



cementing enhanced



Founded in 1980, Eneroil is a multinational force in the oil and gas equipment industry, specialising in innovation and quality to bring our customers around the world advanced and ground-breaking products.

Operating in three countries and selling to numerous others worldwide, we have brought and continue to bring advanced and ground-breaking products to all corners of the Earth.

Since our founding, we have sought to to expand in various directions with a solitary endeavour: that to offer our clients the most innovative and technically superior products at highly competitive prices through continuous improvement in our products and processes.

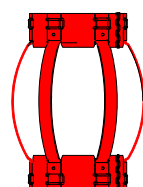
To this regard, we employ more than 100 professionals, who spend their every working minute making your experience with our product comfortable and secure.



Company Establishment

39 years ago, Eneroil was established near Delhi providing oilfield equipment

1980



Centralisers

Through a customer oriented approach, Eneroil established itself as a major player in the industry

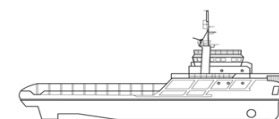
1988



Cementing Services

We launched our cementing services division in a collaboration with Schlumberger in India. The division was sold after a successful operation of 15 rigs

1993



Marine Services

We purchased five anchor handling tugs, an action symbolising our continued growth and expansion into all sectors of the oil and gas industry. The division was sold in 2016

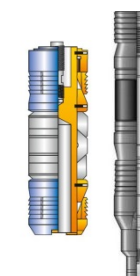
2009



Float Equipment

Maintaining our stranglehold on the downhole equipments industry, we launched our float equipment division to considerable worldwide success

2013



Bridge Plugs and Cement Retainers

We continue to innovate, and plan to launch our latest developments - bridge plugs and cement retainers - early next year, all while consolidating our various other divisions

2020



We have supplied extensively to the Indian market since launching our casing accessories division in 1988

1988



We executed our first international order in 2002 for Murphy in Malaysia, and have since supplied frequently to Malaysia and the South East Asian region. We also entered Egypt, one of our major markets

2002



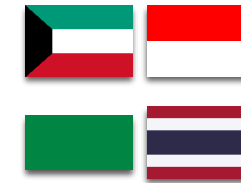
A year later, we supplied to Saudi Aramco in Saudi Arabia, and we remain one of their main suppliers to this date

2003



We consolidated our position in the Middle East market through high-volume contracts to Occidental in Oman and ADNOC in the UAE, places where we remain huge suppliers

2005



We continued our expansion as we supplied to Indonesia, Kuwait, Libya, and Thailand for the first time. Although our supplies to Libya dipped due to the Civil War, Kuwait and Thailand remain two of our largest markets

2007–08



Through the renewal of old contracts in our favour, and the signing of new ones, we became the undisputed leader of casing accessories in the Middle East, while also entering the Colombian market for the first time

2009–10



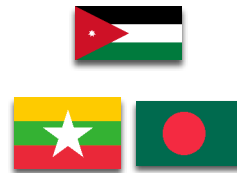
We entered numerous countries in this period, receiving some of our largest orders, as our expansion grew from regional to global dominance

2011



We entered the Algerian market in a large way, earning us our largest ever contract until that point

2012



We consolidated our position as the largest supplier of casing accessories in the Middle East region, receiving numerous contracts in both old and new markets (Jordan). We also entered Myanmar and Bangladesh

2013–14



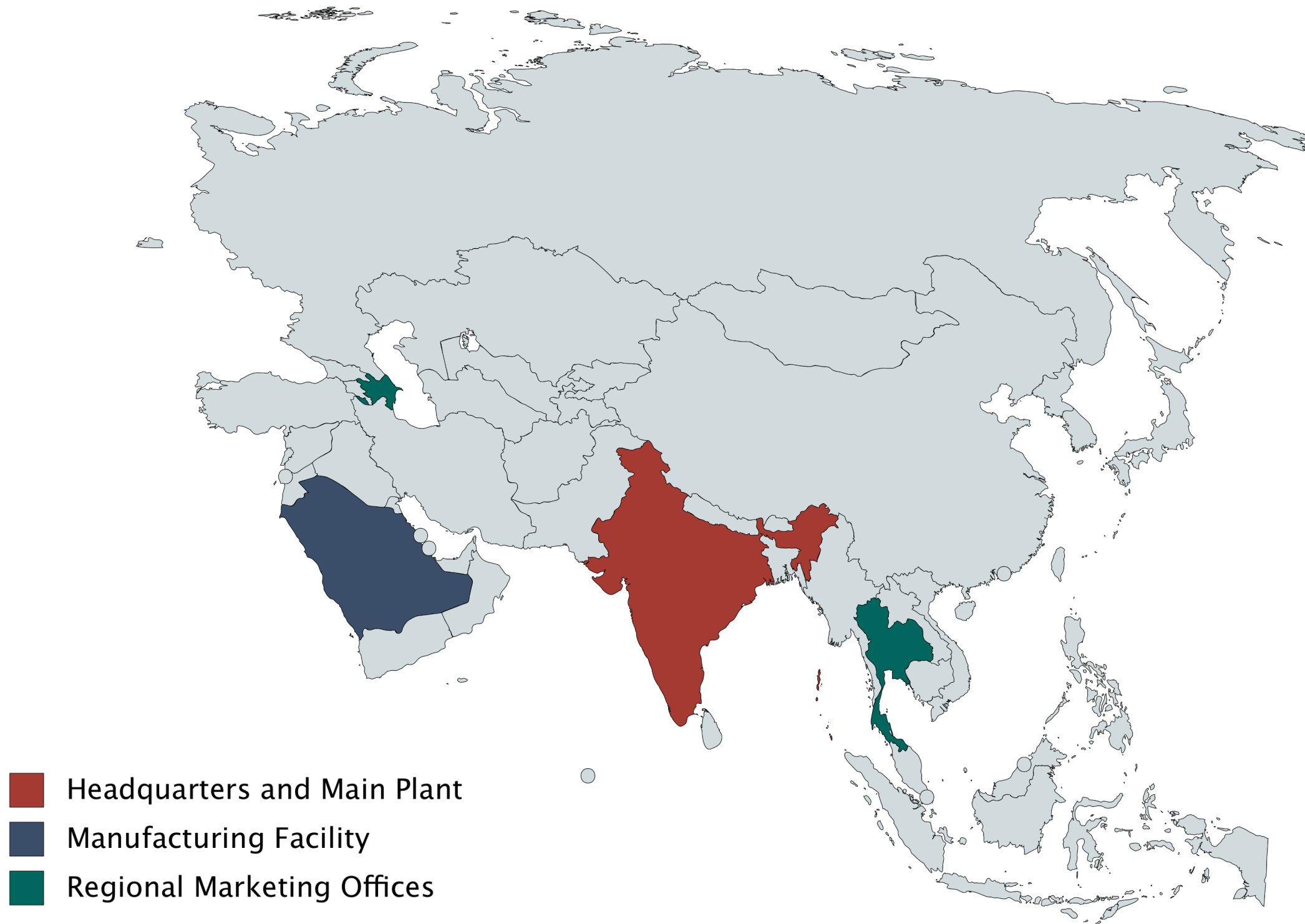
We entered into more countries in South America, successfully executing orders in both Argentina and Peru. We also began selling our float equipment in both old and new markets

2017



We have recently begun supplying to Russia and the Caspian Sea region, as well as continuing our expansion into South America

2018–19



Our adherence and emphasis on quality does not end with the ownership of certificates, but with a mindset of every individual in this organisation to improve the lives and the work of our customers at any time around the world

We employ research and design professionals capable of seeing the future from the eyes of our customers and beyond, and are even able to innovate based on needs unmentioned by our customers

Our plants have state-of-the-art design, increasing our capacity to manufacture casing accessories and float equipment beyond that of any competitor

The desire for quality does not impact our prices or delivery times, however, as we continue to offer competitive prices and low delivery times around the world

A successful track record for executing various high-volume contracts with major clients around the world, who are able to testify about the quality of our product



Through the largest centraliser and float equipment plant in Asia located in India, as well as a regional plant in Saudi Arabia, we are able to not only satisfy the growing global demand for our range of products, but also create a variety of centralisers and float equipment to assist you in a range of different wells and well conditions.

We closely tie our manufacturing, marketing, research, design, and training departments to enable us to provide state-of-the-art innovations to our customers. We possess the technical expertise and an advanced support system necessary to make your experience with our products an unbridled success.

We place the utmost importance in the quality of our products, and house numerous facilities within both our plants to authenticate this. To this end, our products are certified by the American Petroleum Institute (API), the International Standards Organisation (ISO), and the Euro-Asian state standard (GOST).

Our global clientele repeatedly testify the superiority of our product and we continuously work together with our customers to eliminate any problems they may foresee during the application.

Internally, we strive to create a stimulating and welcoming environment for our employees. We do not sidestep anything when it comes to the health and the safety of our workers, associates, or anyone we have the pleasure of welcoming to our facilities.

The Eneroil manufacturing plant is equipped with numerous high-grade machines that facilitate us to produce the highest-quality products in the market:

PRESS SHOP

Our press shop consists of:

1. Numerous hydraulic presses
2. Numerous mechanical presses

(Capacity: 50–250 tonnes)

WELDING

For welding, we employ various machines, including:

1. A special purpose welding machine
2. A robotic welding machine

HEAT TREATMENT + PAINTING

We have automated several of our functions:

1. Heat treatment facility
2. Paint shop

FLOAT EQUIPMENT-SPECIFIC

We employ numerous machines specific to the float equipment division, including:

1. Automatic lathes and CNC machines
2. API-grade threading gauges

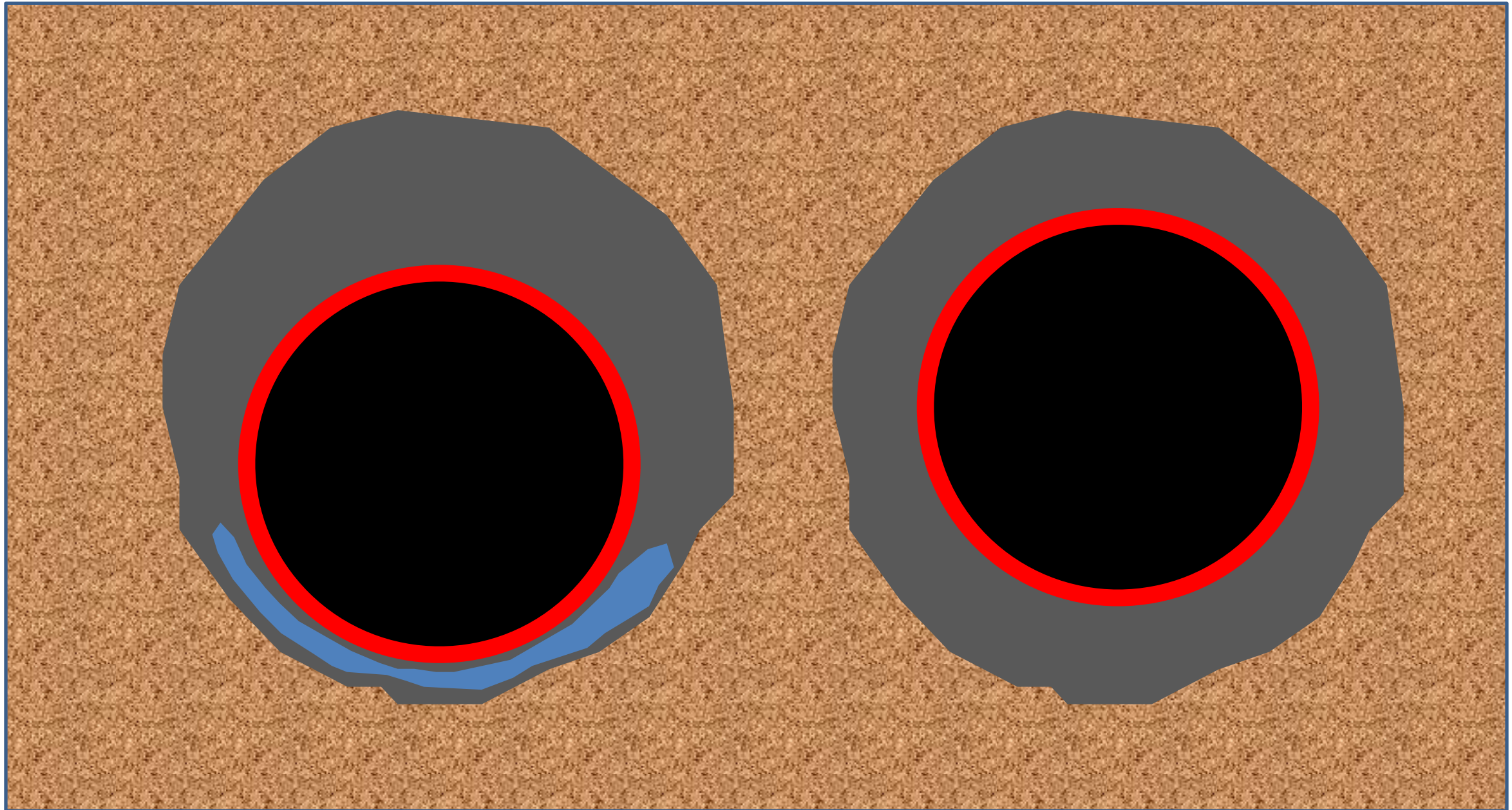
TESTING + SUPPORT

As a commitment to ensuring high-quality standards and a customer-oriented approach in our organisation, we employ:

