



A DIVISION OF
BAC[®]
CORROSION CONTROL

Member of
M
MIDROC



**Internal Corrosion
Monitoring and
Chemical Injection
Specialists**

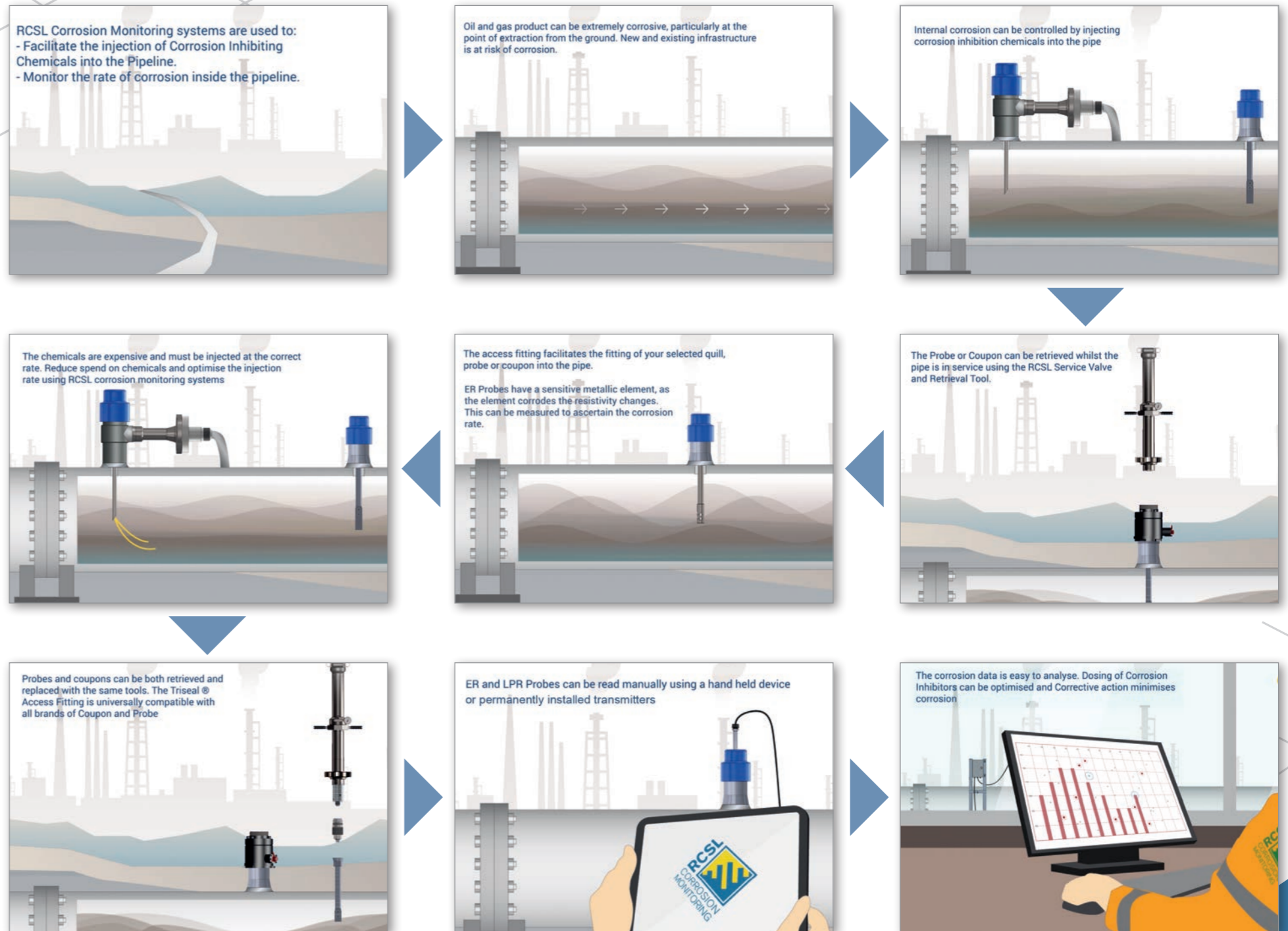
An Introduction to RCSL and our Products

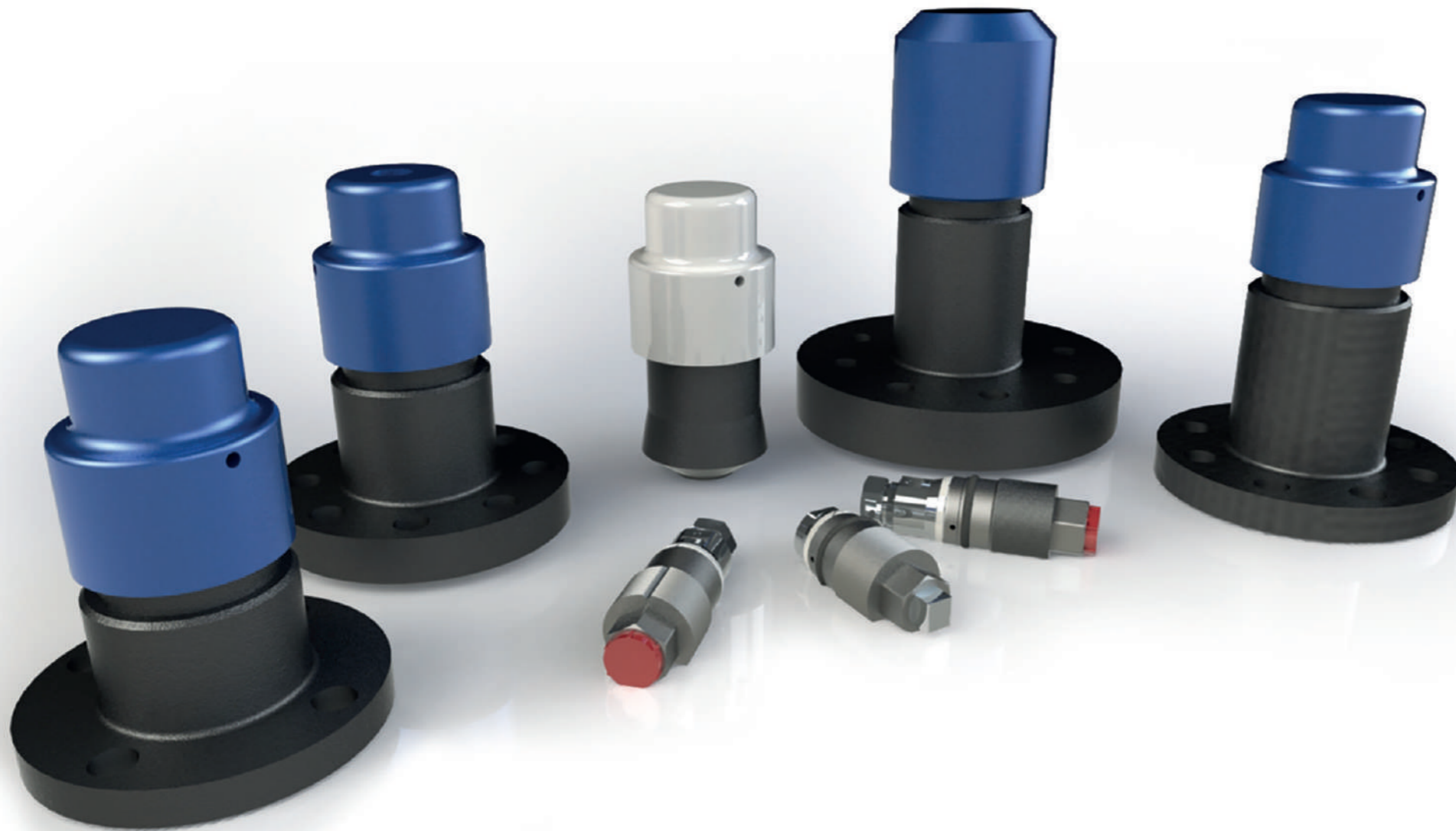
Rose Corrosion Services (RCSL), based in Telford, UK, is a world-class manufacturing company specialising in Internal Corrosion Monitoring and Chemical Injection. Working in the Oil, Gas and Refining industries, RCSL has over 30 years of successful experience working both in the UK and worldwide and is certified to ISO 9001:2015, ISO18001:2007 and ISO14001:2015. Since 2012 RCSL has been under the ownership of BAC Corrosion Control Ltd a world-renowned company in the field of Corrosion Control and Cathodic Protection.

