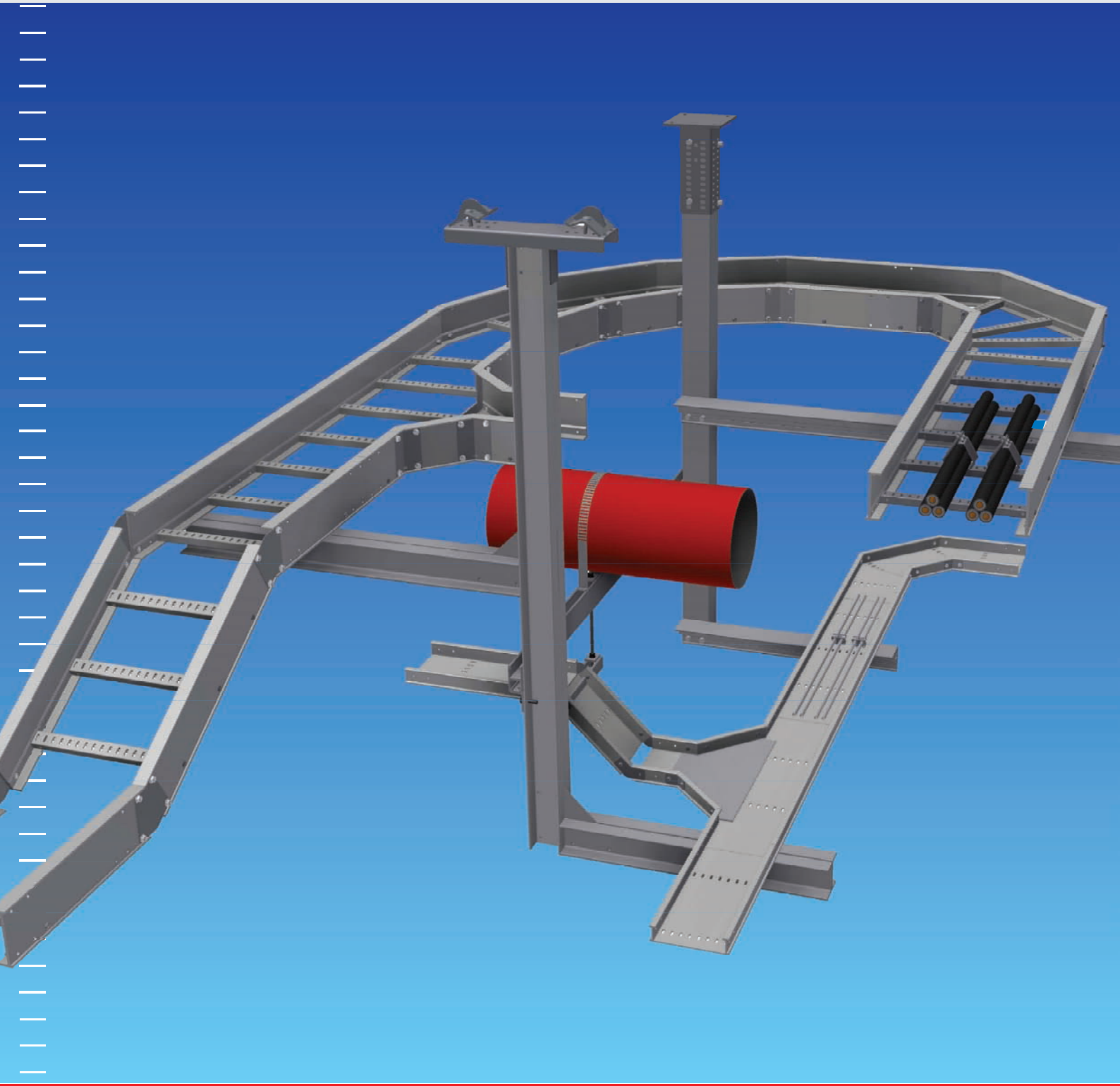
ØGLÆND SYSTEM

FRP / GRP CABLE LADDERS, TRAYS AND SUPPORT SYSTEM



Being first is good, being smart is better, being both is Simply the Best!

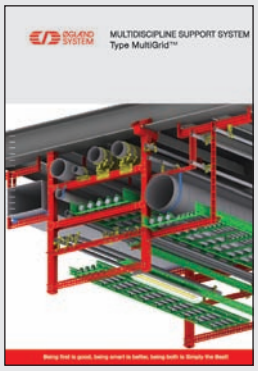
Company presentation

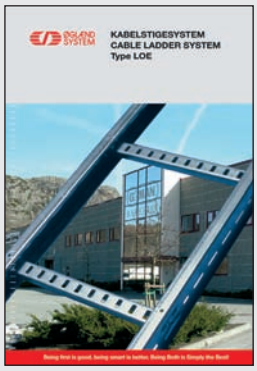
PRODUCT PORTFOLIO

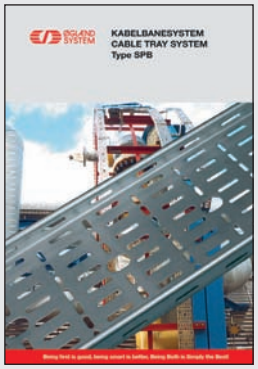
Oglaend System offer a broad range of cable support systems for all applications, e.g. cable ladders, cable trays, junction box racks, tubing clamps, cable cleats, heating cables, control systems etc.

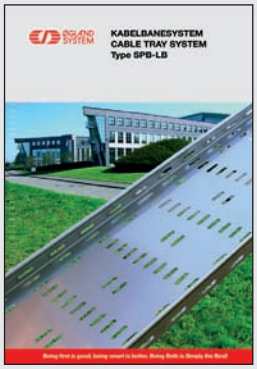
If you need further information, please do not hesitate to contact us!

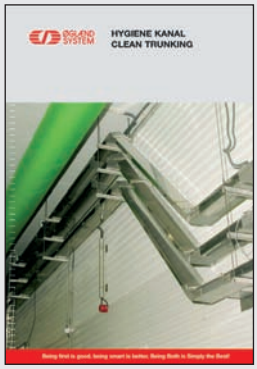
Download our latest version of product catalogues from: **www.oglaend-system.com**

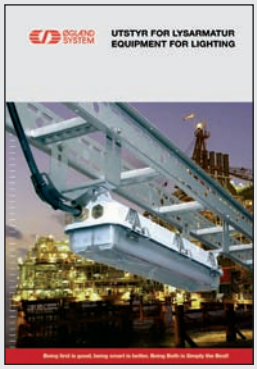


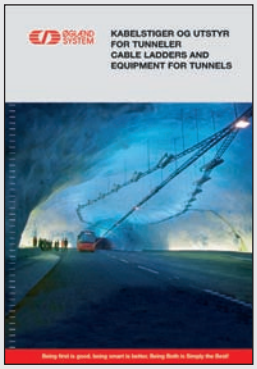


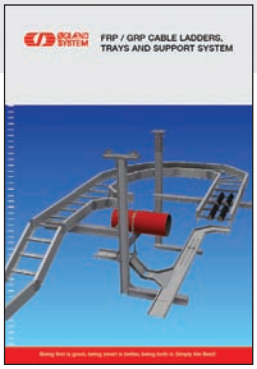


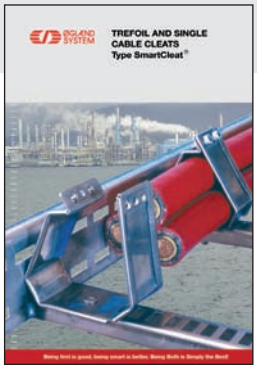


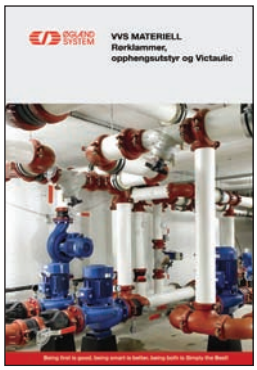












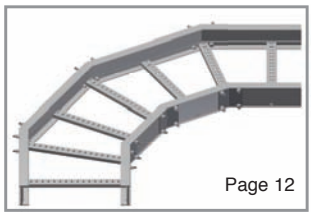
ØGLÆND SYSTEM

Discipline guide:

MultiGrid™ FRP Support System

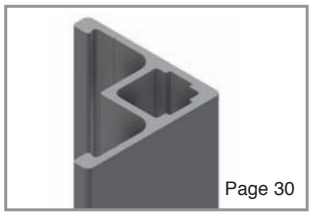
Electro / Instrument / Telecom

HIGHLIGHTS



Build Your Own Elbow:

Build custom cable ladder bends with our new elbow part system.



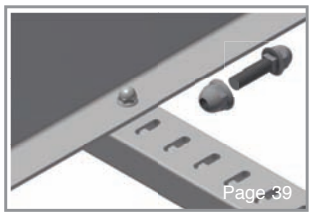
New Support Profile:

A high strength support profile.

New Junction Racks, Instrument Stands and Framing System:

Advantage of Oglaend solution is that all rack mounting is based on bolted combinations.

Simple and quick installations that are easy to assemble and adjust.



FRP Nuts & Bolts:

New high strength and fire resistant fibre reinforced plastic fasteners.

Contents:

DESIGN TOOLS

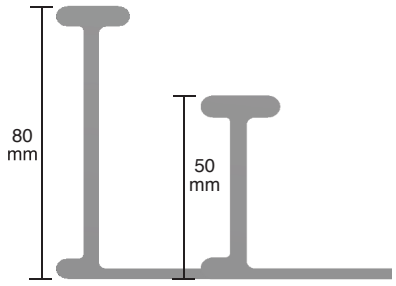
Oglaend FRP products are available in the following design tools AVEVA PDMS and INTERGRAPH PDS. Designers and engineers please contact Oglaend System at www.oglaend -system.com

AVEVA CONTINUAL PROGRESSION INTERGRAPH

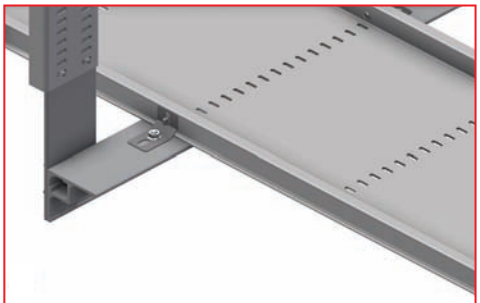
ØGLÆND SYSTEM

FOE & FTE System Summary

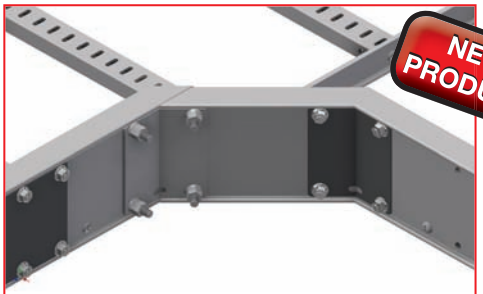
Tray Cover



Tray Height



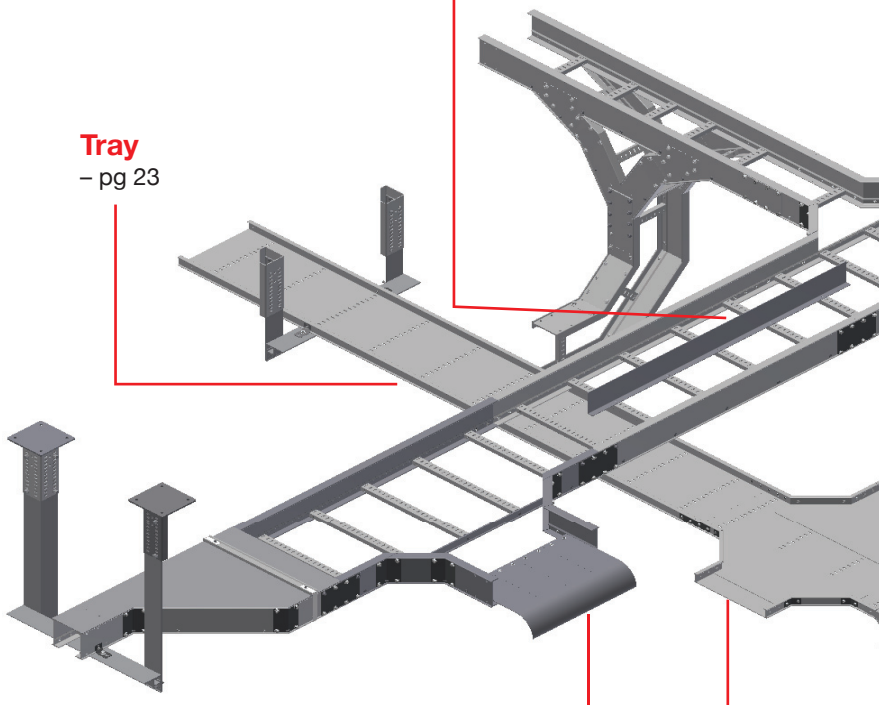
Fixing Clamp



Stainless and FRP Couplers

Ladder Divider
– pg 20

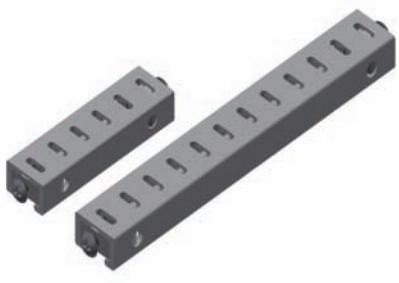
Tray
– pg 23



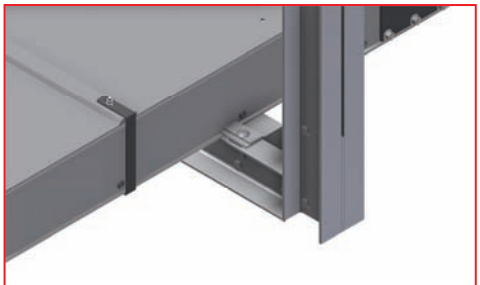
Exit Plate
– pg 15

Tray Fittings
– pg 24

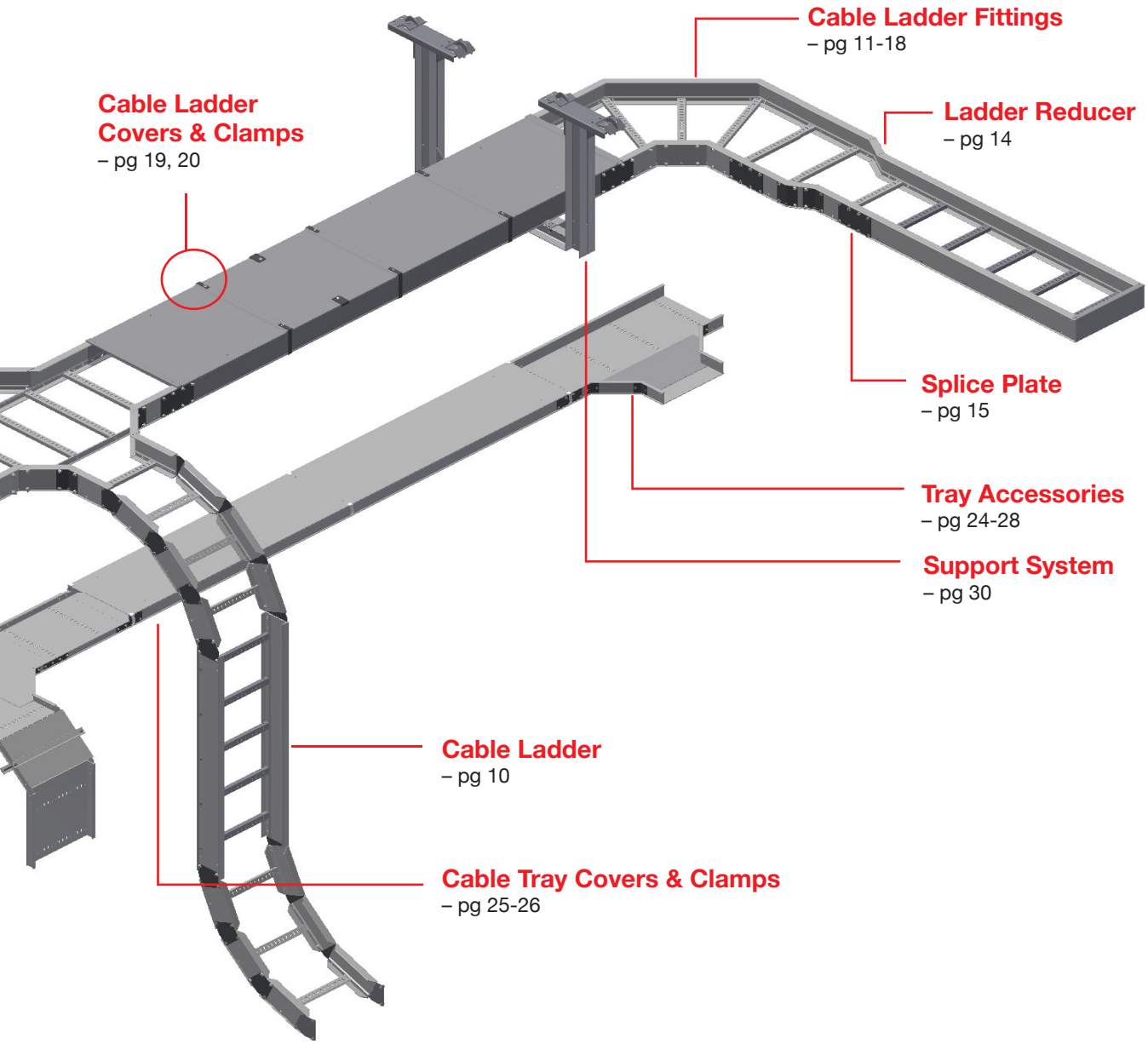
Ladder design and heights

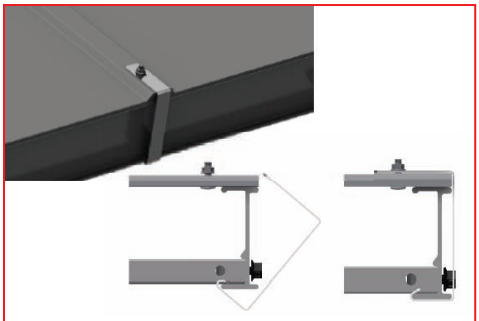


Standard marine rung

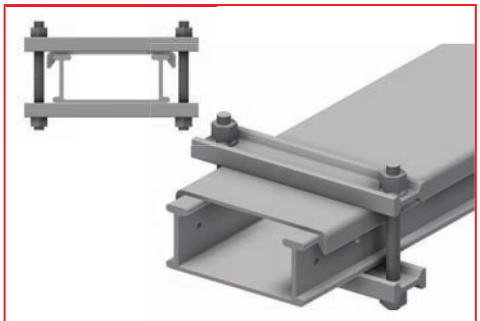


Fixing Clamp





FOE Heavy Duty Cover Fixing Clamp
FRP And SS Construction



FTE Heavy Duty Cover
Fixing Clamp FRP Construction

FRP Fibre Glass Bolt (fire retardant)

Oglaend Attachment Methods for FRP range

Pre-slotted Trays and Ladder Rungs

The pre-slotted design of Oglaend's System's tray and rungs eliminates the costly and time consuming drilling process. Attachment of cables and piping is made easy when combined with our range of fasteners. For more information on tubing clamps, smart cleats and cable ties please visit: www.oglaend-system.com

Reduce installation costs and time by:

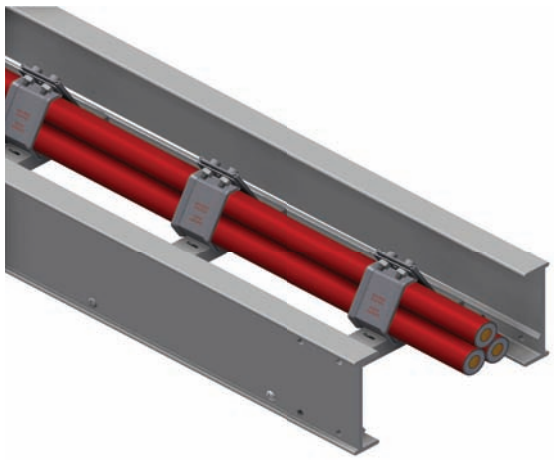
- Longer spans between the supports.
- Snap on Lids.
- Flexible fitting.
- Quick locking anti-vibration nuts.
- Apply Oglaend System´s Smart technology.

SmartCleat®

Think smart - work easy!

Short Circuit and Smart Cable Cleats

Tests have shown that our FOE-150 cable ladder is capable of surviving a 184 kA short circuit burst with a 20 kV cable, provided that cable cleats are placed every 230 mm. Without adequate restraints cables can deform wildly during a short circuit, possibly resulting in a significant transverse impact of the side ladder. Reducing cleating spans decreases the likelihood of this occuring.



Ordering Information SmartCleat trefoil:
SmartCleat Trefoil, order codes:
13034XX - (XX = cable outside diameter), eg. at. no. 1303439
fits 3X39 mm and art. no. 1303447 fits 3 X 47 mm.
Fixing bolts and spacer are included in the article code.

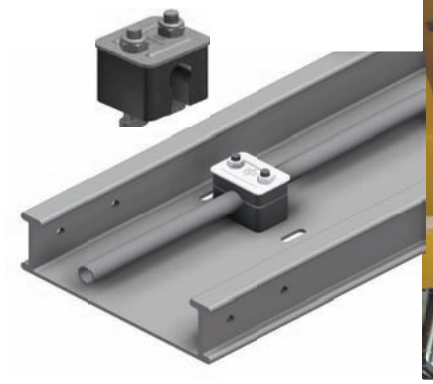
Ordering Information SmartCleat single:
SmartCleat Single. Order codes: 898XX - (XX = cable outside diameter), e.g. art. no. 89839 fits 1 x 39 mm and arti. no. 89879 fits 1 x 79 mm.

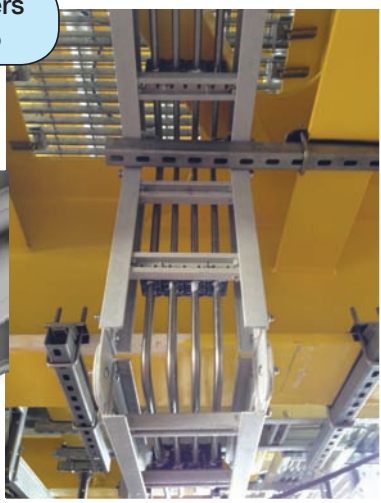
ETIN® and INKO®

The most complete (up to 42 mm) and cost effective range of tubing clamps

- Quick installation
- Reduced man-hours
- Space reduction
- All mounting from one side
- Easy to stack
- Installation brackets for all situations

The tubing program offers cost saving up to 65%





INKO Tubing Clamps for pipes/tubes 6-42 mm (1/4" - 11/2" tubes).

INKO Omega® concept:
One preassembled unit.
No loose parts, no parts to lose.

ETIN Tubing Clamps for pipes/tubes from 6-25 mm (1/4" - 1" tubes).

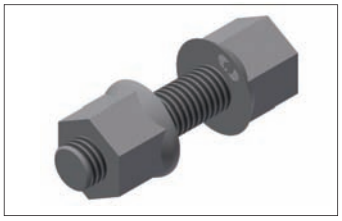
ETIN concept:
Up to 3 layers in height fixed with one bolt. All based on clip on stacking technique.

Complete program available for download at
http://www.oglaend-system.com

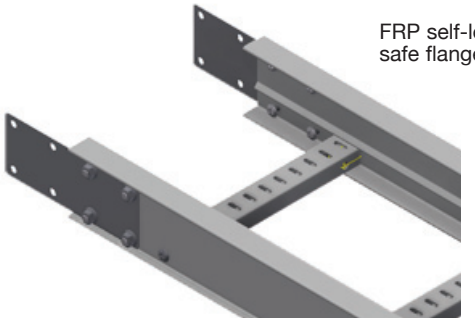
New Fire Retardant FRP Fasteners

Oglaend System can now offer a range of fibre reinforced plastic fasteners with fantastic fire retardant properties. This one of a kind system will ensure a corrosion free product with excellent strength and fire/chemical resistance.

