



FERROFLUIDIC SEALS & VACUUM  
ROTARY FEEDTHROUGH SOLUTIONS

**STANDARD PRODUCTS CATALOG**



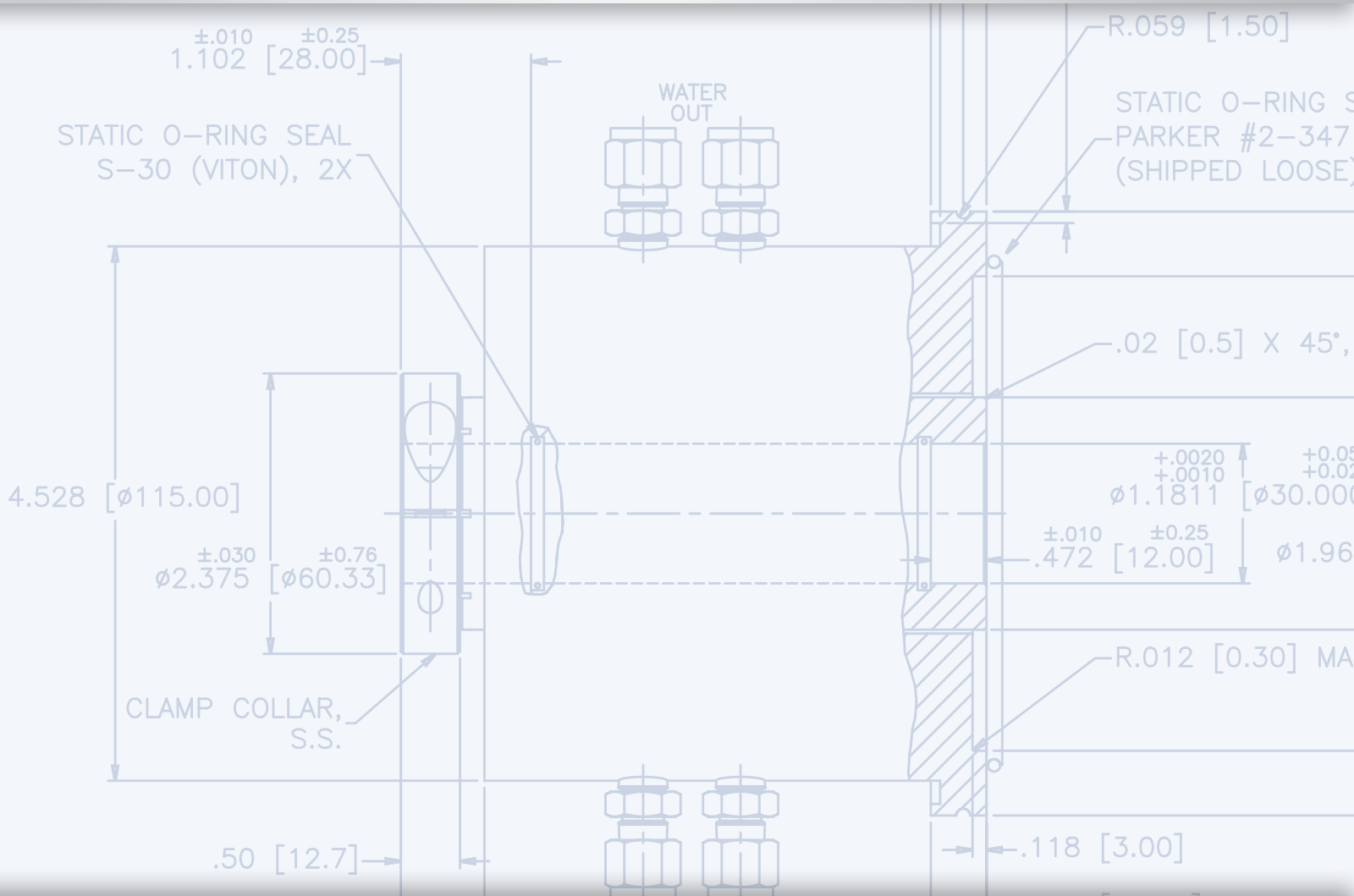
**FerroTec**

# Table of Contents

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Overview of Ferrotec's Capabilities.....	i
Working with Ferrotec to Meet Your Seal Needs .....	viii
How to Order .....	viii
How to Select a Seal.....	x
Performance and Torque information.....	x
Retrofit Seals .....	xii
Using this Catalog — Model Numbers.....	xiii
Standard Feedthrough Common Specifications .....	xiv
Bearing Dimensions .....	xiv
Solid Shaft, Inch-based Seals.....	1
Hollow Shaft, Inch-based Seals .....	19
Solid Shaft, Metric-based Seals.....	35
Hollow Shaft, Metric-based Seals.....	47
Table of Solid Shaft, Inch-based Seals .....	Table A
Table of Hollow Shaft, Inch-based Seals.....	Table B
Table of Solid Shaft, Metric-based Seals .....	Table C
Table of Hollow Shaft, Metric-based Seals.....	Table D

# Pure Precision



Ferrotec provides advanced technology solutions that make sealed rotating systems work better, more precisely, and more reliably.

## Engineered

In the 1970s, the engineers at Ferrotec pioneered a revolutionary approach to a common mechanical problem, creating a dynamic, hermetic seal for rotating mechanisms. Using Ferrofluid to create a liquid o-ring around a rotating shaft, we patented the first Ferrofluidic® seals which quickly became the gold standard for demanding, precision sealing and rotation applications.

### Leading Manufacturers Choose Ferrotec

- World-Class Engineering
- Industry-Leading Performance
- Globally Integrated Manufacturing
- Unsurpassed Quality

### Designed In

For over forty years, our engineering and manufacturing teams have been busy refining, optimizing, and re-envisioning our designs for an expanding set of application challenges. That's why the world's leading manufacturers turn to Ferrotec for their most demanding precision sealing requirements.

### OEM Specified

We design seals for a broad range of industries, shipping millions of Ferrofluidic seals used in a wide range of equipment worldwide. We continue to expand on our original designs with nearly unlimited sizes, complex process fittings, multiple planes of motion, integrated motors, and even computer-controlled intelligence, enabling sophisticated system operation.

TUBE FITTING FOR  
Ø.24 [Ø6.0] TUBING WITH  
1/8-28 BSPT CONNECTION, 4X

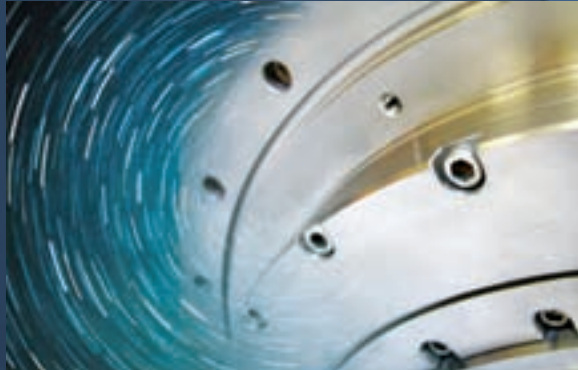
**The Ultimate Rotary Seal**—A Ferrofluidic seal, formed by our specially optimized ferrofluid and a simple permanent magnetic circuit, provides a hermetic seal against gas, vapor and other contaminants under both static and dynamic conditions while providing virtually no friction between the rotating and stationary components.



# Partnering for Success

## When Performance Matters

When applications have demanding requirements, customers look to Ferrotec. At Ferrotec, we specialize in delivering mission-critical performance, whether it's sealing semiconductor vacuum process chambers, driving high-temperature photovoltaic furnaces, protecting sensitive components in military equipment, or providing an enabling solution for your next technology innovation.



## World Class Engineering

Our most advanced sealing solutions all have their roots in Ferrotec's reliable, proven designs. So when customers look to next generation technology with unique rotation, pressure, and material challenges, Ferrotec engineering is the resource they trust. From size, shape, multi-axis motion and advanced analysis to sophisticated components that integrate motors, gas and cooling union features—even sensors and electronic controls—Ferrotec's engineering portfolio spans a spectrum of challenges. Leveraging Ferrotec's application engineering expertise and our broader understanding of the tools and subsystems that rely on our seals, we are the go-to resource for next generation system development.

## Globally Integrated Manufacturing

**Global manufacturing centers** in North America, Asia, and Europe enable Ferrotec's flexible supply chain to meet our customers' needs with optimized cost, high volume, quick turnaround, and U.S. manufacture for sensitive projects.

**All manufacturing locations** are Ferrotec owned and operated, ensuring consistency and repeatability of manufacturing processes and demonstrated high quality.



**Application-Optimized Ferrofluid**—Ferrotec produces a comprehensive and growing range of ferrofluids for a wide variety of scientific and manufacturing applications. The only major seal manufacturer to manufacture all our own ferrofluids, Ferrotec is the first choice for challenging rotary seal requirements.



## Quality Systems

Producing high-quality precision components for OEMs means more than simply matching tight tolerances—it's also about manufacturability, repeatability, and consistency. We own our global manufacturing facilities and we manage our processes. Our primary manufacturing operations in Asia and Europe are registered ISO 9001 and we also mandate strict inter-organizational quality processes. From producing our own ferrofluid to maintaining exacting standards in machining and assembly, a Ferrotec label is much more than just etched steel.



## Partnering with Our Customers

While engineering, quality, and performance are all key aspects of our business, we hold ourselves to these standards for you, the customer. For over 40 years, Ferrotec has worked with our customers to help them achieve success. From logistical partnership to supply chain integration, our goal is to ensure that our business relationship fits your needs as closely as our seals do. From initial sales to end-user service agreements, we work with equipment manufacturers to support systems through the entire product life-cycle.

**Global service and support capabilities** worldwide Ferrotec facilities provide support and service local to most regions and customers.

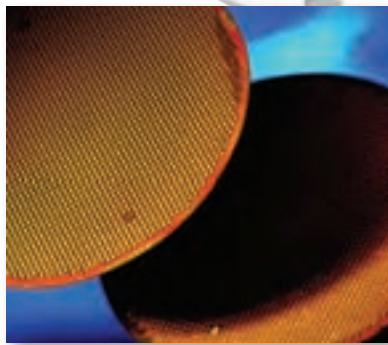
**Internal “dual sourcing” capabilities** utilizing Ferrotec production facilities around the world helps ensure that our customers can benefit from an uninterrupted source of supply.

**Ferrotec employs more** Engineering, Manufacturing, and Customer Support Personnel in Ferrofluid-based vacuum sealing technology than all other competitors in the world combined.

**Ferrotec’s Ferrofluidic® seal manufacturing** processes are specifically optimized for the manufacture of magnetic liquid rotary seals, leveraging over 40 years of technology-specific experience.

# Markets & Applications

Semiconductor • Photovoltaic • Aerospace, Defense & Security • Vacuum Coating • Lighting • Opto-Electronics Manufacturing • Energy • New & Emerging Technologies



## Semiconductor Manufacturing

From raw material growth to photolithography to assembly and testing, Ferrotec solutions are used extensively throughout the process of manufacturing integrated circuits.



## Photovoltaics & PV Manufacturing

The market for photovoltaics is growing rapidly. Photovoltaic material is used in solar cells and emerging alternative energy technologies. Ferrotec offers a number of products and solutions that are optimized for the unique requirements of PV manufacturing, helping drive innovation in this high-growth market.



## Aerospace, Defense & Security

Modern defense and security technologies increasingly use electro-optics for surveillance, tactical, and navigation applications. Ferrofluidic seals permit delicate electro-optical instruments to operate reliably at their maximum potential under highly demanding airborne and ground conditions while reducing overall system maintenance.

## Ferrotec's seal solutions and services can typically be divided into the following categories

**Standards**—Distilled from common designs that we have developed and built for over 40 years, we offer a catalog of vacuum rotary feed-through sizes and shapes that fit most common applications. Available in either solid shaft or hollow shaft designs, our standards come in both inch-based and metric sizes with a variety of mounting options available.

**Modified Standards**—Tailored for your system's exact requirements, Ferrotec's modified standards add unique features to optimize convenience and performance while relying on our proven core feedthrough designs. Common modifications include shaft length, flange and mounting hole changes.

**Retrofits**—Classic equipment still plays a vital role in many operations and it's often imperative to optimize and improve the tool's operation. We've revisited many of these systems, and applied our industry knowledge and experience to re-engineer subcomponents or major assemblies in order to offer retrofit components that improve performance and eliminate frustrations.



### Vacuum Coating Applications

From optical coatings for lenses and industrial glass, to decorative and hard coatings for automotive and industrial manufacturing, Ferrofluidic seals set the standard for material transport, shutters, and a variety of other motion applications. Ferrotec develops specialized technology solutions for the leading optical and thin film companies throughout the vacuum industry.

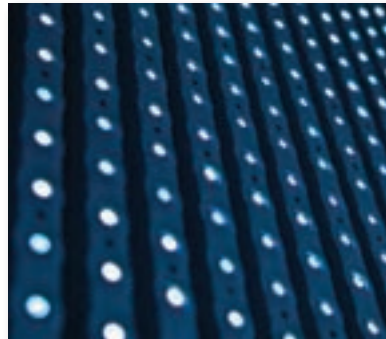
### Lighting

Ferrotec's rotary unions provide the lighting products industry with hermetic, high-throughput solutions that dramatically improve lamp quality, uptime, and maintenance.