RCSL's products allow monitoring of internal pipe conditions while the pipe system is in service. Our Triseal® Access fitting systems, coupons, probes, retrieval tools and service valves offer a complete turnkey solution for monitoring of internal corrosion rates and providing accurate data for operators to adjust and optimise their chemical dosing accordingly.

RCSL Corrosion Monitoring and Chemical Injection systems are supplied throughout the world via a chain of over 20 Distributors and Agents. RCSL products are compatible and interchangeable with similar equipment manufactured by other internationally renowned Internal Corrosion Monitoring Companies.

Working hand in hand with customers worldwide to prevent corrosion, increase safety and save money.





TRISEAL[®] ACCESS FITTINGS

Access fittings are available for flanged, welded or threaded connection to pipe.

The corrosion monitoring / sampling / injection device can be retrieved and installed safely without plant shutdown, at working pressures up to 6000 psi (subject to use of correctly rated service valve and retriever).

The standard Triseal[®] 2 inch access fitting system consists of five basic components:

- ▶ Access Fitting Body
- ▶ Plug Assembly
- ▶ Cover
- ▶ Service Valve
- ▶ Retrieval Tool

“We believe in the importance of product quality, intelligent design and cost effectiveness”

COUPONS

The simplest and longest established method of estimating corrosion losses due to pitting corrosion in pipelines is weight loss analysis, performed using corrosion coupons.

