Unique Group

Buoyancy Solutions

APPLICATION NOTE

The Use of Seaflex Buoyancy for Jacket Installation

Buoyancy & Ballast

www.uniquegroup.com

APPLICATION NOTE

Introduction

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Introduction

+ Whilst most often used for pipeline installation projects or shallow-water salvage or draught reduction projects, Seaflex buoyancy units are finding a growing market in the field of jacket installation.

  In order for a crane with a single hook to be used for the upending operation, the jacket needs to be lowered in the horizontal position into the water then and then float of its own accord.

  Whilst when capped to create internal chambers filled with air the integral buoyancy of the jacket will be sufficient to allow it to float, additional buoyancy is usually also fitted as contingency to be sure that the jacket still floats even if some of the caps fail causing the members to flood and bringing with it the risk of the jacket becoming unstable and / or sinking unless a backup is in place.

  Historically, this contingency buoyancy has been fabricated out of steel: massive structures which need to be able to support their own considerable weight before offering any reserve buoyancy. Such structures are expensive to fabricate and difficult to handle, to rig and to de-rig. They will also deteriorate rapidly between projects, requiring intensive maintenance to keep them operable.

Benefits

Some of the benefits of using Seaflex-style air-filled buoyancy units within this type of application are that it is:

+ Backed up with project engineering experience and guidance from the manufacturer, along with onsite support from a Seaflex technician if so required.
+ Fully compliant with IMCA D-016 guidance, and type-tested to prove minimum 5:1 factor of safety.
+ Flat-packed for efficient and cost-effective transport and stowage.
+ Weighing less than 1% of its uplift capacity: eg 5t unit less than 50kg.
+ Quick to rig, and easy to vent for ultra-safe recovery.
+ Immediately available for rental or purchase from the world's largest stock of such equipment.
+ If rented, then subject to the highest testing and re-certification standards in the industry.

The Process

+ With the jacket afloat, the main crane is then disconnected from the jacket itself, and re-connected to a four point bridle secured to the uppermost points. This arrangement is then used to upend the jacket.

  Seaflex can advise as to the optimum positioning and removal of our bags on each such project. Our horizontally-positioned Inflatable Buoyancy Units (IBUs) are often located on the jacket legs - which is fine while the jacket is floating on its side, but they will need to be removed before the rotation process starts because due to their design IBUs must remain on or near horizontal at all times. IBUs can therefore be used when secured on the jacket's horizontal cross members because these remain horizontal through the rotation phase. Seaflex Mono Buoyancy Units (MBUs) can be used on both the legs and the horizontal members as their single point attachment design allows for any inclination angle. Sometimes, a combination of these two different styles of bag will give the best outcome to the user.

Conceptual Example

+ Over the next few pages you will find some schematics of this process, showing buoyancy calculations and positioning, taken from a recent tender. This is all just by way of example, but it shows the way in which Seaflex buoyancy can be used within such applications as well as the types of drawings which can be produced to support such proposals.

