Flange Fit
Flange Repair Clamp

- **Stops leaks in flange gaskets**

Flange Fit Repair Rings are designed for easy installation.

No special surface preparation is required prior to installation.

The product can be installed by your own personnel and can be used multiple times.

Bolt leakage is stopped by the injection of a suitable sealant fluid via sufficient injection sockets.

In case of a small gap between the line flanges, gaskets can be installed for temporarily sealing prior and during injection.

Detailed design is done based on line temperature, design temperature and design pressure.

In order to be able to quote the correct product, please download and

### Material specifications

<table>
<thead>
<tr>
<th>Standard Clamp Components</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Body</td>
<td>ASTM A516</td>
</tr>
<tr>
<td>Stud Bolts</td>
<td>A193 Gr. 87</td>
</tr>
<tr>
<td>Nuts</td>
<td>A194 Gr. 2H</td>
</tr>
<tr>
<td>Gaskets</td>
<td>NBR (others available on request)</td>
</tr>
</tbody>
</table>

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E sales@romaconpetro.com
Needle Clamp

Product description

The Needle Clamp is a local pithole repair clamp and is the appropriate solution to repair small corrosion pits in steel pipes.

No surface preparation is required and a simple wrench is sufficient to install the clamp.

The needle guides the tip of the conical rubber to enter the corroded area. By tightening the plug, the rubber (NBR or Viton) sufficiently compresses to seal off the leak.

Maximum working pressure is 2000 psi (138 bar). The Needle Clamp can be installed by your own personnel.

Material specifications

a) Pilot pin / Stainless steel
b) Steel packing force screw
c) Thrust washer
d) Leak packing (NBR)
Pipe Tight  
Pipe Coupling  

Product description  
The Pipe Tight coupling connects oil-, gas-, steam and petrochemical pipelines easily and safely.  
The Pipe Tight coupling can be installed without any preparation of the pipe ends.  
The coupling operates with 2 kinds of bolting systems: radial and axial screws.  
They align the two pipe ends together and compress the sealing gaskets respectively.  
In case a long-term connection of the pipes is required, the Pipe Tight coupling must be welded to the line.  
The gasket material is selected according to the medium inside the pipe, the desired operating temperature, rate of corrosion and product performance.  
NBR gaskets are standard. Other gaskets are available upon request.  
The Pipe Tight coupling can withstand axial forces only while it is anchored to the pipe (i.e. either it is fully welded on the line pipes or the line is axially supported.  

Material Specifications  

<table>
<thead>
<tr>
<th>Standard Product Components</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Body</td>
<td>Acc. to API 5L / ASTM A106 or equivalent</td>
</tr>
<tr>
<td>Screws</td>
<td>Acc. to A193 Gr. 87</td>
</tr>
</tbody>
</table>
Pipe Mate
Half Pipe Repair Sleeve

Product description

Pipe mates are designed to reinforce non-leaking, weakened, dented or damaged pipelines while the line remains on stream.
Supplied for any specified pressure wall thickness and class location.
Supplied in various lengths and materials as specified

Material specifications

Pipe mates are manufactured from steel plate ASTM A516 Gr.70 (Equivalent to A572 Gr.50).
Longitudinal butt-welding is required for all applications and back-up strip are furnished.

<table>
<thead>
<tr>
<th>Standard Clamp Components</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Body (shell)</td>
<td>A516 Gr. 70</td>
</tr>
<tr>
<td>Back strip</td>
<td>A36</td>
</tr>
</tbody>
</table>
The clamps can be used to repair the following pipe types:
- Ductile Iron (DI) – PE coated steel
- Cast Iron (CI) – PVC*
- Steel (St.) – GRP*
- Asbestos Cement (AC) – PE*

* If pipe repair clamps are to be used on plastic pipes, please always contact Romacon or a Romacon distributor for more information regarding the application and restrictions on these pipe types.