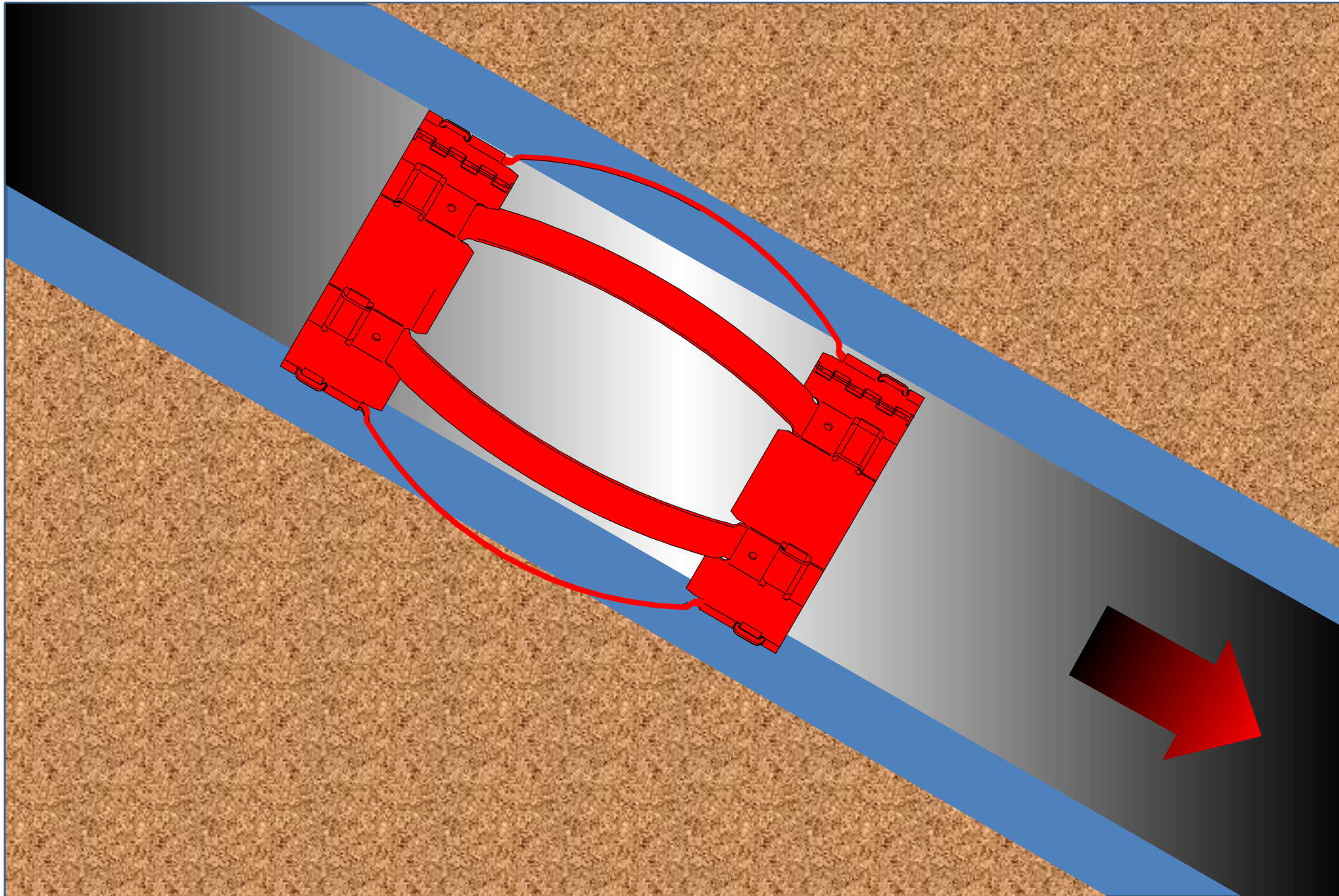
1. An in-house facility for API testing, including an API RP 10F Loop Testing Facility
2. A technical support facility by experts with more than 25 years of experience in handling oil and gas drilling queries

S. No.	Description	Facilities
1	Design	CAD Software
2	Measuring Instruments	Vernier Calibre, Micrometer, Internal and External Thread Taper Gauge, Thread Lead Gauge, Thread Profile Gauge, Thread Plug and Ring Gauge, Thread Runout Gauge
3	Testing Equipment	High Pressure Testing Machine with Graphics System, Flow Loop Testing Apparatus, MPI Dark Room
4	Tool Room	Lathe Machines, Milling Machines, VMC

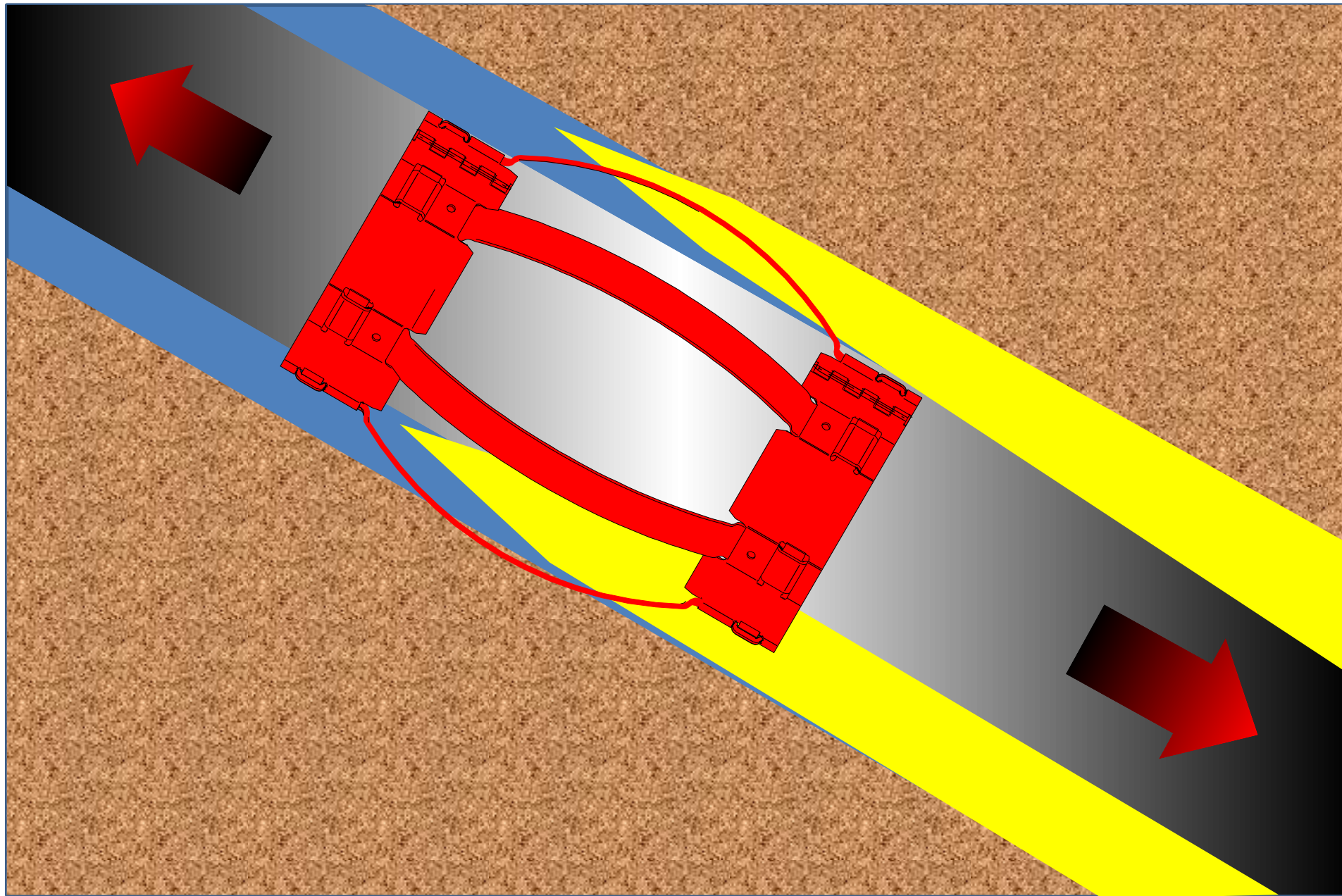
Eneroil centralisers enable good mud removal



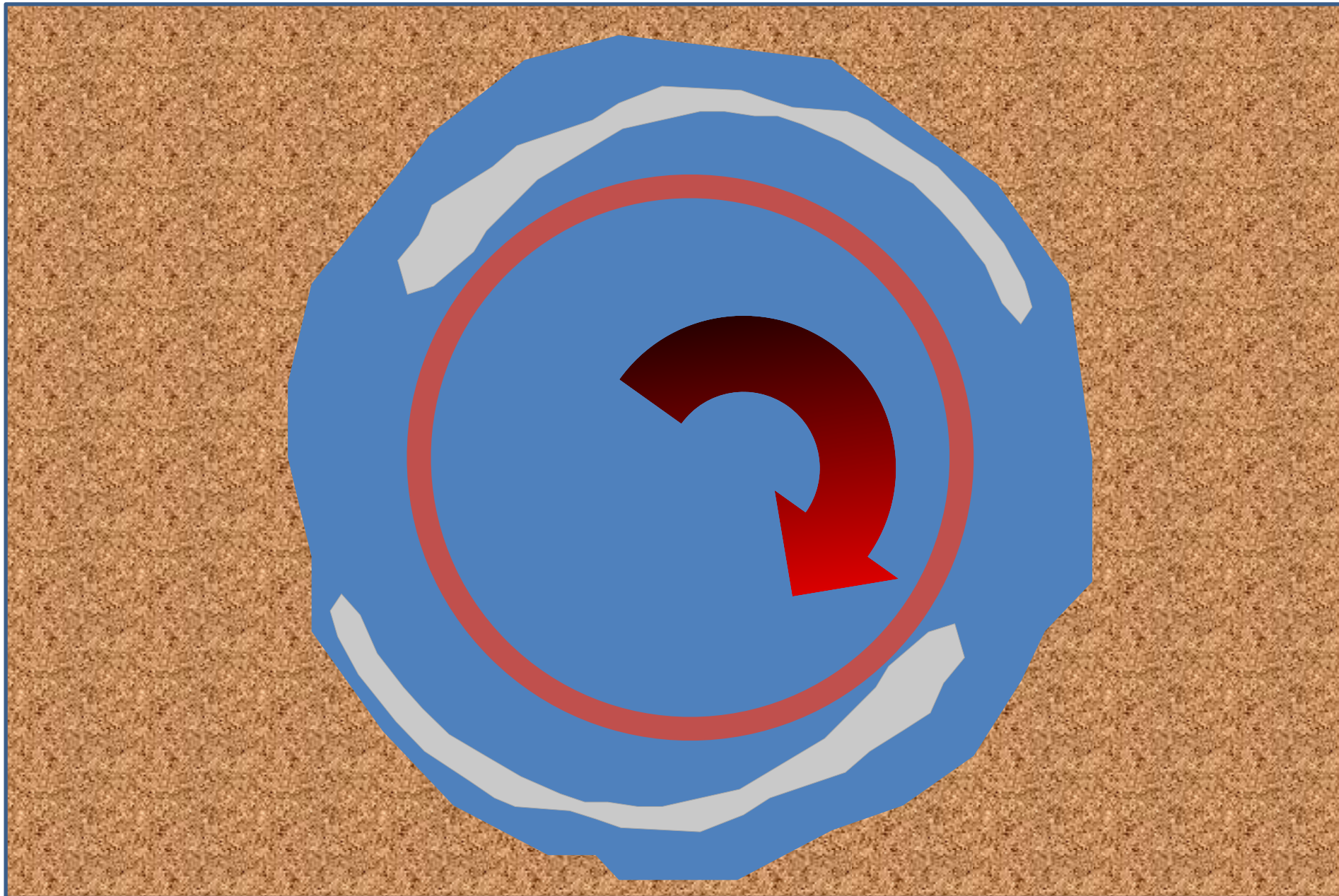
Eneroil centralisers assist casing running



