

Give your mechanical seal the environment it deserves

*SpiralTrac*TM

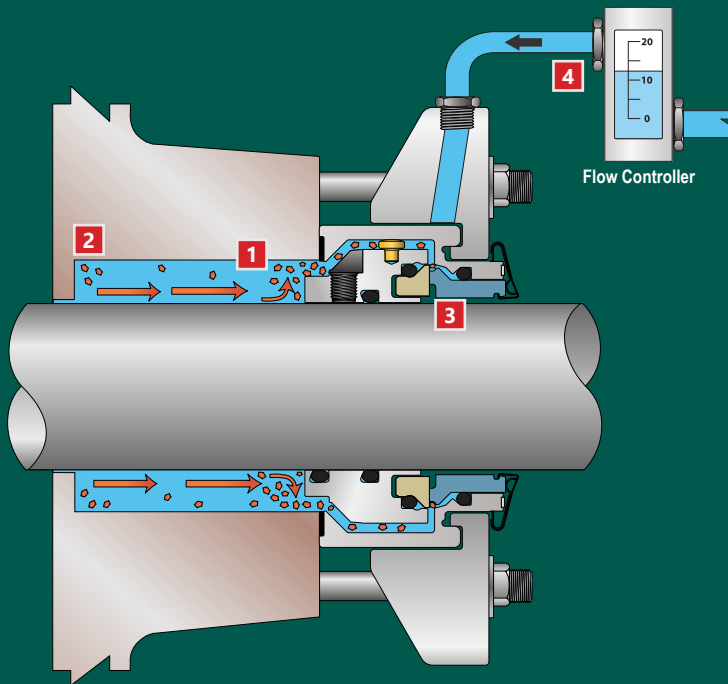
SEAL VERSION



WHAT IS SPIRALTRAC™?

The SpiralTrac Environmental Controller is a **unique, patented, active throat bushing**, specifically engineered to transform and control the internal seal cavity environment in rotating process equipment.

TYPICAL SEALED PUMP PROBLEMS



Contaminants migrate along the shaft and into the seal faces, causing premature seal failure.

- 1 Seal cavity/bore erosion
- 2 Trapped particulate
- 3 Premature seal failure
- 4 Excessive effluent water

Flush costs

Effluent treatment, re-heating costs

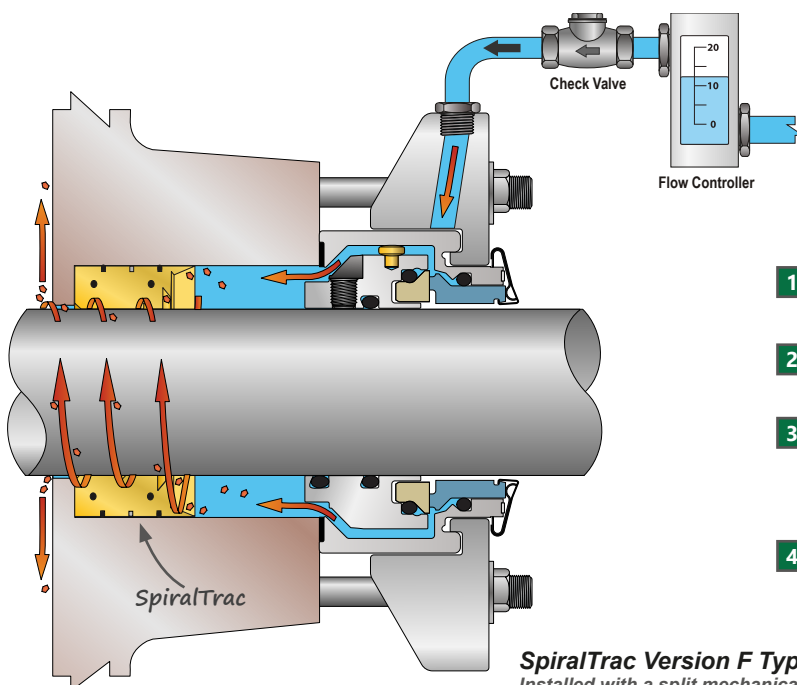
Maintenance and repair costs

Frequent seal replacement
Labor intensive - taking pump out of service

Many equipment types

Different processes - different problems

THE SPIRALTRAC SOLUTION



Contaminants are prevented from invading the seal faces, enabling the seal to operate in a **clean** environment!