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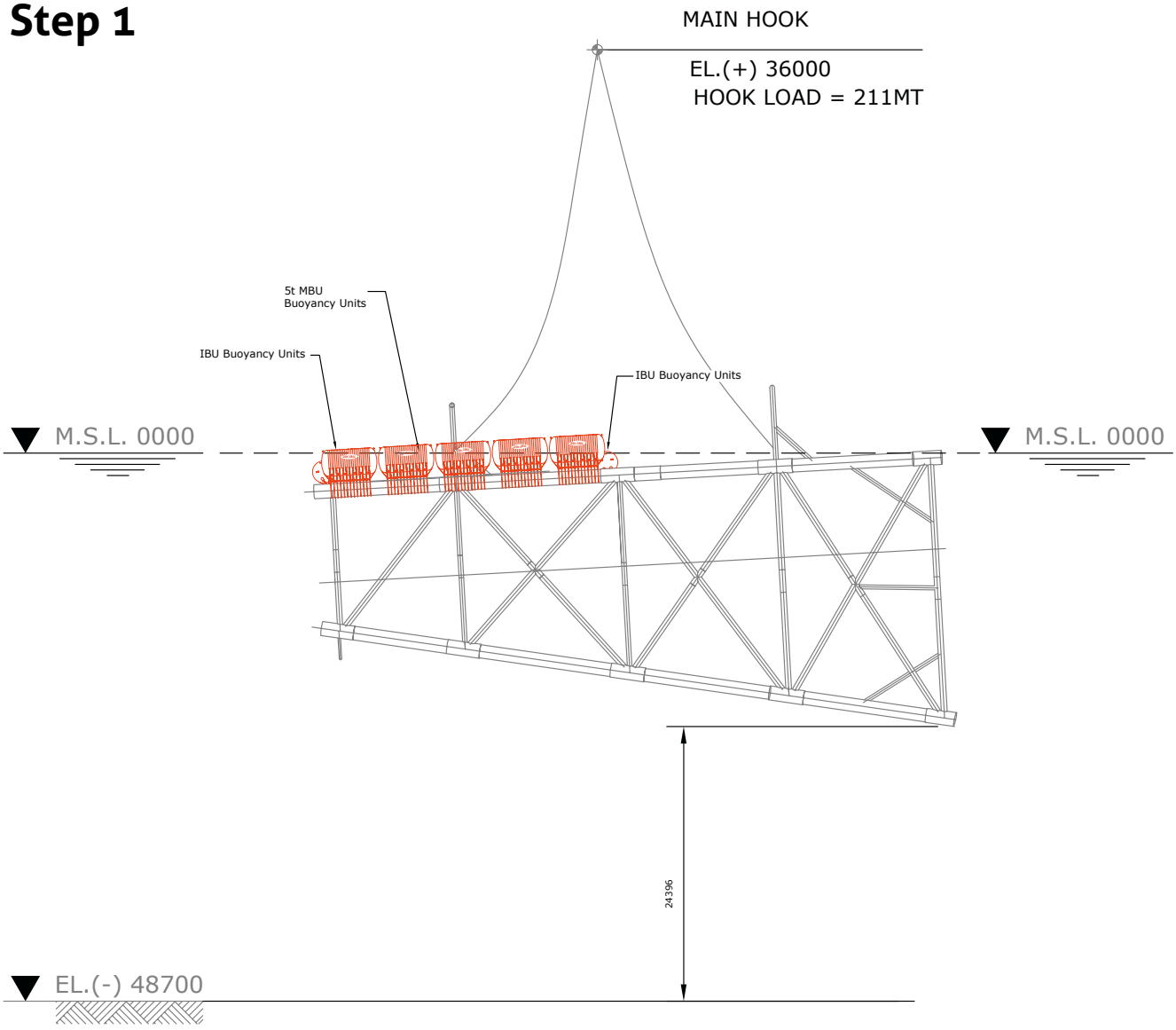
APPLICATION NOTE

