Ladder Load Test SFSP-INTECH LM Series, 102 Ht

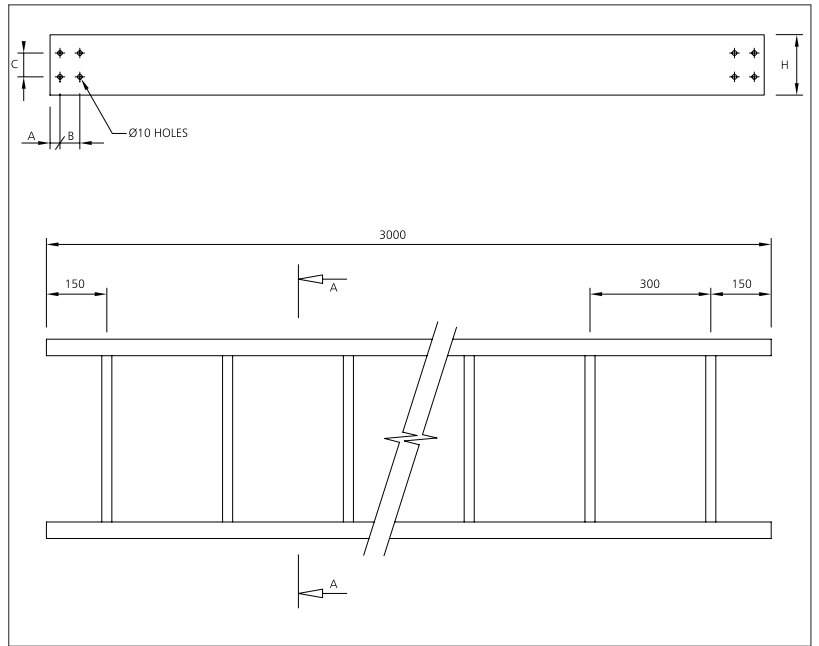
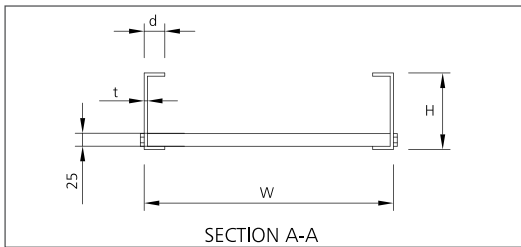
LM SERIES 102 HT	Span, ft	Class	Classification
	3000	8C	*NEMA FG1 12B
	3660	12C	
	6096	20A	



Item Code	Width	Height	Length	Thickness
	mm	mm	m	mm
SF-ITLM-SS-150-N	150	102	3m	6.0
SF-ITLM-SS-300-N	300	102	3m	6.0
SF-ITLM-SS-450-N	450	102	3m	6.0
SF-ITLM-SS-600-N	600	102	3m	6.0
SF-ITLM-SS-750-N	750	102	3m	6.0
SF-ITLM-SS-900-N	900	102	3m	6.0

LM SERIES RUNS

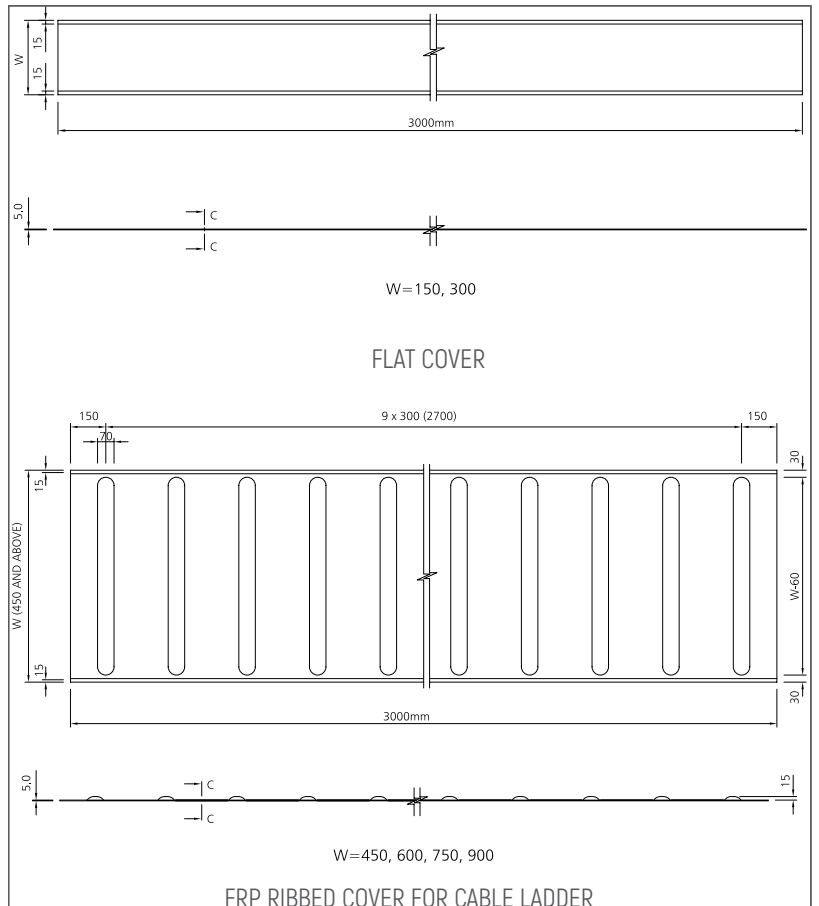
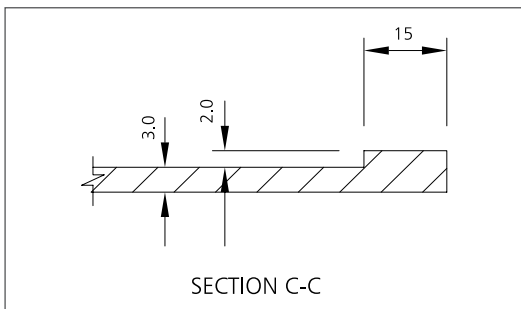
LM Series-Straight Run



TYPE	H	d	t	A	B	C	REMARKS
LM	101	41	4.8	24	50	40	W=150, 300, 450, 600, 750, 900 mm

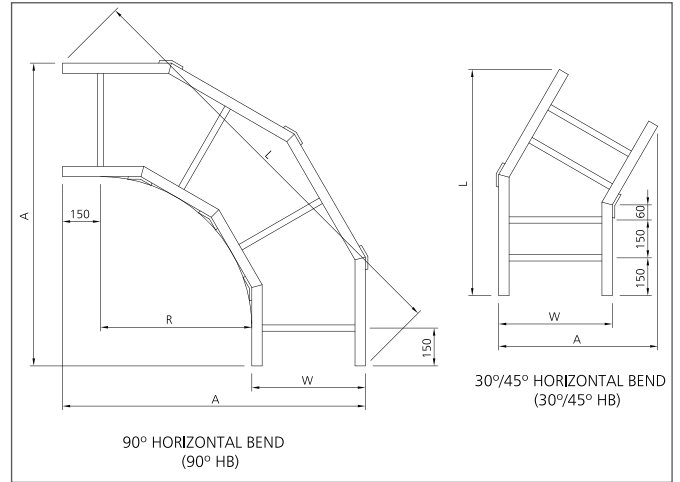
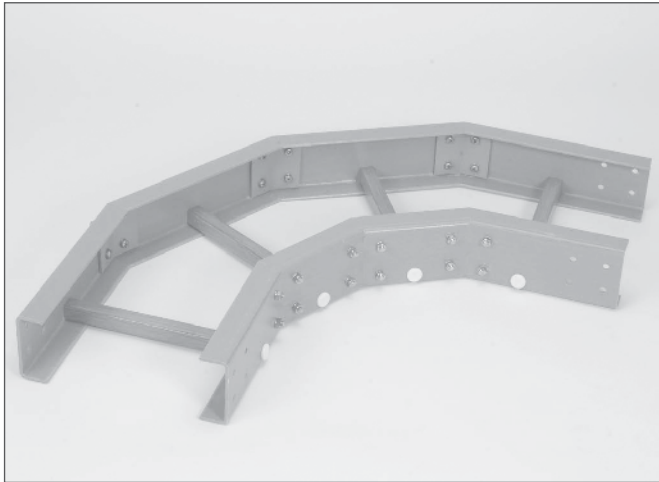
LM Series-Cover

Thickness of FRP side rail for LM Series is 4.5 mm unless otherwise specified.



LM SERIES FITTINGS

LM Series-Horizontal Bend



90° HORIZONTAL BEND

ITEM CODE	W	R = 305	
		A	L
SF-ITLM-HB-90-300R-150-N	150	600	849
SF-ITLM-HB-90-300R-300-N	300	750	1061
SF-ITLM-HB-90-300R-450-N	450	900	1273
SF-ITLM-HB-90-300R-600-N	600	1050	1485
SF-ITLM-HB-90-300R-750-N	750	1200	1697
SF-ITLM-HB-90-300R-900-N	900	1350	1909

ITEM CODE	W	R = 610	
		A	L
SF-ITLM-HB-90-600R-150-N	150	900	1273
SF-ITLM-HB-90-600R-300-N	300	1050	1485
SF-ITLM-HB-90-600R-450-N	450	1200	1697
SF-ITLM-HB-90-600R-600-N	600	1350	1909
SF-ITLM-HB-90-600R-750-N	750	1500	2121
SF-ITLM-HB-90-600R-900-N	900	1650	2333

ITEM CODE	W	R = 915	
		A	L
SF-ITLM-HB-90-900R-150-N	150	1200	1697
SF-ITLM-HB-90-900R-300-N	300	1350	1909
SF-ITLM-HB-90-900R-450-N	450	1500	2121
SF-ITLM-HB-90-900R-600-N	600	1650	2333
SF-ITLM-HB-90-900R-750-N	750	1800	2546
SF-ITLM-HB-90-900R-900-N	900	1950	2758

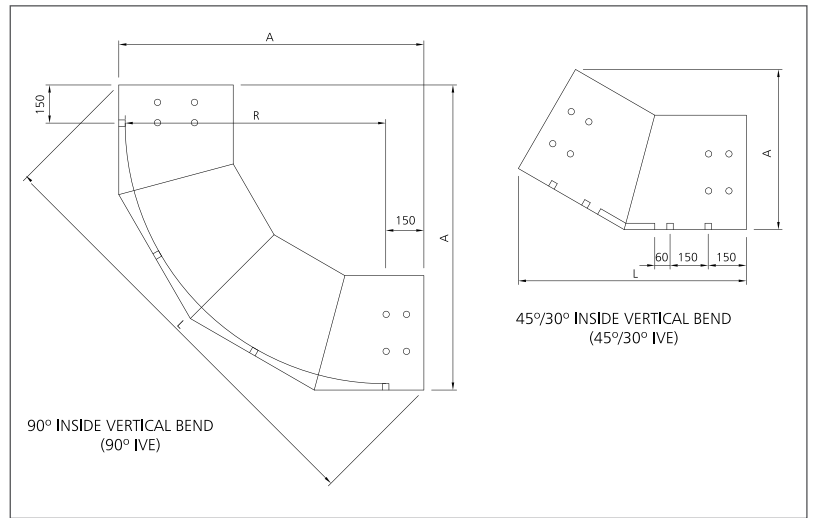
45° HORIZONTAL BEND

ITEM CODE	W	A	L
SF-ITLM-HB-45-300R-150-N	150	405	721
SF-ITLM-HB-45-300R-300-N	300	555	827
SF-ITLM-HB-45-300R-450-N	450	705	933
SF-ITLM-HB-45-300R-600-N	600	855	1039
SF-ITLM-HB-45-300R-750-N	750	1005	1145
SF-ITLM-HB-45-300R-900-N	900	1155	1251

30° HORIZONTAL BEND

ITEM CODE	W	A	L
SF-ITLM-HB-30-300R-150-N	150	320	747
SF-ITLM-HB-30-300R-300-N	300	480	822
SF-ITLM-HB-30-300R-450-N	450	630	897
SF-ITLM-HB-30-300R-600-N	600	780	972
SF-ITLM-HB-30-300R-750-N	750	930	1047
SF-ITLM-HB-30-300R-900-N	900	1080	1122

LM Series-Inside Vertical Bend



90° INSIDE VERTICAL BEND

		R = 305	
ITEM CODE	W	A	L
SF-ITLM-IVB-90-300R-150-N	150	475	672
SF-ITLM-IVB-90-300R-300-N	300	475	672
SF-ITLM-IVB-90-300R-450-N	450	475	672
SF-ITLM-IVB-90-300R-600-N	600	475	672
SF-ITLM-IVB-90-300R-750-N	750	475	672
SF-ITLM-IVB-90-300R-900-N	900	475	672

		R = 610	
ITEM CODE	W	A	L
SF-ITLM-IVB-90-600R-150-N	150	775	1096
SF-ITLM-IVB-90-600R-300-N	300	775	1096
SF-ITLM-IVB-90-600R-450-N	450	775	1096
SF-ITLM-IVB-90-600R-600-N	600	775	1096
SF-ITLM-IVB-90-600R-750-N	750	775	1096
SF-ITLM-IVB-90-600R-900-N	900	775	1096

		R = 915	
ITEM CODE	W	A	L
SF-ITLM-IVB-90-900R-150-N	150	1075	1520
SF-ITLM-IVB-90-900R-300-N	300	1075	1520
SF-ITLM-IVB-90-900R-450-N	450	1075	1520
SF-ITLM-IVB-90-900R-600-N	600	1075	1520
SF-ITLM-IVB-90-900R-750-N	750	1075	1520
SF-ITLM-IVB-90-900R-900-N	900	1075	1520

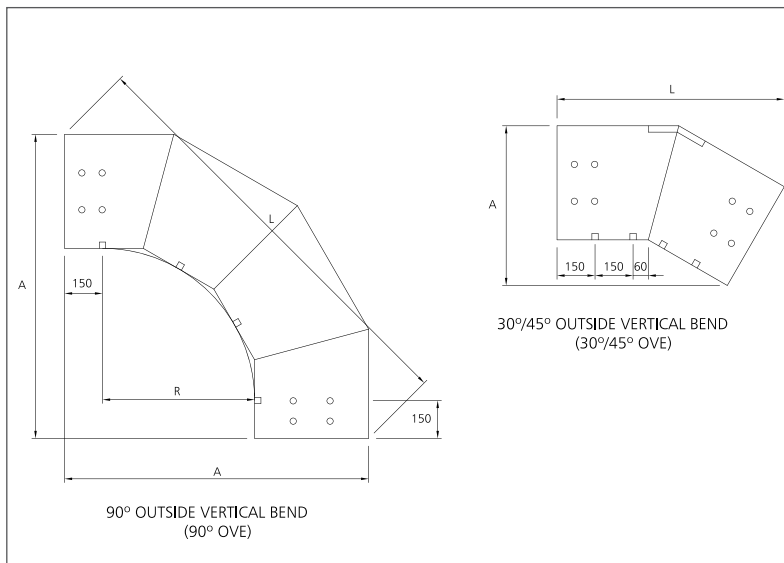
45° INSIDE VERTICAL BEND

ITEM CODE	W	A	L
SF-ITLM-IVB-45-300R-150-N	150	273	486
SF-ITLM-IVB-45-300R-300-N	300	273	486
SF-ITLM-IVB-45-300R-450-N	450	273	486
SF-ITLM-IVB-45-300R-600-N	600	273	486
SF-ITLM-IVB-45-300R-750-N	750	273	486
SF-ITLM-IVB-45-300R-900-N	900	273	486

30° INSIDE VERTICAL BEND

ITEM CODE	W	A	L
SF-ITLM-IVB-30-300R-150-N	150	207	442
SF-ITLM-IVB-30-300R-300-N	300	207	442
SF-ITLM-IVB-30-300R-450-N	450	207	442
SF-ITLM-IVB-30-300R-600-N	600	207	442
SF-ITLM-IVB-30-300R-750-N	750	207	442
SF-ITLM-IVB-30-300R-900-N	900	207	442

LM Series-Outside Vertical Bend



90° OUTSIDE VERTICAL BEND

ITEM CODE	W	R = 305	
		A	L
SF-ITLM-OVB-90-300R-150-N	150	552	781
SF-ITLM-OVB-90-300R-300-N	300	552	781
SF-ITLM-OVB-90-300R-450-N	450	552	781
SF-ITLM-OVB-90-300R-600-N	600	552	781
SF-ITLM-OVB-90-300R-750-N	750	552	781
SF-ITLM-OVB-90-300R-900-N	900	552	781

ITEM CODE	W	R = 610	
		A	L
SF-ITLM-OVB-90-600R-150-N	150	852	1205
SF-ITLM-OVB-90-600R-300-N	300	852	1205
SF-ITLM-OVB-90-600R-450-N	450	852	1205
SF-ITLM-OVB-90-600R-600-N	600	852	1205
SF-ITLM-OVB-90-600R-750-N	750	852	1205
SF-ITLM-OVB-90-600R-900-N	900	852	1205

ITEM CODE	W	R = 915	
		A	L
SF-ITLM-OVB-90-900R-150-N	150	1152	1629
SF-ITLM-OVB-90-900R-300-N	300	1152	1629
SF-ITLM-OVB-90-900R-450-N	450	1152	1629
SF-ITLM-OVB-90-900R-600-N	600	1152	1629
SF-ITLM-OVB-90-900R-750-N	750	1152	1629
SF-ITLM-OVB-90-900R-900-N	900	1152	1629

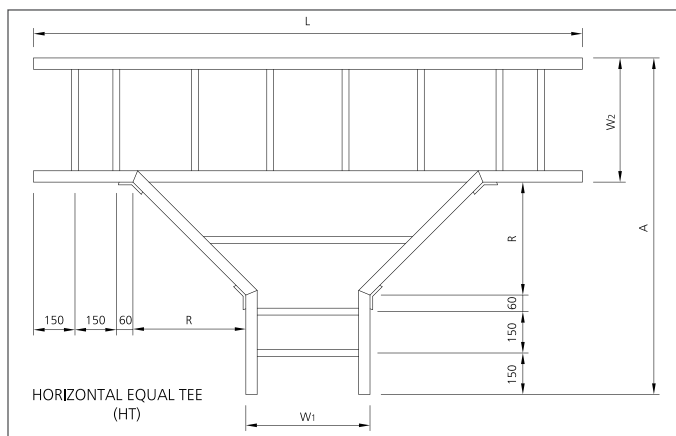
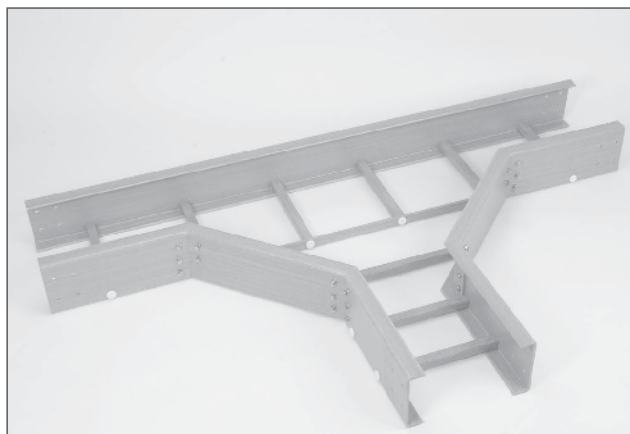
45° OUTSIDE VERTICAL BEND

ITEM CODE	W	A	L
SF-ITLM-OVB-45-300R-150-N	150	296	540
SF-ITLM-OVB-45-300R-300-N	300	296	540
SF-ITLM-OVB-45-300R-450-N	450	296	540
SF-ITLM-OVB-45-300R-600-N	600	296	540
SF-ITLM-OVB-45-300R-750-N	750	296	540
SF-ITLM-OVB-45-300R-900-N	900	296	540

30° OUTSIDE VERTICAL BEND

ITEM CODE	W	A	L
SF-ITLM-OVB-30-300R-150-N	150	217	481
SF-ITLM-OVB-30-300R-300-N	300	217	481
SF-ITLM-OVB-30-300R-450-N	450	217	481
SF-ITLM-OVB-30-300R-600-N	600	217	481
SF-ITLM-OVB-30-300R-750-N	750	217	481
SF-ITLM-OVB-30-300R-900-N	900	217	481

LM Series-Horizontal Tee



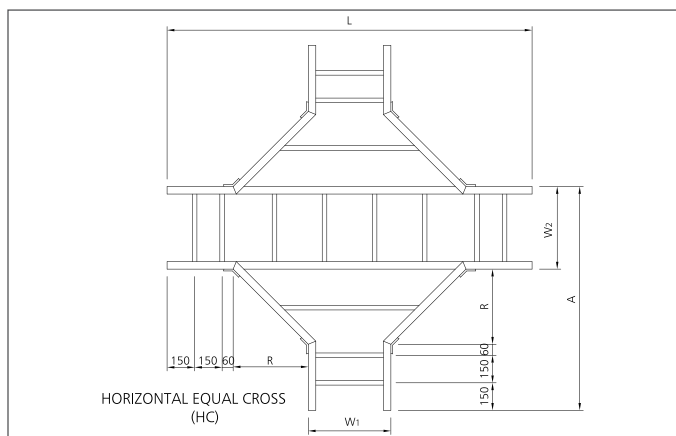
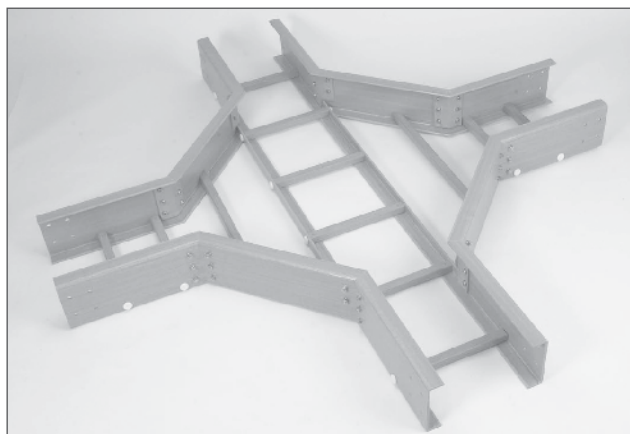
90° HORIZONTAL TEE

ITEM CODE	R = 305		
	W	A	L
SF-ITLM-HT-300R-150-N	150	810	1470
SF-ITLM-HT-300R-300-N	300	960	1620
SF-ITLM-HT-300R-450-N	450	1110	1770
SF-ITLM-HT-300R-600-N	600	1260	1920
SF-ITLM-HT-300R-750-N	750	1410	2070
SF-ITLM-HT-300R-900-N	900	1560	2220

ITEM CODE	R = 610		
	W	A	L
SF-ITLM-HT-600R-150-N	150	1110	2070
SF-ITLM-HT-600R-300-N	300	1260	2220
SF-ITLM-HT-600R-450-N	450	1410	2370
SF-ITLM-HT-600R-600-N	600	1560	2520
SF-ITLM-HT-600R-750-N	750	1710	2670
SF-ITLM-HT-600R-900-N	900	1860	2820

ITEM CODE	R = 915		
	W	A	L
SF-ITLM-HT-900R-150-N	150	1410	2670
SF-ITLM-HT-900R-300-N	300	1560	2920
SF-ITLM-HT-900R-450-N	450	1710	2970
SF-ITLM-HT-900R-600-N	600	1860	3120
SF-ITLM-HT-900R-750-N	750	2021	3270
SF-ITLM-HT-900R-900-N	900	2160	3420