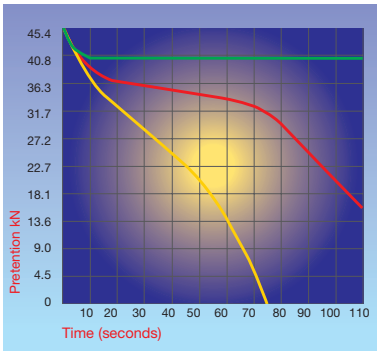
NEW PRODUCT

FRP self-lock system includes vibration-proof bolt sets



FRP self-locking screws with safe flange nuts in SS 316L



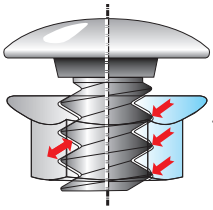
Vibration test diagram

Self Lock Nut

All metal Lock Nut

Standard Nut

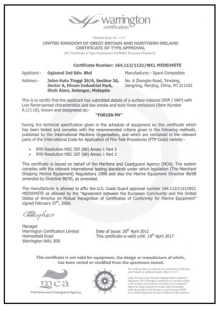
TRADITIONAL:
The nut is moveable during vibrations because of side wards thread gap.



OUR STANDARD:
The nut is locked during vibrations because all thread contact stops side wards movement.

Use Oglaend System's self-locking flange nut when mounting splice plates to our FRP ladder or tray system. This prevents joints from loosening in case of vibration.

Ask for separate brochure or download at
www.oglaend-system.com



Tests and Standards

Our test database is continuously being improved, so please contact Oglaend System for our latest test data.

Standards and Certificates

- BS 476 Part 7 class 1 - This is a verticle flame spread test. Sample material is exposed to a high intensity flame for a predetermined amount of time. The heat source is then removed and the test begins, after 10 minutes the flame spread and rate is measured. All of our resin systems achieve the highest level possible.

- ASTM E84 - Tests the rate of flame spread and smoke emission of materials. To test this sample material is placed in a test box with a gas burner at one end and a smoke measurement device at the exhaust end. Air circulation is provided to assist the spread of the flame. Our FRP material received the highest level of certification in this test.

- ASTM D635 - Is a standard test method for measuring the rate of burning and duration of burning in plastic products. Our FRP product achieved UL94 V-0 certification. This means the material self-extinguished within 10 seconds.

- IEC60754-1 - A simple test that ensures the material has zero halogen content. Halogens are a toxic group of elements on the periodic table that are sometimes used as flame retardants. All of our products are halogen free.

- ASTM G154 2000a - Is a standard weathering test for non-metallic materials. It exposes the material to a high intensity ultraviolet light source. Thanks to our resin rich surface our material is highly resistant to ultraviolet light and is perfect for outdoor applications (it does not rust).

- ASTM D 792 G - Is the standard test for measurement of density. All of our resins are extremely lightweight, with densities ranging from 1699kg/m^3 to 1965 kg/m^3. This offers massive advantages over stainless steel products which have a density approaching 8000 kg/m^3. This reduces the cost of shipping and makes installations easier.

- ASTM B-117 - Tests a materials ability to resist the corrosive effects of salt water. All of our resins saw zero deformation; FRP does not corrode or rust, making it the perfect material for use in areas exposed to sea spray.

- NEMA FG-1 Part 7 class 1 - All our products have been tested under the NEMA FG-1 mechanical loading specification. For more information please refer to our loading data on page 9.

- IEC 61537 - We have tested all of our products using the IEC 61537 mechanical loading standard. For more information please refer to page 9.

- IEC 60068-2-75 - Is an impact test using an impact hammer. The material saw no measurable damage up to an impact energy of 10 Joules.

- GOST 15150-69 - Is a Russian standarised test to analyse a materials reaction to low operating temperatures. FRP retains its material properties well in extreme cold. This test concluded our material could operate in tempertures as low as -60°C.

- ASTM D257 - This test measures the volume and surface resistivity of a material. Our material can be forumulated to obtain a reading of 10^5 to 10^9 Ohm. We may lower the Ohm measurement (make the material more conductive) and increase the anti-static properties by adding carbon to our resin mix. Careful consideration must be given to this process as a conductive product will require grounding, thus increasing the cost and time of installation.

	Type Approvals			
PRODUCT TYPE	UL	ABS		
FOE-70	•	•		
FOE-100	•	•		
FOE-150GA	•	•		
FOE-150	•	•	•	•
FTE-50	•	•		
FTE-80	•	•		

Resin Choice: Maximise performance to meet application. We offer a range of resins to match our customers needs. From our standard polyester resin to our high performance phenolic resin, we can meet your chemical, fire, smoke & toxity requirements. To specify which resin you would like to choose simply take the standard product number (which is associated with a polyester resin) and add the resin code. For example, if we want an anti-static formulation (resin code A) of product 74430 we add “A” to get 74430A.

Below is an overview of our current systems:

Polyester (Standard Product) -This is the most widely used resin system. It offers good weathering properties with resistance to ultra-violet 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.

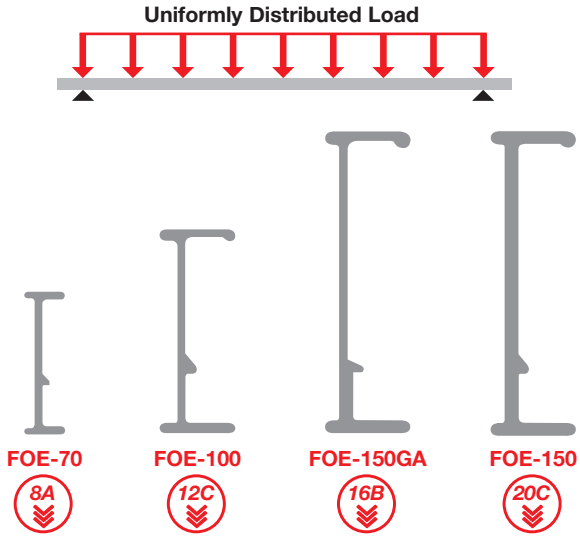
Vinyl Ester (Resin Code: VE)
- Vinyl Ester resins offer better corrosion and heat resistance than our polyester resin. It is widely used in industries using heavy chemical and caustic materials.

Olstar (Resin Code: ABS & AC) - This resin is suitable for projects that require ABS certification under current rules or require low smoke and toxicity properties. This product is widely used in enclosed areas, mass transit and tunnel application. This system is available in two formulations, ABS or standard AC.

Phenolic (Resin Code: PH) - This high performance resin is at the forefront of cable management in terms of smoke and toxicity performance. This product complies to the latest USCG and MarEd requirement and can be used in all areas offshore. Benefits of this system:
- Extreme low smoke and toxicity properties.
- High strength and stiffness
- Excellent impact resistance
- Fire performance is unrivalled
- Increased protection to cables from a fire source

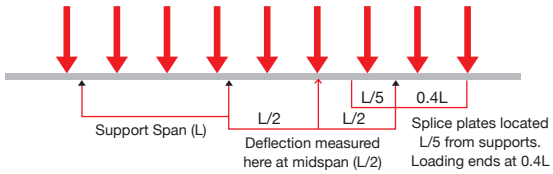
Mechanical Loading Specifications

NEMA FG-1 is a certicate based testing standard. Grading occurs on a combined alphabetic (A-C) and numeric (8,12,16,20) scales. The alphebetic grading denotes the max loading with C being the strongest with a safe working load of 148 kg/m and the numeric grading denotes the span distance in feet between supports e.g. 20C can support 148 kg/m on a 20 ft (6.1 m) span. We offer cable ladders to suit all cases from the low cost FOE-70 cable ladder (evaluated at 8A) to the high strength FOE-150 cable ladder (evaluated at 20C). The method of loading for the NEMA FG-1 test is shown below



NEMA Certicate Specifications (safety factor of 1.5 applied)
8A : Safe working load of 75 kg/m with a 2.44 metre support span.
12C : Safe working load of 148 kg/m with a 3.66 metre support span.
16B : Safe working load of 111kg/m with a 4.87 metre support span.
20C : Safe working load of 148 kg/m with a 6.09 metre support span.

IEC 61537 is an international testing standard for cable trays and cable ladders. The safe working load obtained using these methods have been displayed to the right with a safety factor of 1.7. The products were tested under a worst case scenario methology i.e. maximum width and spans. The loading configuration required by IEC 61537 is displayed below:



IEC 61537: Safe Working Load for Cable Ladders

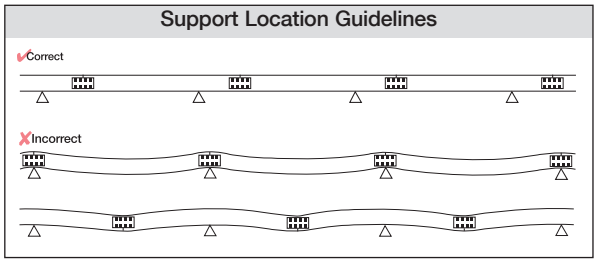
Support Span (m)	FOE-70* (kg/m)	FOE-100* (kg/m)	FOE-150GA* (kg/m)	FOE-150* (kg/m)
1.5	130	–	–	–
2.0	105	–		
3.0	50	172	267	287
4.5	–	118	190	234
6.0	–	–	–	140

IEC 61537: Safe Working Load for Cable Trays

Support Span (m)	FTE-50* (kg/m)	FTE-80* (kg/m)
1.5	100	115
2.0	60	75

* Max safe working load based on our maximum width cable tray i.e worst case scenario. It should be noted that the max safe working load increases as width deceases. All tests were completed with SS 316L splice plates and fasteners.

INSTALLING CABLE LADDERS CORRECTLY
Straight Sections
Cable ladders/trays should be place so that splice joints between horizontal runs sit at the quarter point of the span, as illustrated below. This practice minimises deflections and maximises the safe working load.



TEMPERATURE EFFECT
The strength of FRP can be reduced when exposed to continued high temperatures. Loading shall be reduced based on the following. The spanning distance between supports can also be reduced to accomodate reduced strength.

Temperatures in degrees ˚F	Polyester Resin % of Strength	Vinyl Ester Resin % of Strength
75	100	100
100	90	100
125	78	100
150	68	90
175	60	90
200	52	75

Note: Percentage shown above is a guide, when high temperature conditions are present you should consult the manufacturer. Freezing temperatures does not affect the load rating of the ladders. FRP does not become fragile at freezing temperatures.Consideration is required when service temperatures are over 200˚F or 94˚C.

Physical Properties

Straight Ladder section shall be pultruded glass reinforced with a premium resin system:

a. Our ladder and tray members are designed specifically to optimize the load capacity in the form of a beam section. This UNIQUE style has two important advantages, the first being the way our splice plate fits flush and tightly between the flanges thus preventing the plate from slipping at time of installation. The other is our patented rung to ladder attachment where the rung fits neatly between two flanges and locked using our patented insert.

b. Rung to side rail member connections shall be connected by a fire retardant (UL94 VO halogen free) composite locking clip. The rung to side rail mechanical connection shall resist both vertical shear and rung pullout.

c. The height of the rung is 24mm to maximize cable installations.

d. All Rungs have perforations along the length to aid easy installation of cables.

e. All sections are able to use Oglaend System ETIN tubing clamp and single or TREFOIL SmartCleats and other fixing accessories.

f. Straight sections of ladder and tray are pre-drilled to accept connector plates.

g. All cut ends and drilled splice plate holes are sealed prior to goods leaving factory.

CABLE LADDER FOE

Product selection and options

Standard FOE Ladder System Technical Data	
Material	Polyester Class 1 (C1)
Length	3-6m
Width	150-900mm
Height	70,100 & 150mm
Rung Spacing	300mm (alternative rung spacings are available)
Rung Attachment	SmartLok℗
Assembly	SS Bolt & anti-vibration flange nuts
Splice Detail	Full height SS/FRP splice plates
Elbow Radius	300-900mm
Angles	30˚, 45˚, 60˚ and 90˚

Standard FOE Ladder System Technical Data	
Resin Codes	
Anti-Static	A
Olstar	AC
Vinyl Ester	VE
Phenolic	PH
Full FRP Construction*	F

For details on the advantages of each resin please refer to page 8.

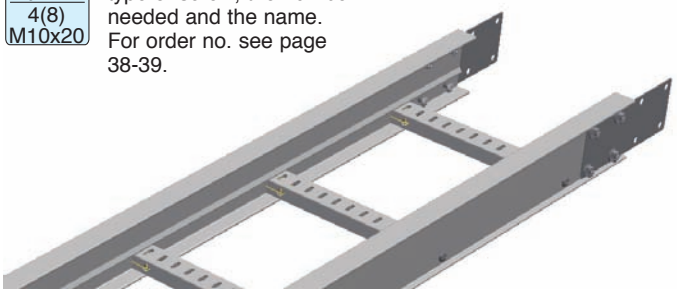
* No metallic components used in construction. All components manufactured from fibre reinforced plastic, which provides excellent corrosion resistance.

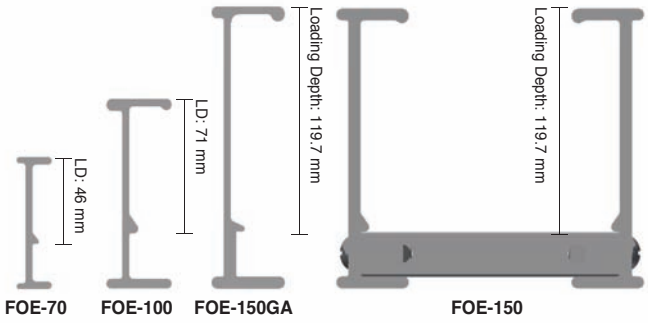
GUIDELINES: To use order code:
Select order code and add to article no.
Example: Anti-Static Resin Code “A” = Art. no. 74429A

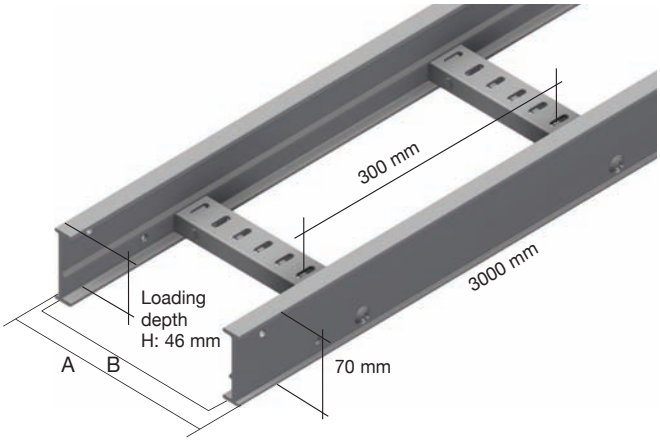
Related Documents

- Mechanical loading data is available on page 9
- A chemical exposure guide is available on page 40
- For ladder accessories see pages 11-21

This symbol shows the type of screw, the number needed and the name. For order no. see page 38-39.



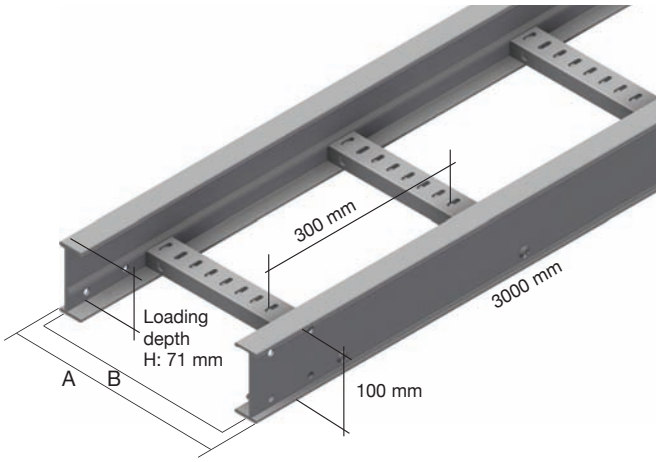




Cable Ladder FOE-70 Nema 8A
For general industrial applications

Type	A (mm)	B (mm)	Art. no.	Kg/m
FOE-70 CL-150-3	168	150	73700	2.0
FOE-70 CL-200-3	218	200	70300	2.1
FOE-70 CL-300-3	318	300	73701	2.4
FOE-70 CL-400-3	418	400	70301	2.6
FOE-70 CL-450-3	468	450	73702	2.8
FOE-70 CL-500-3	518	500	70302	3.0
FOE-70 CL-600-3	618	600	73703	3.1

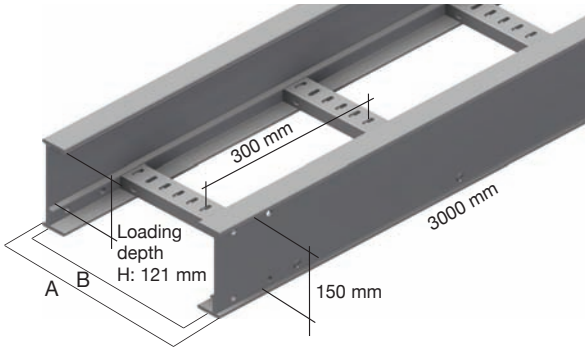
Also available with closed rungs, for food process or other clean or wet room applications.



Cable Ladder FOE-100 Nema 12C

Type	A (mm)	B (mm)	Art. no.	Kg/m
FOE-100 CL-150-3	176	150	74429	3.4
FOE-100 CL-300-3	326	300	74430	3.8
FOE-100 CL-450-3	476	450	74431	4.1
FOE-100 CL-600-3	626	600	74432	4.5
FOE-100 CL-750-3	776	750	74433	4.8
FOE-100 CL-900-3	926	900	74434	5.2
FOE-100 CL-150-6	176	150	74746	3.4
FOE-100 CL-300-6	326	300	74747	3.8
FOE-100 CL-450-6	476	450	74748	4.1
FOE-100 CL-600-6	626	600	74749	4.5
FOE-100 CL-750-6	776	750	74750	4.8
FOE-100 CL-900-6	926	900	74751	5.2

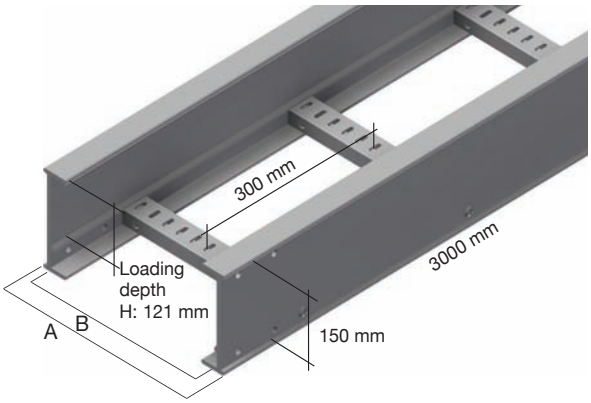
CABLE LADDER FOE



Cable Ladder FOE-150 GA Nema 16B
For general application

Type	A (mm)	B (mm)	Art. no.	Kg/m
FOE-150 GA-CL-150-3	176	150	70264	4.9
FOE-150 GA-CL-300-3	326	300	70265	5.2
FOE-150 GA-CL-450-3	476	450	70266	5.6
FOE-150 GA-CL-600-3	626	600	70267	6.0
FOE-150 GA-CL-750-3	776	750	70268	6.3
FOE-150 GA-CL-900-3	926	900	70269	6.7

Available in 6m sections also. Simply add GA to FOE-150 product numbers for the general application (GA) version.



Cable Ladder FOE-150 Nema 20C

Type	A (mm)	B (mm)	Art. no.	Kg/m
FOE-150 CL-150-3	176	150	74437	6.3
FOE-150 CL-300-3	326	300	74438	6.6
FOE-150 CL-450-3	476	450	74439	7.0
FOE-150 CL-600-3	626	600	74440	7.4
FOE-150 CL-750-3	776	750	74441	7.7
FOE-150 CL-900-3	926	900	74442	8.1
FOE-150 CL-150-6	176	150	74752	6.3
FOE-150 CL-300-6	326	300	74753	6.6
FOE-150 CL-450-6	476	450	74754	7.0
FOE-150 CL-600-6	626	600	74755	7.4
FOE-150 CL-750-6	776	750	74756	7.7
FOE-150 CL-900-6	926	900	74757	8.1

R3

R6

R9

Flat Elbows 90° – R3

Type	Art no.	Kg
FOE-70 FE-90-150	73706	3.5
FOE-70 FE-90-200	70303	4.7
FOE-70 FE-90-300	73307	4.7
FOE-70 FE-90-400	70304	4.7
FOE-70 FE-90-450	73708	5.5
FOE-70 FE-90-500	73707	4.7
FOE-70 FE-90-600	73709	8.1
FOE-100 FE-90-150	74606	4.4
FOE-100 FE-90-300	74607	5.7
FOE-100 FE-90-450	74608	6.6
FOE-100 FE-90-600	74609	7.5
FOE-100 FE-90-750	74610	8.5
FOE-100 FE-90-900	74611	9.4
FOE-150 FE-90-150	74612	7.5
FOE-150 FE-90-300	74613	9.2
FOE-150 FE-90-450	74614	10.5
FOE-150 FE-90-600	74615	11.7
FOE-150 FE-90-750	74616	13.0
FOE-150 FE-90-900	74617	14.3

Flat Elbows 90° – R6

Type	Art no.	Kg
FOE-100 FE-90-150	72008	5.5
FOE-100 FE-90-300	72009	6.8
FOE-100 FE-90-450	72010	7.7
FOE-100 FE-90-600	72011	8.6
FOE-100 FE-90-750	72012	9.6
FOE-100 FE-90-900	72013	10.5
FOE-150 FE-90-150	71990	8.6
FOE-150 FE-90-300	71991	10.3
FOE-150 FE-90-450	71992	11.6
FOE-150 FE-90-600	71993	12.8
FOE-150 FE-90-750	71994	14.1
FOE-150 FE-90-900	71995	15.4

Flat Elbows 90° – R9

Type	Art no.	Kg
FOE-100 FE-90-150	72002	7.4
FOE-100 FE-90-300	72003	8.7
FOE-100 FE-90-450	72004	9.6
FOE-100 FE-90-600	72005	10.5
FOE-100 FE-90-750	72006	11.5
FOE-100 FE-90-900	72007	12.4
FOE-150 FE-90-150	71996	10.5
FOE-150 FE-90-300	71997	12.2
FOE-150 FE-90-450	71998	13.5
FOE-150 FE-90-600	71999	14.7
FOE-150 FE-90-750	72000	16.0
FOE-150 FE-90-900	72001	17.3

CABLE LADDER FOE

Self Assembled FOE Flat Elbows
Study the installation principles to the right to see how to create custom bends with flat elbow parts. All necessary splice plates and fasteners are provided with the elbow starters and elbow parts.

Elbow Starter Pairs
We begin the elbow with a starter pair. One starter pair is needed per bend to allow a flush connection to straight sections of cable ladder.

Step 1: Choose your increment angle (15˚, 22.5˚, 30˚ or 45˚), cable ladder height (FOE-100 or FOE-150) and width from the list below.

Flat Elbow Part
A starter pair provides an initial bend angle that matches the chosen increment angle. To increase the bend angle further we may add elbow parts.

Once an increment angle is chosen the bend must maintain that increment angle i.e. we may not mix 15˚ and 22.5˚ parts.

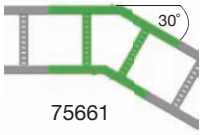
Step 2: Choose a matching elbow part and choose a radius.

Worked example:
Requirement: A FOE-150 300 mm wide 30˚ elbow.

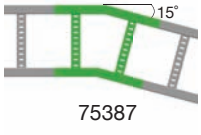
For further information and assistance about tailor-made flat elbows, please contact us at frpsales@oglaendind.com

Option 1: Starter 75661 by itself can provide a simple 30˚ bend.

Option 2: Starter 75387 provides a 15˚ bend by itself, in order to bring the total change in angle to 30˚ we must add a matching 15˚ elbow part, see step two to complete.



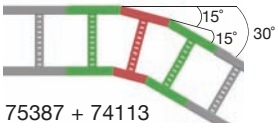
75661



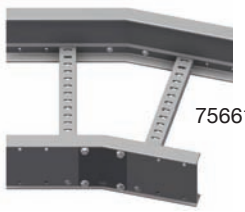
75387

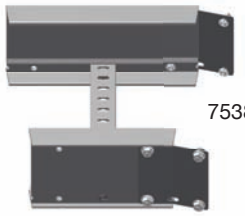
Completing Option 2: The elbow starter 75387 is a fully functioning 15˚ bend as it is, but we want to create a 30˚ bend that is made in smaller 15˚ steps. To do this 75387 is disassembled and either 74113 or 75382 is inserted. 74113 introduces a bend radius of 600 mm and 75382 introduces a bend radius of 900 mm. We require a bend radius of 600 mm, thus 74113 (highlighted in red) has been installed into the middle of our starter (highlighted in green).