Technical Representation

The Use of Seaflex Buoyancy for Jacket Installation

Step 1



Natural Floating Position

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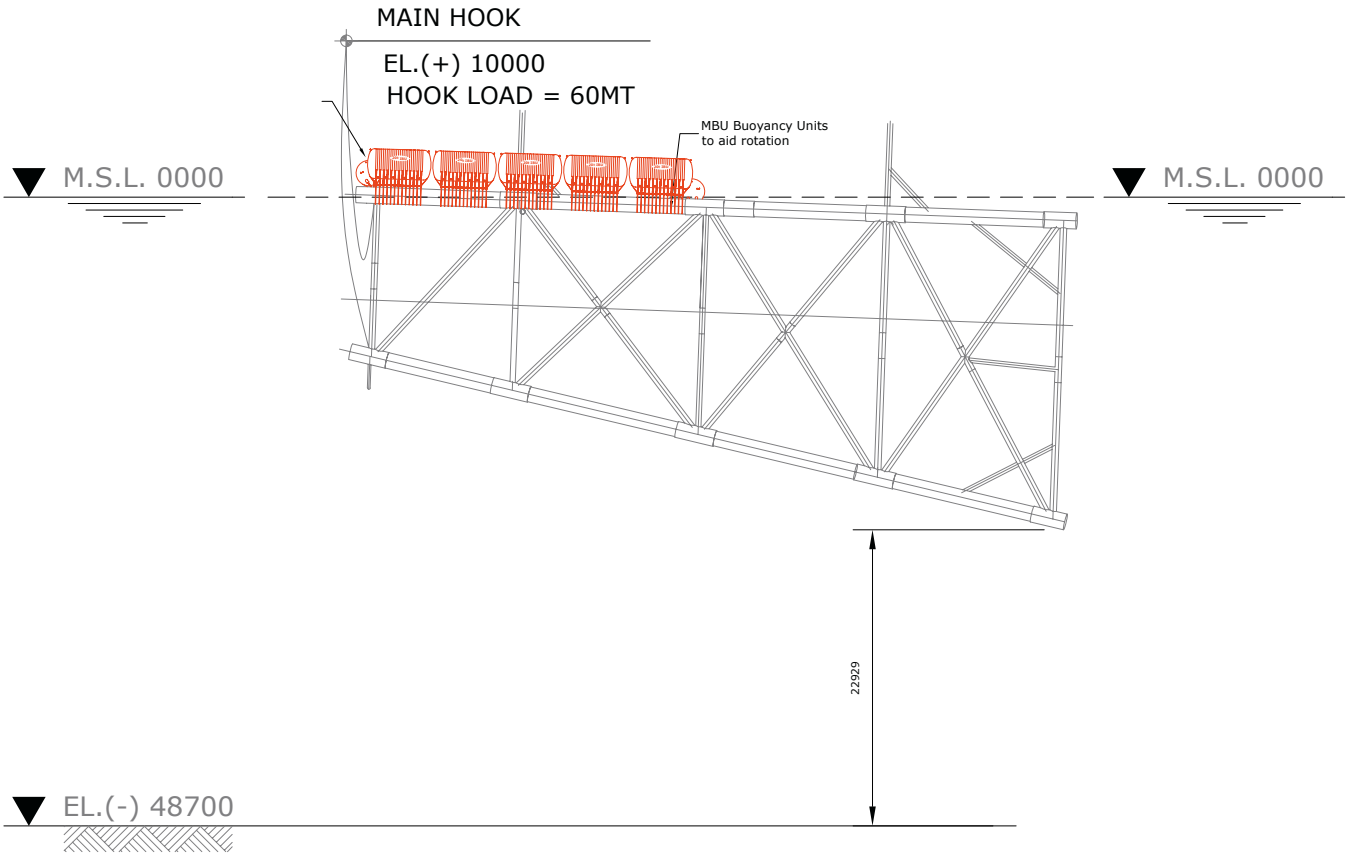
Step 2



1) MAIN HOOK removed and connected to bridle arrangement on upper end of Jacket.
2) Main Hook to lift Jaclet just above surface ready for removal of IBU's.
3) Deflate and remove 20t IBU's eady for rotation.

