



SUBSEA TOOLS

FREUDENBERG
OIL & GAS TECHNOLOGIES

 **FREUDENBERG**
INNOVATING TOGETHER

SEAL FACE CLEANING & SEALRING REMOVAL TOOLS

Make life easier with our bespoke compact cleaning tools

The Seal Face Cleaning and Sealring Removal Tools are ROV-operable and have been designed to operate with the hub seal face profile and the Vector Duoseal™ sealring to give compact lightweight tools that are reliable and effective. The metallic parts of the tools are coated to prevent reflective glare from the ROV lights. The tools can also be supplied with a range of handles to suit the ROV manipulator, such as 'D' and 'T' handles and 'Fishtail' handles, plus any other type to suit customer requirements.

All parts of the tools that come into contact with the hubs or sealring are manufactured using materials that will not damage critical seal faces in any way. (Most materials used are either aluminium or UHMWP). Side entry tools can also be supplied for connections where only a limited hub gap can be achieved. These tools are inserted through a 'window' in the side of the guide funnel and actuated by the ROV. Each tool is manufactured, assembled, inspected and tested in our factory to ensure correct operation prior to being dispatched to our customer.



Main Benefits

- Compact and light design
- Easy to handle
- Standard and bespoke design
- Interchangeable cleaning head
- Field proven at 8,000ft (2,440m)
- Tested to depths up to 13,125ft (4,000m)

Note:

Do you have another graphic we could place here? I didn't want to squeeze the 2 product descriptions here or break between them.

There's a note in the marked-up PDF from H. Williams: "Would like to see from Polarled project dual seat cleaning/seal removal tool photo and information. Also twin torque tool from Polarled project."

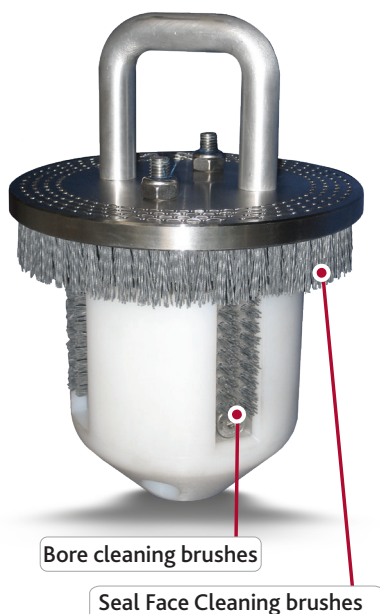


Seal Face Cleaning Tool

The Seal Face Cleaning tool has a profiled shape to ensure the entire seal face is cleaned effectively. The tool has a guide cone to assist ROV insertion into the hub. Once located the ROV simply rotates or oscillates the tool to give rapid and reliable cleaning. The tool has specially selected polymeric bristles that contain additives to facilitate the cleaning action. A motorized tool is also available. The tool shown in the photo to the left is for a 26" ID sealing.

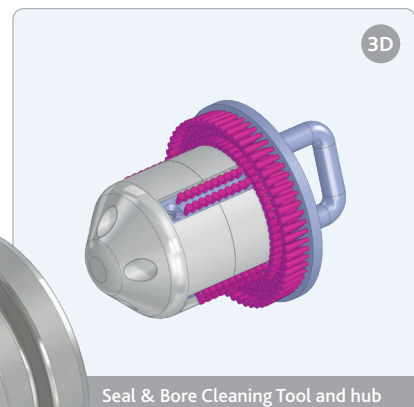


3D CAD view of Seal Face Cleaning Tool



Seal & Bore Cleaning Tool

The Seal Face Cleaning Tool can also be supplied with a bore cleaning facility for use where the Vector Optima® hub is to be fitted with one of our soft seal pressure caps. These pressure caps seal on the bore of the hub, so this type of cleaning tool cleans the bore and Vector Duoseal™ seat. This tool can also be used for other applications where the bore also needs to be cleaned.



Seal & Bore Cleaning Tool and hub

SEALRING REMOVAL TOOL

The Sealring Removal Tool is a compact and light weight tool that is inserted into the Vector Duoseal™ sealring by the ROV manipulator. It is then actuated hydraulically to grip onto the inside diameter of the sealring. The sealring has a groove which is centrally placed, giving the tool a positive lock onto the sealring prior to actuation to reliably remove from the hub and hold until the ROV is ready to release it. The sealring is released automatically when the hydraulic actuation has been released.

