

# Seaflex® Beachflex™

— Joint Closures

TYKO  
FLEX

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FLEX



Seaflex is the Tykoflex submarine Joint Closure for fibre optic submarine cables. The closure is made of highly corrosion-resistant offshore quality stainless steel. Due to its modular cable adapter system, it can be used with most cable designs and between cables from different manufacturers.

Features

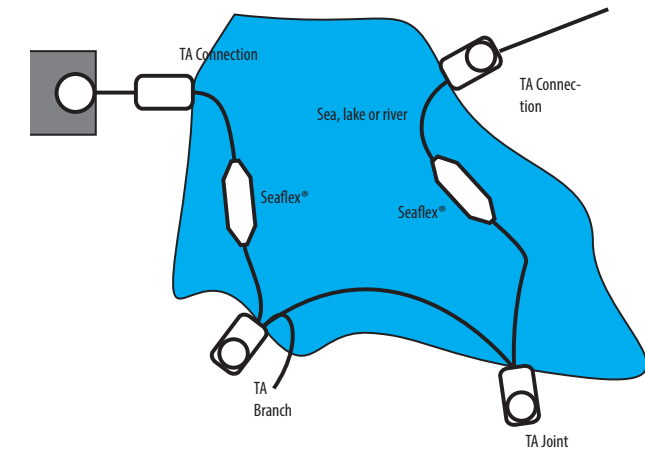
- Seaflex is a universal joint closure designed for optical submarine cables. It is made of highly corrosion resistant material and applicable on most cable designs.
- The closure can be used for splicing cables of different manufacture and designs.
- The closure is designed for an easy and quick assembly with ordinary standard tools, with no welding required at the assembly procedure.

- Easy to re-enter.
- The closure consists of a main closure kit with the closure housing and rubber cable bend protections, and cable specific connection kits for each unique cable type.
- The splicing area is designed for accommodation of up to 192 fibres.
- The fibre jointing is carried out with an ordinary fusion splicing machine and using standard splice protection sleeves.
- The interior of the closure is filled with oil in order to protect the fibres.

\*Seaflex and Beachflex pending trademark application

Seaflex® and Beachflex™ family

The Tykoflex Seaflex and Beachflex family consists of armoured and unarmoured submarine joint closures and beach joint closures.



Seaflex®

Seaflex, for submarine closures, for depths down to 3,000 meters.

Armoured



1650 mm

Unarmoured for integrated cables



600 mm



754 mm

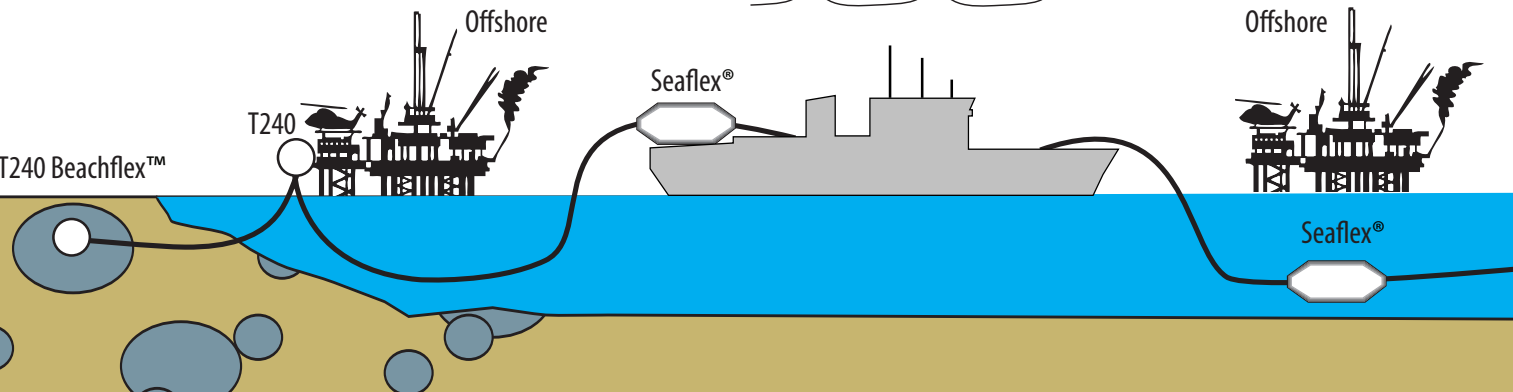
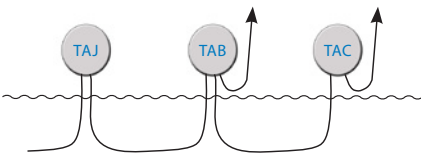
Beachflex™

TA Beachflex (pan)



Connection point between submarine cable and ground cable on shore.

