



Innovative high strength composite

PRT Aquawrap® is water activated, resin impregnated fiberglass fabric, made in varying lengths and widths to accommodate all pipe sizes and wall thicknesses. It is nontoxic, easy to apply and is suitable for a variety of pipeline applications, including, but not limited to reinforcement, corrosion protection, abrasion, impact protection, and in certain instances, leak repair.



PRT Aquawrap® is a fast, efficient, economical, easy to use alternative to any other repair product or replacement. In most applications, the need for pressure reduction is minimized and downtime is eliminated.

PRT Permanent pipe repair System is an innovative combination of the strong advantages of our non-permeable epoxies in concert with our high strength Moisture Cure Urethane (MCU) pre-preg wraps to produce a task specific, field applied solution to even the toughest piping repair and remediation problems.

PRT Aquawrap® is highly chemical resistant, non-conductive and can be specifically engineered to custom fit the application requirements.



PRT Permanent Pipe Repair System offers complete, long life external piping remediation, repair reinforcement, and hoop strength replacement to any size piping constructed of virtually any material. The inherent isolation characteristics also provide complete elimination of electrolysis by protecting against exposure from the elements. Not only this, but it has the flexibility to conform to any shape or configuration, including elbows, manifolds, tees, reducers or bends.



PRT Aquawrap® principal element of a **Permanent pipe Repair System** is allowed for repairs on **D.O.T.** regulated Pipelines per **49 CFR, Parts 192 and 195** as well as other industry standards.



System Product Specifications

Generic Composition:

Permanent repair system consists of two components: Adhesive and PRT Aquawrap®, a resin impregnated fiberglass tape.

Adhesion/Cohesion to steel substrate:

1,000 Psi (69 Bar) with no adhesive failure. (ASTM D 4541)

Cathodic Disbondment:

- 0.0 mm disbondment from Apex (ASTM G 42 – 14 days duration in 3% synthetic seawater at 150°F (65.6°C) , -1.5 VDC)
- 4.5 mm disbondment from Apex (ASTM G 42 – 180 days duration in 3% synthetic seawater at 150°F (65.6°C), -1.5 VDC)

Impact Resistance:

>250 ft/lbs (ASTM G 14)

Hot Water Soak Adhesion:

900 Psi (62 Bar) with no adhesive failure (Immersion in 3% synthetic seawater 200°F (93.3°C) for 200 hours followed by immediate increase to 250°F (121°C) maintained for 4 hours.

Abrasion Resistance:

2.82 mils/sec (ITI/JIP Study)

Code Compliance:

Allowed for “D.O.T.” pipeline repairs under 49 CFR, Parts 192 and 195, as well as being validated and certified for use under ASME PCC-2 Article & European ISO/PRTS 24817. ANSI/NSF 61 for potable water.



Salina Cruz Refinery, Mexico, 60 inches line (150cm) at 350 psi (24.2 Bar).

Reinforcing Wrap

Generic Composition: MCU resin impregnated fiberglass tape.

Shelf Life: One year from date of purchase when stored at 40°—83°F (4.4°—28.3°C)

Tensile Strength: 65,000 Psi (448 MPa)

Solubility: None in water

Toxicity: Non-hazardous after cure.

Set Times: 20-40 minutes.

Glass transition temperature (T_g): 288°F or 142°C

Adhesion: 1000 psi (Lap shear) to abraded carbon steel.
500 psi to concrete per ASTM D 4541

Available Sizes	
2" x 12'	10" x 60'
3" x 10'	10" x 90'
3" x 30'	10" x 120'
4" x 15'	10" x 150'
4" x 30'	12" x 60'
4" x 50'	12" x 90'
6" x 30'	12" x 120'
6" x 60'	12" x 150'



Basecoat, Fillers, Topcoats

Generic Composition:

Epoxy amine: 99% solid by volume or polyurethane primer.

Shelf Life:

24 months (unopened containers)

Flash Point:

>200°F (93.3°C) D.O.T.