LM Series-Horizontal Cross



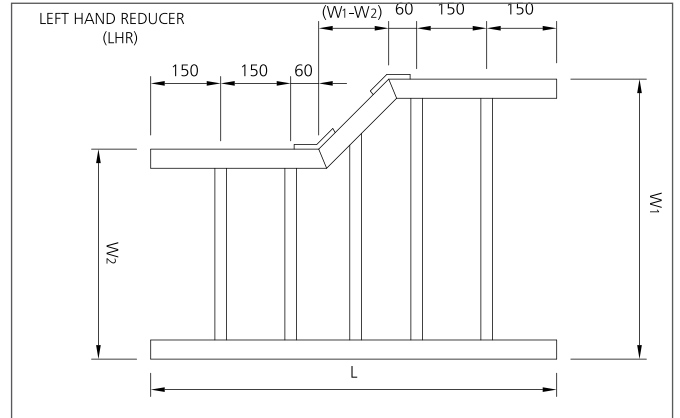
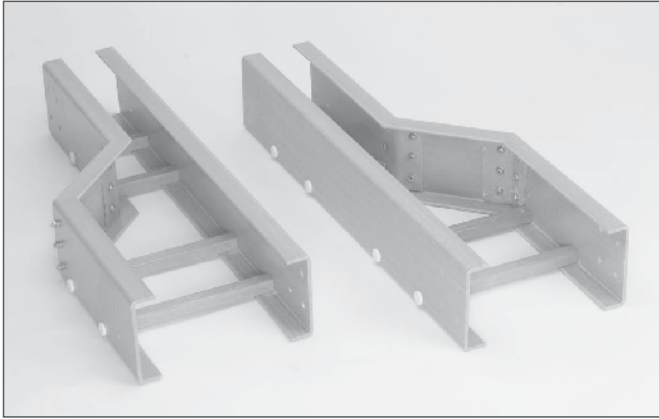
90° HORIZONTAL CROSS

ITEM CODE	R = 305		
	W	A	L
SF-ITLM-HEC-300R-150-N	150	1470	1470
SF-ITLM-HEC-300R-300-N	300	1620	1620
SF-ITLM-HEC-300R-450-N	450	1770	1770
SF-ITLM-HEC-300R-600-N	600	1920	1920
SF-ITLM-HEC-300R-750-N	750	2070	2070
SF-ITLM-HEC-300R-900-N	900	2220	2220

ITEM CODE	R = 610		
	W	A	L
SF-ITLM-HEC-600R-150-N	150	2070	2070
SF-ITLM-HEC-600R-300-N	300	2220	2220
SF-ITLM-HEC-600R-450-N	450	2370	2370
SF-ITLM-HEC-600R-600-N	600	2520	2520
SF-ITLM-HEC-600R-750-N	750	2670	2670
SF-ITLM-HEC-600R-900-N	900	2820	2820

ITEM CODE	R = 915		
	W	A	L
SF-ITLM-HEC-900R-150-N	150	2670	2670
SF-ITLM-HEC-900R-300-N	300	2920	2920
SF-ITLM-HEC-900R-450-N	450	2970	2970
SF-ITLM-HEC-900R-600-N	600	3120	3120
SF-ITLM-HEC-900R-750-N	750	3270	3270
SF-ITLM-HEC-900R-900-N	900	3420	3420

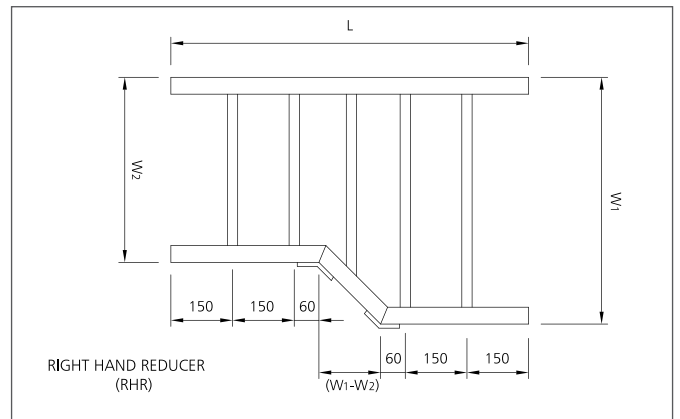
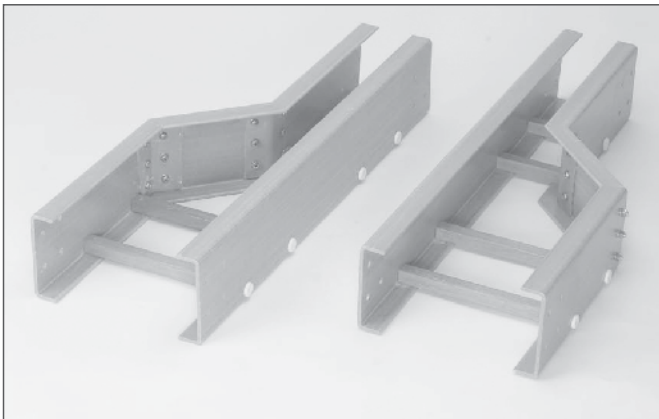
LM Series-Left Hand Reducer



ITEM CODE	W1	W2	L
SF-ITLM-LHR-900-750-N	900	750	870
SF-ITLM-LHR-900-600-N	900	600	1020
SF-ITLM-LHR-900-450-N	900	450	1170
SF-ITLM-LHR-900-300-N	900	300	1320
SF-ITLM-LHR-900-150-N	900	150	1470
SF-ITLM-LHR-750-600-N	750	600	870
SF-ITLM-LHR-750-450-N	750	450	1020
SF-ITLM-LHR-750-300-N	750	300	1170

ITEM CODE	W1	W2	L
SF-ITLM-LHR-750-150-N	750	150	1320
SF-ITLM-LHR-600-450-N	600	450	870
SF-ITLM-LHR-600-300-N	600	300	1020
SF-ITLM-LHR-600-150-N	600	150	1170
SF-ITLM-LHR-450-300-N	450	300	870
SF-ITLM-LHR-450-150-N	450	150	1020
SF-ITLM-LHR-300-150-N	300	150	870

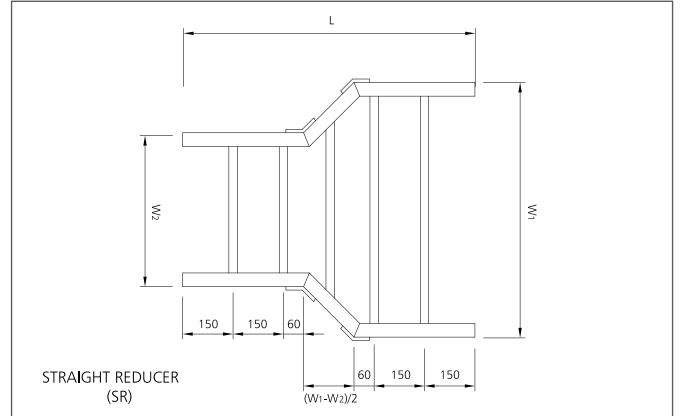
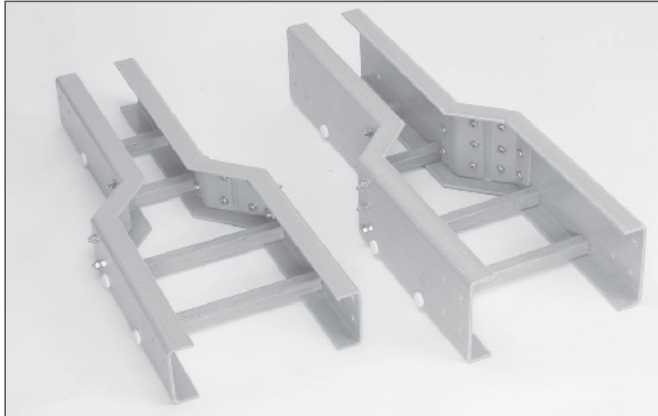
LM Series-Right Hand Reducer



ITEM CODE	W1	W2	L
SF-ITLM-RHR-900-750-N	900	750	870
SF-ITLM-RHR-900-600-N	900	600	1020
SF-ITLM-RHR-900-450-N	900	450	1170
SF-ITLM-RHR-900-300-N	900	300	1320
SF-ITLM-RHR-900-150-N	900	150	1470
SF-ITLM-RHR-750-600-N	750	600	870
SF-ITLM-RHR-750-450-N	750	450	1020
SF-ITLM-RHR-750-300-N	750	300	1170

ITEM CODE	W1	W2	L
SF-ITLM-RHR-750-150-N	750	150	1320
SF-ITLM-RHR-600-450-N	600	450	870
SF-ITLM-RHR-600-300-N	600	300	1020
SF-ITLM-RHR-600-150-N	600	150	1170
SF-ITLM-RHR-450-300-N	450	300	870
SF-ITLM-RHR-450-150-N	450	150	1020
SF-ITLM-RHR-300-150-N	300	150	870

LM Series-Straight Reducer

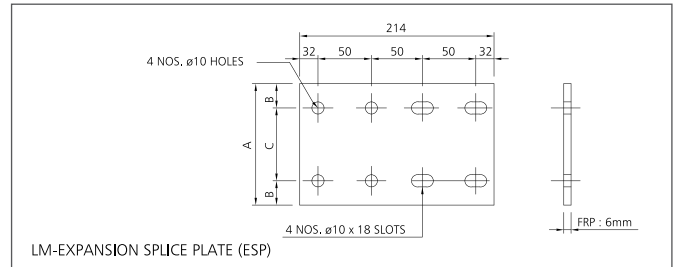
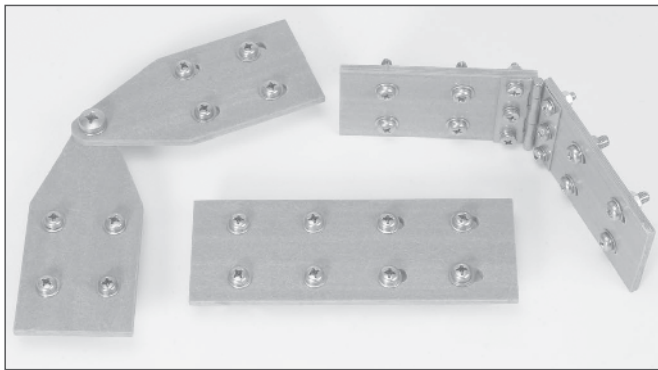


REF NO	W1	W2	L
SF-ITLM-SR-900-750-N	900	750	795
SF-ITLM-SR-900-600-N	900	600	870
SF-ITLM-SR-900-450-N	900	450	945
SF-ITLM-SR-900-300-N	900	300	1020
SF-ITLM-SR-900-150-N	900	150	1095
SF-ITLM-SR-750-600-N	750	600	795
SF-ITLM-SR-750-450-N	750	450	870
SF-ITLM-SR-750-300-N	750	300	945

REF NO	W1	W2	L
SF-ITLM-SR-750-150-N	750	150	1070
SF-ITLM-SR-600-450-N	600	450	795
SF-ITLM-SR-600-300-N	600	300	870
SF-ITLM-SR-600-150-N	600	150	945
SF-ITLM-SR-450-300-N	450	300	795
SF-ITLM-SR-450-150-N	450	150	870
SF-ITLM-SR-300-150-N	300	150	795

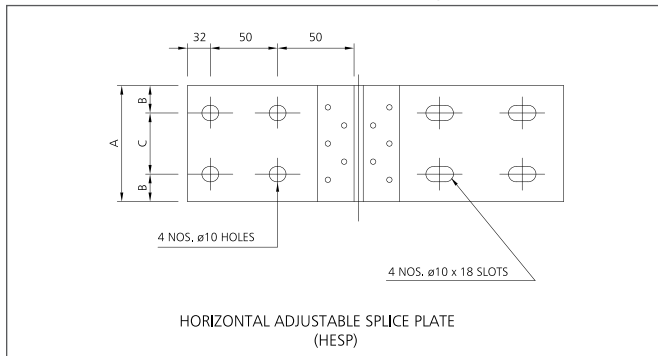
LM SERIES ACCESSORIES

LM Series-Splice Plate

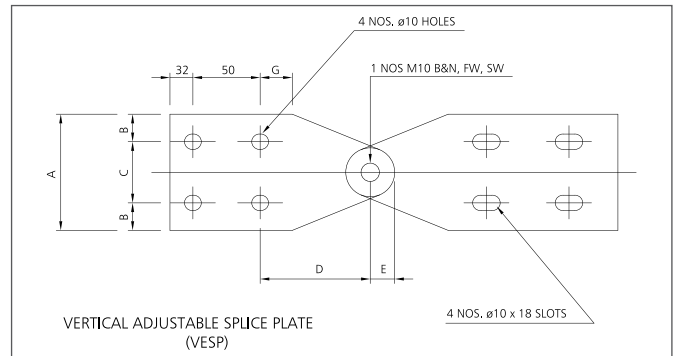


LADDER TYPE	A	B	C
LM	76	18	40

*Splice Plate is available in FRP and Stainless Steel of grades 304 and 316

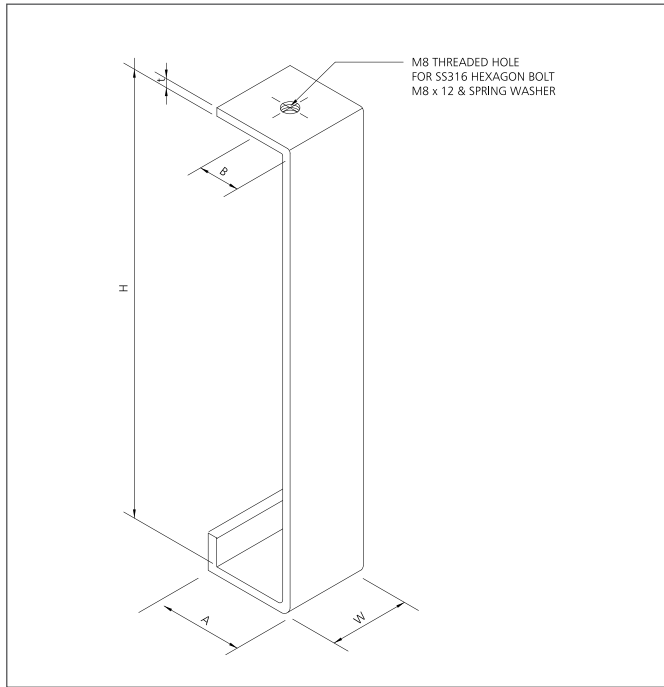


LADDER TYPE	A	B	C
LM	76	18	40



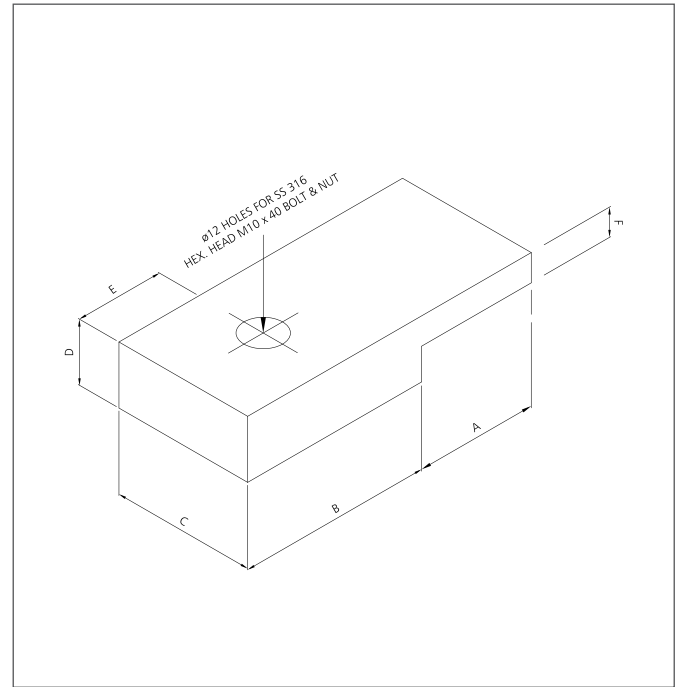
LADDER TYPE	A	B	C	D	E	F
LM	76	18	40	75	16	15

LM Series-Cover Clamp-SS316 (CC-SS)



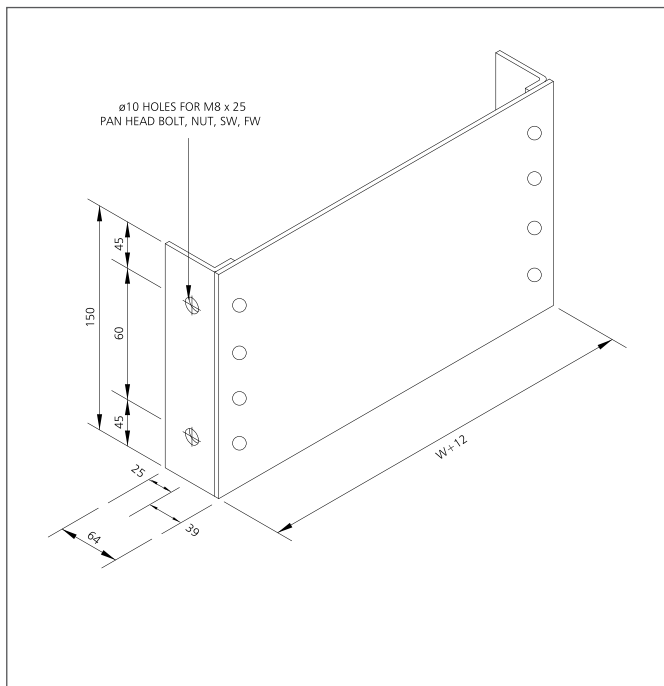
LADDER TYPE	H	W	t	A	B
LM	111	30	2.0	48	24

LM Series-Hold Down Clamp (HDC)

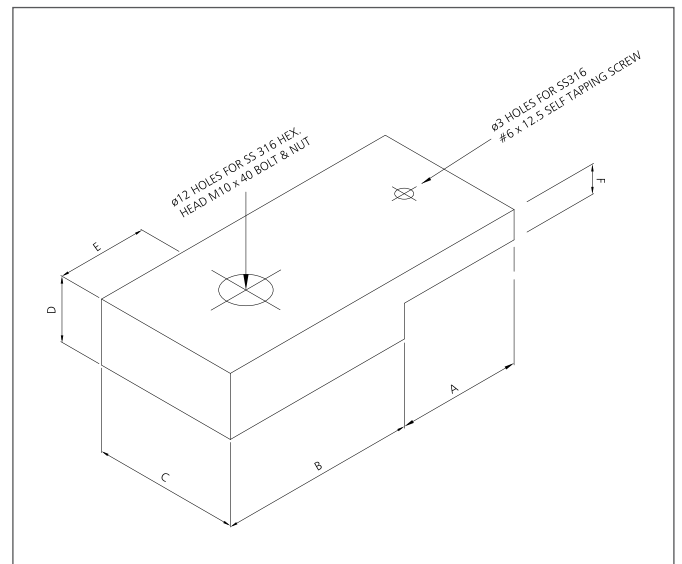


LADDER TYPE	A	B	C	D	E	F
LM	27	37	40	10.7	25	6

LM Series-Blind End Plate (BEP)



LM Series-Vertical Fixing Clamp (VFC)

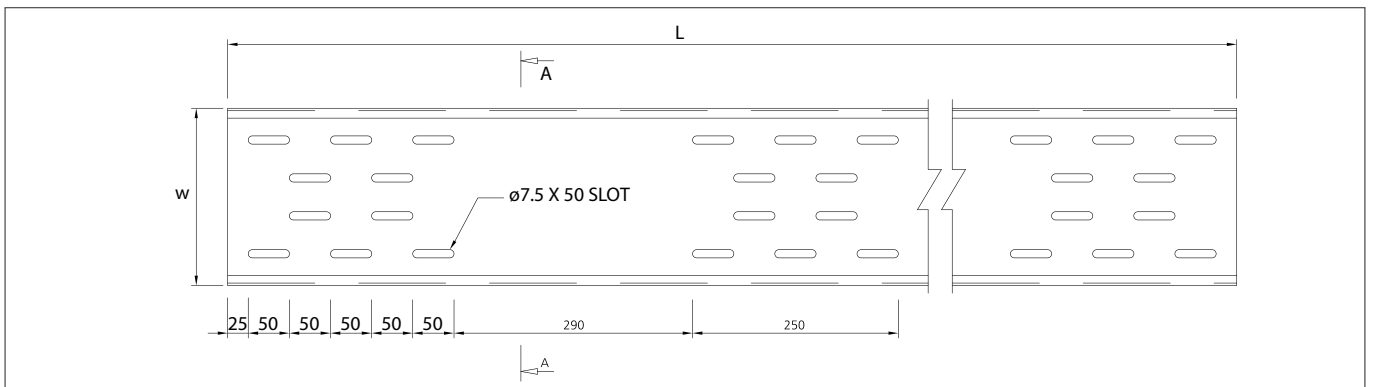
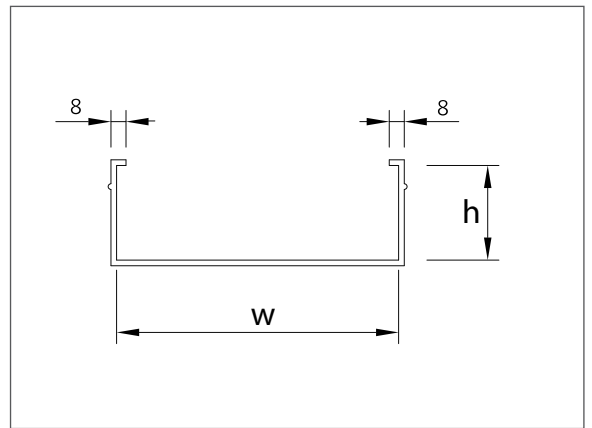
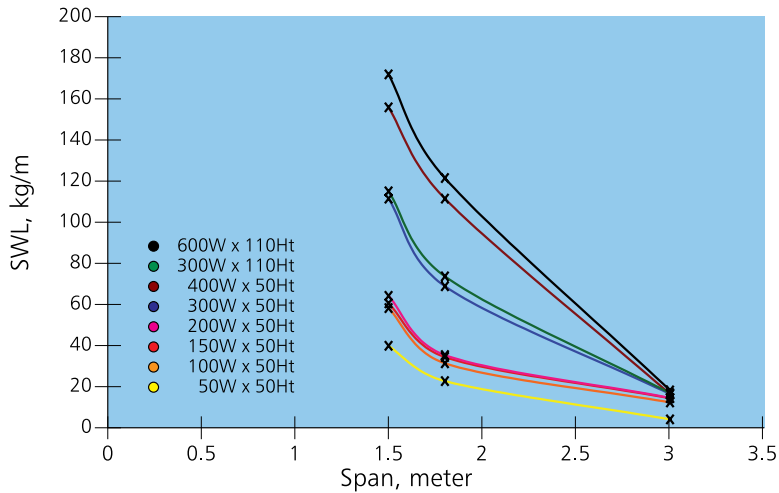
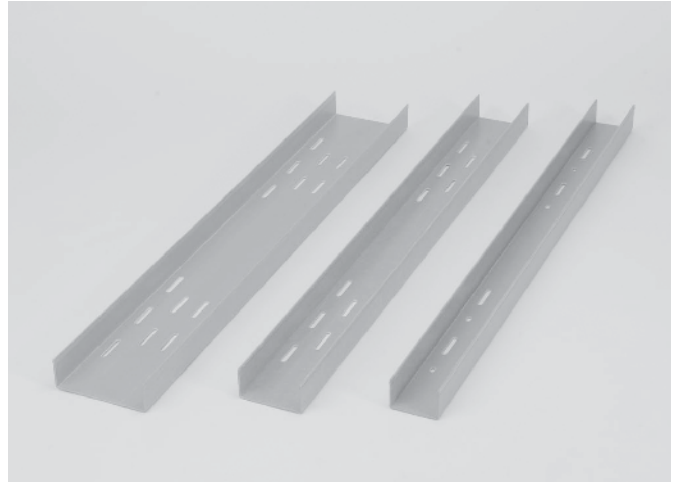