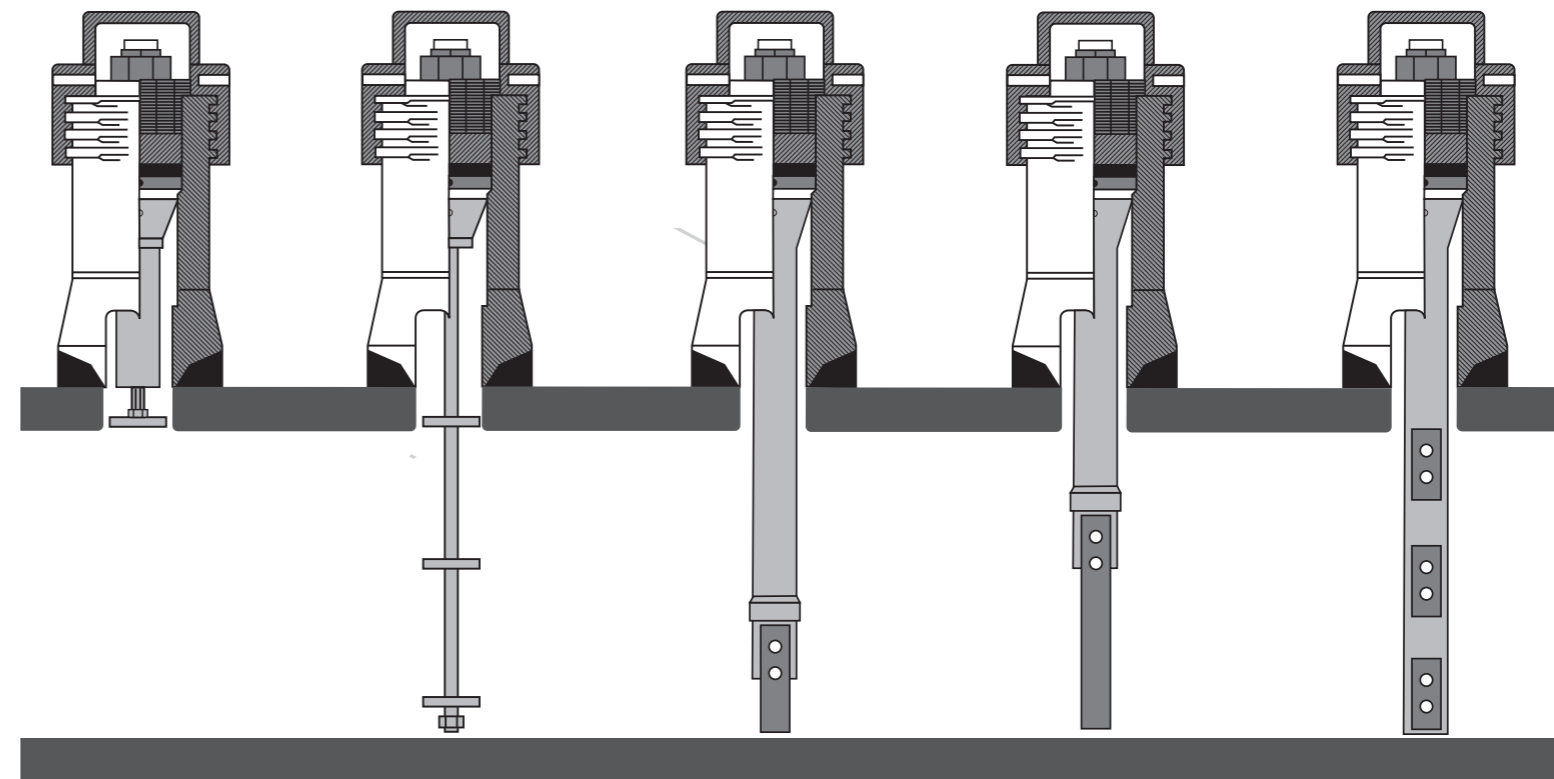
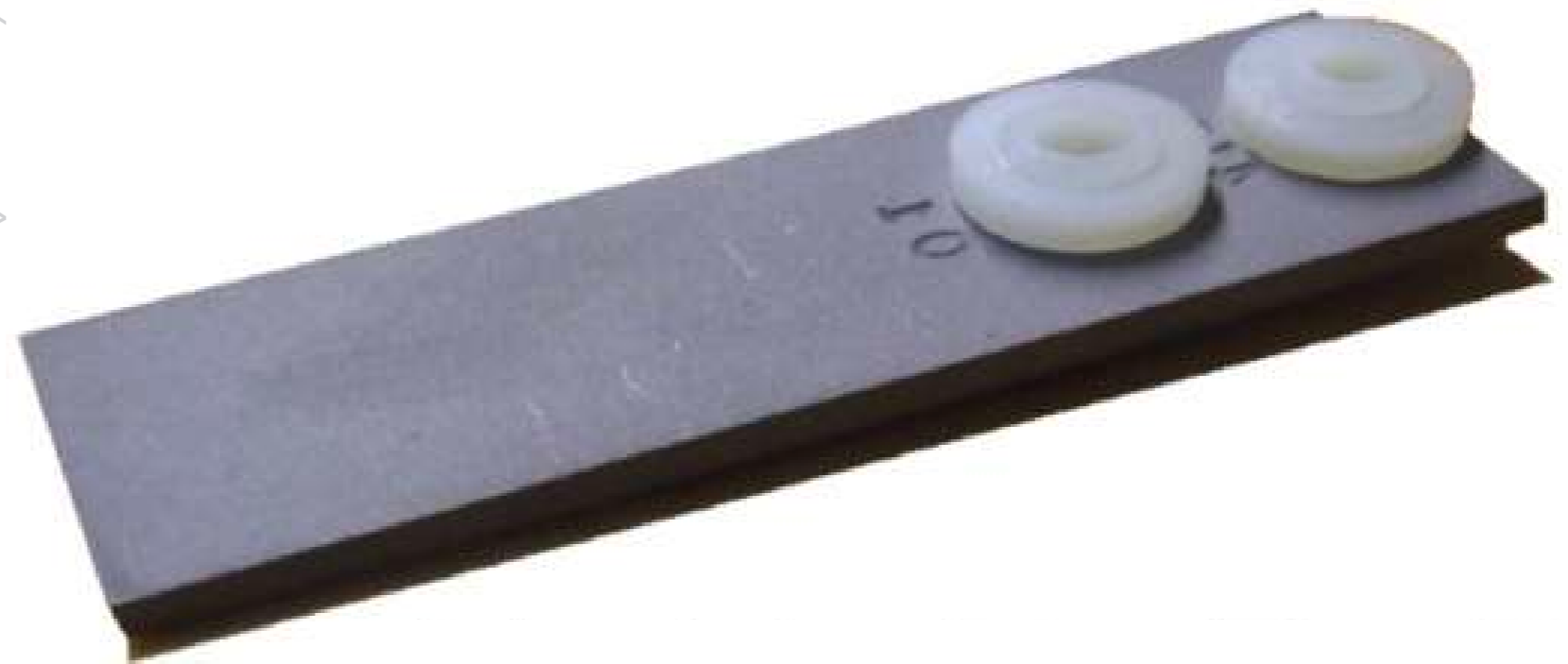
A weighed sample (coupon) of the material, either similar or identical to the pipeline material is introduced into the pipeline process and later removed after a set time interval, usually then replaced with a new coupon.

The removed coupon is then visually inspected and cleaned of all corrosion products and reweighed.

The coupon's weight loss compared to the original weight is converted to a total thickness loss and hence the average pipeline corrosion rate can be estimated.

Various designs are available, for example flush disc, multiple disc, strip coupon and ladder coupons.

A wide range of coupon materials and configurations are available. Contact us to discuss your specific requirements, we can often supply from stock or short lead times to meet your deadlines.



