

# FirstSubsea Autoswage® Connector

First Subsea's Autoswage® is a simple, fast and effective way of connecting pipe without tools due to its unique 'point - push - connect' method of installation. It can be used in a variety of high pressure pipe and tube fitting applications including umbilical intervention and pipe repair. Based on First Subsea's patented ball and taper technology, the connector provides a high integrity joint, which is easily installed and removed, as well as being fully re-useable. Autoswage® connectors have been successfully connected, pressure cycled and disconnected multiple times on the same tube without loss of integrity.

## Ball and Taper

First Subsea's Ballgrab® connectors have a proven history with over 700 systems being supplied into a multitude of markets for subsea mooring, case running, pipe recovery, internal lifting, riser connections and tendon lift tools. Our class leading connectors are based on ball and taper technology, which ensures their suitability for any application involving gripping, pulling and holding connections under load.



1/2 Inch 90° Autoswage® Connector

Ball and taper connection technology, in its simplest form, is the action of balls held securely in tapers machined into the connector's mandrel. The balls are free to move up and down the taper, however when the balls grip the item to be held, they grasp it in direct proportion to the load applied.

Utilising ball and taper technology, First Subsea's Ballgrab® connectors can be used in a wide variety of scenarios.

## Features

- Can be installed in a variety of applications and pressures
- Simple point - push - connect operation
- Quick installation as no tools needed
- Small and compact so ideal for constricted environments
- Works with pipes of various material and size
- Seals can cope with a wide range of both liquids and gases
- Can be used multiple times



3/4 Inch 90° and T Autoswage® Connectors

## Industrial Range

First Subsea Autoswage® connectors are female / female type, or female / welded type and designed to fit over the outside of the existing pipes / fittings.

Ranging in size from ¼" (6.35 mm), Autoswage® connectors are available in a range of different materials to suit any application including:

- Carbon steel
- Stainless steel
- Super duplex
- Inconel
- Aluminium

## Seals

The seals within the Autoswage® housing are impervious to oils, detergents, acids, alkalis, solvents and most gases, and therefore suitable for a broad range of demanding subsea applications.

As part of the Autoswage® testing regime, all seals and connectors are tested under pressure at our facilities in Lancaster to ensure a uniform seal with the pipe or umbilical.



2 Inch 90° Autoswage® Connectors



1/2 Inch Autoswage® with Release Tool

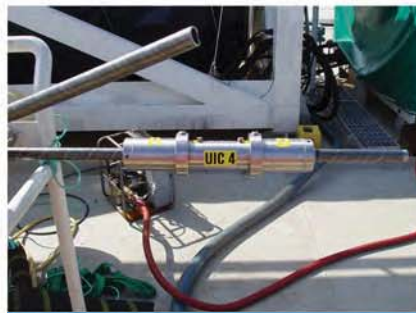
## Case Study - Malampaya 1 Inch Autoswage® Connector

Malampaya platform is situated in the South China Sea off the coast of Palawan. Kvaerner Oilfield Products (KOPN) required a connector to repair a leak from two pipe members in the KOPN supplied Malampaya "B" umbilical. Both the leaking members were 1 inch (25.4 mm) super duplex pipe.

Kvaerner Oilfield Products came to First Subsea for an Autoswage® Umbilical Intervention Connector offering a simple, quick and effective way of connecting the high pressure umbilical, without tools. The connectors were double ended and contained both PTFE and Nitrile seals. The operating pressure of the umbilical was 10,000 psi (689 bar), to ensure sealing integrity First Subsea tested the Autoswage® connector to 15,000 psi (1,034 bar). The connectors were successfully installed by divers in 2003 and are still in use today.



1 Inch double ended Connectors



Hydraulic Testing of Connector



Offshore Testing

It is the ball and taper mechanism that lies behind our strong, reliable connectors. Speed, ease of use and versatility make Autoswage® ideal for repairing subsea umbilicals and pipelines. Our class leading products are tried, tested and proven in service meaning there is always a Ballgrab® for you.

**FirstSubsea**

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