75661



75387 + 74113


75661


75387

15˚

	FOE-100	FOE-150
FRP	75670	75370
SS	71978	74559

	FOE-100	FOE-150
Type	Art no.	Art no.
FE-SP-15-150	71850	71841
FE-SP-15-300	71853	75387
FE-SP-15-450	71856	75386
FE-SP-15-600	71859	75388
FE-SP-15-750	71862	71844
FE-SP-15-900	71865	71847

	FOE-100		FOE-150	
Type	R600	R900	R600	R900
FE-PA-15-150	74106	75672	74112	75677
FE-PA-15-300	74107	75665	74113	75382
FE-PA-15-450	74108	75673	74114	75376
FE-PA-15-600	74109	75674	74115	75678
FE-PA-15-750	74110	75675	74116	75679
FE-PA-15-900	74111	75676	74117	75680

22.5˚

	FOE-100	FOE-150
FRP	75667	75368
SS	71978	71980

Type	Art no.	Art no.
FE-SP-22.5-150	71868	71919
FE-SP-22.5-300	75795	75658
FE-SP-22.5-450	71871	71922
FE-SP-22.5-600	71874	71925
FE-SP-22.5-750	71877	71928
FE-SP-22.5-900	71880	71931

Type	R600	R900	R600	R900
FE-PA-22.5-150	75681	75687	75692	75697
FE-PA-22.5-300	75682	75666	75693	75698
FE-PA-22.5-450	75683	75688	75694	75699
FE-PA-22.5-600	75684	75689	75695	75700
FE-PA-22.5-750	75685	75690	75275	75373
FE-PA-22.5-900	75686	75691	75696	75765

30˚

	FOE-100	FOE-150
FRP	71567	71759
SS	74536	71601

Type	Art no.	Art no.
FE-SP-30-150	71901	71949
FE-SP-30-300	71904	75661
FE-SP-30-450	71907	71952
FE-SP-30-600	71910	71955
FE-SP-30-750	71913	71958
FE-SP-30-900	71916	71961

Type	R300	R600	R900	R300	R600	R900
FE-PA-30-150	75787	71813	71819	71824	71829	71834
FE-PA-30-300	75788	71814	75668	71825	71830	71835
FE-PA-30-450	75789	71815	71820	75378	71831	71836
FE-PA-30-600	75790	71816	71821	71826	71832	71837
FE-PA-30-750	75791	71817	71822	71827	71833	71838
FE-PA-30-900	75792	71818	71823	71828	75374	75377

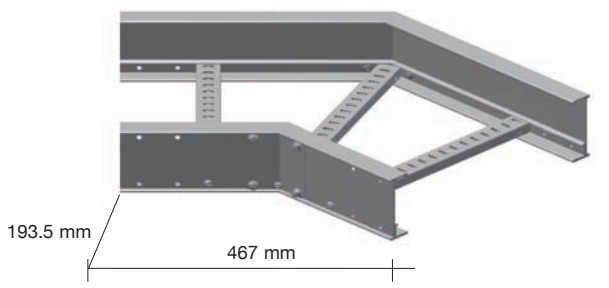
45˚

	FOE-100	FOE-150
FRP	71752	71745
SS	74562	74563

Type	Art no.	Art no.
FE-SP-45-150	71883	71934
FE-SP-45-300	71886	75664
FE-SP-45-450	71889	71937
FE-SP-45-600	71892	71940
FE-SP-45-750	71895	71943
FE-SP-45-900	71898	71946

Type	R600	R900	R600	R900
FE-PA-45-150	75766	75772	75777	75782
FE-PA-45-300	75767	75669	75778	75783
FE-PA-45-450	75768	75773	75779	75784
FE-PA-45-600	75769	75774	75780	75785
FE-PA-45-750	75770	75775	75379	75282
FE-PA-45-900	75771	75776	75781	75786

CABLE LADDER FOE



Flat Elbows 45° R300 Available in 600 and 900 radius

Type	Art. no.	Kg
FOE-70 FE-45-150-R3	73712	2.2
FOE-70 FE-45-200-R3	70305	2.6
FOE-70 FE-45-300-R3	73713	2.9
FOE-70 FE-45-400-R3	70306	3.1
FOE-70 FE-45-450-R3	73714	3.4
FOE-70 FE-45-500-R3	70307	3.9
FOE-70 FE-45-600-R3	73715	4.8

Type	Art. no.	Kg
FOE-100 FE-45-150-R3	74624	2.7
FOE-100 FE-45-300-R3	74625	3.4
FOE-100 FE-45-450-R3	74626	3.9
FOE-100 FE-45-600-R3	74627	4.4
FOE-100 FE-45-750-R3	74628	5.0
FOE-100 FE-45-900-R3	74629	5.5

Type	Art. no.	Kg
FOE-150 FE-45-150-R3	74630	4.7
FOE-150 FE-45-300-R3	74631	5.6
FOE-150 FE-45-450-R3	74632	6.3
FOE-150 FE-45-600-R3	74633	7.0
FOE-150 FE-45-750-R3	74634	7.7
FOE-150 FE-45-900-R3	74635	8.4

- **Unequal Tee available**

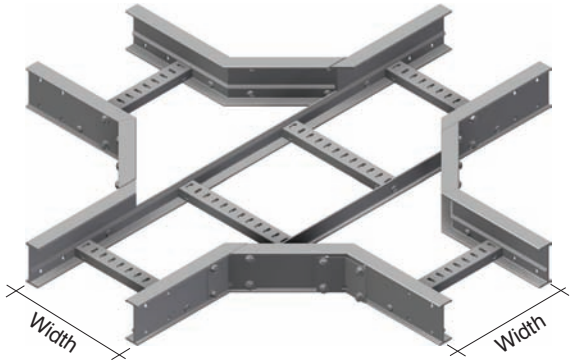
Tee-Piece R300 Available in 600 and 900 radius

Type	Art. no.	Kg
FOE-70 TE-150/150-R3	73718	5.3
FOE-70 TE-200/200-R3	70308	5.6
FOE-70 TE-300/300-R3	73719	6.2
FOE-70 TE-400/400-R3	70309	7.0
FOE-70 TE-450/450-R3	73720	7.5
FOE-70 TE-500/500-R3	70310	7.9
FOE-70 TE-600/600-R3	73721	8.5

Type	Art. no.	Kg
FOE-100 TE-150/150-R3	74506	6.5
FOE-100 TE-300/300-R3	74507	7.5
FOE-100 TE-450/450-R3	74508	8.8
FOE-100 TE-600/600-R3	74509	9.9
FOE-100 TE-750/750-R3	74510	11.6
FOE-100 TE-900/900-R3	74511	12.8

Type	Art. no.	Kg
FOE-150 TE-150/150-R3	74512	11.1
FOE-150 TE-300/300-R3	74513	12.3
FOE-150 TE-450/450-R3	74514	14.0
FOE-150 TE-600/600-R3	74515	15.4
FOE-150 TE-750/750-R3	74516	17.4
FOE-150 TE-900/900-R3	74517	18.9

Unequal Cross available



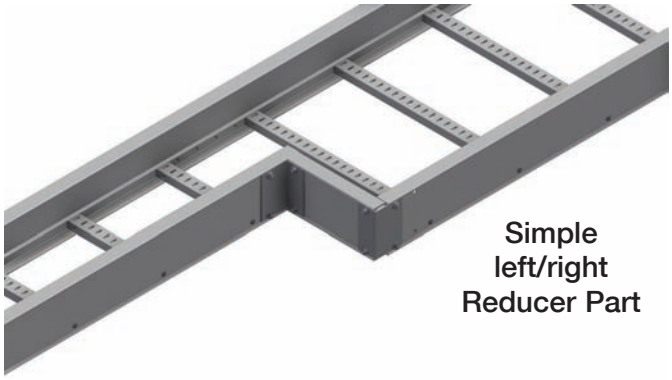
Cross-Piece R300 Available in 600 and 900 radius

Type	Art. no.	Kg
FOE-70 CR-150/150-R3	73724	5.1
FOE-70 CR-200/200-R3	70311	6.4
FOE-70 CR-300/300-R3	73725	6.1
FOE-70 CR-400/400-R3	70312	6.9
FOE-70 CR-450/450-R3	73726	7.4
FOE-70 CR-500/500-R3	70313	6.5
FOE-70 CR-600/600-R3	73727	8.4

Type	Art. no.	Kg
FOE-100 CR-150/150-R3	70314	6.5
FOE-100 CR-300/300-R3	70315	7.5
FOE-100 CR-450/450-R3	70316	8.8
FOE-100 CR-600/600-R3	70317	9.9
FOE-100 CR-750/750-R3	70318	11.6
FOE-100 CR-900/900-R3	70319	12.8

Type	Art. no.	Kg
FOE-150 CR-150/150-R3	70320	11.1
FOE-150 CR-300/300-R3	70321	12.3
FOE-150 CR-450/450-R3	70322	14.0
FOE-150 CR-600/600-R3	70323	15.4
FOE-150 CR-750/750-R3	70324	17.4
FOE-150 CR-900/900-R3	70325	18.8

CABLE LADDER FOE



Simple left/right Reducer Part

4 M10x20

Reducer part is complete with metallic screws and FRP brackets

Reducer Part

Splice connector to be ordered separately

Type	Art. no.	Kg
FOE-70 RP-150	73730	0.8
FOE-70 RP-200	70326	0.9
FOE-70 RP-300	73731	1.0
FOE-70 RP-450	73732	1.1
FOE-70 RP-500	73733	1.2

Type	Art. no.	Kg
FOE-100 RP-150	70275	1.0
FOE-100 RP-300	70276	1.2
FOE-100 RP-450	70277	1.4
FOE-100 RP-600	70278	1.6
FOE-100 RP-750	70279	1.8

Type	Art. no.	Kg
FOE-150 RP-150	70280	1.5
FOE-150 RP-300	70281	1.9
FOE-150 RP-450	70282	2.3
FOE-150 RP-600	70283	2.8
FOE-150 RP-750	70284	3.2

Reducer Central

Type	Art. no.	Kg
FOE-100 RE-300/150	70327	2.5
FOE-100 RE-450/150	70328	2.6
FOE-100 RE-600/150	70329	2.7
FOE-100 RE-450/300	70330	2.7
FOE-100 RE-600/300	70331	2.8
FOE-100 RE-750/300	70332	2.9
FOE-100 RE-900/300	71447	3.0
FOE-100 RE-600/450	70333	2.9
FOE-100 RE-750/450	70334	3.0
FOE-100 RE-900/450	70335	3.2
FOE-100 RE-750/600	70336	3.1
FOE-100 RE-900/600	70337	3.3

Type	Art. no.	Kg
FOE-150 RE-300/150	70338	4.7
FOE-150 RE-450/150	70339	4.8
FOE-150 RE-600/150	70340	4.9
FOE-150 RE-450/300	70341	4.9
FOE-150 RE-600/300	70342	5.0
FOE-150 RE-750/300	70343	5.1
FOE-150 RE-900/300	71450	5.2
FOE-150 RE-600/450	70344	5.1
FOE-150 RE-750/450	70345	5.2
FOE-150 RE-900/450	70346	5.3
FOE-150 RE-750/600	70347	5.3
FOE-150 RE-900/600	70348	5.4

Reducer Left

Type	Art. no.	Kg
FOE-100 RE-L-300/150	70349	2.3
FOE-100 RE-L-450/150	70350	2.4
FOE-100 RE-L-600/150	70351	2.5
FOE-100 RE-L-450/300	70352	2.5
FOE-100 RE-L-600/300	70353	2.6
FOE-100 RE-L-750/300	70354	2.7
FOE-100 RE-L-900/300	71448	2.8
FOE-100 RE-L-600/450	70355	2.7
FOE-100 RE-L-750/450	70356	2.8
FOE-100 RE-L-900/450	70357	3.0
FOE-100 RE-L-750/600	70358	2.9
FOE-100 RE-L-900/600	70359	3.1

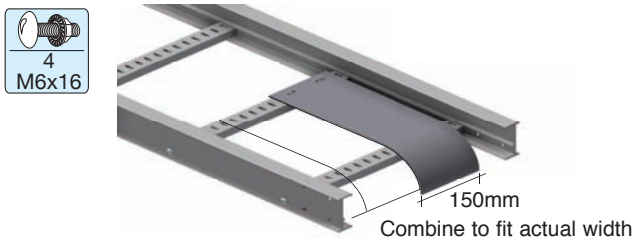
Type	Art. no.	Kg
FOE-150 RE-L-300/150	70360	4.3
FOE-150 RE-L-450/150	70361	4.4
FOE-150 RE-L-600/150	70362	4.5
FOE-150 RE-L-450/300	70363	4.5
FOE-150 RE-L-600/300	70364	4.6
FOE-150 RE-L-750/300	70365	4.7
FOE-150 RE-L-900/300	71451	4.8
FOE-150 RE-L-600/450	70366	4.7
FOE-150 RE-L-750/450	70367	4.8
FOE-150 RE-L-900/450	70368	4.9
FOE-150 RE-L-750/600	70369	4.9
FOE-150 RE-L-900/600	70370	5.0

Reducer Right

Type	Art. no.	Kg
FOE-100 RE-R-300/150	70371	2.3
FOE-100 RE-R-450/150	70372	2.4
FOE-100 RE-R-600/150	70373	2.5
FOE-100 RE-R-450/300	70374	2.5
FOE-100 RE-R-600/300	70375	2.6
FOE-100 RE-R-750/300	70376	2.7
FOE-100 RE-R-900/300	71449	2.8
FOE-100 RE-R-600/450	70377	2.7
FOE-100 RE-R-750/450	70378	2.8
FOE-100 RE-R-900/450	70379	3.0
FOE-100 RE-R-750/600	70380	2.9
FOE-100 RE-R-900/600	70381	3.1

Type	Art. no.	Kg
FOE-150 RE-R-300/150	70382	4.3
FOE-150 RE-R-450/150	70383	4.4
FOE-150 RE-R-600/150	70384	4.5
FOE-150 RE-R-450/300	70385	4.5
FOE-150 RE-R-600/300	70386	4.6
FOE-150 RE-R-750/300	70387	4.7
FOE-150 RE-R-900/300	71452	4.8
FOE-150 RE-R-600/450	70388	4.7
FOE-150 RE-R-750/450	70389	4.8
FOE-150 RE-R-900/450	70390	4.9
FOE-150 RE-R-750/600	70391	4.9
FOE-150 RE-R-900/600	70392	5.0

CABLE LADDER FOE

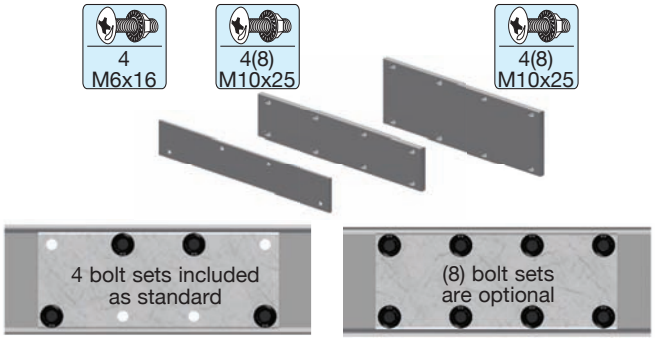


Exit Plate Combine to fit actual width

Type	FRP Art. no.	Kg
FOE EX-150	74545	0.4

End Cover

	FRP Art. no.		
Type	FOE-70	FOE-100	FOE-150
EC-150	73735	74701	74707
EC-200	70393	–	–
EC-300	73736	74702	74708
EC-400	70394	–	–
EC-450	73737	74703	74709
EC-500	70395	–	–
EC-600	73738	74704	74710
EC-750	–	74705	74711
EC-900	–	74706	74712



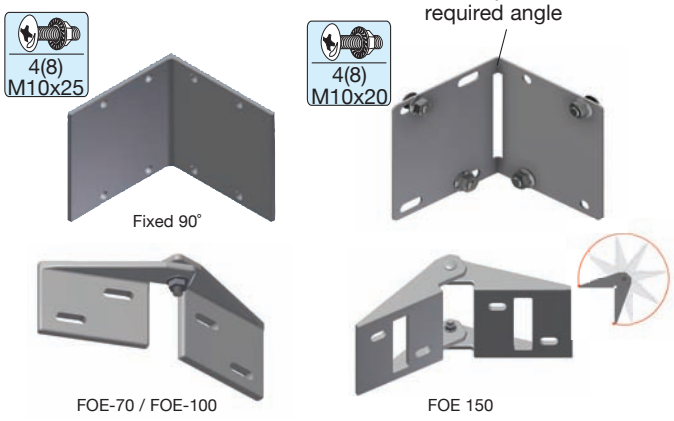
Splice Connectors

Type	FRP Art. no.	Kg	SS Art. no.	Kg
FOE-70 SC	70396	0.2	70397	0.3
FOE-100 SC	75051	0.3	74858	0.4
FOE-150 SC	75045	0.5	74859	0.6

Spans up to 4m, 4 bolt sets are recommended.
Spans above 4m, 8 bolt sets are recommended.

Composite bolt and nut sets are available on request.

Horizontal Hinge



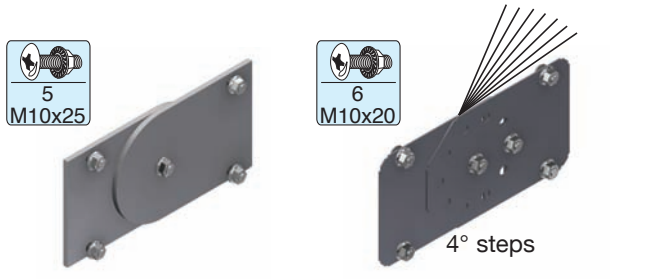
Splice Angle Horizontal / Expansion Coupler

Type	FRP Art. no.	Kg	SS Art. no.	Kg
FOE-70 SA-HO	70398	0.2	70399	0.3
FOE-100 SA-HO	70400	0.3	74861	0.4
FOE-150 SA-HO	70401	0.5	74862	0.6

When used as expansion coupler remember to:

- Use bolts with “nylock” lock nuts in the 4x rectangular slotting and do not tighten the nuts.

Type	FRP Art. no.
FOE-70 / FOE-100 SA-HH	73860
FOE-150 SA-HH	71320

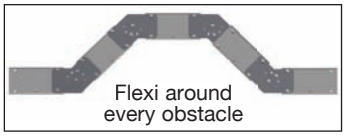


Hinge Vertical for flexible riser

Type	FRP Art. no.	Kg	SS Art. no.	Kg
FOE-70 HV-SD	70402	0.2	74863	0.5
FOE-100 HV-SD	75036	0.3	74864	0.6
FOE-150 HV-SD	75037	0.6	74865	1.1

Various riser solutions are listed in subsequent pages.

Stainless steel equipped with the patented Noni principle with the combination of the 9/10 holes gives adjustment in steps of 4°.

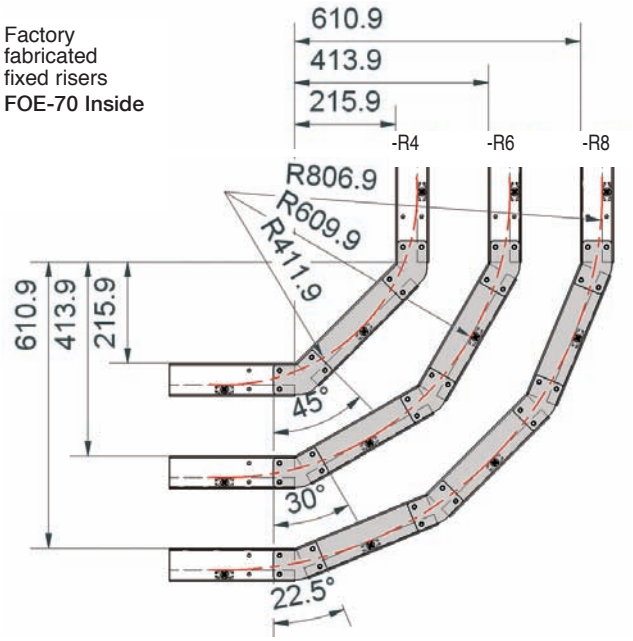


If you use two different ladders or tray heights, Oglaend System offers Step Down splice plates which can be supplied upon request.

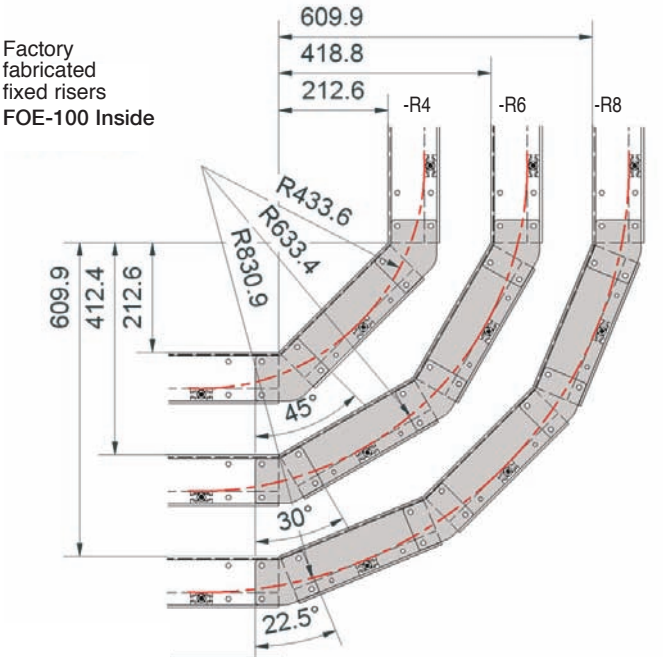
CABLE LADDER FOE

Installation measurements between ladder ends at various riser radius.