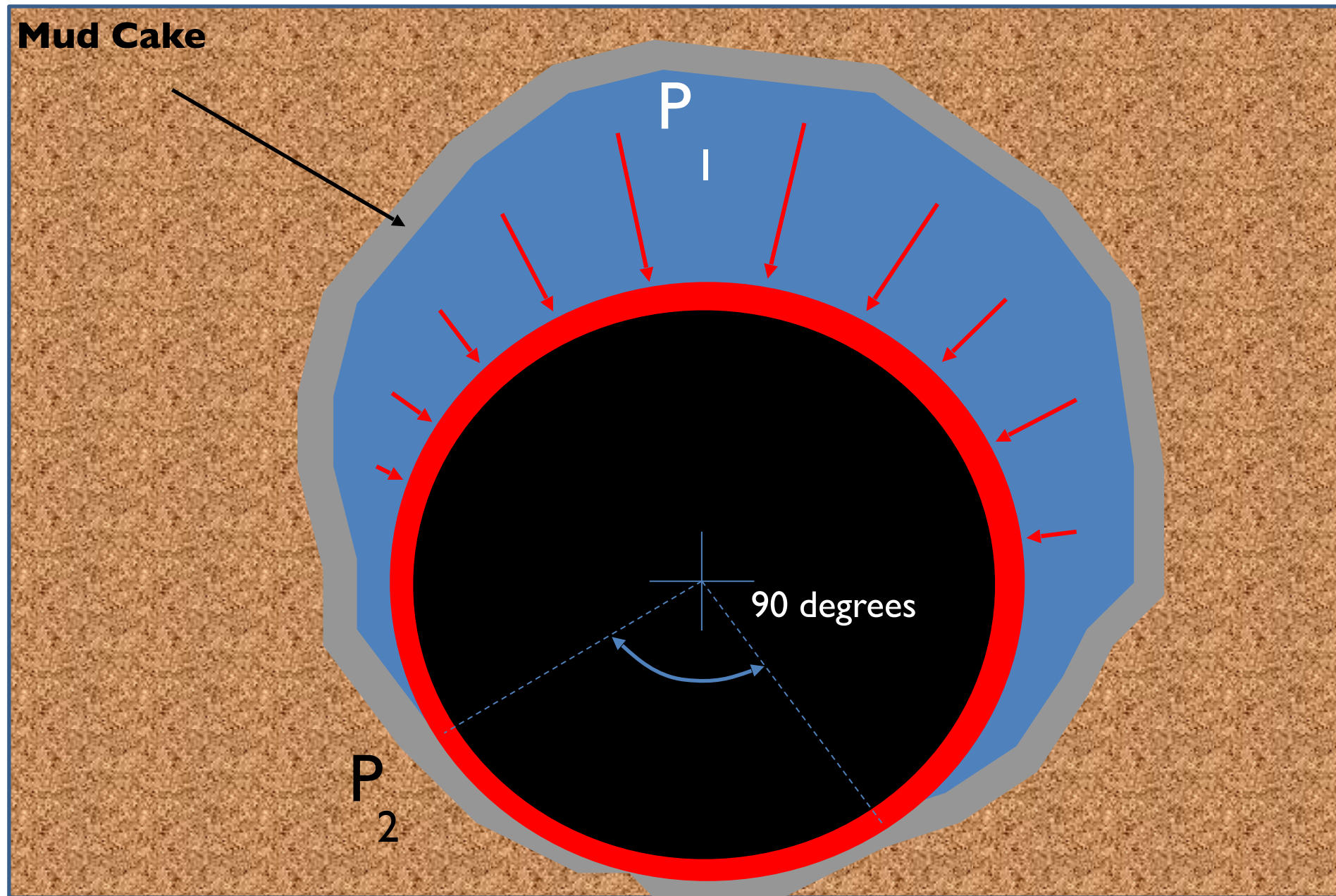
Eneroil centralisers allow pipe reciprocation



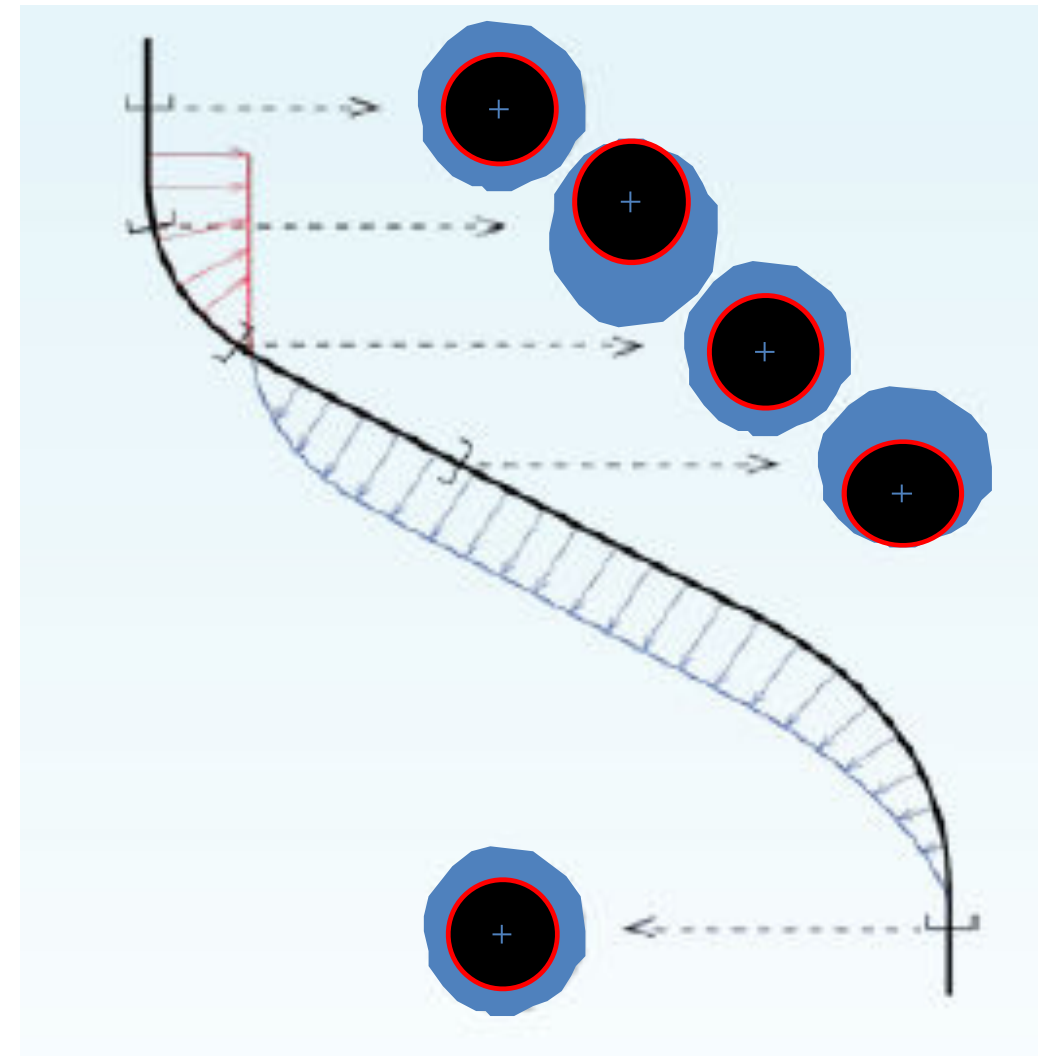
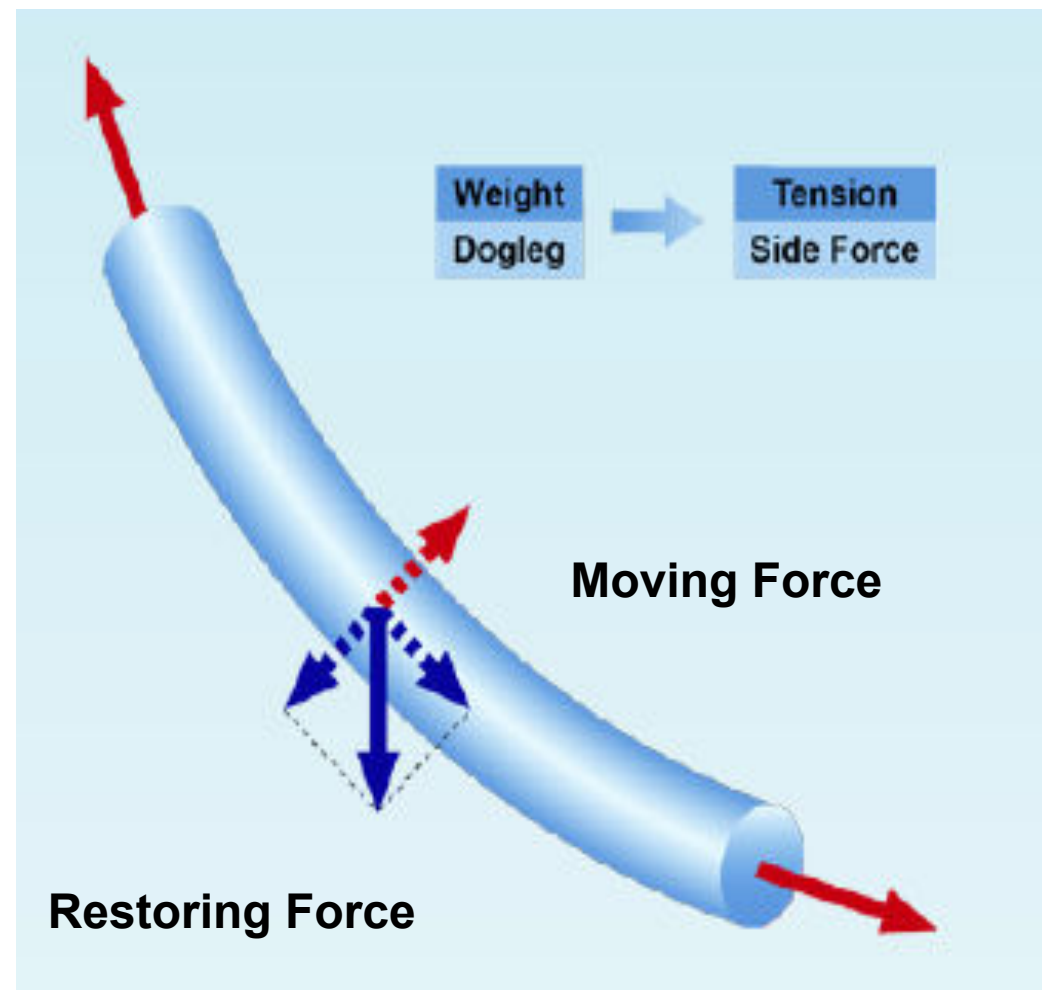
Eneroil centralisers allow free pipe rotation



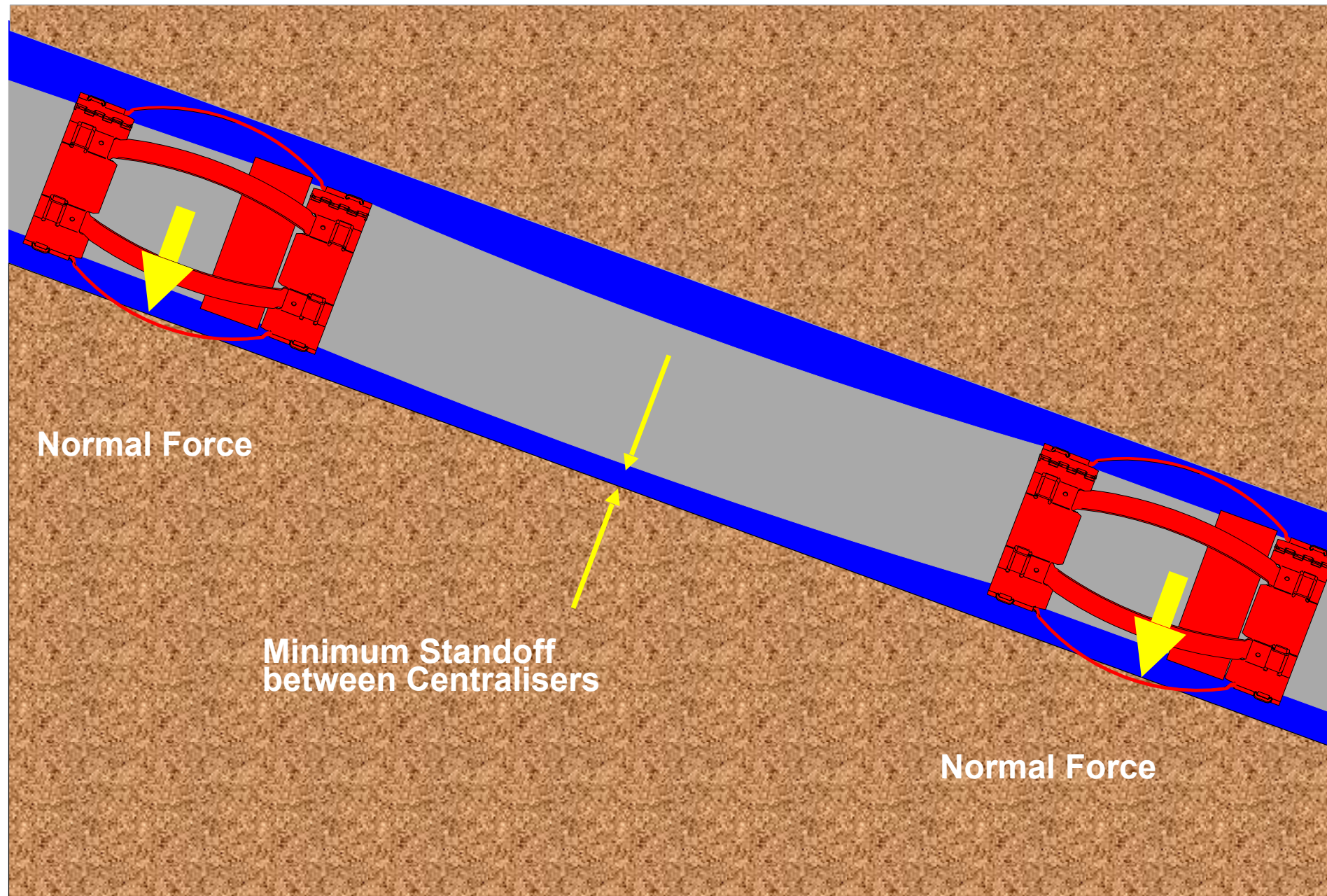
Eneroil centralisers prevent differential sticking