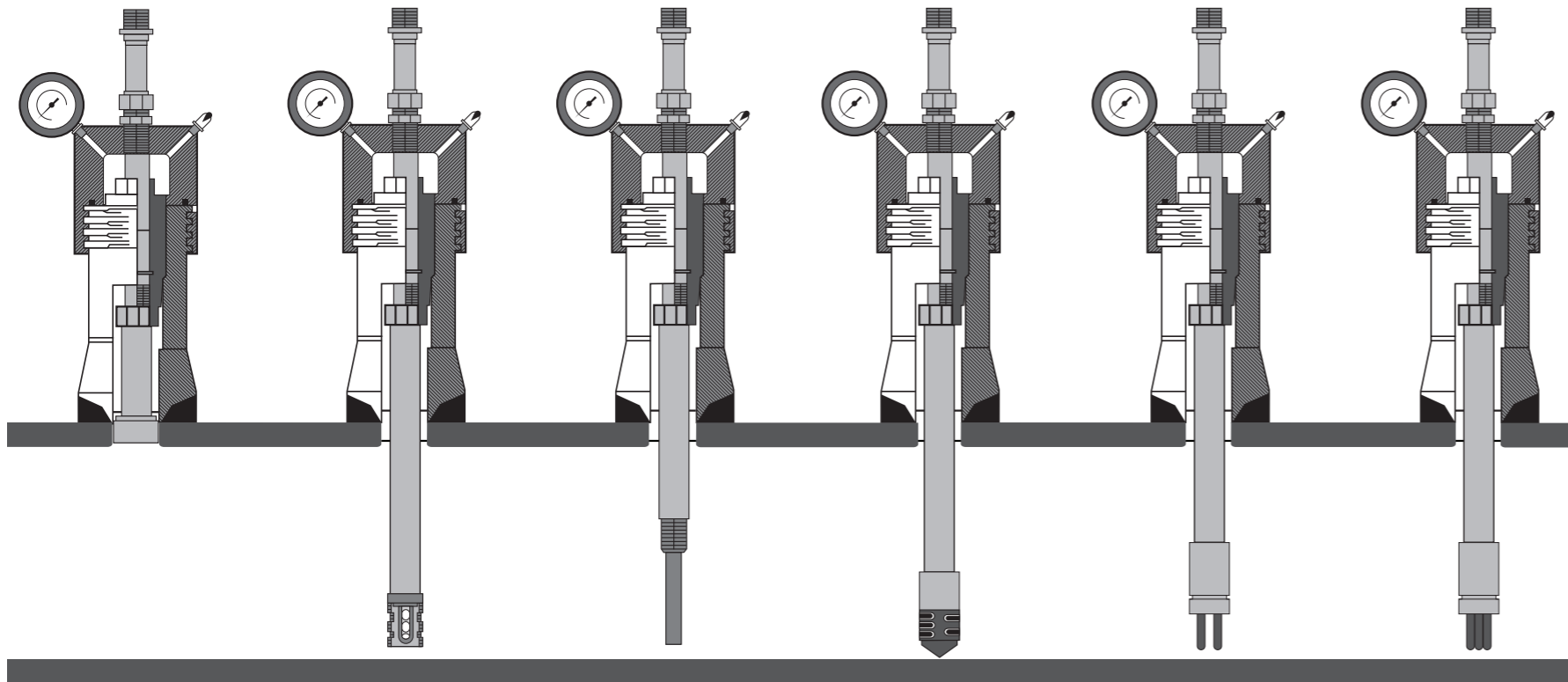
**Flush
Disc**

**Multiple
Disc**

3" Strip

6" Strip

2" Ladder



ER Probes

LPR Probes

CORROSION MONITORING PROBES

Electrical Resistance Probes

Electrical Resistance (ER) is the most common monitoring technique.

This technique involves measuring the change in electrical resistance of a conducting element and using this rate of change to calculate the corrosion rate.

ER monitoring has been used for over forty years and is a well established online measurement technique.

ER probes can also be used to monitor erosion, by using a corrosion resistant material for the probe element.

Linear Polarisation Resistance Probes

The Linear Polarisation Resistance (LPR) instrument measures the current required to polarise the electrodes of the probe to a known potential, using Faraday's law, the instantaneous, "direct real time" corrosion rate can be calculated from polarisation resistance

This system is limited to use with electrolytically conductive liquids (such as water).

Galvanic Probes

The probes have electrodes made from differing materials, commonly brass and carbon steel.

The galvanic current between the anodic (carbon steel) and cathodic (brass) electrodes is used to calculate the corrosion rate. Galvanic probes can also measure oxygen content.

CHEMICAL INJECTION & SAMPLING FITTINGS

RCSL access fittings allow insertion and removal of injection and sampling equipment without expensive shut-downs.

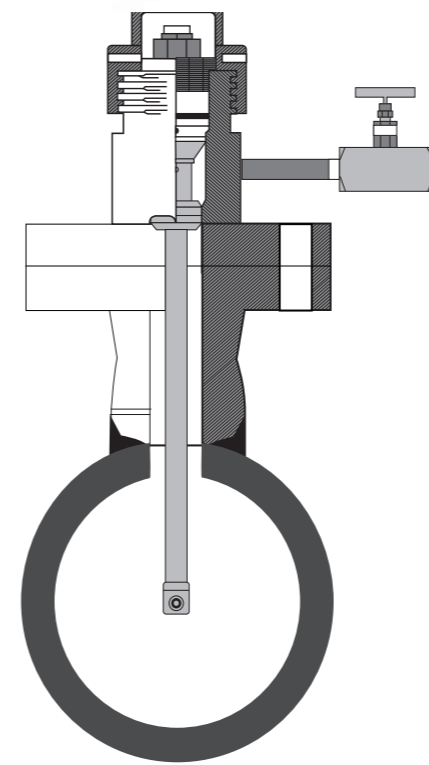
Access fittings with tee are used for injection and sampling. These can be for flanged or welded connection to the pipe and are fitted with a solid plug.

An injection / sampling nut attaches to the plug. The injection / sampling tube is then attached to the nut.

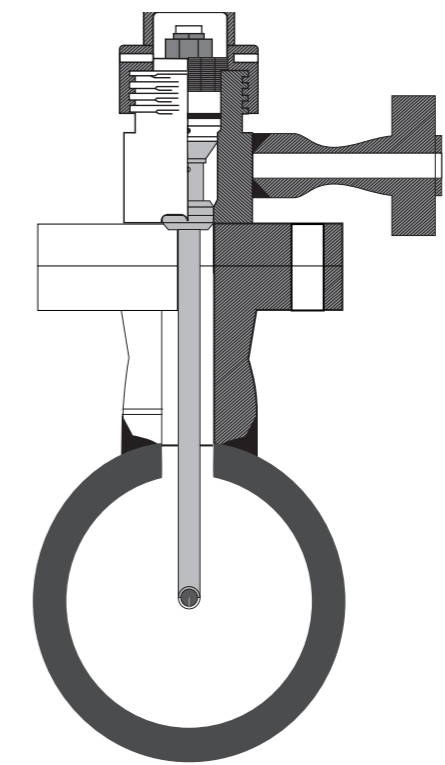
Injection / sampling tubes have various injection end terminations depending on the application, for example straight, scarf cut quill with slot for dispersion, 90° head with atomising cap and core.



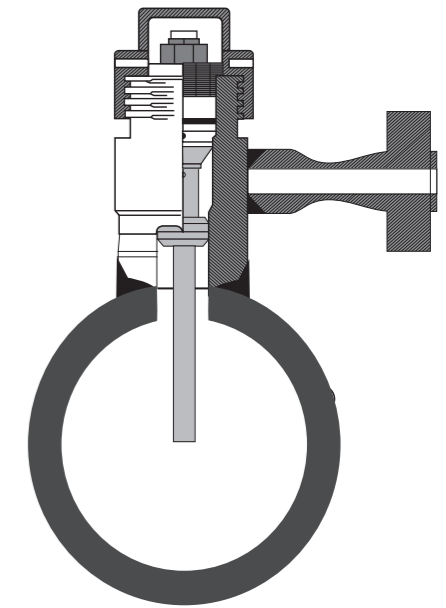
A comprehensive range of materials and designs are available to meet your requirements. All materials are traceable, tested and certified according to the project requirements



90° Head



Injection Quill



Sampling Tube

ER and LPR Probes can be read manually using a hand held device or permanently installed transmitters



INSTRUMENTATION & DATA LOGGERS

- ▶ Corrosion data loggers are available in permanently installed and hand held portable versions for the accurate measurement of ER and LPR probes.
- ▶ Permanently installed data-transmitters or combined data-logger / transmitters are available. These units are certified for Hazardous area installation and offer RS-485 Modbus, RTU or ASCII Protocol communications.
- ▶ The instrument takes probe readings on a user-programmable logging interval. Readings are time and date stamped as they are taken, then stored to memory.
- ▶ Between readings, the instrument remains in a “sleep” mode to conserve main battery power. The instrument’s memory is capable of storing more than 100,000 readings, and is stored in non-volatile Flash memory.
- ▶ RCSL also offers panel / rack mounted receiver units for the plant control room for use with the data transmitter.
- ▶ The data obtained from these instruments can be analysed using the corrosion monitoring software supplied with the instruments.
- ▶ Please ask for further details on our range of instrumentation or request a copy of the RCSL product catalogue.

