

**ALPHASTRUT®**  
THE ALUMINIUM SUPPORT SYSTEM



The revolution in weight saving offshore

# Weigh up the options

**Save weight, time and cost on module construction – with no compromise on quality**

Minimising the weight of structures such as LQ and LER modules on offshore platforms and FPSOs is a top priority for oil companies and their contractors. By reducing the weight of 'non-production' facilities on the platform, oil companies can maximise the amount of revenue-generating extraction and production kit onboard.

Choosing lightweight components also reduces installation and shipping costs, cuts programme times and improves safety.

The Alphastrut aluminium support system is a revolutionary, lightweight, load-bearing alternative to conventional steel support frameworks.

**Half the weight of steel support systems**  
The low density of aluminium makes Alphastrut more than 50% lighter than steel alternatives, while the unique design gives Alphastrut sections an improved strength-to-weight ratio over steel products with the same load-bearing capacity.

**Less than half the cost of stainless steel**  
Combine this with cost savings of more than 60% over stainless steel, and you have the ideal weight and cost-saving solution, with no compromise on strength, durability or sustainability.

**Versatile system for multiple applications**  
The versatility of Alphastrut means it can also be used for a variety of other applications, such as support grids and frameworks for all M&E services, including pipework, cable management, HVAC and architectural installations.

Cover image: LQ module being lifted onto Valhall accommodation platform

# Benefits of the system



WEIGHT SAVING



COST SAVING



STRENGTH TO WEIGHT



100% RECYCLABLE



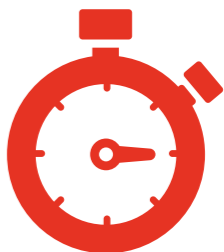
NO HOT WORK



LESS MANUAL  
HANDLING



NO SURFACE  
COATING



SHORTER  
ASSEMBLY  
TIMES

## Weight Saving

Reduce the weight of raised floor support frameworks by 50%

The Alphastrut system is more than 50% lighter than the steel floor support systems traditionally used in offshore modules. Its load-bearing capacity also negates the requirement for additional steel plinths to support heavy control cabinets, which can be mounted directly onto the floor grid, again reducing weight and fabrication times. By lightening the load on living quarter modules, oil companies can increase the amount of production equipment carried on an oil platform or FPSO.

## Low Cost

Save more than 60% on the cost of floor and service supports

As well as saving on weight when you specify Alphastrut, you'll also save money. The system is up to 60% cheaper than stainless steel alternatives. The lighter weight of Alphastrut also means that greater quantities can be shipped on single barges and offloaded by crane. Choosing Alphastrut over steel systems could therefore significantly reduce the cost of shipping – and help to accelerate the delivery phase of your construction programme. And, of course, faster construction means platforms can be operational more quickly, giving oil companies a faster return on investment and contractors an opportunity to earn early-completion and weight-saving bonuses.

## High Strength

Innovative design delivers all the strength of steel

The ingenious design of Alphastrut includes a T-shaped cross section within the strut, which provides enhanced rigidity and strength. In fact, this design feature gives Alphastrut a higher strength-to-weight ratio than steel, so there'll be no loss of structural integrity or load-carrying capacity when you opt for Alphastrut. Essentially, you'll be saving 50% on the weight of all your overhead service and floor supports, with no loss of performance.

## Sustainability

100% recyclable components

In an environmentally conscious industry, aluminium is the ultimate sustainable choice of construction material. It can be recycled endlessly with no loss of quality or performance. Re-melting requires very little energy, which means recycling aluminium uses 95% less energy than producing new primary aluminium.

## Easy to Install

Safe, rapid installation reduces programme times and costs

The light weight of Alphastrut components makes them easy to handle and quick to install.

### Clean system ready for immediate use

Alphastrut is a very clean system too, with no need for degreasing or other cleaning operations. As soon as it is installed, the next phase of fitting out can begin immediately.

### Bolt-together frame with no hot work permit

Sections can be sawn to size, and the framework is simply bolted together using custom-made brackets. There is no need for welding or other hot working, which means installation teams won't require hot-working permits.

The framework is anodised to protect the surface of the aluminium, so it requires no final treatment once installed.

### Improved site safety

Specifying Alphastrut makes for a safer installation. The absence of hot working means there are no fire risks, while the lightweight components mean there is no strenuous manual handling.