Density weight:

11.3 lbs/gal 1.36Kg/liter

Water Absorption:

<1.0% (ASTM D 570)

Toxicity:

Non-hazardous, if use properly

Pot Life:

40 minutes at 77°F (25°C)

Surface Preparation:

SSPC SP 5/NACE 1 (steel) preferred

Compressive Strength:

7,380 Psi (51 MPa)

Tensile Strength:

6,000 Psi (41.4 MPa)

Flexural Strength:

4,550 Psi (31.4 MPa)



EP-400 and 5/20 UW
Epoxy Stick (filler)



BD-563 Base & Topcoat

BIO-DUR 563

BIO-DUR 563 is based on a unique blend of liquid epoxy polymer and aliphatic polyamine curing agents, which is able to displace water from wet surfaces in order to make a permanent bond. The formulation is solvent-free to ensure safety and maximum technical performance. Kevlar™ fibers are incorporated for reinforcement and viscosity management and increased application rates – even underwater! Proprietary catalysts speed up the curing process for maximum productivity.

Permanent Pipe Repair System

Description:

The repair system is defined as the combination of the following elements for which qualification testing has been completed: substrate (pipe), surface preparation, composite material (repair laminate), filler material, adhesive and application method.

We provide a qualified Repair System.

Guide for Selection of Repair Technique

	General wall thinning	Local wall thinning	Pitting	Gouges	Blisters	Laminations	Circumferential	Longitudinal	Other
Non-Metallic Composite Repair Systems for Pipelines and Pipe work	Y	Y	Y	R	Y	Y	R	R	

Nomenclature:

Y = Generally appropriate.

S = Although may be acceptable, is not generally used for this condition.

R = May be used, but requires special cautions.

N = Not generally appropriate.

The Repair System qualification, design, installation and operational requirements covers situations involving damage commonly encountered in piping systems.

The following type of defects may be repaired.

- External corrosion where structural integrity is compromised. In this case it is probable the application of a Repair System will arrest further deterioration;
- External damage such as dents, gouges, fretting or wear (at supports);
- Cracks may be repaired if they are prepared in accordance.
- Internal corrosion and / or erosion, which may or may not be leaking. In this case it is probable that corrosion will continue and the assessment must take this into account;
- Leaks;
- Manufacturing or fabrication defects.

Assessment

NEVER ASSUME !

Operator Qualification rules (49 CFR 192(N) require that all personnel performing pipelines repairs are properly trained and qualified.

Internal fluids and external environments shall be considered with respect to compatibility of the composite. The upper pressure / temperature limits are dependent on the type of damage being repaired and the Repair System being used. These limits are determined by the testing and qualification requirements of this Article. A lower temperature limit of -50°C (-58°F) shall be assumed unless a lower temperature capability is demonstrated through qualification testing.

This Repair System can be applied to both metallic and non-metallic (substrate) pipe materials.

Repair System Combination Elements

Evaluation of the Application(s):

- I. Assessment
- II. Determination of the optimum solution
- III. Calculation for re-enforcement/repair

Calculation basic method to determine the number of wraps on a given repair

The formula for the calculation of the minimum number of wraps is a modified version of the widely accepted **Barlow's Formula** and is as follows:

$$t = \frac{PD}{2s}$$

Where;

t = the minimum number of wraps necessary to retain the required working or design pressure

P = the MAOP or design pressure (In this example-500 PSI)

D = the actual outside diameter of the pipe in inches (use 12.75 Inches)

s = the stress allowable of the wrap per ply expressed in PSI (400) this value is a constant for **PRT Aquawrap®**.

Therefore, to determine the number of wraps necessary for this 12 inch O.D. pipe at 500 PSI;

$$t = \frac{500 (12.75)}{2 (400)} = \frac{6,375}{800} = 7.97 \text{ Wraps minimum for 100\% replacement}$$

Since we recommend no less than 8 wraps per repair to maintain complete hoop strength integrity and impermeability, the formula above indicates that the minimum number of 8 wraps will be sufficient for a safe repair.

Note: It is strongly recommend that a minimum of 8 wraps to be installed to assure complete retention of pressure should the base piping fail.

This calculation basic method is here as an example.

An advance calculation formula base on PCC-II article is used only by certified qualified senior technician to determine the right quantity of wraps to be installed.