**Custom Designs**—Leverage the world's most experienced seal and motion engineering team to define, structure and solve your unique motion seal application. Ferrotec engineers have developed solutions for unusual sizes, multiple planes of rotation, and unique challenges involving temperature, pressure, and process exposure. When you're looking for the solution to core process problems, Ferrotec is your resource for key enabling technologies.

### Energy

While photovoltaics promise to help improve our energy future, sources such as wind, nuclear, and kinetic flywheel energy storage also fit within the puzzle to reduce our reliance on traditional fuels. Ferrotec solutions enable advances in many of the developing alternatives.

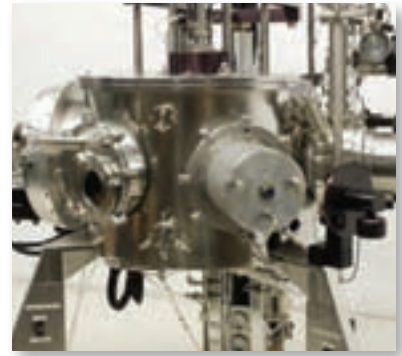


### Opto-electronics Manufacturing

Compound semiconductor processes are used for manufacturing LEDs and solar cells. Ferrotec's integrated seal and motor solutions enable the contamination-free high vacuum environments needed for high volume manufacturing.

**Subsystem Assemblies**—With global manufacturing capabilities, close partnerships with our suppliers, and our in-depth system understanding, we often partner with equipment manufacturers to assist in engineering, optimization, contract manufacture, and turnkey supply of complete equipment subsystems.

**Near-limitless Capabilities**—With diameters of less than 5mm to beyond 1m, Ferrotec custom designs achieve the extreme rotary surface speeds needed to push system performance to new levels.



### New & Emerging Technologies

Vacuum, pressure, pure environments and precision rotation are challenges faced by many technologies and industries. Whether those challenges require seals with unique sizes and shapes, unique approaches to motion, or sophisticated intelligence integrated into the system, Ferrotec is helping lead the way with solutions to enable these applications.

**Repairs**—Even the most reliable parts in the world are subject to wear and tear in demanding applications. Ferrotec maintains an expert repair service to ensure genuine original equipment parts and quality, with repair and replacement programs designed around our ongoing commitment to closely partnering with our customers.



# Working with Ferrotec to Meet Your Ferrofluidic Seal Needs

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## FERROTEC OFFERS A BROAD RANGE OF VACUUM ROTARY FEEDTHROUGHS AND FERROFLUIDIC SEALS.

### Standard Feedthroughs

This catalog features listings for all of our standard vacuum rotary feedthroughs. These seals are some of our most commonly manufactured parts and have been adopted as standard components for many applications. In many cases, we may have inventory of these products in stock, but even when the part needs to be manufactured, the lead time for these parts is typically much shorter than custom designs.

### Ordering Standard Parts

For standard parts, you can reference the listings in the back of the catalog or the listings on the Ferrotec web site ([www.ferrotec.com/ferrofluidic/](http://www.ferrotec.com/ferrofluidic/)). Make note of the 6-digit part number (ex. 103990), then contact your local Ferrotec sales representative (either directly or using the online form provided on our web site) to place your order.

### Modified Standard Feedthroughs

Sometimes a standard feedthrough design doesn't meet your exact requirements. Rather than completely designing a custom seal to meet your needs, we often wind up using a standard feedthrough design as a template. It's usually not difficult for us to make modifications to a standard Ferrotec design in order to meet your requirements. Common modifications include shaft length and mounting hole changes.

### Ordering Modified Standard Parts

To order a modified standard feedthrough, start by identifying the standard feedthrough that you want to base the design on. Once you have selected the correct part and make note of the 6-digit part number (ex. 133604), contact your Ferrotec representative (either directly or using the form provided on the Ferrotec web site), and we can work with you to specify the necessary changes.

To place an order, or if you need more information,  
please submit an inquiry through the web site or call 800-258-1788

## Retrofit Parts for Classic Equipment and Legacy Systems

Although Ferrotec has been supplying feedthroughs for over forty years, some classic equipment may not have been originally designed using a Ferrofluidic seal. Often, these systems will experience operational issues that can be solved using a Ferrofluidic seal.

## Ordering Retrofit Parts

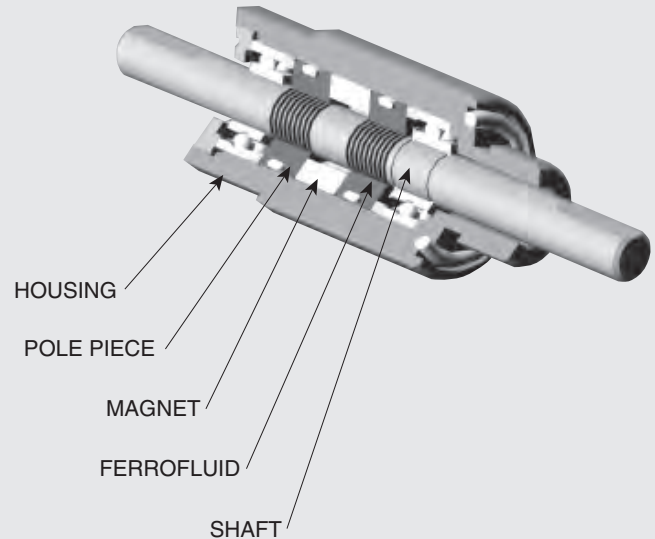
We have already developed retrofit seals for several legacy systems. For more information on retrofit solutions, refer to the section on retrofits in this catalog or contact your Ferrotec sales representative.

## Custom Designs

The vast majority of seals that Ferrotec manufactures are custom designs. If you don't see the solution that meets your requirements listed in our standard products, contact the world's most experienced seal and motion engineering team to define, structure and solve your unique motion seal application. Ferrotec engineers have developed solutions for unusual sizes, multiple planes of rotation, and unique challenges involving temperature, pressure, and process exposure. When you're looking for the solution to core process problems, Ferrotec is your resource for key enabling technologies.

## Ordering Custom Parts

To define your custom seal, submit your request through the Ferrotec web site or contact your local Ferrotec sales representative directly.



## Principles of Operation

A Ferrofluidic seal takes advantage of the response of a magnetic fluid to an applied magnetic field. The basic seal components include ferrofluid, a permanent magnet, two pole pieces and a magnetically permeable shaft. The magnetic circuit, completed by the stationary pole pieces and the rotating shaft, concentrates magnetic flux in the radial gap under each pole piece.

When fluid is applied to this gap it assumes the shape of a liquid O-ring and produces a hermetic seal. Ferrofluidic vacuum rotary feedthroughs utilize multiple rings of ferrofluid contained in stages formed by grooves machined into either the shaft or pole pieces. Typically a single stage can sustain a pressure differential of 0.2 atmospheres (200 mbar). The pressure capacity of the entire feedthrough is equal to the sum of the pressure capacities of the individual stages.

# How to Select a Seal

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## Dimensional Requirements

The size and available space for your seal are significant factors that shape your selection. To select a Ferrofluidic seal from our standard rotary seals, you need to know some information such as:

- Whether you need a solid or a hollow shaft for your feedthrough
- Your spindle size or the size of the hole to be sealed
- Seal mounting characteristics such as external flanges, cartridge seals, or threaded mounting

Ferrotec's Ferrofluidic vacuum feedthrough products are shown with a representative photograph or drawing, dimensional and performance information.

Individual dimensional drawings show the important features of each feedthrough. For hollow shaft products, additional dimensional information about shaft interfaces is presented.

Appropriate mounting nuts and washers are provided for standard nose-mount styles above 1/4-inch shaft diameter.

## Application Environmental Requirements

Depending on the environment where your Ferrofluidic seal will operate, Ferrotec will recommend seal characteristics that help ensure your seal will function reliably and will perform optimally. Factors that need to be considered include:

- Whether you are sealing an environment with aggressive or reactive gas

- Heat exposure and the feedthrough operating temperature
- Any other environmental considerations that may shape your Ferrotec solution

## Performance Information

Your performance requirements will also shape the Ferrofluidic solution that Ferrotec recommends for you. Some of these factors include:

- Shaft speed
- Load specifications
- Torque specifications
- Pressure requirements

General information needed to select a standard feedthrough for a particular application will be found in tables accompanying each product. The following is a brief description of the information provided. Enhancements such as water cooling can extend the operating capacity of some products. For applications where requirements exceed the referenced data, please contact your nearest field sales engineer.

**Shaft Speed.** Ferrofluidic feedthroughs are capable of a broad range of speeds due to their unique non-contacting seal design. The catalog lists a limiting speed for each feedthrough. This is the safe speed limit when the feedthrough is attached to a massive structure. Other considerations such as heavy loads or high temperatures may reduce this limit. Many feedthroughs have provisions for water cooling. Although this feature is normally used to deal with high operating temperatures, it can also be used to significantly increase the limiting speed. Contact your nearest field engineer for assistance.

**Load Carrying Capacity.** The load carrying capacity of a feedthrough is governed by many factors including shaft speed, mounting orientation, and load attitude. Bearing specifications and locations are given for each feedthrough, which can be used to calculate the total load capacity under the actual combination of radial, thrust and bending loads, considering other factors such as shaft speed and operating temperature. For more information and for help considering a specific product for your operating conditions, please consult your nearest field sales engineer.

**Shaft Torque Capacity.** The torque transmission capacity of each feedthrough is provided on the specifications page. The listed value is the maximum safe torque for a feedthrough which is carrying maximum radial load.

**Drag Torque.** A Ferrofluidic feedthrough presents a modest amount of resistance to rotation. This effect is the result of viscous drag and bearing rolling friction.

The specification lists approximate running torque for shaft speeds of 100 and 1,000 rpm. Running torque is proportional to shaft speed. For torque values at different speeds and for particularly torque sensitive applications, consult with your nearest field sales engineer.

When left idle for days at a time, a Ferrofluidic seal may have somewhat higher initial starting torque. This normal, temporary condition is alleviated after just a few shaft rotations.

The specification lists starting torque for 100 and 1000 rpm. This is the peak value of drag torque that would be encountered on first startup after a day or more idle. Subsequent startups would not encounter this torque.

Starting torque is proportional to acceleration rate. The tabulated values are for an acceleration rate of 3.33 RPS<sup>2</sup>. This rate reaches 100 rpm in 1/2 second or 1000 rpm in 5 seconds.

Note: Due to normal production variables, actual drag torque may be up to 30% higher or lower.

**Gas Load:** Ferrofluidic feedthroughs are commonly used in high vacuum systems. A gas load value can be provided, considering actual operating conditions, to assist with the design of vacuum and pumping systems. This is an estimate of the rate of evolution of gas from the feedthrough due to permeation and evaporation of ferrofluid.

Note that this is not a leak rate. Atmospheric gas is effectively blocked by the Ferrofluidic seal mechanism. For users who need to understand the nature of the gases which may evolve from a feedthrough, a sample residual gas analysis (RGA) trace of a typical Ferrofluidic seal can be provided by your field sales engineer.

The values depicted are for feedthroughs equipped with standard ferrofluid. If special process conditions require a nonstandard ferrofluid, these values will change. Contact your representative for a discussion of standard and special ferrofluids.

# Retrofit Seals

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## IMPROVE PERFORMANCE AND COST OF OWNERSHIP WITH FERROTEC TOOL RETROFITS

Ferrotec's rotary seals and subsystems give existing equipment high performance, quality and uptime just like our OEM applications.

### Retrofit Seals

As the rotary seal leader, Ferrotec understands the needs of your application. Although some equipment may not have been originally designed using a Ferrofluidic seal, a solution from Ferrotec can eliminate operational hassles and improve system performance.

Ferrotec offers retrofit and upgrade solutions for many vacuum manufacturing systems. Contact your Ferrotec representative and find out about the solution that is right for you.

### Popular Examples

**Varian 3000-series Sputtering System:** non-contacting Ferrofluidic seals improve uptime and extend the tool's productive life. Smooth mechanical operation eliminates binding and drag, and reduced particles and contaminants improve product quality.

**Tokyo Electron Alpha-8, -8S and -8SE CVD Furnace:** Hermetic Ferrofluidic seals eliminate environmental leaks and contamination. Ferrotec's high performance retrofit provides long life and high reliability.

### **Oerlikon / Unaxis Z 660, ZH 620, Vanguard,**

**Emerald and Corona Sputtering Tool:** Ferrotec's engineered solution upgrades the rotary-lift subassembly while providing a complete refurbishment. Eliminate electrical arcing, improve plasma stability and process repeatability, and extend tool operation and uptime.

### **Perkin Elmer 4400-series Sputtering System:**

Ferrotec offers several individual feedthroughs as well as full upgrade and refurbishment of the rotary-lift subassembly. The original design's elastomer seals cause binding and leaks and lead to unplanned downtime and maintenance. Replace the old parts with proven Ferrofluidic seals and an easily serviceable commercial water union.

Learn the details of these and other retrofit possibilities by contacting Ferrotec to discuss your equipment's needs.

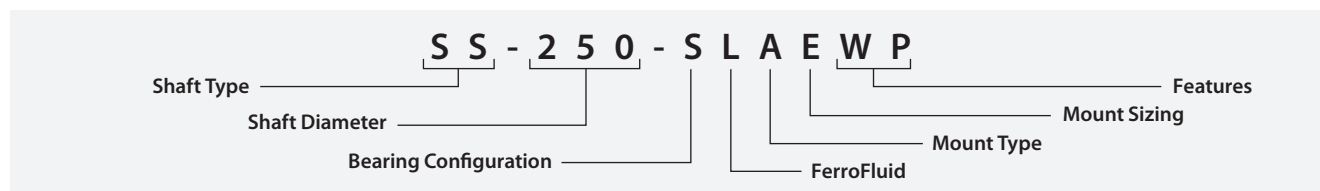
### Warranty

You can rely on the best products and support in the industry. Ferrotec's retrofit and repaired products carry the same full warranty as our industry leading new products. Don't risk your reputation and tool uptime on inferior solutions—demand Ferrotec.