**50 years** offshore  
life expectancy

# Performance in a tough environment

## Corrosion Resistance

Proven long-life performance  
in harsh marine conditions

Alphastrut is highly corrosion resistant and has an anodised surface for enhanced protection. It has been extensively tested for durability in the marine environment and provides equivalent performance to stainless steel.

The system has passed a 1,000-hour salt-spray test, indicating an expected life of up to 25 years in an external marine environment. In reality, Alphastrut is usually located internally, and so has limited exposure to salt spray – meaning its true lifespan, for internal applications, is expected to be in excess of 50 years.

# Frequently asked questions

### Q: How does Alphastrut perform in a fire?

A: Aluminium is non-combustible and has a zero flame spread rating. As such it will not contribute to the spread of a fire.

### Q: How long will Alphastrut survive

**in a marine/salt water spray  
atmosphere?**

A: Alphastrut is anodised to AA25 marine grade. Alphastrut has been through an accelerated salt spray test, comfortably passing 1,048 hours. This gives it a life expectancy in excess of 30 years, which gives it a comparable resistance to corrosion to stainless steel.

### Q: What loads will Alphastrut carry?

A: Alphastrut AC-01 channel has been designed to carry loads similar to those carried by standard 41 x 41 x 2.5 steel or stainless steel channels. Its structure incorporates two boxes on the bottom side to enhance its load capacity. Thus, if standard channels can carry your required load, then Alphastrut will be able to.

### Q: How much weight will I save if I use Alphastrut?

A: Alphastrut AC-01 is approx. 48% lighter than standard channels, and the aluminium brackets are approx. 66% lighter than standard brackets. As a rule of thumb, you will save at least 50% over conventional systems.

### Q: How does Alphastrut overcome the issue of "thermic sparking"?

A: BS EN 60079-14:2008 section 5.10 states that: "Particular consideration shall be given to the location of items that incorporate light metals in external construction as it has been well established that such materials give rise to sparking that is incendive under conditions of frictional contact."

Section 5.10.1 states  
*"Installation materials (e.g. cable trays, mounting plates, weather protection) shall not contain by mass more than:*

**For location EPL 'Ga'**  
*10% in total of aluminium,  
magnesium and zirconium or  
7.5% in total of magnesium,  
titanium and zirconium*

**For EPL 'Gb'**  
*7.5% magnesium and titanium*

**For location EPL 'Gc'**  
*No requirements"*

Hence Alphastrut, which contains over 97% aluminium, 0.6% magnesium and 0.1% titanium, need only be excluded from EPL 'Ga' areas, which equate to hazardous zones 0 and 20. Whilst zone 0 exists on platforms, the requirement for Alphastrut in these areas is nil. Hence sparking is not an issue when considering the benefits of using Alphastrut in an offshore application.

### Q: What about galvanic corrosion?

A: When fixing Alphastrut back to a steel beam or structure, the precautions are the same as if fixing stainless steel. However, if being used in an external application you should use A4 stainless steel channel nuts, screws and washers. These have been tested against other fixings, such as coated stainless steel and galvanised. All three were subject to the same salt spray test, and the stainless steel fixings passed the accelerated test with minimal sacrificial corrosion.

### Q: How much extra will I have to pay for all the benefits of Alphastrut?

A: Alphastrut will not cost any more than conventional stainless steel systems. In fact, it will save you in the region of 40% over the cost of stainless steel.

# Versatile System

## Alphastrut can be adapted for varying loads and applications

Alphastrut is available in a number of different section types and sizes with specific cross-sections, to suit varying load requirements.

### Design and specification support service

Alphastrut specialists can advise you on the most suitable sections for your particular application. If you supply details of your service support and raised access floor requirements, we will select the most appropriate sections and framework design for your application. We can then supply a bespoke kit of parts to meet your needs.

To simplify specification and installation, the same structural sections are used for both vertical supports and horizontal beams. Custom-made brackets are supplied for all joints and connection points.

### Multiple applications – in multiple sectors

The light weight, ease of installation and cleanliness of the Alphastrut system also makes it an ideal solution for a host of other uses in many different sectors.