Surface Preparation:

PLEASE NOTE: The cleaner the surface for application the better the result.

Care should be taken to remove all particulate matter and oily substances from the application surface. Any traces of hydrocarbon (oily) residue, will eliminate surface adhesion and seriously reduce the product's effectiveness.

Preparation can be taken to two levels:

A. Leak Repair, Corrosion Protection: Surface should be sandblasted to a 2.5-4 -mil profile and chemically washed twice to remove all particulate material. This is the most desirable surface preparation for all applications.

B. Other Applications, Such as Reinforcement, Non Leaking Surface Repair, etc.: Clean surface, by media blasting or if that is not possible, use coarse sandpaper or wire wheel, wire brush or similar implement, then clean well to remove all particulate matter and any and all oily residue. Clean the surface twice with water or a light solvent as Acetone or Toluene.

Desirable Surface Preparation examples



Filler/ Base Coat:

In instances where external wall loss requires a filler media to round out the pipe in pitted areas, a high strength Epoxy filler must be applied between the pipe surface and the Pipe Wrap. Appropriate materials suited to the specific task such as EP-400 or 5/20SE Epoxy Stick and Bio-Dur 563 are available upon assessment of the individual application. The filler materials consist of viscous, high strength epoxy resins which mix in a One part to One part ratio, based on their volume, not their weight. The mix ratio must be correct in order to obtain the correct material set time and ultimate strength.

The filler is applied to the freshly prepared pipe surface prior to the application of the wrap.

Filler/Base coat application examples



PRT Aquawrap® Application:

PRT Aquawrap® should be applied directly over the setting epoxy before it fully cures. This allows the wrap to settle into the epoxy and form an impermeable barrier.

Make sure that the wrap comes fully into contact with the filler, but is not applied and pulled so tightly as to extrude all the filler.

Continue the application of the wrap to the required number of layers.

After the PRT Aquawrap® is installed; it is recommended that 2 layers of plastic stricture wrap be applied tightly to hold the wrap in place during cure time in the direction of the original wrap, to achieve a smooth finish and to maintain full contact on the loose end.

The plastic stricture wrap must be perforated to allow excess water and the bi-product gas to escape freely. The perforations should be small holes all over the plastic wrap using any sharp object, such a knife tip, awl or roller perforator. This wrap can be removed after about one hour and must be completely removed prior to top coat. , and allow to cure for a period of no less than 12 hours before starting the installation of the top coat, if applicable.



Figure 6 - First layer of Aqua Wrap installed on pipe



Figure 8 - Perforating plastic wrap to permit off-gassing during cure

Top Coat:

Allow the wrap to cure for no less than 12 hours before application of top coat.

The BD-563 Epoxy top coat should be applied, to a thickness of approximately 10 mil to completely cover and encapsulate the repaired area.



Epoxy paint and other kind of protective coating can be applied after full cure of the wrap.



Salamanca refinery. Heat exchanger, 250°F (121°C) at 250 psi (17.2 bar).

Underwater application can be performed and have the same performance with his particular procedure.



With the proper surface preparation, PRT Permanent Repair System can be applied to any kind of surface material; copper, cast iron, aluminum, plastic and concrete.