- 1 Improves equipment MTBF
- 2 Requires minimal or no flush
- 3 Improves seal performance and extends seal life
- 4 Decreases housekeeping costs

*SpiralTrac Version F Type S
Installed with a split mechanical seal*

Seal Version SpiralTrac Benefits



Split for easy installation
(Version F Type S)



SpiralTrac installation in a large influent pump at a wastewater treatment plant

Increases seal MTBF

By preventing accumulation of solids in the cavity, circulating fluid around the seal, exchanging internal cleaned flush and venting the cavity when the pump is stationary, SpiralTrac is able to increase mechanical seal MTBF by typically two to six times the previous level.

Decreases or eliminates flush

The SpiralTrac patented design permits users to greatly reduce or eliminate flush in many standard process applications. Although complete elimination of flush is dependent on the type of application, EnviroSeal's technical support staff can assist you in determining your application's suitability for total flush elimination.

Greatly reduces or eliminates seal and cavity erosion

One of the problems caused by particulate circulating in the seal cavity is excessive shaft or sleeve wear. As noted above, SpiralTrac draws this particulate through its grooving system, and expels it at the impeller, significantly reducing erosion of the shaft or sleeve.

Permits the use of soft faces in many non-crystallizing applications

Typically, hard face seal combinations are used when erosive solids are present in a seal cavity. With SpiralTrac however, solids are no longer present in the cavity. Since the seal is now operating in a cleaner environment, soft face seal combinations can be used at substantially reduced costs. Soft face seal combinations will also run cooler, further extending the mechanical seal's life.

Enables seals to operate in applications not possible before

Many customers have had poor results using mechanical seals because of high solids/fiber content in the process. These solids get in around the seal area, dehydrate and consequently cause the seal to overheat and/or fail. The SpiralTrac inherent ability to remove solids/fibers from around the seal allows many of these applications to be revisited. The end result? A typical seal MTBF increase of approximately 2 to 6 times that of a conventional seal operating alone.

Protects single or double seals

Solids will enter the seal cavity whether or not a single or double seal is installed. SpiralTrac will develop a flow to remove these solids regardless of the seal design, resulting in a significant reduction or elimination of flush and increased seal MTBF.



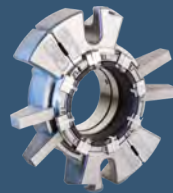
SpiralTrac Versions & Types

SpiralTrac comes in many shapes and sizes so it can accommodate most all fluid sealing applications. The *Version* of a SpiralTrac (F, N, D or C) refers to the **application** the device is designed for, while *Type* (A, B, E, I or S) categorizes the device by its **installation configuration**. SpiralTrac can be designed to fit nearly all pump configurations. If there are solids in the process, we can improve your mechanical seal performance!

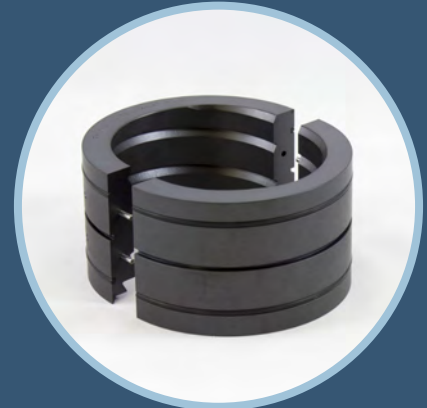
Common Version and Types

Version F Type S

- Requires minimal flush
- Split for easy installation
- Ideal use with Split Mechanical Seals
- No modification required to pump or seal cavity



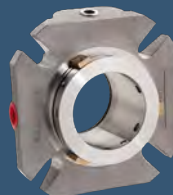
Chesterton 442C
Split Mechanical Seal



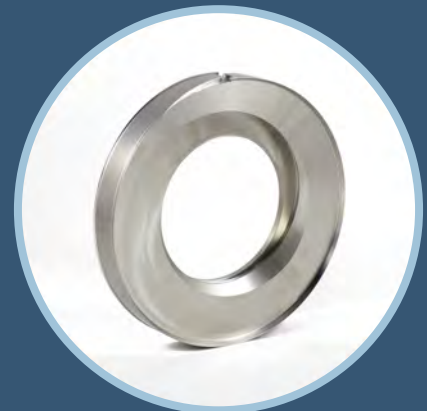
Commonly paired with Chesterton Split Mechanical Seals: 442C, 442

Version N/D/C Type I

- Requires minimal or NO flush
- Used with Non Fibrous (N) or Fibrous (D) applications
- Enables venting of air from seal cavity
- Bottom drain to allow process to drain from seal cavity (C)



Chesterton 1810
Single Cartridge Seal



Equipment has to be disassembled for installation, small modification required.