LADDER TYPE	A	B	C	D	E	F
LM	27	37	40	10.7	25	6

FRP CABLE TRAYS SYSTEMS

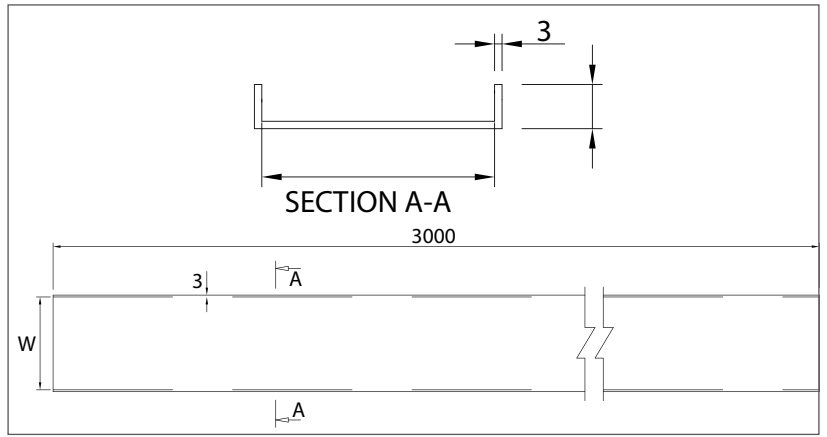
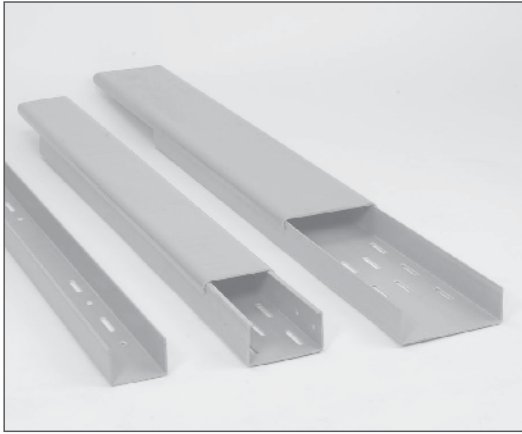
TYPES C & U SERIES

- Side Rail Height (H) : 50mm
- Widths (W) : 50mm, 75mm, 100mm, 150mm, 200mm, 300mm, 400mm, 600mm
- Standard Slot : 7.5 x 50 mm
- Standard Lengths (L) : 3000 mm



ITEM CODE	Width	Height	Length	Thickness	Safe Working Load for Span 1500
	mm	mm	mm	mm	kg/m
SF - ITCT50-SS-100-P	50	50	3M	3.0	39.5
SF - ITCT50-SS-150-P	75	50	3M	3.0	57.9
SF - ITCT50-SS-200-P	100	50	3M	3.0	60.2
SF - ITCT50-SS-300-P	150	50	3M	3.0	63.8
SF - ITCT50-SS-400-P	200	50	3M	3.0	111.1
SF - ITCT110-SS-150-P	300	50	3M	3.0	114.7
SF - ITCT110-SS-200-P	400	50	3M	3.0	155.6
SF - ITCT110-SS-300-P	600	50	3M	3.0	171.5
SF - ITCT110-SS-450-P	300	110	3M	3.0	141.4
SF - ITCT110-SS-600-P	600	110	3M	3.0	197.1

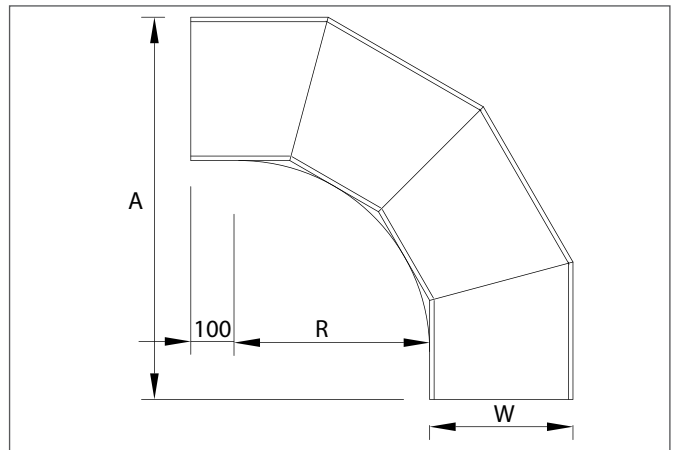
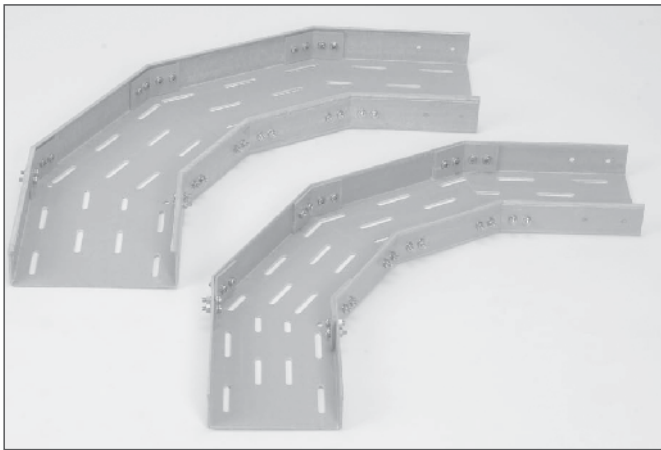
Cable Tray-C Series & U Series-Cover



ITEM CODE	W	H
SF-1022-CO-050	50	10
SF-1022-CO-070	75	15
SF-1022-CO-100	100	15
SF-1022-CO-150	150	18
SF-1022-CO-200	200	18
SF-1022-CO-300	300	18
SF-1022-CO-400	400	18
SF-1022-CO-600	600	18

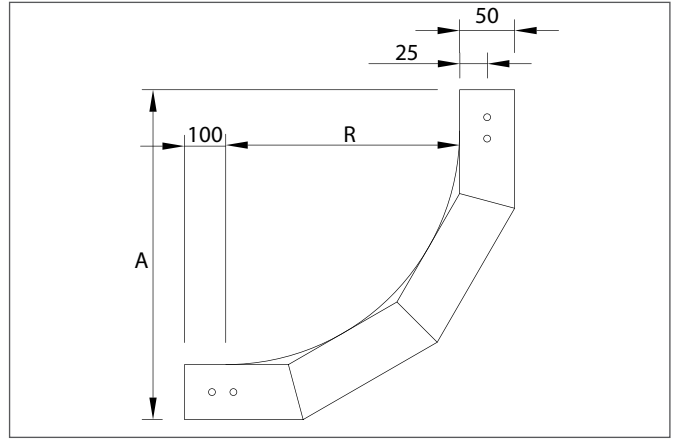
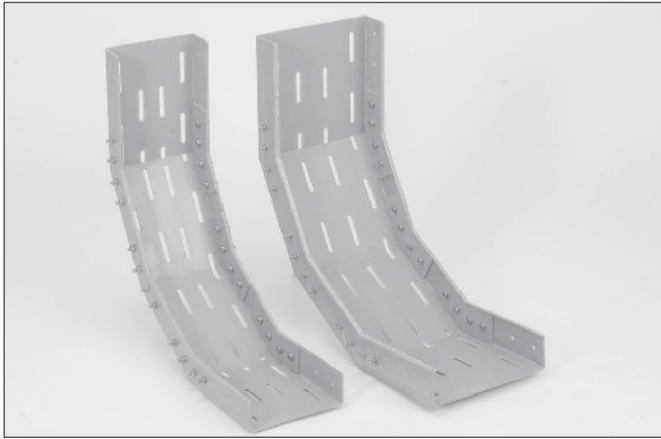
CABLE TRAY FITTINGS

Cable Tray-Horizontal Bend



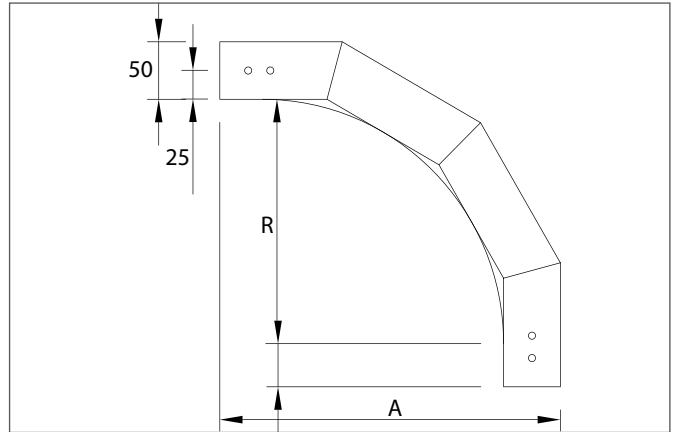
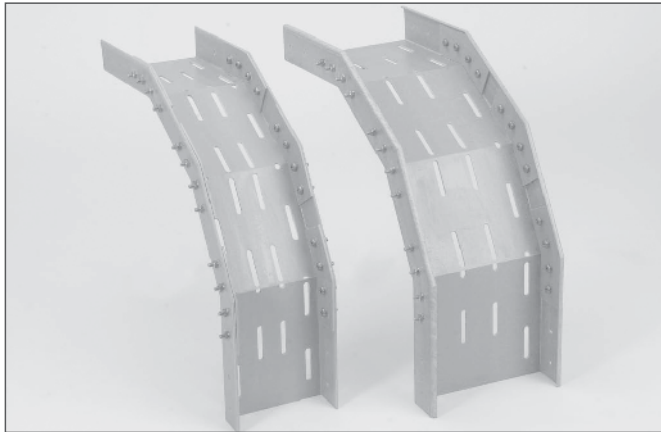
ITEM CODE	W	A	R
SF-ITCT50-HB-90-300R-50-P	50	400	305
SF-ITCT50-HB-90-300R-75-P	75	475	305
SF-ITCT50-HB-90-300R100-P	100	500	305
SF-ITCT50-HB-90-300R150-P	150	550	305
SF-ITCT50-HB-90-300R200-P	200	600	305
SF-ITCT50-HB-90-300R300-P	300	700	305
SF-ITCT50-HB-90-300R400-P	400	800	305
SF-ITCT110-HB-90-30R300-P	300	700	305
SF-ITCT110-HB-90-30R600-P	600	1000	305

Cable Tray-Inside Vertical Bend



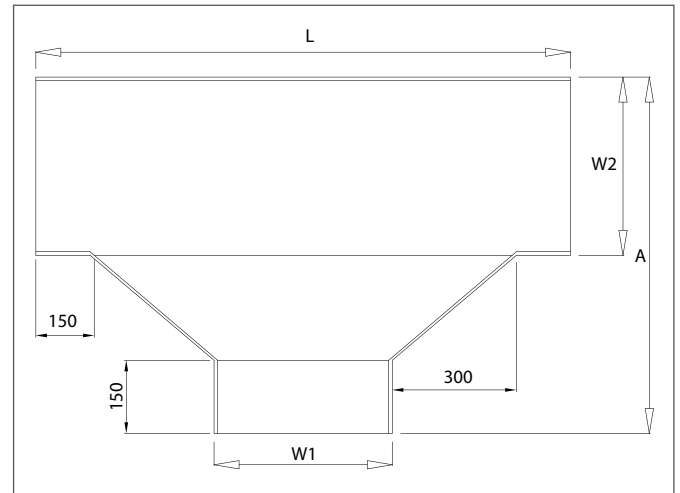
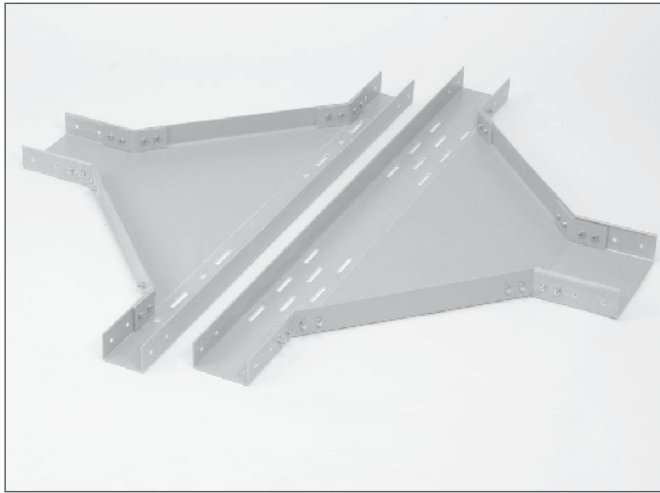
ITEM CODE	W	A	R
SF-ITCT50-IVB-90-300R50-P	50	450	305
SF-ITCT50-IVB-90-300R75-P	75	450	305
SF-ITCT50-IVB-90300R100-P	100	450	305
SF-ITCT50-IVB-90300R150-P	150	450	305
SF-ITCT50-IVB-90300R200-P	200	450	305
SF-ITCT50-IVB-90300R300-P	300	450	305
SF-ITCT50-IVB-90300R400-P	400	450	305
SF-ITCT110-IVB-90300R300P	300	510	305
SF-ITCT110-IVB-90300R600P	600	510	305

Cable Tray-Outside Vertical Bend



ITEM CODE	W	A	R
SF-ITCT50-OVB-90-300R50-P	50	450	305
SF-ITCT50-OVB-90-300R75-P	75	450	305
SF-ITCT50-OVB-90300R100-P	100	450	305
SF-ITCT50-OVB-90300R150-P	150	450	305
SF-ITCT50-OVB-90300R200-P	200	450	305
SF-ITCT50-OVB-90300R300-P	300	450	305
SF-ITCT50-OVB-90300R400-P	400	450	305
SF-ITCT110-OVB-90300R300P	300	510	305
SF-ITCT110-OVB-90300R600P	600	510	305

Cable Tray-Horizontal Unequal Tee

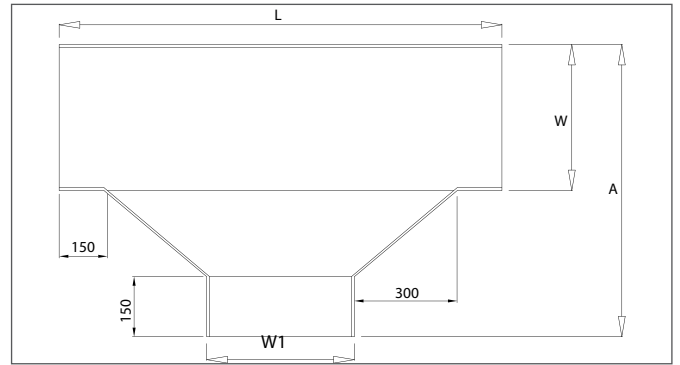
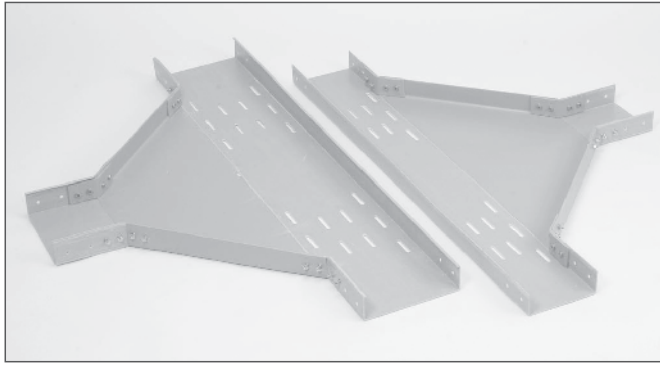


ITEM CODE	W1	W2	A	L
SF-ITCT50-HUT-300R-5075-P	50	75	525	950
SF-ITCT50-HUT-300R50100-P	50	100	550	950
SF-ITCT50-HUT-300R50150-P	50	150	600	950
SF-ITCT50-HUT-300R50200-P	50	200	650	950
SF-ITCT50-HUT-300R50300-P	50	300	750	950
SF-ITCT50-HUT-300R50400-P	50	400	850	950
SF-ITCT50-HUT-300R75-50-P	75	50	500	975
SF-ITCT50-HUT-300R75100-P	75	100	550	975
SF-ITCT50-HUT-300R75150-P	75	150	600	975
SF-ITCT50-HUT-300R75200-P	75	200	650	975
SF-ITCT50-HUT-300R75300-P	75	300	750	975
SF-ITCT50-HUT-300R75400-P	75	400	850	975
SF-ITCT50-HUT-300R10050-P	100	50	500	1000
SF-ITCT50-HUT-300R10075-P	100	75	525	1000
SF-ITCT50-HUT-300R100150P	100	150	600	1000
SF-ITCT50-HUT-300R100200P	100	200	650	1000
SF-ITCT50-HUT-300R100300P	100	300	750	1000
SF-ITCT50-HUT-300R100400P	100	400	850	1000
SF-ITCT50-HUT-300R15050-P	150	50	500	1050
SF-ITCT50-HUT-300R15075-P	150	75	525	1050
SF-ITCT50-HUT-300R150100P	150	100	550	1050
SF-ITCT50-HUT-300R150200P	150	200	650	1050

ITEM CODE	W1	W2	A	L
SF-ITCT50-HUT-300R150300P	150	300	750	1050
SF-ITCT50-HUT-300R150400P	150	400	850	1050
SF-ITCT50-HUT-300R20050-P	200	50	500	1100
SF-ITCT50-HUT-300R20075-P	200	75	525	1100
SF-ITCT50-HUT-300R200100P	200	150	550	1100
SF-ITCT50-HUT-300R200150P	200	200	600	1100
SF-ITCT50-HUT-300R200300P	200	300	750	1100
SF-ITCT50-HUT-300R200400P	200	400	850	1100
SF-ITCT50-HUT-300R30050-P	300	50	500	1200
SF-ITCT50-HUT-300R30075-P	300	75	525	1200
SF-ITCT50-HUT-300R300150P	300	150	550	1200
SF-ITCT50-HUT-300R300200P	300	200	600	1200
SF-ITCT50-HUT-300R300400P	300	400	850	1200
SF-ITCT50-HUT-300R40075P	400	75	525	1300
SF-ITCT50-HUT-300R400150P	400	150	550	1300
SF-ITCT50-HUT-300R400200P	400	200	600	1300
SF-ITCT110HUT-300R600300P	600	300	750	1500

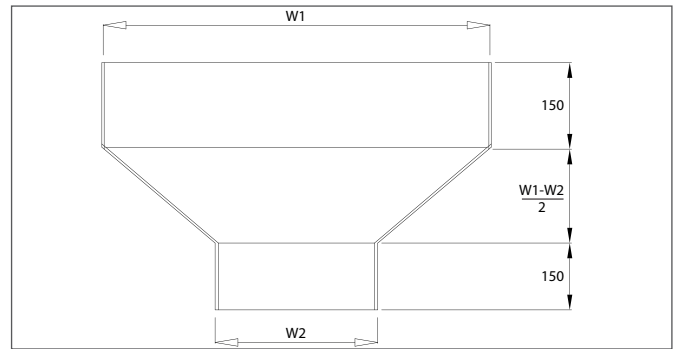
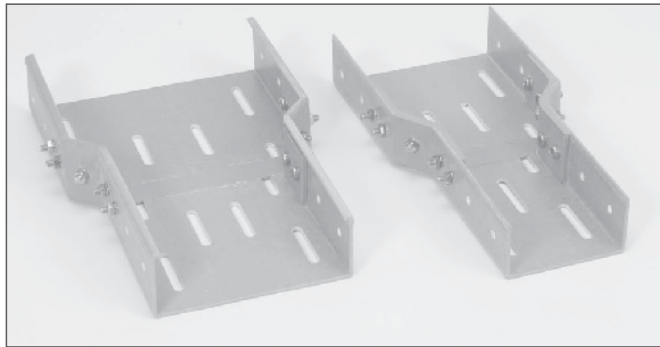
Other Radii of 610 and 915mm are available upon request

Cable Tray-Horizontal Equal Tee



ITEM CODE	W	A	L
SF-ITCT50-HT-300R-50-P	50	500	1500
SF-ITCT50-HT-300R-75-P	75	525	1200
SF-ITCT50-HT-300R-100-P	100	550	1300
SF-ITCT50-HT-300R-150-P	150	600	1200
SF-ITCT50-HT-300R-200-P	200	650	1100
SF-ITCT50-HT-300R-300-P	300	750	1050
SF-ITCT50-HT-300R-400-P	400	850	1000
SF-ITCT50-HT-300R-600-P	600	1050	1000
SF-ITCT110-HT-300R-300-P	300	750	975
SF-ITCT110-HT-300R-600-P	600	1050	950

Cable Tray-Straight Reducer

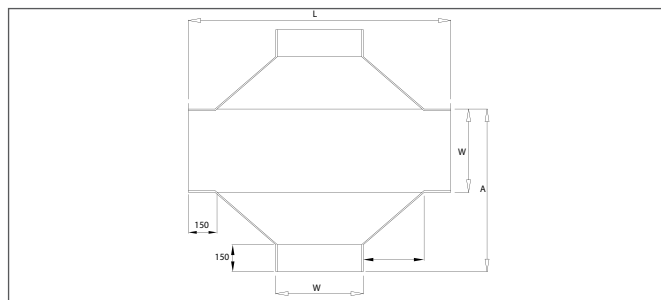
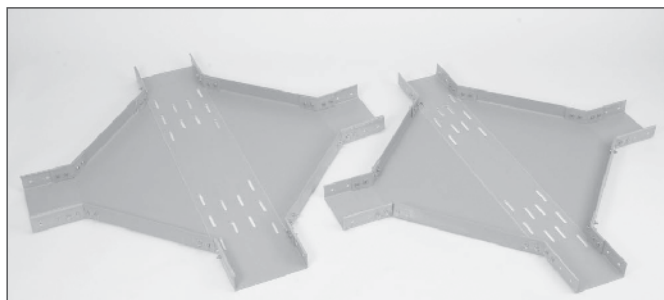


ITEM CODE	W1	W2
SF-ITCT50-SR-75-50-P	75	50
SF-ITCT50-SR-100-75-P	100	75
SF-ITCT50-SR-100-50-P	100	50
SF-ITCT50-SR-150-100-P	150	100
SF-ITCT50-SR-150-75-P	150	75
SF-ITCT50-SR-150-50-P	150	50
SF-ITCT50-SR-200-150-P	200	150
SF-ITCT50-SR-200-100-P	200	100
SF-ITCT50-SR-200-75-P	200	75
SF-ITCT50-SR-200-50-P	200	50
SF-ITCT50-SR-300-200-P	300	200

ITEM CODE	W1	W2
SF-ITCT50-SR-300-150-P	300	150
SF-ITCT50-SR-300-100-P	300	100
SF-ITCT50-SR-300-75-P	300	75
SF-ITCT50-SR-300-50-P	300	50
SF-ITCT50-SR-400-300-P	400	300
SF-ITCT50-SR-400-200-P	400	200
SF-ITCT50-SR-400-150-P	400	150
SF-ITCT50-SR400-100-P	400	100
SF-ITCT50-SR-400-75-P	400	75
SF-ITCT50-SR-400-50-P	400	50

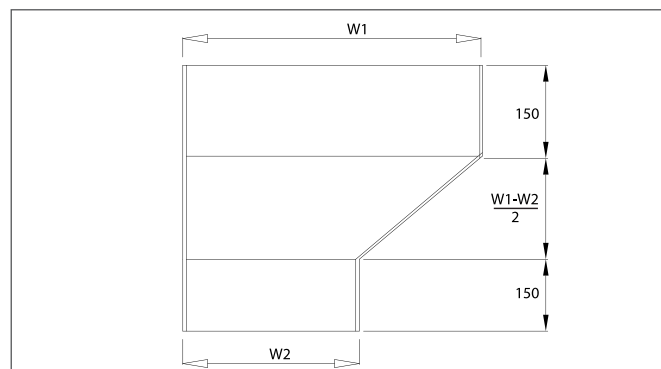
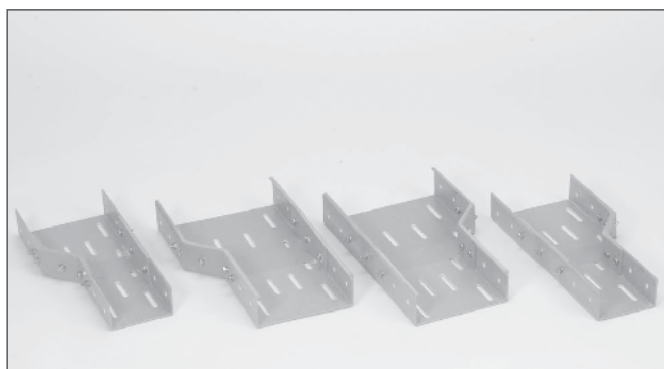
*For 110mm Side height, please mention with /end of code, ex.: SF-1.028-SR-300-200/110