TAJ= Joint TAB= Branch TAC= Connection



Specifications

Fibre capacity	Up to 192 fibres (single fibres)
Overall length:	1650 mm
Closure diameter:	115 mm
Bend protection diameter:	160 mm
Closure weight assembled:	48 kg
Approved installation depth:	2000 m
Material:	Stainless steel, offshore quality
Max tension:	200 kN (closure)
Typical installation and jointing time:	5–10 hours

Delivery

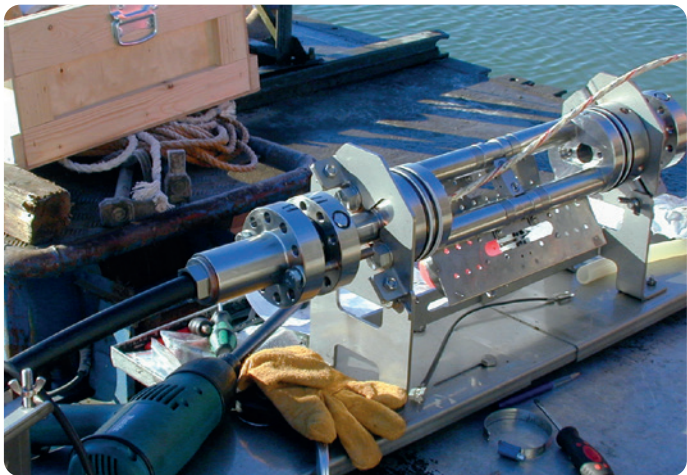
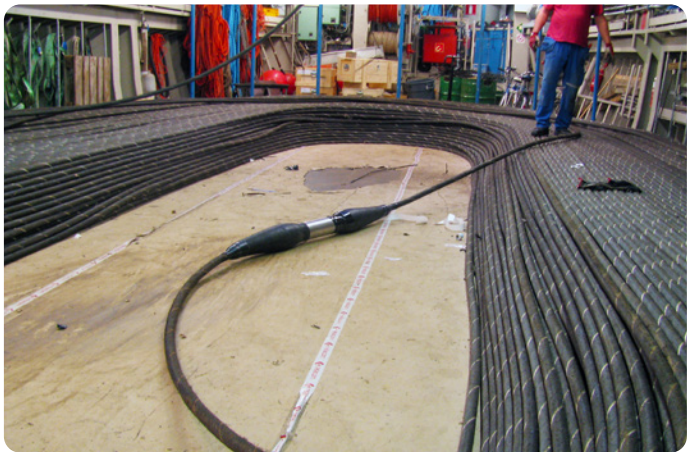
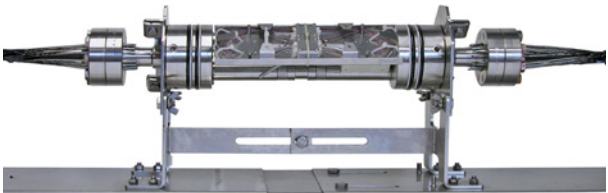
The product is delivered in a wooden box containing all the parts required for a complete joint.

Three items are required when ordering a complete joint closure: (1) The main closure kit, and (2 & 3) two cable connection kits. Optional items are a tool kit and a work bench.

