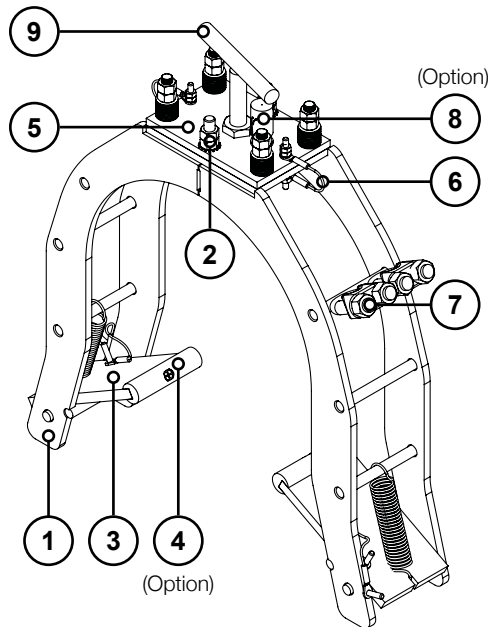


RetroClamp

General

RetroClamp is designed to provide a constant-tension electromechanical connection to metallic subsea tubulars. It may be used to connect galvanic anodes, support monitoring instruments or establish electrical continuity between two subsea metallic entities. RetroClamp is designed to be installed by diver or ROV. RetroClamp is available for installation on all pipe diameters from 4" to 65" with custom sizes available upon request.



Frame (Item 1)

Steel grade	ASTM A36 [EN 10025 S355]
Steel thickness	3/8" [9.5 mm] Plate
Fulcrums & spacers	Ø 1/2" Rod [Ø 12.7 mm]
Fasteners	SS316 and Zinc Plated Carbon Steel
Cable connection (Item 2)	2 x Ø 1/2" [M12] Stud

RetroClamp

ASTM A36 [EN 10025 S355]
3/8" [9.5 mm] Plate
Ø 1/2" Rod [Ø 12.7 mm]
SS316 and Zinc Plated Carbon Steel
2 x Ø 1/2" [M12] Stud

RetroClamp HD

ASTM A36 [EN 10025 S355]
3/8" [9.5 mm] Plate
Ø 3/4" Rod [Ø 19 mm]
SS316 and Zinc Plated Carbon Steel
2 x Ø 1/2" [M12] Stud

Features

Flappers (Item 3)

Tensioned by springs to allow easy installation onto tubular assets. In the event of snagging, flappers are designed to fail to prevent damage to asset. Can be fitted with pipeline protectors if required (Item 4).

Floating plate (Item 5)

Spring-tensioned by Belleville spring washers to ensure the low-resistance electrical contact is maintained under constant pressure.

Continuity (Item 6)

Electrical continuity throughout RetroClamp provided by SS316 bonding cable with swaged connector lug (4 required)

Cable grip (Item 7)

Provides strain relief and routing for the anode connection cables

Floating plate separation indicator (Item 8)

Indicates floating plate separation when visibility is obstructed (option)

Contact screw (Item 9)

The contact screw runs through the floating plate and establishes electrical continuity with the target member or pipeline; it is tensioned against the Belleville spring washers. The user interface for the contact screw is customised to suit the installation requirements, i.e. diver or ROV installation.

User interface options (Constructed from Stainless Steel 316)

Rigid tee handle (Diver or ROV installation)	Ø 3/4" [Ø 19 mm] Length to suit installation - 6" [152 mm] long handle as standard
Fish handle (ROV installation)	3/4" [19 mm] Plate
Hexagonal head (Diver installation)*	Ø 3/4" [Ø 19 mm] Length to suit installation

*To drive the hexagonal head, removable handles with socket attachments are provided

Contact tip options

The contact tip is selected based on the target structure and coating.

Target structure and coating

Target structure and coating	Contact tip	Diagram
Structural connections (Bare steel or painted)	Ø 3/4"-10 Stainless Steel 316 45° point tip	
Pipelines with thin film coatings (<6 mm) or Pipelines with Concrete Weight Coating (CWC) (Concrete pre-removed)	Ø 3/4"-10 Stainless Steel 316 Volcano tip with transverse slot	
Pipelines with Concrete Weight Coating (CWC) (Diver only)	Ø 5/8"-18 Stainless Steel 316 driver Tungsten-Carbide concrete piercing masonry bit	

Plate separator

Recommended Maximum

Diagram	Recommended	Maximum
	6mm	10mm
	6mm	10mm
	8mm	10mm

Technical datasheet

Coating

Frame and flappers coated with submersion service epoxy - safety yellow

Anode connection cables

4/0 AWG [~107 mm²], EPDM insulated, heavy duty flexible cable
 2 per RetroClamp
 Supplied in standard cable lengths of 25' [7.5 m] or 40' [12 m]. Custom sizes available upon request.
 Strain-relieved by 5/8" [16 mm] galvanised malleable wire rope clips.