Cable Tray-Horizontal Equal Cross



ITEM CODE	W	A	L
SF-ITCT50-HEC-300R-50-P	50	500	950
SF-ITCT50-HEC-300R-75-P	75	525	975
SF-ITCT50-HEC-300R-100-P	100	550	1000
SF-ITCT50-HEC-300R-150-P	150	600	1050
SF-ITCT50-HEC-300R-200-P	200	650	1100
SF-ITCT50-HEC-300R-300-P	300	750	1200
SF-ITCT50-HEC-300R-400-P	400	850	1300
SF-ITCT50-HEC-300R-600-P	600	1050	1500
SF-ITCT110-HEC-300R-300-P	300	750	1200
SF-ITCT110-HEC-300R-600-P	600	1050	1500

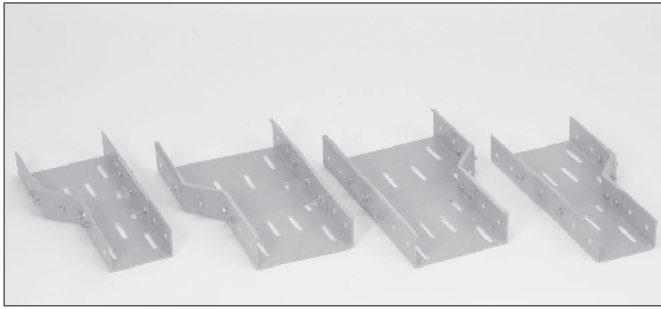
Cable Tray-Right Hand Reducer



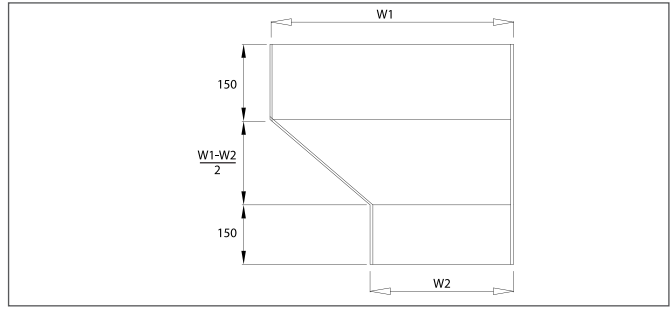
ITEM CODE	W1	W2
SF-ITCT50-RHR-75-50-P	75	50
SF-ITCT50-RHR-100-75-P	100	75
SF-ITCT50-RHR-100-50-P	100	50
SF-ITCT50-RHR-150-100-P	150	100
SF-ITCT50-RHR-150-75-P	150	75
SF-ITCT50-RHR-150-50-P	150	50
SF-ITCT50-RHR-200-150-P	200	150
SF-ITCT50-RHR-200-100-P	200	100
SF-ITCT50-RHR-200-75-P	200	75
SF-ITCT50-RHR-200-50-P	200	50
SF-ITCT50-RHR-300-200-P	300	200
SF-ITCT50-RHR-300-150-P	300	150
SF-ITCT50-RHR-300-100-P	300	100
SF-ITCT50-RHR-300-75-P	300	75

ITEM CODE	W1	W2
SF-ITCT50-RHR-300-50-P	300	50
SF-ITCT50-RHR-400-300-P	400	300
SF-ITCT50-RHR-400-200-P	400	200
SF-ITCT50-RHR-400-150-P	400	150
SF-ITCT50-RHR-400-100-P	400	100
SF-ITCT50-RHR-400-75-P	400	75
SF-ITCT50-RHR-400-50-P	400	50
SF-ITCT110-RHR-600-400-P	600	400
SF-ITCT110-RHR-600-300-P	600	300
SF-ITCT110-RHR-600-200-P	600	200
SF-ITCT110-RHR-600-150-P	600	150
SF-ITCT110-RHR-600-100-P	600	100
SF-ITCT110-RHR-600-75-P	600	75
SF-ITCT110-RHR-600-50-P	600	50

Cable Tray Left Hand Reducer



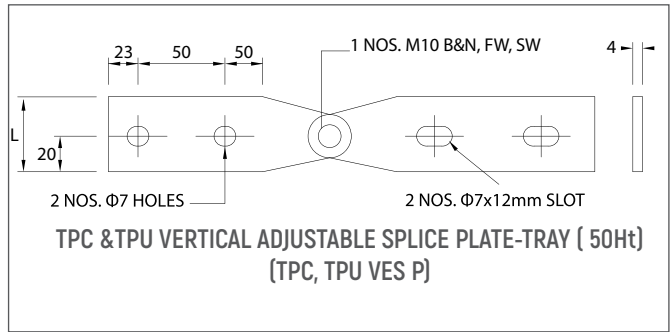
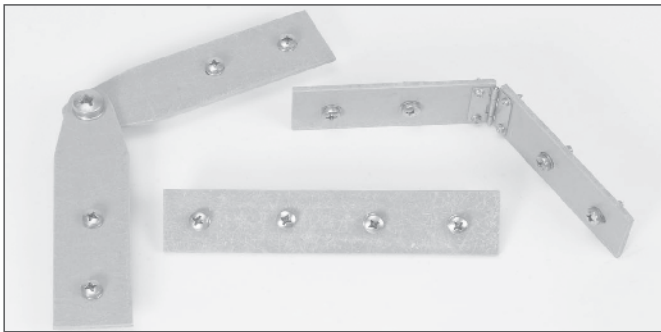
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SF-ITCT50-LHR-75-50-P	75	50
SF-ITCT50-LHR-100-75-P	100	75
SF-ITCT50-LHR-100-50-P	100	50
SF-ITCT50-LHR-150-100-P	150	100
SF-ITCT50-LHR-150-75-P	150	75
SF-ITCT50-LHR-150-50-P	150	50
SF-ITCT50-LHR-200-150-P	200	150
SF-ITCT50-LHR-200-100-P	200	100
SF-ITCT50-LHR-200-75-P	200	75
SF-ITCT50-LHR-200-50-P	200	50
SF-ITCT50-LHR-300-200-P	300	200
SF-ITCT50-LHR-300-150-P	300	150
SF-ITCT50-LHR-300-100-P	300	100
SF-ITCT50-LHR-300-75-P	300	75



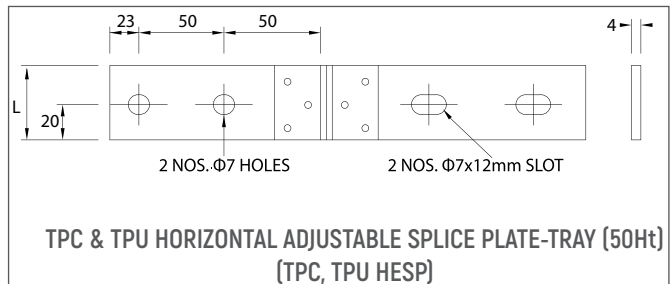
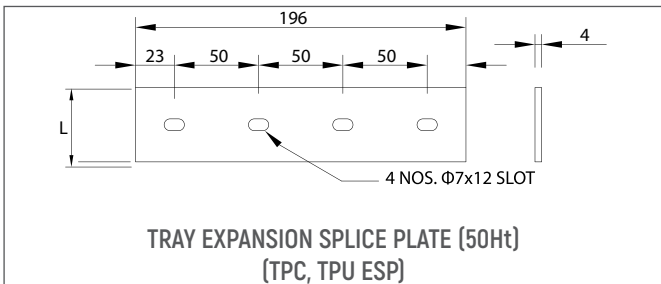
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SF-ITCT50-LHR-300-50-P	300	50
SF-ITCT50-LHR-400-300-P	400	300
SF-ITCT50-LHR-400-200-P	400	200
SF-ITCT50-LHR-400-150-P	400	150
SF-ITCT50-LHR-400-100-P	400	100
SF-ITCT50-LHR-400-75-P	400	75
SF-ITCT50-LHR-400-50-P	400	50
SF-ITCT110-LHR-600-400-P	600	400
SF-ITCT110-LHR-600-300-P	600	300
SF-ITCT110-LHR-600-200-P	600	200
SF-ITCT110-LHR-600-150-P	600	150
SF-ITCT110-LHR-600-100-P	600	100
SF-ITCT110-LHR-600-75-P	600	75
SF-ITCT110-LHR-600-50-P	600	50

CABLE TRAY ACCESSORIES

Cable Tray-Splice Plate



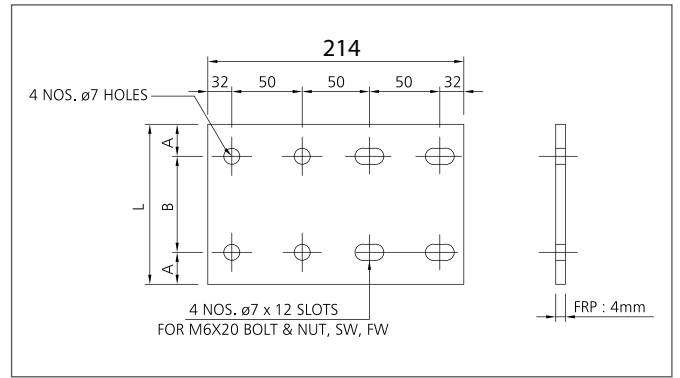
*Splice Plate is available in FRP and Stainless Steel of grades 304 and 316



SPLICE PLATE TYPE	Ht	L
EXPANSION SPLICE PLATE, ESP	400	850
HORIZONTAL ADJUSTABLE SPLICE PLATE, HESP	300	750
VERTICAL ADJUSTABLE SPLICE PLATE, VESP	200	650

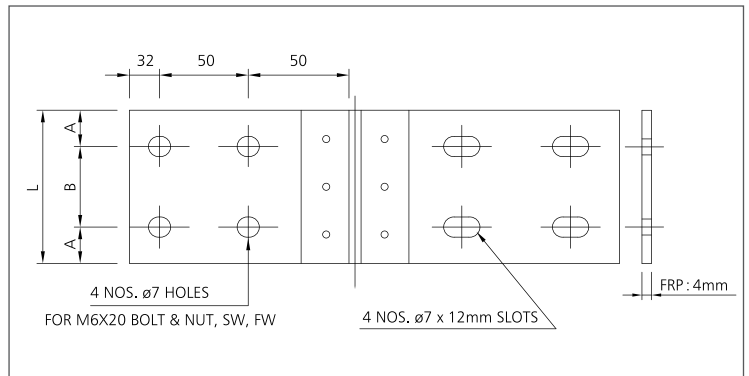
TRAY EXPANSION SPLICE PLATE (11 OHt) (TPC ESP)

TPC ESP DIMENSIONS			
SPLICE PLATE TYPE	L	A	B
EXPANSION SPLICE PLATE	76	18	40



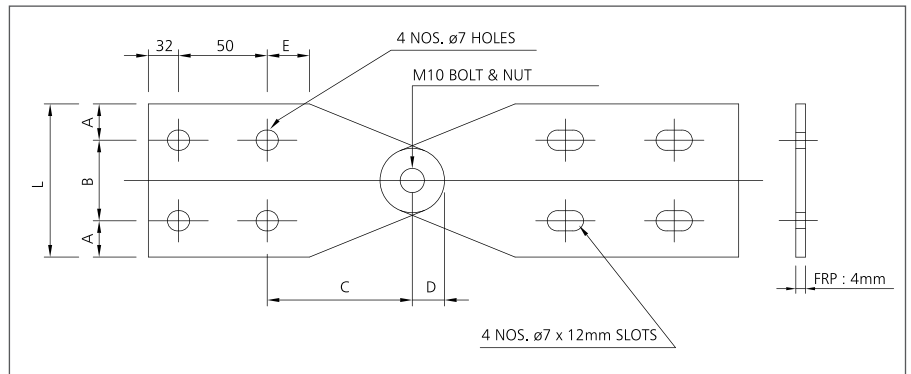
TRAY HORIZONTAL ADJUSTABLE SPLICE PLATE (110Ht) (TPC HESP)

TPC HESP DIMENSIONS			
SPLICE PLATE TYPE	L	A	B
HORIZONTAL ADJUSTABLE SPLICE PLATE	76	18	40

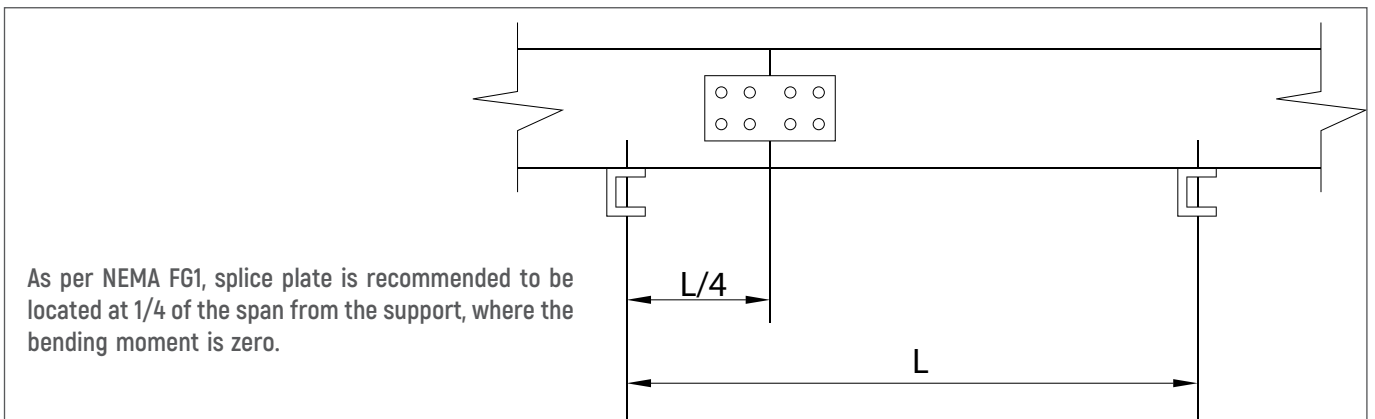


TRAY VERTICAL ADJUSTABLE SPLICE PLATE (11 OH\) (TPC VESP)

TPC VESP DIMENSIONS			
SPLICE PLATE TYPE	L	A	B
VERTICAL ADJUSTABLE SPLICE PLATE	76	18	40
	C	D	E
	75	16	15



Splice Plate Location

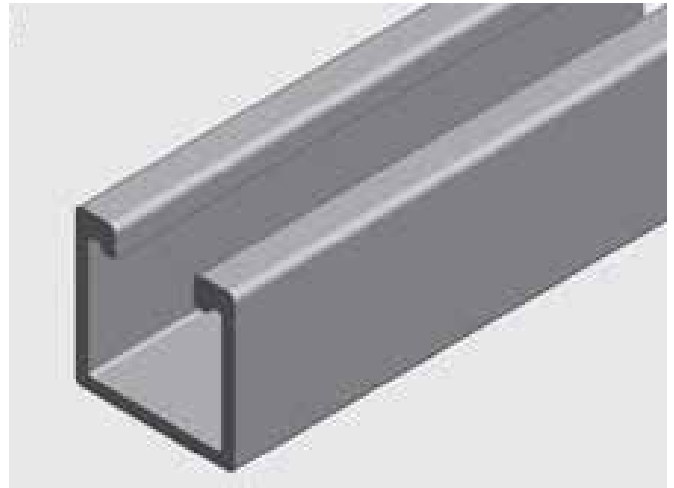


CABLE MANAGEMENT SUPPORT SYSTEMS

C-Channel Support Systems

FCH 220

- Thickness : 4 mm
- Length (L): 3 m
- Dimensions: 21x41 mm

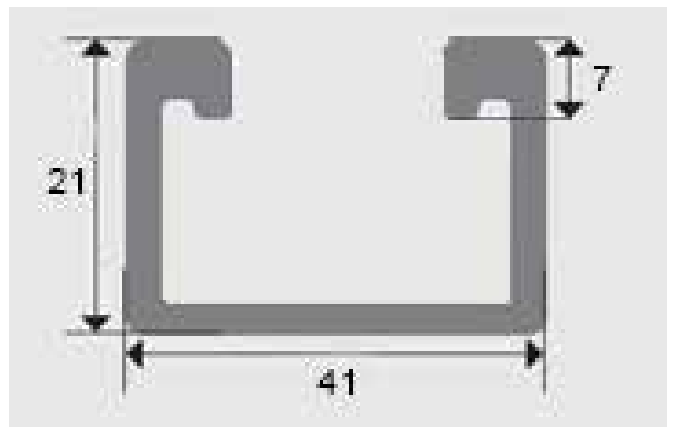


Lightweight strong and durable C-Channel solution for cable management support where high volumes of strong corrosive elements such as salt water/spray are continually present in the environment.

All fittings and fasteners used with this product, shall be manufacture from stainless steel of grades 304 and 316.

FCH 220 Channel section is manufactured from pultruded Fibre Reinforced Plastic to the following standards:

- ASTM E84 CLASS A Standard for Surface Burning
- BS476 Part 7 Class 1 and Class 2 Building Standard for Flame Retardance
- UL94 Flammability Standard
- IEC 60695 - 960°C Temperature Flammability Index



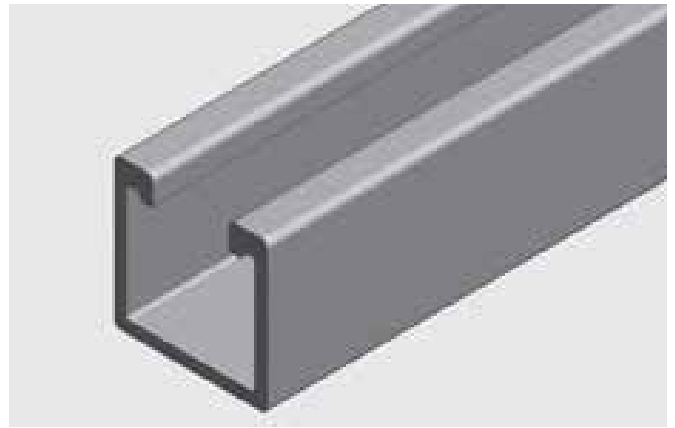
Load Rating & Deflection

The following results are based on a uniformly loaded, simply supported span. Deflection has been calculated using standard formulae at the maximum permissible stress.

Span (mm)	Max Allowable Load (kg)	Deflection at Allowable Load mm
250	1100	1.15
500	900	1.707
750	520	4.99
1000	260	7.88
1250	120	8.88
1500	70	10.75
1750	55	14.4
2000	38	18.447
2250	28	21.72
2500	20	23.703
2750	15	24.01
3000	10	24.575

FCH 420

- Thickness : 4 mm
- Length (L): 3 m
- Dimensions: 41x41 mm

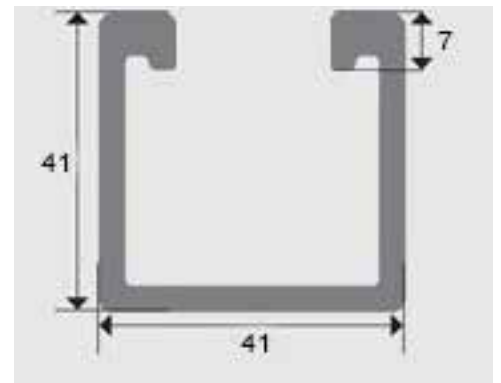


Lightweight strong and durable C-Channel solution for cable management support where high volumes of strong corrosive elements such as salt water/spray are continually present in the environment.

All fittings and fasteners used with this product, shall be manufacture from stainless steel of grades 304 and 316.

FCH 220 Channel section is manufactured from pultruded Fibre Reinforced Plastic to the following standards:

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- BS476 Part 7 Class 1 and Class 2 Building Standard for Flame Retardance
- UL94 Flammability Standard
- IEC 60695 - 960°C Temperature Flammability Index



TRAY HORIZONTAL ADJUSTABLE SPLICE PLATE (110Ht) (TPC HESP)

Load Rating & Deflection

The following results are based on a uniformly loaded, simply supported span.

Deflection has been calculated using standard formulae at the maximum permissible stress.

Span (mm)	Max Allowable Load (kg)	Deflection at Allowable Load mm
250	1274	1.2
500	1019	2.5
750	917	3.8
1000	877	5.1
1250	548	6.3
1500	398	7.5
1750	285	8.7
2000	204	10.0
2250	154	11.1
2500	112	12.4
2750	76	13.6
3000	34	15.1

* All channels and cable management support system are available in HDG finish

GENERAL INFORMATION

Channel

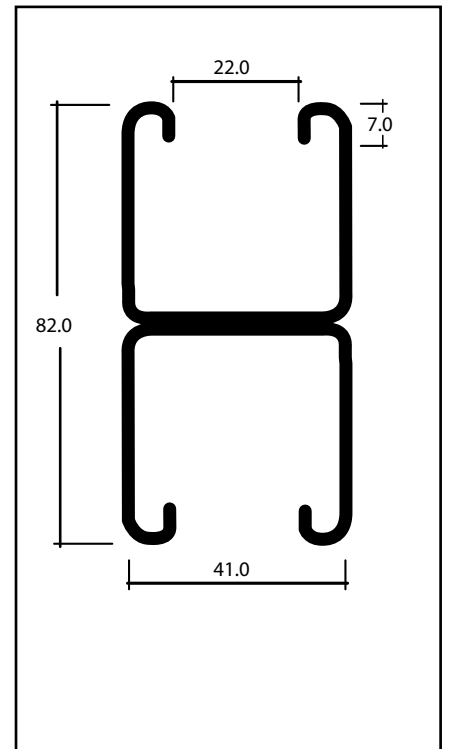
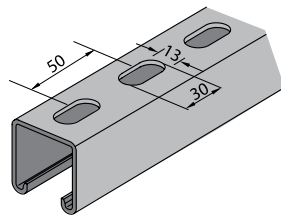
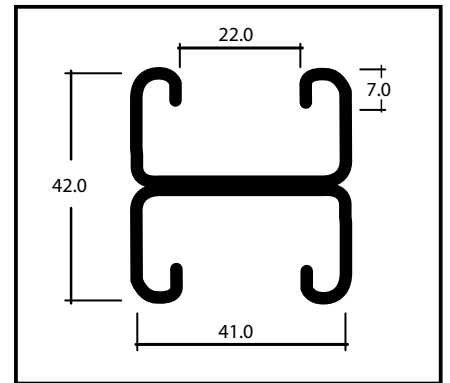
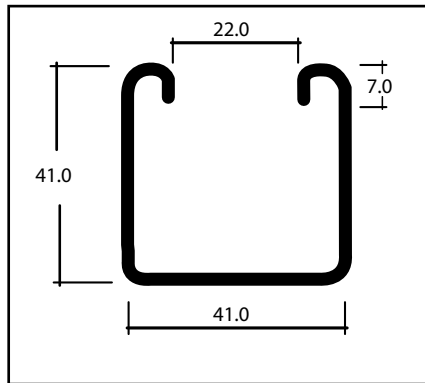
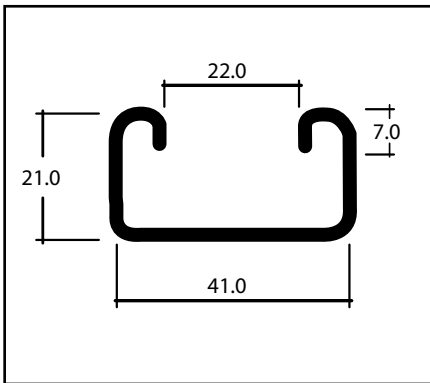
SFSP's metal framing channel is cold formed on modern rolling machines from low carbon steel manufactured according to BS 6946:1988. A continuous slot provides the ability to make attachments at any point.

Lengths

Standard length: 3000mm with ± 3.2 mm length tolerance.
Custom lengths are available upon request.