Documentation

The following documents are included with each delivery:

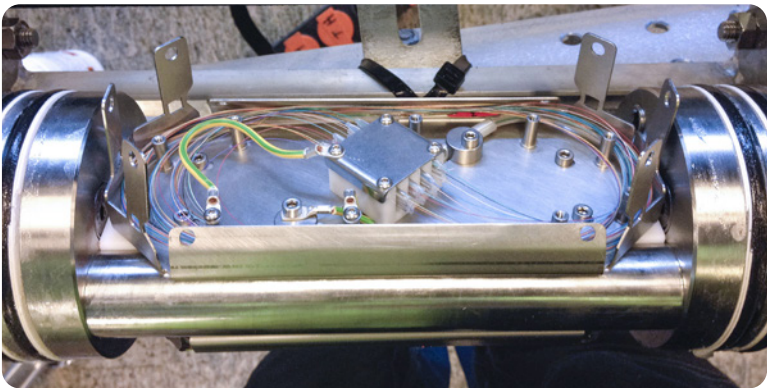
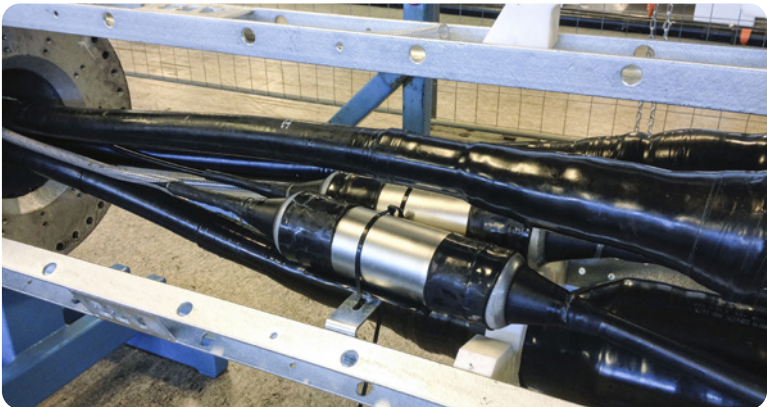
- Installation manual
- Parts list (joint closure)
- Parts list (cable connection kit)





Specifications model 600

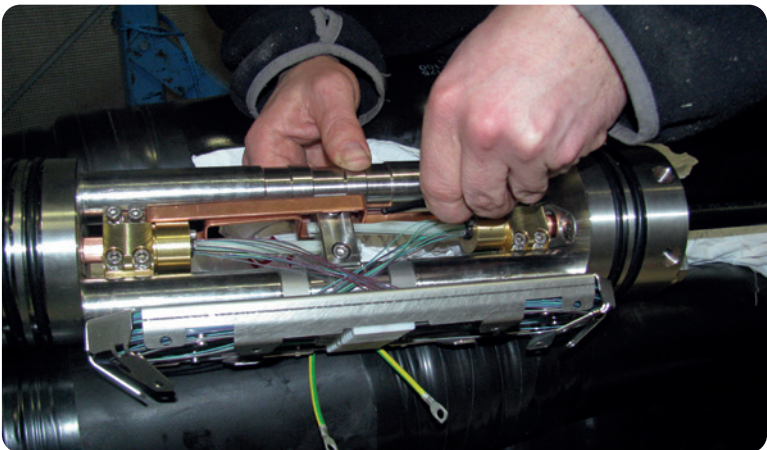
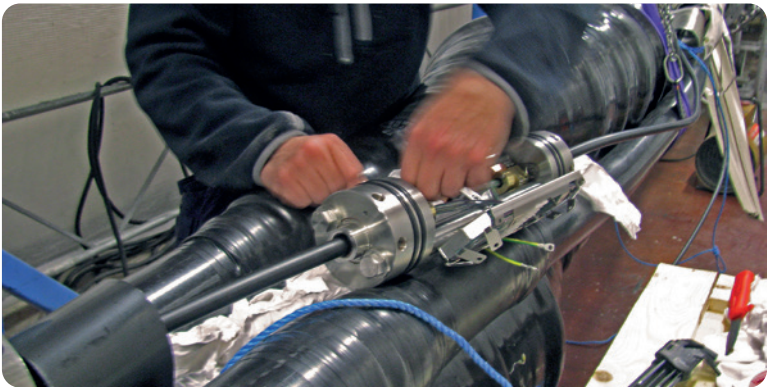
Fibre capacity	Up to 48 fibres (single fibres)
Overall length:	600 mm
Closure diameter:	115 mm
Bend protection diameter:	115 mm
Closure weight assembled:	22 kg
Approved installation depth:	2000 m
Material:	Stainless steel, offshore quality
Max tension:	200 kN (closure)
Typical installation and jointing time:	4–6 hours



Photos show the installation of Seaflex® model 600.