# Using This Catalog

## FERROTEC'S FEEDTHROUGH MODEL NUMBERS

### Inch-based Ferrotec Seals



#### Shaft Type

SS..... Solid Shaft  
 HS..... Hollow Shaft  
 CM..... Compliant Mount  
 RU..... Rotary Union  
 CX..... Co-Axial  
 TX..... Tri-Axial  
 HD..... Heavy Duty  
 MS..... Module Seal  
 MSS..... Sleeved Module Seal  
 SM..... Sealed Motor

#### Shaft Diameter

188..... 0.1875 inch  
 250..... 0.250 inch  
 375..... 0.375 inch  
 1000..... 1.000 inch

#### Bearing Configuration

S..... Simply Supported  
 C..... Cantilevered

#### FerroFluid

F..... Fluorocarbon Based  
 (reactive gasses)  
 L..... Standard Hydrocarbon

#### Mount Type

A..... Nose (threaded)  
 B..... Nut Mount  
 (threaded body)  
 C..... CF Flange  
 F..... Ferro Flange  
 E..... Custom  
 O..... ISO Flange  
 K..... KF Flange  
 X..... Cartridge Seal

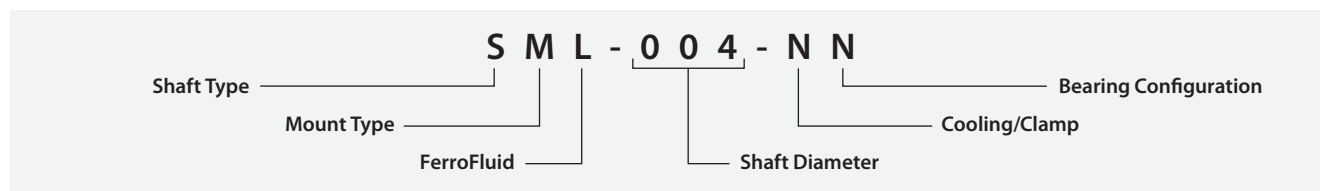
#### Features

S..... Electrical Isolation Sleeve  
 W..... Water-Cooled  
 C..... Shaft Clamp  
 U#..... # of Union Services  
 P..... Pulley

#### Mount Sizing

	Thread Size	CF Flange	ISO Flange Size	Ferro Flange Size	KF Flange
A	0.3125-24	1.33	63	6.0	16
B	0.4375-20	2.75	100	7.0	25
C	0.50-20	4.5	160	8.0	40
D	0.75-16	6.0	200	9.0	50
E	1.0-14	8.0	250	10.0	
F	1.5-24	10.0	320	5.0HD	
G			500	6.0HD	
H				7.0HD	
S	Special				

### Metric-based Ferrotec Seals



#### Shaft type

S..... Solid Shaft  
 H..... Hollow Shaft

#### Mount Type

F..... Flange  
 M..... Mini-Flange  
 N..... Nut  
 S..... Screw  
 T..... Sleeve

#### FerroFluid

F..... Fluorocarbon Based (reactive gasses)  
 L..... Standard Hydrocarbon

#### Shaft Diameter

004..... Sizes Displayed in Millimeters

#### Cooling / Clamp

C..... Clamp  
 M..... Water Cooling and Clamp  
 N..... No Water Cooling, No Clamp  
 W..... Water Cooling

#### Bearing Configuration

C..... Both on Atmosphere Side  
 H..... Heavy Duty  
 N..... Standard (vacuum and atmosphere sides)

Note: Although codes exist for many options, not all combinations of options are available.

# Standard Feedthrough Common Specifications

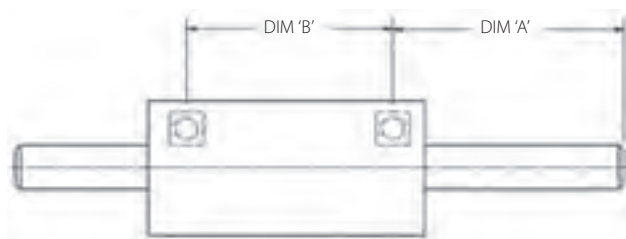
## SOME OF FERROTEC'S FERROFLUIDIC SEAL SPECIFICATIONS ARE COMMON TO THE MAJORITY OF OUR FEEDTHROUGHS

<b>Temperature Range (Uncooled)</b>	20 to 210°F, (-6 to 100°C)	Water cooled units may exceed these temperatures. Most units are bakeable to 150°C
<b>Vacuum Pressure</b>	10 <sup>-9</sup> Torr	Estimated Value. Actual performance will depend on system pumping speed and other gas loads
<b>Leakage Rate</b>	10 <sup>-11</sup> Std cc He/s	Units not regularly tested to this level as it is beyond the capability of production leak detectors
<b>Gas Compatibility</b>	Inert Gas	For sealing in reactive environments, a flouorocarbon-based ferrofluid may be required
<b>Housing Material</b>	300 series stainless steel	ISO 1.4301 or similar
<b>Shaft Material</b>	400 series stainless steel or 17-4 PH	ISO 1.4000 or similar, ISO 1.4542 or similar
<b>Maximum Shaft Run-Out</b>	0.003in/0.076mm	

## BEARING DIMENSIONS

All of the parts listed in this catalog feature a reference to measurements for Dimension A and Dimension B. Dimension A references the distance from the process side (VAC) to the center of the process bearing. Dimension B measures from the distance between the two bearings. The reference points change if the part is a solid shaft or a hollow shaft. For clarification, we have included the following illustrations:

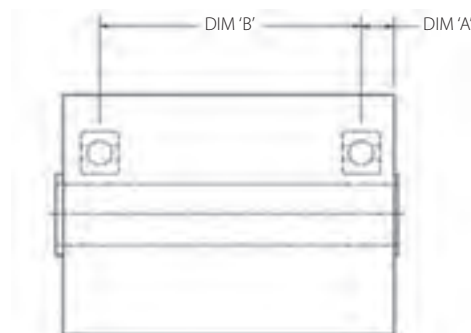
### Solid Shaft



ATM

VAC

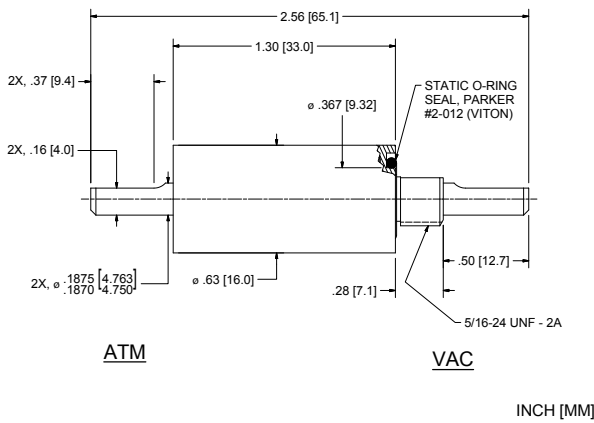
### Hollow Shaft



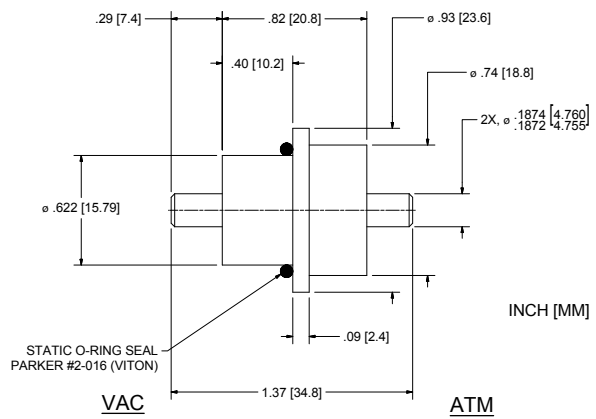
ATM

VAC

**MODEL: SS-188-SLAA**



**MODEL: SS-188-SLES**



**Part No.: 103971**

Fluid:	Standard
Bearing type/material:	SR3
Dim A: Dimension to process bearings	0.97 in
Dim B: Dimension between bearings	0.9 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.12 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	0.07 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	0.21 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.11 in-oz
Shaft Torque Capacity:	8.8 in-lb
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 103073**

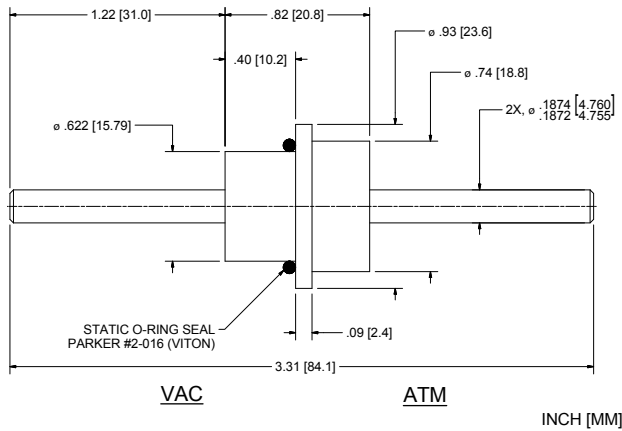
Fluid:	Standard
Bearing type/material:	SR166
Dim A: Dimension to process bearings	0.41 in
Dim B: Dimension between bearings	0.6 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.2 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	0.12 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	0.37 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.19 in-oz
Shaft Torque Capacity:	12.9 in-lb
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

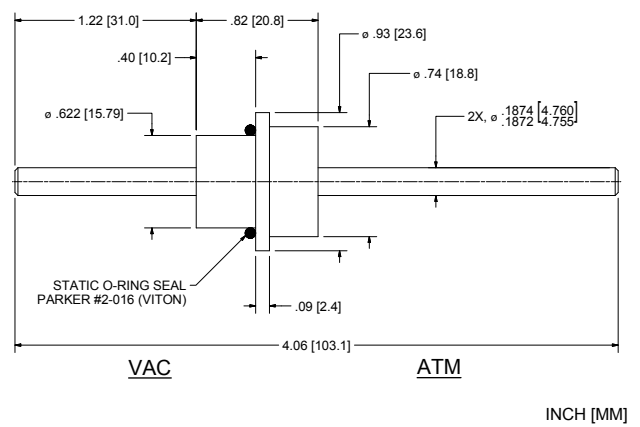
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.



MODEL: SS-188-SLES



MODEL: SS-188-SLES



Part No.: 103074

Fluid:	Standard
Bearing type/material:	SR166
Dim A: Dimension to process bearings	1.34 in
Dim B: Dimension between bearings	0.6 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.2 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	0.12 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	0.37 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.19 in-oz
Shaft Torque Capacity:	12.9 in-lb
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

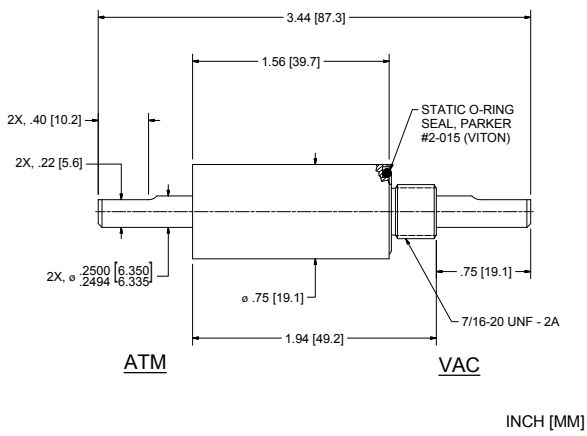
Part No.: 103075

Fluid:	Standard
Bearing type/material:	SR166
Dim A: Dimension to process bearings	1.34 in
Dim B: Dimension between bearings	0.6 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.2 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	0.12 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	0.37 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.19 in-oz
Shaft Torque Capacity:	12.9 in-lb
Limiting Speed:	10000 rpm

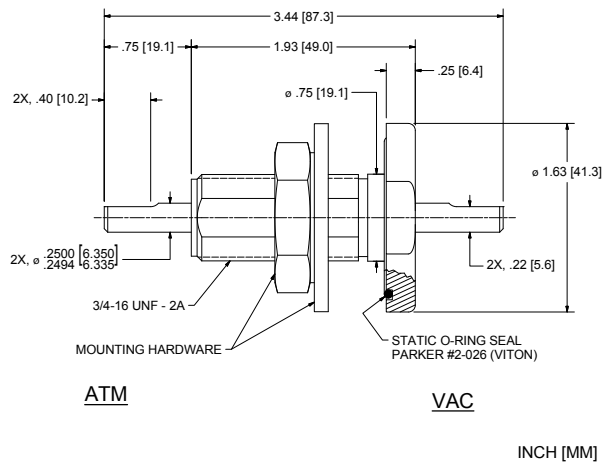
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

### MODEL: SS-250-SLAB



### MODEL: SS-250-SLBD



#### Part No.: 103978

Fluid:	Standard
Bearing type/material:	SR4
Dim A: Dimension to process bearings	1.3 in
Dim B: Dimension between bearings	1.17 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.19 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	0.11 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	0.34 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.17 in-oz
Shaft Torque Capacity:	15.5 in-lb
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