Romacon repair clamps should be used under following conditions:
- The width of the clamp should be at least equal to the pipe OD.
- The width of the clamp should be 150 mm greater than the length of any crack on pipes with an outside diameter up to 350 mm. On larger pipes this should be at least 200 mm.
- For PVC pipes, the width of the clamps should be 50 % longer and bolt torque should be reduced by 50 %. We prefer that you consult your Romacon distributor.
- The maximum allowable distance between two pipe ends should not exceed 10 mm.
- The maximum allowable deflection is 2 degrees.
- The maximum allowable offset should not exceed 3 mm.
Material specification:

- All metal parts: stainless steel AISI 304 or AISI316L.
- Metal parts have been deburred and are passivated to restore the corrosion resistance to its original state after the welding process.
- Double band (two sections) with a working range of 20-22 mm depending on the diameter. For an overview of all working ranges please see our pricelist.
- Standard certified rubber gaskets EPDM or NBR. The rubber is tapered and has a waffle pattern.
- Seamless rubber lining for every clamp diameter.
- Bridge plates are vulcanized into the rubber gasket.
- U-shaped lifter bars.
- Bolts are PTFE (Teflon™) coated to prevent galling.
- Stainless steel washers.
- No loose parts that may get lost during installation.
- No special tools required: a simple wrench will do the job.
- Special tape is used to fix the rubber gasket to the stainless steel band. This tape is flexible and reinforced with glass fibre thread to withstand hot and humid conditions and guarantee a long storage capability.
- Under most circumstances the clamps can be installed without releasing the pressure on the pipe.

Available sizes:
Romacon RS-2 clamps are available in many different working ranges for pipes of ND 80 - ND 800. Please consult our pricelist for more details on the working ranges. Available lengths: 200 / 250 / 300 / 400 / 500 / 600 / 750 mm.

Pressure ratings:
Pressure ratings for water depend on the type of break or damage, pipe OD, medium etc.
Pipe ND 80 up to including ND 150: 16 bar
Pipe ND 175 up to including ND 500: 10 bar
Our clamps can be modified to cope with higher working pressures.

Available rubber gaskets:
Romacon clamps can be supplied with the following types of rubber:

<table>
<thead>
<tr>
<th>Type</th>
<th>Application</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPDM</td>
<td>potable water</td>
<td>max 55 degr. C.</td>
</tr>
<tr>
<td></td>
<td>waste water</td>
<td></td>
</tr>
<tr>
<td>EPDM HT</td>
<td>potable water</td>
<td>max 150 degr. C.</td>
</tr>
<tr>
<td></td>
<td>waste water</td>
<td></td>
</tr>
<tr>
<td>NBR</td>
<td>natural gas</td>
<td>max 70 degr. C.</td>
</tr>
<tr>
<td></td>
<td>potable water</td>
<td></td>
</tr>
<tr>
<td></td>
<td>waste water</td>
<td></td>
</tr>
<tr>
<td>Viton</td>
<td>several chemicals</td>
<td>pls contact Romacon</td>
</tr>
<tr>
<td></td>
<td>pls contact Romacon</td>
<td></td>
</tr>
</tbody>
</table>

Our rubber gaskets are certified to European standards, such as ACS (France) and WRAS (UK). Please contact us for a detailed list of current certifications.
Split Barrel

Product description

The split barrel repair clamp is used to repair leaking couplings, broken AC couplings and leaking bell joint connections. With the split barrel repair clamp it is possible to repair the pipe without removing the broken coupling. Furthermore it can be easily installed even under rough and wet conditions. No special tools are needed, just a torque wrench. The clamp is suitable for pressures up to 40 bar and on pipes with a diameter up to 1500 mm and length up to 5.000 mm.

Material specifications

- Material: stainless steel aisi 304/316
- Bolts and nuts: Stainless steel aisi 304/316 with PTFE coating - to avoid galling
- Rubber gaskets: NBR or EPDM. Axial gaskets are seated in grooves in each half of the split barrel
- Restraint strips are welded in to prevent the rubber from flowing out during installation
- The initial radial seal is obtained by tightening the end bolts at each end of the barrel
- Depending on the size and weight of the product, a hinge construction will be provided to lift the split barrel over the pipe
- A vent is installed for testing purpose and to enable the medium to escape during installation.
- A suitable vent valve is not included

How to order or demand prices

Contact our sales department and fill out the "split barrel size request form". This form provides us with all the necessary details to make the quotation and, at a later stage, manufacture the product. We will need to know the pipe diameter, repair situation, pressure and medium as well as the required length.

If possible please provide us with a sketch or picture of the repair situation.
Pipe Fit
Split Repair Sleeve

Split sleeves are widely used for making repairs to a variety of high or low pressure and high or low temperature pipelines, containing oil, water, gas, steam and chemical fluids.

The clamp halves are joined by bolts to form a high integrity pressure vessel around the damaged or leaking pipe. Sealing is provided by elastomer seals of the highest quality selected for compatibility with the pipeline fluid and operating temperature.