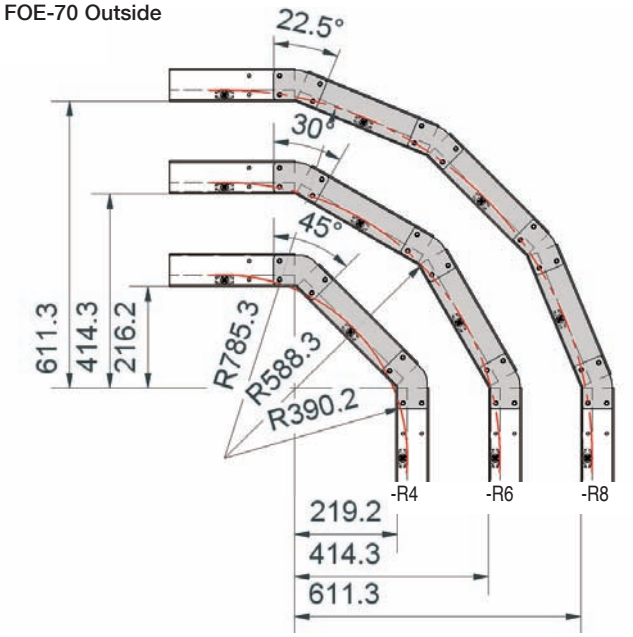
Factory fabricated fixed risers
FOE-70 Inside



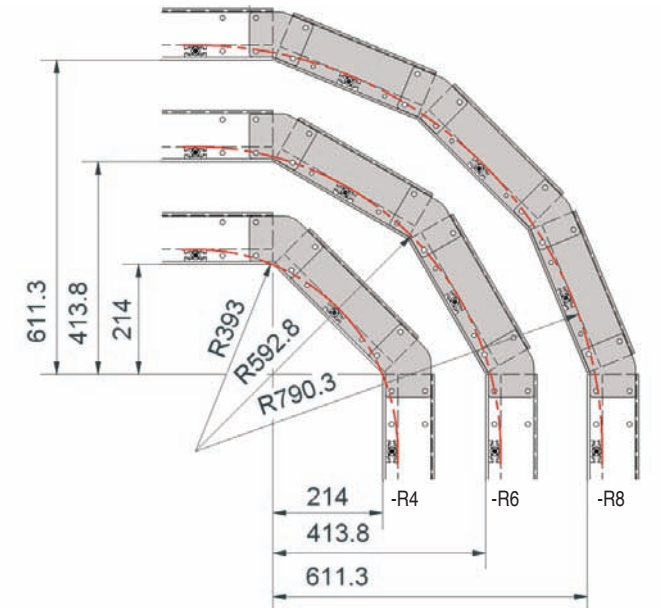
Factory fabricated fixed risers
FOE-100 Inside



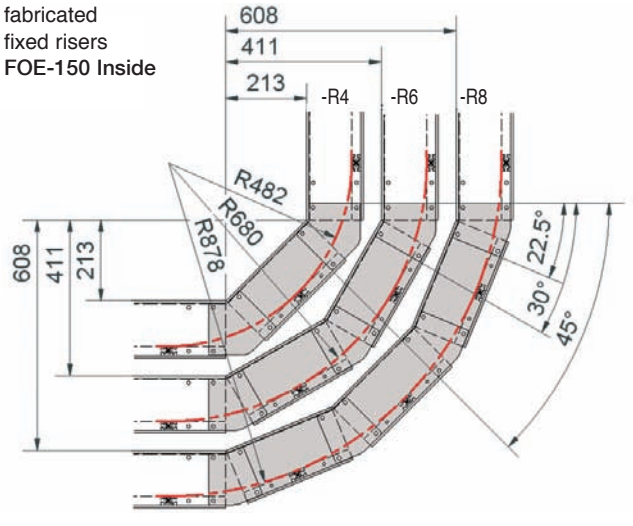
FOE-70 Outside



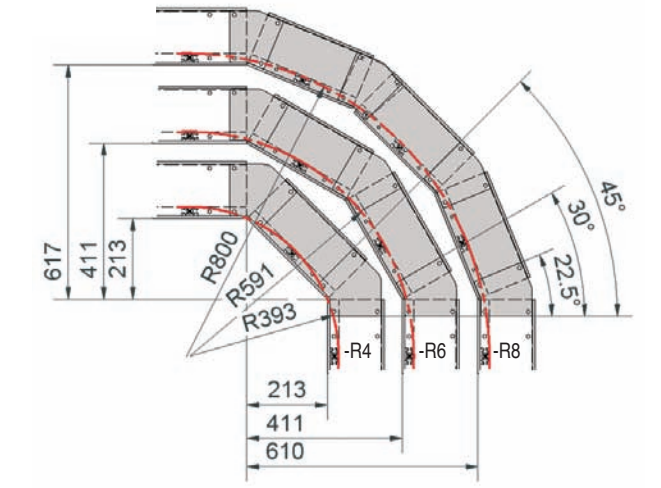
FOE-100 Outside



Factory fabricated fixed risers
FOE-150 Inside



FOE-150 Outside



CABLE LADDER FOE

Factory fabricated fixed risers

FOE-70 Riser 90° Inside

Type	Radius	Art. no.	Kg
FOE-70 RI-IN-90-150-R4	409	73747	1.69
FOE-70 RI-IN-90-200-R4		70415	1.72
FOE-70 RI-IN-90-300-R4		73748	1.79
FOE-70 RI-IN-90-400-R4		70416	1.91
FOE-70 RI-IN-90-450-R4		73749	1.99
FOE-70 RI-IN-90-500-R4		70417	2.03
FOE-70 RI-IN-90-600-R4		73750	2.09
FOE-70 RI-IN-90-150-R6	607	73753	2.89
FOE-70 RI-IN-90-200-R6		70418	2.97
FOE-70 RI-IN-90-300-R6		73754	3.09
FOE-70 RI-IN-90-400-R6		70419	3.26
FOE-70 RI-IN-90-450-R6		73755	3.49
FOE-70 RI-IN-90-500-R6		70420	3.56
FOE-70 RI-IN-90-600-R6		73756	3.64
FOE-70 RI-IN-90-150-R8	804	73759	4.10
FOE-70 RI-IN-90-200-R8		70421	4.20
FOE-70 RI-IN-90-300-R8		73760	4.34
FOE-70 RI-IN-90-400-R8		70422	4.40
FOE-70 RI-IN-90-450-R8		73761	5.00
FOE-70 RI-IN-90-500-R8		70423	5.10
FOE-70 RI-IN-90-600-R8		73762	5.30

FOE-70 Riser 90° Outside

Type	Radius	Art. no.	Kg
FOE-70 RI-OU-90-150-R4	393	73765	1.69
FOE-70 RI-OU-90-200-R4		70424	1.72
FOE-70 RI-OU-90-300-R4		73766	1.79
FOE-70 RI-OU-90-400-R4		70425	1.86
FOE-70 RI-OU-90-450-R4		73767	1.99
FOE-70 RI-OU-90-500-R4		70426	2.02
FOE-70 RI-OU-90-600-R4		73768	2.09
FOE-70 RI-OU-90-150-R6	591	73771	2.89
FOE-70 RI-OU-90-200-R6		70427	3.02
FOE-70 RI-OU-90-300-R6		73772	3.09
FOE-70 RI-OU-90-400-R6		70428	3.29
FOE-70 RI-OU-90-450-R6		73773	3.49
FOE-70 RI-OU-90-500-R6		70429	3.54
FOE-70 RI-OU-90-600-R6		73774	3.64
FOE-70 RI-OU-90-150-R8	788	73777	4.10
FOE-70 RI-OU-90-200-R8		70430	4.20
FOE-70 RI-OU-90-300-R8		73778	4.40
FOE-70 RI-OU-90-400-R8		70431	4.80
FOE-70 RI-OU-90-450-R8		73779	5.00
FOE-70 RI-OU-90-500-R8		70432	5.10
FOE-70 RI-OU-90-600-R8		73780	5.30

FOE-100 Riser 90° Inside

Type	Radius	Art. no.	Kg
FOE-100 RI-IN-90-150-R4	434	74236	2.08
FOE-100 RI-IN-90-300-R4		74237	2.18
FOE-100 RI-IN-90-450-R4		74238	2.28
FOE-100 RI-IN-90-600-R4		74239	2.38
FOE-100 RI-IN-90-750-R4		74240	2.48
FOE-100 RI-IN-90-900-R4		74241	2.68
FOE-100 RI-IN-90-150-R6	633	74242	3.54
FOE-100 RI-IN-90-300-R6		74243	3.74
FOE-100 RI-IN-90-450-R6		74244	3.94
FOE-100 RI-IN-90-600-R6		74245	4.14
FOE-100 RI-IN-90-750-R6		74246	4.34
FOE-100 RI-IN-90-900-R6		74247	4.74
FOE-100 RI-IN-90-150-R8	831	74248	5.00
FOE-100 RI-IN-90-300-R8		74249	5.30
FOE-100 RI-IN-90-450-R8		74250	5.60
FOE-100 RI-IN-90-600-R8		74251	5.90
FOE-100 RI-IN-90-750-R8		74252	6.20
FOE-100 RI-IN-90-900-R8		74253	6.80

FOE-100 Riser 90° Outside

Type	Radius	Art. no.	Kg
FOE-100 RI-OU-90-150-R4	393	74254	2.08
FOE-100 RI-OU-90-300-R4		74255	2.18
FOE-100 RI-OU-90-450-R4		74256	2.28
FOE-100 RI-OU-90-600-R4		74257	2.38
FOE-100 RI-OU-90-750-R4		74258	2.48
FOE-100 RI-OU-90-900-R4		74259	2.68
FOE-100 RI-OU-90-150-R6	593	74260	3.54
FOE-100 RI-OU-90-300-R6		74261	3.74
FOE-100 RI-OU-90-450-R6		74262	3.94
FOE-100 RI-OU-90-600-R6		74263	4.14
FOE-100 RI-OU-90-750-R6		74264	4.34
FOE-100 RI-OU-90-900-R6		74265	4.74
FOE-100 RI-OU-90-150-R8	790	74266	5.00
FOE-100 RI-OU-90-300-R8		74267	5.30
FOE-100 RI-OU-90-450-R8		74268	5.60
FOE-100 RI-OU-90-600-R8		74269	5.90
FOE-100 RI-OU-90-750-R8		74270	6.20
FOE-100 RI-OU-90-900-R8		74271	6.80

FOE-150 Riser 90° Inside

Type	Radius	Art. no.	Kg
FOE-150 RI-IN-90-150-R4	482	74272	3.42
FOE-150 RI-IN-90-300-R4		74273	3.52
FOE-150 RI-IN-90-450-R4		74274	3.62
FOE-150 RI-IN-90-600-R4		74275	3.72
FOE-150 RI-IN-90-750-R4		74276	3.82
FOE-150 RI-IN-90-900-R4		74277	3.92
FOE-150 RI-IN-90-150-R6	680	74278	5.87
FOE-150 RI-IN-90-300-R6		74279	6.07
FOE-150 RI-IN-90-450-R6		74280	6.27
FOE-150 RI-IN-90-600-R6		74281	6.47
FOE-150 RI-IN-90-750-R6		74282	6.67
FOE-150 RI-IN-90-900-R6		74283	6.87
FOE-150 RI-IN-90-150-R8	878	74284	8.34
FOE-150 RI-IN-90-300-R8		74285	8.64
FOE-150 RI-IN-90-450-R8		74286	8.94
FOE-150 RI-IN-90-600-R8		74287	9.24
FOE-150 RI-IN-90-750-R8		74288	9.54
FOE-150 RI-IN-90-900-R8		74289	9.84

FOE-150 Riser 90° Outside

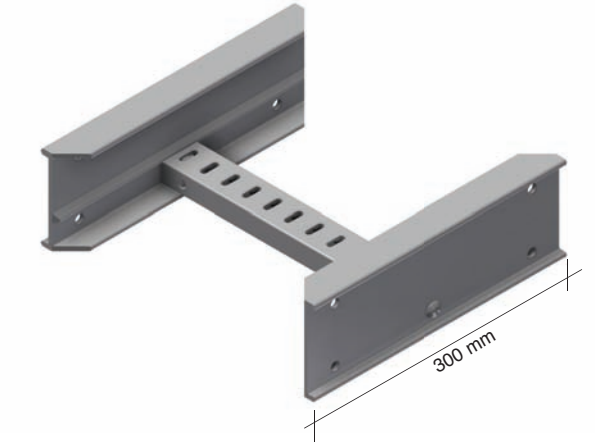
Type	Radius	Art. no.	Kg
FOE-150 RI-OU-90-150-R4	393	74290	3.42
FOE-150 RI-OU-90-300-R4		74291	3.52
FOE-150 RI-OU-90-450-R4		74292	3.62
FOE-150 RI-OU-90-600-R4		74293	3.72
FOE-150 RI-OU-90-750-R4		74294	3.82
FOE-150 RI-OU-90-900-R4		74295	3.92
FOE-150 RI-OU-90-150-R6	591	74296	5.87
FOE-150 RI-OU-90-300-R6		74297	6.07
FOE-150 RI-OU-90-450-R6		74298	6.27
FOE-150 RI-OU-90-600-R6		74299	6.47
FOE-150 RI-OU-90-750-R6		74300	6.67
FOE-150 RI-OU-90-900-R6		74301	6.87
FOE-150 RI-OU-90-150-R8	800	74302	8.34
FOE-150 RI-OU-90-300-R8		74303	8.64
FOE-150 RI-OU-90-450-R8		74304	8.94
FOE-150 RI-OU-90-600-R8		74305	9.24
FOE-150 RI-OU-90-750-R8		74306	9.54
FOE-150 RI-OU-90-900-R8		74307	9.84

Build your own flexible riser from the components below:

ADVANTAGES OF SELF ASSEMBLY:

- One part can be combined to form a variety of specifications. This keeps stocks to a minimum.
- Simply flip splice plates to switch from inside to outside risers.
- Additional riser parts may be added to increase radius of bend.
- Angle plates can be combined to reach a number of turn angles.

STEP ONE: Choose the height and width of riser you need.



Riser Part

Type	Art. no.	Kg
FOE-70 RI-PA-150	73741	0.8
FOE-70 RI-PA-200	70403	0.8
FOE-70 RI-PA-300	73742	0.9
FOE-70 RI-PA-400	70404	1.0
FOE-70 RI-PA-450	73743	1.1
FOE-70 RI-PA-500	70405	1.1
FOE-70 RI-PA-600	73744	1.2
FOE-100 RI-PA-150	74160	1.0
FOE-100 RI-PA-300	74161	1.1
FOE-100 RI-PA-450	74162	1.2
FOE-100 RI-PA-600	74163	1.3
FOE-100 RI-PA-750	74164	1.4
FOE-100 RI-PA-900	74165	1.6
FOE-150 RI-PA-150	74166	1.9
FOE-150 RI-PA-300	74167	2.0
FOE-150 RI-PA-450	74168	2.1
FOE-150 RI-PA-600	74169	2.2
FOE-150 RI-PA-750	74170	2.3
FOE-150 RI-PA-900	74171	2.4

STEP TWO: Identify the angle and radius required.

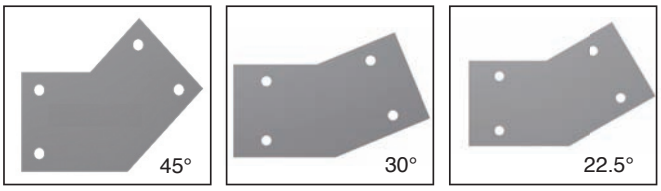
Radius and angles will vary depending on the number of riser parts and splice plates used. For example with 90˚ risers:

- Small radius (400mm) consists of one riser part and four pieces of 45˚ angle plates (2x45=90)
- Medium radius (600mm) consists of two riser parts and six pieces of 30˚ (3x30=90) angle plates
- Large radius (800mm) consists of 3 risers parts and eight pieces of 22.5˚ (4x22.5=90) angle plates

Contact Oglaend System for any special design requirements.

STEP THREE: Assemble

All of our fittings are available in both FRP and SS. This includes splice angles plates and our nuts and bolts. Plates come with SS 316L fasteners as standard, add ‘F’ order code to plate article number for FRP fasteners.

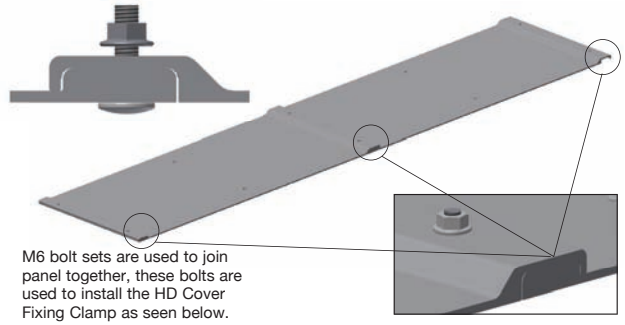


Splice Angle Plates 45°/30°/22.5°/15°

Type	FRP Art. no.	Kg	SS Art. no.	Kg
FOE-70 SA-VE-45	70406	0.1	74190	0.1
FOE-100 SA-VE-45	70407	0.1	74191	0.1
FOE-150 SA-VE-45	70408	0.2	74192	0.2
FOE-70 SA-VE-30	70409	0.1	74193	0.1
FOE-100 SA-VE-30	70410	0.1	74194	0.1
FOE-150 SA-VE-30	70411	0.2	74195	0.2
FOE-70 SA-VE-22.5	70412	0.1	74196	0.1
FOE-100 SA-VE-22.5	70413	0.1	74197	0.1
FOE-150 SA-VE-22.5	70414	0.2	74198	0.2

Example: To build a riser in 22.5°, 30° or 45° select the relevant Riser Part (see Art. no. above), and matching Splice Angle Plate. For full flexibility combine Riser Parts with the Hinge Vertical on page 15.

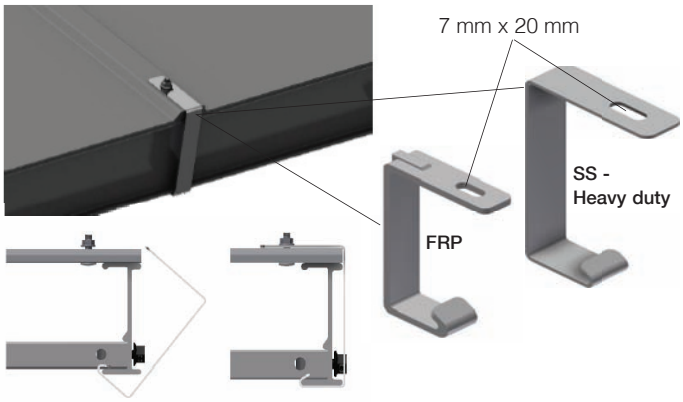
CABLE LADDER FOE



Cable Ladder Cover

For high wind application

Type	Art. no.	Kg/m
FOE CO-CL-150	71468	1.0
FOE CO-CL-200	71469	1.15
FOE CO-CL-300	71470	1.6
FOE CO-CL-400	71471	2.15
FOE CO-CL-450	71472	2.4
FOE CO-CL-500	71473	2.7
FOE CO-CL-600	71474	3.15
FOE CO-CL-750	71475	3.9
FOE CO-CL-900	71476	4.7



HD Cover Fixing Clamp

For heavy duty application

Type	FRP Art no.	SS Art. no. Heavy duty	Kg
FOE-70 CC-HD	–	71484	0.05
FOE-100 CC-HD	71783	71485	0.07
FOE-150 CC-HD	71757	71486	0.1

Installation of the heavy duty clamp is quick and easy. All that is required once the cover is in position is to remove the nuts located on top of each side of the reinforcement ribs. Then hook the clamp under the bottom flange of the ladder and lift clamp upwards so the slotted hole on top of clamp lands directly over the bolt. Once in place apply the nut to secure. Detailed best practice guides are available upon request.

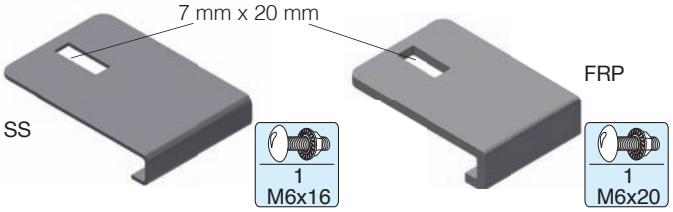
Ladder cover is supplied assembled and is pre-drilled to suit alternative GP cover clamp 74856 as standard.

HD Cover Fixing Clamps
Recommended Number of HD Cover FC is four (4) per 3m ladder length, provides protection to 90Km/h. Wind above but not exceeding 160Km/h use eight (8) clamps. A diagram on best practice installation of covers is available upon request.

GP Cover Clamps
Recommended Number of GP Cover Clamps 74856 is Six (6) per 3m ladder length, provides wind protection up to 70Km/h. Eight (8) clamps provides protection to 110Km/h.

FRP Flexi Fixing Clamps
Recommended Number of FRP Flexi Fixing Clamps is two (2) per 3m ladder length, provides protection up to 80Km/h. Three (3) clamps provides protection to 110Km/h.

All the above wind load data was gathered from wind tunnel testing and does not simulate the actual working conditions. Tests performed using stainless steel fixing clamps, results not applicable to FRP clamps. Please consider this when selecting the correct clamp system for your application.



GP Cover Clamp

Type	FRP Art no.	SS Art. no.	Kg
FOE CC	72077	74856	0.1

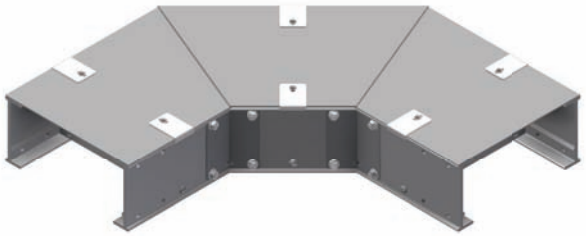
HD Flexi Clamp
used as a support for ladder and fitting covers when required.

HD Flexi Fixing Clamp

Type	Width	SS Art. no.
FOE-70-150	168	71610
FOE-70-200	218	71611
FOE-70-300	318	71612
FOE-70-400	418	71613
FOE-70-450	468	71614
FOE-70-500	518	71615
FOE-70-600	618	71616
FOE-100-150	176	71617
FOE-100-300	326	71618
FOE-100-450	476	71619
FOE-100-600	626	71620
FOE-100-750	776	71621
FOE-100-900	926	71622
FOE-150-150	176	71623
FOE-150-300	326	71624
FOE-150-450	476	71625
FOE-150-600	626	71626
FOE-150-750	776	71627
FOE-150-900	926	71628

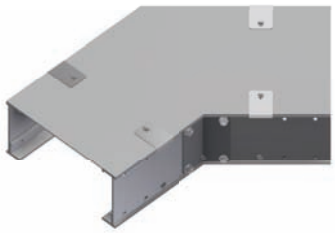
CABLE LADDER FOE

Use 6 clamps per section



HD Flexi Clamp seen on page 19 are designed to fit all FOE fittings to increase wind protection

All covers for fittings are supplied as one piece construction



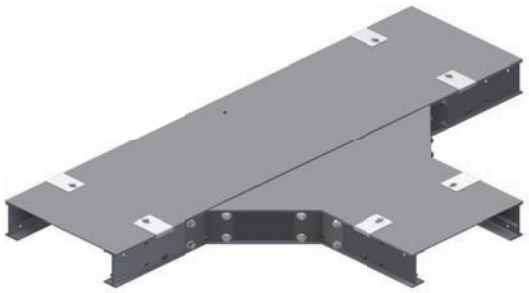
Use 4 clamps per section

Cover Flat Elbow 90°

Type	Art. no.	Kg
FOE CO-FE-90-150	74715	0.9
FOE CO-FE-90-300	74716	1.9
FOE CO-FE-90-450	74717	3.2
FOE CO-FE-90-600	74718	4.6
FOE CO-FE-90-750	74719	6.3
FOE CO-FE-90-900	74720	8.1

Cover Flat Elbow 45°

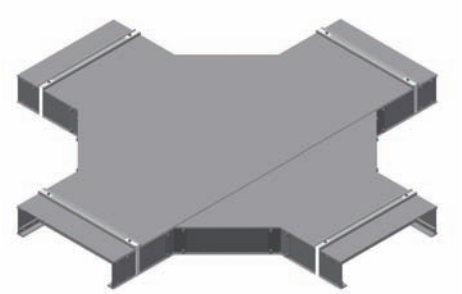
Type	Art. no.	Kg
FOE CO-FE-45-150	74801	0.6
FOE CO-FE-45-300	74802	1.2
FOE CO-FE-45-450	74803	2.0
FOE CO-FE-45-600	74804	3.1
FOE CO-FE-45-750	74805	4.1
FOE CO-FE-45-900	74806	5.2



Use 6 clamps per section

Cover Tee-Piece

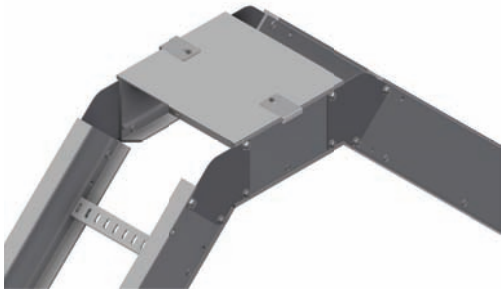
Type	Art. no.	Kg
FOE CO-TE-150	74721	0.8
FOE CO-TE-300	74722	1.7
FOE CO-TE-450	74723	2.8
FOE CO-TE-600	74724	4.1
FOE CO-TE-750	74725	5.7
FOE CO-TE-900	74726	7.6



Cover Cross

Type	Art. no.	Kg
FOE CO-CP-150	71655	1.2
FOE CO-CP-300	71656	2.0
FOE CO-CP-450	71657	3.2
FOE CO-CP-600	71658	4.4
FOE CO-CP-750	71659	6.0
FOE CO-CP-900	71660	8.0

Use the same for inside and outside risers.

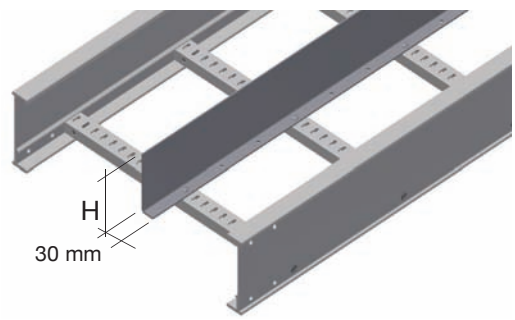


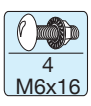
Cover Flexi-Riser

2 covers are needed for R600 risers and 3 covers are needed for R800 risers.

Type	Art. no.	Kg
FOE CO-FR-150	74760	0.3
FOE CO-FR-300	74761	0.6
FOE CO-FR-450	74762	0.9
FOE CO-FR-600	74763	1.2
FOE CO-FR-750	74764	1.5
FOE CO-FR-900	74765	1.8

Use the same for inside and outside risers.