PROPERTIES OF THE COMPOSITE SYSTEM

Property	Test Procedure	Unit	Testing Conditions	Value Test results
Percentage of Fiber in Volume		%		Proprietary
Percentage of Fiber in Mass		%		Proprietary
Nominal Ply Thickness		mm		27,9
Density		Kg/m ³		1345
Wrap or sleeve Width				2'' to 12''
Tensile Strength in hoop direction	ASTM D 3039 ISO 527-1 / ISO 517-4	MPa	Short term	362
		MPa	Long term (*)	188
Tensile Strength in Axial direction	ASTM D 3039 ISO 527-1 / ISO 517-4	MPa	Short term	180
		MPa	Long term (*)	93
Tensile Strain to failure in hoop direction	ASTM D 3039 ISO 527-1 / ISO 517-4	%	Short term	1,70%
		%	Long term (*)	.88% calculated
Tensile Strain to failure in axial direction	ASTM D 3039 ISO 527-1 / ISO 517-4	%	Short term	1,10%
		%	Long term (*)	.57% calculated
Tensile Modulus in hoop direction	ASTM D 3039 ISO 527-1 / ISO 517-4	GPa	Short term	20,8
		GPa	Long term (*)	20,8
Tensile Modulus in axial direction	ASTM D 3039 ISO 527-1 / ISO 517-4	GPa	Short term	10,3
		GPa	Long term (*)	10,3
Poissons ratio	ASTM D 3039 ISO 527-1 / ISO 517-4			0,3
Shear Modulus	ASTM 5379	GPa		NA
Impact resistivity	ASTM G 14 ISO 24817 Annex F	J		80 in-lbft per ASTM D 5420
Thermal Expansion Coefficient in hoop direction	ISO 11359 ASTM D696	m/m/°C		11.7 e-6
Thermal Expansion Coefficient in the axial direction		m/m/°C		NA
Barcol Hardness or Shore D hardness	BS EN 59 ISO 868 (or ASTM D2583)			SHORE D 85
Adhesion strength: lap shear Strength (Interface pipe / Composite System)	BS EN 1465 (or ASTM D3165)	MPa	Short term	6,7
		MPa	Long term (*)	3.4 Estimated
Pull Off Test	ISO 4624	MPa	Short term	.345 Per ASTM D 4541
		MPa	Long term (*)	n/a
Cathodic Disbondment	NF A 49-711 Annex K			No Disbondment per ASTM G 8
Short-term pipe spool survival test (spool pressure test with a 80% wall thickness depth machined defect)	See ISO 24817/TS Annexe C			PASSES Equivalent test
Interlaminar shear	ASTM D 2344			3200 PSI
Pipe spool repair flexural strength	ASTM D 790	MPa		316
(*)	Test carried out following immersion in water at Maximum Design Temperature for 1000 hr.			



***Appendix VII INSTALLER QUALIFICATION**

VII-1 Introduction

The repair of pipe using composite laminates differs considerably from other repair techniques and the quality of the installation depends strongly on satisfactory craftsmanship. Training and certification of personnel is therefore a key element of a successful repair. This appendix outlines the minimum requirements for training, qualification and approval of installers and supervisors.

Courses and training shall be arranged by or with the assistance of the Repair System Supplier.

VII-2.3 Installer Specific Qualification

Installers shall be qualified for each specific Repair System through practical tests for Type A and / or Type B.

All specific approval tests shall be carried out in accordance with a written procedure, relevant to the specific Repair System and approved by the Repair System Supplier.

VII-3 Training Records

At the completion of an installer or supervisor course a successful candidate shall be issued with a certificate providing details of the Repair System of concern.

The Employer of the Repair System Installer shall keep a record of the completed training.

An advance calculation formula will be given to qualified senior technician and trainer.



*PCC-2 article:

The PCC-2 is a published **ASME** specification dealing with Non Metallic, Post Construction Composite repairs of pressure containing pipelines and is recognized by D.O.T. and all others agencies as the correct and appropriate way to evaluate a problem, qualify repair products, qualify repair personnel and perform the repair.

The full PCC-2 Specification is now available for sale thru ASME website.

<i>No Effect Chemical Resistance</i>	
40 days Immersion Test Period	
Hydrochloric Acid	Ammonia
Ethylene Glycol	Diesel
Ethyl Alcohol	Crude Oil
Sulfuric Acid	Gasoline
Black Liquor	Acetone
Toluene	Xylenes



Specific Mechanical Properties

Installation and Curing Temperature	1° to 65°C
Design Operating Temperature	-50° to 177°C
Design Calculation Model	Per ASME PCC-2 & ISO 24817
Repair Life Time	50 Years
Repair Software Design	Calculator Available
Fire Performance	Class B per ASTM D 84
Dielectric Strength	Non-conductive when Cured (16,000 volts resistance)