RCSL offer a wide range of instrumentation solutions. With over 30 years of experience our product is field tested and has been developed to incorporate all of the features, specification and functionality you require.

COMPLIMENTARY APPLICATION PROBES

Mechanical Sand Probe

These check for the presence of erosive sand by placing a capped tube in the process flow that is eroded.

Perforation of the tube wall is denoted by either a reading on a pressure gauge or by triggering of customer's alarm system using a pressure driven switch.

Hydrogen Probe

Hydrogen permeation in steels can lead to embrittlement, blistering, and decarburisation, potentially resulting in failure of the structure.

Hydrogen permeation through a sealed tube causes the pressure within that tube to increase. This is displayed on a pressure gauge for visual checking (again customer could utilise a pressure sensing device).

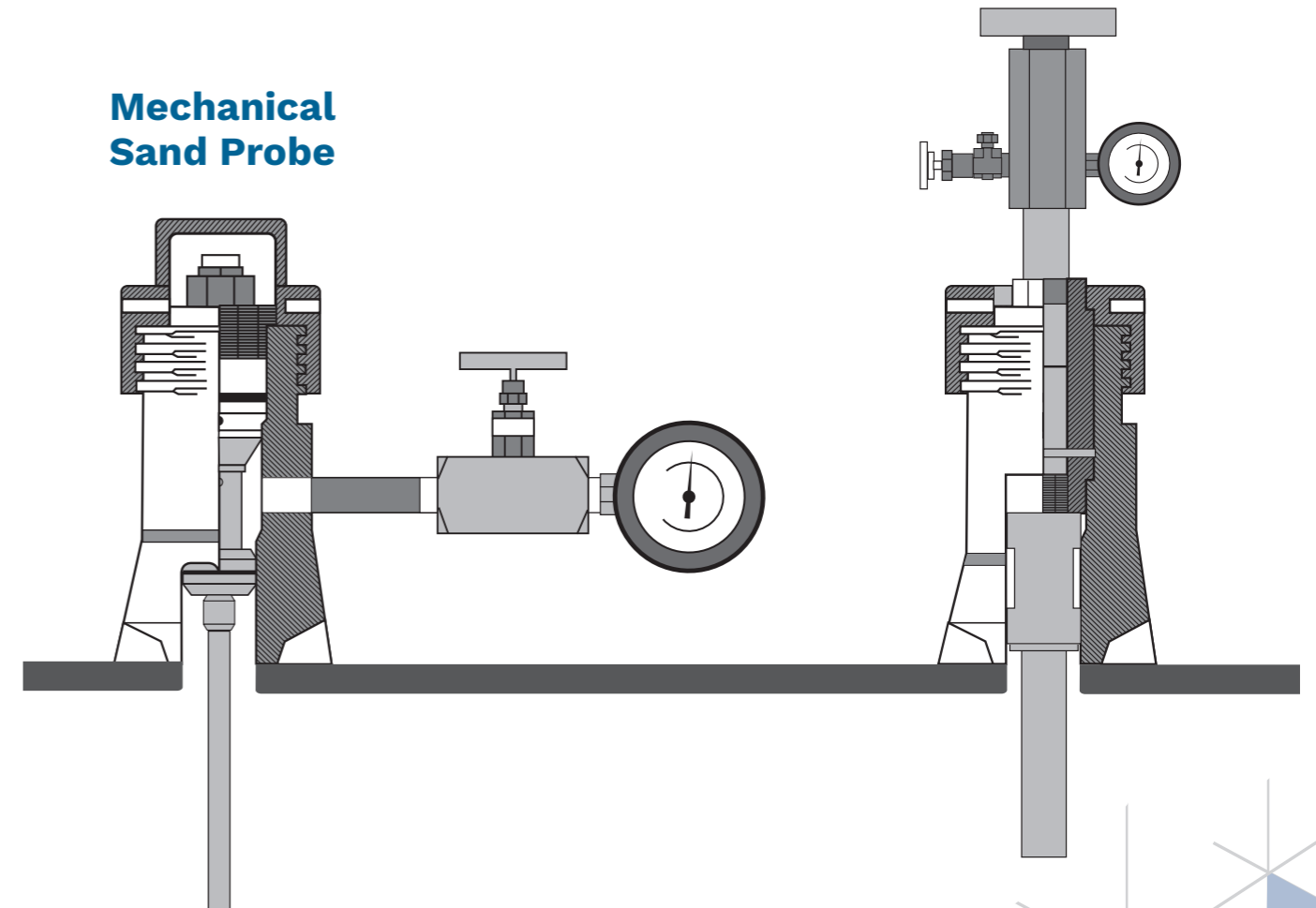
The hydrogen probe assembly includes a temperature gauge to check that the pressure change is not due to temperature.

Bio Probe

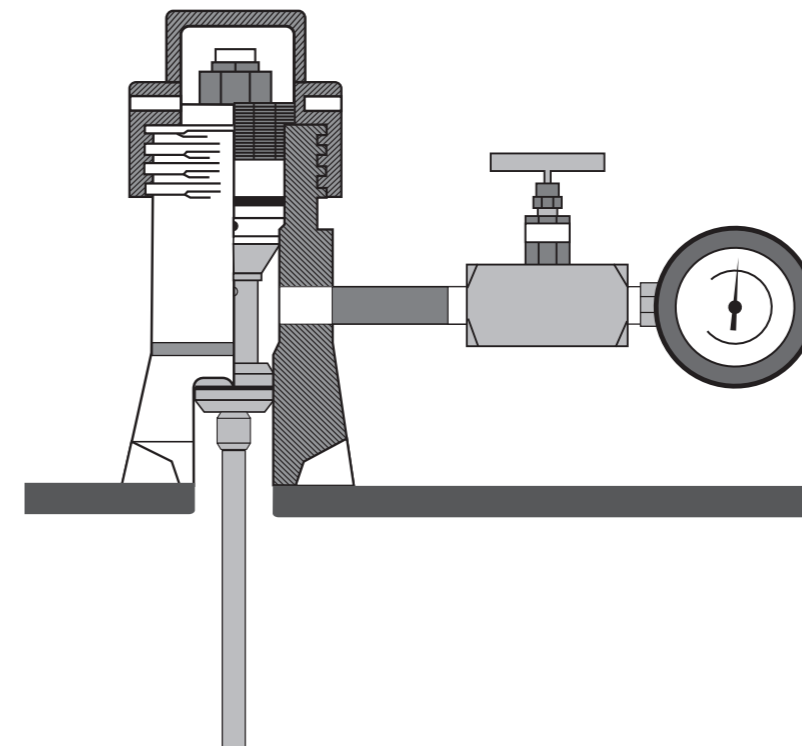
These probes provide a holder for sample elements that can be withdrawn from the process and the sample elements are analysed for the presence of potentially harmful bacteria.

