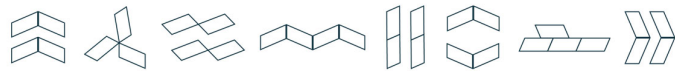


# RETROFIT ANODE

## PIRANHA<sup>®</sup> CLAMP



"The Piranha<sup>®</sup> product is an electrical continuity CP retrofit Clamp intended for connecting to plates and/or rods. Piranha<sup>®</sup> is designed with a range of different jaws sizes, suitable for plate thickness and bar diameters ranging from 3mm to 200mm, and more."



### Intelligence built in

The main benefits of choosing a Imenco Piranha® Retrofit Anode Clamp are the ease of installation, flexible sizing and proven long-term integrity. The clamp is guided into place by a ROV/diver and tensioned with an Imenco Clamp Installation Tool (ICIT) or with a standard torque tool to make strong mechanical and low resistance electrical connection.

Most subsea structures and components have some sort of plate or bar as part of their design. This makes the Piranha® Clamp the most versatile Imenco Retrofit Anode Clamp for any structural element. Anodes may be attached directly to the clamp, or by a bonding cable to an anode sled/anode bank. Piranha clamp is designed with flexibility in mind - can carry everything from small anodes to large heavy anodes and have an interface for most standardized cable connections.

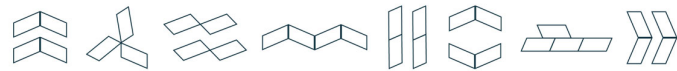
Piranha® is typically used for the placement of sacrificial anodes, electrical continuity between different entities or to connect instrument packages to a structure

### Features

- Field proven with more than 5000 clamps installed
- Simple and robust design
- Durable and compact design dimensions
- Excellent mechanical grip
- Quick diver-less ROV installation
- Anode attachment flexibility, clamping on plate, edge or end of rods
- Designed for a variety of plate/rod thicknesses
- Standardized installation tool and ROV interface

### Advantages

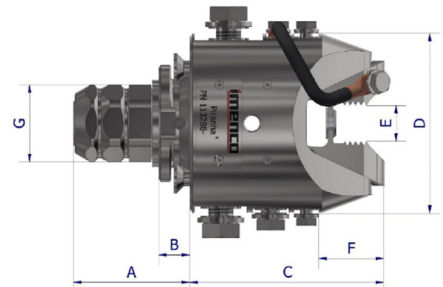
- Quick installation
- Provides excellent mechanical attachment
  - Typically > 10 ton
- Provides excellent electrical contact/grounding
  - Typically <100  $\mu\Omega$  connection resistance
- Mechanical grip (tension)
  - Will not loosen by vibration
  - Fatigue resistant against expected loads
- Electrical Resistance
  - Can be used on coated or uncoated structures
  - Will bite through existing rust layers and marine growth



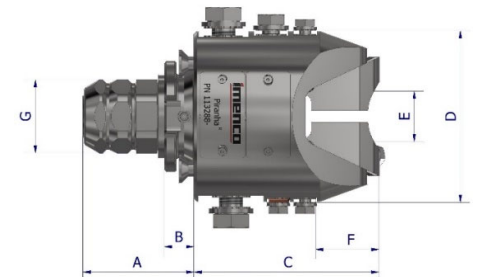
# PIRANHA® S CLAMP

The Piranha® S clamp is primarily composed of housing and jaw. The housing design is suitable across the entire 5–35mm range.

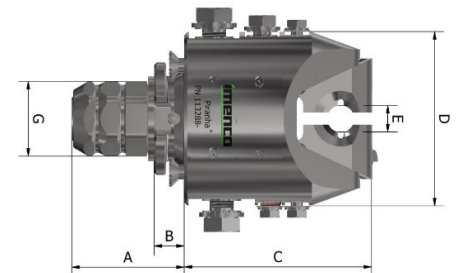
Clamp Type	Plate Thickness (mm)	Clamp Dimensions (mm)					Weight
		A	C	øD	E	G	
Piranha® S	5-10 mm	75	125	115	4-11	46	8 kg
Piranha® S	10-15 mm	75	125	115	9-16	46	8 kg
Piranha® S	15-20 mm	75	125	115	14-21	46	7,9 Kg
Piranha® S	20-25 mm	75	125	115	19-26	46	7,9 Kg
Piranha® S	25-30 mm	75	125	115	24-31	46	7,8 Kg
Piranha® S	30-35 mm	75	125	115	29-36	46	7,8 Kg