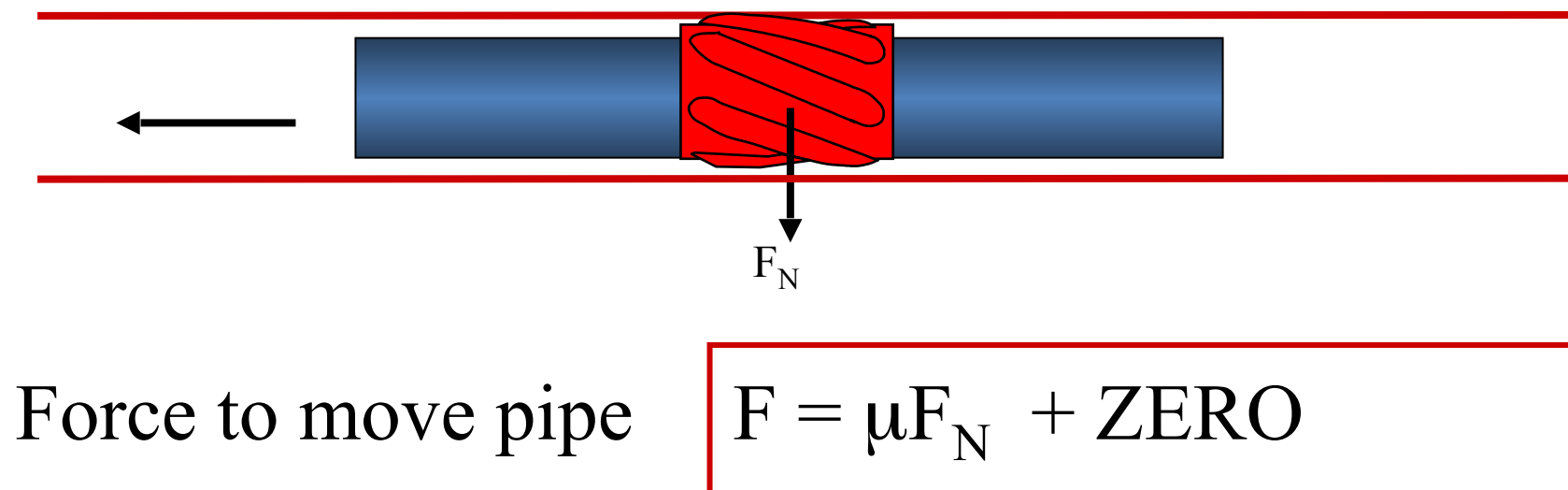
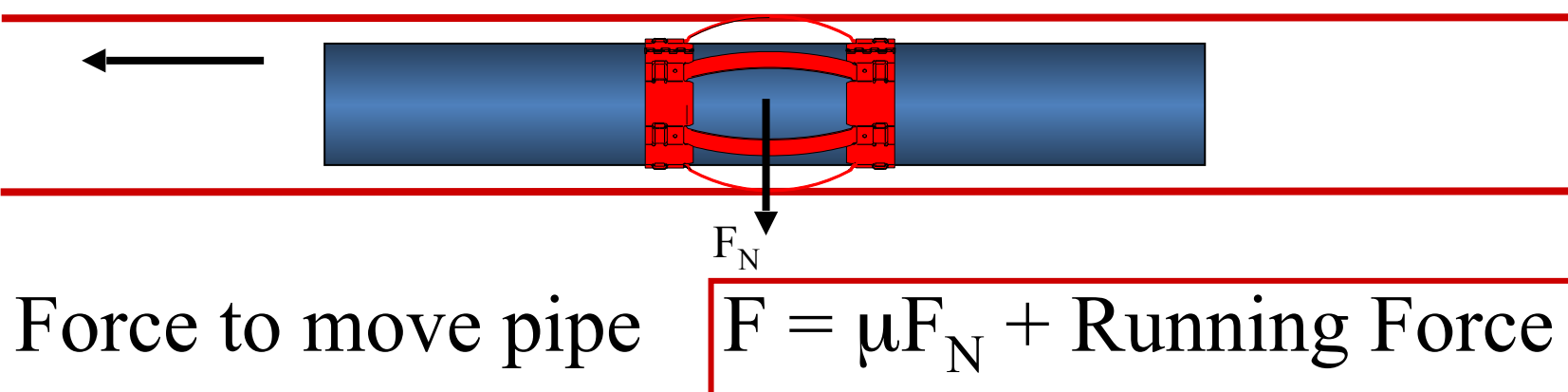
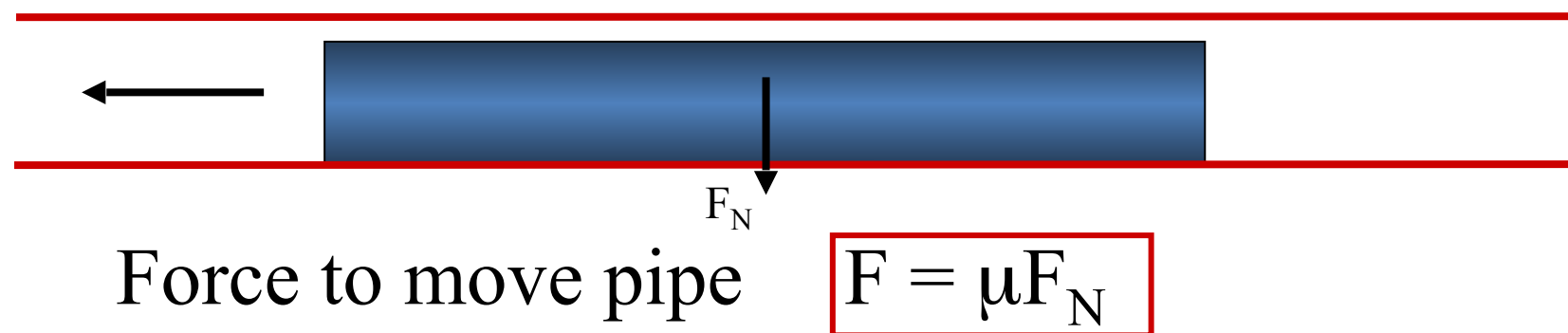
The various forces during the running of casing
All considered by Eneroil to optimise the performance of your activities



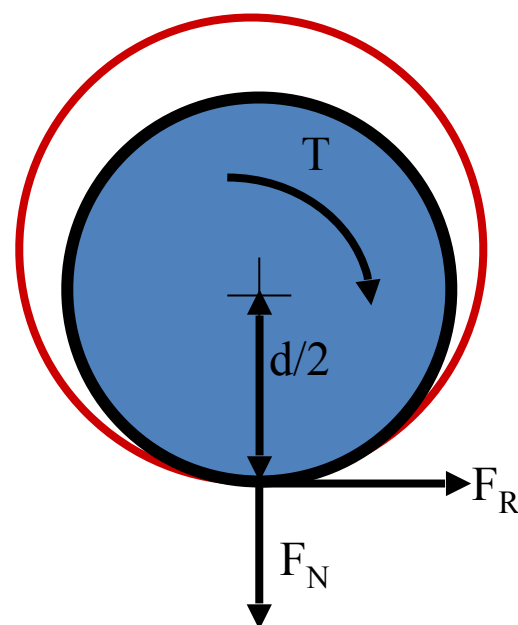
Stand-off considerations employed by Eneroil



Drag considerations employed by Eneroil



Torque considerations employed by Eneroil



Torque to rotate pipe

$$T = F_R * d/2 = \mu F_N d/2$$



Product Range: Centralisers



Non-welded Bow Centraliser

S-10



Welded Bow Centraliser

S-11



Non-welded Bow Centraliser

Features



Single Piece Bow Centraliser

S-12



Single Piece Bow Centraliser

Features

Each Eneroil S-I2 centraliser is made of a single sheet of steel; additionally, there is no weld between the bow and the end ring

Due to the absence of a weld, there is a 0% chance of a bow getting loose and then stuck in the well

During the casing running and reciprocation, the joint of the bow faces the maximum stress due to the drag and torque forces



The special steel used on all Eneroil S-I2 centralisers provide excellent hardness and a spring action to ensure an ability to return to the original shape

The bows can easily pass through highly constricted spaces and return to their original shapes, thereby giving an excellent standoff in an open hole

The end rings are joined together using SPM and heat-treated ensuring uniformity and optimising material strength

Slip-on Welded Centraliser

S-13



Slip-on Welded Centraliser
with Set Screws

S-14



Thermo-plastic Centraliser
with Metal Swage Ring

S-19S



Thermo-plastic Centraliser with Metal Swage Ring

Features

Eneroil S-19S centralisers made out of thermo-plastic are able to withstand extremely high impacts and lateral loads

Eneroil S-19S centralisers are light-weight, resulting in lower drag forces during casing running



Suitable for highly deviated and ERD holes

30° spiral vanes provide a vortex motion to fluids, ensuring better cement placement

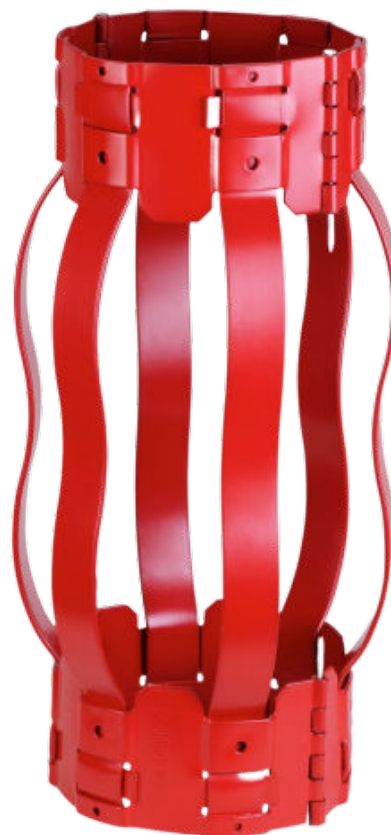
Non-welded Positive
Centraliser

S-20



Non-welded Semi-rigid
Centraliser

S-29



Welded Semi-rigid
Centraliser

S-30



Spiral Vane Solid Centraliser
Steel / Zinc / Aluminium

S-23 / S-25 / S-27



Straight Vane Solid Centraliser
Steel / Zinc / Aluminium

S-24 / S-26 / S-28



Spiral Vane Solid Centraliser Steel / Zinc / Aluminium

Features

Solid centralisers are suitable for highly deviated ERD wells

30° spiral vanes create a vortex motion of fluids, thereby resulting in better displacement of drilling fluid and improved cementation of the well

Solid centralisers are made slightly under the gauge to hole sizes, and chances of them getting stuck is minimal



Eneroil S-23 solid centralisers made of steel are able to withstand maximum impact and lateral loads

Non-sparking zinc used in Eneroil's S-25 centralisers is suitable for HTHP wells because it does not create sparks on friction with the well-bore or casing

Eneroil S-27 aluminium alloy centralisers are lighter in comparison to the other options, resulting in less drag on the casing