Commonly paired with Chesterton Cartridge & Cassette Seals: 1810/2810, 170, 150/250, S10/S20

Version N/D Type A

- Requires minimal or NO flush
- Used with Non Fibrous (N) or Fibrous (D) applications
- Enables venting of air from seal cavity
- Replaces existing removable bushing

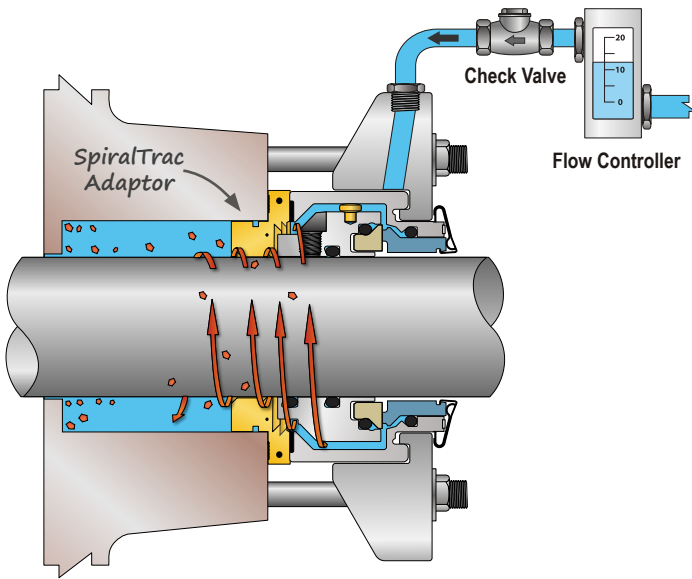


Chesterton 170
Single Cartridge Seal



Commonly paired with Chesterton Cartridge & Cassette Seals: 1810/2810, 170, 150/250, S10/S20

SpiralTrac Adaptor



Gain the benefits of our proven, patented SpiralTrac technology in an easy-to-install adaptor for your mechanical seal!

Contaminants are prevented from invading the seal faces, enabling the seal to operate in a clean environment!

- ✓ Increased Seal MTBF.
- ✓ Drastically reduced flush rates.
- ✓ Drastically reduced seal erosion.
- ✓ Reduced sensitivity to flush pressure loss.
- ✓ Works with split and cartridge mechanical seals.

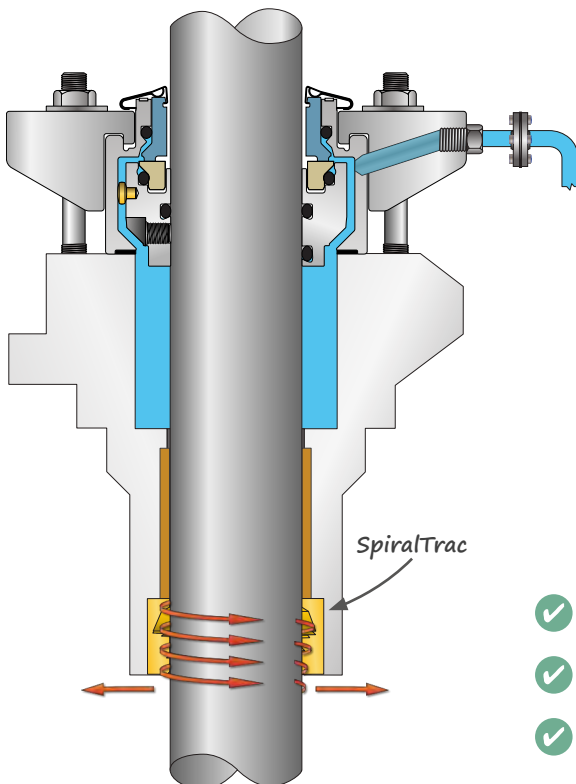


SpiralTrac Adaptor installed with a Chesterton 442HP Split Seal in a Hydro Turbine



SpiralTrac Adaptor installed with a Chesterton S10 Seal in a Sulzer Scanpump®

Vertical Turbine SpiralTrac



Unlike the standard SpiralTrac that is installed in the seal cavity, the Vertical Turbine SpiralTrac is installed (press fit) into the bottom of the column. This helps to keep the seal cavity clean by **preventing solids from migrating up alongside the shaft.**

The spiral geometry expels particulates back before they could reach the cavity, allowing the packing/mechanical seal to operate in a clean environment. Typically manufactured from metal with a minimum axial length of 1.000" (25.4 mm).

Vertical Turbine SpiralTrac can be used for both packed or sealed applications.

- ✓ Preventing solids from entering the seal cavity.
- ✓ Improved seal performance and longer MTBF.
- ✓ Press fit for long lasting one-time installation.