The Split sleeves may also be welded after installation to provide a permanent repair. It may be completely seal-welded with the pipe line in operation.
Design Features and Methods

The foremost design considerations for the split sleeves are as the following:

Safety
The clamps are fully compensatory pressure vessels, hydrostatically tested to 1.5 times the rated working pressure. They are equipped with a 1” NPT vent port.

Design Criteria and Industry Standards
All split sleeves are tested in accordance with the API Specification 6H, “Specification for End Closures, Connectors, and Swivels”, ASME BOILER AND PRESSURE VESSEL CODE, Section VIII; and with ANSI standards B-31.3, B31.4, & B31.8, where applicable.

Ease of Installation and Maintenance
All split sleeves are designed to be installed with the most common tools available and are readily field repairable, including full seal replacement.

Economy
Split Sleeve Repair Clamps are designed utilizing the latest technology, allowing optimization of design techniques and materials, resulting in lower weight, reduced bending tendencies, and a more economical product.

Specifications of Split Sleeves compatible with sour environment
This type of split sleeve is designed to be used in hydrogen sulfide (H2S) bearing hydrocarbon service.

Onshore Split Sleeves Specifications

ANSI pressure classes 400, 600 and 900
Design based on: ASME Sec. VIII, API 6H, ANSI B31.4, B31.8 and Split Sleeve Software 3S

Design control and stress analysis with Finite Element Package

Body materials: A216 WCB, A216 WCC, A352 LCC, A516 Gr.70 (Suitable for normally corrosive services)

The highest quality elastomer seal precisely compatible with the line fluid and ambient temperature. (NBR is standard; other types are available on request.)

Stud material: A193 Gr.B7
Nut material: A 194 Gr.2H
Coating: Yellow Epoxy Polyamide

Easily replaceable gasket without any special tools.

Each sleeve is equipped with one NPT vent port.

Split Sleeves are tested to 1.5 times the working pressure at our factory before shipment according to API6H.
Features and Advantages:

Design Tools: ASME Sec. VIII / API 6H / API 5L / IPS ETP100/
NACE MR0175/ Split sleeve software (3S)
Design control and stress analysis with FEM.
ANSI pressure classes 400, 600, 900 with different partial pressure and ppm of H2S
Split Sleeves are tested to 1.5 times the working pressure
The Highest Quality elastomer precisely compatible with sour system, operating temperature and pressure (HNBR and VITON gaskets are suitable, other gaskets also available depending on customer interest)
HNBR temperature Range is from -40° F to +300° F
VITON temperature Range is from -40° F to +400° F
Protection sheets are used to prevent displacement of gaskets
Inge and rod assembly and lifting lugs will be provided on request
Split sleeve may be fully welded to the pipe for permanent repair
Easily replaceable gasket without special tools

Offshore Split Sleeves specifications

ANSI pressure classes 400, 600 and 900
Design based on: ASME Sec. VIII, API 6H, ANSI B31.4, B31.8 and Split Sleeve Software(3S)
Design control and stress analysis with Finite Element Package
Body materials: A216 WCB, A216 WCC, A352 LCC, A516 Gr.70 (Suitable for normally corrosive services) and A217 CA15 (Compatible with sour services of different partial pressure and ppm of H2S)
For sour services, the body material must meet NACE MR0175
The highest quality elastomer seal precisely compatible with the line fluid and ambient temperature. (NBR is standard, Viton is ideal for sour services; other types are available on request)

Double Row Sealing (DRS) design is also available. This special design is more suitable for where probable leakage is much costly or dangerous; such as gaseous services & offshore applications.
Sacrificial anodes are installed on the sleeves for long term cathodic protection.
Stud material: A193 Gr.B7; and Gr. B7M (for highly corrosive surrounding)
Nut material: A 194 Gr.2H; and Gr. 2HM (for highly corrosive surrounding)
Split sleeves are equipped with hinges for easy diver installation.
Coating: White Marine Epoxy (for low corrosive surrounding) and Coal tar epoxy plus a white top coat (for sour surroundings)
Easily replaceable gasket without special tools.
Each sleeve is equipped with one NPT vent port.
Split Sleeves are tested to 1.5 times the working pressure at factory before shipment according to API6H.