Divider

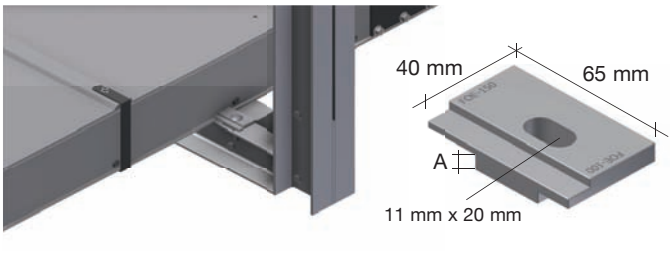
3m lengths for straight ladders

Type	H (mm)	FRP Art. no.	Kg/m
FOE-70 DI	40	73783	0.4
FOE-100 DI	70	74541	0.5
FOE-150 DI	120	74542	0.8

A full range of dividers are available for all horizontal fittings and all vertical fittings inside or outside radiuses.

For assistance, please contact Oglaend System.

CABLE LADDER FOE



Fixing/Expansion Clamp

Type	A (mm)	FRP Art. no.	Kg
FOE FC-A40X65	6	71410	0.06

This clamp is suitable for the following products:
FOE-150, FOE-150GA, FOE-100 and FOE-70.
Not suitable for vertical supports. To secure tray or ladder on vertical supports use article number 74783 or 71753.

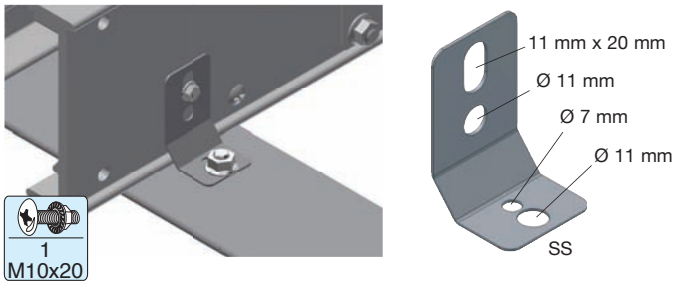
Dome Head Nut & Bolt

Rounded edge FRP nut and bolt protects contents of cable trays and ladders from damage.

Type	FRP Art. no.	Kg
S-M DH-E-M6X20	75249	0.002
S-M NU-DH-E-M6	73917	0.001

Fixing Clamps Fits both ladders and trays

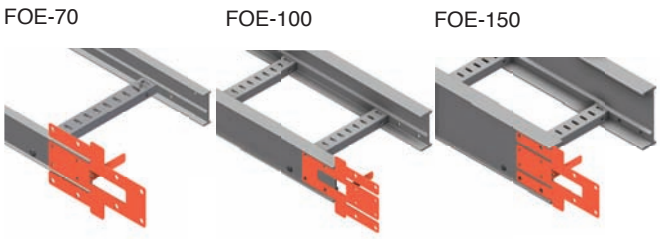
Type	SS Art. no.	Kg
FOE/FTE FC-B47x50	74492	0.1



Fixing Clamps Fits both ladders and trays

Type	FRP Art. no.	SS Art. no	Kg
FOE/FTE FC-B40x65	72024	74783	0.04

Used for vertical or horizontal installations.



Smart Jig Drilling Jig for FOE ladder holes

Type	SS Art. no.	Kg
FOE-DJ70/100/150	74398	0.4

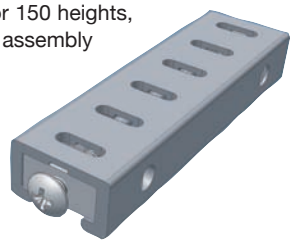
With this jig you can pre-drill holes in exact positions when cutting ladder lengths on site. After modifications use Oglaend System Sealing Kit to preserve the product quality.

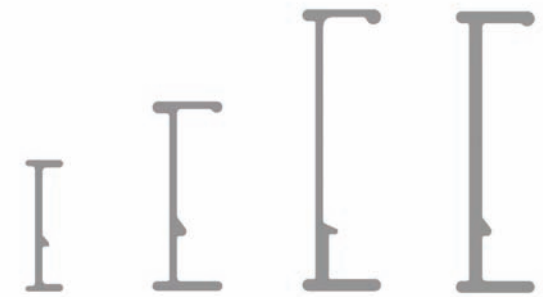



CABLE LADDER FOE

«Build your own FOE ladder at site»

Pre-drilled side channels in 70,100 or 150 heights, supplied in 3 or 6m lengths for easy assembly at site. Rungs supplied pre-slotted, complete with the patented SmartLok insert and SS pan head bolts for easy assembly.





Rung spacing standard is 300 mm.
Rung widths from 150mm to 900mm.
Ask for alternative rung spacing or resin systems.
Order 10 rungs and 2 side pieces per ladder at standard spacing of 300mm.

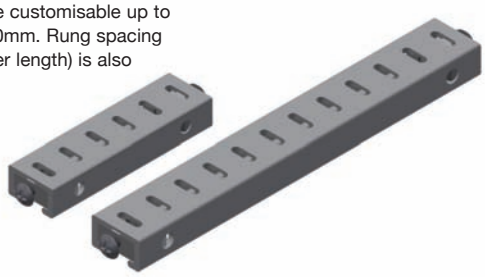
FOE Side Channel

Type	Art. no. 3m	Art. no. 6m	Kg/m
FOE-70	74133	71453	0.8
FOE-100	74136	71418	1.4
FOE-150	74137	71454	2.8
FOE-150 GA	71455	71456	2.2

FOE Rung

Type	Art. no.	Kg
FOE RU-P-150	74469	0.2
FOE RU-P-300	74470	0.3
FOE RU-P-450	74471	0.4
FOE RU-P-600	74472	0.5
FOE RU-P-750	74473	0.6
FOE RU-P-900	74474	0.7

Rung widths are customisable up to a length of 1200mm. Rung spacing (rungs per ladder length) is also customisable



FOE-70 Rung

All rungs are now punched as standard

Type	Art. no.	Kg
FOE-70 RU-150	71544	0.10
FOE-70 RU-200	71545	0.12
FOE-70 RU-300	71546	0.16
FOE-70 RU-400	71547	0.20
FOE-70 RU-450	71548	0.22
FOE-70 RU-500	71549	0.24
FOE-70 RU-600	71550	0.28

CABLE TRAY FTE

Product selection and options

Standard FOE Ladder System Technical Data	
Material	Polyester Class 1 (C1)
Length	3-6m
Width	50, 100, 150, 200, 300, 400 & 600mm
Height	50 & 80mm
Peforation Spacing	300mm
Assembly	SS Bolt & anti-vibration flange nuts
Splice Detail	Full height SS/FRP splice plates
Elbow Radius	250-300mm
Angles	30˚, 45˚, 60˚ and 90˚

Standard FOE for Alternative Designs	
Resin Codes	
Anti-Static	A
Olstar	AC
Vinyl Ester	VE
Phenolic	PH
Full FRP Construction	F

For details on the advantages of each resin please refer to page 8.

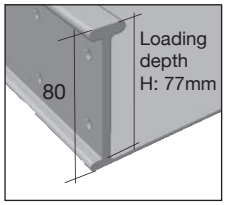
* No metallic components used in construction. All components manufactured from fibre reinforced plastic, which provides excellent corrosion resistance.

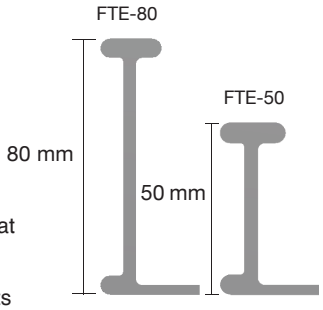
GUIDELINES: To use order code:
Select order code and add to article no.
Example: Anti-Static Resin Code “A” = Art. no. 74400A

Related Documents

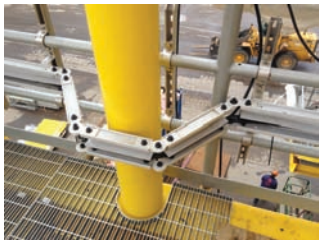
- Mechanical loading data is available on page 9
- A chemical exposure guide is available on page 40
- For tray accessories see pages 24-28

FTE-80

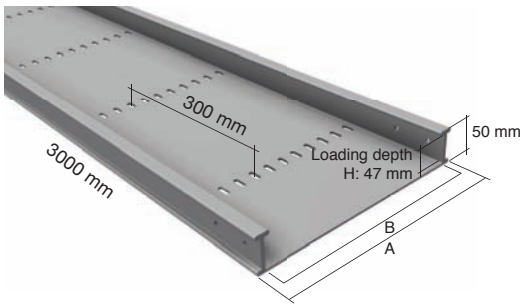




This symbol tells you that the product is supplied with stainless steel bolt sets or FRP. (In brackets are optional).

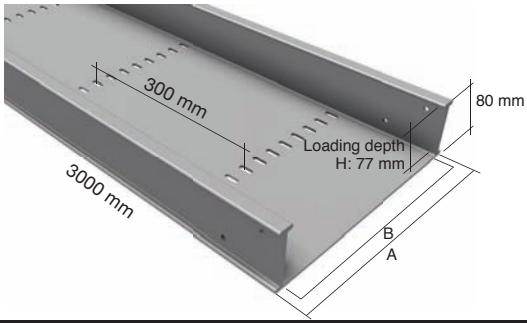


CABLE TRAY FTE



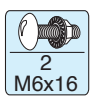
Cable Tray FTE-50

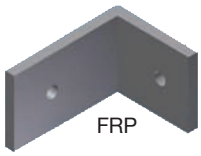
Type	A (mm)	B (mm)	Art. no.	Kg/m
FTE-50 CT-50	70	50	74400	1.3
FTE-50 CT-100	122	100	74401	1.7
FTE-50 CT-150	172	250	74399	2.0
FTE-50 CT-200	222	200	74402	2.3
FTE-50 CT-300	324	300	74403	3.0
FTE-50 CT-400	426	400	71460	4.5
FTE-50 CT-600	624	600	71558	6.6



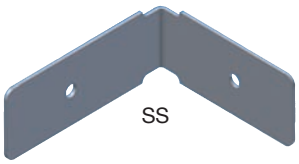
Cable Tray FTE-80

Type	A (mm)	B (mm)	Art. no.	Kg/m
FTE-80 CT-50	72	50	74410	1.9
FTE-80 CT-100	122	100	74411	2.2
FTE-80 CT-150	172	150	74409	2.6
FTE-80 CT-200	224	200	74412	3.0
FTE-80 CT-300	324	300	74413	3.5
FTE-80 CT-400	424	400	71461	5.1
FTE-80 CT-600	624	600	73879	5.1





Fixed 90˚



Adjustable angle

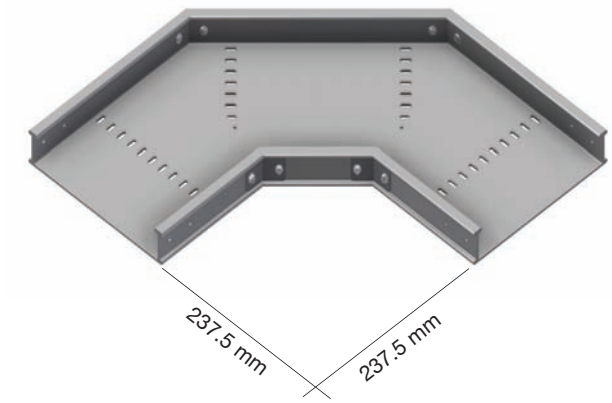
Splice Angle Horizontal

Type	FRP Art. no.	SS Art. no.	Kg
FTE-50 SA-HO-50	70436	74870	0.1
FTE-80 SA-HO-80	70437	74871	0.2

All Steel(SS) accessories are supplied in **AISI 316L.**

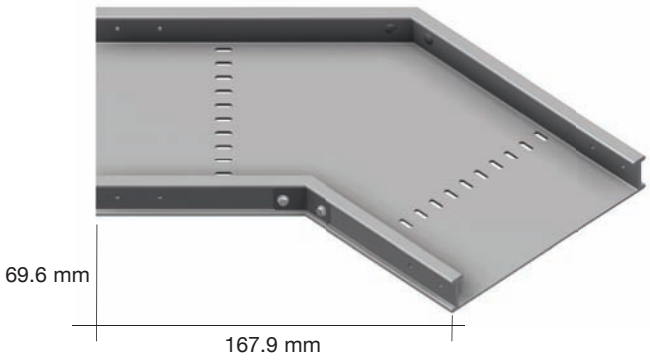
CABLE TRAY FTE

Alternative radii are available



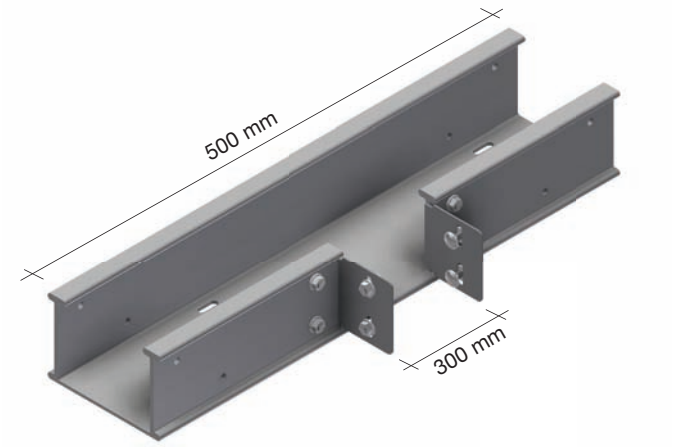
Flat Elbows 90° R250

Type	Art. no.	Kg
FTE-50 FE-90-50	74568	0.8
FTE-50 FE-90-100	74569	1.1
FTE-50 FE-90-150	74572	1.3
FTE-50 FE-90-200	74570	1.6
FTE-50 FE-90-300	74571	2.2
FTE-50 FE-90-400	71463	4.8
FTE-50 FE-90-600	71559	6.5
FTE-80 FE-90-50	74582	1.3
FTE-80 FE-90-100	74583	1.5
FTE-80 FE-90-150	74581	1.8
FTE-80 FE-90-200	74584	2.1
FTE-80 FE-90-300	74585	3.6
FTE-80 FE-90-400	71493	5.6
FTE-80 FE-90-600	73902	8.9



Flat Elbows 45°

Type	Art. no.	Kg
FTE-50 FE-45-50	74575	0.4
FTE-50 FE-45-100	74576	0.6
FTE-50 FE-45-150	74574	0.7
FTE-50 FE-45-200	74577	0.8
FTE-50 FE-45-300	74578	1.1
FTE-50 FE-45-400	71464	1.3
FTE-50 FE-45-600	71560	2.0
FTE-80 FE-45-50	74590	0.6
FTE-80 FE-45-100	74591	0.8
FTE-80 FE-45-150	74589	1.0
FTE-80 FE-45-200	74592	1.1
FTE-80 FE-45-300	74593	1.4
FTE-80 FE-45-400	71494	1.7
FTE-80 FE-45-600	73903	2.5



Tee-Piece

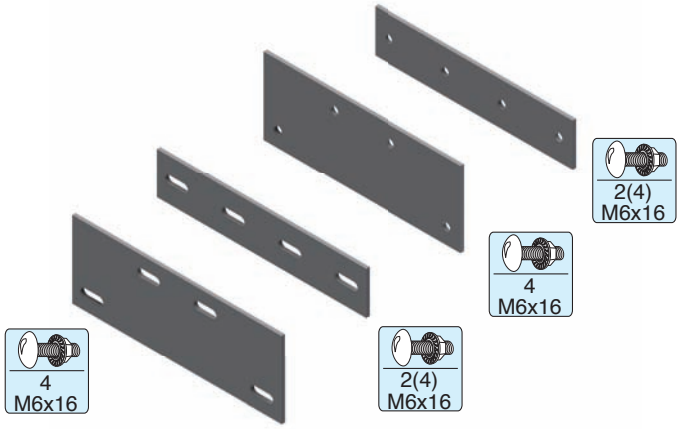
Type	Art. no.	Kg
FTE-50 TE-50/50	74660	0.6
FTE-50 TE-100/100	74661	0.7
FTE-50 TE-150/150	74659	0.9
FTE-50 TE-200/200	74662	1.1
FTE-50 TE-300/300	74663	1.6
FTE-50 TE-400/400	71465	2.1
FTE-50 TE-600/600	71561	2.7
FTE-80 TE-50/50	74664	0.9
FTE-80 TE-100/100	74665	1.0
FTE-80 TE-150/150	74668	1.2
FTE-80 TE-200/200	74666	1.4
FTE-80 TE-300/300	74667	1.9
FTE-80 TE-400/400	71495	2.9
FTE-80 TE-600/600	73904	5.4

- **Unequal Tee and alternative radii are available**

Radius Tee-Piece R300

Type	Art. no.	Kg
FTE-50 TE-50-50 R3	71629	1.7
FTE-50 TE-50-100 R3	71630	2.4
FTE-50 TE-50-150 R3	71631	2.8
FTE-50 TE-50-200 R3	71632	3.2
FTE-50 TE-50-300 R3	71633	3.7
FTE-50 TE-50-400 R3	71634	4.0
FTE-50 TE-50-600 R3	71635	4.3
FTE-80 TE-50-50 R3	71636	2.5
FTE-80 TE-50-100 R3	71637	2.9
FTE-80 TE-50-150 R3	71638	3.4
FTE-80 TE-50-200 R3	71639	3.9
FTE-80 TE-50-300 R3	71640	4.3
FTE-80 TE-50-400 R3	71641	4.8
FTE-80 TE-50-600 R3	73905	11.2

CABLE TRAY FTE



Splice Connectors

Type	FRP Art. no.	SS Art. no.	Kg
FTE-50 SC	75043	74880	0.1
FTE-80 SC	75052	74881	0.2

Expansion Splice Plates

Type	FRP Art. no.	SS Art. no.	Kg
FTE-50 SC Exp	71608	71691	0.1
FTE-80 SC Exp	71609	71692	0.2

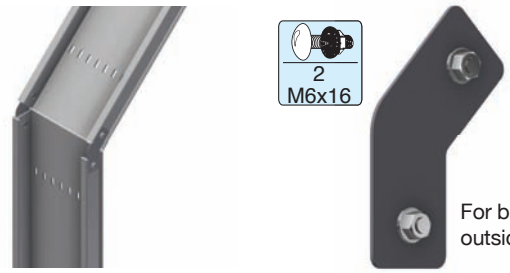
When used as expansion coupler remember to:

- Use bolts with “nylock” lock nuts in the 4x rectangular slotting and do not tighten the nuts.
- Place one coupler for approx 25m span to count for thermal expansion.

Supplied as inside riser. Turn the splice angles over to make an outside riser.

Combi-Riser

Type	FRP Art. no.	SS Art. no.	Kg
FTE-50 CR-50	75046	74670	0.9
FTE-50 CR-100	75047	74671	1.0
FTE-50 CR-150	75039	74669	1.1
FTE-50 CR-200	75048	74672	1.2
FTE-50 CR-300	75049	74673	1.4
FTE-50 CR-400	71642	71490	1.6
FTE-50 CR-600	71644	71562	2.0
FTE-80 CR-50	75072	74674	1.5
FTE-80 CR-100	75073	74675	1.6
FTE-80 CR-150	75074	74678	1.7
FTE-80 CR-200	75075	74676	1.8
FTE-80 CR-300	75076	74677	2.0
FTE-80 CR-400	71643	71496	2.2
FTE-80 CR-600	73906	73909	2.6



For both in and outside use

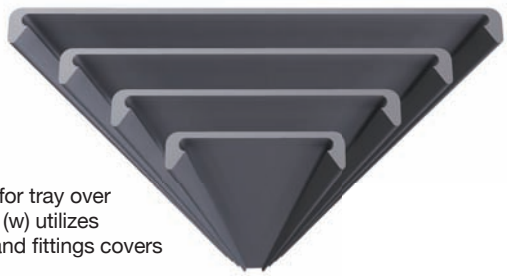
Splice Angle 45°

Type	FRP Art. no.	SS Art. no.	Kg
FTE-50 SA-VE-45	75041	74872	0.1
FTE-80 SA-VE-45	75042	74873	0.2

The splice angle is available in standard 45° or 30° & 60°. Excellent for building risers on site.

Use our pre-slotted Drill Jig to drill new holes after cutting trays.

Seal with Oglaend System resin for improved life span.

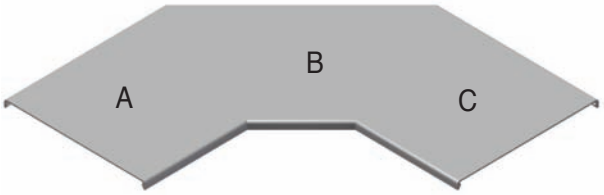


Covers for tray over 300mm (w) utilizes ladder and fittings covers

Snap-On Cover FTE 3m length

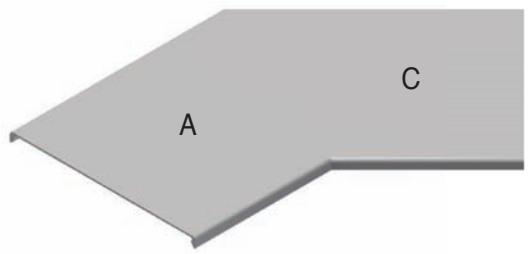
Type	Art. no.	Kg/m
FTE CO-CT-50	74450	0.8
FTE CO-CT-100	74451	1.0
FTE CO-CT-150	74449	1.3
FTE CO-CT-200	74452	1.6
FTE CO-CT-300	74453	2.1
FTE CO-CT-400	71462	2.5
FTE CO-CT-600	71570	3.0

CABLE TRAY FTE



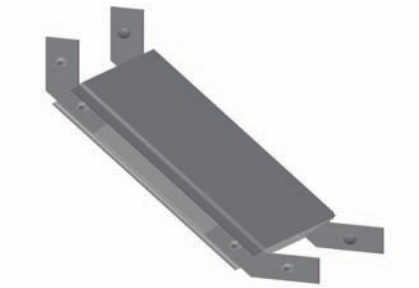
Cover Flat Elbow 90°

Type	Art. no.	Kg
FTE-CO-FE-90-50	74735	0.4
FTE-CO-FE-90-100	74736	0.5
FTE-CO-FE-90-150	74739	0.8
FTE-CO-FE-90-200	74737	1.0
FTE-CO-FE-90-300	74738	1.5
FTE-CO-FE-90-400	71499	1.9
FTE-CO-FE-90-600	71651	4.6



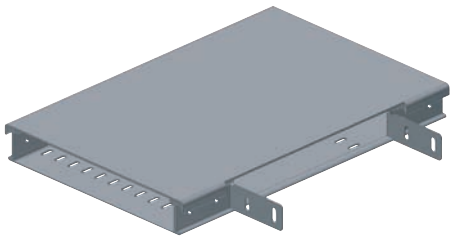
Cover Flat Elbow 45°

Type	Art. no.	Kg
FTE-CO-FE-45-50	74940	0.2
FTE-CO-FE-45-100	74941	0.25
FTE-CO-FE-45-150	74944	0.4
FTE-CO-FE-45-200	74942	0.7
FTE-CO-FE-45-300	74943	0.75
FTE-CO-FE-45-400	71500	0.95
FTE-CO-FE-45-600	71652	3.1



Cover Combi-Riser

Type	Art. no.	Kg
FTE-CO-CR-50	74844	0.25
FTE-CO-CR-100	74845	0.4
FTE-CO-CR-150	74848	0.65
FTE-CO-CR-200	74846	0.8
FTE-CO-CR-300	74847	1.0
FTE-CO-CR-400	71531	1.1
FTE-CO-CR-600	71653	1.2



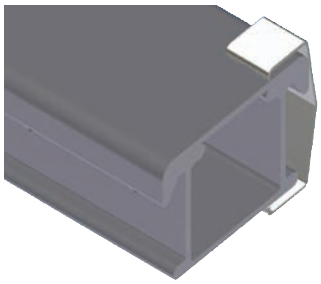
Cover Tee-Piece

Type	Art. no.	Kg
FTE-CO-TE-50	74840	0.25
FTE-CO-TE-100	74841	0.4
FTE-CO-TE-150	74839	0.65
FTE-CO-TE-200	74842	0.8
FTE-CO-TE-300	74843	1.0
FTE-CO-TE-400	71530	1.1
FTE-CO-TE-600	71654	1.2

FRP Step Down Splice Plate

This FRP Step Splice Plate is available in FRP for all heights.