	Type G-03	Type G-05	Type G-06	Type C-14
Reinforcement	Woven glass Bi-axial fabric	Woven glass Bi-axial fabric	Woven glass Uni-axial fabric	Stitched carbon Uni-axial fabric
Dry Fabric weight, (oz./sq.yd)	11	24	26	13
Nominal thickness (mils)	11	27	27	27
Tensile strength (psi)	54,000	47,500	83,000	123,000
Tensile modulus (e-6 psi)	3.24	3.2	5.0	11.4
Tensile load per ply (pounds)	694	1,280	2,240	3,320
Compressive strength (psi)	28,500	25,000	27,400	20,000
Interlaminar shear (psi)	2,900	2,750	3,465	2,800

General Notes

Handling:

PRT Aquawrap® is shipped in a sealed protective bag to protect it from atmospheric moisture. Because it cures with the application of water (and air humidity), care must be taken in handling the sealed bags to prevent puncturing or scuffing, which would cause the product to cure in the bag. Once the bag is opened and the PRT Aquawrap® is exposed to the humidity in the air, it will begin to cure and will gel within about 60 minutes. Therefore, work must be well planned prior to opening the bag. PRT Aquawrap® requires no special handling or application procedures. This resin is slightly irritating to certain sensitive people; it will give a small amount of carbon dioxide while curing; and the cured resin is permanent and very difficult to remove, so gloves, safety glasses and other personnel protection equipment appropriate for the task must be used.

Design and Application Instructions:

Design guidelines and application notes for various applications are available from your nearest service provider.



Manufacturer Warranty:

The manufacturer warrants that the goods delivered hereunder shall be free from defects in material and workmanship. The WARRANTY shall extend for a period of one (1) year after date of delivery of such goods to customer. This warranty is void in the event that the protective pouch has been damaged. THE MANUFACTURER MAKES NO WARRANTY EXPRESS, IMPLIED (INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND FITNESS FOR INTENDED PURPOSE), OR STATUTORY, OTHER THAN THE FOREGOING EXPRESS WARRANTY. Failure of customer to submit any claim hereunder within the Warranty Period after receipt of such goods shall be an admission by customer and conclusive proof that such articles are in every respect as warranted and shall release the manufacturer from any all claims for damage or loss sustained by customer. In the event customer submits a claim for defective material within the required Warranty Period, the parties agree that customer's sole and exclusive remedy shall be the replacement of such defective goods or refund of the price of the defective goods. To the greatest extent practical defective goods shall be returned to the manufacturer for analysis. The Manufacturer does not warrant products which have been damaged by abuse or misuse, mishandling, negligence, vandalism, act of god or improper installation. IN NO EVENT SHALL THE MANUFACTURER BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OR SPECIAL, INDIRECT OR INCIDENTAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, LOSS OF USE OF GOODS OR ANY PART THEREOF, EVEN THOUGH THE MANUFACTURER HAS BEEN NEGLIGENT OR HAS BEEN INFORMED OF CIRCUMSTANCES WHICH MIGHT GIVE RISE TO SUCH DAMAGES.

Data and parameters listed herein and in our data sheets have been obtained by the Manufacturer using materials under carefully controlled conditions. Data of this type should not be used by engineers as design specifications, but rather as indicative of ultimate properties obtainable. Before using, user should determine the suitability of the product for its intended use. In determining whether the material is suited for a particular use, such factors as overall application configuration and design, field conditions and environmental criteria to which it will be subjected should be considered by the user.

For Information and/or Technical Assistance:



Contact your service provider: Exclusive & Sole Representative for West Africa

Osaks Inteq
(WELLQUIP ENERGY SERV. LTD.)
#14 Woji Road, Rumuogba
Port Harcourt
Plot 245 East West Road,
Between Uniport & UPTH,
Port Harcourt
[Tel:+234-84-886-615](tel:+234-84-886-615) 234-803-668-2386
info@wellquipenergy.com