Options
The following options are available
All clamps are fully prepared for welding after installation (welding procedure suggestions available on request).
Clamps with Longer Lengths available on request.
Clamps can be removed and re-used when not welded if packings are replaced,(Spare packings available on request)
Heat insulators (parallel to seal) protect the seals from heat due to welding of sleeves to pipe.
Double Row Sealing (DRS) design is also available. This special design is more suitable for where probable leakage is much costly or dangerous; such as gaseous services & offshore applications.

Certification and Testing
Besides the certificates of hydrostatic test, written NDT test reports and material certifications are available upon request.
# Standard Sizes

<table>
<thead>
<tr>
<th>API Pipe Size (inches)</th>
<th>Inside diameter &quot;A&quot; inches</th>
<th>Active sealing length &quot;B&quot; inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>5</td>
<td>5 1/4</td>
</tr>
<tr>
<td>6</td>
<td>7 1/8</td>
<td>5 1/4</td>
</tr>
<tr>
<td>8</td>
<td>9 1/8</td>
<td>5 1/4</td>
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<tr>
<td>10</td>
<td>11 1/4</td>
<td>5 1/2</td>
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<tr>
<td>12</td>
<td>13 1/4</td>
<td>5 1/2</td>
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<td>14</td>
<td>14 1/2</td>
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<td>20</td>
<td>20 1/2</td>
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<tr>
<td>48</td>
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<td>8</td>
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<tr>
<td>56</td>
<td>56 1/2</td>
<td>8</td>
</tr>
</tbody>
</table>

## Standard Clamp Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body (shell)</td>
<td>A216 WCB, WCC, A516 Gr. 70</td>
</tr>
<tr>
<td>Stud Bolts</td>
<td>A193 Gr. 87</td>
</tr>
<tr>
<td>Nuts</td>
<td>A194 Gr. 2H</td>
</tr>
<tr>
<td>Gaskets</td>
<td>NBR (others available on request)</td>
</tr>
<tr>
<td>Coating</td>
<td>Zinc rich + Epoxy</td>
</tr>
</tbody>
</table>
Pipe Fit
Split Repair Sleeve
Off-Shore DRS

The DRS (double row sealing) Split Sleeve offers the ultimate leak free solution in off-shore pipelines where welding of high pressure repair sleeves is difficult or extremely expensive.

Quicker sealing action, easy installation and a safe installation procedure makes this product the right choice in situations where standard repair sleeves do not offer sufficient backup in difficult installation circumstances.
Design Standards:
- API SPEC 6H, Specification on End Closures, Connectors and Swivels
- API SPEC 5L, Specification for Line Pipe
- ASME Pressure Vessel Code, Section VIII
- ASME/ANSI B18.2.1, Square and Hex Bolts and Screw Inch Series

Product Specifications:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure rating</td>
<td>All Pressure Ratings</td>
</tr>
<tr>
<td>Body (Shell)</td>
<td>ASTM A216 Gr. WCB/WCC-API 5L-A516 Gr.70</td>
</tr>
<tr>
<td>Stud Bolts</td>
<td>ASTM A193 Grade B7 (PTFE Coated)</td>
</tr>
<tr>
<td>Nuts</td>
<td>ASTM A194 Grade 2H (PTFE Coated)</td>
</tr>
<tr>
<td>Sealing</td>
<td>NBR / Viton c/w stainless steel protection sheet</td>
</tr>
<tr>
<td>Protection Sheet</td>
<td>AISI 304/316</td>
</tr>
<tr>
<td>Vent Plug</td>
<td>A105</td>
</tr>
<tr>
<td>Sacrificial Anode</td>
<td>2 x Zinc Anode</td>
</tr>
<tr>
<td>Lifting Hinges</td>
<td>Yes</td>
</tr>
<tr>
<td>Coating</td>
<td>Zinc Rich+Marine Epoxy</td>
</tr>
<tr>
<td>Length</td>
<td>Available up to ultra long lengths</td>
</tr>
</tbody>
</table>

Features & Benefits:

Superior Leak Free sealing (SLFS)
- Quicker sealing action
- Easier replacement and installation
- Safer installation procedure due to special gasket construction

Lifting hinges

Double Row Sealing (DRS)
Ultimate leak free option on offshore clamps due to single fluid touch for longer aging and rows backing up each other.

Hydrostatic Test
- Shell pressure test (1.5 times the working pressure)
- Gasket sealing Test (by applying variable pressure)
- Allocation test (Full bolted installation on leaking pipe / real operational practice)