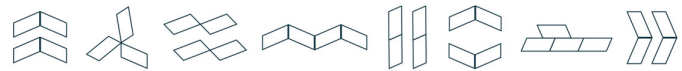


Clamp Type	Axial Rod	A	C	øD	E	G	Weight
Piranha® S	13-18 mm	75	125	115	12-19	46	8 Kg
Piranha® S	17-22 mm	75	125	115	16-23	46	8 Kg
Piranha® S	22-26 mm	75	125	115	21-27	46	8 Kg



Clamp Type	Radial Rod	A	C	øD	E	G	Weight
Piranha® S	13-18 mm	75	125	115	12-19	46	8 Kg
Piranha® S	22-26 mm	75	125	115	21-27	46	8 Kg

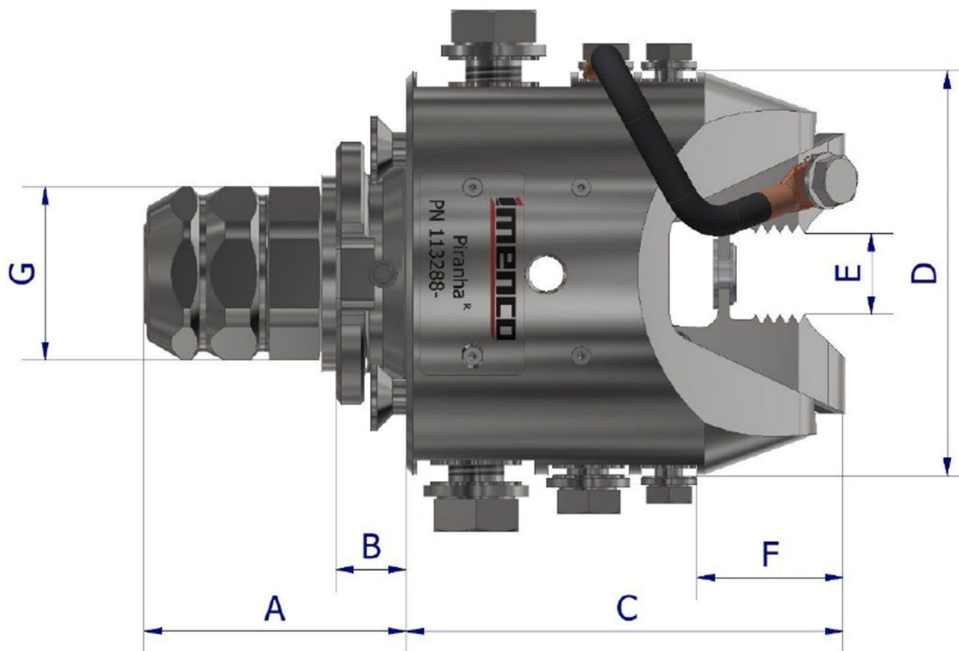


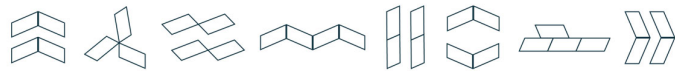


# PIRANHA® M CLAMP

The Piranha® M clamp housing design is suitable across the entire 35-55mm range.

Clamp Type	Plate Thickness (mm)	Clamp Dimensions (mm)					
		A	C	øD	E	G	Weight
Piranha® M	35-40 mm	75	125	115	34-39	46	8,9 kg
Piranha® M	40-45 mm	75	125	115	39-44	46	8,8 kg
Piranha® M	45-50 mm	75	125	115	44-49	46	8,8 kg
Piranha® M	50-55 mm	75	125	115	49-54	46	8,7 kg





# PIRANHA<sup>®</sup> Assortment

## PIRANHA<sup>®</sup> L Clamp

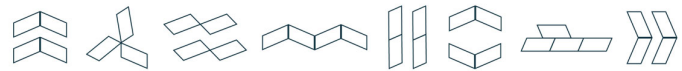
The Piranha<sup>®</sup> L clamp is suitable for plate thickness or pipe/rod diameter across the entire 55-90 mm range.