Non-welded Turboliser

S-32



Slip-on Turboliser

S-34



Rotating Centraliser

S-35



Spiraslider

S-36



Heavy Duty Spiraslider

S-38



Single Piece Spiraslider

S-37



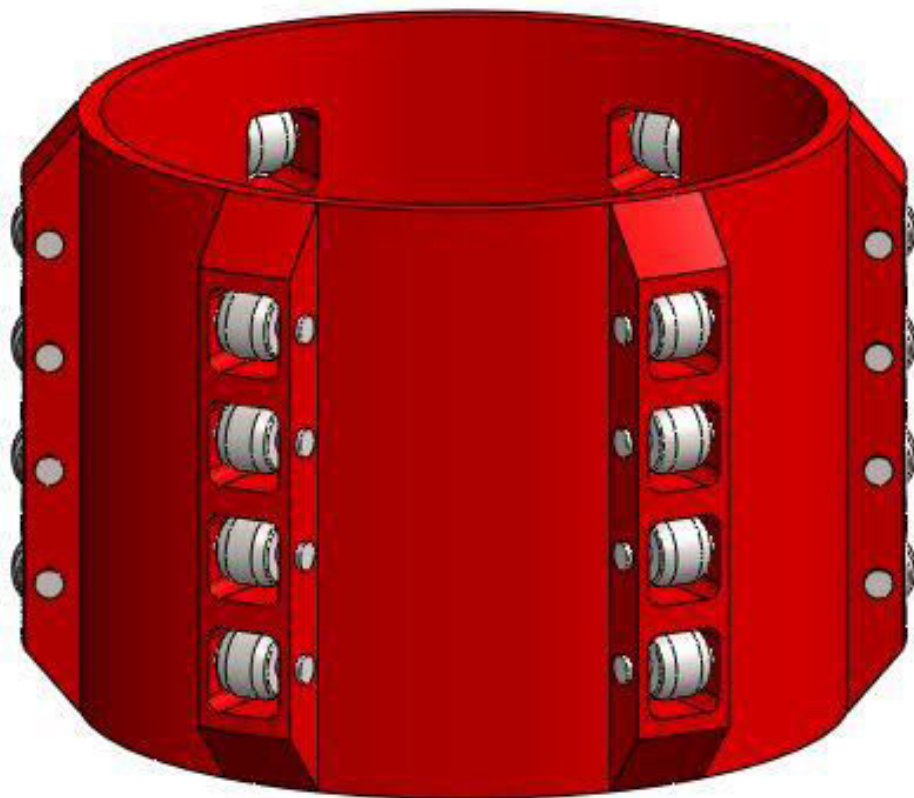
Stand-off Band

S-40



Low-Drag
Roller Centraliser

S-45



Low-Drag + Low-Torque
Roller Centraliser

S-47



Low-Drag + Low-Torque Roller Centraliser

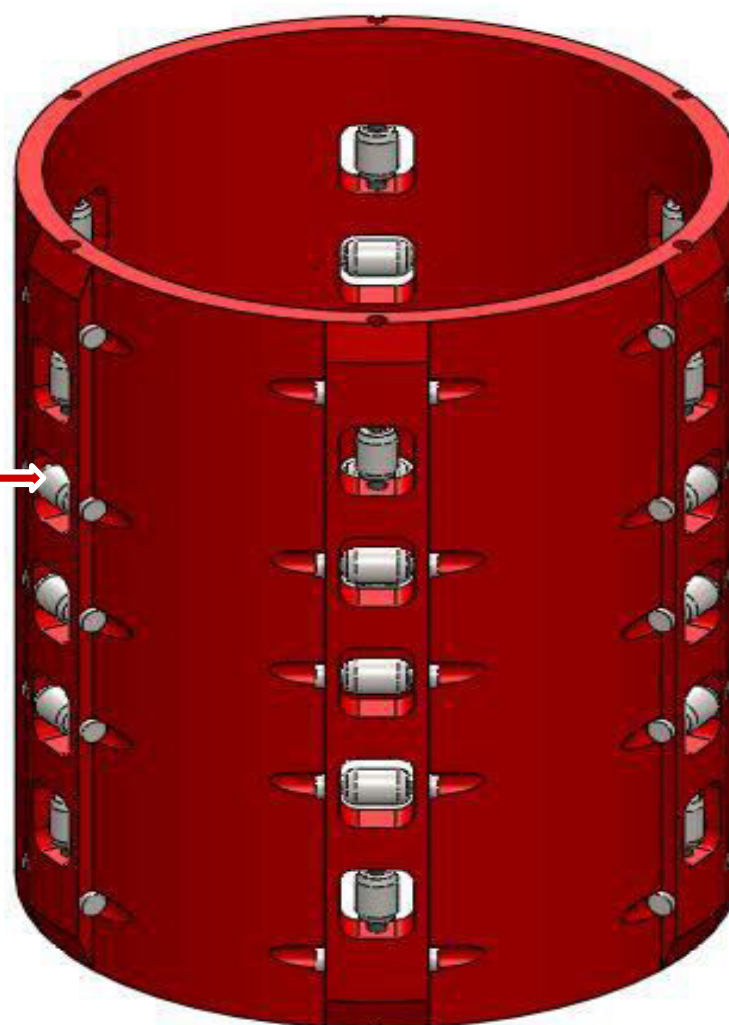
Features

Roller centralisers are able to run and rotate long, heavy wall-liners in extended-reach wells as rotation provides an optimum cement sheath

Rollers help to avoid ploughing, which can cause major problems

Small roller contact areas reduce differential sticking

Roller centralisers retain their efficiency in the absence of oil-based and pseudo-oil based mud



Eneroil S-45 low-drag centralisers are successful in running casing and sand-control screens into unconsolidated sandstone reservoirs

Eneroil S-47 low-torque/low-drag centralisers perform independently from drilling or completion fluids

Eneroil S-47 low-torque/low-drag centralisers are provided with rollers placed axially and horizontally, thereby reducing both drag and torque forces

Hinged Stop Collar
with Bolt

S-60



Hinged Stop Collar
with Nails

S-61 / S-62



Hinged Stop Collar
with Set Screw

S-63



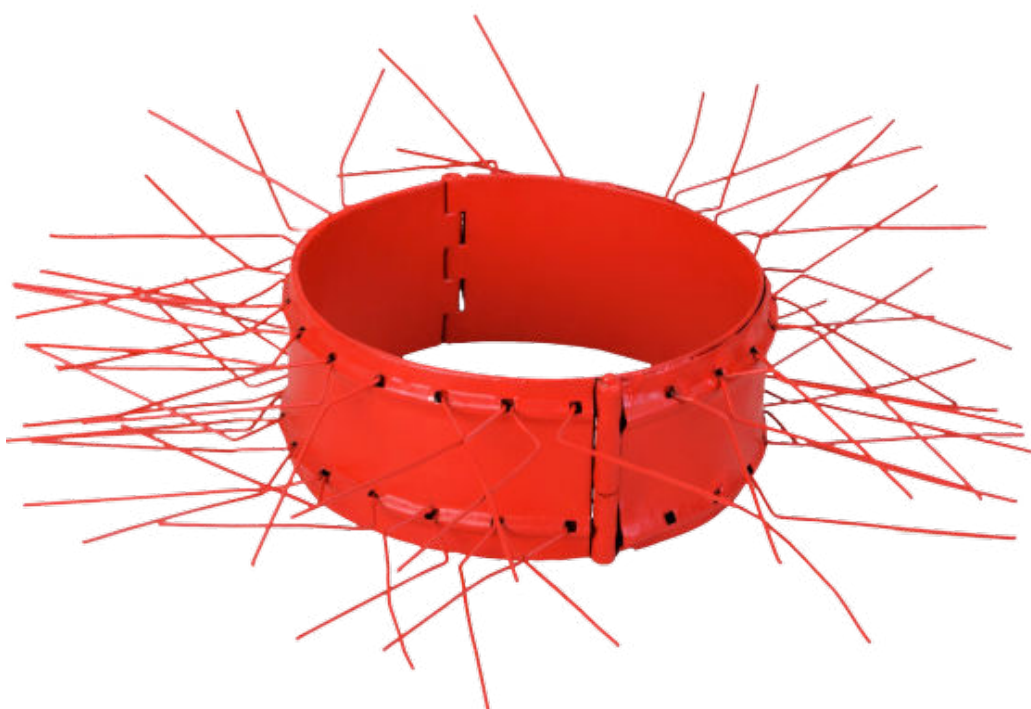
Slip-on Stop Collar with Set
Screw; Bevelled on one side

S-65



Wire Bristle

S-70



Well-bore Wiper





S-80



Cement Basket

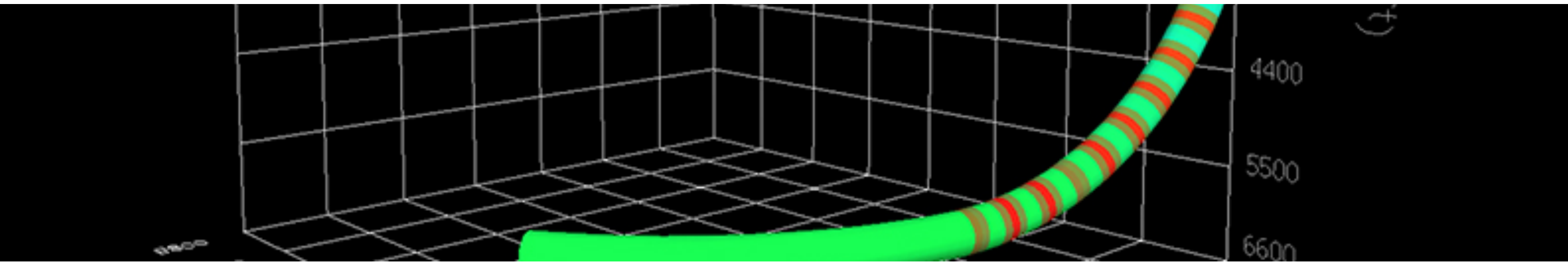
S-90



Model				
Normal Hole Applications	●	●	●	●
Rotating Linear Applications	●	●	●	●
Minimising Drag Force	●	●	●	●
Passing Wellbore Restrictions	●	●	●	●
Oversized Holes / Washouts	●	●	●	●
Passing Casing Windows	●	●	●	●



Centraliser Placement Software



Eneroil is able to provide you with centraliser placement simulations to help you select the optimum number of centralisers based on a specific well profile

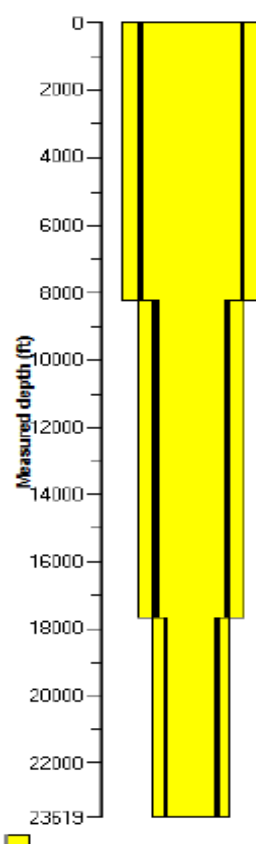
Our patented Centraliser Placement software helps us calculate downhole forces by utilising data particular to a specific well, including well profiles and pipe data.

Following this, we analyse Eneroil centraliser performance data to determine the most favourable locations to place our product in order to maintain a minimal standoff throughout the string.

We are also able to determine the optima deployment, i.e., the minimum strategic deployment for maximum output, of any cementation products required in the well.

7", 9 5/8" & 13 3/8" Casing Centralizer Placement Model & Simulation

Date:	5/20/2020	Legal:	TRIAL
Operator:	ENEROIL	Contractor:	ENEROIL
Well name:	Field	Type of job:	Cementing
Location:	Field	Prepared by:	Sajish
Comments:	9 5/8" Casing Centralizer placement Model and Stimulation report		



Wellbore intervals (from top down)			
Description	ID (in)	MD (ft)	Friction factor
OH	17.500	8223.	0.30
OH	13.400	17653	0.30
OH	9.700	23619	0.30

Traveling assembly weight (TAW) = 0 (lbf)

Pipe intervals (from top down)								
Description	Len. (ft)	Adj. wt (lb/ft)	OD (in)	ID (in)	Blade OD (in)	Restore F. (lbf)	Spacing (ft)	SO (%)
Casing	8223.	72.000	13.375	12.347	NA	NA	NA	80
Casing	9430.	53.614	9.625	8.535	NA	NA	NA	80
Casing	5966	29.000	7.000	6.184	NA	NA	NA	80

Fluids during tripping	
Fluid density in annulus = 12.18 (ppg)	Fluid density inside pipe = 15.85 (ppg)

Fluids after cement job	
Fluid density inside pipe = 10.00 (ppg)	

Fluids	Annular fluids	Density (ppg)	Top MD (ft)
1		12.18	0.