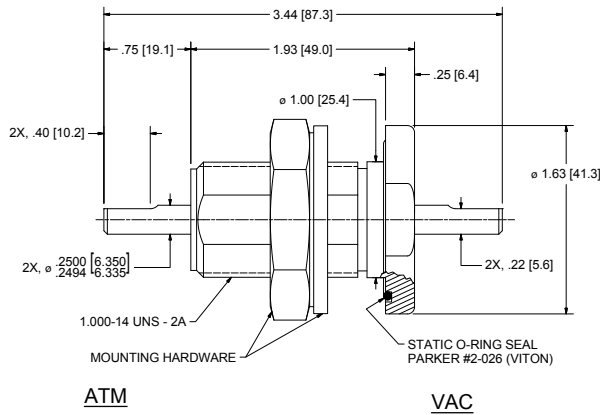
#### Part No.: 103236

Fluid:	Standard
Bearing type/material:	SR4
Dim A: Dimension to process bearings	1.3 in
Dim B: Dimension between bearings	1.17 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.19 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	0.11 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	0.34 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.17 in-oz
Shaft Torque Capacity:	15.5 in-lb
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: SS-250-SLBE**

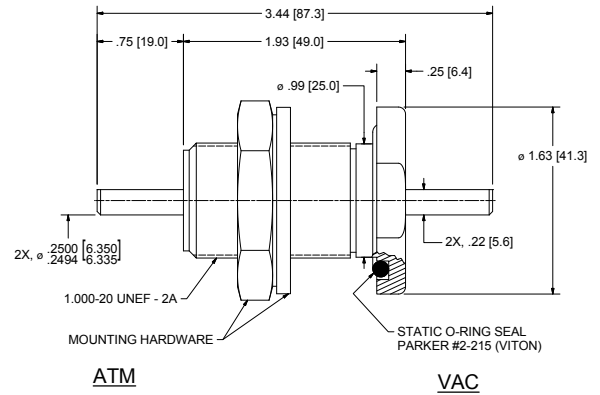


ATM

VAC

INCH [MM]

**MODEL: SS-250-SLBE**



ATM

VAC

INCH [MM]

**Part No.: 103237**

Fluid:	Standard
Bearing type/material:	SR4
Dim A: Dimension to process bearings	1.3 in
Dim B: Dimension between bearings	1.17 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.19 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	0.11 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	0.34 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.17 in-oz
Shaft Torque Capacity:	15.5 in-lb
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

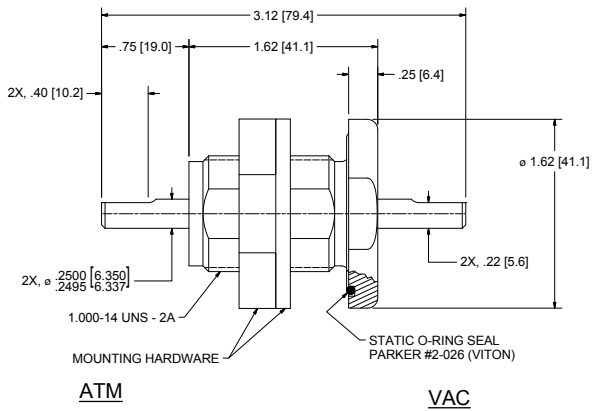
**Part No.: 103982**

Fluid:	Standard
Bearing type/material:	SR4
Dim A: Dimension to process bearings	1.3 in
Dim B: Dimension between bearings	1.17 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.19 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	0.11 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	0.34 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.17 in-oz
Shaft Torque Capacity:	15.5 in-lb
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

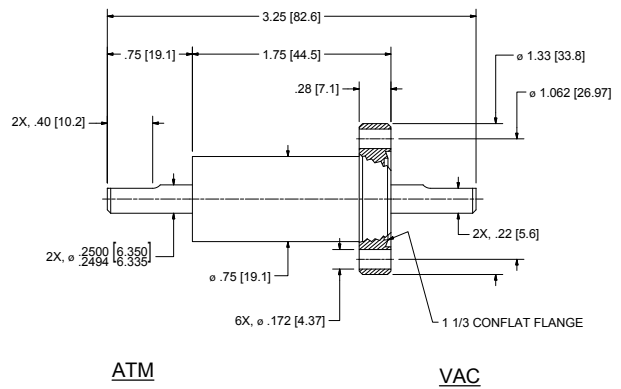
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

### MODEL: SS-250-SLBE



INCH [MM]

### MODEL: SS-250-SLCA



INCH [MM]

#### Part No.: 107519

Fluid:	Standard
Bearing type/material:	SR4
Dim A: Dimension to process bearings	0.94 in
Dim B: Dimension between bearings	1.2 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.19 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	0.11 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	0.34 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.17 in-oz
Shaft Torque Capacity:	15.5 in-lb
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

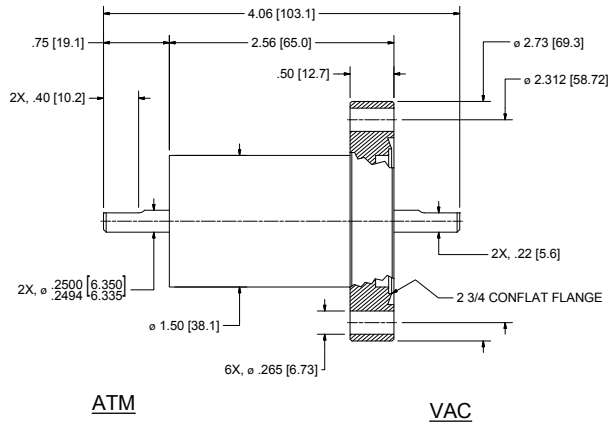
#### Part No.: 103915

Fluid:	Standard
Bearing type/material:	SR4
Dim A: Dimension to process bearings	1.12 in
Dim B: Dimension between bearings	1.17 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.19 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	0.11 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	0.34 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.17 in-oz
Shaft Torque Capacity:	15.5 in-lb
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: SS-250-SLCB**



INCH [MM]

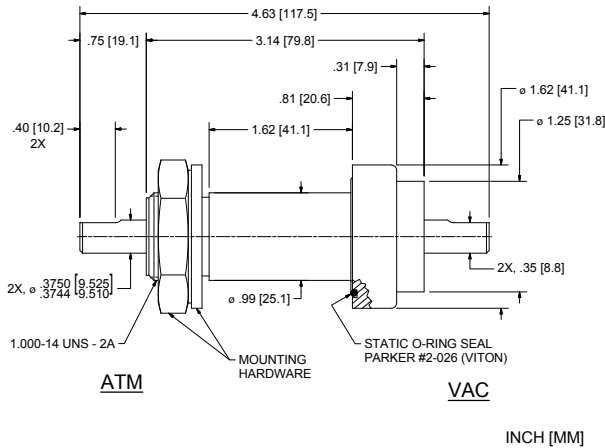
**Part No.: 103532**

Fluid:	Standard
Bearing type/material:	SR4
Dim A: Dimension to process bearings	1.51 in
Dim B: Dimension between bearings	1.17 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.19 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	0.11 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	0.34 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.17 in-oz
Shaft Torque Capacity:	15.5 in-lb
Limiting Speed:	10000 rpm

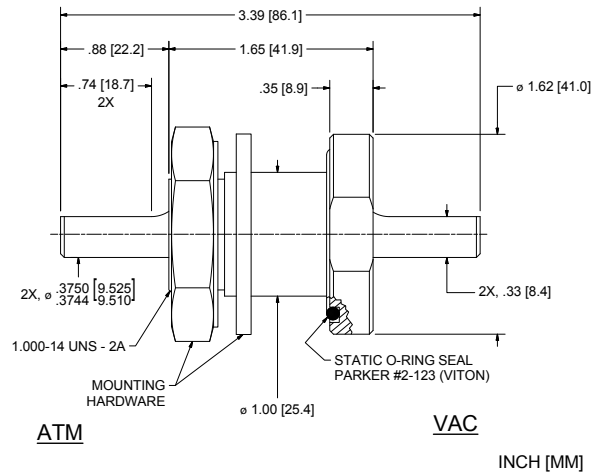
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: SS-375-SLBE**



**MODEL: SS-375-SLBE**



**Part No.: 103990**

Fluid:	Standard
Bearing type/material:	SR61
Dim A: Dimension to process bearings	1.1 in
Dim B: Dimension between bearings	1.88 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.57 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	0.34 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1.04 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.52 in-oz
Shaft Torque Capacity:	67.1 in-lb
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

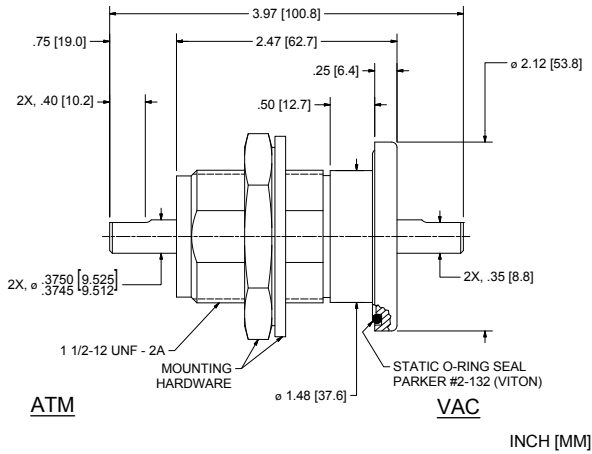
**Part No.: 132910**

Fluid:	Standard
Bearing type/material:	R6, JT-66
Dim A: Dimension to process bearings	1.1 in
Dim B: Dimension between bearings	1.17 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.2 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	0.12 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	0.36 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.18 in-oz
Shaft Torque Capacity:	201 in-lb
Limiting Speed:	10000 rpm

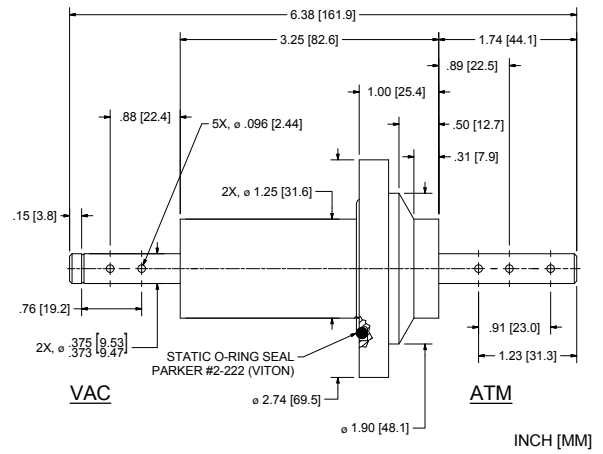
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: SS-375-SLBF**



**MODEL: SS-375-SLFS**



**Part No.: 103991**

Fluid:	Standard
Bearing type/material:	SR61
Dim A: Dimension to process bearings	1.11 in
Dim B: Dimension between bearings	1.88 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.57 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	0.34 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1.04 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.52 in-oz
Shaft Torque Capacity:	67.1 in-lb
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

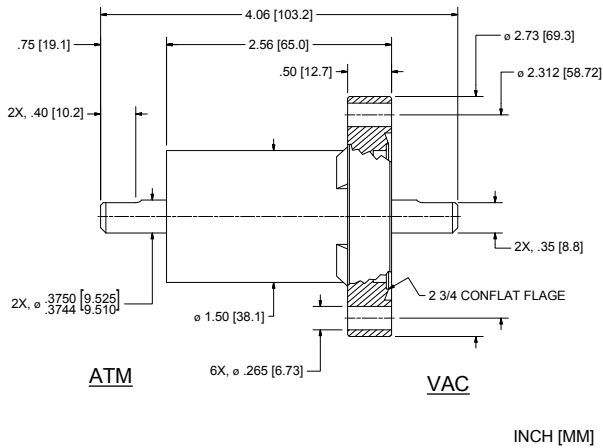
**Part No.: 114892**

Fluid:	Standard
Bearing type/material:	SR61
Dim A: Dimension to process bearings	2.05 in
Dim B: Dimension between bearings	2.68 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.57 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	0.34 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1.04 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.52 in-oz
Shaft Torque Capacity:	201 in-lb
Limiting Speed:	10000 rpm

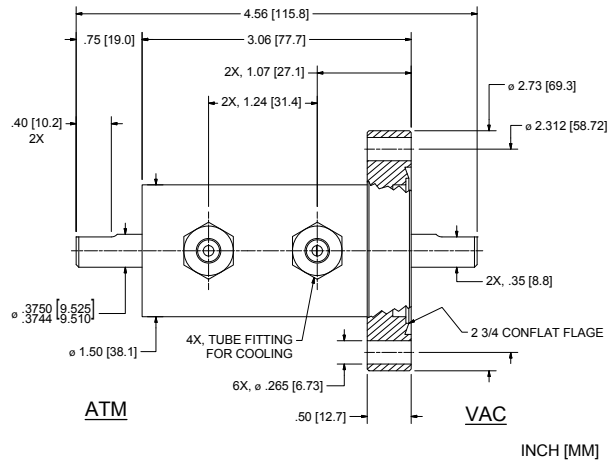
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

### MODEL: SS-375-SLCB



### MODEL: SS-375-SLCBW



Part No.: 103154

Fluid:	Standard
Bearing type/material:	SR61
Dim A: Dimension to process bearings	1.32 in
Dim B: Dimension between bearings	1.77 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.57 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	0.34 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1.04 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.52 in-oz
Shaft Torque Capacity:	67.1 in-lb
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