## PIRANHA<sup>®</sup> XL Clamp

The Piranha<sup>®</sup> XL clamp is suitable for plate thickness or pipe/rod diameter suitable across the 75-120 mm range.

## PIRANHA<sup>®</sup> XXL Clamp

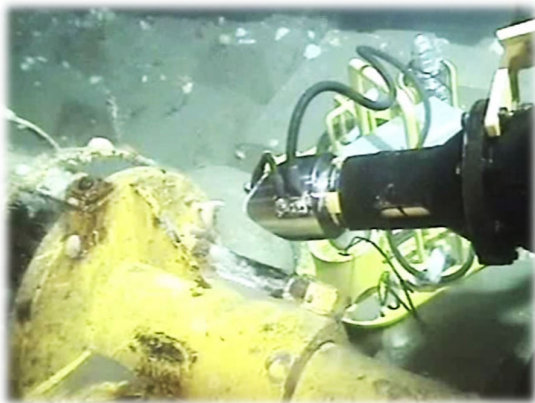
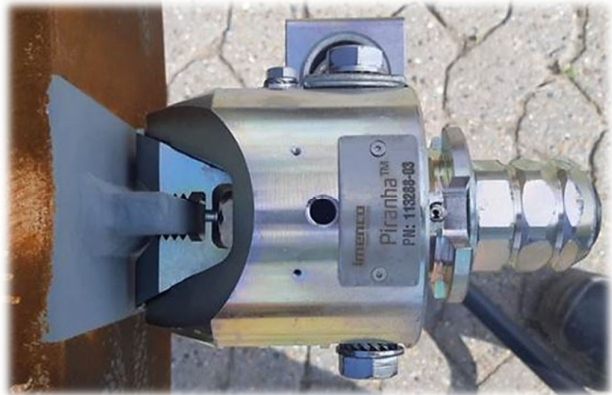
The Piranha<sup>®</sup> XXL clamp is suitable for plate thickness or pipe/rod diameter of 120 mm and higher.

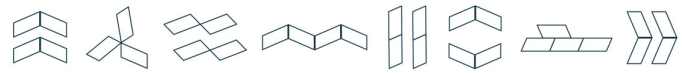


## Use-Case

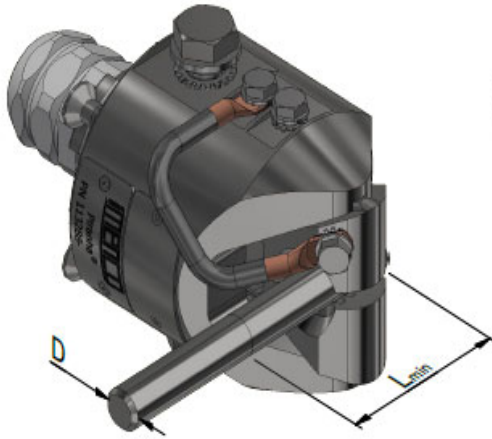
### Clamping on plates

The Piranha® Retrofit Anode Clamp's function is to clamp onto a structure by tightening onto a plate with its serrated jaw-by use of the ROV operated Imenco Clamp Installation Tool (ICIT). In addition to the connection aspect, the Piranha® Range features a flexibility in the design of the "jaw", providing many options for various plate thicknesses and rod/pipe diameters.