Pipe running operation			
Pipe rotation: No			
Tripping speed (ft/min)	Pipe end drag or WOB (lbf)	Rotation speed (rpm)	Pipe end torque or TOB (ft-lb)
40.0	0	25	0

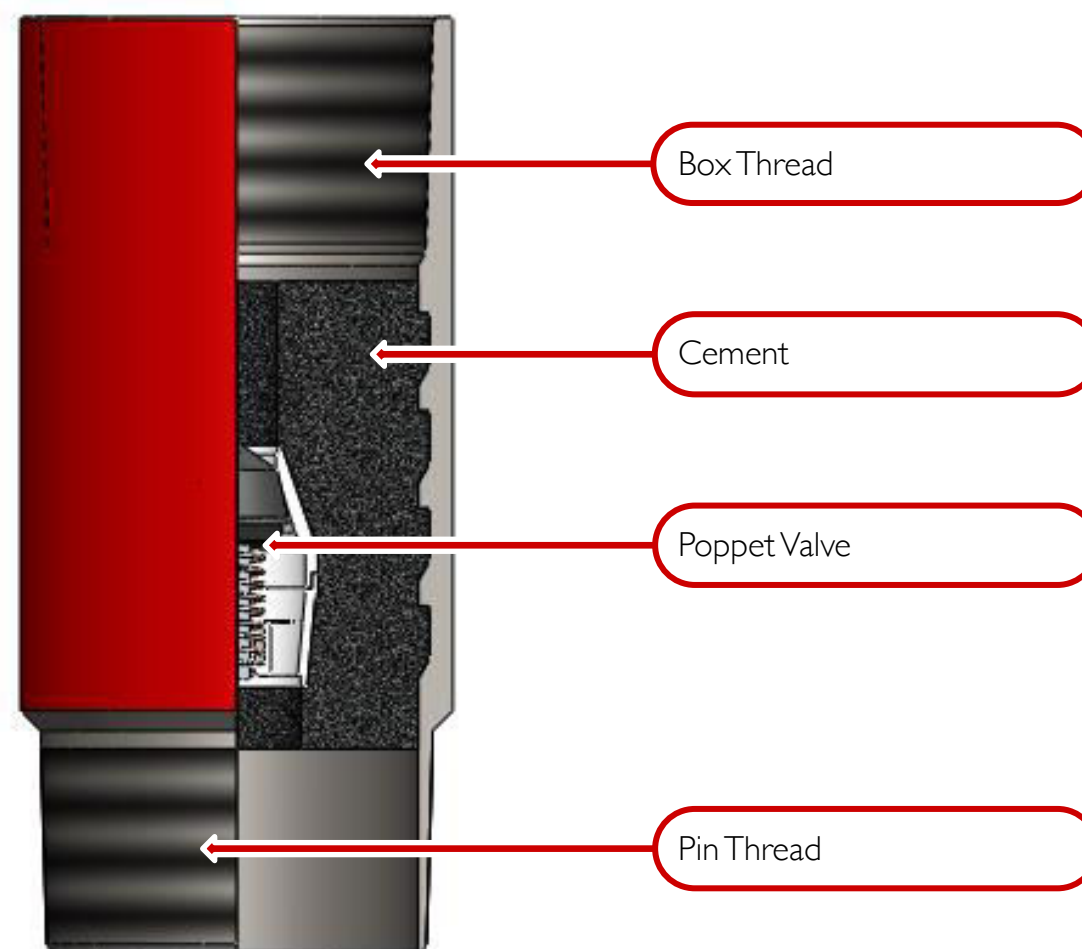
Results							
Pipes	Cent. type	Specified spacing (ft)	Specified standoff (%)	No. of cent. required	Average cent. spacing (ft)	Standoff range (%)	Side force range @ cent. (lbf)
Casing - 13.375 x 12.347 (in)	Bow	N/A	80.0	138	59.	73.6 - 80.0	899 - 3211
Casing - 9.625 x 8.535 (in)	Bow	N/A	80.0	231	41.	63.4 - 80.0	281 - 1468
Casing - 7.000 x 6.184 (in)	Bow	N/A	80.0	149	40.	71.4 - 72.7	797 - 810