Part No.: 103912

Fluid:	Standard
Bearing type/material:	SR61
Dim A: Dimension to process bearings	1.32 in
Dim B: Dimension between bearings	2.25 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.75 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	0.44 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1.36 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.68 in-oz
Shaft Torque Capacity:	67.1 in-lb
Limiting Speed:	10000 rpm*

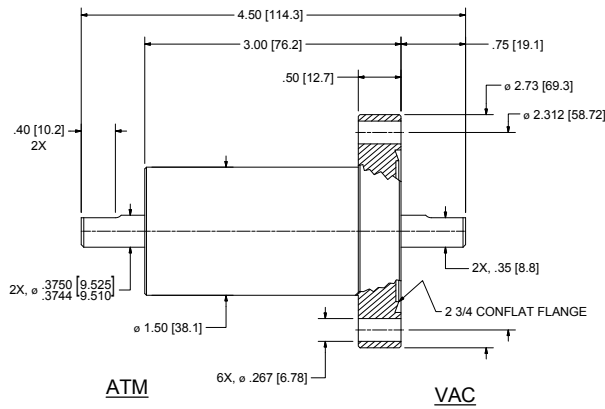
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

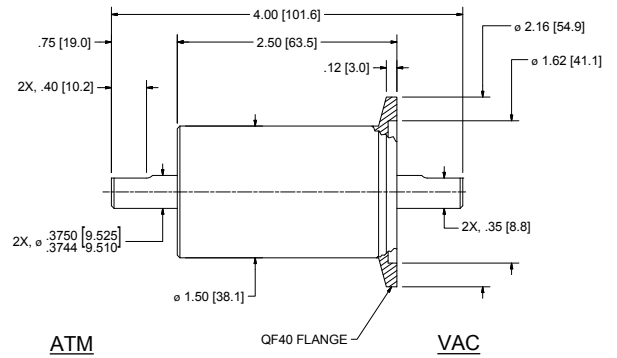


**MODEL: SS-375-CFCB**



INCH [MM]

**MODEL: SS-375-SLKC**



INCH [MM]

**Part No.: 121060**

Fluid:	Reactive Gas
Bearing type/material:	DDL-1910
Dim A: Dimension to process bearings	2.64 in
Dim B: Dimension between bearings	0.88 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	1.94 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	1.15 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	3.53 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	1.77 in-oz
Shaft Torque Capacity:	67.1 in-lb
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

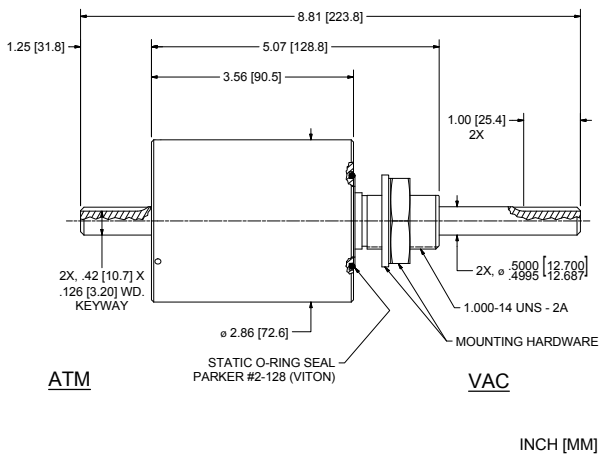
**Part No.: 121062**

Fluid:	Standard
Bearing type/material:	SR61
Dim A: Dimension to process bearings	1.12 in
Dim B: Dimension between bearings	1.77 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.57 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	0.34 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1.04 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.52 in-oz
Shaft Torque Capacity:	67.1 in-lb
Limiting Speed:	10000 rpm

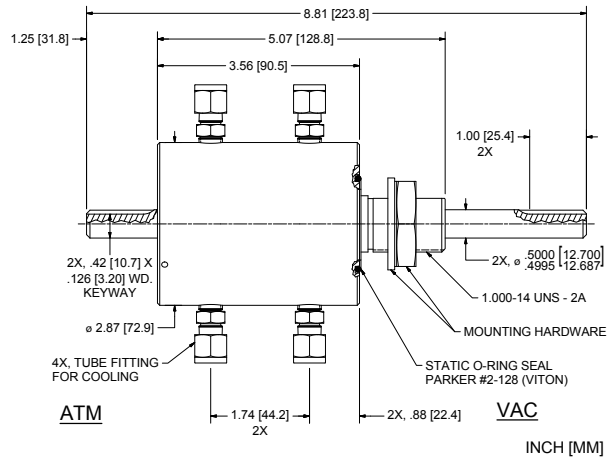
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

### MODEL: SS-500-SLAE



### MODEL: SS-500-SLAEW



Part No.: 103191

Fluid:	Standard
Bearing type/material:	SR8
Dim A: Dimension to process bearings	4.29 in
Dim B: Dimension between bearings	2.92 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	2.72 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	1.61 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	4.94 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	2.47 in-oz
Shaft Torque Capacity:	178 in-lb
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

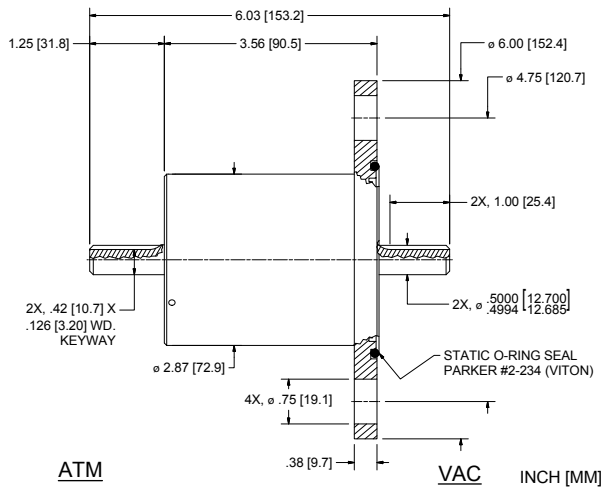
Part No.: 103204

Fluid:	Standard
Bearing type/material:	SR8
Dim A: Dimension to process bearings	4.29 in
Dim B: Dimension between bearings	2.92 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	2.72 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	1.61 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	4.94 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	2.47 in-oz
Shaft Torque Capacity:	178 in-lb
Limiting Speed:	10000 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: SS-500-SLFA**



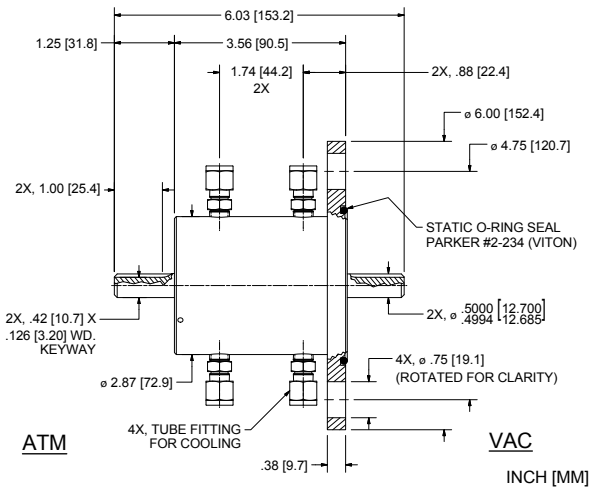
**Part No.: 103244**

Fluid:	Standard
Bearing type/material:	SR8
Dim A: Dimension to process bearings	1.5 in
Dim B: Dimension between bearings	2.92 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	1.78 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	1.05 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	3.23 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	1.62 in-oz
Shaft Torque Capacity:	178 in-lb
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: SS-500-SLFAW**



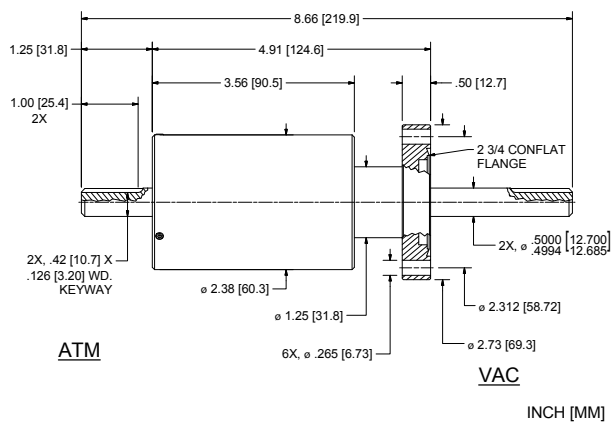
**Part No.: 103182**

Fluid:	Standard
Bearing type/material:	SR8
Dim A: Dimension to process bearings	1.5 in
Dim B: Dimension between bearings	2.92 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	2.44 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	1.44 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	4.44 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	2.22 in-oz
Shaft Torque Capacity:	178 in-lb
Limiting Speed:	10000 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: SS-500-SLCB**

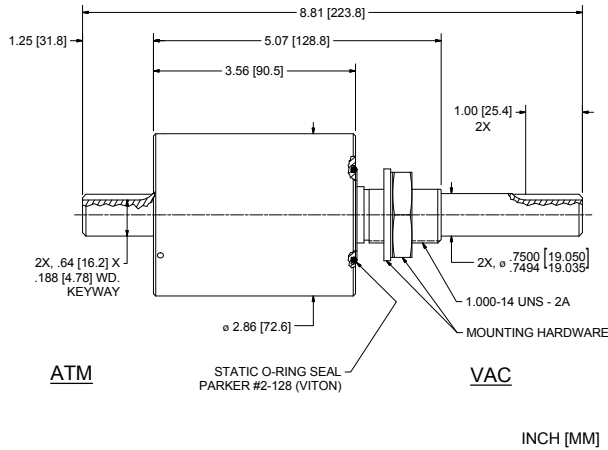
Part No.: 103909

Fluid:	Standard
Bearing type/material:	SR8
Dim A: Dimension to process bearings	4.13 in
Dim B: Dimension between bearings	2.92 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	1.78 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	1.05 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	3.23 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	1.62 in-oz
Shaft Torque Capacity:	178 in-lb
Limiting Speed:	10000 rpm

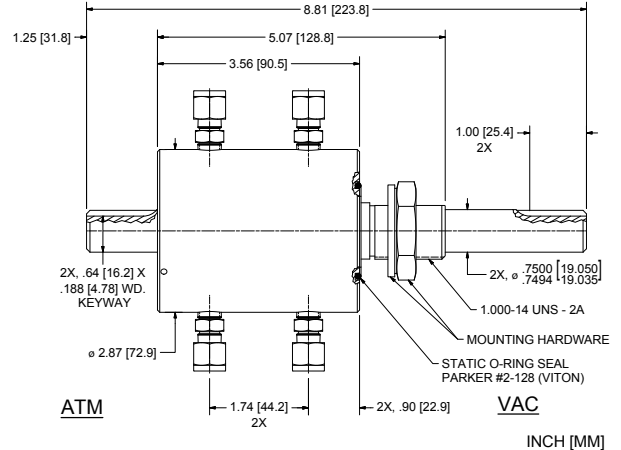
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: SS-750-SLAE**



**MODEL: SS-750-SLAEW**



**Part No.: 103193**

Fluid:	Standard
Bearing type/material:	SSR12
Dim A: Dimension to process bearings	4.36 in
Dim B: Dimension between bearings	2.8 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	3.81 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	2.25 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	6.92 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	3.46 in-oz
Shaft Torque Capacity:	671 in-lb
Limiting Speed:	9000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 103206**

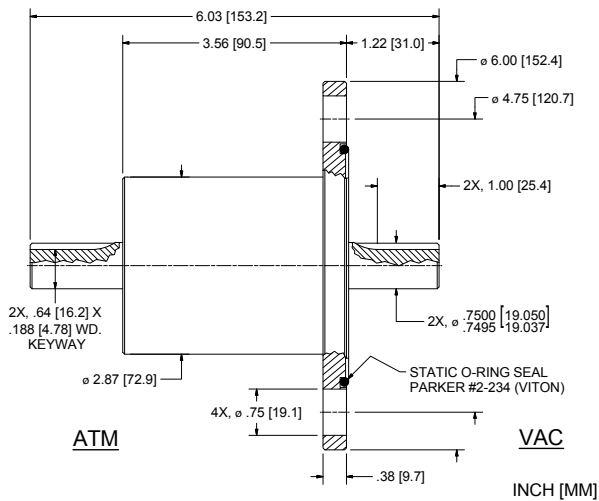
Fluid:	Standard
Bearing type/material:	SSR12
Dim A: Dimension to process bearings	4.36 in
Dim B: Dimension between bearings	2.8 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	4.76 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	2.82 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	8.66 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	4.33 in-oz
Shaft Torque Capacity:	671 in-lb
Limiting Speed:	9000 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

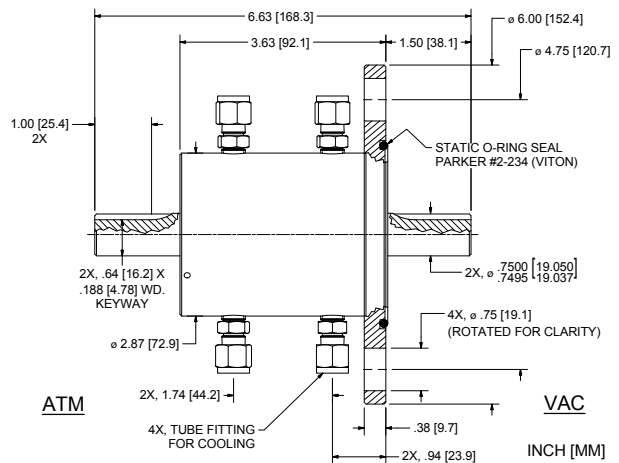
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