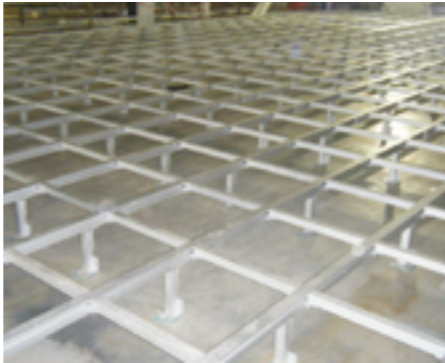
For example, it can be used for raised access flooring and services support in clean room environments for pharmaceutical, food preparation, manufacturing or IT companies. It can be used in the retail sector for shopfloor fittings, wall panel supports, exposed service supports and other applications where light weight, cleanliness and aesthetics are essential.

The versatility of the system offers a wealth of possibilities. Our specialists can advise you on adapting the Alphastrut system for different applications.

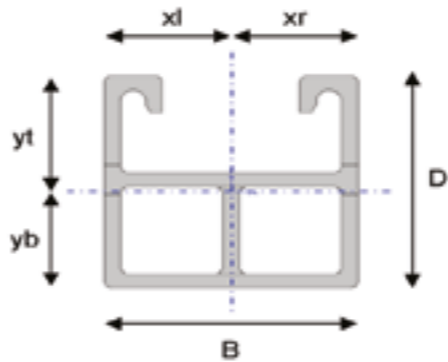
### Responsive deliveries – manufactured to order, with short lead times

Alphastrut sections are available on very short lead times. We hold most sections in stock, but with a manufacturing lead time of just two weeks, we can manufacture to order for most projects – and deliver worldwide.

PDMS data is available from our website at [www.alphastrut.com](http://www.alphastrut.com)



## Section AC-01

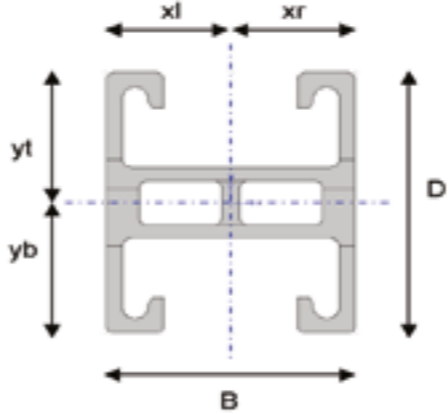


Material: Aluminium Alloy 6060-T6

### Cross-sectional properties:

A	(cm <sup>2</sup> )	5.433
M	(kg/m)	1.467
D	(mm)	42
B	(mm)	42
tw	(mm)	2.7
xl	(mm)	21
xr	(mm)	21
yt	(mm)	23.176
yb	(mm)	18.824

## Section AC-02



Material: Aluminium Alloy 6060-T6

### Cross-sectional properties:

A	(cm <sup>2</sup> )	7.008
M	(kg/m)	1.892
D	(mm)	53.0
B	(mm)	42.0
tw	(mm)	2.7
xl	(mm)	21.0
xr	(mm)	21.0
yt	(mm)	26.5
yb	(mm)	26.5

## Member Capacities: Capacity Results to BS 8118: Part 1

Strut/Beam Span mm	F <sub>max</sub> (kN) Max Deflection = L/200		F <sub>max</sub> (kN) Max Deflection = L/200		F <sub>max</sub> (kN)
	F <sub>UDL</sub> (kN)	δ <sub>UDL</sub> (mm)	F <sub>PL</sub> (kN)	δ <sub>PL</sub> (mm)	
250	9.095	0.3	6.297	0.3	33.0
500	6.293	1.5	3.143	1.2	28.3
750	4.189	3.4	2.089	2.7	22.6
1000	3.135	6.0	1.560	4.8	17.0
1250	2.502	9.4	1.241	7.5	12.5
1500	2.078	13.6	1.028	10.9	9.4
1750	1.774	18.5	0.874	14.8	7.3
2000	1.545	24.1	0.758	19.3	5.8
2250	1.366	30.5	0.666	24.4	4.7
2500	1.223	37.7	0.593	30.2	–