Material Options

SpiralTrac™ is manufactured in a variety of materials, aimed at your particular needs and process specifications. Systematic selection of the best material for a given application begins with the material properties. Mechanical, thermal, chemical and other properties.

Material	ENV ID	Max Temp	Application Information	Common use in Industry
Carbon Graphite PTFE <i>Shore D 63-66</i>	ESC	250 F / 121 °C	Engineered polymer used in a wide variety of applications.	Chemical, General Manufacturing, Mining, Power, Pulp & Paper, Steel, Wastewater
Fortron PPS <i>Shore D 82-86</i>	MGE	500 F / 260 °C	High performance polymer suited for applications where intermittent shaft support is required.	Chemical, General Manufacturing, Mining, Power, Pulp & Paper, Steel, Wastewater
Bearing Grade PEEK <i>Shore D 83-87</i>	BGE	500 F / 260 °C	High performance polymer designed for applications that require maximum shaft support.	Chemical, General Manufacturing, Mining, Power, Pulp & Paper, Steel, Wastewater
Glass Filled PTFE <i>Shore D 59-63</i>	GLF	250 F / 121 °C	Engineered "white" polymer typically used in applications where process fluid is white.	Pulp and Paper
Poly-Urethane <i>Shore D 46-50</i>	STR	185 F / 85 °C	Excellent wear properties for slurry services.	Mining, Power, Steel, Wastewater
660 Bearing Grade Bronze <i>Brinell 65</i>	BRZ	n/a	Good wear properties. Material is non-sparking and absorbs moderate shaft deflection without damaging the shaft.	General Manufacturing, Mining, Power, Pulp & Paper, Steel, Wastewater
316 Stainless Steel <i>Rockwell B 95</i>	316	n/a	Used in corrosive services.	Chemical, General Manufacturing, Mining, Power, Pulp & Paper, Steel, Wastewater
416 Stainless Steel <i>Rockwell C 26.6</i>	416	n/a	Ideal for erosive services where chemical compatibility is not an issue.	Chemical, General Manufacturing, Mining, Power, Pulp & Paper, Steel, Wastewater
17-4PH* Stainless Steel <i>Rockwell C 36</i>	174	n/a	Ultimate wear resistance for tough slurry services.	General Manufacturing, Mining, Power, Pulp & Paper, Steel, Wastewater

*can be heat treated (HT) to Rockwell C 38-45. Additional charges may apply. During the heat treating process, material discoloration occurs.

Many times, it comes down to the customer's choice as to what is required for material for the SpiralTrac. Product compatibility, cost, pump construction, and installation type are all to be considered when choosing what material is to be used. The above list is only a guideline for material selection and industry applicability.

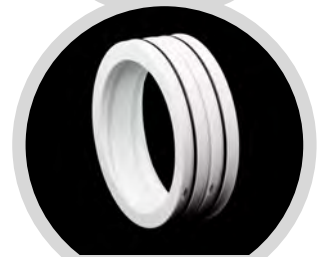
Exotic materials are available upon request. Please email support@enviroseal.ca for any application that does not fall within the above guidelines, or if you have any other questions.



ESC



MGE



GLF



STR



BRZ



316



17-4PH HT

Frequently Asked Questions

General

Does the SpiralTrac rotate?

No, the SpiralTrac does not rotate. SpiralTrac's patented design creates new and unique flow patterns from existing flows caused by shaft and sealing element rotation.

Our equipment's shaft moves axially. Will this affect SpiralTrac's operation?

No, since SpiralTrac does not contact the shaft/sleeve.

What type of rotating equipment can I use SpiralTrac in?

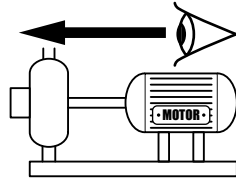
Any equipment that has a stuffing box/seal chamber. Horizontally or vertically mounted centrifugal pumps, agitators, vertical turbines, refiners, hydro turbines, etc.

Where should the SpiralTrac not be used?

SpiralTrac should not be used in any application where the process is at or near vapor margin. In this situation, any increase in temperature or decrease in pressure could cause flashing. Depending on the process, SpiralTrac may slightly change this condition, and we don't recommend taking the risk. SpiralTrac should also not be used with dry powder or any latex compound.

How do I determine the rotation of the SpiralTracs required in my pump?

Direction of rotation is determined from the motor end looking towards the impeller.



How can I get a quote for SpiralTrac?