### MODEL: SS-750-SLFA



### MODEL: SS-750-SLFAW



Part No.: 103246

Fluid:	Standard
Bearing type/material:	SSR12
Dim A: Dimension to process bearings	1.57 in
Dim B: Dimension between bearings	2.89 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	3.81 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	2.25 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	6.92 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	3.46 in-oz
Shaft Torque Capacity:	671 in-lb
Limiting Speed:	9000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

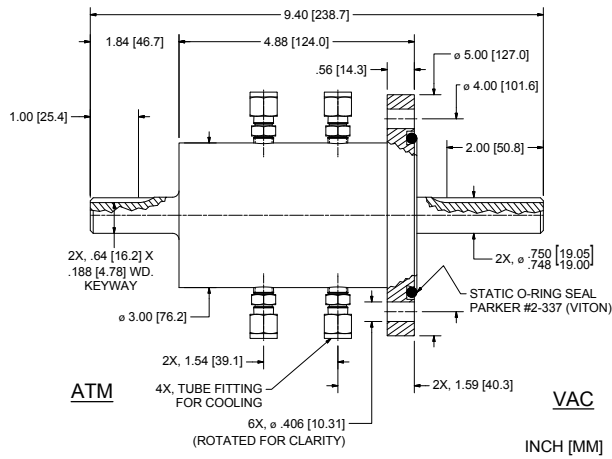
Part No.: 121101

Fluid:	Standard
Bearing type/material:	SSR12
Dim A: Dimension to process bearings	1.91 in
Dim B: Dimension between bearings	2.8 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	2.99 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	1.77 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	5.44 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	2.72 in-oz
Shaft Torque Capacity:	671 in-lb
Limiting Speed:	9000 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HD-750-SLFFW****Part No.: 103904**

Fluid:	Standard
Bearing type/material:	7305
Dim A: Dimension to process bearings	3.26 in
Dim B: Dimension between bearings	3.65 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	19.3 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	11.4 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	35 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	17.5 in-oz
Shaft Torque Capacity:	2470 in-lb
Limiting Speed:	6060 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

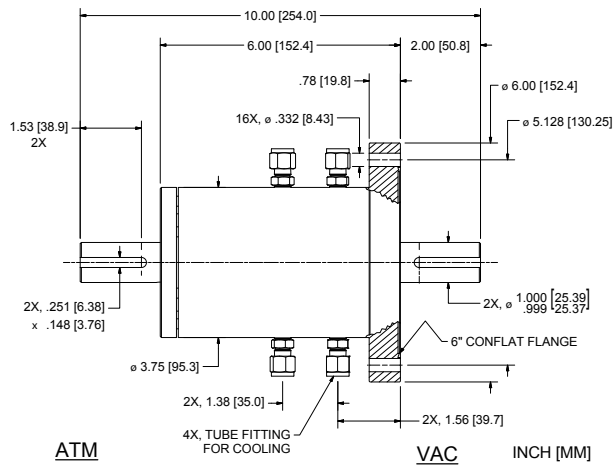
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.





**MODEL: SS-1000-CFCDW**



**Part No.: 121153**

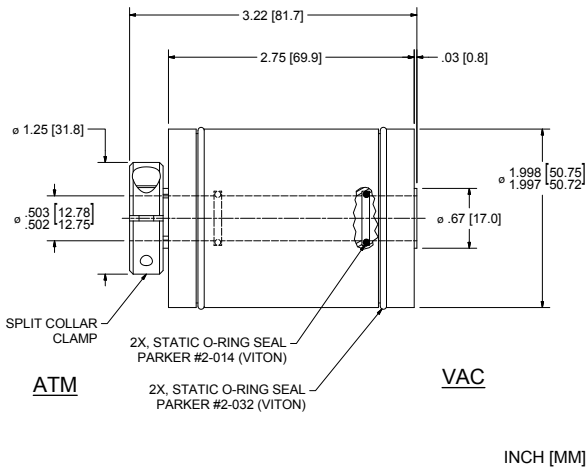
Fluid:	Reactive Gas
Bearing type/material:	7206
Dim A: Dimension to process bearings	5.94 in
Dim B: Dimension between bearings	1.28 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	44.2 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	26.1 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	80.4 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	40.2 in-oz
Shaft Torque Capacity:	1630 in-lb
Limiting Speed:	5920 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

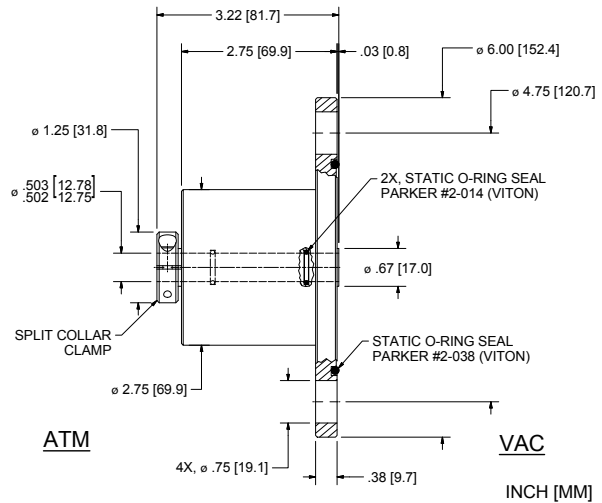
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HS-500-SLXSC**



**MODEL: HS-500-SLFAC**



HOLLOW | INCH

**Part No.: 132405**

Fluid:	Standard
Bearing type/material:	16003
Dim A: Dimension to process bearings	0.27 in
Dim B: Dimension between bearings	2.17 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	4.92 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	2.9 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	8.94 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	4.47 in-oz
Limiting Speed:	9000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 103358**

Fluid:	Standard
Bearing type/material:	6903
Dim A: Dimension to process bearings	0.3 in
Dim B: Dimension between bearings	2.13 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	4.92 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	2.9 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	8.94 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	4.47 in-oz
Limiting Speed:	9000 rpm

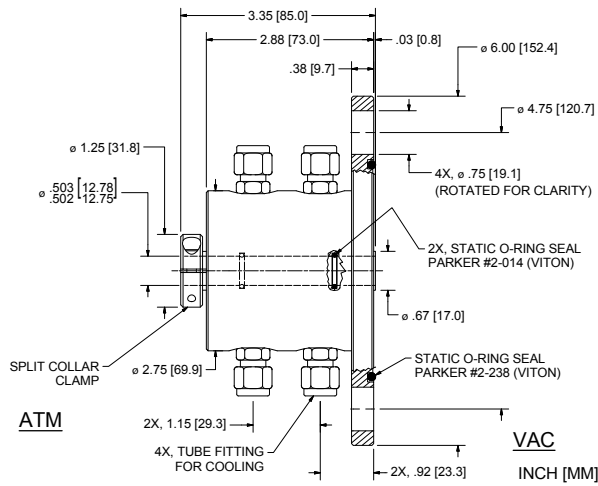
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: HS-500-SLFACW**



HOLLOW | INCH



**Part No.: 105395**

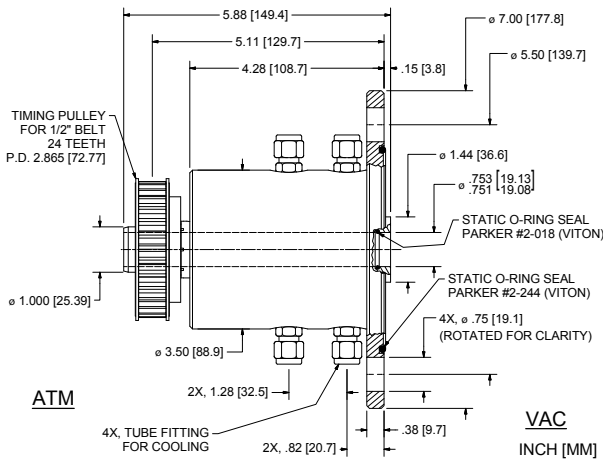
Fluid:	Standard
Bearing type/material:	6903
Dim A: Dimension to process bearings	0.42 in
Dim B: Dimension between bearings	2.13 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	8.6 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	5.08 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	15.6 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	7.82 in-oz
Limiting Speed:	9000 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HS-750-CFFBWPS**

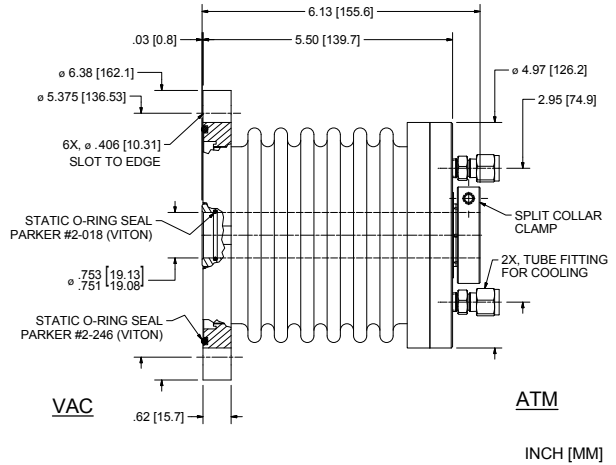


**Part No.: 107426**

Fluid:	Reactive Gas
Bearing type/material:	7007
Dim A: Dimension to process bearings	2.95 in
Dim B: Dimension between bearings	0.55 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	134 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	79.1 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	243 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	122 in-oz
Limiting Speed:	3710 rpm*

<sup>†</sup> See page xi for the definition of starting torque.  
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.  
 \* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: CM-750-CLFSWC**



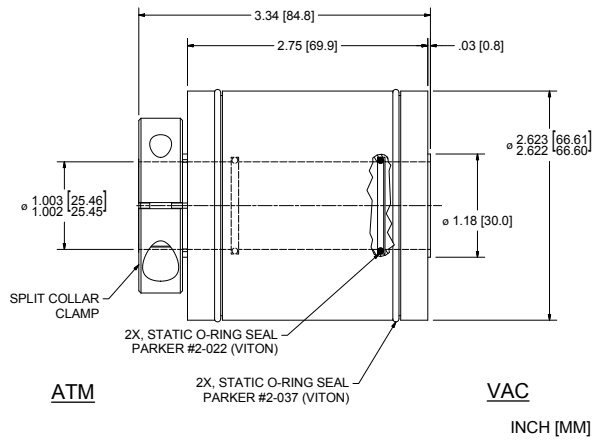
**Part No.: 132121**

Fluid:	Standard
Bearing type/material:	6007
Dim A: Dimension to process bearings	2.62 in
Dim B: Dimension between bearings	2.31 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	25.3 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	15 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	46 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	23 in-oz
Limiting Speed:	3710 rpm*

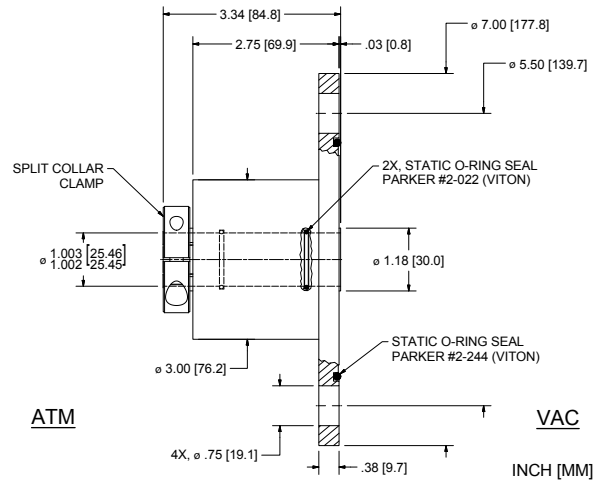
<sup>†</sup> See page xi for the definition of starting torque.  
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.  
 \* Water cooling may permit significantly higher speed. Consult your Field Engineer.