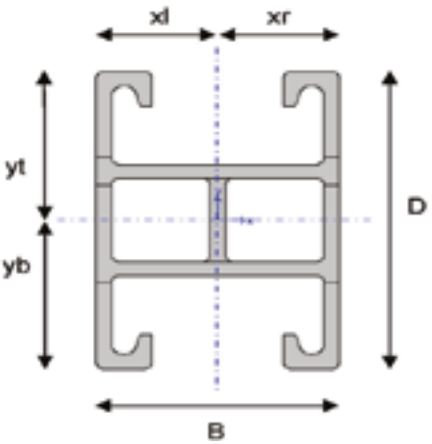
Notes: Load capacity = UDL total characteristic (working) load in kN. Welding will reduce the member capacities, please seek advice. Limiting stresses: po=150N/mm<sup>2</sup>, pa=190N/mm<sup>2</sup>, pv=105N/mm<sup>2</sup> for use with BS 8118: Part 1 design only. Allowance for self weight of profile made i.e. stated F = Load applied to profile. No allowance made for bearing/local crushing due to concentrated load. Above table is not to use for replacement of detailed structural design. For design criteria deviating from BS 8118, please seek advice.

## Member Capacities: Capacity Results to BS 8118: Part 1

Strut/Beam Span mm	F <sub>max</sub> (kN) Max Deflection = L/200		F <sub>max</sub> (kN) Max Deflection = L/200		F <sub>max</sub> (kN)
	F <sub>UDL</sub> (kN)	δ <sub>UDL</sub> (mm)	F <sub>PL</sub> (kN)	δ <sub>PL</sub> (mm)	
250	12.221	0.2	8.455	0.3	49.5
500	8.451	1.3	4.221	1.1	43.2
750	5.626	3.0	2.806	2.4	35.7
1000	4.211	5.3	2.096	4.2	27.8
1250	3.360	8.3	1.668	6.6	21.0
1500	2.791	11.8	1.382	9.5	16.0
1750	2.384	16.1	1.175	12.9	12.5
2000	2.077	21.1	1.020	16.9	9.9
2250	1.837	26.7	0.897	21.4	8.1
2500	1.644	33.0	0.799	26.4	6.7

Notes: Load capacity = UDL total characteristic (working) load in kN. Welding will reduce the member capacities, please seek advice. Limiting stresses: po=150N/mm<sup>2</sup>, pa=190N/mm<sup>2</sup>, pv=105N/mm<sup>2</sup> for use with BS 8118: Part 1 design only. Allowance for self weight of profile made i.e. stated F = Load applied to profile. No allowance made for bearing/local crushing due to concentrated load. Above table is not to use for replacement of detailed structural design. For design criteria deviating from BS 8118, please seek advice.

Section AC-2C



Material: Aluminium Alloy 6060-T6

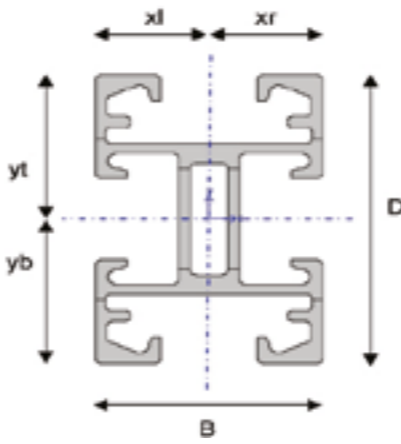
Cross-sectional properties:			
A	(cm <sup>2</sup> )	7.146	
M	(kg/m)	1.929	
D	(mm)	61.3	
B	(mm)	42.0	
tw	(mm)	2.7	
xl	(mm)	21.0	
xr	(mm)	21.0	
yt	(mm)	30.65	
yb	(mm)	30.65	

Member Capacities: Capacity Results to BS 8118: Part 1

Strut/Beam Span mm	F <sub>max</sub> (kN) Max Deflection = L/200		F <sub>max</sub> (kN) Max Deflection = L/200		F <sub>max</sub> (kN)
	F <sub>UDL</sub> (kN)	δ <sub>UDL</sub> (mm)	F <sub>PL</sub> (kN)	δ <sub>PL</sub> (mm)	
250	14.495	0.2	11.192	0.2	51.1
500	11.187	1.1	5.589	0.9	45.2
750	7.450	2.6	3.718	2.1	38.4
1000	5.579	4.5	2.780	3.7	30.9
1250	4.455	7.1	2.215	5.7	24.0
1500	3.703	10.3	1.837	8.2	18.6
1750	3.165	13.9	1.566	11.2	14.6
2000	2.760	18.2	1.361	14.6	11.7
2250	2.445	23.0	1.201	18.5	9.5
2500	2.191	28.5	1.071	22.8	7.9