In order to get a quote, fill out as much information as you can on one of our *SpiralTrac Quote Forms* (available at enviroseal.ca) and email it to support@enviroseal.ca

How do I order SpiralTrac?

We offer SpiralTrac through A. W. Chesterton's Worldwide distribution network. Find your country in our *Distributor Locator* or email us with your location (address and zip code) and we'll put you in touch with your local authorized distributor.

What tools do I need to install SpiralTrac?

Some are designed to be easily installed on site without the use of any tool, some designed with a press fit and requires the equipment to be disassembled. Refer product installation instruction for details.



enviroseal.ca



info@enviroseal.ca

Please explore our website (enviroseal.ca) for additional SpiralTrac resources, downloadable digital assets (including this brochure), application success stories, more FAQs and other SpiralTrac information. Get in touch with us by emailing to info@enviroseal.ca

Seal Version

Will Seal Version SpiralTrac work with packing?

No, these SpiralTracs are not designed to work with packing.

How much clearance is between the SpiralTrac ID and the OD of the shaft?

The typical clearance between the SpiralTrac and the OD of the shaft is $0.018'' / 0.46mm$ radial, but this can vary depending on the size of the device and the material it is made from.

Can SpiralTrac be used with all mechanical seals?

Yes! SpiralTrac can be designed to work with all mechanical seals.

How much flush pressure is required for a SpiralTrac Version F?

The required flush pressure is dependent on the seal cavity pressure. Normal flush pressure should be above box pressure by a minimum of $1 \text{ Bar} / 14.5 \text{ PSI}$, enabling the flush to push any contaminants under the existing throat.

What is the difference between Version N, D, C?

They differ in the length of the devices and the applications that they are used in:

- Version N typically used in non-fibrous applications (silt, sand)
- Version D typically used in fibrous applications (pulp, corn mash, wastewater)
- Version C typically used in intermittent services (product crystallizes, hardened when cooled)

Why is there no air vent in the Version F SpiralTrac devices?

These devices are split and designed to be easily installed in the field where the required upgrades associated with the air vent cannot be done. The use of flush also takes care of the air trapped in the seal cavity.

Why would I choose a SpiralTrac Adaptor over a regular SpiralTrac?

SpiralTrac Adaptor can be your answer when:

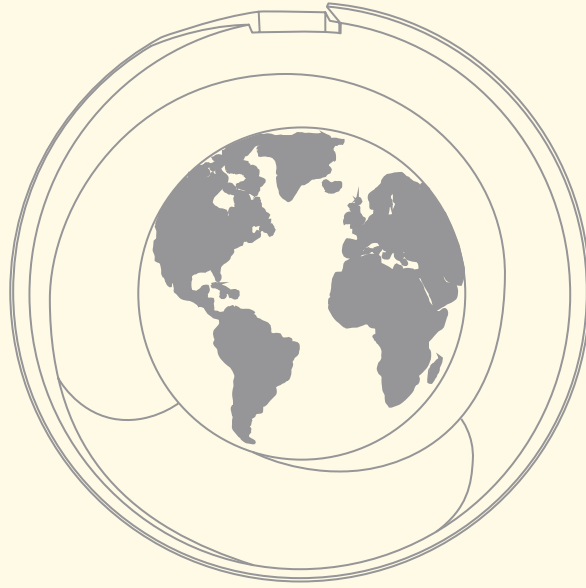
- Box bore too big/small (for gasket of seal)
- Bolt pattern too big/small (for seal mounting)
- Shaft wear (moving seal closer to clean part of shaft)

What are the pressure limitations of the split SpiralTrac Adaptor?

The split device made of ESC material has been pressure tested to 100 PSI / 6.9 Bar. The typical applications for the Adaptor are well within this limit. Should you have a higher-pressure application and still require a split device, contact EnviroSeal.

I would like to run my application flush free. Can the Seal Version SpiralTrac make this happen?

Yes. There are many installations where we are able to run flush free under the right conditions. After application details have been submitted and looked at, we can help you determine whether your application can run flush free with SpiralTrac.



Home of SpiralTrac™

EnviroSeal Engineering Products Ltd. is a pioneering leader in seal and packing protection technology, offering several patented product families that enhance operating conditions and dramatically increase the service life of mechanical seals and packing in the pulp & paper, mining, API, CPI, municipal, pharmaceutical, marine, food processing and other general heavy industries worldwide.

Mission Statement

Our mission is to research, design and produce creative and leading-edge seal protection technology for distribution and use worldwide in any process industry. Our hallmark will be excellence of service, ingenuity in design and quality of product, thereby resulting in the greatest possible benefits and savings for our customers.

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