HOLLOW | INCH

**MODEL: HS-1000-SLXSC**



**MODEL: HS-1000-SLFBC**



**Part No.: 103319**

Fluid:	Standard
Bearing type/material:	6906
Dim A: Dimension to process bearings	0.26 in
Dim B: Dimension between bearings	2.21 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	29.2 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	17.3 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	53.1 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	26.6 in-oz
Limiting Speed:	3900 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

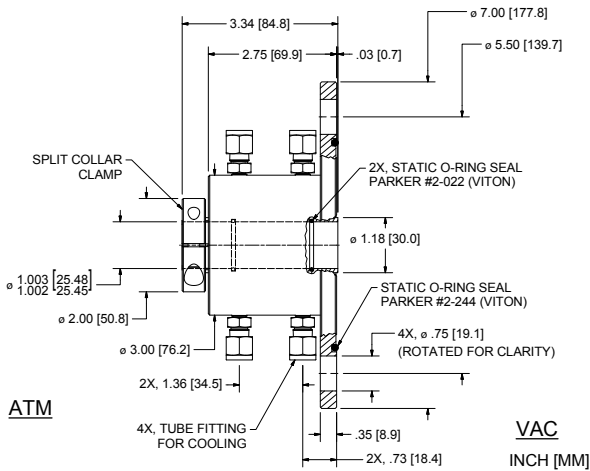
**Part No.: 103359**

Fluid:	Standard
Bearing type/material:	6906
Dim A: Dimension to process bearings	0.34 in
Dim B: Dimension between bearings	2.13 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	29.2 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	17.3 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	53.1 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	26.6 in-oz
Limiting Speed:	3900 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: HS-1000-SLFBCW**

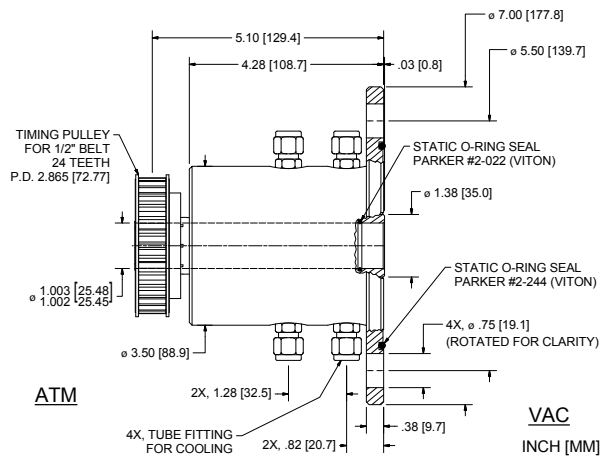


**Part No.: 105396**

Fluid:	Standard
Bearing type/material:	6906
Dim A: Dimension to process bearings	0.27 in
Dim B: Dimension between bearings	2.21 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	29.2 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	17.3 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	53.1 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	26.6 in-oz
Limiting Speed:	3900 rpm*

<sup>†</sup> See page xi for the definition of starting torque.  
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.  
 \* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HS-1000-CFFBWP**



**Part No.: 107423**

Fluid:	Reactive Gas
Bearing type/material:	7007
Dim A: Dimension to process bearings	2.95 in
Dim B: Dimension between bearings	0.55 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	134 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	79.1 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	243 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	122 in-oz
Limiting Speed:	3710 rpm*

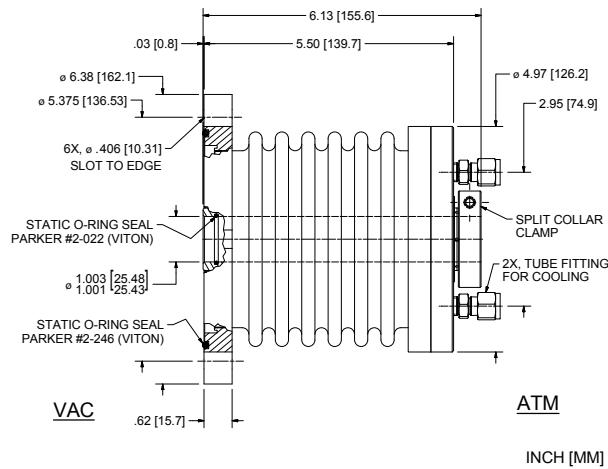
<sup>†</sup> See page xi for the definition of starting torque.  
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.  
 \* Water cooling may permit significantly higher speed. Consult your Field Engineer.

HOLLOW | INCH

**MODEL: CM-1000-CLFSWC**



HOLLOW | INCH



**Part No.: 132122**

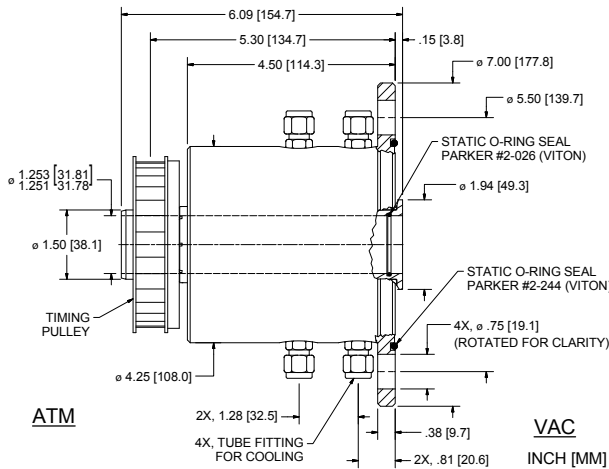
Fluid:	Standard
Bearing type/material:	6007
Dim A: Dimension to process bearings	2.62 in
Dim B: Dimension between bearings	2.31 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	21.6 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	12.8 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	39.3 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	19.7 in-oz
Limiting Speed:	3710 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HS-1250-CFFBWPS**



HOLLOW | INCH

**Part No.: 107427**

Fluid:	Reactive Gas
Bearing type/material:	7009
Dim A: Dimension to process bearings	2.99 in
Dim B: Dimension between bearings	0.63 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	397 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	234 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	721 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	360 in-oz
Limiting Speed:	2370 rpm*

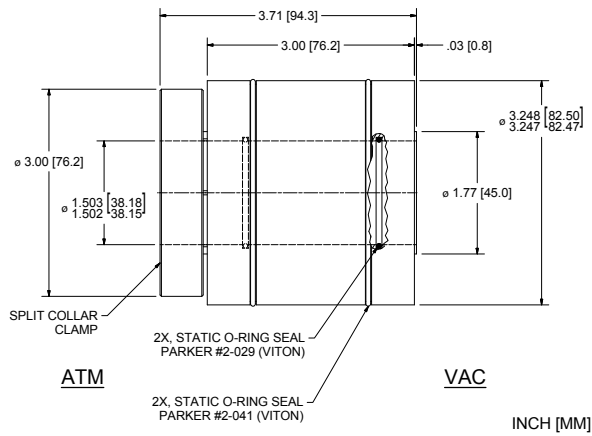
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

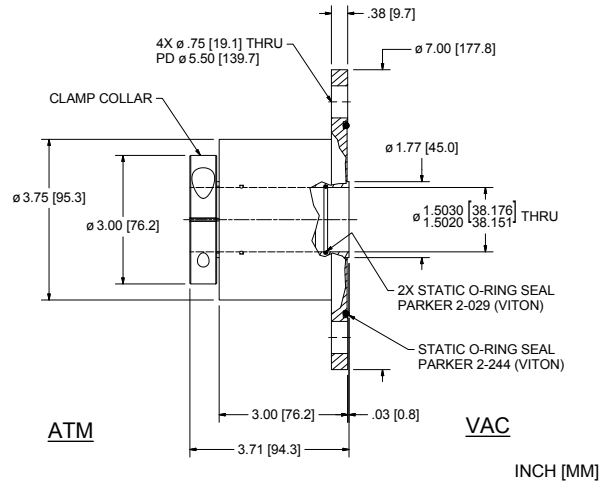
\* Water cooling may permit significantly higher speed. Consult your Field Engineer.



**MODEL: HS-1500-SLXSC**



**MODEL: HS-1500-SLFBC**



**Part No.: 103320**

Fluid:	Standard
Bearing type/material:	6909
Dim A: Dimension to process bearings	0.33 in
Dim B: Dimension between bearings	2.33 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	96.9 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	57.2 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	176 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	88.1 in-oz
Limiting Speed:	2320 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

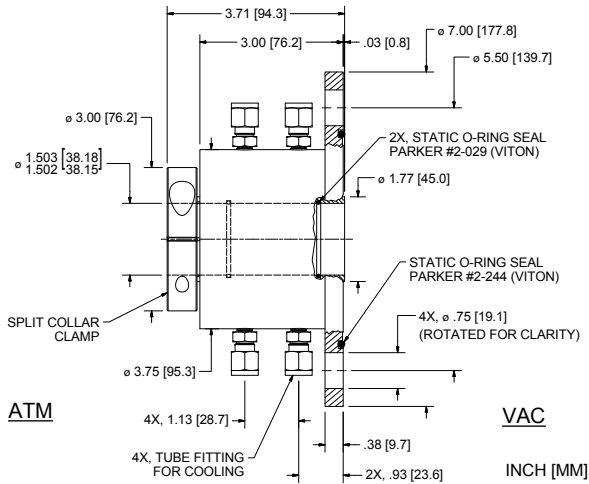
**Part No.: 103360**

Fluid:	Standard
Bearing type/material:	6909
Dim A: Dimension to process bearings	0.33 in
Dim B: Dimension between bearings	2.33 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	96.9 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	57.2 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	176 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	88.1 in-oz
Limiting Speed:	2320 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: HS-1500-SLFBCW**



**Part No.: 103354**

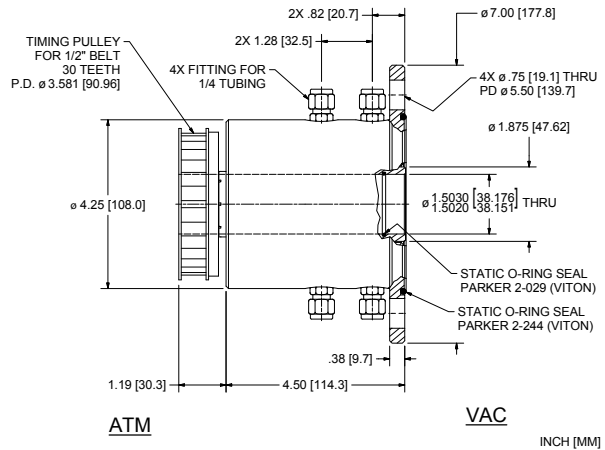
Fluid:	Standard
Bearing type/material:	6909
Dim A: Dimension to process bearings	0.33 in
Dim B: Dimension between bearings	2.33 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	71.1 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	42 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	129 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	64.7 in-oz
Limiting Speed:	2320 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HS-1500-CFFBWP**



**Part No.: 107424**

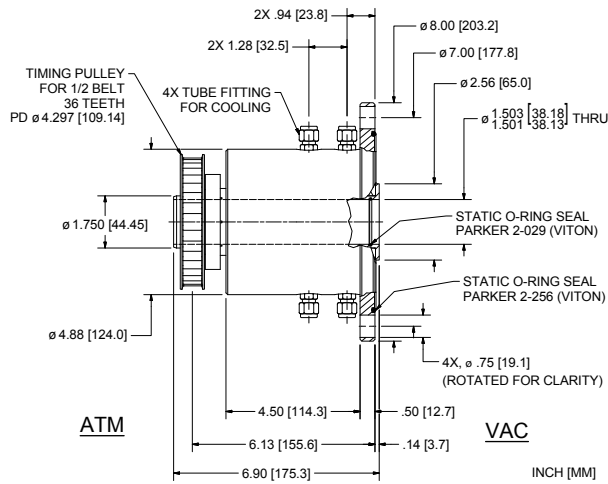
Fluid:	Reactive Gas
Bearing type/material:	7009
Dim A: Dimension to process bearings	2.99 in
Dim B: Dimension between bearings	0.63 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	397 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	234 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	721 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	360 in-oz
Limiting Speed:	2370 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

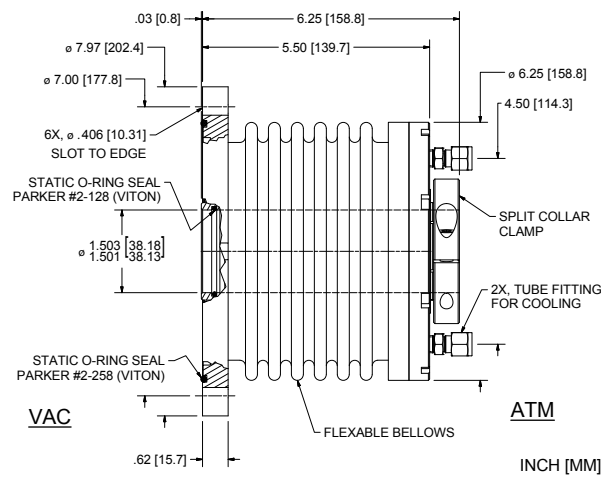
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HS-1500-CFFCWPS**



**MODEL: CM-1500-CLFSWC**



**Part No.: 107428**

Fluid:	Reactive Gas
Bearing type/material:	7012
Dim A: Dimension to process bearings	3.16 in
Dim B: Dimension between bearings	0.69 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	800 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	473 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1450 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	727 in-oz
Limiting Speed:	1560 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**Part No.: 132123**

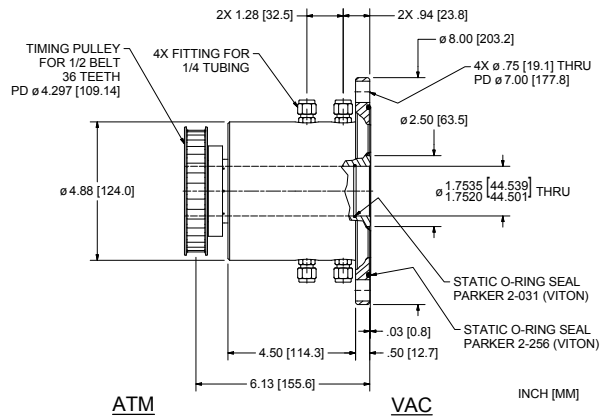
Fluid:	Standard
Bearing type/material:	6012
Dim A: Dimension to process bearings	2.77 in
Dim B: Dimension between bearings	2.08 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	131 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	77.7 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	239 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	120 in-oz
Limiting Speed:	1695 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HS-1750-CFFBWP**