Notes: Load capacity = UDL total characteristic (working) load in kN. Welding will reduce the member capacities, please seek advice. Limiting stresses: po=150N/mm², pa=190N/mm², pv=105N/mm² for use with BS 8118: Part 1 design only. Allowance for self weight of profile made i.e. stated F = Load applied to profile. No allowance made for bearing/local crushing due to concentrated load. Above table is not to use for replacement of detailed structural design. For design criteria deviating from BS 8118, please seek advice.

Section AC-04



Material: Aluminium Alloy 6060-T6

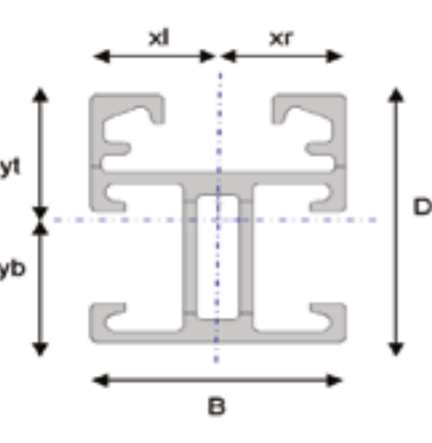
Cross-sectional properties:		
A	(cm <sup>2</sup> )	11.841
M	(kg/m)	3.197
D	(mm)	80.5
B	(mm)	53.0
tw	(mm)	2.7
xl	(mm)	26.5
xr	(mm)	26.5
yt	(mm)	40.25
yb	(mm)	40.25

Member Capacities: Capacity Results to BS 8118: Part 1

Strut/Beam Span mm	F <sub>max</sub> (kN) Max Deflection = L/200		F <sub>max</sub> (kN) Max Deflection = L/200		F <sub>max</sub> (kN)
	F <sub>UDL</sub> (kN)	δ <sub>UDL</sub> (mm)	F <sub>PL</sub> (kN)	δ <sub>PL</sub> (mm)	
250	27.209	0.1	27.201	0.2	87.9
500	27.209	0.8	14.261	0.7	79.3
750	19.012	2.0	9.494	1.6	69.6
1000	14.245	3.5	7.107	2.8	58.6
1250	11.382	5.4	5.671	4.3	47.6
1500	9.470	7.8	4.711	6.3	38.0
1750	8.102	10.6	4.023	8.5	30.4
2000	7.074	13.9	3.505	11.1	24.6
2250	6.273	17.5	3.101	14.1	20.3
2500	5.631	21.7	2.776	17.4	16.9

Notes: Load capacity = UDL total characteristic (working) load in kN. Welding will reduce the member capacities, please seek advice. Limiting stresses: po=150N/mm², pa=190N/mm², pv=105N/mm² for use with BS 8118: Part 1 design only. Allowance for self weight of profile made i.e. stated F = Load applied to profile. No allowance made for bearing/local crushing due to concentrated load. Above table is not to use for replacement of detailed structural design. For design criteria deviating from BS 8118, please seek advice.

Section AC-03



Material: Aluminium Alloy 6060-T6

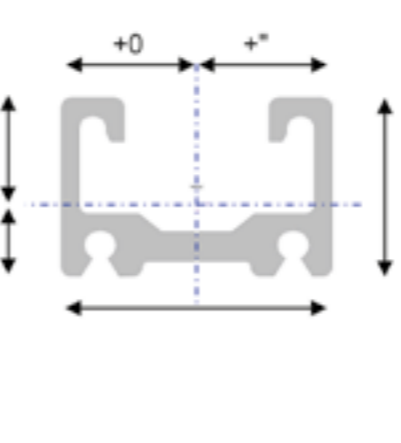
Cross-sectional properties:			
A	(cm <sup>2</sup> )	9.280	
M	(kg/m)	2.505	
D	(mm)	61.3	
B	(mm)	53.0	
tw	(mm)	2.7	
x	(mm)	26.5	
xr	(mm)	26.5	
yt	(mm)	31.05	
yb	(mm)	30.25	