Anode connection cables weight (dual cables)

Length	Weight (air)	Weight (water)
2 x 25' [2 x 7.5 m]	50 lb [22.8 kg]	38 lb [17.2 kg]
2 x 40' [2 x 12 m]	80 lb [36.4 kg]	60 lb [27.6 kg]

Packaging

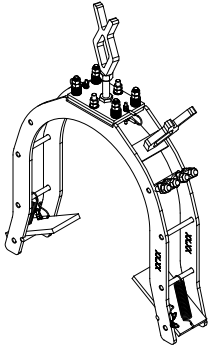
Each RetroClamp is hermetically sealed in a plastic inner envelope and packaged in a wooden crate (fumigated for international shipments). May be packed in multiple quantities if required (bulk crating) If RetroClamp is to be supplied on a returnable consignment, individual packing is required.

Clamp weights and dimensions*

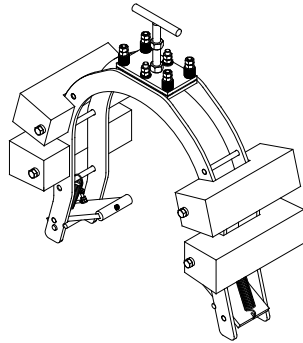
Pipe OD**	Weight (air)	Weight (water)
4"	28 lb [12.5 kg]	24 lb [10.9 kg]
6"	32 lb [14.3 kg]	28 lb [12.5 kg]
8"	35 lb [15.9 kg]	31 lb [13.9 kg]
10"	36 lb [16.6 kg]	32 lb [14.5 kg]
12"	38 lb [17.3 kg]	33 lb [15.0 kg]
14"	40 lb [18.0 kg]	34 lb [15.6 kg]
16"	41 lb [18.6 kg]	40 lb [16.2 kg]
18"	47 lb [21.1 kg]	41 lb [18.4 kg]
20"	48 lb [21.8 kg]	42 lb [19.0 kg]
22"	50 lb [22.7 kg]	44 lb [19.8 kg]
24"	52 lb [23.6 kg]	45 lb [20.6 kg]
26"	54 lb [24.5 kg]	47 lb [21.4 kg]
28"	57 lb [25.7 kg]	49 lb [22.4 kg]
30"	60 lb [27.2 kg]	52 lb [23.8 kg]
36"	75 lb [34.0 kg]	65 lb [29.7 kg]
46"	116 lb [52.7 kg]	101 lb [45.9 kg]

RetroClamp variations and accessories

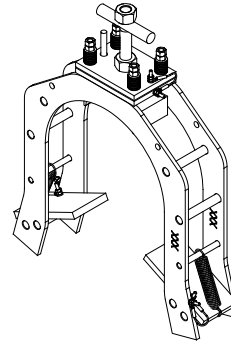
RetroClamp is available with a variety of accessories to suit many applications. Please contact Deepwater for further details on RetroClamp solutions.



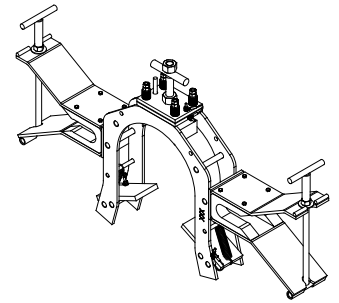
RetroClamp with ROV Grab Handle
To aid ROV installations



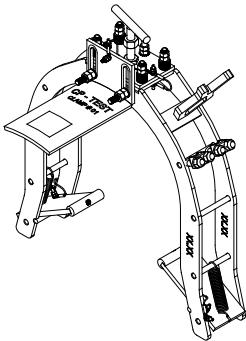
RetroClamp CP
For fast, localised CP retrofits
(See RetroClamp CP Technical Datasheet)



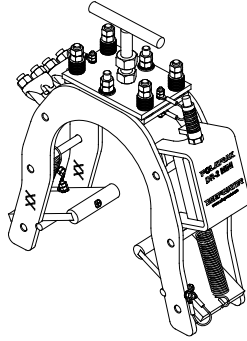
RetroClamp HD
Suitable for heavy-duty applications



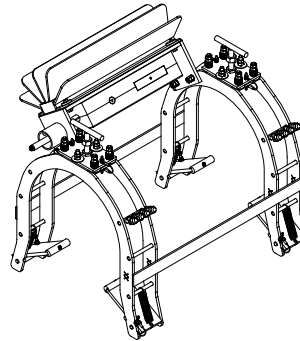
RetroClamp HD with dual cable grips
For subsea cable routing



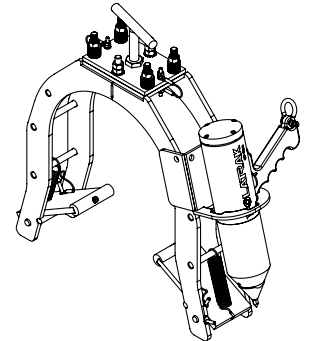
RetroClamp with CP Stab Plate
For pipeline potential stab measurements and location markers



RetroClamp with DR-2 Mini
For retrofit monitoring attachment
(See DR-2 Mini Technical Datasheet)



RetroClamp with DR-2 CD
For retrofit monitoring attachment
(See DR-2 Technical Datasheet)



RetroClamp with CP Gun
CP Gun interface used with CWC to verify pipe contact
Diver installation only
(See CWC installation procedure)