Bacteria levels on the pipe wall (and hence on the sample elements) is more indicative of bacteriological corrosion risk than bacteria levels detected when taking samples from the process, as it is the surface or sessile bacteria that can cause corrosion.

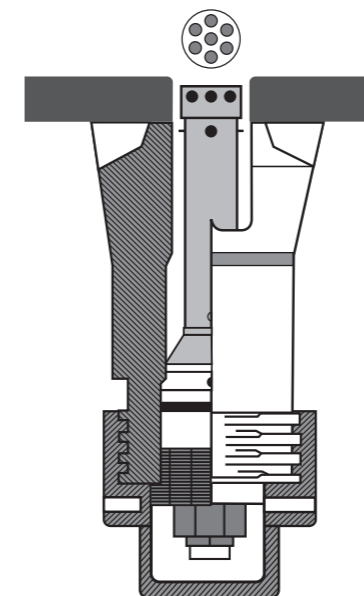
Hydrogen Probe

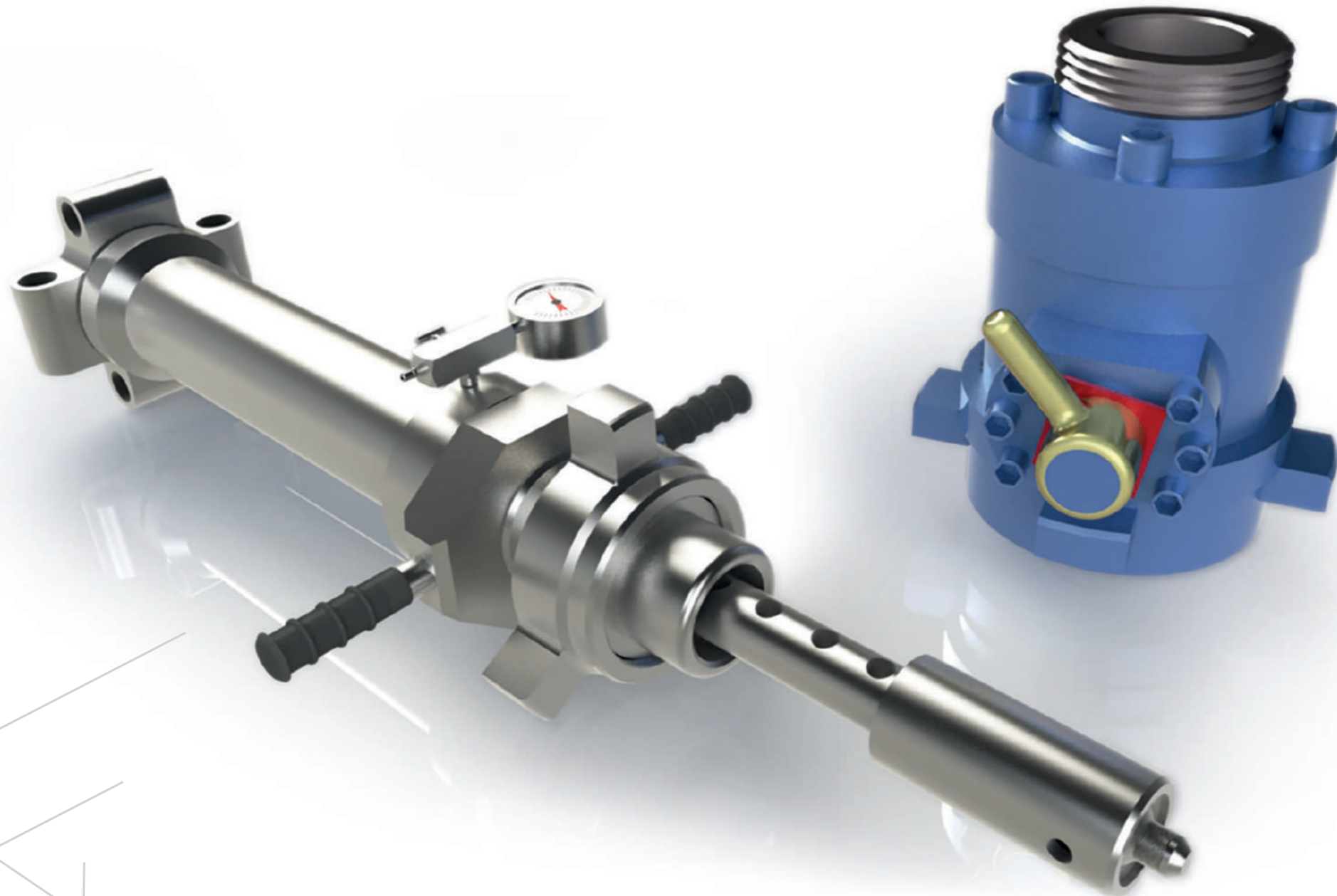


Mechanical Sand Probe



Bio Probe





RETRIEVER TOOL AND SERVICE VALVE

- ▶ The Retriever and Service Valve permit safe and simple removal of the full range of retrievable monitoring probes, coupon holders and chemical injection whilst the pipeline or vessel is under operating pressure.
- ▶ Retriever tools are sized to accommodate different pipeline pressures and probe/device lengths. All the materials of construction comply with the requirements of NACE standard MR-01-75 (92).
- ▶ Retriever and Service Valve Kits include a heavy-duty carrying case, maintenance tools and spare seals. A comprehensive Operation and Maintenance Manual is also included. Seal and Repair Kits are available separately.
- ▶ Operator training is minimal and is easily achieved once the basic principles of operation are understood. Training courses are available both on-site and off-site as required.
- ▶ 250 bar and 400 bar retrievers are available, these both feature stainless steel outer barrels.
- ▶ Service valves are required to connect the retriever tool to the Access Fitting to be serviced; its primary function is to contain the line pressure whilst the monitoring probe/injection device is replaced or removed.
- ▶ All service valves comply with NACE MR-0175 (92 Rev) requirements for materials suitable for use in sour service conditions.
- ▶ Service Valves are available rated for 250 bar (3600psi) and 400 bar (5700psi).