Member Capacities: Capacity Results to BS 8118: Part 1

Strut/Beam Span mm	F <sub>max</sub> (kN) Max Deflection = L/200		F <sub>max</sub> (kN) Max Deflection = L/200		F <sub>max</sub> (kN)
	F <sub>UDL</sub> (kN)	δ <sub>UDL</sub> (mm)	F <sub>PL</sub> (kN)	δ <sub>PL</sub> (mm)	
250	11.937	0.1	11.931	0.1	69.6
500	11.937	0.7	9.457	0.9	62.3
750	11.937	2.4	6.294	2.0	53.9
1000	9.445	4.5	4.710	3.6	44.5
1250	7.544	7.0	3.757	5.6	35.4
1500	6.275	10.1	3.119	8.1	27.8
1750	5.367	13.8	2.662	11.0	22.1
2000	4.685	18.0	2.317	14.4	17.8
2250	4.152	22.8	2.048	18.3	14.6
2500	3.725	28.1	1.831	22.5	12.1

Notes: Load capacity = UDL total characteristic (working) load in kN. Welding will reduce the member capacities, please seek advice. Limiting stresses: po=150N/mm², pa=190N/mm², pv=105N/mm² for use with BS 8118: Part 1 design only. Allowance for self weight of profile made i.e. stated F = Load applied to profile. No allowance made for bearing/local crushing due to concentrated load. Above table is not to use for replacement of detailed structural design. For design criteria deviating from BS 8118, please seek advice.

Section AC-05



Material: Aluminium Alloy 6060-T6

Cross-sectional properties:		
A	(cm <sup>2</sup> )	4.611
M	(kg/m)	1.250
D	(mm)	30.0
B	(mm)	42.0
tw	(mm)	2.7
xl	(mm)	21.0
xr	(mm)	21.0
yt	(mm)	17.926
yb	(mm)	12.074

Member Capacities: Capacity Results to BS 8118: Part 1

Strut/Beam Span mm	F <sub>max</sub> (kN) Max Deflection = L/200		F <sub>max</sub> (kN) Max Deflection = L/200		F <sub>200</sub> (kN)
	F <sub>MAX</sub> (kN)	F <sub>200</sub> (kN)	F <sub>MAX</sub> (kN)		
200	8.33	26.7	4.17		—
300	5.55	11.87	2.77		—
400	4.16	6.67	2.08		—
500	3.33	4.27	1.66		—
600	2.77	2.96	1.38		—
700	2.17	2.17	1.18		—
800	1.66	1.66	1.03		—
900	1.31	1.31	0.81		—
1000	1.06	1.06	0.66		—
—	—	—	—		—

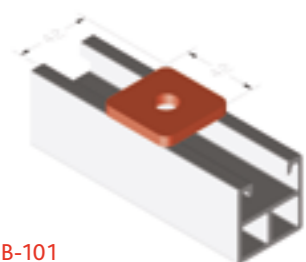
Notes: Load capacity = UDL total characteristic (working) load in kN. Welding will reduce the member capacities, please seek advice. Limiting stresses: po=150N/mm², pa=190N/mm², pv=105N/mm² for use with BS 8118: Part 1 design only. Allowance for self weight of profile made i.e. stated F = Load applied to profile. No allowance made for bearing/local crushing due to concentrated load. Above table is not to use for replacement of detailed structural design. For design criteria deviating from BS 8118, please seek advice.



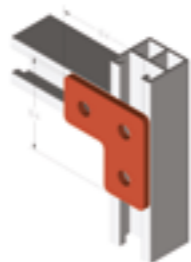
**66% lighter**  
than steel brackets

# Brackets

Alphastrut brackets are all manufactured from 6mm thick grade 6082-T6 Aluminium. We can manufacture in either 42mm wide or 53mm wide to accommodate either channel section. Should you not see a bracket to fulfil your requirements then we will be happy to quote for bespoke manufacture of any type of bracket.