Specifications model 754

Fibre capacity	Normal 96 fibres (can contain up to 192 fibres)
Overall length:	754 mm
Closure diameter:	115 mm
Bend protection diameter:	115 mm
Closure weight assembled:	25 kg
Approved installation depth:	2000 m
Material:	Stainless steel, offshore quality
Max tension:	200 kN (closure)
Typical installation and jointing time:	4-6 hours



Photos show the installation of Seaflex model 754.

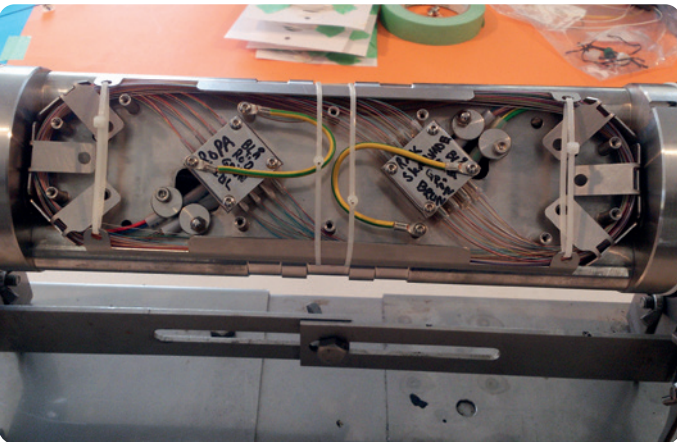
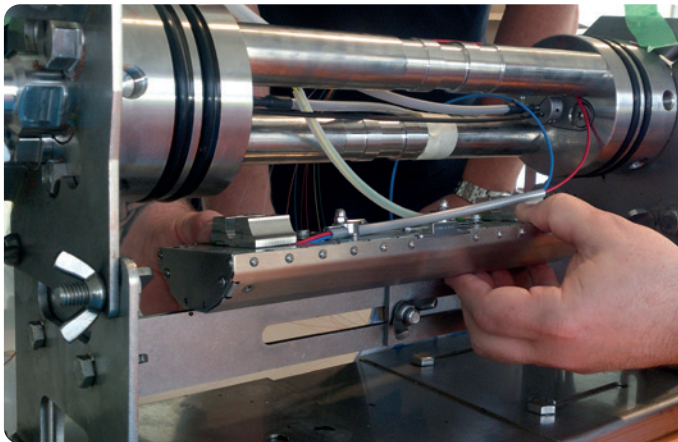
*TykoFlex is a partner for the future supply of knowledge and products for infrastructure development in the Baltic sea area.*

ABB is the contractor producing the new HVDC Light transmission system between Sweden & Lithuania. The 700 MW is the world's longest HVDC Light underground and subsea cable.

The communication link in the Nordbalt project is a 400km long Hexatronics Submarine fibre optic cable. The technology that is used to amplify the signal in the 400km cable uses an advanced method called ROPA.

The technology is based onto a technique to amplify the light signal with passive components. This is done by using a special types of glass fibre spliced into the cable in exact positions inside the Submarine Joint Closure 16-ROPA. The ROPA Fibre unit is a product from the Canadian company MPB.