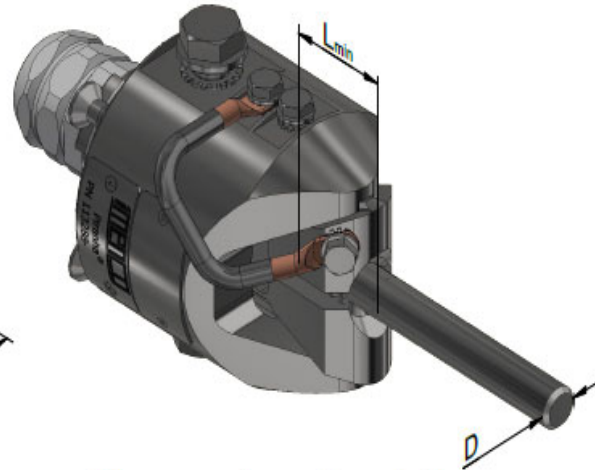




## Clamping on rod/Pipe

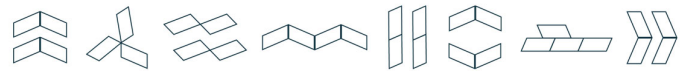


Clamp onto rods radially



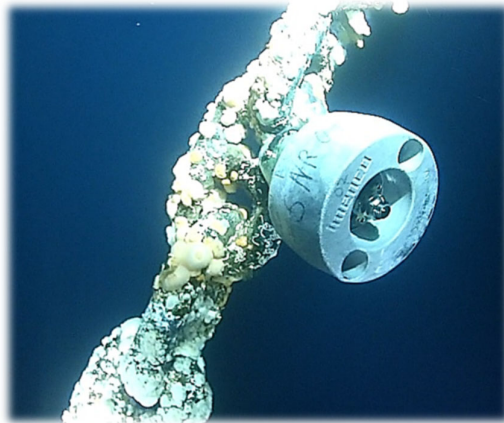
Clamp onto rods axially

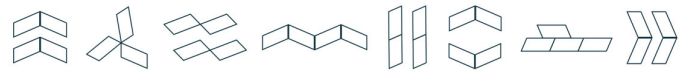




## Clamping on mooring-chains

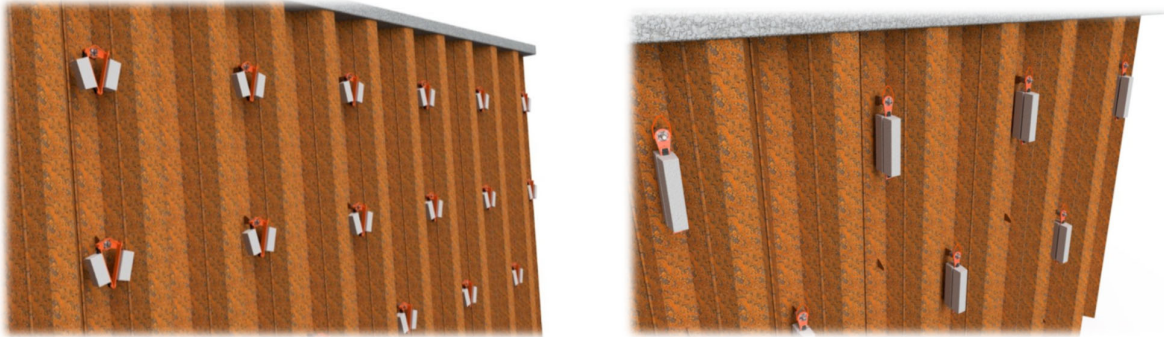
Mooring-chains can be protected from corrosion using Imenco Corrosion Technologies' own PACU™ system which has Piranha® clamp as main building block and specifically designed anode. Mooring-chains can also be monitored in different ways by using a combination of the Piranha® Retrofit Anode Clamp and a sensor.