Type	SS Art. no.	Kg/m
FTE-SD-SP-80-50	71650	0.15



Cover Clip Quick and Easy

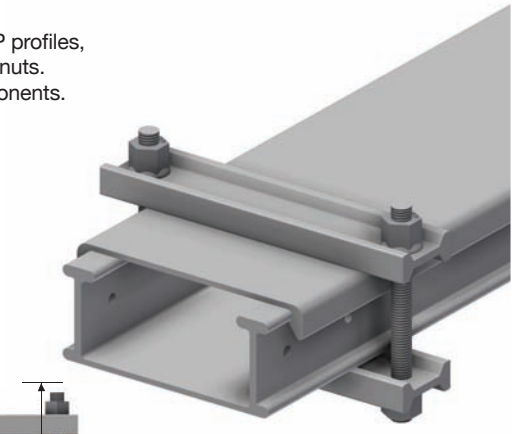
Type	SS Art. no.	Kg/m
FTE-50 CC	71352	0.01
FTE-80 CC	71459	0.02

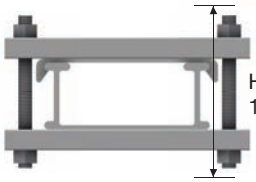
Special Request

If you have a special design requirement, please contact Oglaend System for options and availability.

CABLE TRAY FTE

Supplied with FRP profiles,
threaded rod and nuts.
No metallic components.





Height -
112/142 mm

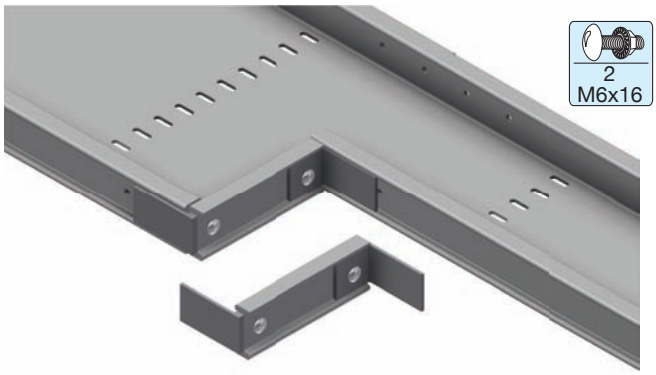
Cover Fixing Clamp

Used in high wind application

Type	Width (mm)	FRP Art. no.	Kg
FTE-50 CC-HD-50	130	73930	0.31
FTE-50 CC-HD-100	180	73931	0.37
FTE-50 CC-HD-150	230	73929	0.43
FTE-50 CC-HD-200	280	73932	0.49
FTE-50 CC-HD-300	380	73933	0.60
FTE-50 CC-HD-400	480	71491	0.72
FTE-50 CC-HD-600	680	71563	0.82
FTE-80 CC-HD-50	130	73934	0.35
FTE-80 CC-HD-100	180	73935	0.41
FTE-80 CC-HD-150	230	73938	0.47
FTE-80 CC-HD-200	280	73936	0.53
FTE-80 CC-HD-300	380	73937	0.64
FTE-80 CC-HD-400	480	71497	0.75
FTE-80 CC-HD-600	680	73909	0.91

End Cover

Type	FRP Art. no.	Kg
FTE-50 EC-50	74727	0.02
FTE-50 EC-100	74728	0.04
FTE-50 EC-150	74885	0.05
FTE-50 EC-200	74728	0.06
FTE-50 EC-300	74730	0.10
FTE-50 EC-400	71492	0.12
FTE-50 EC-600	71564	0.16
FTE-80 EC-50	74731	0.03
FTE-80 EC-100	74732	0.06
FTE-80 EC-150	74886	0.08
FTE-80 EC-200	74733	0.10
FTE-80 EC-300	74734	0.20
FTE-80 EC-400	71498	0.30
FTE-80 EC-600	73908	0.50



Reducer part is complete with AISI
316L screws and FRP brackets.

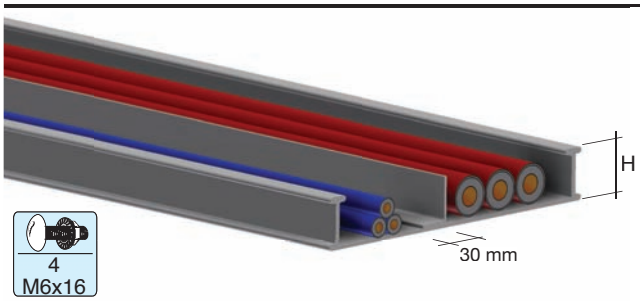
Reducer Part

Type	Art. no.	Kg
FTE-50 RP-50	70438	0.10
FTE-50 RP-100	70439	0.12
FTE-50 RP-150	70440	0.15
FTE-50 RP-200	70441	0.17
FTE-50 RP-300	71606	0.20
FTE-80 RP-50	70442	0.15
FTE-80 RP-100	70443	0.18
FTE-80 RP-150	70445	0.20
FTE-80 RP-200	70446	0.22
FTE-80 RP-300	71607	0.25

Hinge Vertical

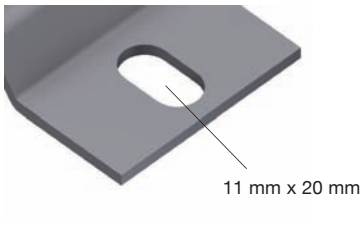
Type	FRP Art. no.	SS Art. no.	Kg
FTE-50 HV	75044	74882	0.2
FTE-80 HV	75053	74883	0.3

CABLE TRAY FTE



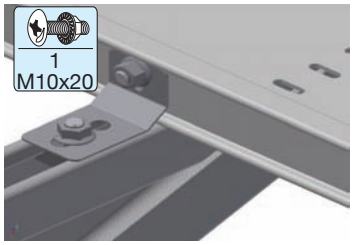
Divider

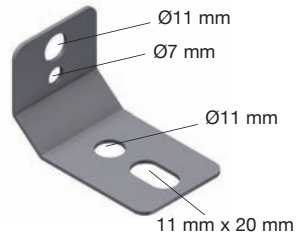
Type	H (mm)	FRP Art. no.	Kg/m
FTE-50 DI	45	74540	0.4
FTE-80 DI	70	74541	0.5



Fixing Clamps Fits both ladders and trays

Type	SS Art. no.	Kg
FOE/FTE FC-A	74492	0.04





Fixing Clamps Fits both ladders and trays

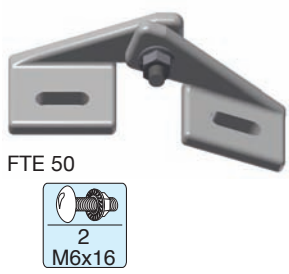
Type	SS Art. no.	Kg
FOE/FTE FC-B40x65	74783	0.04

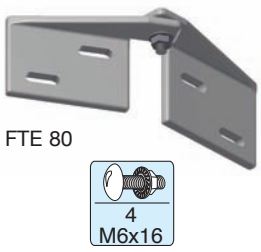
Used for vertical and horizontal installations. Supplied with 1 x M10 x 20 bolt set used to fix clamp to product. Bolt set to secure clamp to structure is not included.

Tubing Clamps

Type	SS Art. no.	Pipe Diameter
ETIN BU-ME-12	1371820	12mm
INKO-O BU 20	1320320	20mm

Full range of tubing clamps sizes are available for purchase.
For more information please visit: *www.oglaend-system.com* or contact us at *frpsales@oglaendind.com*



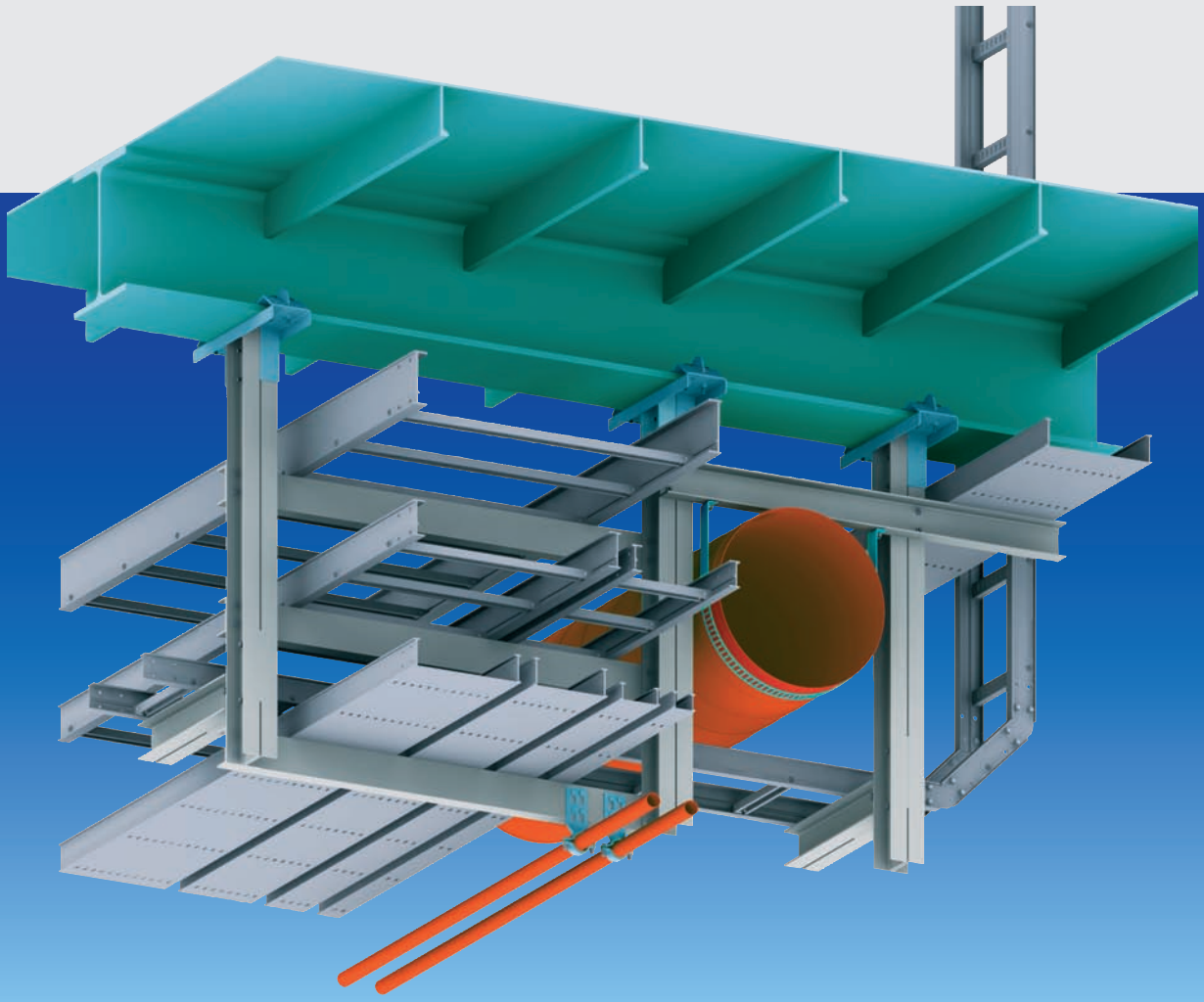


Adjustable Horizontal Hinge

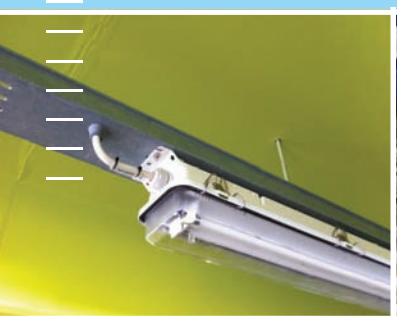
Type	FRP Art. no.
FTE-50 SA-HH	71321
FTE-80 SA-HH	73860

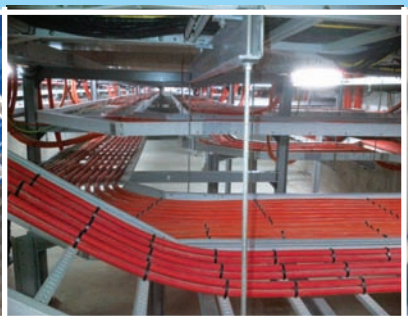
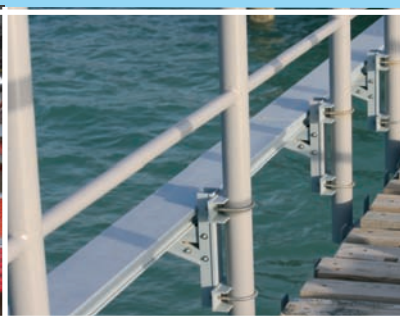
ØGLÆND SYSTEM

FRP / GRP MULTIDISCIPLINE SUPPORT SYSTEM



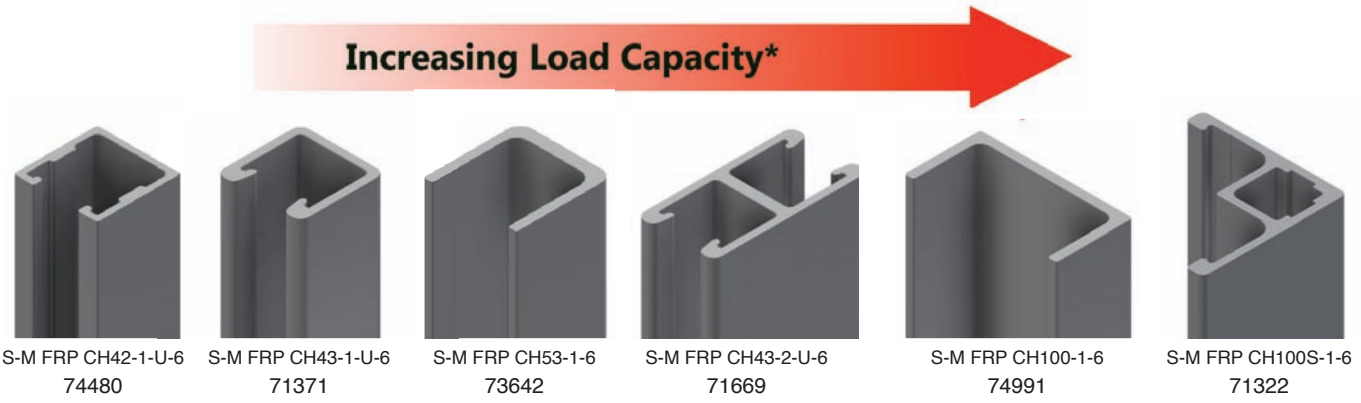
Our FRP support system offers a unique design concept





ØGLÆND SYSTEM



Beam Clamp and Starter Bracket

The FRP support system is secured with various starter brackets, which can be welded or bolted.

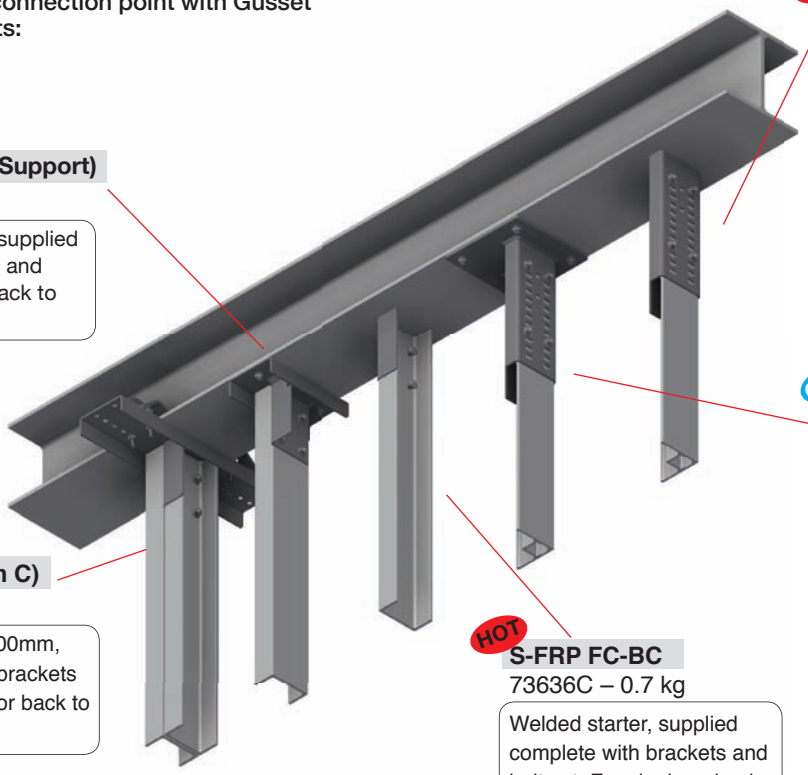
Bolted starter brackets secured with 4 expansion bolts M10x60. Every connection point with Gusset Plates need 8 bolt sets:

FOR COLD WORK

Bolted starter brackets eliminate the need for a hot work licence.

FOR HOT WORK

Welded starter brackets.



HOT

SB-CH100-2T 300
1302061 – 2.3 kg

SB-CH100-2T 200
1301024 – 1.6 kg

Welded starter is supplied complete with brackets and bolt set. Available in 300 and 200 mm lengths. 300 mm suitable for L frame and 200 mm suitable for U frame. For use with CH100S-71322

COLD

S-FRP FC-BS (Bolt Support)
73636 – 2.2 KG

Bolted starter bracket, supplied complete with brackets and bolt set. For single or back to back CH100-74991

COLD

SB-CH100-2T 300
1303358 – 4.8 kg

SB-CH100-2T 200
1371425 – 4.2 kg

Bolted starter, supplied complete with brackets and bolt set. For Triangular channel. Available in 300 and 200 mm lengths. 300 mm suitable for L Frame. 200 mm suitable for U Frame.

COLD

S-FRP FC-BC (Beam C)
73634 – 5.0 kg

Fits beam widths 200-300mm, supplied complete with brackets and bolt set. For single or back to back CH100 -74991

HOT

S-FRP FC-BC
73636C – 0.7 kg

Welded starter, supplied complete with brackets and bolt set. For single or back to back CH100-74991

Sectional Properties

Art. no.		Height (mm)	Width (mm)	Weight (kg/m)	Area (mm^2)	X Axis Ix (mm^4)	X Axis Cx (mm)	X Axis Rx (mm)	Y Axis Iy (mm^4)	Y Axis Cy (mm)	Y Axis Ry (mm)
74480	Light duty	42	42	0.87	464	95837	21.0	14.37	133232	18.49	16.94
71371	Medium/Heavy duty	43	43	1.12	575	126081	21.50	14.81	161322	19.62	16.76
71370	Heavy duty	43	45	1.34	688	144100	22.5	14.47	203415	18.98	17.19

Loading & Deflection Table for UNO channels

	Maximum uniformly distributed load on X-X Axis						Maximum uniformly distributed load on Y-Y Axis					
	71371		71370		74480		71371		71370		74480	
Span (m)	Weight (Kgf)	Deflect (mm)	Weight (Kgf)	Deflect (mm)	Weight (Kgf)	Deflect (mm)	Weight (Kgf)	Deflect (mm)	Weight (Kgf)	Deflect (mm)	Weight (Kgf)	Deflect (mm)
1.00	500	20	530	20	240	16	520	25	640	26	460	18
1.25	410	31	450	32	190	28	440	38	520	40	370	31
1.50	360	41	390	41	165	37	390	55	490	65	280	54
2.00	250	72	280	75	105	62	290	65	290	80	200	75

Load Data for max. Dead Weight Vertical Safety factor of 2.

CH42-1
Art no.: 73632
150kg

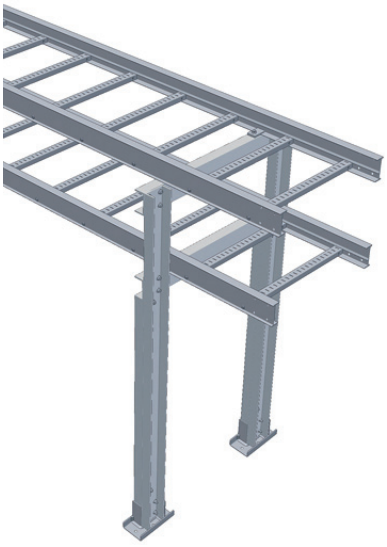
CH42-1
Art no.: 73632
550kg

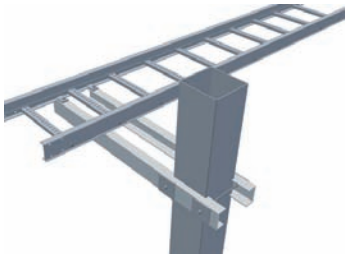
CH100-1
Art no.: 74991
1000kg

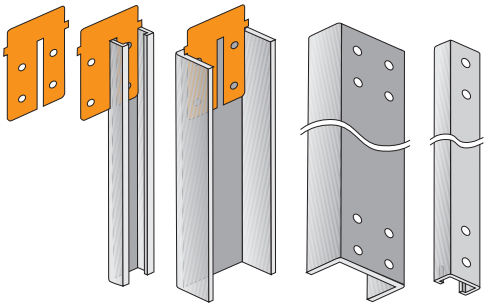
CH100-1
Art no.: 74991
2500kg

CH100S-1
Art no.: 71322
1500kg

CH100S-1
Art no.: 71322
2500kg

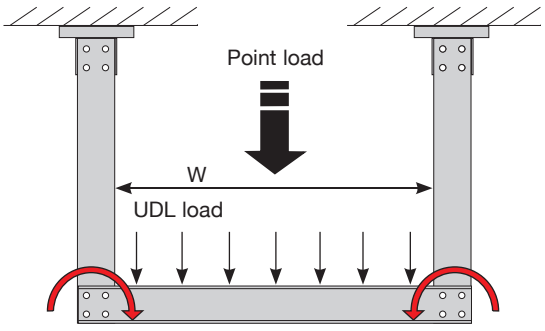






Note:
Use our Drill Jig to secure the holes in right position.
See page 35.

Type U-Frame Load data for typical industrial support



Max bending moment for the bolted connection is 612 Nm.

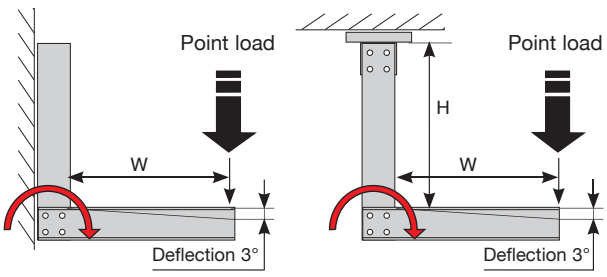
Channel CH100-1 Max load in kg

Safety factor x 2 included. Bolt dim. M10.
Support Width = W

W (m)	Channels* Single/Double	Point Load (kg)	UDL Load (kg)
2.00	Single	140	140
2.00	Double	345	345
1.75	Single	172	196
1.50	Single	245	326
1.25	Single	312	499
1.00	Single	340	680

* Only the horizontal channel is double (Back to back).
All verticals are single.

Type Cantilever and L-Frame



Max bending moment for the bolted connection is 612 Nm.

Channel CH100-1 Max load in kg

Safety factor x 2 included. Bolt dim. M10.
Support Width = W. Height = H.

Type Cantilever

W (m)	Channels	Point Load (kg)	Deflection 3° (kg)
0.5	Single	125	215

Type L-Frame

W (m)	H (m)	Channels	Point Load (kg)	Deflection 3° (kg)
0.5	0.5	Single	169	200
0.5	1.0	Single	125	120

UNO FRAMING SYSTEM

Flexible framing system for cable tray and instrumentation support. A 100% FRP construction is possible with Oglaend System's new fire retardant nuts and bolts. Simply combine with the channel nut for a simple drilling free construction. Framing system can be adjusted and altered easily.

71318
M10X40
FRP Bolt

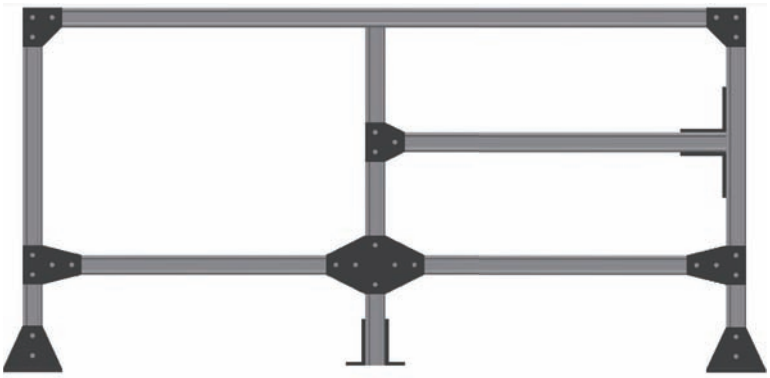
71551
Channel Nut
Heavy Duty

71371
UNO CH43-1-U-6

Choose brackets
from below

Heavy duty base post support for UNO channel framing system

UNO SB 73916



Fasteners are supplied separately.

Framing Brackets can be utilised in a variety of ways, thus fasteners must be ordered separately. For order no. see page 38-39.