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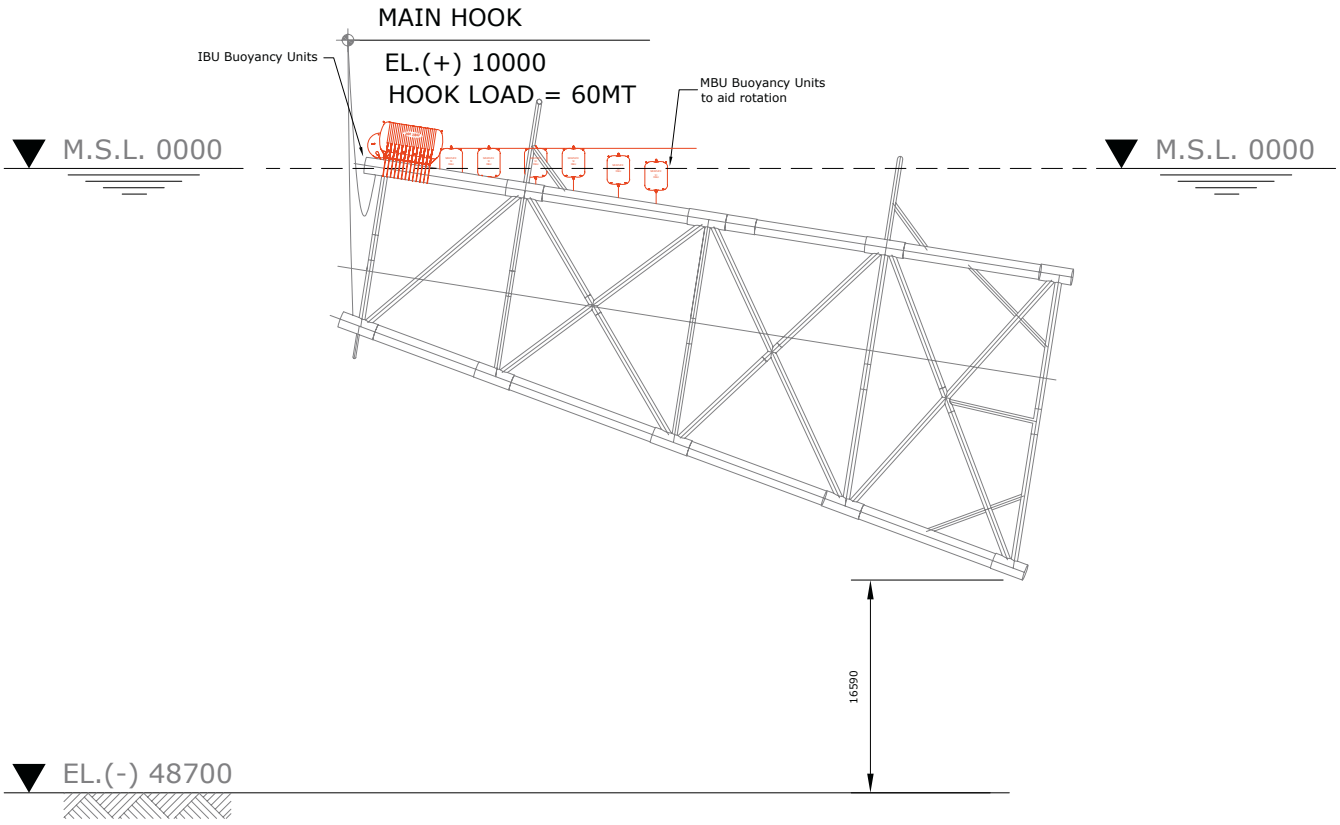
Step 3