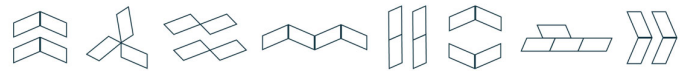




## Clamping on shallow-water jetty

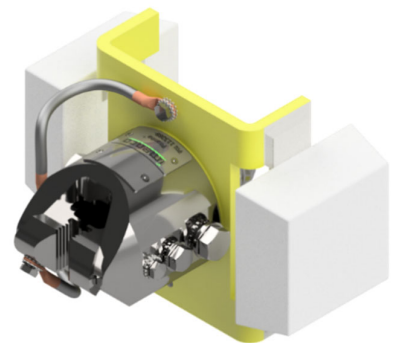
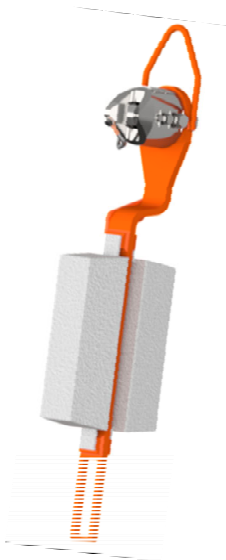
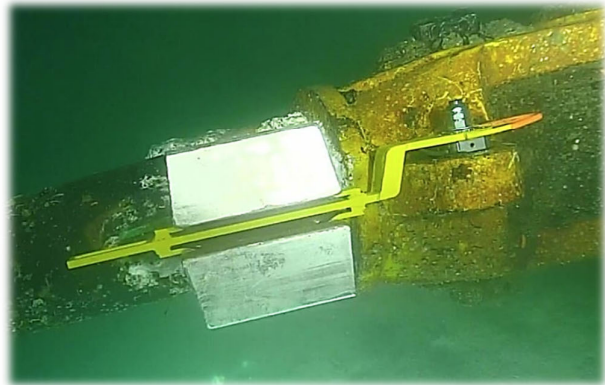
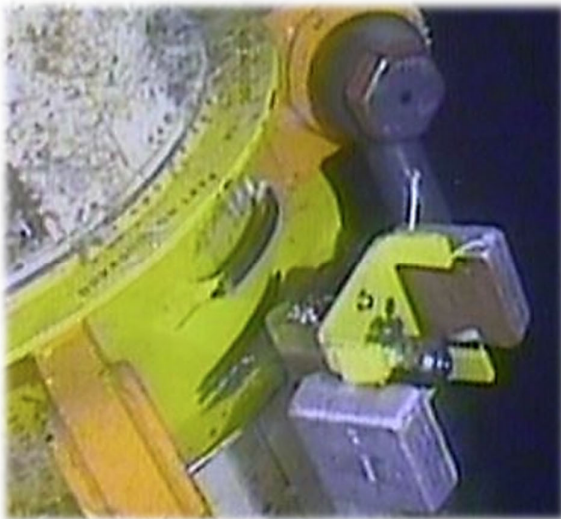
Shallow-water jetties can be protected from corrosion by combining the Piranha® Retrofit Anode Clamp with anode-brackets. The Piranha with anode-bracket can hold one or two anodes up to 1000 kg of anode mass and can protect large areas of Jetty loading platforms.

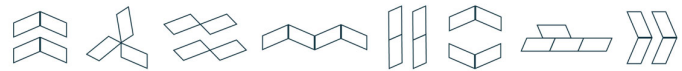




## Clamping with anode-brackets

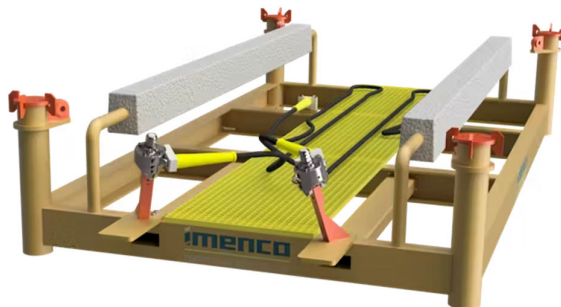
The Piranha® Retrofit Anode Clamp have built in interface for mounting of sacrificial anodes. The anodes are welded to a bracket, which is bolted to the clamp. Electrical continuity is secured by a continuity cable from the bracket to the anode clamp housing. Brackets are available in many designs, scalable for various amount and size of sacrificial anodes.

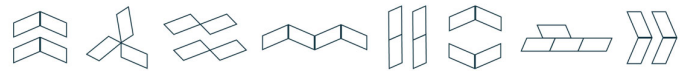




## Clamping connected to anode-bank

The Piranha® Clamp have built in interface for mounting of continuity cables in sizes ranging from 16mm<sup>2</sup> to 240mm<sup>2</sup>, making the clamp very flexible for connecting any size of anode sled/bank to a subsea pipeline or to a subsea structure. When needed the cables can be fitted with an Imenco developed bend stiffener to protect the cable termination end on both sides of the cable from cyclic loads/fatigue. Imenco can supply anode sleds/banks and stands in any size and form according to customer requirement and specifications.





## Clamping connected to new or existing ICCP

The Piranha® Clamp can be connected to new or existing ICCP-systems.

## As a sensor-platform

The Piranha® Clamp is also designed with flexibility in mind to have various sensors fitted directly to the clamp. Imenco has a sensor for CP Wireless Monitoring, measuring the surface potential of a subsea steel structures that the clamp is connected to and transferring this data to top side via digital acoustic communication.