Finishes

Standard Finishes: Stainless Steel finish of grades 304 and 316. Hot Dip Galvanized after fabrication (ASTM A123 or BSEN ISO1461:2009) . Other custom coatings are 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 - 320/321	21.0 mm	41.0 mm	2.0 mm
CCH - 340/341	41.0 mm	41.0 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

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

CCH 320 **3** **2** **0** **T**

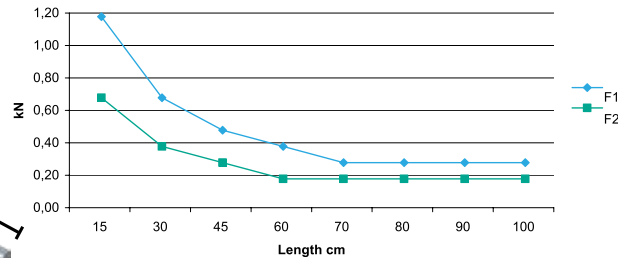
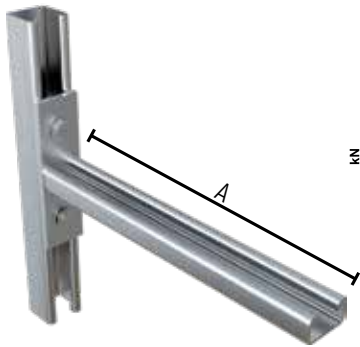
- Material Thickness**
for 1.5 mm 2
for 2.0 mm 3
for 2.5 mm 4
- Size**
mm 21/41 - 2
mm 41/41 - 4
- Channel Patterns**
PT - 0
ST - 1
B2B - 2
- Toothed channel**

* All channels and cable management support system are available in HDG finish

CANTILEVER ARM BRACKET

Cantilever Arm Brackets - SCA

CCH421 41x21x2.5

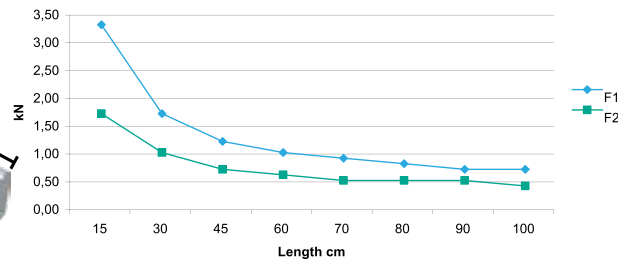
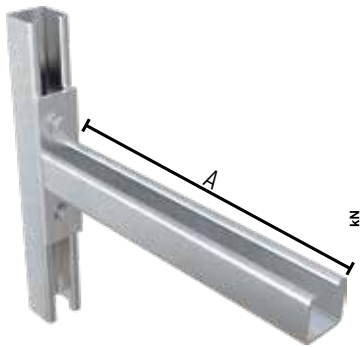


Length	Allowable Load			
	A (mm)	F ₁ * (kN)	F ₂ ** (kN)	F ₇ ** (kN)
150	150	1.10	0.60	3.10
300	300	0.60	0.30	3.10
450	450	0.40	0.20	3.10
600	600	0.30	0.10	3.10
700	700	0.20	0.10	3.10
800	800	0.20	0.10	3.10
900	900	0.20	0.10	3.10
1000	1000	0.20	0.10	3.10

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]



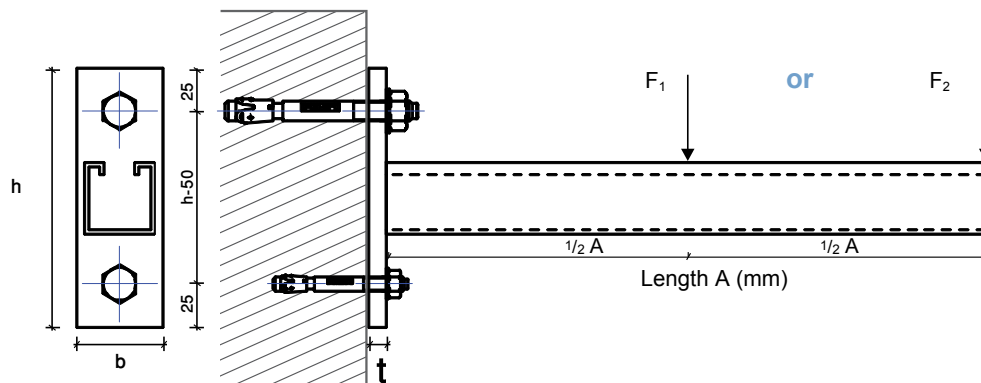
Length	Allowable Load			
	A (mm)	F ₁ * (kN)	F ₂ ** (kN)	F ₇ ** (kN)
150	150	3.10	1.50	7.50
300	300	1.50	0.80	7.50
450	450	1.00	0.50	7.50
600	600	0.80	0.40	7.50
700	700	0.70	0.30	7.50
800	800	0.60	0.30	7.50
900	900	0.50	0.30	7.50
1000	1000	0.50	0.20	7.50

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]

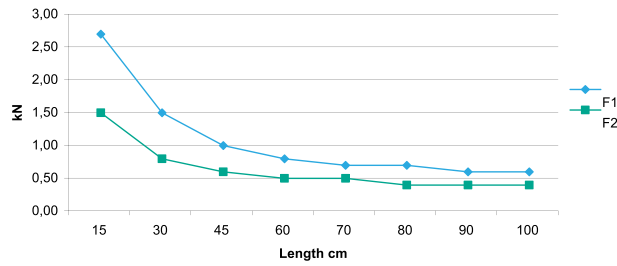
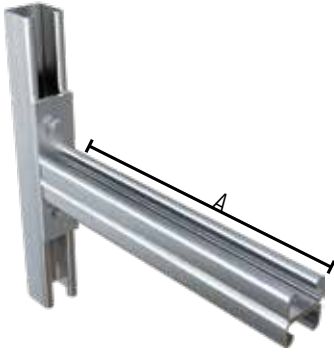
* Given Loads are always in [kN] * Allowable characteristic live load *



* All channels and cable management support system are available in HDG finish

Cantilever Arm Brackets - SCA

CCH422 41x21x2.5 B2B



Length A (mm)	Allowable Load		
	F ₁ *	F ₂ *	F ₇ **
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

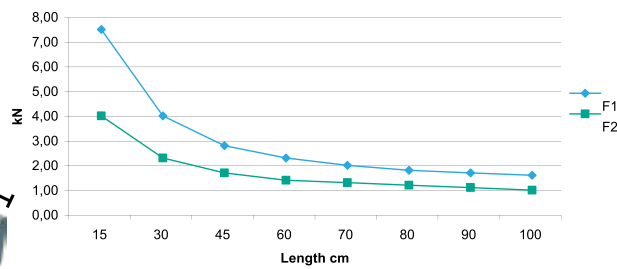
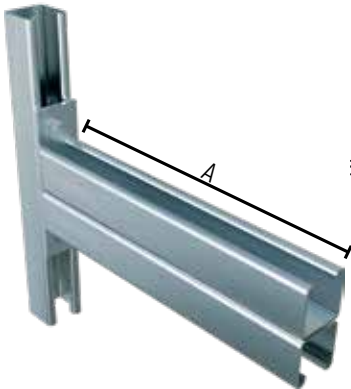
Base plate : height (h) x width (b) x thickness (t)

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 A (mm)	Allowable Load		
	F ₁ *	F ₂ *	F ₇ **
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

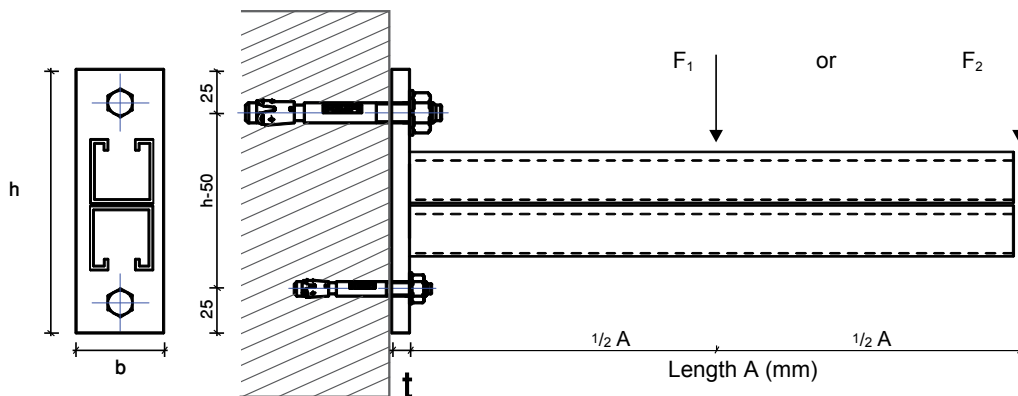
Base plate : height (h) x width (b) x thickness (t)

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]

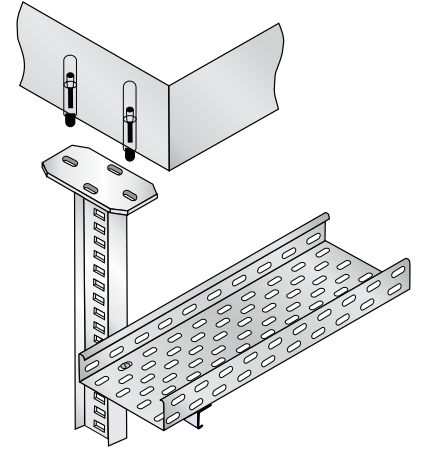
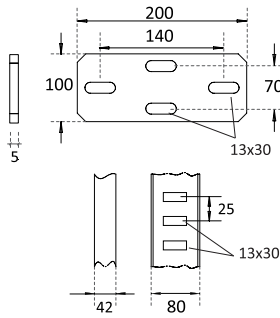
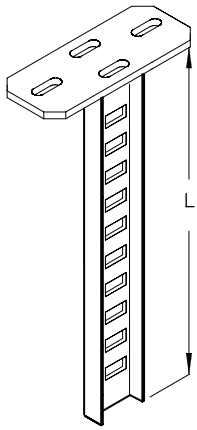
* Given Loads are always in [kN] * Allowable characteristic live load *



* All channels and cable management support system are available in HDG finish

U - Support / 3000

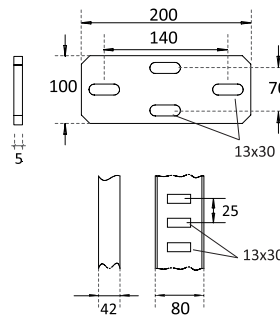
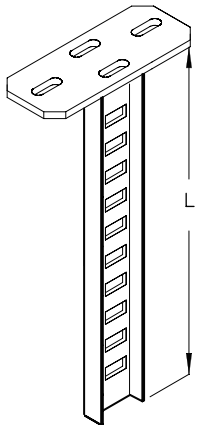
3000



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

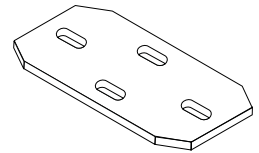
I - Support / 3050

3050



Head Plate / 3100

3100

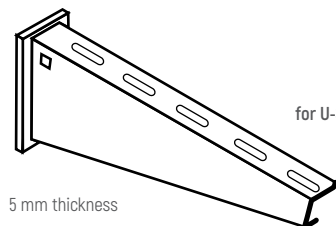


200 x 100 x 5mm

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

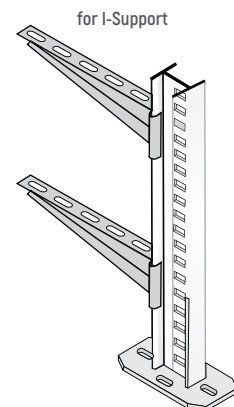
Wall Bracket | 3200 - 3250

3200



for U-Support

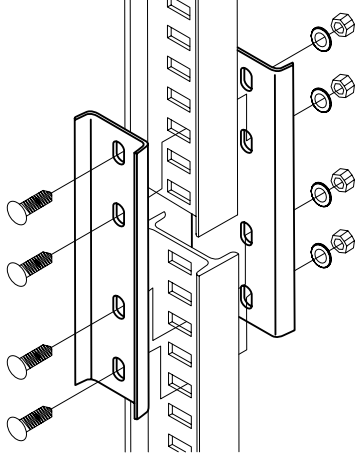
3250



* All channels and cable management support system are available in HDG finish

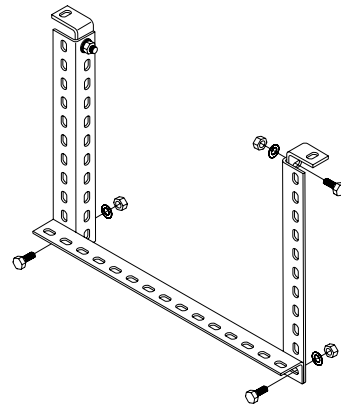
Support connectors | 3300

3300



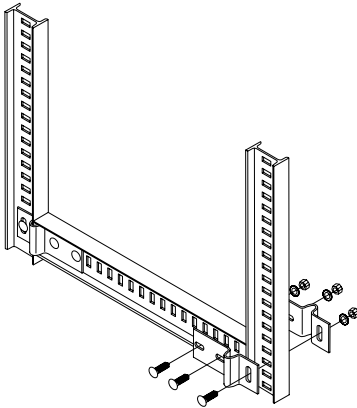
Clamping plates | 3350

3350



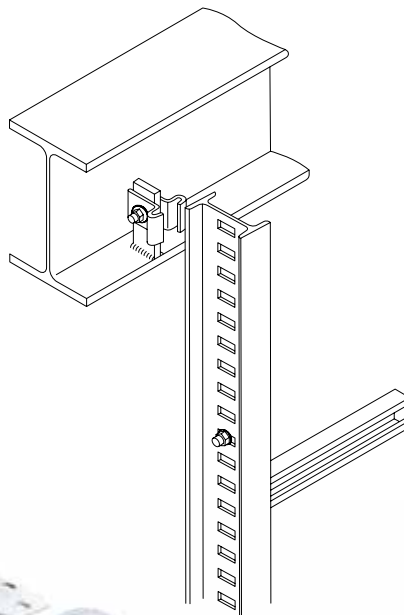
Support plates | 3400

3400



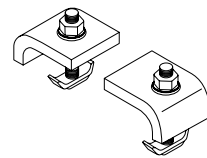
Support clamps | 3450

3450



Clamping angles | 3550

3550



Head plate for welding

Head plate

Head plate: variable, transverse

Carrier lug

Head plate: variable, longitudinal

Support bracket

Support connector

Angles | 3600

3600



* All channels and cable management support system are available in HDG finish

FRP PULTRUDED & MOLDED GRATING

Benefits of INTECH FRP Pultruded and Molded Grating

Corrosion Resistance

No rusting, peeling or flaking, even under the most aggressive conditions in any part of the world.

Lightweight and Durable

Lightweight of FRP ease handling and cutting, reduce size of platform structure.

Cost Effective

Extremely long life compared to metal and others plastic, "with no maintenance required."

High Strength and Stiffness

High glass content and continuous reinforcement, pultruded FRP products give extremely high strength and stiffness compared to other engineering plastic.

High Impact Resistance & Elastic

Returns to original position without any permanent deflection or distortion with allowable loads.

Superior Weatherability

SFSP / INTECH's integral UV protection system gives long term protection against UV attack.

Non-Conductive & Non-Interfering

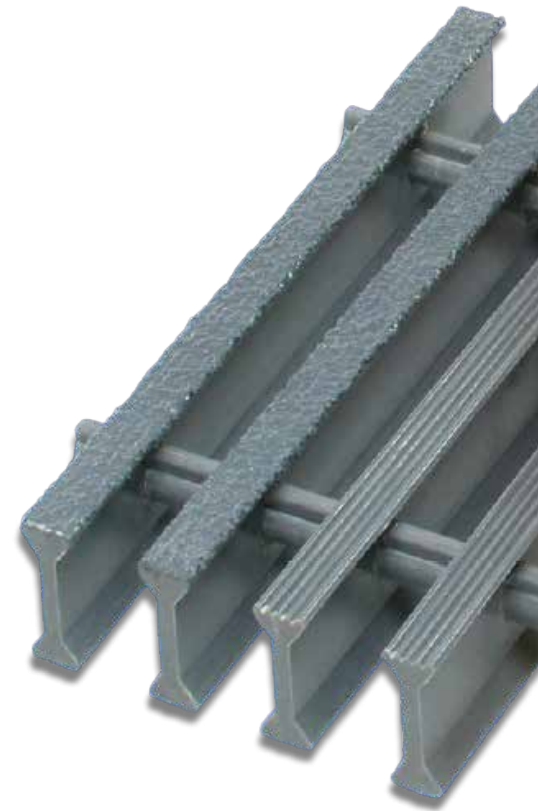
Complies to international electrical safety specification and transparent to radio waves and is nonmagnetic.

Low Thermal Conductivity & Expansion Rate

Will not transfer heat, and no problem of expansion under heat.

Fire Retardant

Fire retardant quality is available with compliance to ASTM-E84 and BS 476 standards.



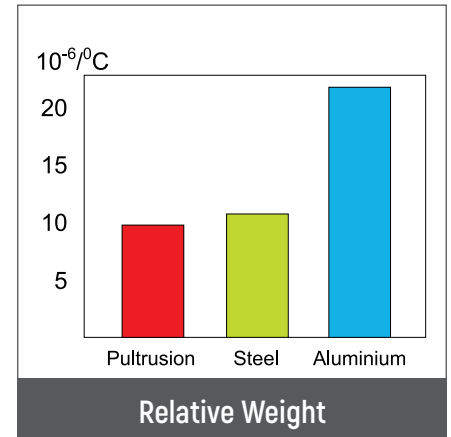
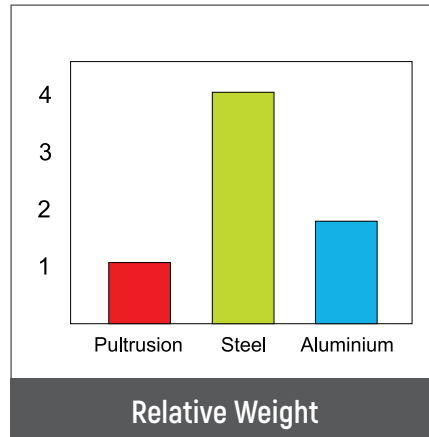
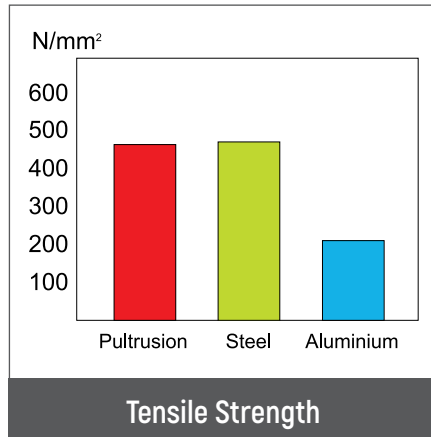
Standard Colour Code :



Typical Properties of Pultrusion FRP Products

The information given below is a guide to the typical properties of Pultruded Fiberglass Reinforced plastic. The pultruded profiles are made from a combination of continuous Longitudinal Rovings, Continuous Filament Mats and Resin, thus properties will vary depending on reinforcement and resin choice.

COMPARISONS



PROPERTIES

Mechanical:

Tensile Strength, Longitudinal:	400-450	N/mm ²
Flexural Stress, Longitudinal:	200-450	N/mm ²
Elastic Modulus, Flexural, Longitudinal:	15,000 -30,000	N/mm ²
Compressive Strength:	150 -300	N/mm ²
Impact Strength:	1 -2	kJ/M
Elongation at Rupture:	2	%
Hardness (Barcol 934-1):	50-60	
Specific Gravity:	1.7-1.9	

Electrical:

Dielectric Strength:	12	kV/mm
Volume Resistivity:	10 ¹⁰ -10 ¹²	Ω/cm ²

Thermal:

Coefficient of Thermal Expansion:	8 - 10	10 ⁻⁶ /°K
Thermal Conductivity:	0.2 -0.3	W/°K.M
Operating Temperature Range (resin dependent):	-70 to +120	°c

Fire:

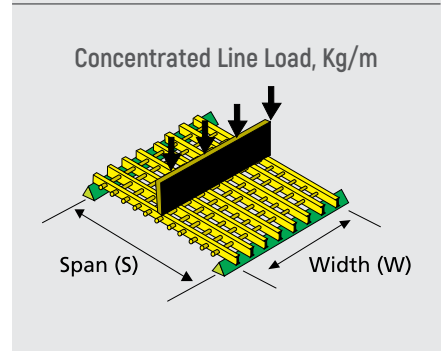
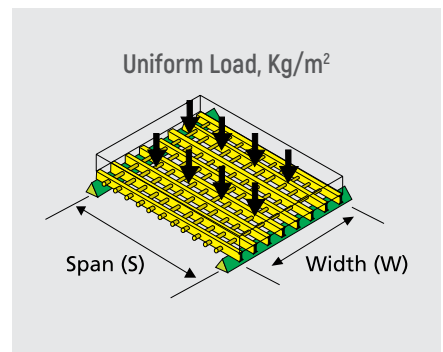
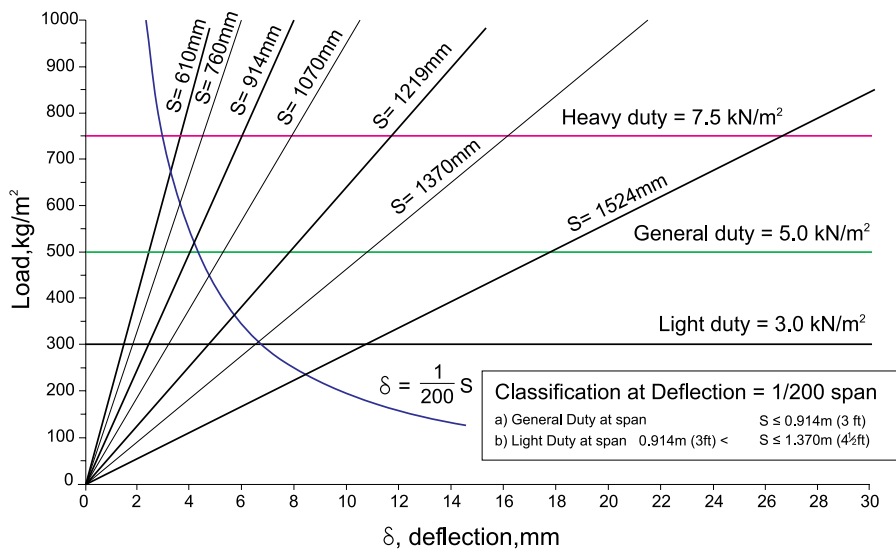
B.S. 476	- Class 1
ASTM E84	- Class 1
IEC 60695	- 960 °c Max.