Hydraulic actuation is normally carried out from the ROV on-board hydraulic power pack, however, actuation can also be achieved from other pressure sources, such as accumulators etc. The tool can be actuated using hydraulic oil and water to gas fluids and all components are compatible with these.



Main Benefits

- Compact and light design
- Easy to handle
- Standard and bespoke design
- Interchangeable cleaning head
- Field proven at 8,000ft (2,440m)
- Tested to depths up to 13,125ft (4,000m)

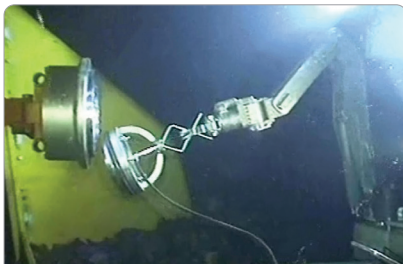
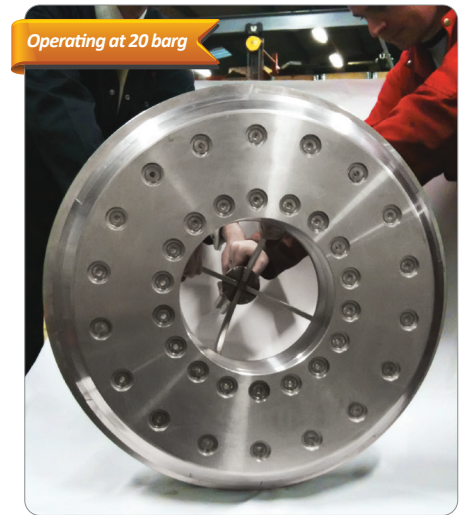
Note: Do you have another graphic we could place here?

SEALRING REMOVAL TOOL: SIZE AND WEIGHT

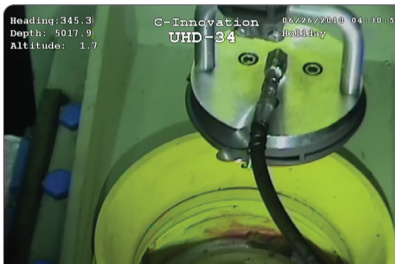
The tool shown to the right was supplied to fit a 26" ID sealring and, as can be seen from the photo, the bore was removed to give the lightest possible tool. The aluminium construction for the main body parts gives the tool the lightest possible weight, especially when submerged subsea. For connections using large diameter clamps, the tools can be supplied for use with guide post assistance that helps the ROV during insertion and operation.

The Sealring Removal Tool has been supplied to various projects around the world for in water depths to 8,200ft (2,500m). However, the tools have been hyperbarically tested in our in-house facility to a depth of 13,125ft (4,000m).

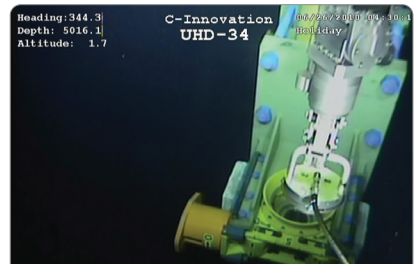
Tools have been supplied in various sizes to fit sealrings with internal diameters from 3½" to 26". Irrespective of sealring diameter, the design principle for the tools remains the same, ensuring effective operation.



Sealring Removal Tool on ROV



Close-up of Sealring on Tool (Size 50)



Optima® Connector on FSR with tool on ROV



UNITED STATES

UNITED KINGDOM

UNITED ARAB EMIRATES

CANADA

MALAYSIA

NORWAY

SINGAPORE

VECTOR

PRODUCT LOCATIONS

Malaysia (Kuala Lumpur)	+603 8723 3689
Norway (Drammen)	+47 32 20 93 00
Scotland (Aberdeen)	+44 1224 775 242
UK (Port Talbot)	+44 1639 822 555
USA (Houston)	+1 713 979 4444

Contact Us

Freudenberg Oil and Gas Technologies

Metal Sealing Solutions—Vector Products
Unit 4, Christchurch Road, Baglan Industrial Park
Port Talbot SA12 7BZ
Phone: +44 (0) 1639 822 555

www.fogt.com
sales@fogt.com

Freudenberg Oil and Gas Technologies

Headquarters
10035 Brookriver Drive, Suite 400
Houston Texas 77040
Phone: +1 281 233 1400

Corporate Sales

+1 514 428 5900 Phone
+1 514 426 9222 Fax
+1 866 643 5999 Toll-Free

For global locations and support, please visit www.fogt.com.

© 2020 Freudenberg Oil & Gas Technologies. All rights reserved. V002-5-2021