Rotation of Jaclet can begin

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Technical Representation

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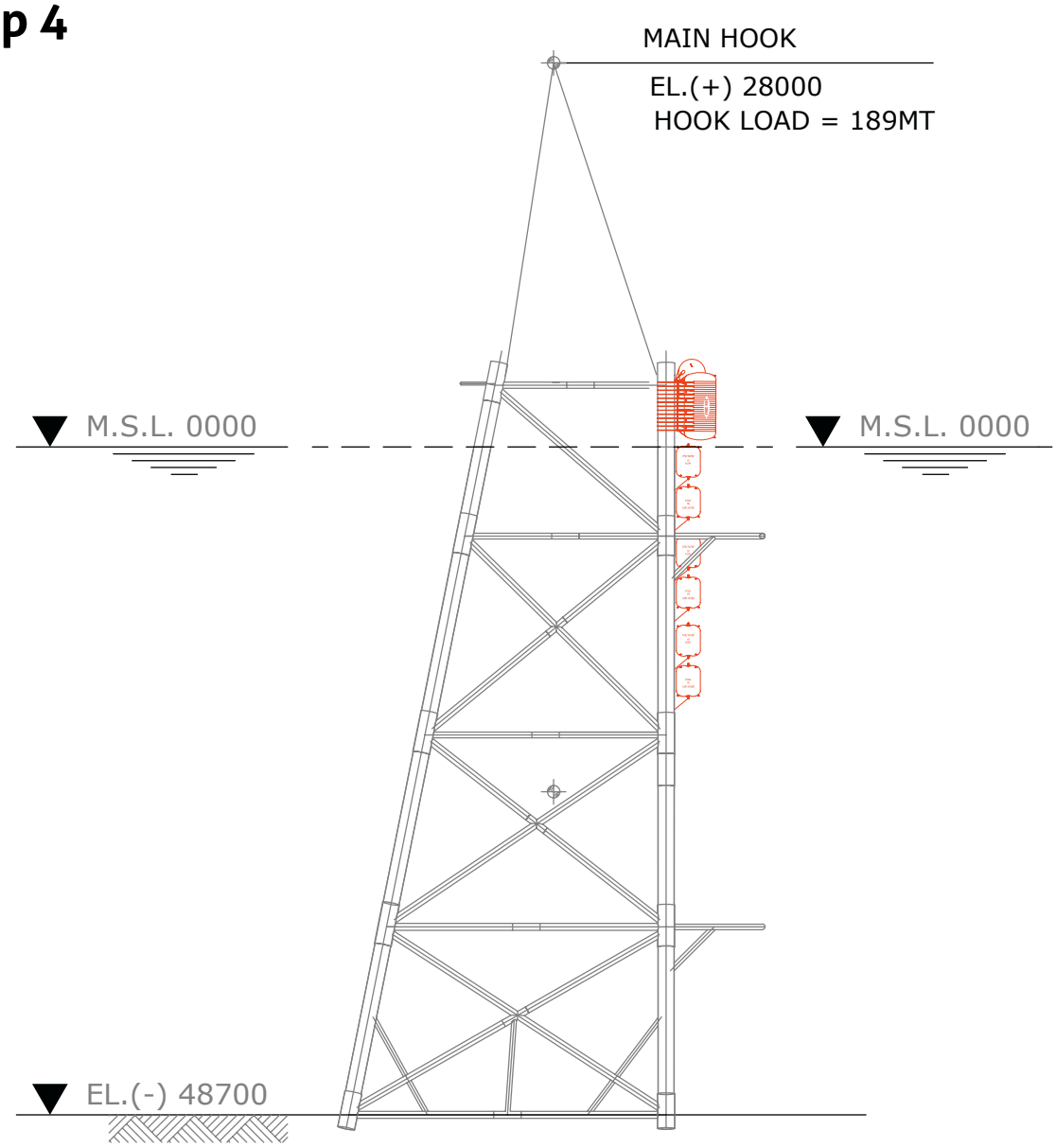
Step 4



1) L ower Jacket onto seabed

2) Remaining 20t IBU's clear of water so not at risk.

3) 10t IBU's free to rotate around horizontal brace.

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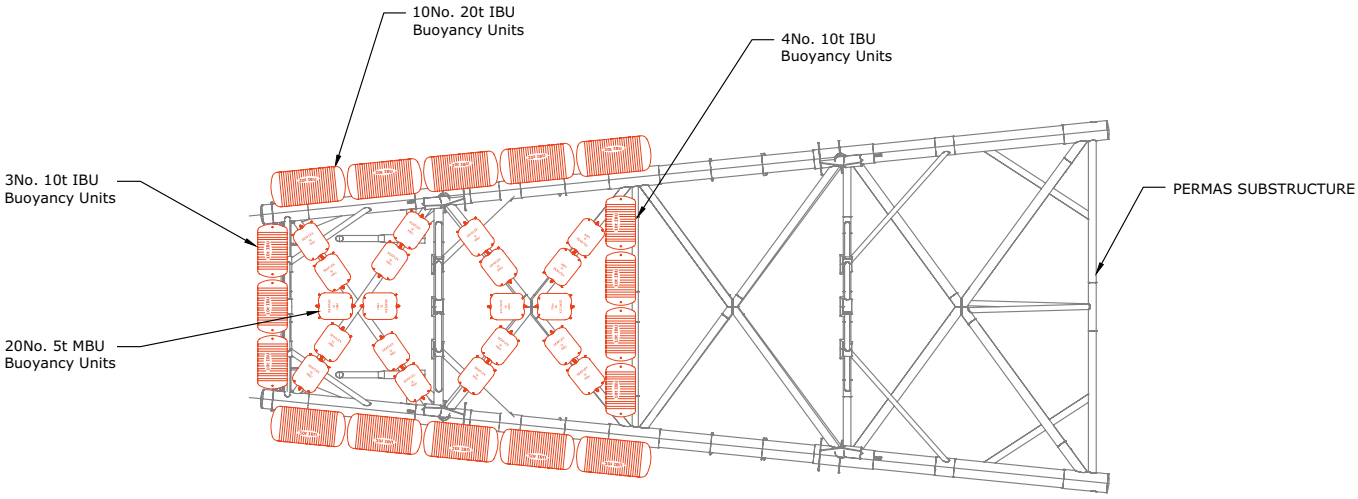
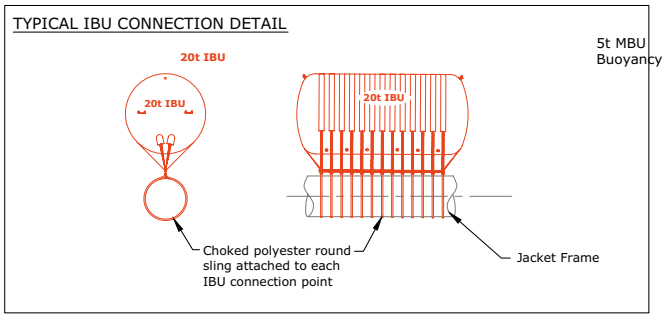