Smoke:

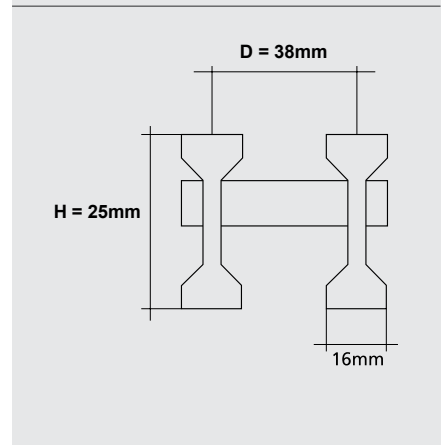
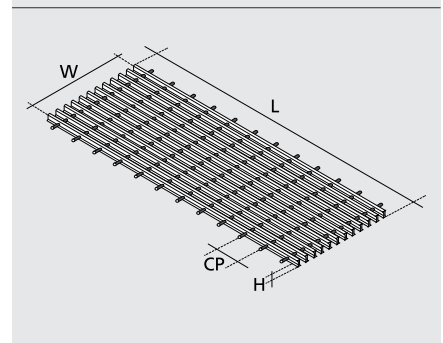
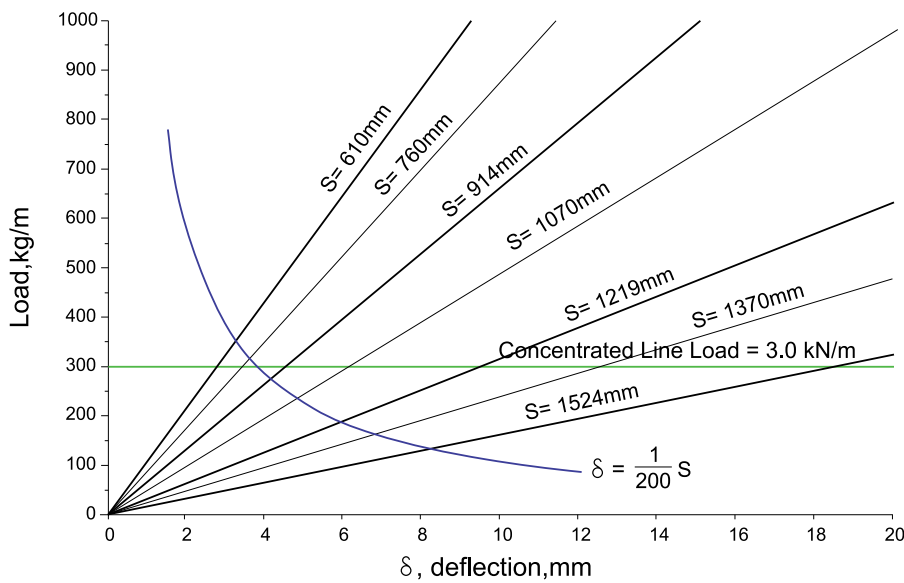
ASTM E662	- Ds at 1.5 min= 0.68
ASTM E84	- Class A

25 MM (H) GRATING

Loading & Support Selection Chart for Uniform Load (25 mm HT grating)



Loading & Support Selection Chart for Concentrated Line Load (25 mm HT grating)

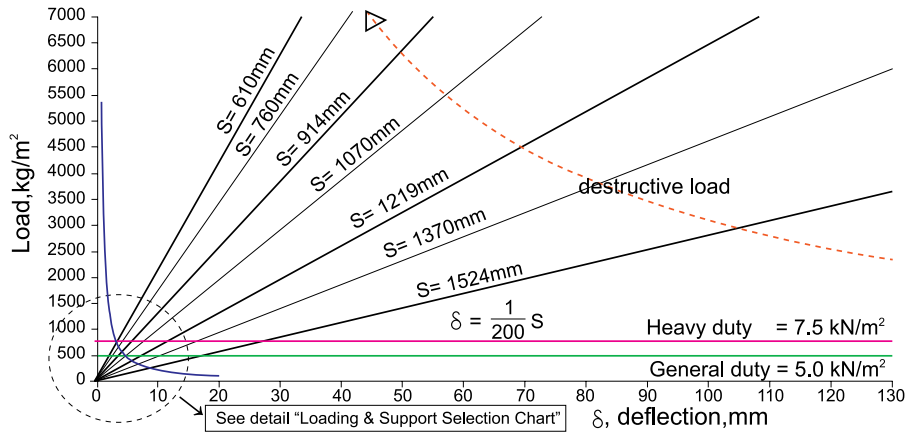


Note: Concentrated Line Load applied on an area of 300 mm x 300 mm

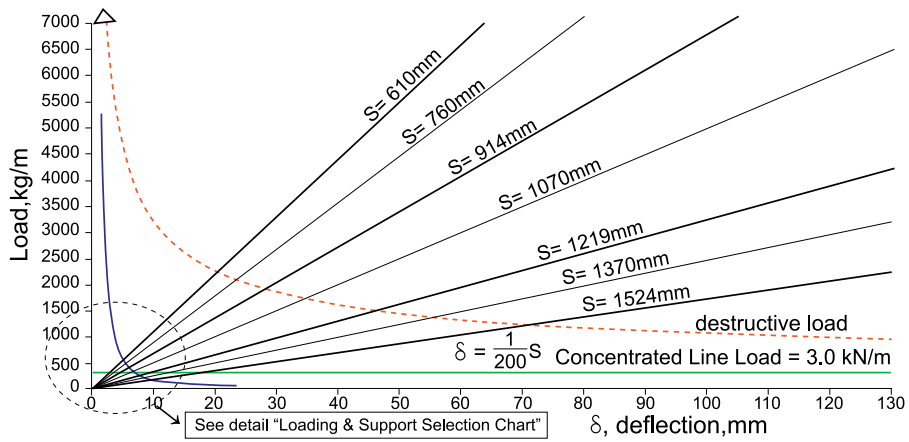
SF-G-1.059-25-152	H = 25mm	D = 38mm	CP = 152mm
SF-G-1.059-25-304	H = 25mm	D = 38mm	CP = 304mm

No. of Bars/m of width	Height (H)	Open Area	Load Bar Centers (D)	Approximate Weight
	(mm)		(mm)	(kg/m²)
27	25	60%	38	12.4

Load Vs Deflection Chart
for Uniform Load [25 mm H Grating]

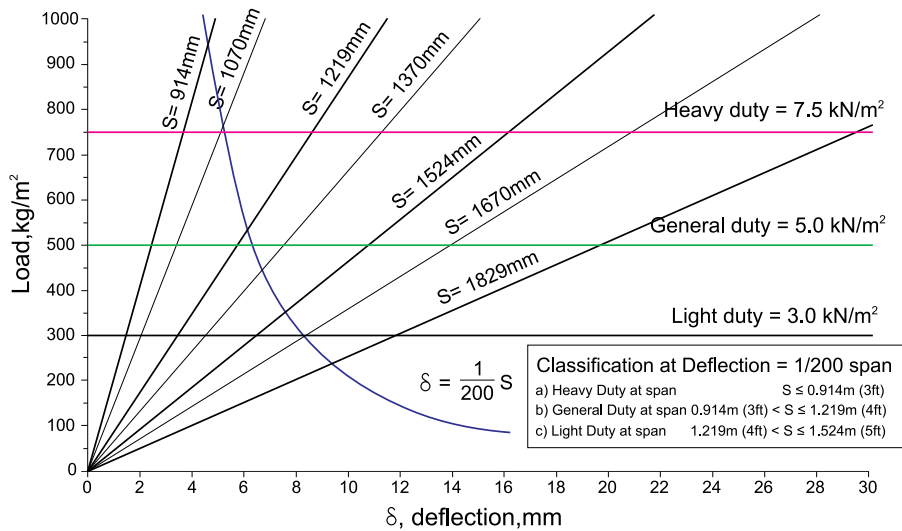


Load Vs Deflection Chart
for Concentrated Line Load [25 mm H Grating]

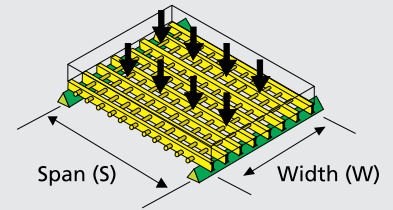


38 MM (H) GRATING

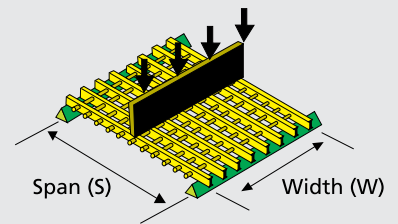
Loading & Support Selection Chart for Uniform Load (38 mm HT grating)



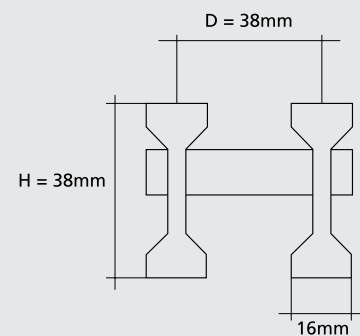
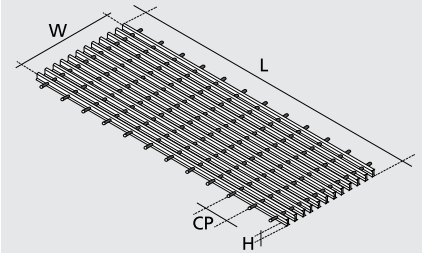
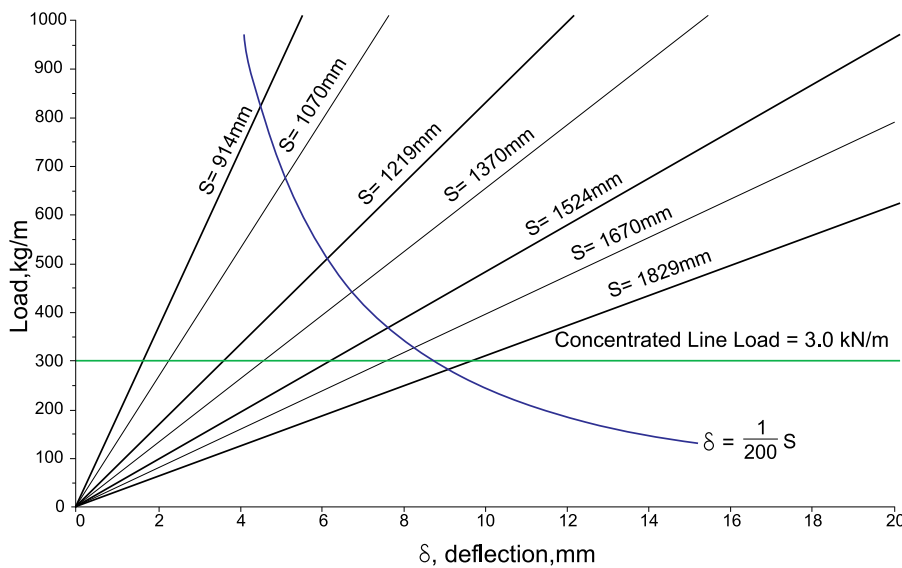
Uniform Load, Kg/m²



Concentrated Line Load, Kg/m



Loading & Support Selection Chart for Concentrated Line Load (38 mm HT grating)

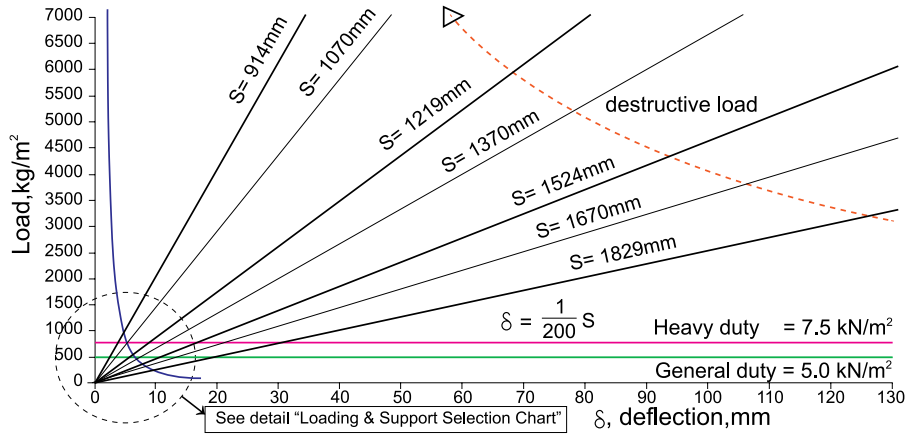


Note: Concentrated Line Load applied on an area of 300 mm x 300 mm

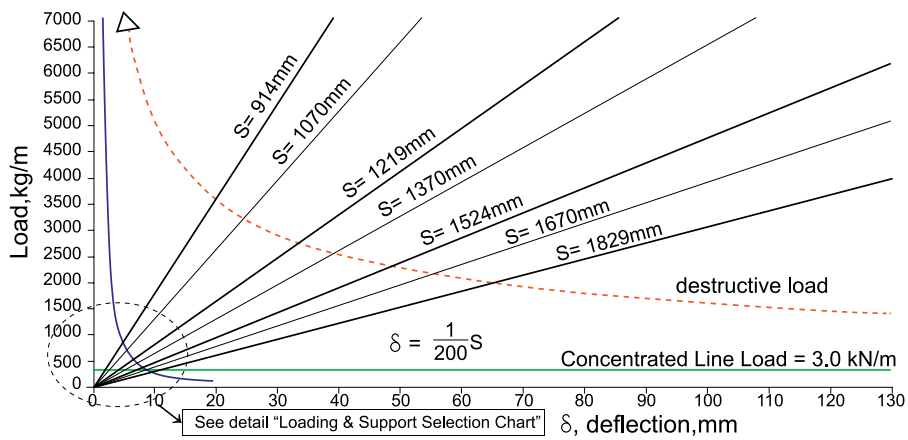
SF-G-1.059-38-152	H = 38mm	D = 38mm	CP = 152mm
SF-G-1.059-38-304	H = 38mm	D = 38mm	CP = 304mm

No. of Bars/m of width	Height (H)	Open Area	Load Bar Centers (D)	Approximate Weight
	(mm)		(mm)	(kg/m ²)
27	38	60%	38	15.6

Load Vs Deflection Chart
for Uniform Load [38 mm H Grating]

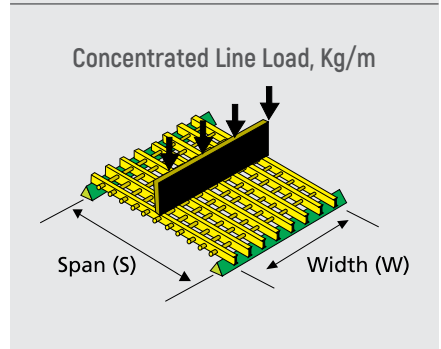
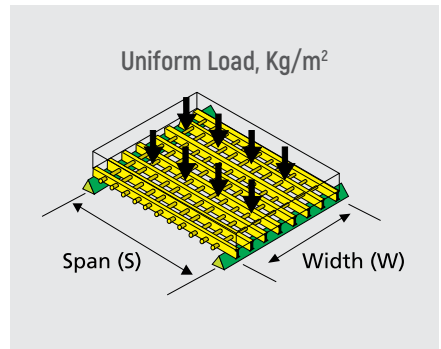
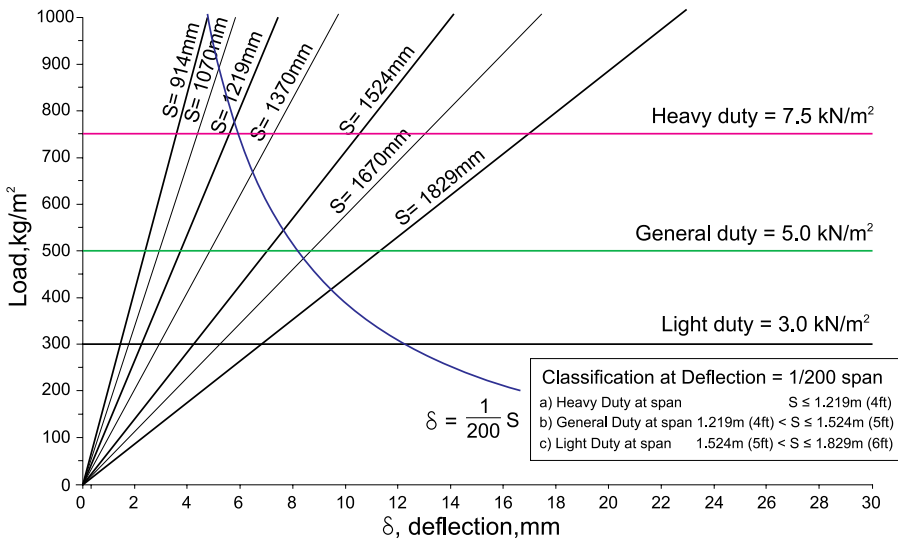


Load Vs Deflection Chart
for Concentrated Line Load [38 mm H Grating]

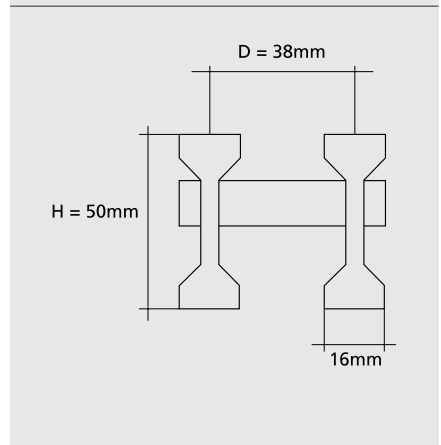
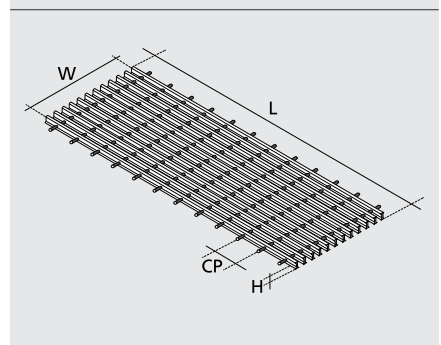
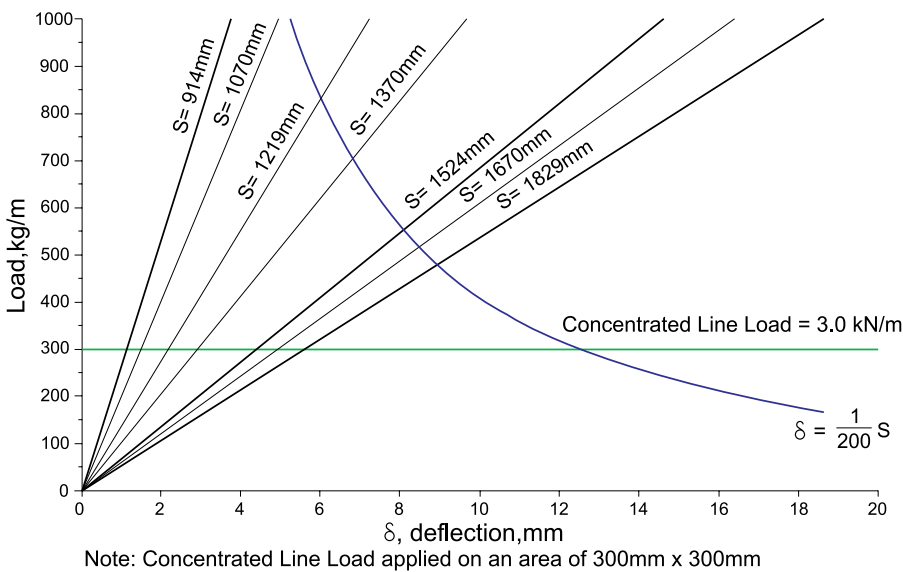


50 MM (H) GRATING

Loading & Support Selection Chart for Uniform Load (50 mm HT grating)



Loading & Support Selection Chart for Concentrated Line Load (50 mm HT grating)

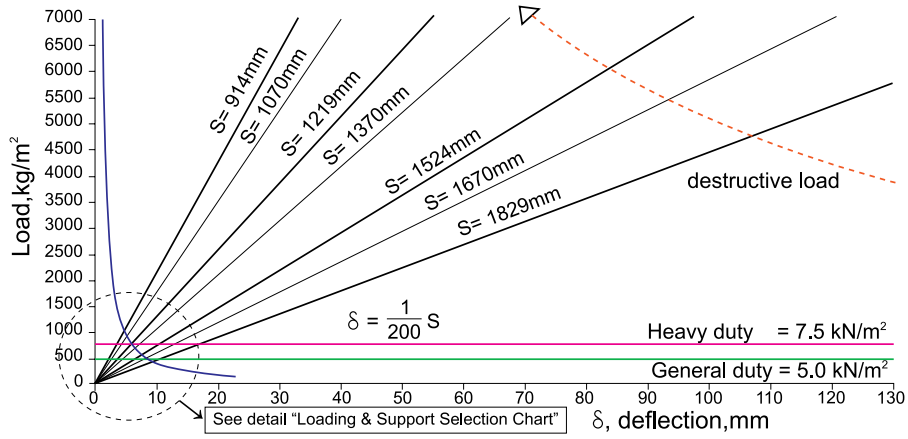


Note: Concentrated Line Load applied on an area of 300 mm x 300 mm

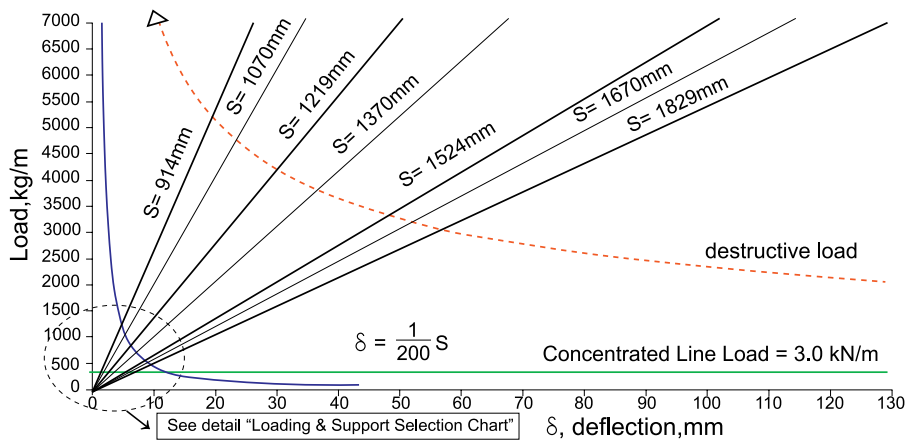
SF-G-1.059-50-152	H = 50mm	D = 38mm	CP = 152mm
SF-G-1.059-50-304	H = 50mm	D = 38mm	CP = 304mm

No. of Bars/m of width	Height (H)	Open Area	Load Bar Centers (D)	Approximate Weight
	(mm)		(mm)	(kg/m²)
27	50	60%	38	21.0

Load Vs Deflection Chart
for Uniform Load (50 mm H Grating)

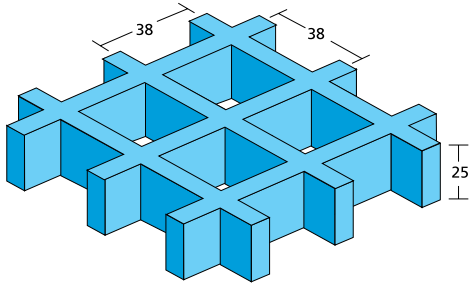


Load Vs Deflection Chart
for Concentrated Line Load (50 mm H Grating)

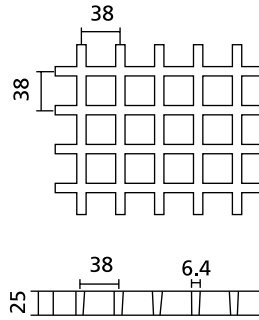


Detailed Specifications

Thickness: 25mm



Plan View



25mm thick, 38x38mm square mesh, bearing bars run both direction

Bearing bar thickness (Top/Bottom) : 6.4/5.0

Bearing bar center : 38

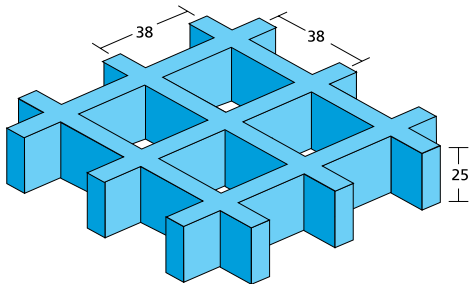
Open Area : 68%

Approx. Weight : 12.30 kgs/m²

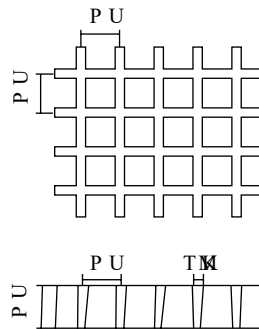
Panel size available :