OTHER PRODUCTS

Retractable System

The Retractable System is a low pressure alternative to the retrievable system. The device enters the pipe via a permanently installed valve. When removal is required the device is drawn back through the valve, the valve is closed and the device is removed, with refitting being the reverse, this prevents the need to shut down the process. A retractor tool is advised for use above 150psi, to control the retraction of the device against the process pressure.

Catch Pots

Catch Pots are fitted under the pipe, to simulate a low point where stagnant water would gather. The catch pot is fitted to the pipe via a flanged branch, with a valve allowing removal of the catch pot without needing system shutdown.

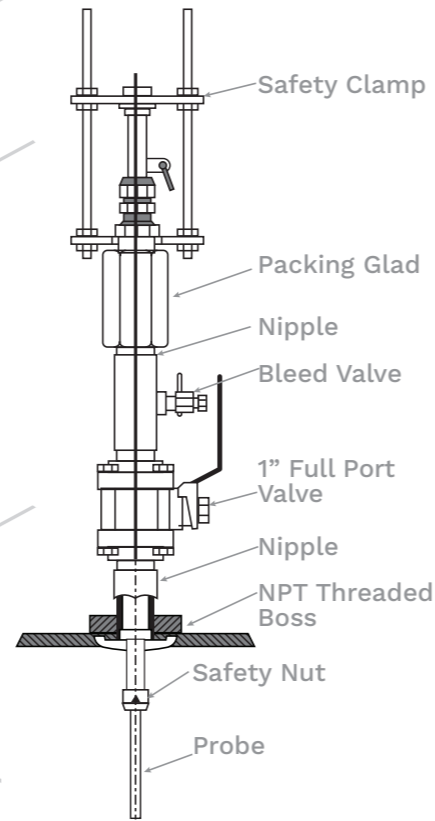
The catch pot is fitted with various corrosion monitoring devices, such as ER probe, LPR probe, coupon and bio probe.

Direct / Fixed Mount

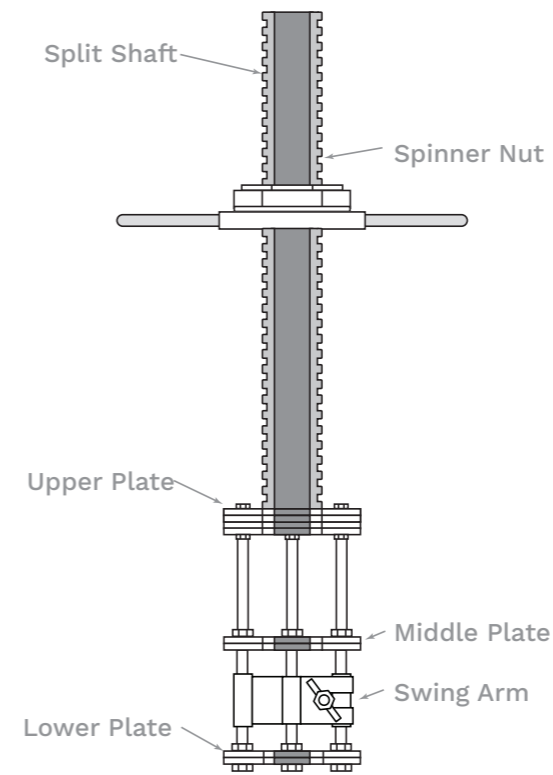
Corrosion monitoring devices, injection and sampling devices can be supplied that fit directly to the pipe without an access fitting or valve, via a threaded boss or flanged branch.

Process shut down is required for fitting and removal of direct mount devices.

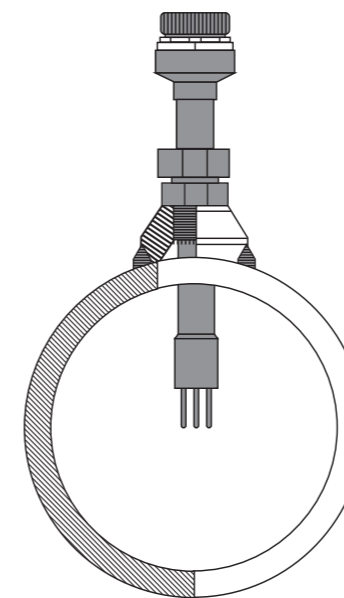
Retractable System (ER Probe Shown)