PLAN
N.T.S.

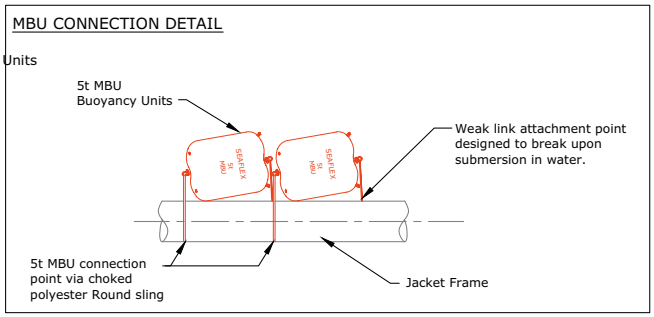
BUOYANCY DETAILS	
20No. 5t MBU Units	= 100t of Lift
10No. 20t IBU Units	= 200t of Lift
7No. 10t IBU Units	= 70t of lift
Total Lift Generated	= 370t

MBU CONNECTION DETAIL

TYPICAL IBU CONNECTION DETAIL



MBU CONNECTION DETAIL



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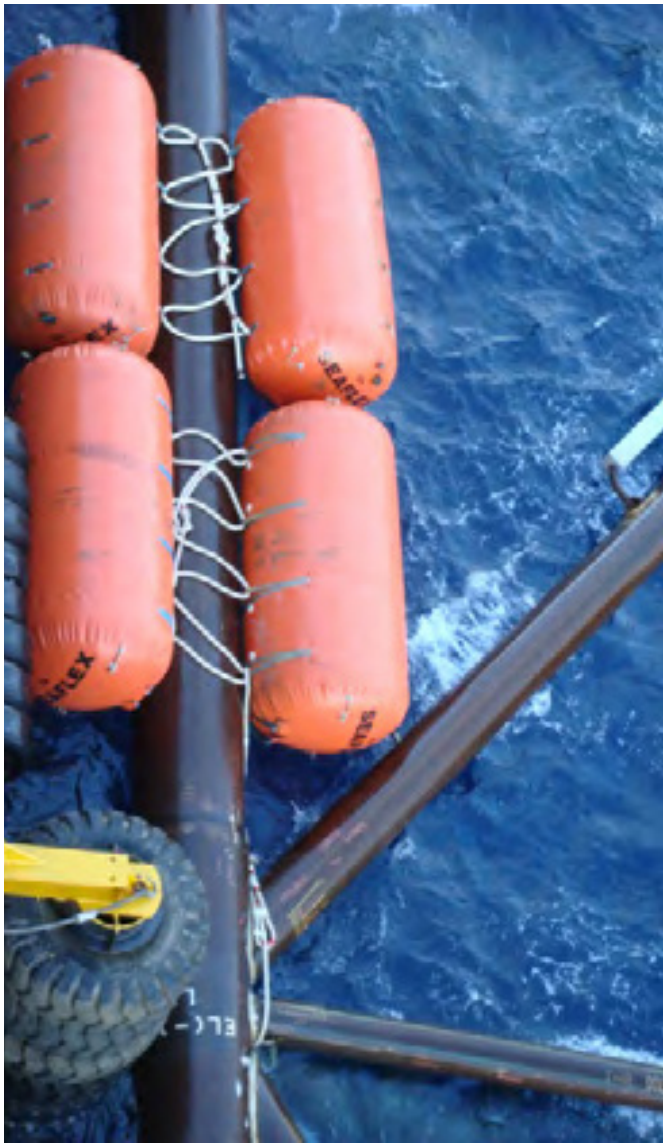
Seaflex IBUs in Use