1524 x 4000, 1220 x 4000,
1220 x 3660, 1220 x 2440,
915 x 3050

Thickness: 38mm



Plan View



38mm thick, 38x38mm square mesh, bearing bars run both direction

Bearing bar thickness (Top/Bottom) : 7.0/5.0

Bearing bar center : 38

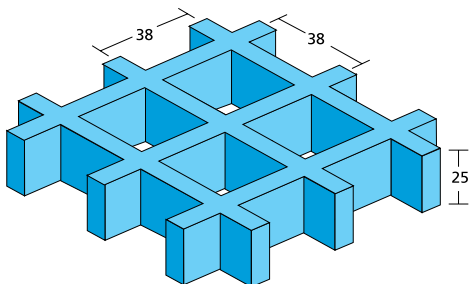
Open Area : 68%

Approx. Weight : 19.50 kgs/m²

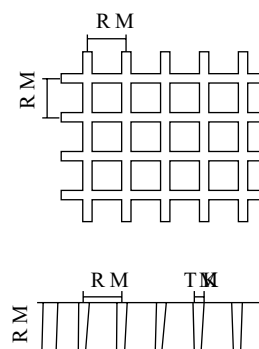
Panel size available :

1524 x 4000, 1524 x 3050,
1220 x 4000, 1220 x 3660,
1220 x 2440, 915 x 3050

Thickness: 50mm



Plan View



50mm thick, 50x50mm square mesh, bearing bars run both direction

Bearing bar thickness (Top/Bottom) : 7.0/5.0

Bearing bar center : 50

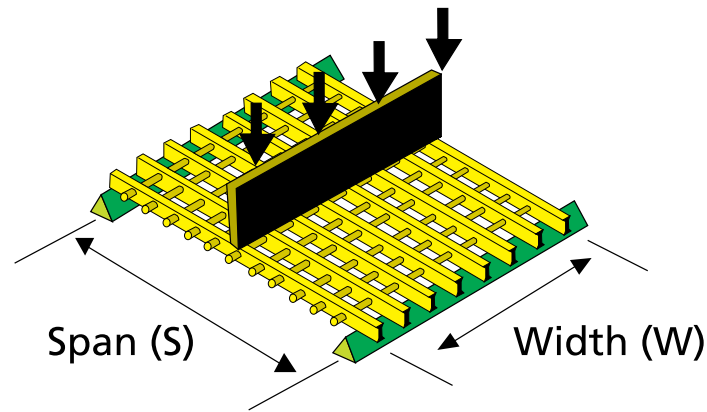
Open Area : 78%

Approx. Weight : 20.80 kgs/m²

Panel size available :

1524 x 4000, 1220 x 3660,
1800 x 4000, 1220 x 2440,
915 x 3050

Molded Grating Load Tables



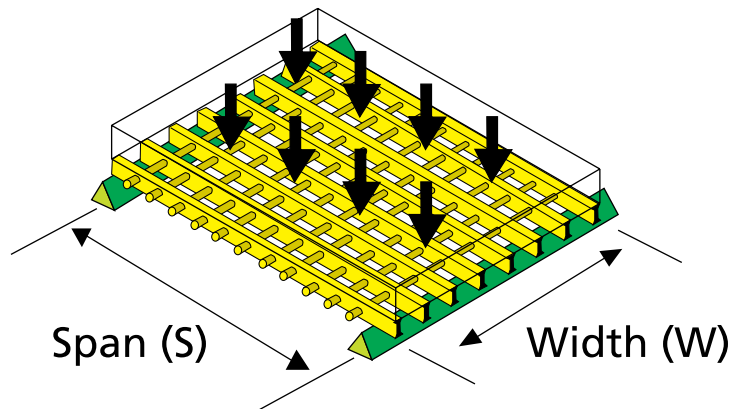
CONCENTRATED LINE LOAD TABLES - DEFLECTION IN MILLIMETERS

Span in mm	THK	Mesh	9.8Load in Kn/m of Width [Concentrated]											Maximum Recommended	Apparent EI x 10 ⁻⁶ N-mm ² /m	
			3	5	10	15	20	25	40	50	60	70	80			
400	25	38x38	1.6	2.6	5.3	7.9	10.5	13.1							9	2.54
	38	38x38	0.6	0.9	1.9	2.8	3.7	4.7	7.3	9.3	11.2	13.1	14.9	19	7.14	
	50	50x50	0.3	0.6	1.1	1.7	2.3	2.8	4.4	5.7	6.8	7.9	9.1	30	11.75	
600	25	38x38	4.8	8.0	16.0										6	2.82
	38	38x38	1.6	2.6	5.3	7.9	10.5	13.2						13	8.56	
	50	50x50	0.9	1.5	3.0	4.5	6.1	7.6	11.8	15.1				21	14.85	
800	25	38x38	11.3												3	2.82
	38	38x38	3.5	5.9	11.8									10	9.03	
	50	50x50	1.9	3.2	6.4	9.7	12.9							12	16.55	
1000	38	38x38	6.9	11.4										7	9.12	
	50	50x50	3.7	6.1	12.2									10	17.02	
1200	38	38x38	11.8											5	9.12	
	50	50x50	6.2	10.4										8	17.30	
1400	50	50x50	9.8											5	17.60	

NOTES

1. Maximum Recommended load should not be exceeded at any time.
2. Maximum Load indicates a 5:1 factor of safety on Ultimate Capacity.
3. Ultimate Capacity represents a complete and total failure of the grating.
4. Pedestrian traffic walking loads recommended is 2.4KN/M². Deflections for worker comfort are typically limited to 9mm or span divided by 120 under full live load.
5. The permissible loads are for STATIC LOAD CONDITIONS at ambient temperatures. Permissible loads for impact or dynamic loads should be a maximum to one-half from the value shown. Long duration loads will cause added deflection due to creep in material and will require higher safety factors to ensure acceptable performance.

Molded Grating Load Tables



UNIFORMED LOAD TABLES - DEFLECTION IN MILLIMETERS

Span in mm	THK	Mesh	9.8Load in Kn/m of Width [Concentrated]											Maximum Recommended	Apparent EI x 10 ⁶ N-mm ² /m
			3	5	10	15	20	25	39	50	60	70	80		
400	25	38x38	0.4	0.7	1.3	2.0	2.6	3.3	5.1	6.6	7.9	9.2	10.5	48	2.54
	38	38x38	0.1	0.2	0.5	0.7	0.9	1.2	1.8	2.9	2.8	3.3	3.7	100	7.14
	50	50x50	0.1	0.1	0.3	0.4	0.6	0.7	1.1	1.4	1.7	2.0	2.3	154	11.75
600	25	38x38	1.8	3.0	6.0	9.0	12.0	15.0						20	2.82
	38	38x38	0.6	1.0	2.0	3.0	3.9	4.9	7.7	9.9	11.8	13.8	15.8	45	8.56
	50	50x50	0.3	0.6	1.1	1.7	2.3	2.8	4.4	5.7	6.8	8.0	9.1	73	14.85
800	25	38x38	5.7	9.5										9	2.82
	38	38x38	1.8	3.0	5.9	8.9	11.8	14.8						26	9.03
	50	50x50	0.1	0.2	0.6	0.5	0.7	0.8	1.3	1.6	2.0	2.3	2.6	35	16.54
1000	38	38x38	13.9											5	2.82
	38	38x38	4.3	7.1	14.6									14	9.12
	50	50x50	2.3	3.8	7.7	11.5	15.3							21	17.01
1200	38	38x38	8.9	14.8										9	9.12
	50	50x50	4.7	7.8	15.6									14	17.30
1400	50	50x50	8.5	14.2										8	17.60

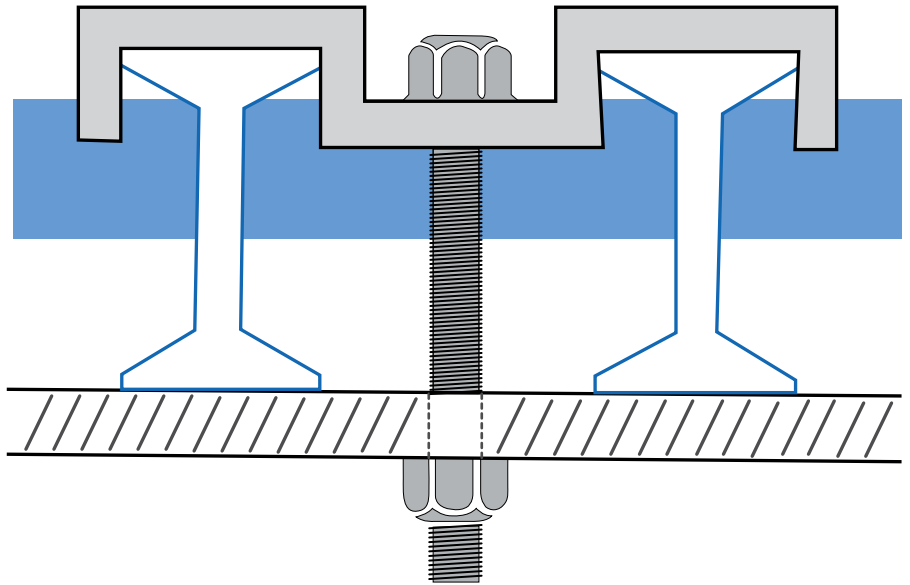
NOTES

1. Maximum Recommended load should not be exceeded at any time.
2. Maximum Load indicates a 5:1 factor of safety on Ultimate Capacity.
3. Ultimate Capacity represents a complete and total failure of the grating.
4. Pedestrian traffic walking loads recommended is 2.4kN/M². Deflections for worker comfort are typically limited to 9mm or span divided by 120 under full live load.
5. The permissible loads are for STATIC LOAD CONDITIONS at ambient temperatures. Permissible loads for impact or dynamic loads should be a maximum to one-half from the value shown. Long duration loads will cause added deflection due to creep in material and will require higher safety factors to ensure acceptable performance.

Installation System

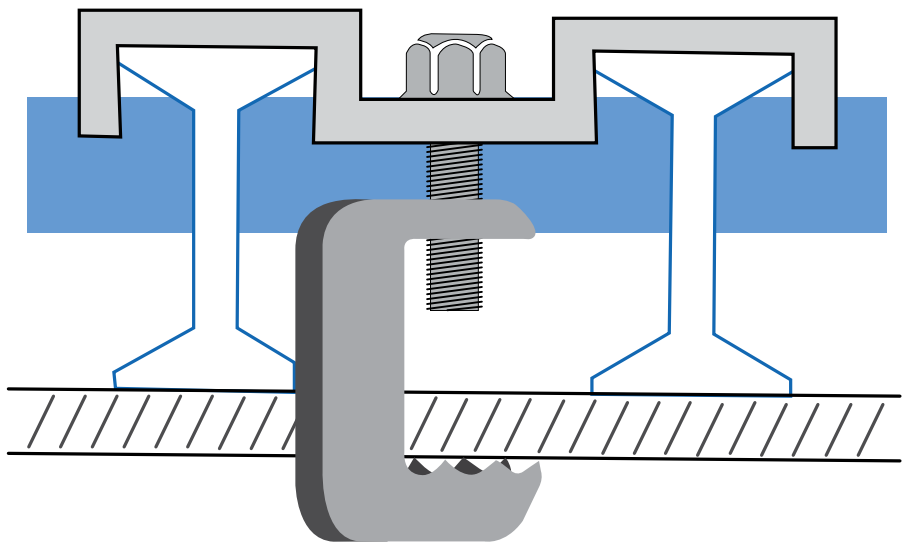
M-CLIP

M-Clip is used to secure panels by drilling through the support structures. It is designed to use two adjacent grating bars for a more secure fit.



G-CLIP

G-Clip is designed to attach grating to any structural support, with no drilling required. Recommended for offshore projects.



Application

SFSP/INTECH products can be used in either new application or for replacing existing application which is exposed to corrosive environment. The application can be found in all type of industrial such as

- Offshore, Onshore, and Oil & Gas
- Power Plants
- Pollution Control
- Recreation
- Government Properties
- Food Industry
- District Cooling System
- Petrochemical
- Chemical
- Water / Waste Treatment
- Public Facilities
- Fertilizer Plant
- Pharmaceutical

FRP HANDRAILS

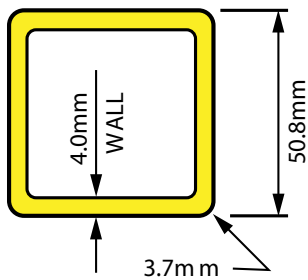
Fiberglass Reinforced Plastic (FRP) Handrail

SFSP - INTECH FRP handrail is constructed in several models using structural profiles such as square hollow section, round tube and others.

Unlike other steel or aluminium handrail, the FRP handrail offers several advantages such as corrosion resistance, long service life, cost effective, lightweight and high strength, ultimate UV protection, and others. It has been widely used in offshore construction, oil & gas industry, ship building and marine industry, and etc where corrosion and UV protection are the main concerned.

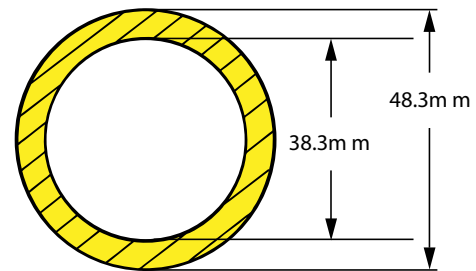


Square Post or Rail Section Properties



- A= 742.5mm²
- S= 1.077 x 10⁴ mm³
- I= 2.735 x 10⁵ mm⁴
- E= 2.55 x 10¹⁰ N/m²
- WT= 431 Grams
- where E= Flexural modulus full section

Round Post or Rail Section Properties

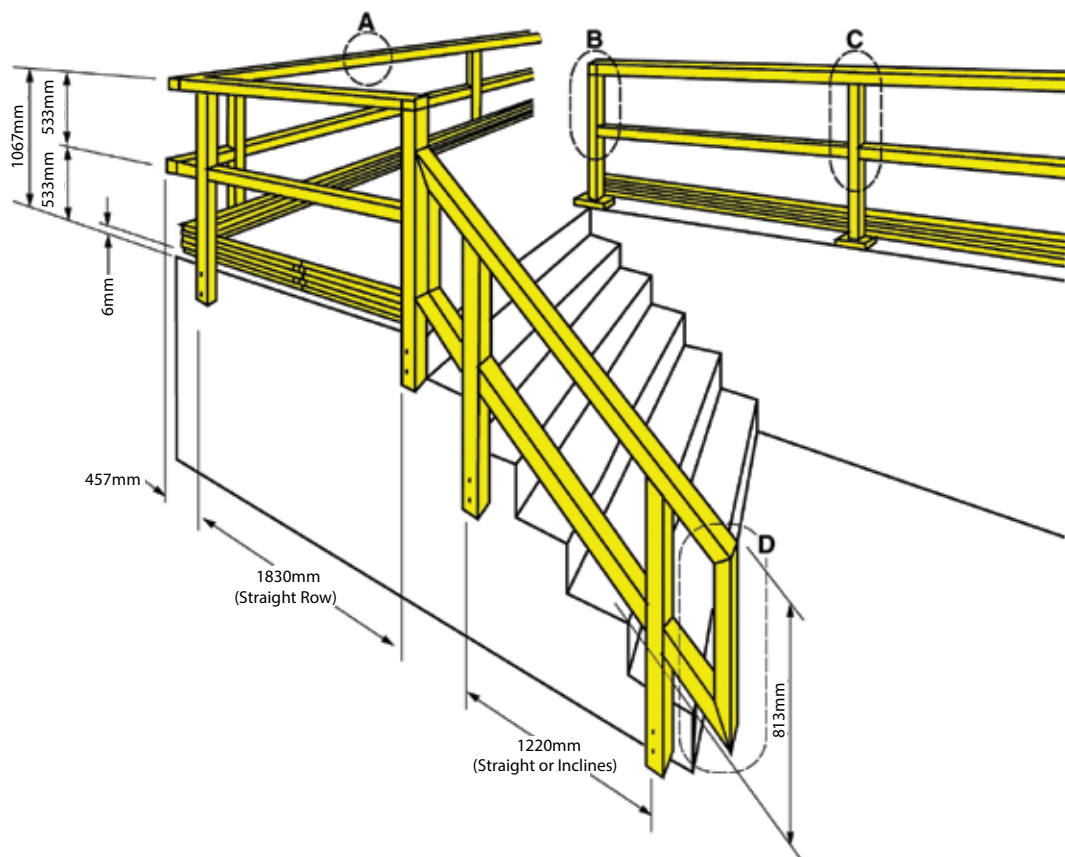


- A= 677.4mm²
- S= 6.637x10³ mm³
- I= 2.735 x 10⁵ mm⁴
- E= 2.10 x 10¹⁰ N/m²
- WT= 380 Grams
- where E= Flexural modulus full section

Minimum Mechanical Properties for Pultruded Rail and Post

Properties	Test Method	Square Rail Values	Round Rail Values
Tensile Stress	ASTM D638	207N/mm ²	207N/mm ²
Tensile Modulus	ASTM D638	17.2x10 ³ N/mm ²	17.2x10 ³ N/mm ²
Compressive Stress	ASTM D695	207N/mm ²	207N/mm ²
Compressive Modulus	ASTM D695	17.2x10 ³ N/mm ²	17.2x10 ³ N/mm ²
Flexural Stress	ASTM D790	207N/mm ²	207N/mm ²
Flexural Modulus	ASTM D790	11.0x10 ³ N/mm ²	11.0x10 ³ N/mm ²
Shear Stress	ASTM D2344	1N/mm ²	1N/mm ²
Density	ASTM D792	1.72-1.94x10 ⁻³ g/mm ³	1.72-1.94x10 ⁻³ g/mm ³
24 Hr. Water Absorption	ASTM D570	0.6% max	0.6% max
Coef. Thermal Expansion	ASTM D696	14.5x10 ⁻⁶ mm/mm/C ^o	14.5x10 ⁻⁶ mm/mm/C ^o
Flexural Stress	Full Section	248N/mm ²	414N/mm ²
Flexural Modulus	Full Section	25.5x10 ³ x10 ³ N/mm ²	31.0x10 ³ N/mm ²

Typical Square Handrail Construction

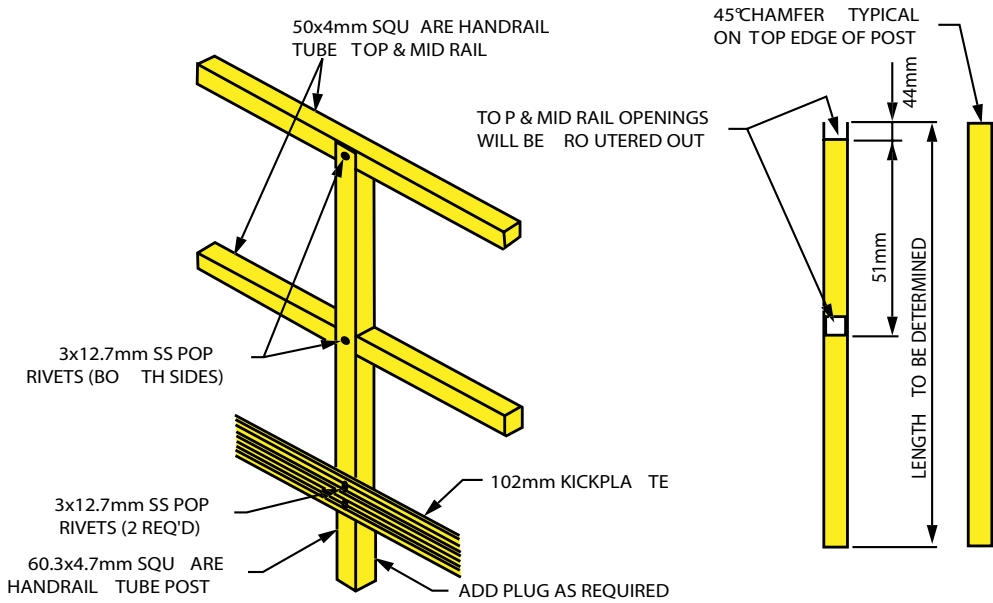


Connection Details

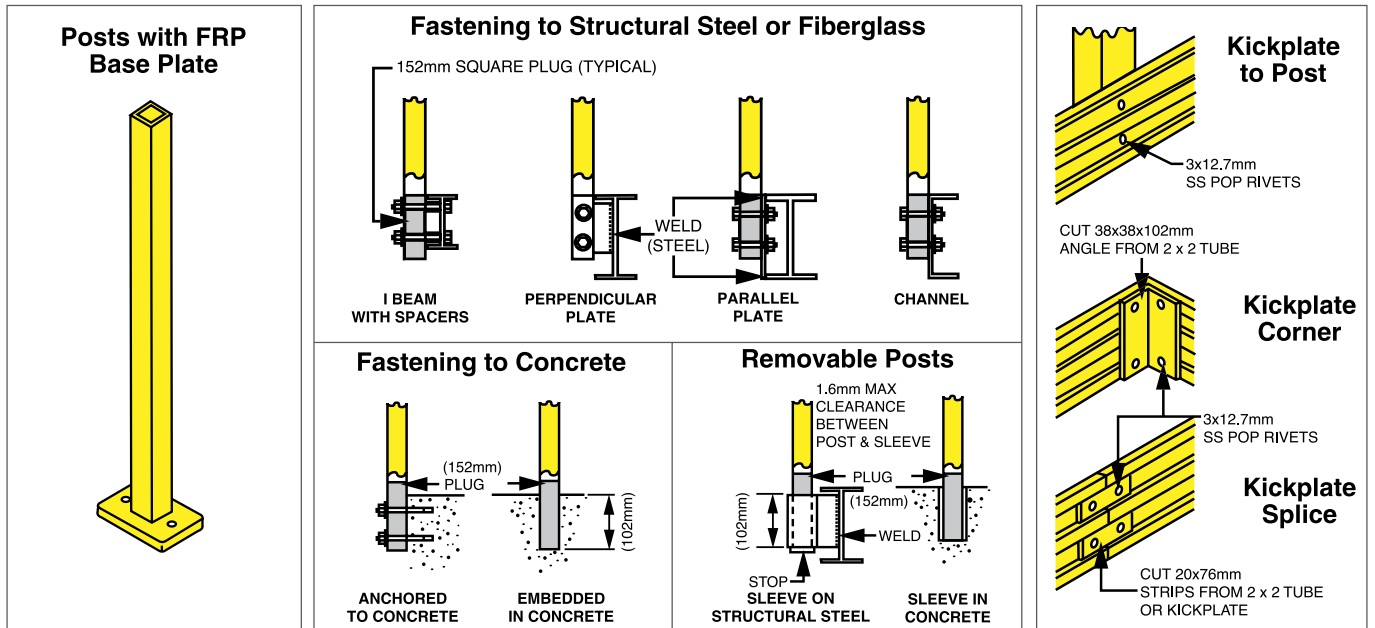
All components secured with epoxy.