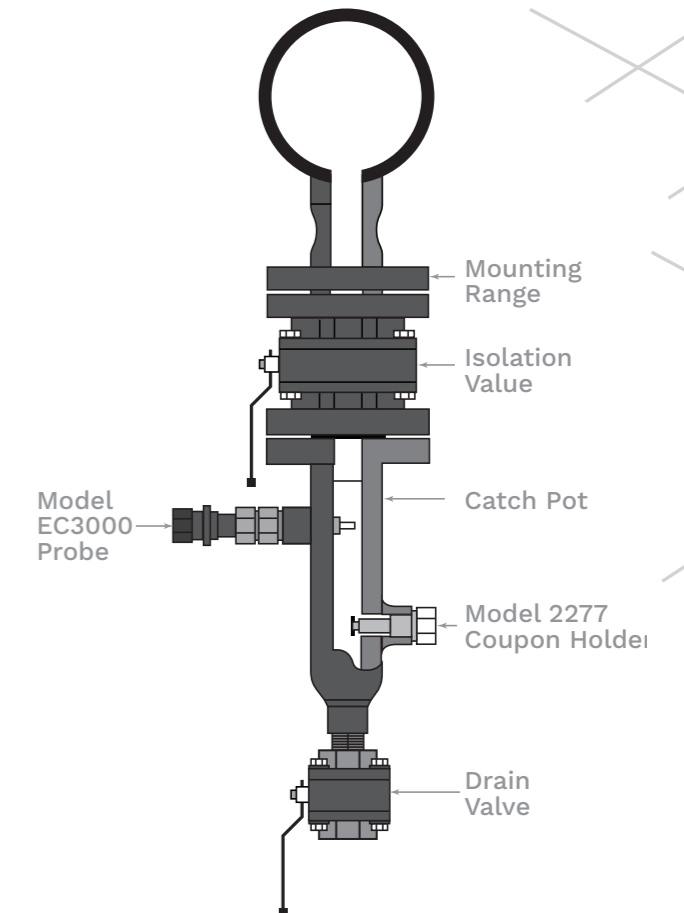
Retractable Tool



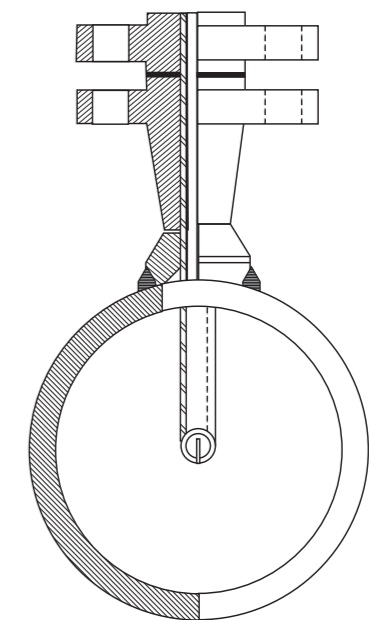
Direct Mount LPR Probe



Catch Pot



Direct Mount Injection Quill



GLOBAL REFERENCES AND EXPERIENCE

RCSSL has a global reputation for quality and service. For more than 30 years we have been supplying corrosion monitoring solutions to a global client base that includes the following :

Shell • BP • Aramco • KPC • Dragon Oil • ADCO • Exxon Mobil • ADNOC • KOC • CPECC • Petrofac • Chevron

RCSSL have completed many major projects in recent years, some examples of which are shown opposite. We are available to help you specify, design, build, install and maintain any system from the simplest Corrosion Coupon system to the highest complexity Project requirements.


Our design and manufacturing capability, experience and quality are key strengths in assisting you at every stage of the project.



UNITED KINGDOM
NORTH SEA : VARIOUS
Supply history over 30 years into the North Sea Oil Industry including Conoco, Agip, Shell & Total




IRAQ
CPECC / Exxon Mobil / Produced Water Treatment Project, West Qurna-1 Iraq
Design, manufacture and supply of corrosion monitoring and chemical injection systems.




UAE
ADNOC
Al Dabb'iya Thammama Zone B Transition Zone Development Design, manufacture and supply of corrosion monitoring and chemical injection systems.



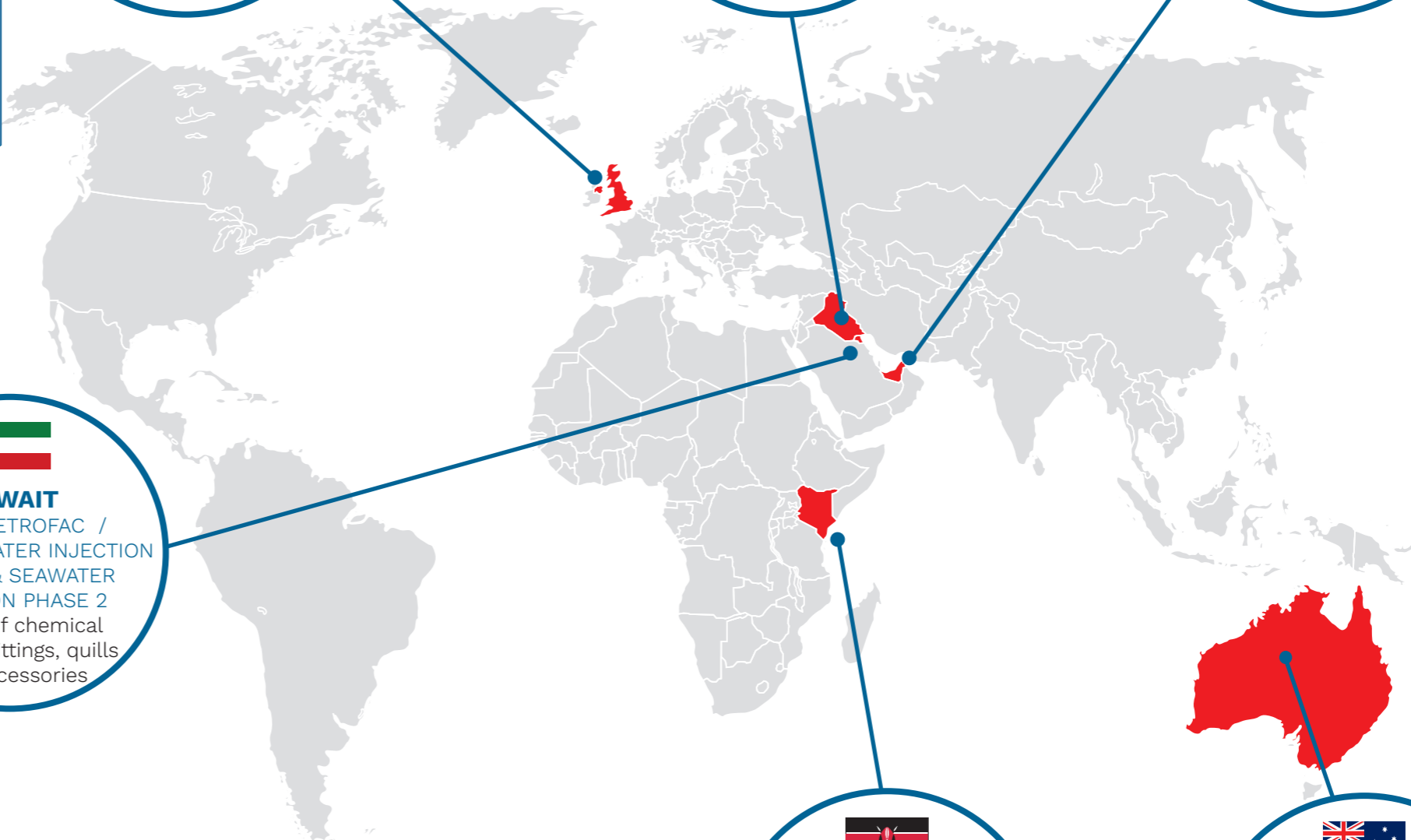
KUWAIT
KOC / PETROFAC / EFFLUENT WATER INJECTION PHASE 1 & SEAWATER INJECTION PHASE 2
Supply of chemical injection fittings, quills and accessories



KENYA
KENYA : KPC : MOMBASSA TO NAIROBI PIPELINE
Supply of Corrosion Monitoring ER and LPR Probe system



AUSTRALIA
GORGON PROJECT: PETROFAC / CHEVRON
Design, manufacture and supply of corrosion monitoring system for a large natural gas project.



Please contact us at sales@rcslgroup.com to see how we can assist with your project.

A DIVISION OF

BAC®

CORROSION CONTROL



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