Master Sale Technical representative

C.E.S. Servtech Inc

**1505 Autoroute Laval
Laval, Québec, Canada
H7L 3W3**

**c.e.s@qc.aira.com
www.cesservtech.com**

Self Sealing Repair Clamps-SSRC's

From Piping Repair Technologies



STANDARD FEATURES

- Available in most ANSI and/or customer specified pressure ratings up to 5000 PSI
- Wide Seal Contact Area for maximum sealing reliability
- Fittings are fully weldable after installation
- Hinge plates provided on 8 Inch and larger sizes
- Readily modified for hot-tap or line-stop applications
- Advanced sealing body design reduce clamp weight and bending loads
- Field replaceable seals
- Xylan Coated Fasteners reduce friction and corrosion
- Vent / Injection ports standard on all sizes
- Designs based on materials and design requirements in API-6H and ASME Section 8, Divisions 1 and 2



**12 Inch ANSI 600
Flange Leak Repair
Clamp with Various
SSRC's**

The PRT Split Sleeve Repair Clamps (SSRC) are a high integrity split pressure vessel utilizing a perimeter elastomer seal system, specifically engineered for long term repairs of pipelines, encapsulation of leaking valves, encapsulation of leaking flanges, and advance remediation of potential problem areas both onshore and offshore. Nominal sizes from 2 inch thru 54 inch are available in virtually every length and configuration, in working pressure ranges up to 5000 PSI. These devices are comparable or superior to all competitors' products on the market.



24 Inch Nom. X 88 Inch Subsea
SSRC With Hydraulic Controls

The design criteria is taken directly from the **API-6H Specification for Clamps and Enclosures**, which incorporates all the engineering, design, material and testing requirements as set forth in the **ASME Pressure vessel codes** and **ANSI dimensional requirements**

A: All pressure containing components are designed utilizing the API-6H design safety factor based upon the Ultimate tensile strength of allowable pressure vessel quality carbon steels. All materials are furnished with complete traceability.

B. Where specified, fasteners are furnished with a Xylan (Teflon) coating for accuracy in torque procedures and for corrosion resistance. The fasteners designs are specified to only 50% of their certified yield strength.

C. All weldments, stress relief and non-destructive examination procedures are performed as specified in the appropriate specifications, and fully documented.

D. All manufacturing phases are followed by qualified quality assurance personnel, and documented as is required, or as the customer requests.

Mechanical Connectors
14 Inch
ANSI 600 Flanged End



E. The hydrostatic testing of the clamps is performed on a selective basis for standard commodity and/or inventory clamps, and is performed on 100% of special clamps, or as the customer specifies in the purchase documents. The standard test is performed at 1.3 times the rated design working pressure, with certificated and calibrated test equipment for a period of not less than 60 minutes duration for standard clamps, unless otherwise specified.

F. The design, material and test data is all supplied with the clamp at no extra cost and can be modified according to individual customer requirements. In addition, a certificate of compliance can be issued assuring compliance with all specifications set forth in the purchase documents.

DIMENSIONAL TABLE

API Size (In.)	Seal Length (In.)	Max. I.D. (In.)	Max. O.D. (In.)	O.A. Width (In.)	O.A. Length (In.)	Ship Wt. (Lbs.)	Ship Vol. (Cu.Ft.)	Min. Cir. (In.)
2	5.23	3.70	4.02	5.88	8.88	26	0.1	0.50
3	5.38	4.79	5.19	7.38	9.13	38	0.2	0.50
4	5.25	5.86	6.36	8.38	9.00	48	0.5	0.50
6	5.25	8.10	8.78	10.75	9.00	75	0.5	0.50
8	5.25	10.70	11.60	13.88	9.50	131	0.9	0.50
10	5.25	12.82	13.90	16.25	9.50	170	1.3	0.50
12	5.25	14.88	16.16	18.25	9.50	207	1.7	0.50
14	8.25	16.37	17.75	20.13	13.00	346	2.8	0.50
16	8.25	18.34	19.90	22.50	13.00	412	3.5	0.50
18	8.25	20.36	22.08	24.38	13.00	469	4.3	0.50
20	8.25	22.76	24.66	27.63	13.25	616	5.5	0.50
22	8.25	24.79	26.87	29.63	13.25	692	6.4	0.50
24	8.25	26.79	29.03	31.50	13.25	755	7.4	0.56
26	8.25	28.97	31.39	34.25	13.25	916	8.7	0.63
28	8.25	30.93	33.51	36.15	13.35	989	9.7	0.63
30	8.25	33.52	36.32	39.13	14.00	1231	12.1	0.69
32	8.25	35.17	38.11	41.75	14.38	1407	13.9	0.75
34	8.25	37.15	40.25	43.75	14.38	1520	15.4	0.75
36	8.25	39.15	42.45	45.75	14.38	1628	17.0	0.81
38	8.25	41.14	44.58	47.63	14.38	1721	18.5	0.88
40	8.25	43.16	46.76	49.63	14.38	1841	20.3	0.88
42	8.25	44.76	48.50	52.25	15.63	2178	24.1	0.88
48	9.00	50.90	55.14	58.25	15.63	2602	30.5	0.88