AB-101



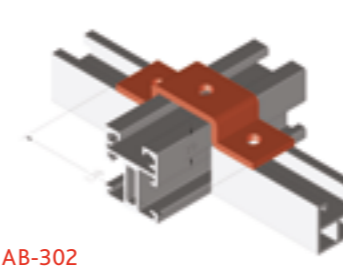
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AB-109



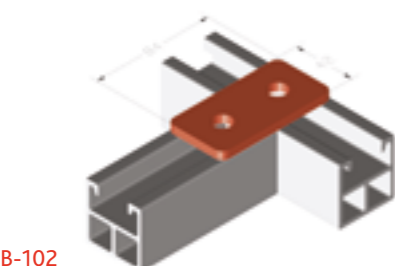
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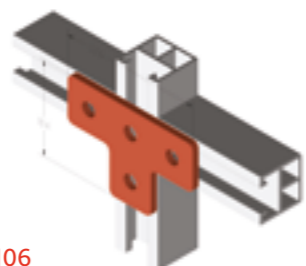
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AB-305 R



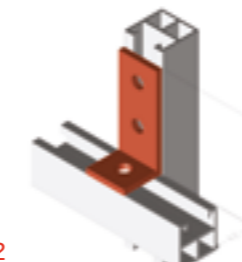
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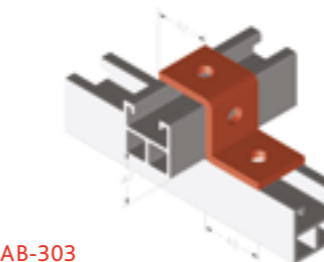
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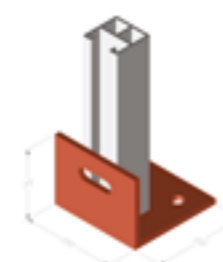
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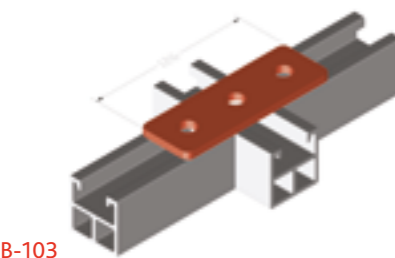
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AB-303



AB-BP1



AB-103



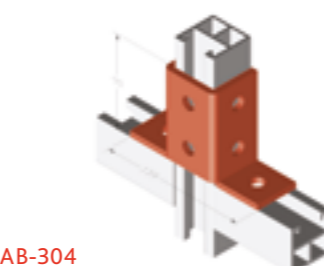
AB-107



AB-203 L



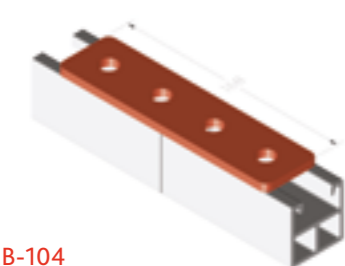
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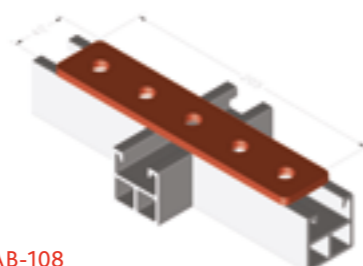
AB-304



AB-BP2



AB-104



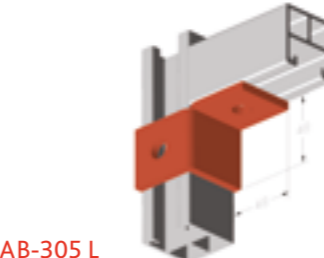
AB-108



AB-203 R



AB-301



AB-305 L



# BP VALHALL

## Redevelopment, North Sea

Alphastrut was developed to help BP save as much weight as possible over conventional support systems on the Valhall redevelopment project. The system was used extensively throughout the project for all M&E and HVAC supports, all architectural supports and raised access floors within the LQ and PFS modules.



120 tonnes of weight saved



Significant cost savings

MURRAY METALS



Alphastrut Ltd, a Murray Metals Investments business, is part of a wider group, including Murray Metals Ltd.

The group supplies products and services to the offshore and onshore energy sector, power generation, mining, construction, aerospace, transport and general engineering sectors, specialising in steel plate, profiling, engineering bar, general steels and aluminium products.

We are working to continuously develop the product to add more and more benefits to the Alphastrut system.

We are able to offer product from stock and also a bespoke kit of parts to suit your requirements. We can design a system according to your drawings, and also offer installation and on-site project management as required, wherever you are in the world.

To find out more about Alphastrut or request a quotation please do not hesitate to get in touch or visit our website at **[www.alphastrut.com](http://www.alphastrut.com)**

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