Product Range: Float Equipment

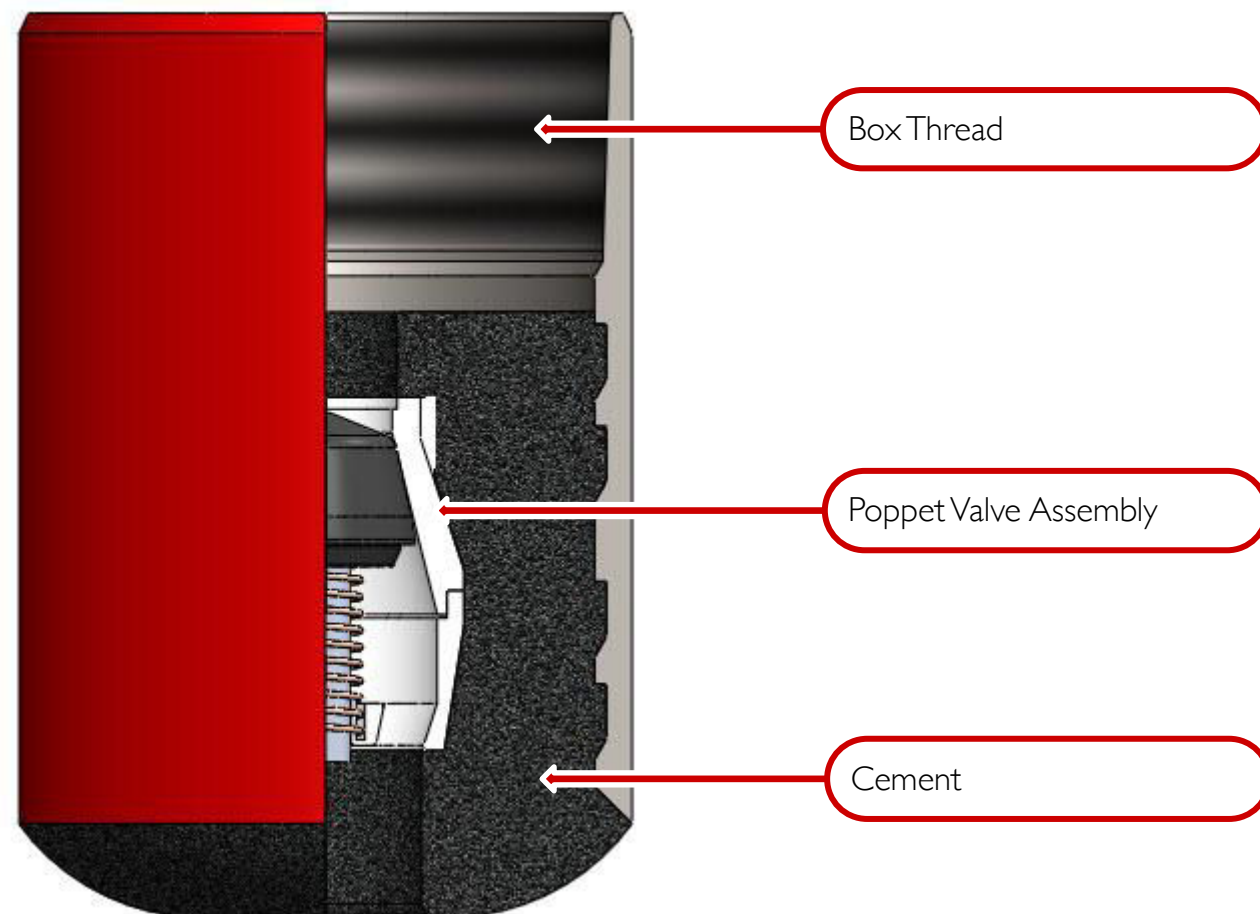
Float Collar

S-FCSV



Single Valve Cement Float Shoe

S-FSSV

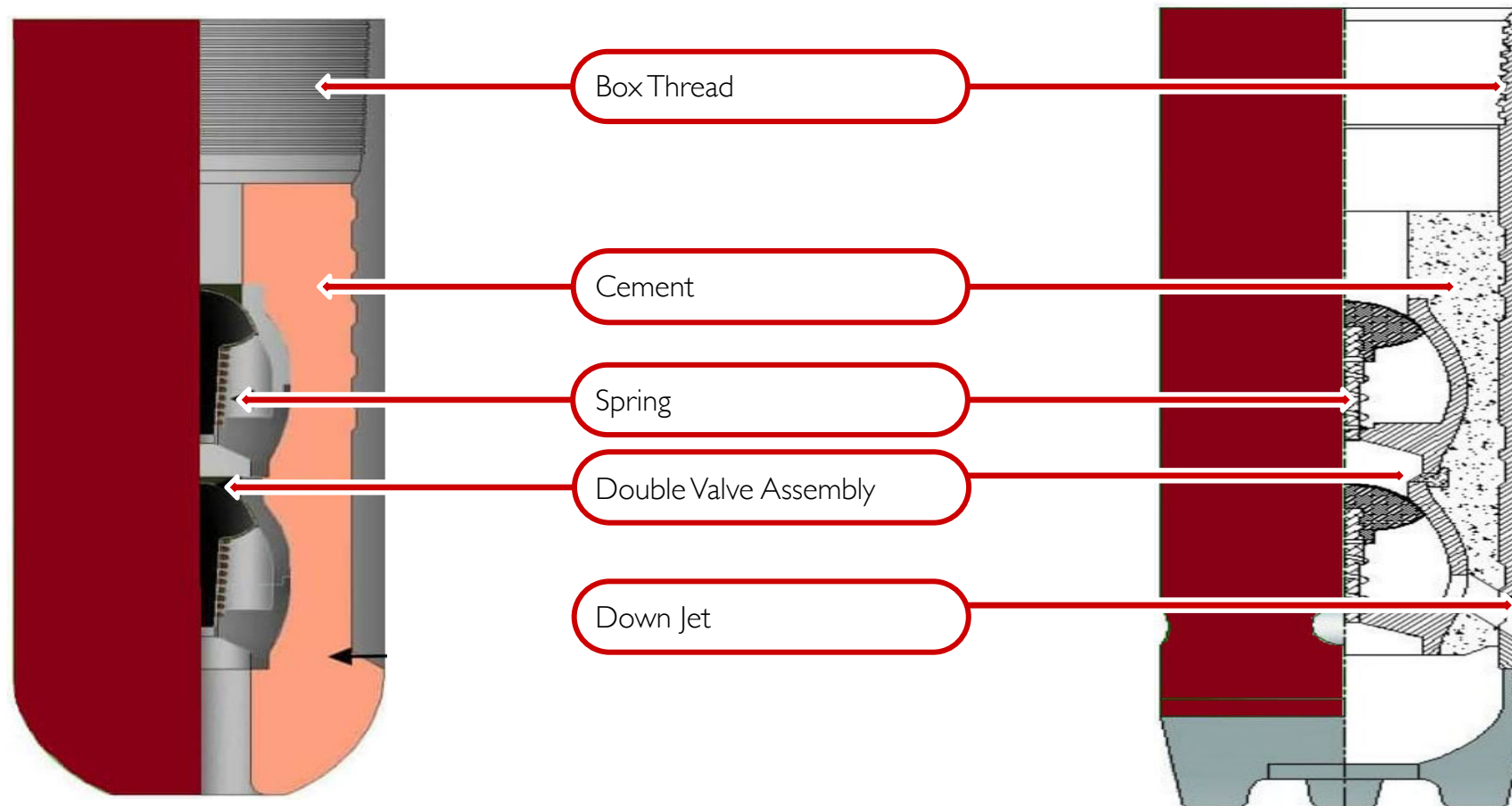


Double Valve Cement Float Shoe

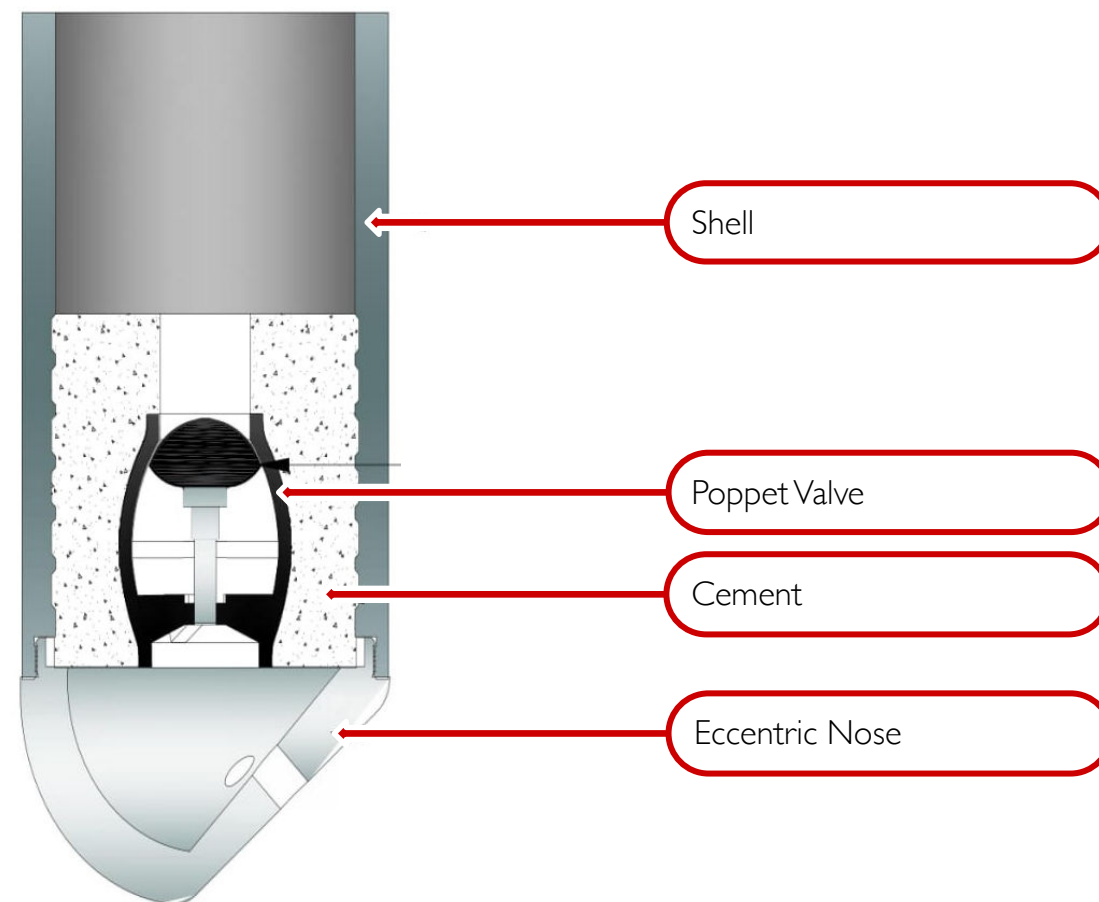
S-FSDV

Double Valve
Down Jet Swirl Float Shoe

S-FSDV-DJ

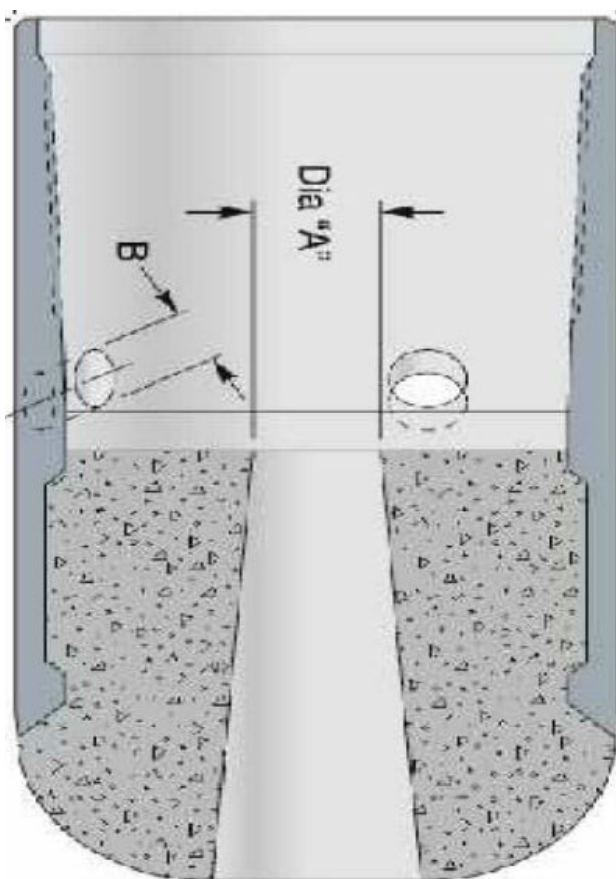


Eccentric Nose Float Shoe



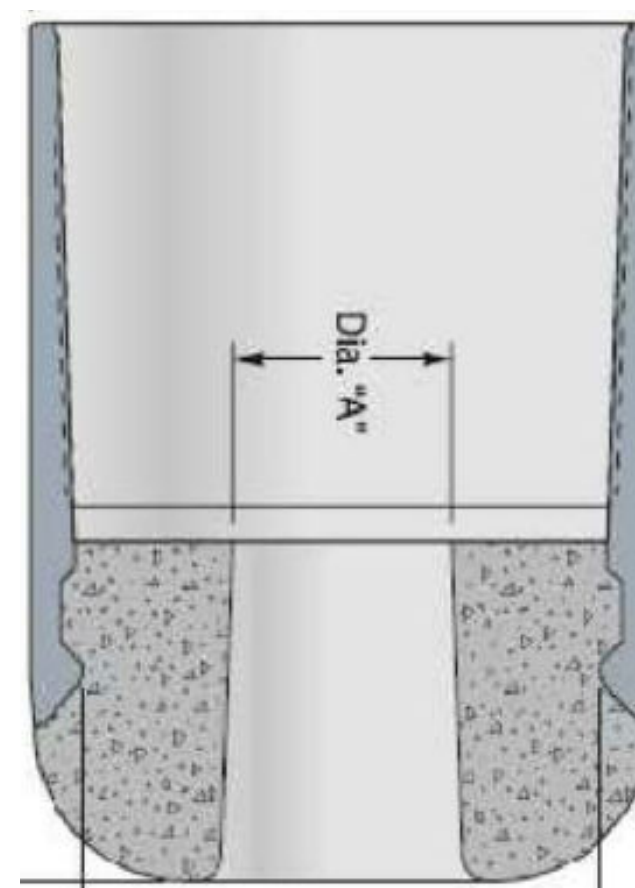
Single Valve Guide Shoe

S-GUSE



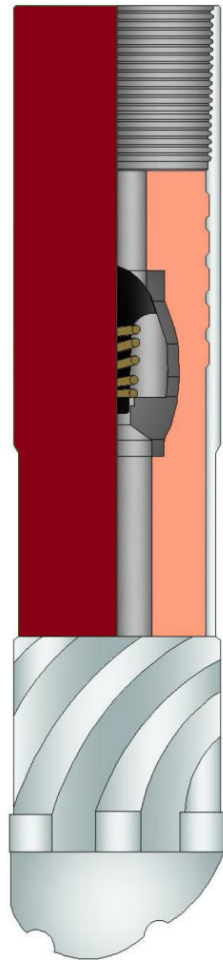
Down Jet Guide Shoe

S-GUSE-DJ



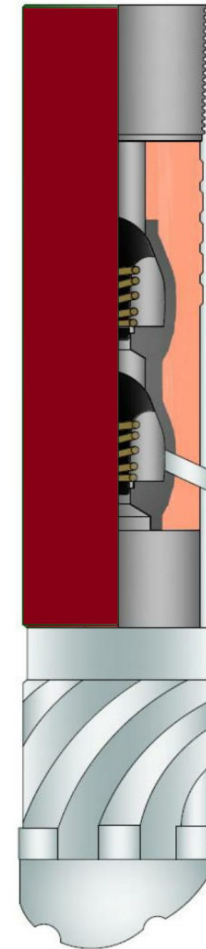
Single Valve Reamer Shoe

S-RSSV



Double Valve Reamer Shoe

S-RSDV



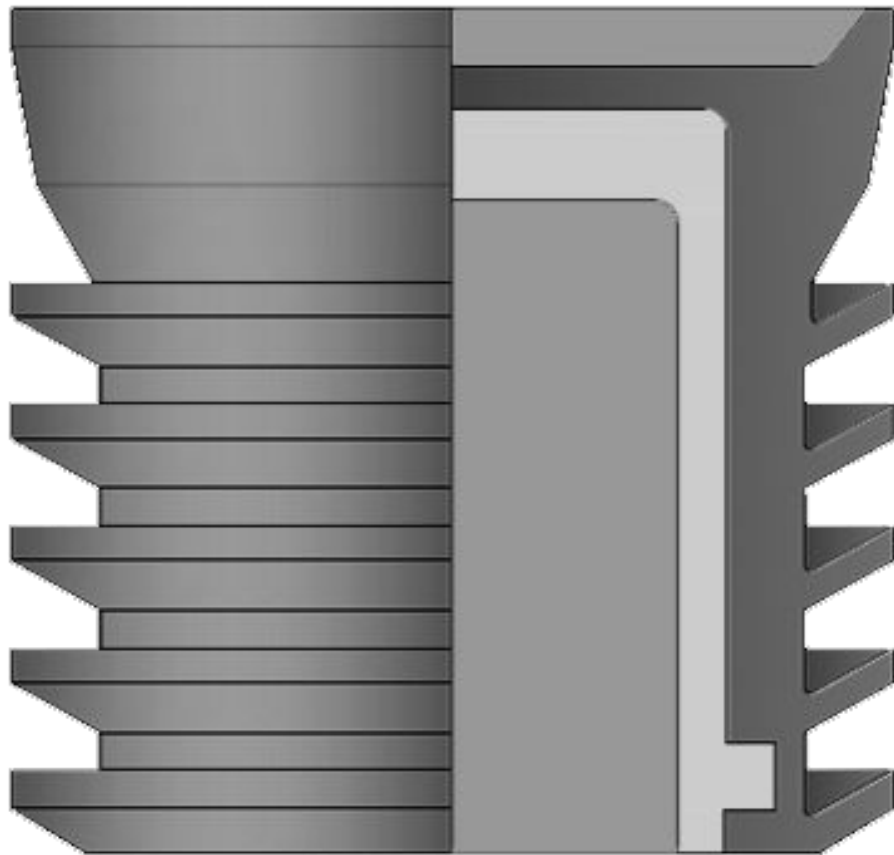


Product Range: Cementing Plugs



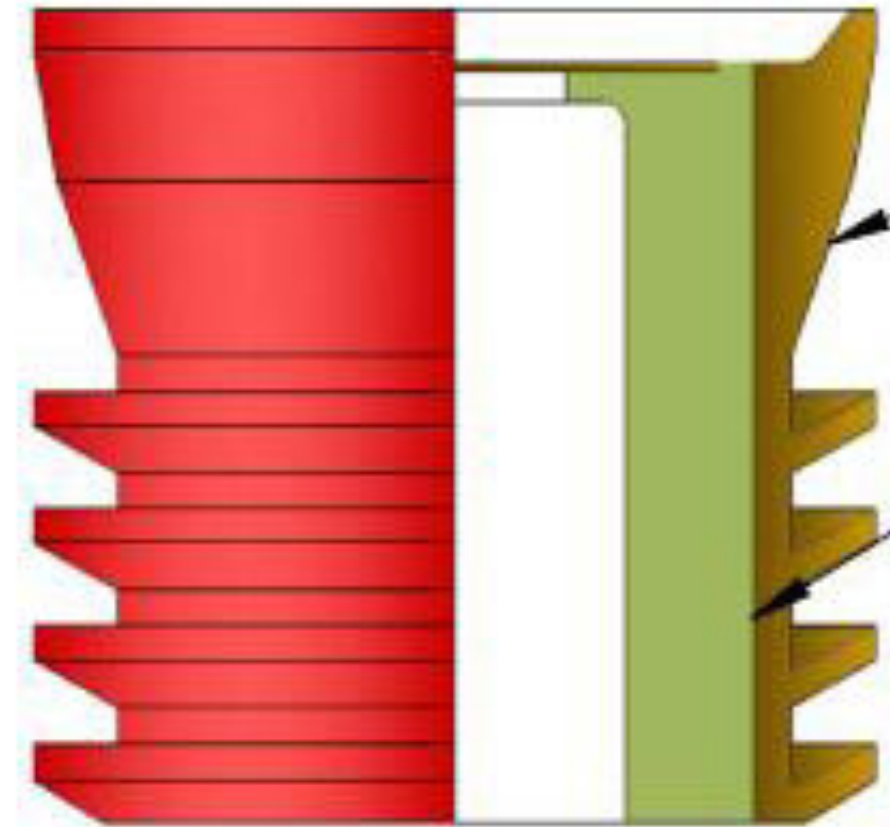
Top Plug

S-TOPG



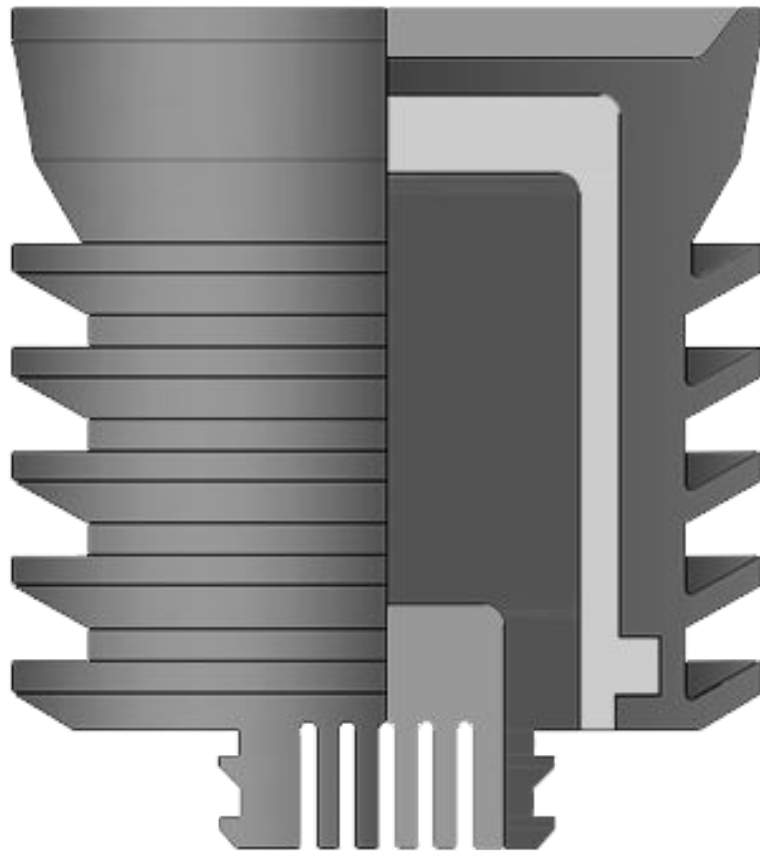
Bottom Plug

S-BOTG



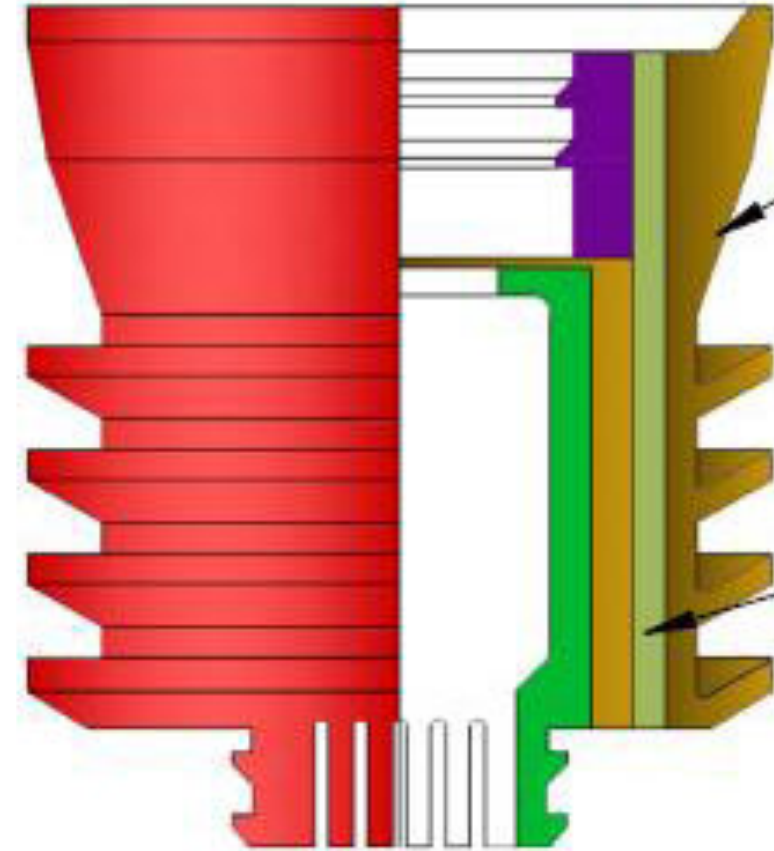
Top Plug

S-TOPG-NR



Bottom Plug

S-BOTG-NR





Quality Control & Process Flow



We constantly search for technological and innovative advances to our quality and have put in mechanisms to monitor conformance to quality at every stage.