<p>A Rail Splice</p> <p>152mm SQU ARE PLUG</p> <p>STRAIGHT</p> <p>ADJUST ABLE CORNER ASSEMBLY</p> <p>ANGLE</p>	<p>B End Post to Rail</p> <p>102mm SPLIT TUBE CONNECT OR</p> <p>90° CORNER</p>	<p>C Line Post to Rail</p> <p>203mm SPLIT TUBE CONNECT OR</p> <p>02mm SPLIT TUBE CONNECT OR</p>	<p>D Stair Rail Return</p> <p>(2) ADJUST ABLE CORNER ASSEMBLIES</p>
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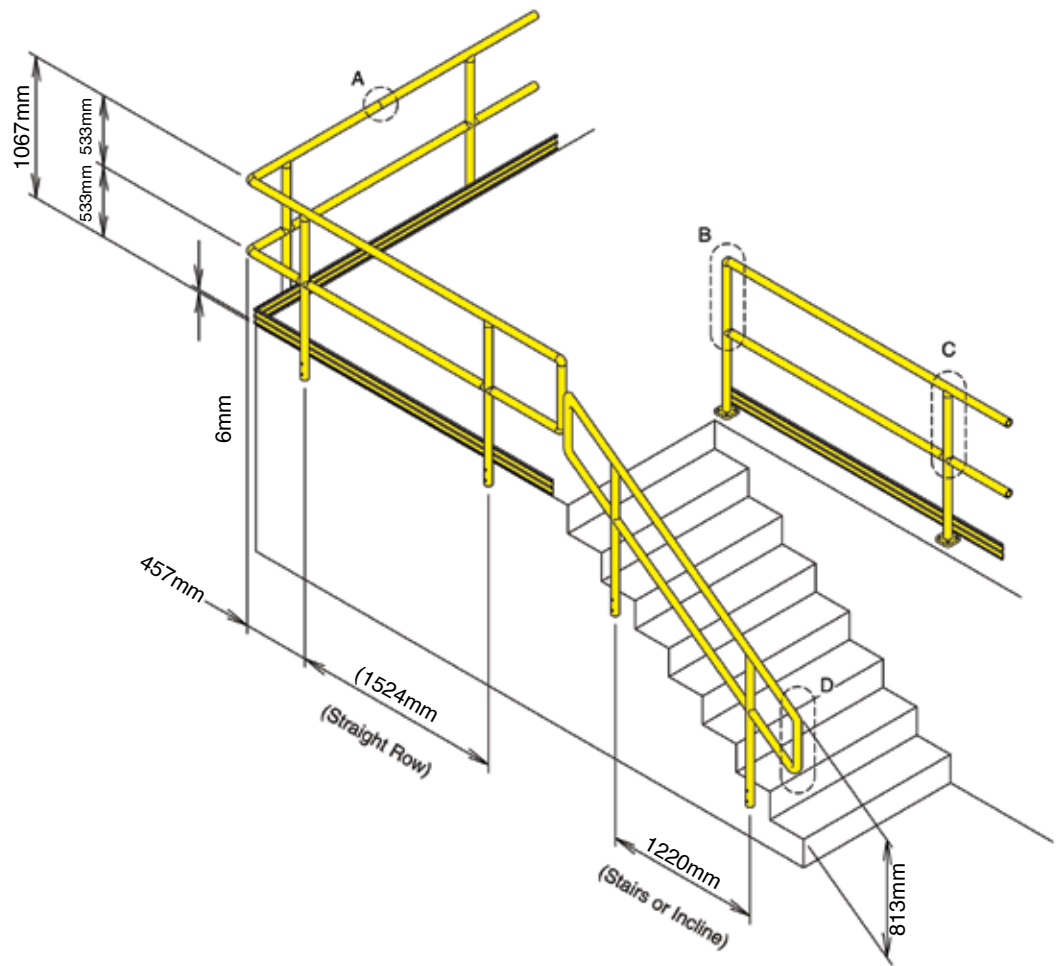
Alternative Post Design



Suggested Square Post and Kick Plate Installation

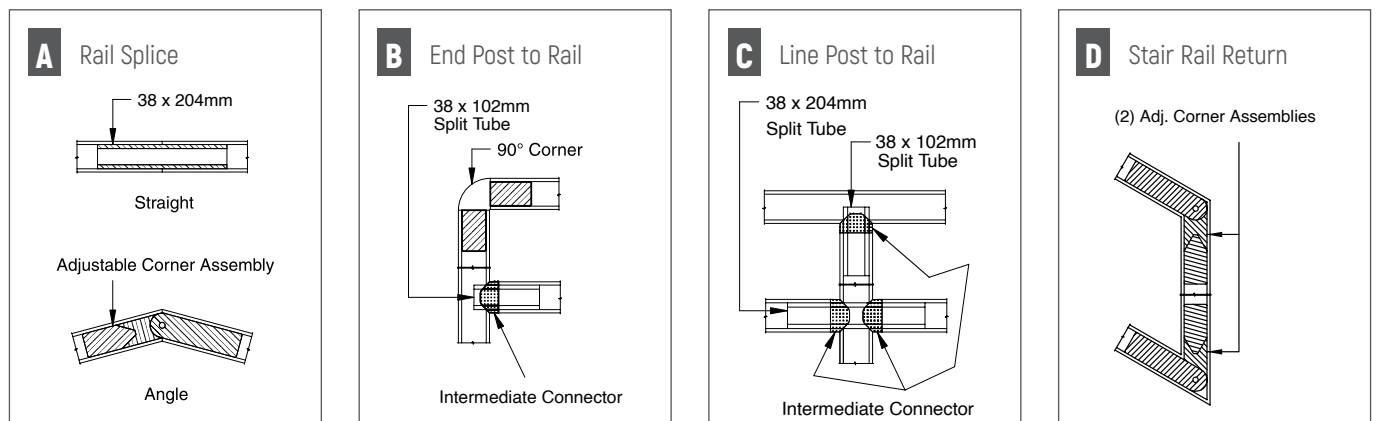


Typical Round Handrail Construction



Connection Details

All components secured with epoxy.



Round Handrail System

The round handrail system is a round fiberglass system that is ideal for any high traffic area where handrail is needed. The round rails are easy to grip and 90o molded corners eliminate sharp edges.

The handrail system meets OSHA strength requirements with a 2:1 factor of safety with a 1524mm maximum post spacing.

The handrail system can be made to comply with ADA standards upon request.

Internally bonded fiberglass connectors result in no visible rivets or metal parts. Rail and posts are 48.3mm O.D. x 38.3mm I.D. This is the same outside dimension as typical metal rails for ease of adapting to common metal brackets.

Kickplates are available upon request. The round handrail system is pultruded using either a vinyl ester or a polyester resin system.

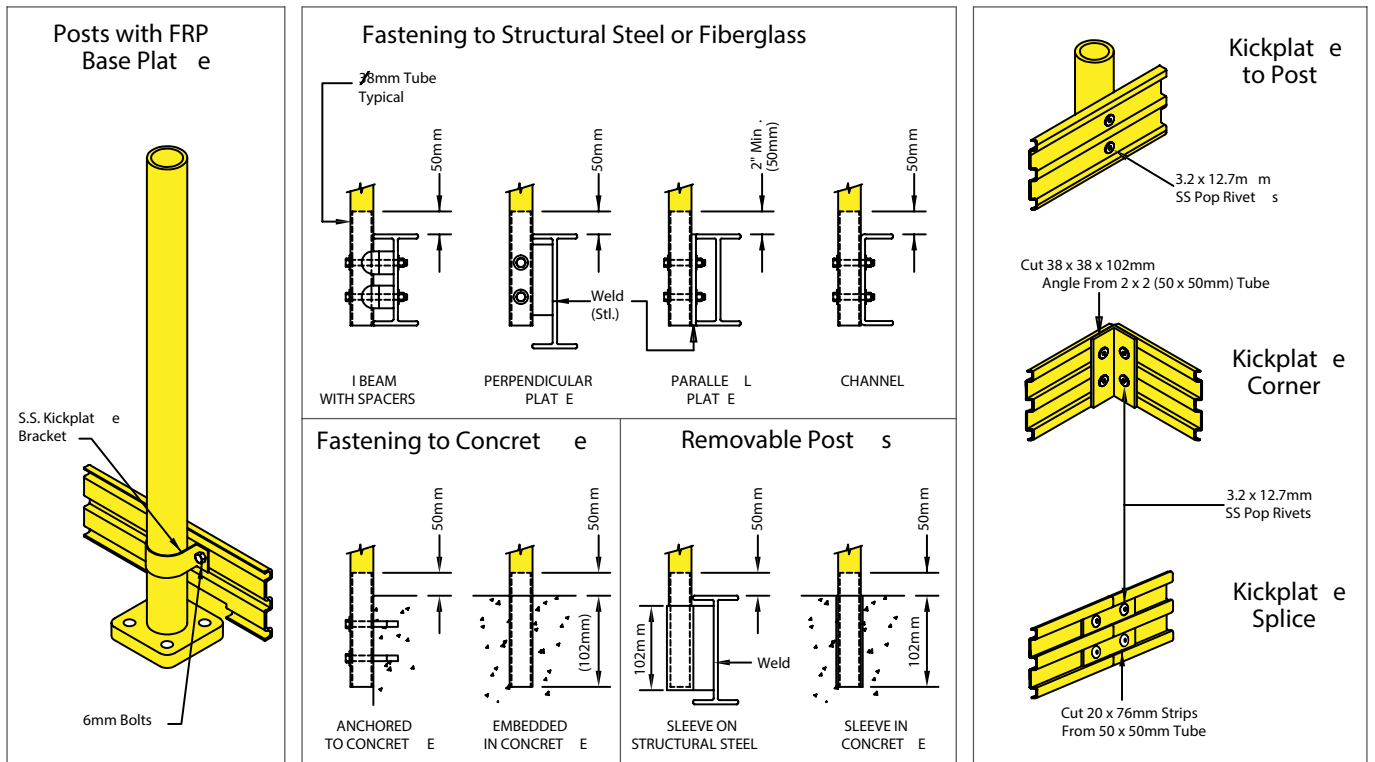
The handrail system includes a UV inhibitor for additional resistance to ultraviolet degradation and corrosion.

Typical applications include:

- Food Processing Facilities
- Platforms & Walkways
- Heavy Industrial Plants



Suggested Square Post and Kick Plate Installation



Channel Top Handrail System

The channel top industrial fiberglass handrail is an economical commercial railing system designed for long runs on platforms and walkways. The railing system is designed for fabrication efficiency and is not particularly well-suited for stair rails with twists and turns. The channel top can be used in combination with round and square as needed.

The channel top systems are fabricated as handrails and guardrails using pultruded fiberglass components produced by Strongwell and molded thermoplastic connectors.

The channel top system consists of a 63.50mm x 60.45mm channel top rail, 50.80mm x 50.80mm x 3.96mm square tube posts and a 1" inch diameter round tube mid rail.

Advantages

The benefits to designing a channel top fiberglass handrail system are:

- Easy installation and field fabrication
- Economical installation of long straight runs
- Fewer components, reducing freight cost
- No epoxy required
- All riveted connections

In addition, channel top shares same benefits and advantages of the original such as:

- Corrosion resistance
- Strength
- Impact resistance
- Light weight
- Low thermal conductivity
- Low electrical conductivity

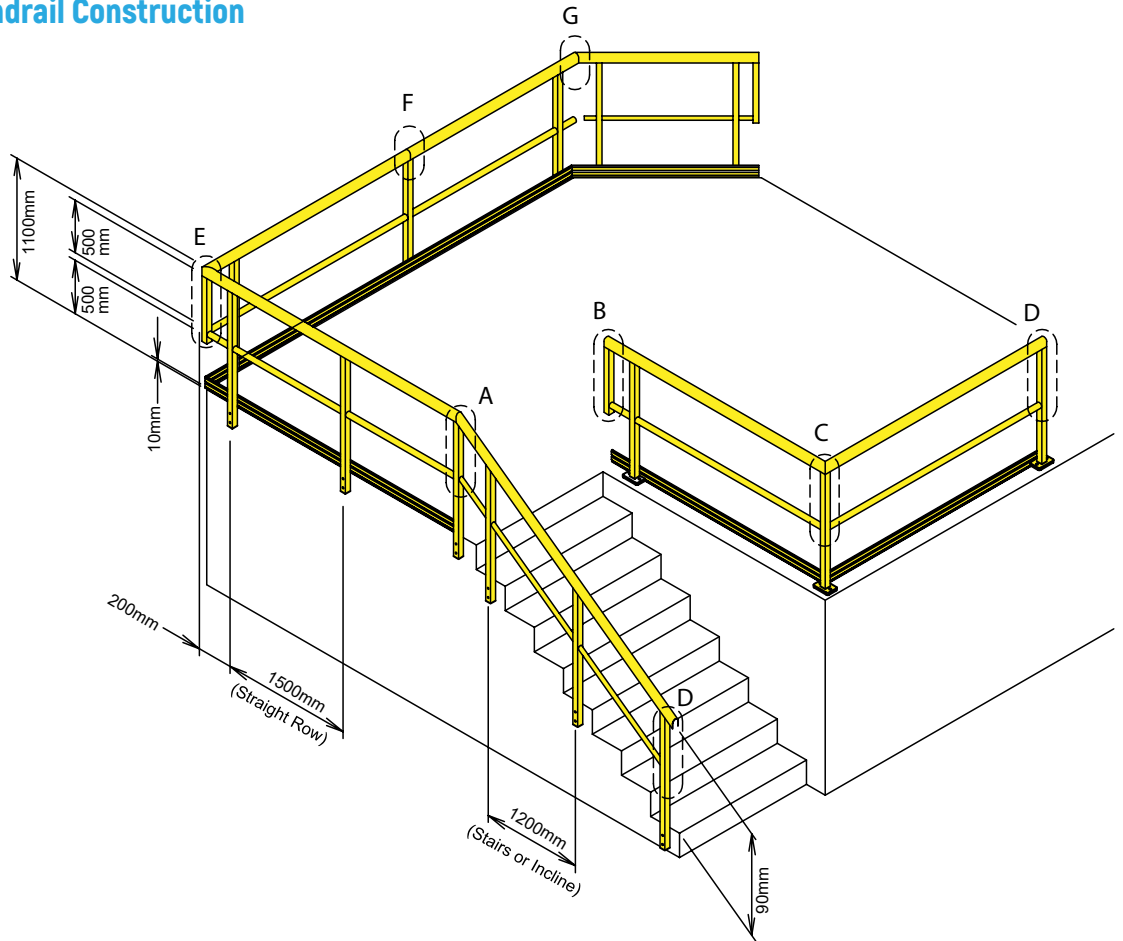
Standard channel top handrail systems are pultruded using a polyester, fire-retardant resin system. The handrail system includes a UV inhibitor for additional resistance to ultraviolet degradation and corrosion. Standard color is yellow, however, other colors are available upon request.

Safety

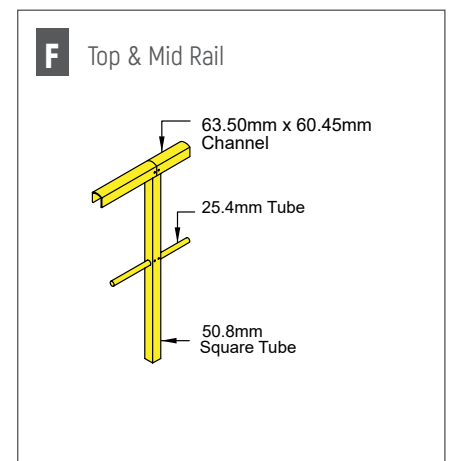
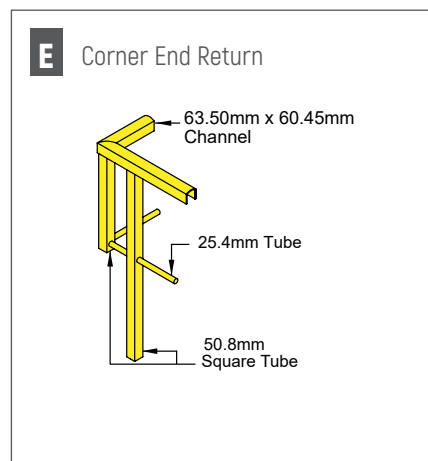
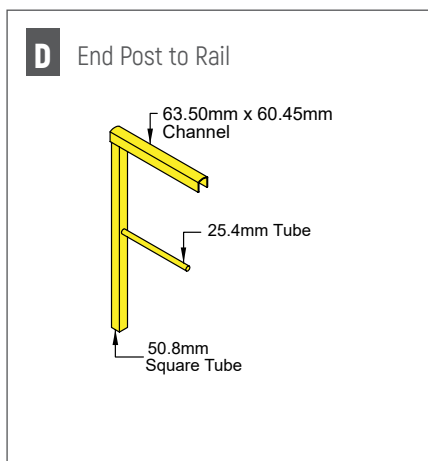
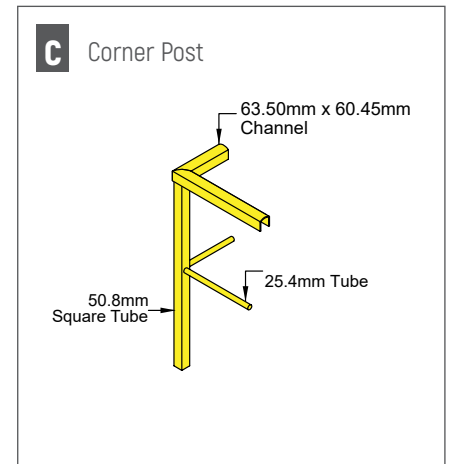
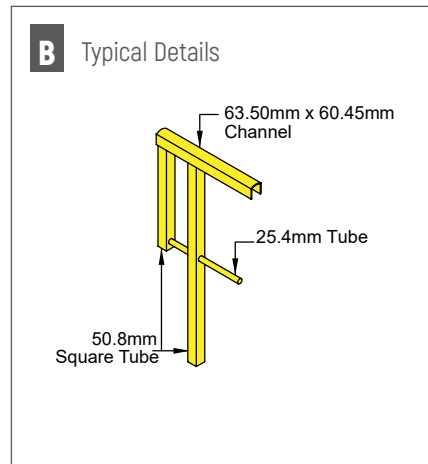
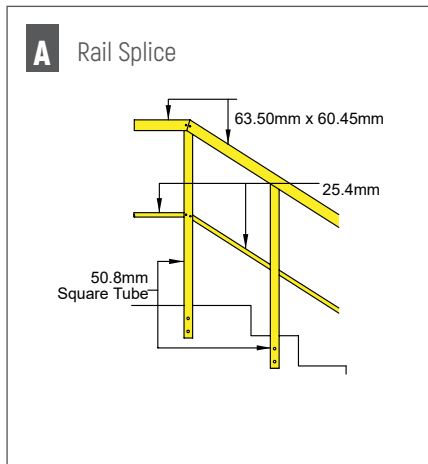
The channel top handrail system meets OSHA strength requirements. It has also been independently tested and meets the British Standard EN ISO 14122-3:2001 requirements. The handrail system sustained a falling weighted bag impact force of 216.5 ft-lb (293.6 N-m).



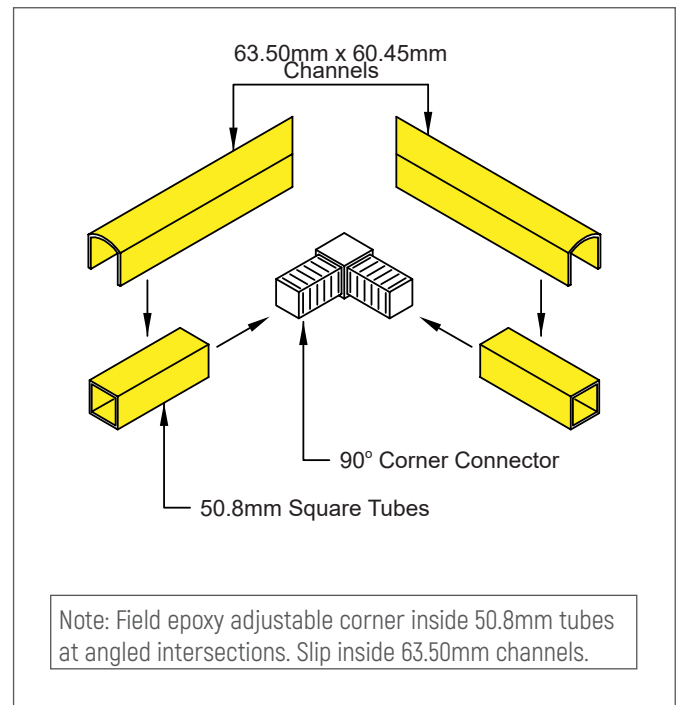
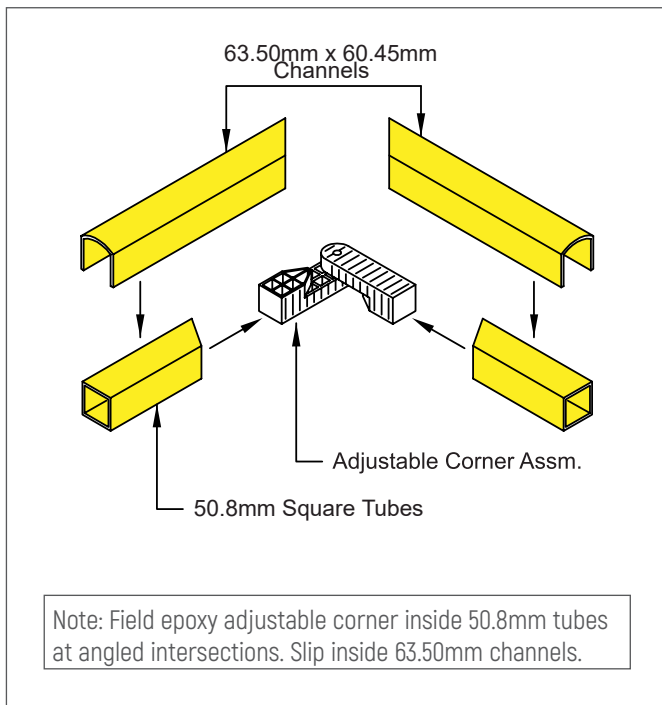
Typical Square Handrail Construction



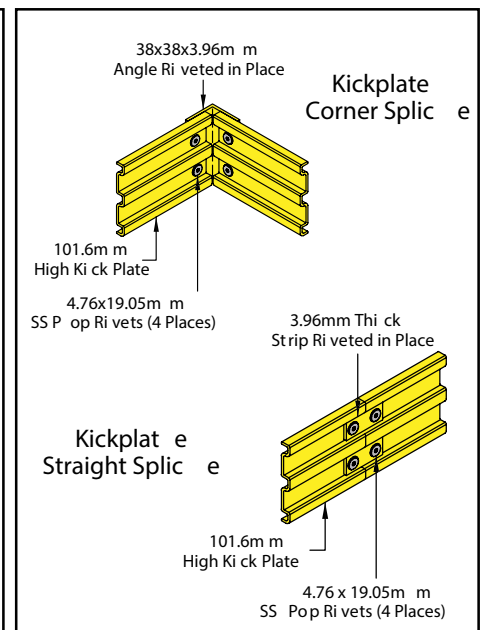
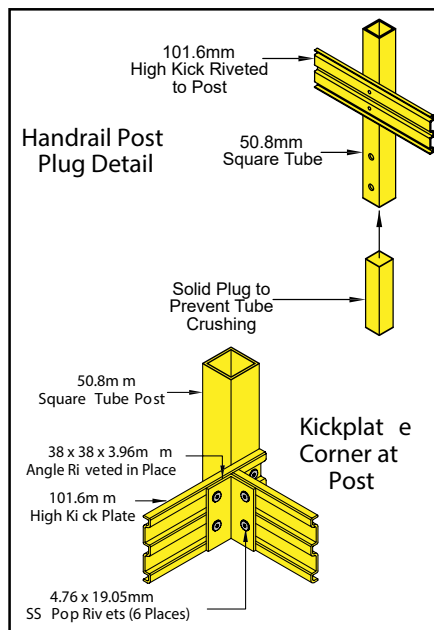
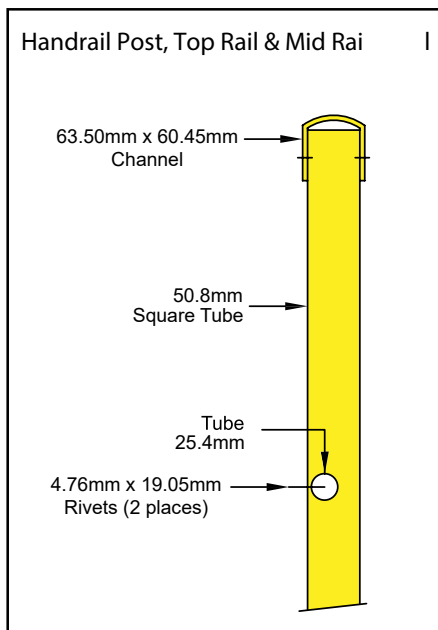
Typical Details



Alternative Post Design



Suggested Channel Top Post and Kick Plate Installation



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