All data subject to change without notice. Other lengths and bores available upon request. Standard body material is A-216 Gr. WCC cast carbon steel or plate and/or tubing equivalent. Other materials available as required. Standard seal material is BUNA-Nitrile. Other seal materials available upon request. Other ANSI and API class pressure ratings available.



**6 inch X 2 Inch ANSI
Class 600 Structural,
Mechanical Bolt-On Hot
Tap Fitting**

G. Design Advantages:

1. The unique, advanced seal retention designs allow the seals to be easily and quickly replaced in the field with simple tools and minimally skilled labor, eliminating the costly need to return the clamp to the factory to install new seals.
2. All fasteners are Xylan (Teflon) coated for lubricity, thus providing an easier and more accurate torque or tensioning procedure, and providing added corrosion resistance.
3. Standard seal material is Buna-Nitrile, with many other special purpose seal materials available upon requirement.
4. All clamps are furnished with preparations along all split lines and around the ends to accommodate permanent weldment to the pipeline should that procedure be required.
5. Many PRT clamps are designed with an integrated “Nut Stop Ridge” on one half to eliminate the requirement to use a back-up wrench or a second person for installation. Certain clamp configurations will not allow this feature.
6. All PRT clamps are furnished with a minimum of one-1/2 Inch NPT vent/injection port on each half of each clamp.
7. All PRT clamps, 8 inch and larger are furnished with hinge plates. In addition, hydraulically actuated hinge opening and closure options are available where required at additional cost.
8. All PRT SSRC’s designated for underwater installation are furnished with a Subsea Marine Epoxy coating and sacrificial anodes, both designed for a 20 year life.
9. All PRT clamps are furnished with an enlarged annulus (Belly) dimension to allow installation over most cap welds, small dents, gouges or other allowable misshapen anomalies.

Emergency Intervention

PINHOLE CLAMP



Size up to 36" at 2000 psig
Larger size or lower pressure style
available on request.



**20 inch – 1500 PSI 90° Elbow
Encapsulation Clamp**



**4 inch 1500 PSI
Pipe End Connectors**



12" ANSI Class 600 - Flanged End Connector. Dual Seals, Sub-sea Crude Oil Service located at Gulf of Mexico.



48" Sub-sea Clamp ANSI Class 600 – 4ft long Oil line – with hydraulic activation and sub-sea anodes located at Nigeria

12" ANSI Class 600 – Sub-sea clamp – 10ft long for gas line repair - located at Gulf of Mexico





48" Weld-On Live stop fitting ANSI Class 600 located at Venezuela for Lagoven



24" ANSI Class 600 Sub-sea Clamp – 8t long for oil line with hydraulic activation and sub-sea anodes located at Gulf of Mexico, USA

For Information and/or Technical Assistance:



**SSRC- Extra Long 6 Inch Nom.
24 Inch Seal Length
1500 PSI MAOP**

Contact your service provider: Nigeria OEM Representative

Osaks Inteq

(WELLQUIP ENERGY SERV. LTD.)

#14 Woji Road, Rumuogba

Port Harcourt

Plot 245 East West Road,

Between Uniport & UPTH,

Port Harcourt

Tel: +234-84-886-615 234-803-668-2386

OEM

C.E.S. Servtech Inc

1505 Autoroute Laval Laval,

Québec, Canada H7L 3W3