Our reputation as the manufacturer of the highest quality products in India and around the world is due to our complete respect to approved quality systems and procedures.

Procedure:

1. Prepare minimum of 7.9m³ (50 barrels) of fluid, circulate the fluid (bypassing the float equipment) until the fluid properties have stabilised.
2. Mount the float equipment to be tested in either horizontal or vertical orientation in the test section of flow loop.
3. If the float equipment is to be used in wells with a final deviation angle greater than 45°, test the equipment in horizontal orientation.

Following are the test categories for durability testing:

Category	Duration (Hours)	Maximum Pressure (k Pa) [PSI]
I	8	10 300 [1 500]
II	12	20 700 [3 000]
III	24	34 500 [5 000]

Remarks:

Circulation rate is 10 bbl/min for float equipment larger than 3.5" and 6 bbl/min for 3.5" and smaller float equipment.

The maximum test pressure should be the lesser of values shown or 80% of the manufacturer's rated burst or collapse pressure for the float equipment casing, whichever is applicable.

Procedure:

1. Perform flow durability test as per the procedure mentioned
2. Review, verify and observe safety precautions before conducting the test
3. Install the float equipment in a high temperature/high pressure test set up

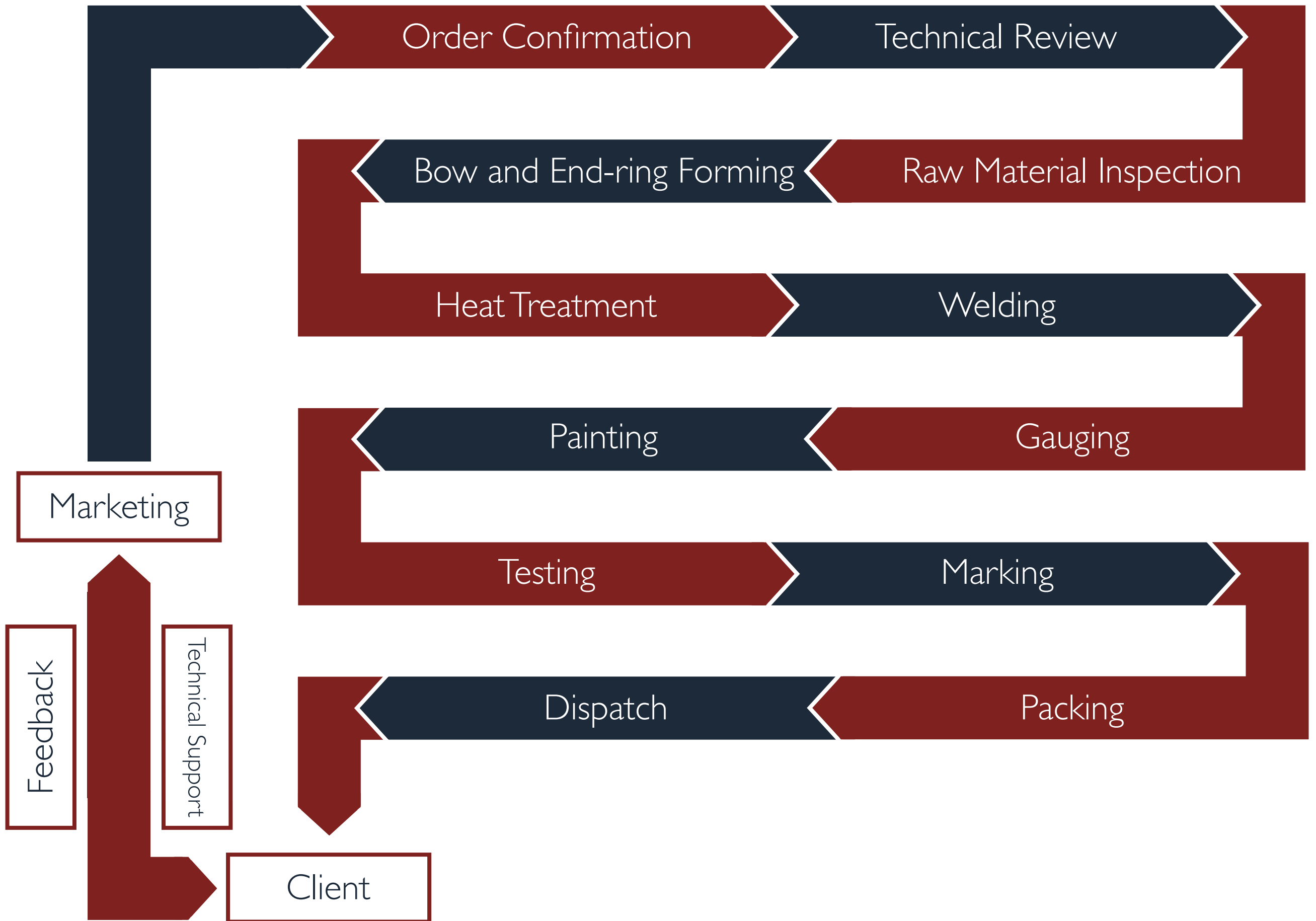
Following are the test categories for static high temperature/high pressure testing:

Category	Temperature (°C) [°F]	Maximum Pressure (k Pa) [PSI]
A	93,33 [200]	10 300 [1 500]
B	148,88 [300]	20 700 [3 000]
C	204,44 [400]	34 500 [5 000]

Remarks:

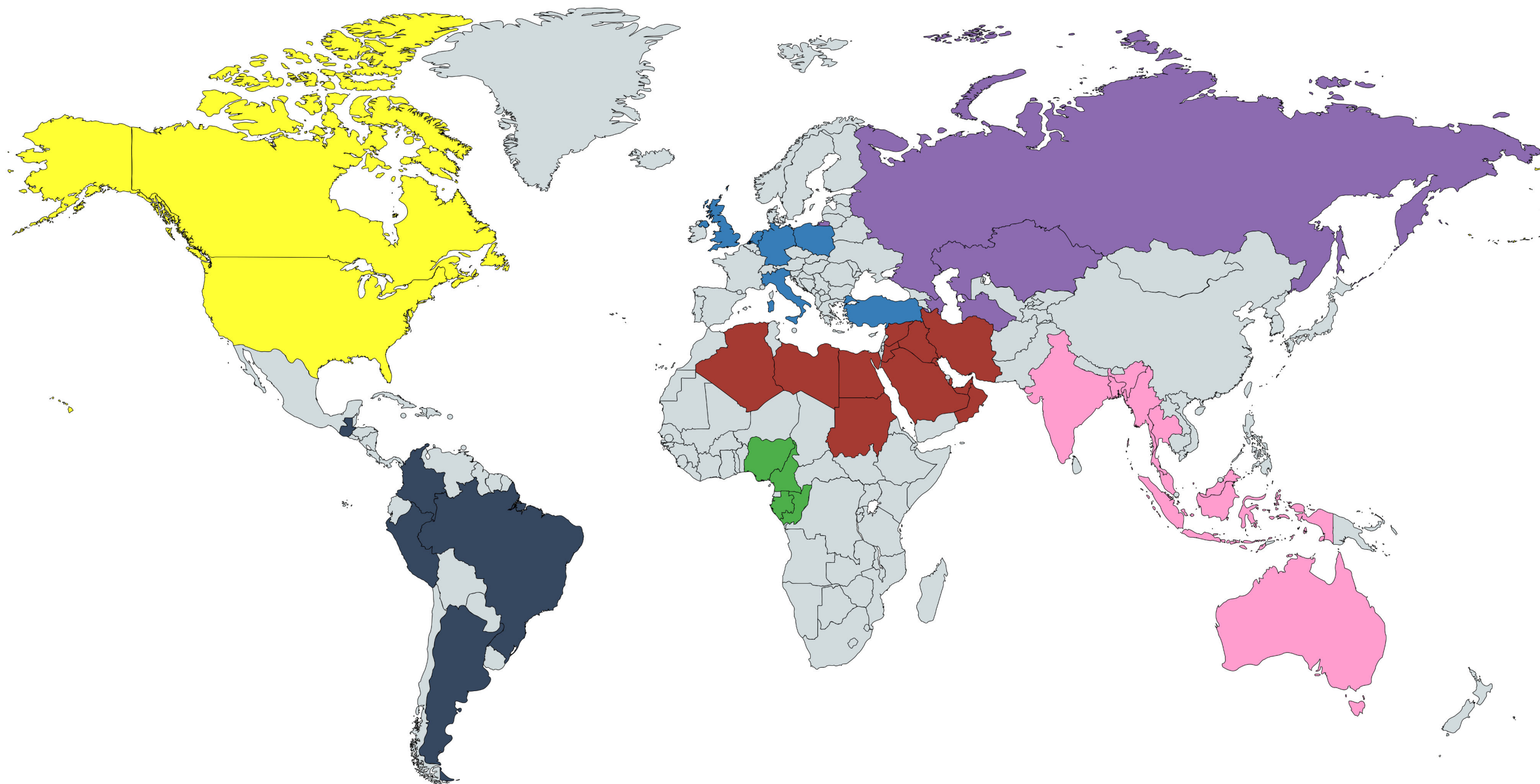
Duration at temperature is 8 hr for all categories.

The maximum test pressure should be the lesser of values shown or 80% of the manufacturer's rated burst or collapse pressure for the float equipment casing, whichever is applicable.





Global Clientele





Country	Client(s)
Argentina	Total
Barbados	Barbados National Oil Company
Brazil	Petrobras
Canada	Various (including CTE)
Colombia	Ecopetrol, Halliburton, Occidental, Frontera (Pacific), Schlumberger, Total
Guatemala	Perenco
Peru	China National Petroleum Company
United States	Various (including Turbeco)

Country	Client(s)
Algeria	Sonatrach
Egypt	Agiba, GUPCO, Mansoura, Naftgas, Petrobel, Qarun
Iran	National Iranian Oil Company
Iraq	Halliburton, OMV
Jordan	JOSCO, Schlumberger
Kuwait	Kuwait Oil Company, Halliburton
Libya	Naftlib, Halliburton, Schlumberger
Oman	Occidental
Qatar	Qatar Petroleum, Halliburton, Total
Saudi Arabia	Saudi Aramco
Sudan	Greater Nile Petroleum Company
Syria	Al-Furat, Oudeh Petroleum
UAE	ADNOC (ADCO, ADMA, ZADCO), Dragon Oil

Country	Client(s)
Azerbaijan	SOCAR
Kazakhstan	Brunel Energy
Turkmenistan	Dragon Oil
Indonesia	Pertamina, PetroChina
Malaysia	Petronas, ExxonMobil, Halliburton, Murphy
Myanmar	Baker Hughes
Thailand	PTTEP, Baker Hughes, CPOC
Australia	Origin Energy, Santos
Bangladesh	Kris Energy
India	Various (including ONGC)

Country	Client(s)
Germany	JJS Oilfield Supply
Italy	AGIP (now part of Eni)
The Netherlands	IOT-Dosco
Poland	Polish Oil and Gas Company
Turkey	Türkiye Petrolleri
United Kingdom	Baker Hughes, Island Energy
Cameroon	ADDAX Petroleum
Congo - Brazzaville	Société de Forages Pétroliers
Gabon	Maurel & Prom
Nigeria	Nigeria Petroleum Development Company, Weafri



301-304, Block I, DLF Corporate Park,
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