Jacket Installation, SE Asia



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APPLICATION NOTE

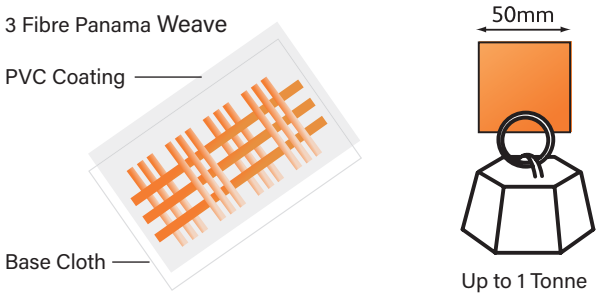
Technology, Service and Support

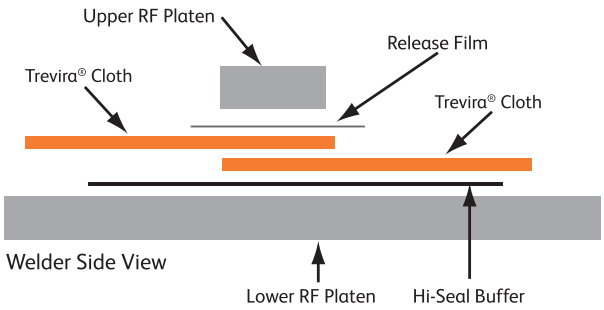
Manufacturing Technology

+ All Seaflex products are designed and manufactured in the UK. Our bag canopies are constructed from High Tensile Trevira® Polyester base cloth (either 2 /2 or 3 /3 fibre panama pattern weave) coated with heavy duty UV stabilised PVC coating or, for special applications, polyurethane. Trevira is incredibly strong; a 50 mm wide 3/3 strip has a break load of approximately 1 tonne. The panels for our bags are precision cut on our 15 metre long, 3 metre wide advanced automated table for perfect repeatability. Once inspected and approved panels are assembled by skilled personnel to using Radio Frequency welding to strict quality control standards.

Certification

+ All our work is carried out within a system which complies with the ISO 9001-2009 Quality Management Standard as audited by Lloyds Register Quality Assurance for full traceability – and we have now gained ISO 14001 and ISO 18001 accreditation.





Service

+ Whether for hire or sale, all Seaflex products are sent out fully tested and inspected against their build criteria. And we do also offer on-site support to our clients in the use of our products – this most often happens within the more complex buoyancy applications for our products.
  In the event that your Seaflex product should suffer minor damage in service, we can supply an approved, boxed field service kit comprising of patches, a professional quality heat gun and instruction manual to make good minor leaks prior to product refurbishment.
  We can also advise on the viability of carrying out more extensive repairs, which would typically be undertaken either at our factory or at one of our approved service centres.

Support

+ Our support philosophy is "Wherever, Whenever". This underlines the Seaflex commitment to not just sending out tested, proven products in proper shipping crates and with the most comprehensive documentation package in the business – but to assisting our customers in every way possible throughout their time using our products, whether the job is a hire project or an equipment sale.
  We offer worldwide support to our customers via either email or phone from head office in the UK and via our ever-growing network of offices and partners around the world.
  You can put your trust in Seaflex – we won't let you down.

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Unique Group's Buoyancy & Ballast products are available for hire or purchase from more than 20 other worldwide locations via our network of independent partners. Please contact us for more details.