

RetroClamp

General

RetroClamp is designed to provide a constant-tension mechanical and electrical 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)

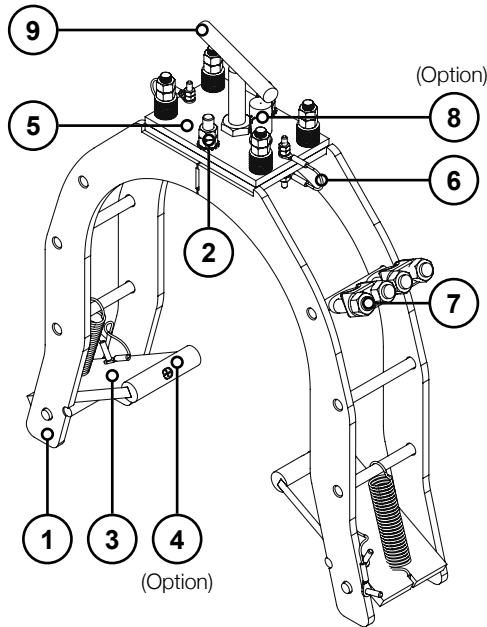
Steel grade	ASTM A36 [EN 10025 S355]
Steel thickness	3/8" [9.5 mm] Plate
Fulcrums & spacers	Ø 1/2" Rod [Ø 12.7 mm]
Fasteners	SS316 and Zinc Plated Carbon Steel
Cable connection (Item 2)	2 x Ø 1/2" [M12] Stud

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 lugs (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 customized to suit the installation requirements i.e. diver or ROV installation. Custom handle geometries are available by request.

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

Structural connections (Bare steel or painted)	Ø 3/4"-10 Stainless Steel 316 45° point tip		6mm	10mm
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		6mm	10mm
Pipelines with Concrete Weight Coating (CWC) or Thick polymer coatings up to (76mm) (ROV installable with the use of a RetroReader)	Ø 5/8"-18 Stainless Steel 316 driver Tungsten-Carbide concrete piercing masonry bit		8mm	10mm

Plate separator

Recommended Maximum

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] galvanized 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

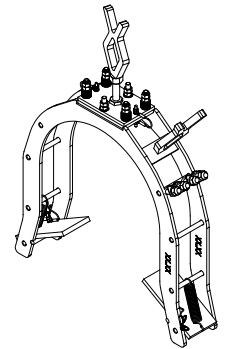
Each RetroClamp is hermetically sealed in a plastic inner envelope and packaged in a wooden crate (fumigated for international shipments).
May be packed in multiple quantities if required (bulk crating)
If RetroClamp is to be supplied on a returnable consignment, individual packing is required.

Clamp weights and dimensions*

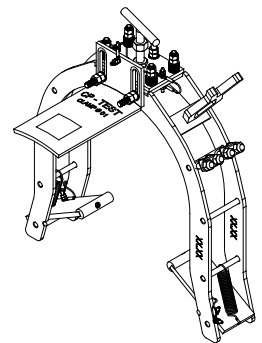
Pipe OD**	Weight (air)	Weight (water)
4"	28 lb [12.5 kg]	24 lb [10.9 kg]
6"	32 lb [14.3 kg]	28 lb [12.5 kg]
8"	35 lb [15.9 kg]	31 lb [13.9 kg]
10"	36 lb [16.6 kg]	32 lb [14.5 kg]
12"	38 lb [17.3 kg]	33 lb [15.0 kg]
14"	40 lb [18.0 kg]	34 lb [15.6 kg]
16"	41 lb [18.6 kg]	40 lb [16.2 kg]
18"	47 lb [21.1 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]

RetroClamp variations

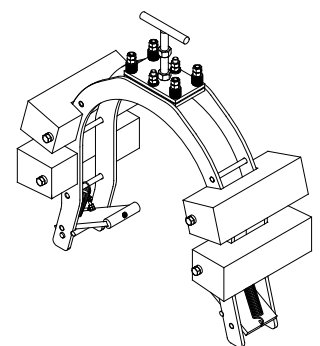
RetroClamps are available with a variety of accessories for many applications. Here are just a few options:



RetroClamp with grab handle to aid ROV installation



RetroClamp with CP stab plate for pipeline potential stab measurements and location markers



RetroClamp CP for fast, localized CP retrofits

RetroClamp dimensions

Clamp size	RetroClamp width		RetroClamp height		Clamp size	RetroClamp width		RetroClamp height	
	Inches	mm	Inches	mm		Inches	mm	Inches	mm
4.00	12.14	308.4	13.71	348.2	20.00	27.63	701.8	28.89	733.8
5.00	13.19	335.0	14.52	368.8	21.00	28.63	727.2	30.05	763.3
6.00	14.26	362.2	15.58	395.7	22.00	29.63	752.6	30.86	783.8
8.00	16.26	413.0	17.49	444.2	23.00	30.63	778.0	31.85	809.0
9.30	16.98	431.3	17.91	454.9	24.00	31.63	803.4	32.83	833.9
10.00	18.38	466.9	19.68	499.9	24.25	31.88	809.8	33.94	862.1
11.50	19.23	488.4	20.61	523.5	24.50	32.13	816.1	32.93	836.4
11.63	19.38	492.3	20.84	529.3	25.51	33.14	841.8	35.14	892.6
12.00	20.38	517.7	21.53	546.9	26.00	33.63	854.2	34.81	884.2
13.13	20.76	527.3	22.11	561.6	26.80	34.43	874.5	35.60	904.2
13.55	21.05	534.7	22.41	569.2	28.00	35.63	905.0	36.78	934.2
14.00	21.63	549.4	22.97	583.4	28.75	36.74	933.2	37.21	945.1
14.25	21.88	555.8	23.22	589.8	30.00	37.63	955.8	38.75	984.3
16.00	23.63	600.2	24.95	633.7	32.00	39.63	1006.6	40.72	1034.3
16.25	23.88	606.6	25.19	639.8	34.00	41.63	1057.4	42.70	1084.6
17.00	24.63	625.6	25.93	658.6	36.00	43.63	1108.2	44.67	1134.6
17.25	24.88	632.0	26.18	665.0	39.00	46.63	1184.4	47.63	1209.8
18.00	25.63	651.0	26.92	683.8	42.00	49.63	1260.6	50.58	1284.7
19.50	27.13	689.1	28.40	721.4	42.25	51.88	1317.8	52.22	1326.4