UNO CHANNEL FRAMING BRACKETS


71776


71298


71806


71805

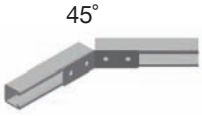
71801


71301

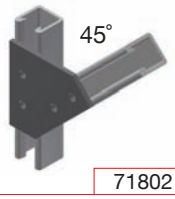

71308


71296


71302



71807



71802

71803

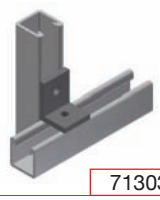

71306
71307 (M10)


71804


71810


71297

71808


71303

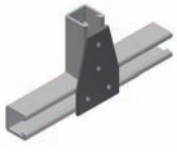

71309


71305


71809

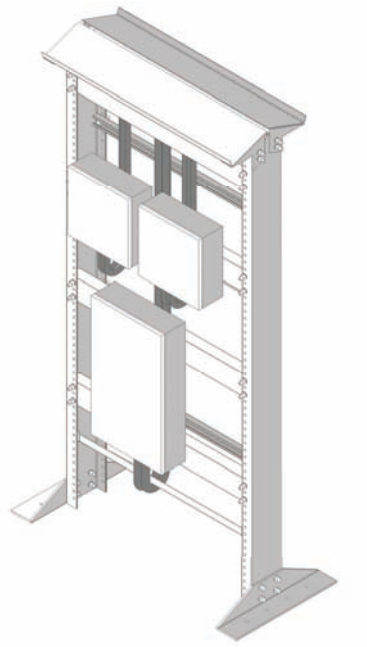

71304


71300


71299

JUNCTION BOX RACK

NEW PRODUCT



A roof is not included in the standard package and needs to be ordered separately from the list below.

A standard factory fabricated Junction Box Rack is supplied with:
- 2 side pieces
- 5 rungs
- 4 mounting rails
- 2 floor mounting brackets

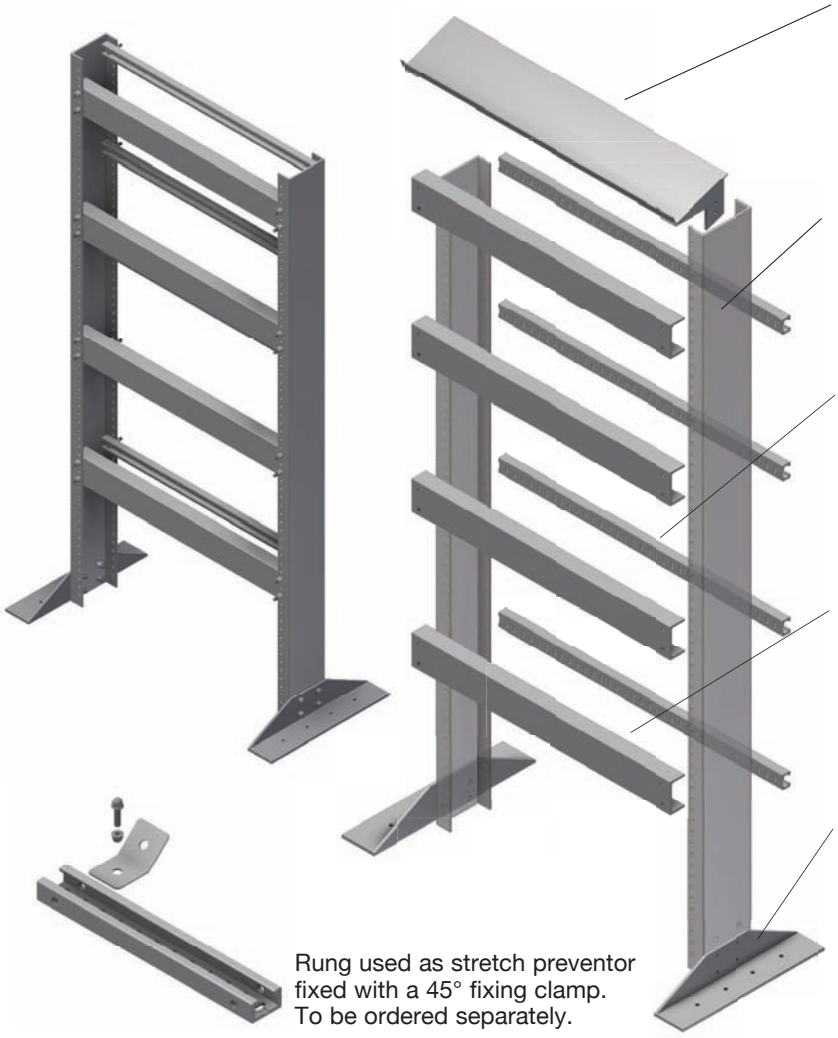
Cost and time saving junction box rack for enclosure and equipment mounting. Comes flat packed as standard or, if required, as a fully assembled product to meet project requirements.

Factory Fabricated Junction Box Rack

Type	Art. no.
FRP IR-600-150	71964
FRP IR-750-150	71965
FRP IR-900-150	75264
FRP IR-1200-150	71966
FRP IR-600-200	71967
FRP IR-750-200	71968
FRP IR-900-200	71969
FRP IR-1200-200	71970

The system is supplied with single sided support as standard, but additional mounting rails and rungs can be fitted if needed.

Build your own flexible Junction Box Rack from the components below:



Rung used as stretch preventor fixed with a 45° fixing clamp. To be ordered separately.

Roof

Type	Art. no.	Kg/m
FRP IR-RF-600	71971	0.3
FRP IR-RF-750	71972	0.4
FRP IR-RF-900	75269	0.5
FRP IR-RF-1200	71976	0.6

Sidepiece Available in 150 and 200 mm widths

Type	Art. no	Kg/m
FRP IR-SP-150	75256	5.0
FRP IR-SP-200	75270	9.4

Rung

Type	Art. no.	Kg/m
FRP IR-R-600	71974	0.4
FRP IR-R-750	71975	0.5
FRP IR-R-900	75263	0.6
FRP IR-R-1200	71976	0.8

Mounting Rail

Type	Art. no.	Kg/m
FRP IR-CH-600	75259	1.3
FRP IR-CH-750	75260	1.6
FRP IR-CH-900	75261	1.9
FRP IR-CH-1200	75258	2.6

Base

Type	Art. no.	Kg/m
FRP IR-BS-600	75254	1.2

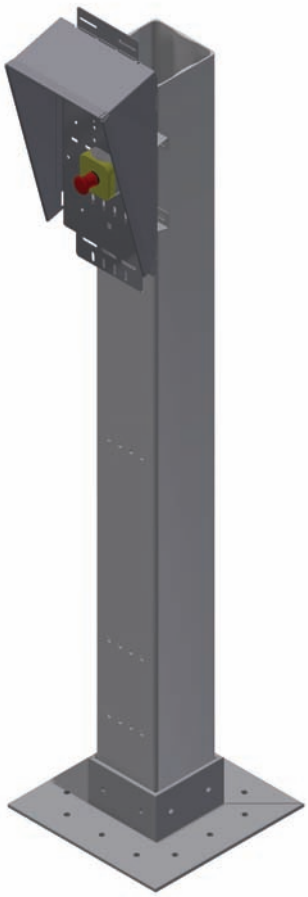
Instrument Stand

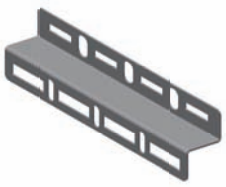
A versatile and stable solution constructed with FRP channels. A compact stand, where equipment can easily be installed on equipment plates or directly onto the channel.

Instrument Stands come pre-drilled and pre-cut for standard equipment plate attachments and cable entry points.

FRP material can be easily drilled and cut to accomodate any additional arrangement.

Type	Art. no.	Kg
S-FRP IS-140-1500	71977	8.3

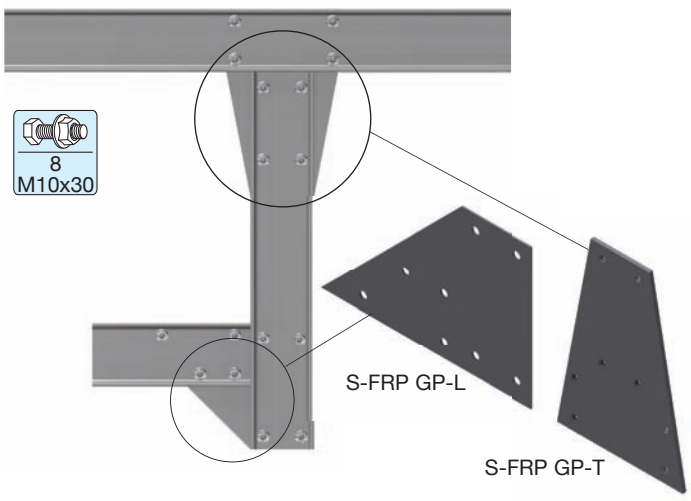




Mounting Bracket
Art no.: 88090

Equipment Plate
Art no.: SP2005

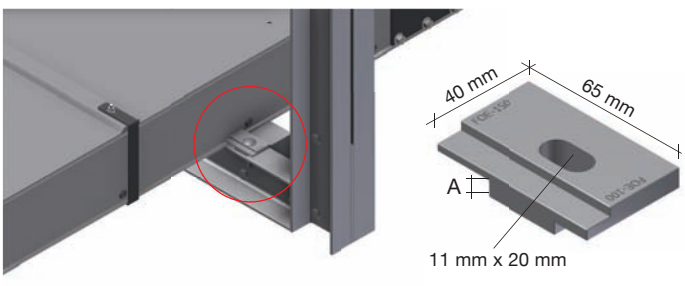
Protective Roof
Art no.: 81372



Gusset Plates T and L for channel support

Type	Art. no.	Kg
S-FRP GP-T	79970	0.5
S-FRP GP-L	79969	0.4

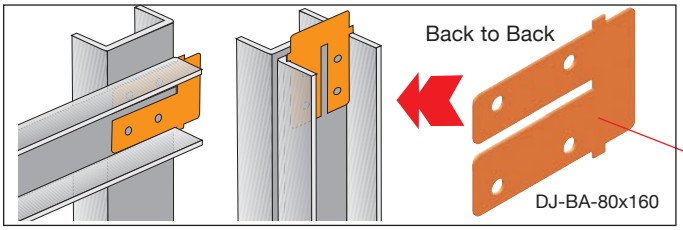
How to use: For easy and quick installation use our Smart Jigs for pre-drilling the 8 holes. See next page.



Fixing/Expansion Clamp

Type	A (mm)	FRP Art. no.	Kg
FOE FC-A40X65	6	71410	0.06

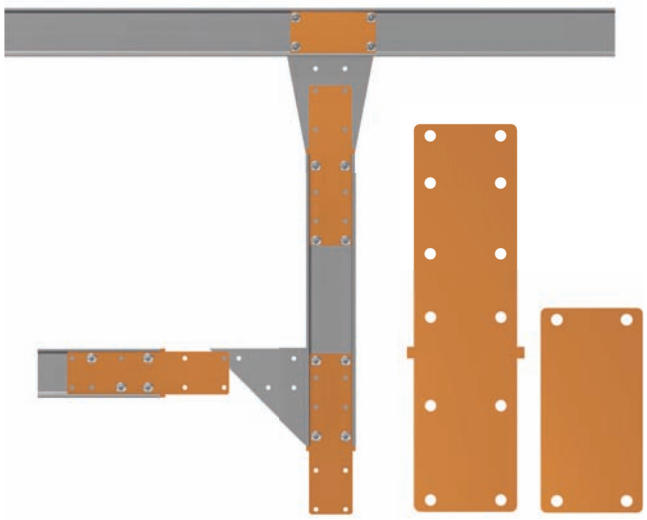
This clamp is suitable for the following products:
FOE-150, FOE-150GA, FOE-100 and FOE-70.
Not suitable for vertical supports. To secure tray or ladder on vertical supports use article number 74783 or 71753.

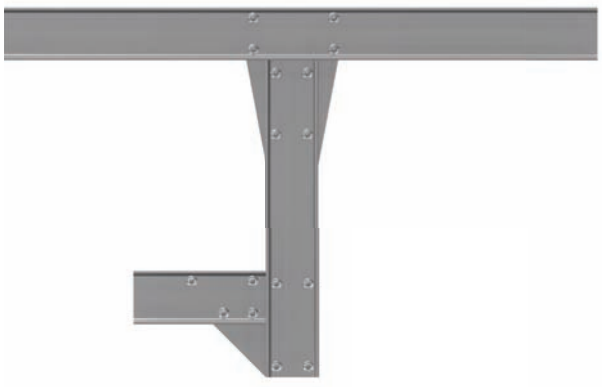


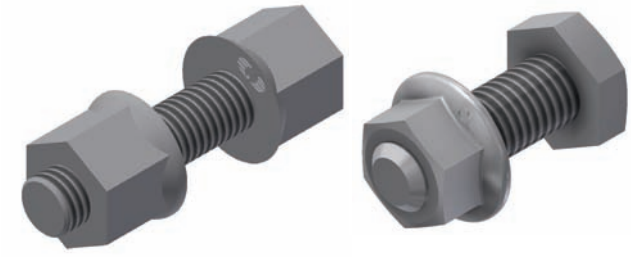
Smart Jig Drilling Jig for 10mm holes

Type	Art. no.	Kg
DJ-BA-80x160	79959	0.2
DJ-GP-L-80x400	79962	0.6
DJ-GP-T-80x200	79961	0.3

With this jig you can pre-drill holes in exact positions when cutting channel lengths on site. After modifications use Oglaend System Sealing Kit to preserve the product quality.







FRP & SS Fasteners

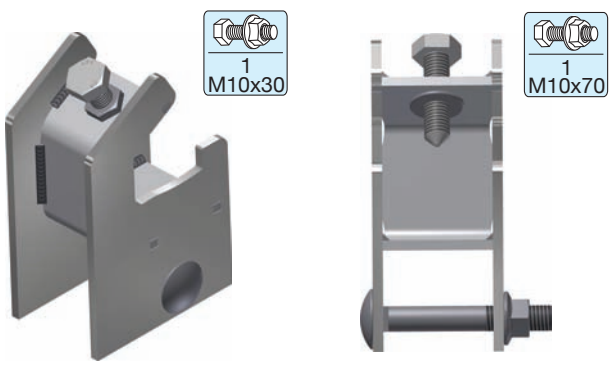
Fibre Reinforced Plastic and Metallic Fasteners suitable for support fixings

Type	Material	Art. no.	Kg
S-M HE-E M10 x 40	FRP	71318	0.013
S-M NU-FL-E M10	FRP	71319	0.005
S-M HE M10 x 30	SS	1371327	0.032
S-M NU-FL M10	SS	1371973	0.012

Spacer Plate for Double Channel Support

Type	Art. no.	Kg
S-FRP SH-100x50	74996	0.05

How to use: Place the plate between the channel ends and hold with a clamp when drilling through.
See our special Smart Jigs above.



Channel Bracket for Stringer

For Stringer Support use special Stringer Brackets with
1 through going M10x70 bolt for channel lengthwise stringer or
1 M10x30 bolt for crosswise channel support.

Type	SS Art. no.
S-FRP BC-ST	73640

Supplied with both M10x30 and M10x70.

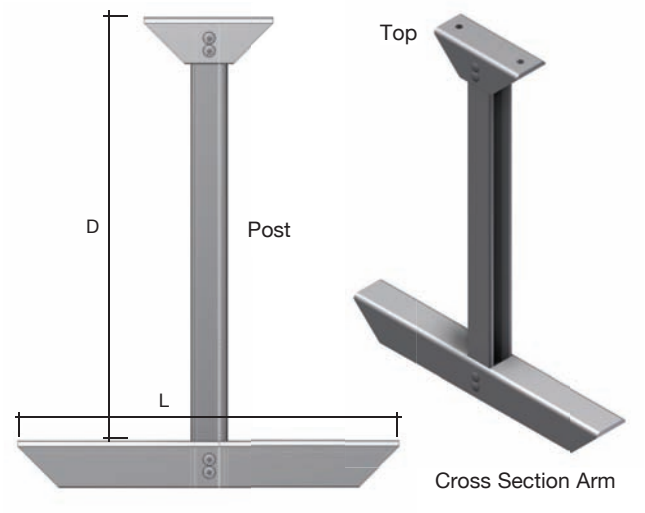
Build your own TRAPEES SUPPORT

Part Description	Length (mm)	Dia (mm)	Pack	FRP Art. no.	Kg/m
Uno Channel					
S-M UNO CH42-1-U-6	6000	–	–	74480	0.87
S-M UNO CH43-1-U-6	6000	–	–	71371	1.12
S-M UNO CH45-1-U-6	6000	–	–	71370	1.34
TFRP Threaded Rod					
S-FRP TR-M10-1500	1500	M10	–	71364	0.15
TPU Nuts					
NU-FL-M10 (40 LF)	M10	–	25	71362	0.007
NU-FL-M10 (26 SF)	M10	–	25	71365	0.007
Support Washer					
S-M Washer	50x37	–	25	71552	0.02
TPU Bolts					
S-M HE-M10x40 (40 LF)	40	M10	25	71359	–
S-M HE-M10x40 (26 SF)	40	M10	25	71413	–
Fixing/Expansion Clamp					
FOE FC-A40x65	–	–	–	71410	0.06
TPU Nut for UNO Channels					
S-UNO NU-M10 (CN-43)	–	M10	25	71551	–

CENTRAL SUPPORT

Type	Depth (mm)	Length (mm)	Loading (kg)	FRP Art. no.	Kg
S-FRP CS-50-150	500	135	310	71440	1.9
S-FRP CS-50-200	500	235	300	71441	2.2
S-FRP CS-50-300	500	335	300	71442	2.5
S-FRP CS-50-400	500	435	260	71443	2.8
S-FRP CS-50-500	500	535	245	71445	3.1
S-FRP CS-50-600	500	635	240	71446	3.4

Safety factor = 3



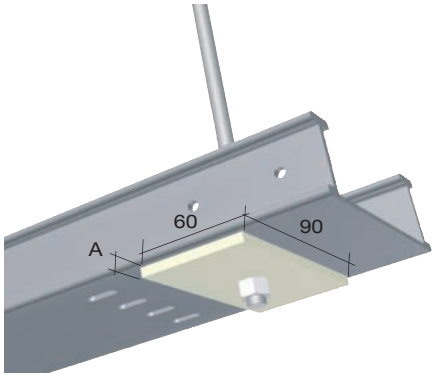
Build your own CENTRAL SUPPORT

Part Description	Length (mm)	Pack	FRP Art. no.	Kg/m
Top Fixing	–	–	71429	0.20
Post				
S-M UNO CH43-1-U-6	6000	–	71371	1.12
Cross Section				
CS-150	200	–	71433	0.25
CS-200	250	–	71434	0.35
CS-300	350	–	71435	0.50
CS-400	450	–	71436	0.65
CS-450	500	–	71437	0.73
CS-500	550	–	71438	0.82
CS-600	650	–	71439	0.98

Top and bottom supports are pre-drilled to accept 2 x M6 x 60 SS316 bolts.

Use the Drill Jig to drill the post once you know the length and insert into top and bottom UNO channel section and insert the M6 x 60 bolts sets.

Part Description	Length (mm)	Pack	SS Art. no.	Kg/m
Bolts				
S-M-PSM6x60	M6	25	71419	0.02
Drill Jig	–	1	71555	–



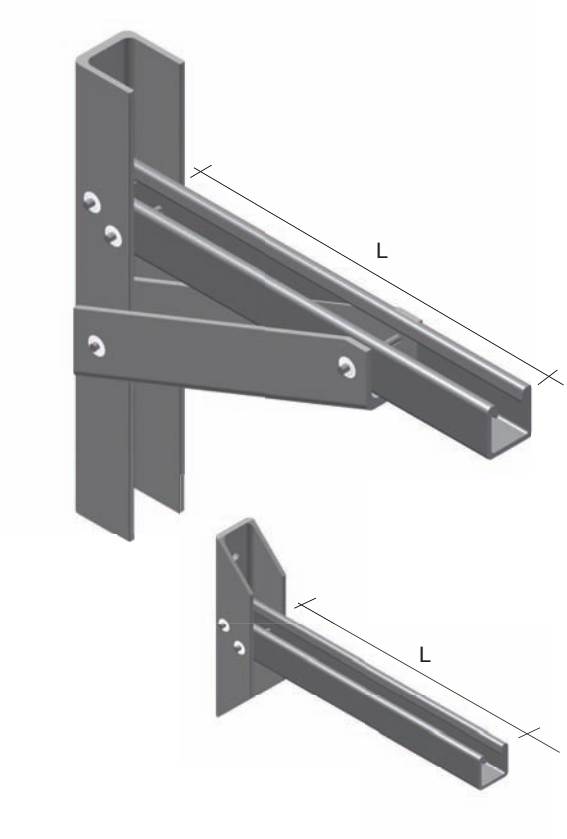
Ceiling Support for FRP Trays

Support Plate with 2 nuts M10

Type	A (mm)	Pack	FRP Art. no.	Kg
S-FRP PL-90x60	6	15	71532	0.10

Threaded Rod

Type		FRP Art. no.	Kg
S-FRP TR-M10-1500		71364	0.15
Glass filled Polyurethane Nut			
Type	**Pack**	**FRP Art. no.**	**Kg**
S-FRP NU-FL-M10	25	71365	0.007



Heavy Duty FRP Cantilever Arm

Type	Dim L (mm)	UDL Kg	Art. no.	Weight Kg
FRP CA-HD-100	135	390	70448	1.0
FRP CA-HD-150	185	380	70449	1.1
FRP CA-HD-200	235	370	70450	1.2
FRP CA-HD-300	335	325	70271	1.5
FRP CA-HD-450	485	225	70272	1.9
FRP CA-HD-600	635	215	70273	2.1
FRP CA-HD-750	785	200	70274	2.3
FRP CA-HD-900	985	170	71553	2.6

UDL = Uniformly Distributed Load - safety factor = 3.
Longer supports can be supplied upon request.

Light Duty FRP Cantilever Arm

Type	Dim L (mm)	UDL Kgf	Art. no.	Weight Kg
FRP CA-LD-50	85	170	71477	0.39
FRP CA-LD-100	135	109	71478	0.43
FRP CA-LD-150	185	81	71479	0.47
FRP CA-LD-200	235	65	71480	0.51
FRP CA-LD-300	335	47	71481	0.57
FRP CA-LD-400	435	41	71482	0.64

UDL = Uniformly Distributed Load - safety factor = 3.
Longer supports can be supplied upon request.

FRP Profile Description:

Channels	Dimensions mm H X W X T X (T)	Shape	VE	Kg	Art. No.
Flat Sheet	926 x 3000 x 3 136 x 3000 x 6.35		NS NS	5.3 1.6	74143C1 74146C1
Equal Angle	37 x 20 x 3000		NS	0.5	74479C1
Unequal Angle	100 x 50 x 6 x 6		NS	1.65	71533C1
Wide Flange Beam	102 x 102 x 6.4 152 x 152 x 6.4 203 x 203 x 9.5		NS NS NS	3.6 5.45 10.85	71537C1 71538C1 71539C1

* denotes strut type profile

NS = none stocked

ØGLÆND SYSTEM

Typical Coupon Properties

Typical coupon properties of Oglaend System Reinforced Plastics structural fiberglass channels (Standard, Polyester & Vinylester fire retardant shapes). Properties derived per the ASTM test method. Surface veil and ultraviolet inhibitors are standard in all channels.