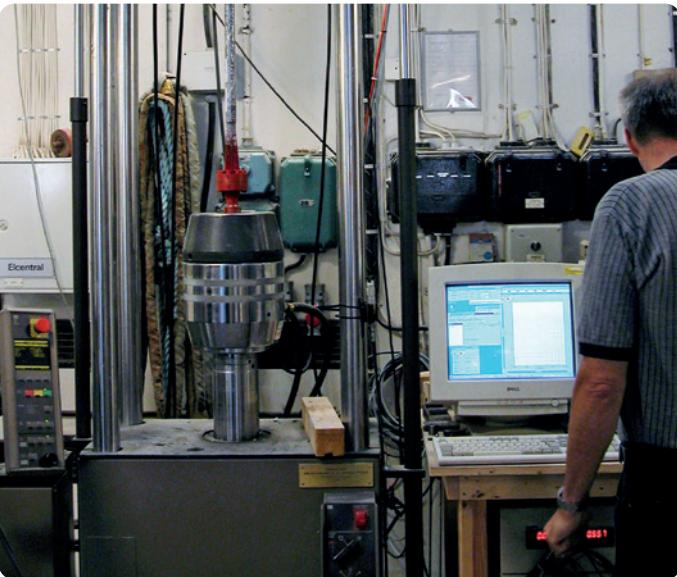
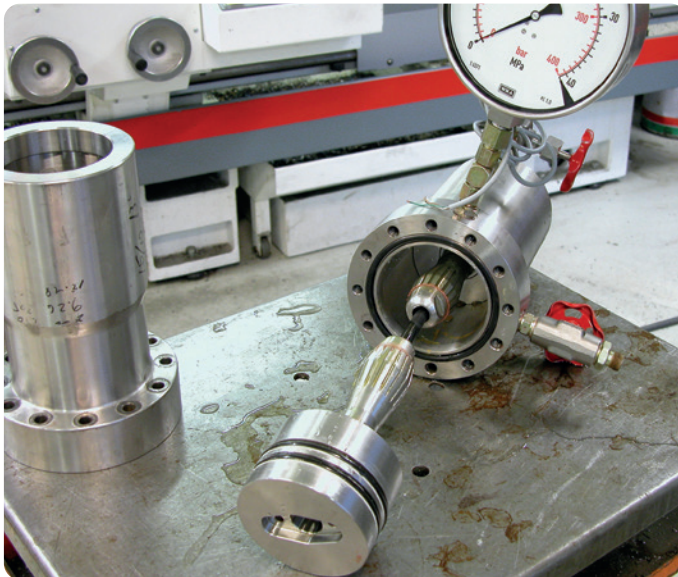
Submarine Joint Closure 16-ROPA is a product from the TykoFlex Seaflex® family. The standard Seaflex closure for Hexatronic GJMLTV cable has been developed and certified for the 16 fibre ROPA unit. The Submarine Joint Closure 16-ROPA used in the project is designed for a 48 fibre cable and 16-ROPA fibres spliced inside each joint.



Seaflex® verification

Each type of cable connection kit is tested and certified according to the requirements for the cable. Test programs for tensile and pressure test are performed according to cable and customer requirements. The photo below to the

left shows the chamber for pressure testing and the photo below to the right shows a tensile strength test performed at Stockholm's KTH Royal Institute of Technology.





Sheave test

The photo below shows the Seaflex Closure in position with load on the bend protection restrictors.



Tension test

The photo below shows the Seaflex Closure with full load of static tension on the cable.



Certification of personnel

In line with our quality assurance programme, we strive to make the whole installation process run as smoothly and accurately as possible. We therefore offer a complete customized training course adapted to the type of cable, as well as the type of Seaflex closure that will be installed. We



have a long history of certifying personnel and we take great pride in making sure that our customers are provided with the the level of competence required in order to achieve optimum accuracy and precision.



*Joint Closure Beachflex is designed for harsh coastal environments. Joint Closure TA Beachflex is a complete system used for the transition between wire armoured submarine cable and/or land cable.*

TA Beachflex consists of a T240 type TA mounted on a strain relief frame (stainless steel bracket). The cable entries to the joint closure are configured for a variety of applications, such as:

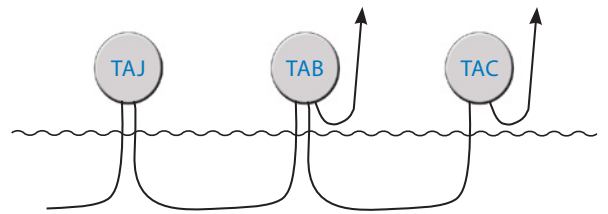
- TAJ:** Joint between two submarine cables with facility for a future branch.
- TAB:** Branch between two submarine cables with branching ground cable.
- TAC:** Connection between submarine cable and ground cable.