Mechanical Properties	ASTM	Units	PE	VE
Tensile Stress, LW	D-638	psi	30,000	35,000
Tensile Stress, CW	D-638	psi	7,000	10,000
Tensile Modulus, LW	D-638	10^6 psi	2.5	3.0
Tensile Modulus, CW	D-638	10^6 psi	0.8	1.1
Compressive Stress, LW	D-695	psi	30,000	35,000
Compressive Stress, CW	D-695	psi	15,000	20,000
Compressive Modulus, LW	D-695	10^6 psi	2.5	2.5
Compressive Modulus, CW	D-695	10^6 psi	1.2	1.9
Flexural Stress, LW	D-790	psi	30,000	35,000
Flexural Stress, CW	D-790	psi	10,000	14,000
Flexural Modulus, LW	D-790	10^6 psi	1.8	2.0
Flexural Modulus, CW	D-790	10^6 psi	0.8	0.8
Modulus of Elasticity, E Full Section	D-790	10^6 psi	2.6	2.9
Shear Modulus	—	10^6 psi	0.450	0.450
Short Beam Shear	D-2344	psi	4,500	4,800
Punch Shear	D-732	psi	10,000	10,000
Notched Izod Impact, LW	D-256	ft-lbs/in	25	30
Notched Izod Impact, CW	D-256	—	—	—

Physical Properties	ASTM	Units	PE	VE
Barcol Hardness	D-2583	—	47	47
24 Hour Water Absorption	D-570	% max	0.43	0.43
Density	D-792	lbs./in.^{3}	.061-.070	.061-.070
Coefficient of Thermal Expansion, LW	D-696	10^{-6} in/°C	10	10

Electrical Properties	ASTM	Units	PE	VE
Arc Resistance, LW	D-495	seconds	120	120
Dielectric Strength, LW	D-149	kv./in.	35	35
Dielectric Strength, PF	D-149	volts/mil.	200	200
Dielectric Constant, PF	D-150	60hz	8	8

Fire Retardant Polyester and Fire Retardant Vinylester Structural Profiles:

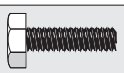
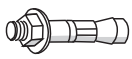
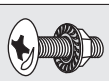
Flammability Properties	ASTM	Units	PE	VE
Tunnel Test	E-84	Flame Spread	25 max.	25 max.
Flammability	D-635	—	Non-burning	Non-burning

SPECIAL SCREWS FOR FRP PRODUCTS: Please also study the following page.

	Type	Where to use	Art. no.
	**Self-Tapping SS Screws** MARUTEX M4.8 x 13 mm	FOR END COVER	1371373
	S-M PS-M10 x 25 Pan head with star and flange nuts	FOR FOE-150 & -100 SPLICE PLATES	74139
	S-M LS-NU-M6 x16 Locking sets with pan head and flange nuts	FOR FTE SPLICE PLATES & FOE COVER	74140

SCREW LIST FOR FRP SUPPORT:

In order of sequence these screws are included as listed below.
Fixing of accessories may need others. Study our complete screw list on page 43.

	**Hexagonal Screw** S-M HE-M10 x 50	FOR BEAM CLAMP LIGHT	1371330
	**Flange Nut** S-M NU-FL-M10	FOR HEXAGONAL SCREW	1371973
	**Hexagonal Screw** S-M HE-M10 x 30	FOR THE MOST CONNECTIONS	1371327
	**Flange Nut** S-M NU-FL-M10	FOR HEXAGONAL SCREW	1371973
	**Hexagonal Screw** S-M HE-M10 x 70	FOR STRINGER BRACKET CROSSWISE	81396
	**Flange Nut** S-M NU-FL-M10	FOR HEXAGONAL SCREW	1371973
	**Anchor Concrete** S-M AC-10 x 60	FOR CONCRETE	1371370
	**Pan Head with Star and Flange Nuts** S-M PS-M10 x 20	FOR FIXING CLAMPS	74145

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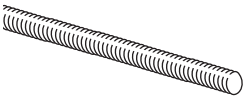
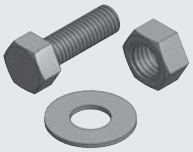
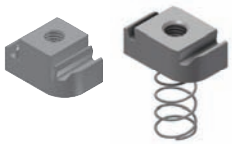
	Type	Material	Diameter	Length mm	Thread Shear (Kgs) Safety Factor = 3	Torque (N-m)	Stdr. packs	Art. no.
	**FRP Threaded Rod** S-FRP TR-M10-1500	FRP	M10	1500	240	8	—	71364
	S-M HE-M10 x 40 S-M HE-M10 x 40	TPU 40 LF TPU 26 SF	M10 M10	40 40	190 140	6 6	25 25	71359 71413
	**TPU Flange Nuts** NU-FL-M10 NU-FL-M10	 TPU 40 LF TPU 26 SF	 M10 M10	 — —	 250 220	 6 6	 25 25	 71362 71365
	**Stud Bolts** S-M HE-M10 x 30 S-M HE-M10 x 50 S-FRP TR-M10-80	 FRP FRP FRP	 M10 M10 M10	 30 50 80	 240 240 240	 8 8 8	 25 25 25	 71487 71488 71489
	**SmartLock Insert in SS for Rung fixing** Metal Pin M8	SS	—	—	—	—	25	71354
	**Optional Bolt Set** S-M HE-M8 x 25 S-M NU-M8 S-M WA-M8	 Nylon Nylon Nylon	 M8 M8 M8	 25 — —	 — — —	 — — —	 50 50 100	 71406 71407 71408
	**Channel Nut Heavy Duty** Fits both CH43 and CH45 S-UNO NU-M10 S-UNO NU-S-M10	 TPU FRP	 M10 M10	 — —	 — —	 — —	 25 25	 71551 72026
	**Heavy-Duty Fire Retardant FRP Fasteners** S-M HE-E-M10 x 40 S-M NU-FL-E- M10	 FRP	 M10 M10	 – –	 185 185	 4.25 4.25	 25 25	 75253 71319
	**Light-Duty Fire Retardant FRP Domehead Fasteners** S-M DH-E-M6 x 20 S-M DH-NU-E-M6	 FRP FRP	 M6 M6	 – –	 20 20	 0.8 0.8	 25 25	 75249 73917
	S-M HE-E-M8 x 45 S-M NU-FL-E- M8	FRP FRP	M8 M8	– –	136 136	2 2	25 25	75250 73918
	**Sleeve Nut** S-M SN-E-M10	FRP	M10	–	–	–	25	73913

ØGLÆND SYSTEM

Chemical exposure chart

The information compiled in this exposure chart is related to data collected from actual projects installed in the field.
Temperatures used are neither minimum nor maximum but represents a cross section of test conditions.
Some products may be suitable for higher temperatures but individual testing should be carried out prior to installation.
Please contact Oglaend System for any special applications you may have.

RESIN SELECTION

Isophthalic ISOFR	Uses modified premium grade Isophthalic polyester resins. Fire retardant and complies with ASTM E 84 and ASTM D635
Vinyl ester VEFR	Uses vinyl ester fire retardant resin and complies with ASTM E 84 and ASTM D635

CHEMICAL EXPOSURE CHART

CHEMICAL ENVIRONMENT	ISO POLYESTER % Concentrate	ISO POLYESTER Temp °F	VINYL ESTER Wt %	VINYL ESTER Temp°F
Acetic Acid	10	190	10	210
Acetic Acid	50	125	50	180
Aluminium Chlorine	SAT	170	SAT	200
Aluminium Hydroxide	SAT	160	SAT	170
Aluminium Nitrate	SAT	150	SAT	170
Aluminium Sulfate	SAT	180	SAT	200
Ammonium Chloride	SAT	170	SAT	190
Ammonium Hydroxide	1	100	10	150
Ammonium Hydroxide	28	■	28	100
Ammonium Carbonate	■	■	SAT	150
Ammonium Bicarbonate	15	125	SAT	130
Ammonium Nitrate	SAT	160	SAT	190
Ammonium Persulfate	SAT	■	SAT	150
Ammonium Sulfate	SAT	170	SAT	200
Amyl Alcohol	ALL	■	ALL	90
Amyl Alcohol Vapor	▲	140	▲	120
Benzene Sulfonic Acid	25	110	SAT	200
Benzoic Acid	SAT	150	SAT	200
Benzoly Alcohol	100	■	100	■
Borax	SAT	170	SAT	200
Calcium Carbonate	SAT	170	SAT	200
Calcium Chloride	SAT	170	SAT	200
Calcium Hydroxide	25	70	25	165
Calcium Nitrate	SAT	180	SAT	200
Calcium Sulfate	SAT	180	SAT	200
Carbon Disulfide	■	■	■	■
Carbonic Acid	SAT	130	SAT	180
Carbon Dioxide Gas	▲	200	▲	200
Carbon Monoxide Gas	▲	200	▲	200
Carton Tetrachloride	■	■	100	75
Chlorine, Dry Gas	▲	140	▲	170
Chlorine, Wet Gas	▲	■	▲	■
Chlorine Water	SAT	■	SAT	90
Chromic Acid	5	70	10	120
Citric Acid	SAT	170	SAT	200
Copper Chloride	SAT	170	SAT	200
Copper Cyanide	SAT	170	SAT	200
Copper Nitrate	SAT	170	SAT	200
Crude Oil, Sour	100	170	100	200
Cyclohexane, Vapor	ALL	100	ALL	130
Diesel Fuel	100	160	100	180
Diethyl Ether	■	■	■	■
Dimethyl Phthalate	■	■	100	80
Ethanol	50	75	50	90
Ethyl Acetate	■	■	■	■
Ethylene Chloride	■	■	■	■
Ethylene Glycol	100	90	100	200
Fatty Acids	SAT	180	SAT	200
Ferric Chloride	SAT	170	SAT	200
Ferric Nitrate	SAT	170	SAT	200
Ferric Sulfate	SAT	170	SAT	200
Ferrous Chloride	SAT	170	SAT	200
Fluoboric Acid	■	■	SAT	165
Fluosilicic Acid	■	■	SAT	75
Formaldehyde	50	75	50	100
Formic Acid	■	■	50	100
Gasoline	100	80	100	150
Glucose	100	170	100	200
Glycerine	100	150	100	200
Heptane	100	110	100	120
Hexane	100	90	100	130
Hydrobromic Acid	50	120	50	120
Hydrobromic Acid	10	150	10	200
Hydrobromic Acid	20	140	20	190
Hydrobromic Acid	37	75	37	95
Hydrobromic Acid	■	■	15	80
Hydrogen Bromide, Dry	100	190	100	200
Hydrogen Bromide, Wet	100	75	100	130
Hydrogen Chloride	▲	120	▲	200
Hydrogen Peroxide	30	■	30	80
Hydrogen Sulfide, Dry	■	140	ALL	180
Hydrogen Sulfide, Wet	V	140	V	180
Hypochlorous Acid	10	70	20	100
Isopropyl Alcohol	■	■	15	80
Kerosene	100	140	100	180

CHEMICAL ENVIRONMENT	ISO POLYESTER % Concentrate	ISO POLYESTER Temp °F	VINYL ESTER Wt %	VINYL ESTER Temp °F
Lactic Acid	SAT	170	SAT	200
Lead Acetate	SAT	170	SAT	200
Lead Chloride	SAT	140	SAT	200
Lead Nitrate	SAT	▲	SAT	200
Linseed Oil	100	150	100	190
Lithium Chloride	SAT	150	SAT	190
Magnesium Carbonate	SAT	140	SAT	170
Magnesium Chloride	SAT	170	SAT	200
Magnesium Hydroxide	SAT	150	SAT	190
Magnesium Nitrate	SAT	140	SAT	180
Magnesium Sulfate	SAT	170	SAT	190
Mercuric Chloride	SAT	150	SAT	190
Mercurous Chloride	SAT	140	SAT	180
Mineral Oils	100	170	100	200
Naptha	100	140	100	170
Nickel Chloride	SAT	170	SAT	200
Nickel Nitrate	SAT	170	SAT	200
Nickel Sulfate	SAT	170	SAT	200
Nitric Acid	5	140	5	150
Nitric Acid	20	70	20	100
Oleic Acid	100	170	100	190
Oxalic Acid	ALL	75	ALL	200
Paper Mill Liquors	▲	100	▲	120
Perchlorethylene	100	■	100	80
Perchloric Acid	■	■	10	150
Perchloric Acid	■	■	30	80
Phosphoric Acid	10	160	10	200
Phosphonic Acid	100	120	100	200
Potassium Aluminium Sulfate	SAT	170	SAT	200
Potassium Bicarbonate	50	80	50	140
Potassium Carbonate	10		10	120
Potassium Chloride	SAT	170	SAT	200
Potassium Dichromate	SAT	170	SAT	200
Potassium Hydroxide	■	■	25	150
Potassium Nitrate	SAT	170	SAT	200
Potassium Permangante	SAT	75	SAT	200
Potassium Sulfate	SAT	170	SAT	200
Propylene Glycol	ALL	170	ALL	200
Phthalic Acid	▲	▲	SAT	200
Sodium Acetate	SAT	160	SAT	200
Sodium Benzoate	SAT	170	SAT	200
Sodium Bicarbonate	SAT	160	SAT	175
Sodium Bisulfate	ALL	170	ALL	200
Sodium Bromide	ALL	170	ALL	200
Sodium Carbonate	10	80	35	160
Sodium Chloride	SAT	170	SAT	200
Sodium Cyanide	SAT	170	SAT	200
Sodium Hydroxide	■	■	10	150
Sodium Hydroxide	■	■	25	80
Sodium Hypochlorite	■	■	10	150
Sodium Monophosphate	SAT	170	SAT	200
Sodium Nitrate	SAT	170	SAT	200
Sodium Sulfate	SAT	170	SAT	200
Sodium Thiosulfate	ALL	100	ALL	120
Stannic Chloride	SAT	160	SAT	190
Sulfated Detergent	0/50	170	0/50	200
Sulfur Dioxide	100	80	100	200
Sulfur Trioxide	100	80	100	200
Sulfuric Acid	93	■	93	N/R
Sulfuric Acid	50	■	50	175
Sulfuric Acid	25	75	25	190
Sulfurous Acid		80	■	
Tartaric Acid		170		200
Tetrachloroethylene	■	■	■	■
Toluene	■	■	■	■
Trisodium Phosphate			SAT	175
Urea	SAT	130	SAT	140
Vinegar	100	170	100	200
Water, Distilled	100	170	100	190
Water, Tap	100	170	100	190
Water, Salt	SAT	170	SAT	190
Zinc Chloride	SAT	170	SAT	200
Zinc Nitrate	SAT	170	SAT	200
Zinc Sulfate	SAT	170	SAT	200

LEGEND: SAT - SATURATED, ▲- NOT AVAILABLE, ■ - NOT RECOMMENDED, V - VAPOURS

Installation Guidelines

OGLAENDS FRP/GRP system offers the best possible protection for today's demanding environment. To prolong the service life of the product it should be installed in compliance with the standards set forth by the **National Electric Code and NEMA Publications FG-1 (current issue).**

1. Always observe common safety procedures. When a circular power saw is used, always wear safety glasses, suitable dust mask and gloves.
2. Overalls or suitable clothing would also protect the operator during sawing or cutting, machining or sanding operations. Although the dust created is non-toxic and presents no serious health issues, it can cause skin irritation. The amount of irritant varies among different individuals and can be reduced or eliminated by use of protective clothing and/or protective creams.
3. Avoid excessive pressure when sawing or drilling. Excessive force can wear the tooling down (Diamond or carbide grit edged saw blades, carbide tip drill bits are best suited for fiberglass).
4. Refrain from generating excessive heat in any sawing or drilling operation. Excessive heat softens the resin thus resulting in a rough rather than a clean edge. Excessive heat will burn resin and fiberglass.
5. Support the fiberglass profile material rigidly during the cutting or drilling process. Movements may cause chipping at the profile edges.
6. Always touch-up or seal any cut surfaces or edges of the fiberglass shape before installing as this will prolong the service life.
7. When installing cable ladder or tray product from Oglaend, ensure that you use original parts which make up part or all of the main support system, for example splice plates, fittings, fixing clamps and FRP supports. The use of non Oglaend's product in your management system could affect the loading performance and warranty of the total system.

WARNING! Not to be used as a walkway, ladder or support for personnel. To be used only as a mechanical support for cables and tubing.

Cable ladders are designed as a support for power or control cables, or both and is not intended or designed to be a walkway for personnel.

Storage and Handling Tips

1. FRP/GRP non-metallic cable tray can be stored outdoor but it is always best practice to keep it covered where possible. Product should be elevated off the ground and at an angle to prevent water build-up or other foreign objects staining or bonding to cable ladder.
2. If appearance is important, FRP/GRP products should be stored indoors.
3. FRP/GRP should be kept away from high traffic areas and should be palletized by width and type.
4. If unloading by hand, workers should wear gloves and if necessary glasses too.
5. To prevent damages, never pull from the truck by chaining to bottom rung and pulling out of truck as this may cause serious damage.
6. Special care must be taken when slings are used to prevent ladder or tray from crushing as a result of improper handling.
7. Avoid using any chemical cleaning agents to clean the surface of the product. If the products requires cleaning use water first or contact the manufacturer for advice.
8. The recommended number of standard 3m/10ft (long) x 900mm/36" (wide) x 150mm/6" (height) ladder/tray should be 10 per pallet, for 100mm/4" high profile it should be 16 per pallet (Guide only).
9. If you are required to re-band the ladders please exercise care when using steel banding/strapping or use plastic to avoid damaging the product during transit.

OGLAEND SYSTEM PROJECT LIST FOR FRP

CLIENT	PROJECT	LOCATION	PRODUCT
Adyard	Indago	Abu Dhabi	FOE-150 Ladders, Trays
Adyard	Maersk	Abu Dhabi	FTE Trays-50-300 Tray Fittings
Arabian Falcon	Adyard	Abu Dhabi	FTE Trays
Gulf Piping	Offshore	Abu Dhabi	FOE-100 Ladders, Fittings
Maersk	General products	Abu Dhabi	FOE Ladders (Nema 20C)
NPCC	Maersk	Abu Dhabi	FOE Ladders and FTE and FTE Trays, Fittings (Nema 20C)
Total	CLOV FPSO	Angola	FOE 70, FTE 50
Alfasi	Desalination Plant	Australia	FOE 70
Leonard Electrics	State Aquatic Centre	Australia	FOE 70
Downer EDI	SSJV Desalination Plant	Australia	FOE 100 Ladder, Fittings HD Supports
Downer EDI	SSJV Desalination Plant Phase 2	Australia	FOE 100 Ladder, Fittings HD Supports
Southern Cross Electrical	Pigment plant upgrade	Australia	FOE 100 Ladder
Vestas Wind Mill	Various Windwill Park	Australia	Support Channels
BP	Accomodation	Azerbaijan	FOE-100 Ladder, Fittings
BelWind	Transformer Platform	Belgium	FOE Ladder, FTE Tray, FRP Support
London Array	Transformer Platform	Belgium	FOE, FTE, FTE Antistatic, FRP Support
Conoco Philips	RUP Bohai Bay	China	FOE-150 Ladders and Fittings
Conoco Philips	Well Head, D,E,F Bohai Bay	China	FOE-150 Ladders
ETS Track	Boulevard Tunnel	Denmark	FOE-70 Ladders
Semco Maritime	Horns Rev 2 Accomodation	Denmark	FOE Ladders and FTE Trays
Vestas Wind Mill	Various Windmill park	Denmark	Support Channels
Copenhagen Zoo	Artic Ring	Denmark	FOE 70
BK Gulf	Atlantis	Dubai	FOE-100 Ladders, FTE Trays & Fittings
BK Gulf	Palm Island	Dubai	FOE-100 Ladders, Fittings
BK Gulf	Palm Interchange	Dubai	FOE-100 Ladders, Fittings
Chalmers	Tapti project	Dubai	FTE Trays & Fittings
Cumberland Electro Services	DPE Fateh	Dubai	FTE Trays
Danway Electrical	DUBAL	Dubai	FTE Trays and Fittings
Dubai Petroleum	General projects	Dubai	Various FTE Trays
Hydrolink	Al Shaheen	Dubai	FTE Tray
Innovative Technology	Various project	Dubai	FTE Trays
JR McDermott	Maersk	Dubai	FOE Ladders and FTE Trays, Fittings (Nema 20C)
Kaz Intertrade	Oil & Gas	Dubai	FOE Ladders
Lamprell	Various project	Dubai	Etin Clamps, FTE Trays, FOE Ladders
Lamprell	Gulphino	Dubai	FTE Trays
Metito	Oil & Gas	Dubai	FTE Trays
SBM	FPSO	Dubai	FOE-150 Ladders (Nema 20C)
SEMCO Maritime	Various project	Dubai	All products
Suliman Petrotech	Oil & Gas	Dubai	FTE Trays
Alderley FZE	Various project	Dubai/UK	FTE Trays, Fittings
Vestas Wind Mill	Various Windmill Park	Germany	Support Channels
British Gas India	Tapti project	India	FOE 150 Ladders (Nema 20C)
Aqua Treat	Oil & Gas	Jordan	FTE Trays
JV Inkai	Petrochemical plate	Kazakhstan	FOE-150 Ladders and Fittings
Sime Darby	Maersk	Malaysia	FOE Ladders and FTE Trays, Fittings (Nema 20C)
Sime Darby	Maersk	Malaysia	FOE-150 Ladders (Nema 16B)
Sime Darby	Kumang Cluster	Malaysia	FOE-150 Ladders, Fittings and FTE Trays
Lynas	Lamps Up	Malaysia	FOE Ladders (Nema 20C)
SMOE	Zatwika Project	Myanmar	FOE 150, FTE 50
DONG Energy	Transformer Platform	Netherland	FOE Ladders
Hemworthy	Pazfloor FPSO	Norway	FTE Tray
Siemens	Norsk Hydro	Norway	FOE Ladders, FTE Trays and FRP Support
Avinor	Sola Airport	Norway	FOE 70, FTE 50, Support Channels
Cegelec	New Doha Airport	Qatar	FOE-100 Ladders
Kentech Qatar Technical Services	Qatargas II	Qatar	FTE Tray
Maersk	Project at Adyard	Qatar	FOE-150 Ladders and FTE Trays (Nema 20)
Mw Kellog	Shell Pearl	Qatar	FOE Ladders and FTE Trays (Nema 20C)
Prochem Engineering	Oil & Gas	Qatar	FOE Ladders
Qatar Aviation Fuels	Jetty area	Qatar	FTE-150 Ladders
Qatar Kentz	Qatargas	Qatar	FOE-150 Ladder
Qatar Petroleum	Jetty area	Qatar	FOE Ladders (Nema 20C)
Washington Group International	Qatargas	Qatar	FTE Tray
Qatar Gas	Qatar Gas Modification Raslaffan	Qatar	FOE 150
Cegelec	New Doha Airport	Qatar	FOE 100, FTE 50
Qatar Gas	Laffan Refinery	Qatar	FTE 50
Acciona Infraestructura	Adriatic LNG	Spain	FOE-100 Ladders, Fittings
Viny Thai	Windmill, Chemical plant	Thailand	FRP Tray
PTTEP	Montara	Thailand	FRP Ladder Tray
PTTEP	Bongkot	Thailand	FRP/Ladder Tray
PTTEP	Arthit (Maintenance)	Thailand	FRP/Ladder Tray
Pearl Oil	PPB2 Power System	Thailand	FRP/Ladder Tray
PTTEP	Montara	Thailand	FRP Ladder Tray
PTTEP	Bongkot (Maintenance)	Thailand	FRP/Ladder Tray
Pearl Oil	PPB2 Power System Improvement	Thailand	FRP Ladder Tray
PTTEP	PTTEP Bundle Project	Thailand	FRP/Ladder Tray
CPOC	CPOC JKB	Thailand	FRP/Ladder Tray
CPOC	CPOC MDE	Thailand	FRP/Ladder Tray
Salamander	Salamander B	Thailand	FRP/Ladder Tray
PTTEP	BC3	Thailand	FRP/Ladder Tray
Dragon Oil	Zhdanov A, Crane Vessel	Turkmenistan	FOE Ladders and FTE Trays
Adma Opco	Zadco Central Super Complex	UAE	FOE 150 GA, FTE 50
Adma Opco	Zadco Pressure Upgrade	UAE	FOE 150 GA, FTE 51
Gasco	Ruwais Jetty	UAE	FOE 150, FTE 50
Dubai Petroleum	Al Jalil Platform	UAE	FOE 150, FTE 50
Adma Opco	Potable Water Zirku Island	UAE	FTE 80
Seatrax UK	Al Shaheen	UK	FTE Trays for the cranes construction
Acciona	Croydon Tunnels	UK	FTE-50 & FOE-100
British Fuels	Not available	UK	FTE Trays & Fittings
Fabricom	Liverpool Dock	UK	FTE-50, FOE-100 & Supports
Farebrother	Thorton Bio Waste	UK	FTE-50, FOE-150 & Supports
Goodwin & Price	Birmingham Queensway	UK	FTE-80 & Supports
Vestas Wind Mill	Various WIndmill Park	UK	Support Channels
London Array	Offshore WIndmill	UK	Support Channels
Vung Ang FLSmith	Coal Fire Thermal Power Plant	Vietnam	FOE 70

* A selection of projects completed between 2007 & July 2012.

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SIMPLY THE BEST!

This has been our motto since the company was founded in 1977.
By living up to this motto, we have become the market leader worldwide in our field.

Oglaend System´s goal is to develop systems that are better, simpler and more economic.

ISO 9001 REGISTERED
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UKAS MANAGEMENT SYSTEMS
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