The closure is equipped with cable strength member clamps, splice protectors, Multicassette, sea cable/ground cable bushing, hose clamps and bracket. Together with a locking cap, the closure can easily be locked with a padlock. Depending on the sea cable type, a FIMT and equalizer (earth strap) can be added..

The photos below show a sea cable installation in a river crossing in Finland, near the village of Karis between Helsinki and Hangö.



TAJ= Joint TAB= Branch TAC= Connection

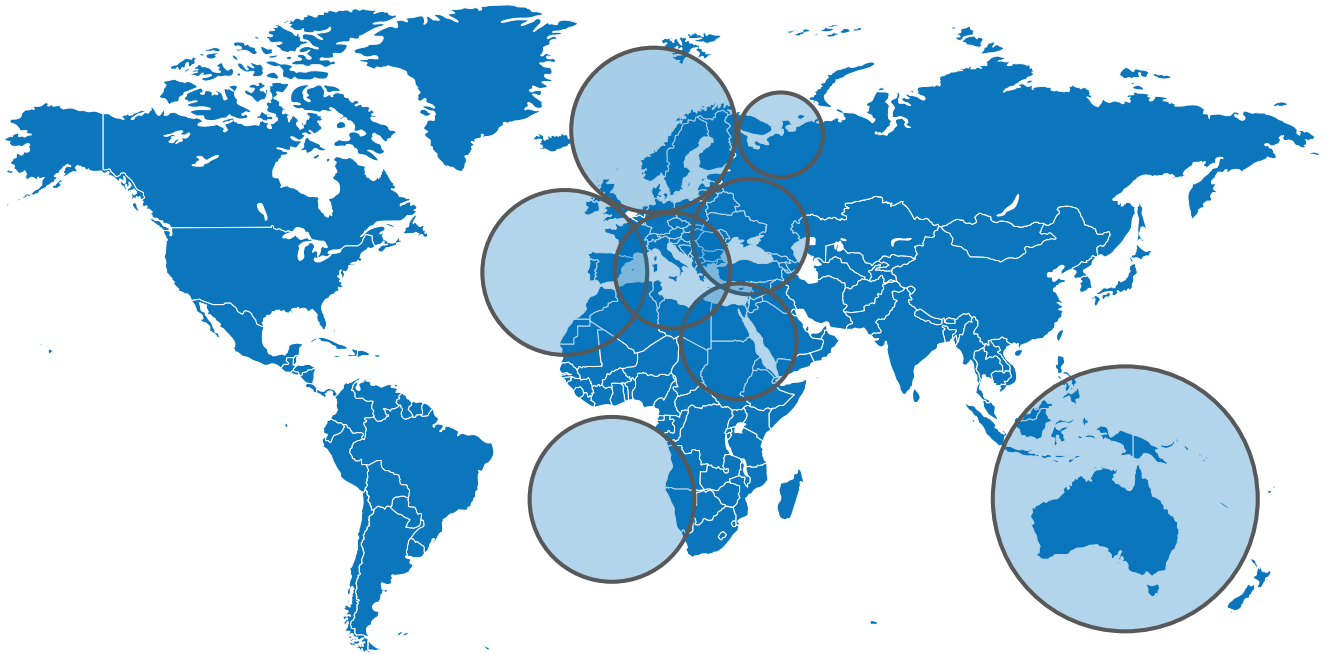


Beachflex installation in Finland





Seaflex® has been installed in the following locations



## About Tykoflex

*Tykoflex is an engineering company with our own product development, head office and manufacturing facility in Tyresö, just outside of Stockholm. Our main product ranges are enclosures for splicing optical fibre and fittings for pipe and hose systems. Besides a wide standard range of products, we can offer flexible production and customized solutions to suit all our customers' needs. For more information please visit [www.tykoflex.com](http://www.tykoflex.com)*



T240 fulfils international and European standards for outdoor closures.

IEC 61753-111-7

IEC 61753-111-8

IEC 61753-111-9

EN 60529:1991 + A1:2000 + A2:2013

IEC 60529:1989 + A1:1999 + A2:2013

ISO 20653:2013

IP68 (2.0 bar/24 h)/IP69, IP69K



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