HOLLOW | INCH

**Part No.: 107425**

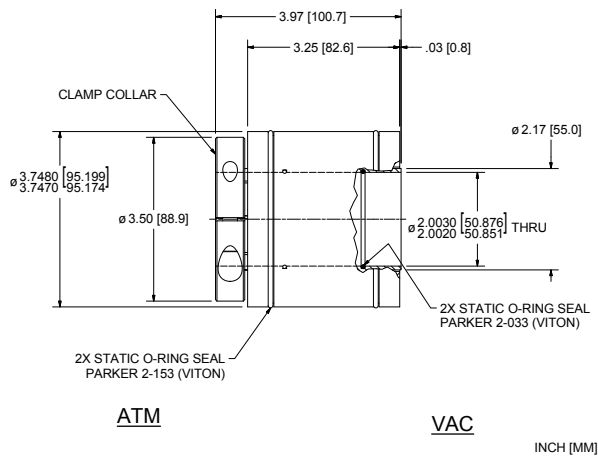
Fluid:	Reactive Gas
Bearing type/material:	7012
Dim A: Dimension to process bearings	3.16 in
Dim B: Dimension between bearings	0.69 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	800 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	473 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1450 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	727 in-oz
Limiting Speed:	1560 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

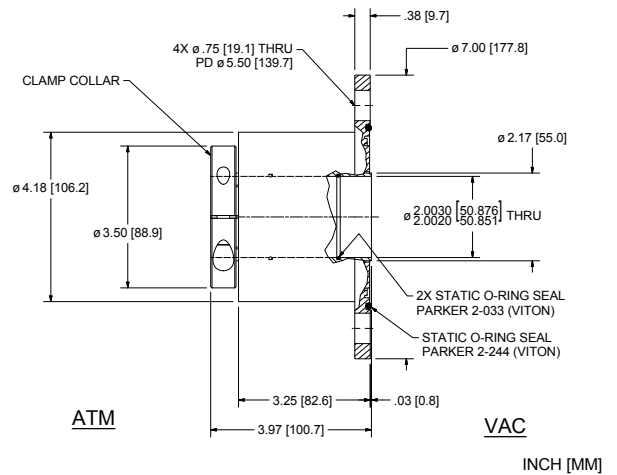
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HS-2000-SLXSC**



**MODEL: HS-2000-SLFBC**



**Part No.: 103321**

Fluid:	Standard
Bearing type/material:	6911
Dim A: Dimension to process bearings	0.43 in
Dim B: Dimension between bearings	2.37 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	164 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	96.7 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	298 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	149 in-oz
Limiting Speed:	1640 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

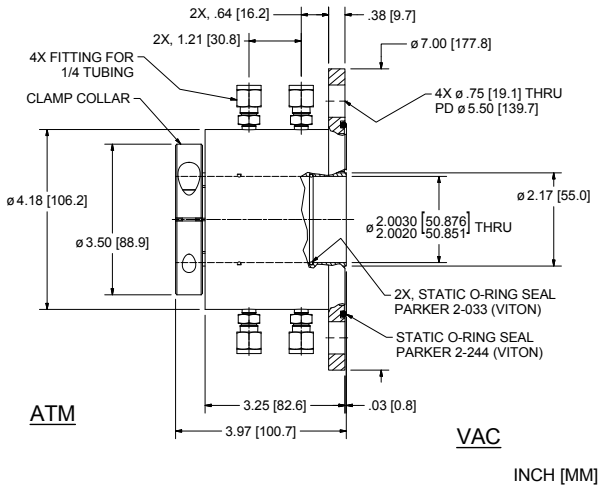
**Part No.: 103361**

Fluid:	Standard
Bearing type/material:	6911
Dim A: Dimension to process bearings	0.43 in
Dim B: Dimension between bearings	2.37 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	164 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	96.7 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	298 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	149 in-oz
Limiting Speed:	1640 rpm

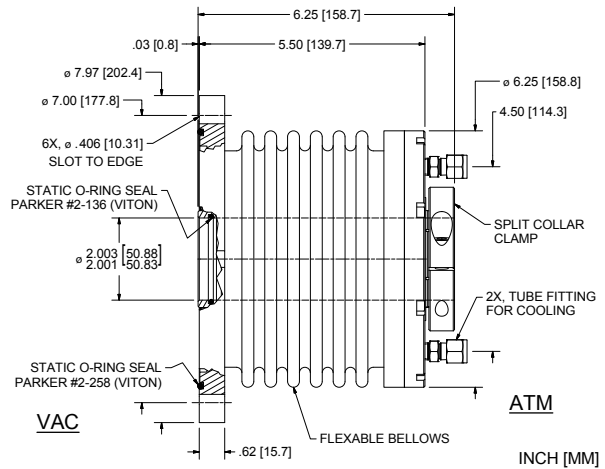
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: HS-2000-SLFBCW**



**MODEL: CM-2000-CLFSWC**



HOLLOW | INCH

**Part No.: 103921**

Fluid:	Standard
Bearing type/material:	6911
Dim A: Dimension to process bearings	0.43 in
Dim B: Dimension between bearings	2.37 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	191 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	113 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	347 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	174 in-oz
Limiting Speed:	1640 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**Part No.: 122151**

Fluid:	Standard
Bearing type/material:	6012
Dim A: Dimension to process bearings	2.77 in
Dim B: Dimension between bearings	2.08 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	91 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	53.8 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	165 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	82.7 in-oz
Limiting Speed:	1695 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

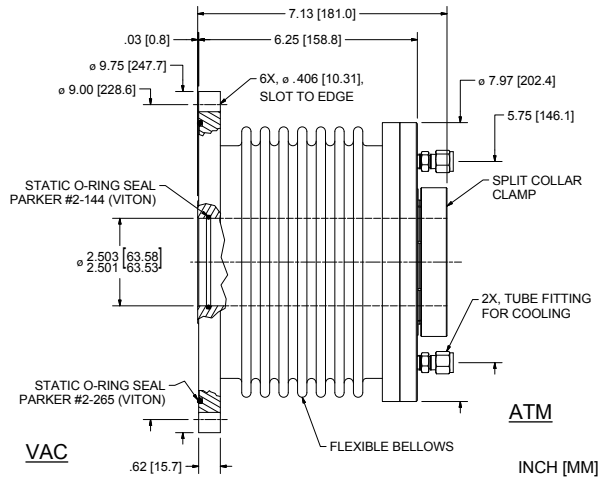
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: CM-2500-CLFSWC**



HOLLOW | INCH



**Part No.: 132124**

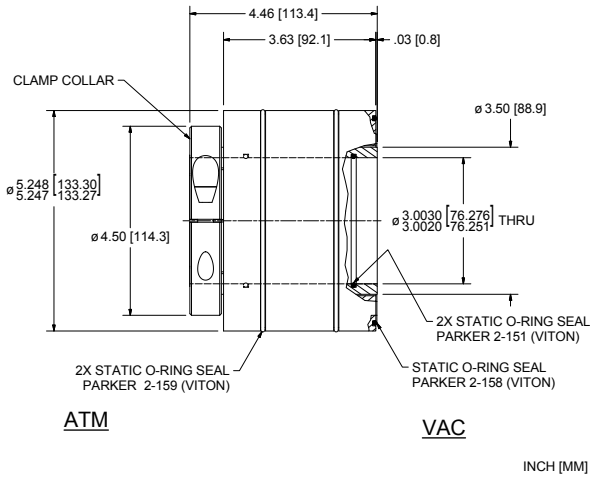
Fluid:	Standard
Bearing type/material:	6918
Dim A: Dimension to process bearings	2.77 in
Dim B: Dimension between bearings	2.83 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	444 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	262 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	808 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	404 in-oz
Limiting Speed:	940 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

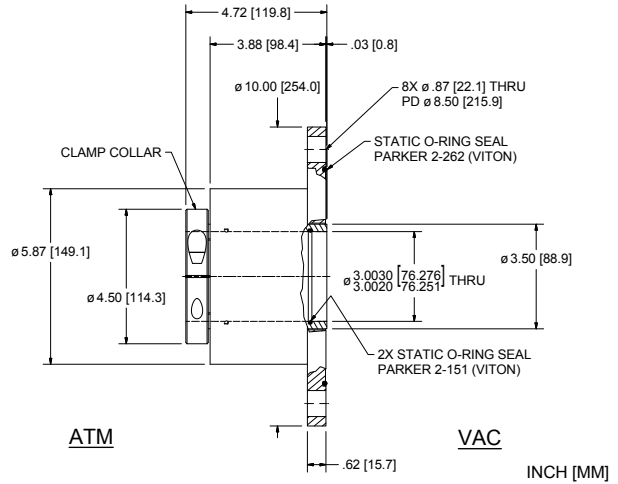
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HS-3000-SLXSC**



**MODEL: HS-3000-SLFEC**



HOLLOW | INCH

**Part No.: 133759**

Fluid:	Standard
Bearing type/material:	6917
Dim A: Dimension to process bearings	0.64 in
Dim B: Dimension between bearings	2.3 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	258 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	152 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	469 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	234 in-oz
Limiting Speed:	880 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133218**

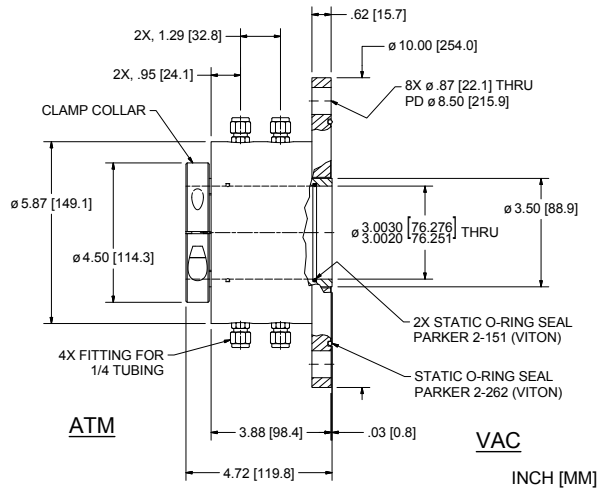
Fluid:	Standard
Bearing type/material:	6917
Dim A: Dimension to process bearings	0.64 in
Dim B: Dimension between bearings	2.51 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	258 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	152 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	469 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	234 in-oz
Limiting Speed:	880 rpm

<sup>†</sup> See page xi for the definition of starting torque.

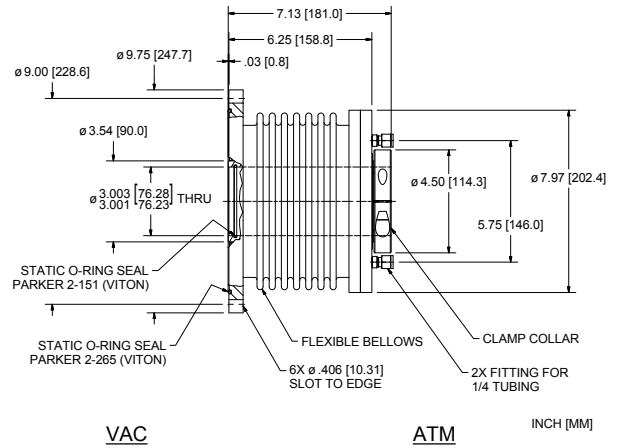
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.



**MODEL: HS-3000-SLFBCW**



**MODEL: CM-3000-CLFSWC**



**Part No.: 133760**

Fluid:	Standard
Bearing type/material:	6917
Dim A: Dimension to process bearings	0.64 in
Dim B: Dimension between bearings	2.51 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	258 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	152 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	469 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	234 in-oz
Limiting Speed:	880 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**Part No.: 132125**

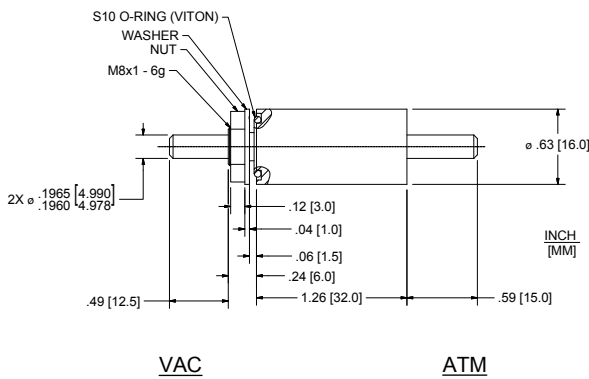
Fluid:	Standard
Bearing type/material:	6918
Dim A: Dimension to process bearings	2.77 in
Dim B: Dimension between bearings	2.83 in
Predicted Starting Torque <sup>†</sup> 100 rpm:	444 in-oz
Predicted Running Torque <sup>††</sup> 100 rpm:	262 in-oz
Predicted Starting Torque <sup>†</sup> 1000 rpm:	808 in-oz
Predicted Running Torque <sup>††</sup> 1000 rpm:	404 in-oz
Limiting Speed:	940 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

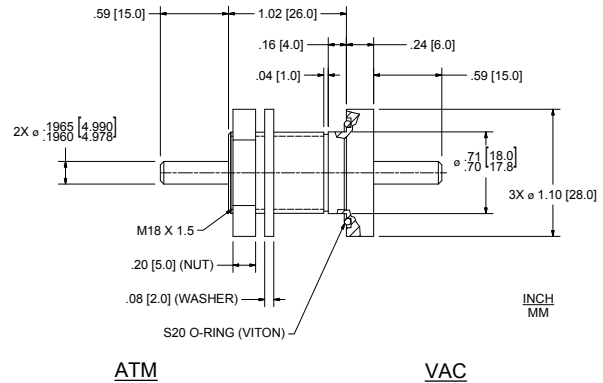
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: SSL-005-NN**



**MODEL: SNL-005-NN**



**Part No.: 133601**

Fluid:	Standard
Bearing type/material:	695
Dim A: Dimension to process bearings	23.5 mm
Dim B: Dimension between bearings	22.5 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.64 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	0.35 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1.06 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.57 N-mm
Shaft Torque Capacity:	0.69 N-m
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133598**

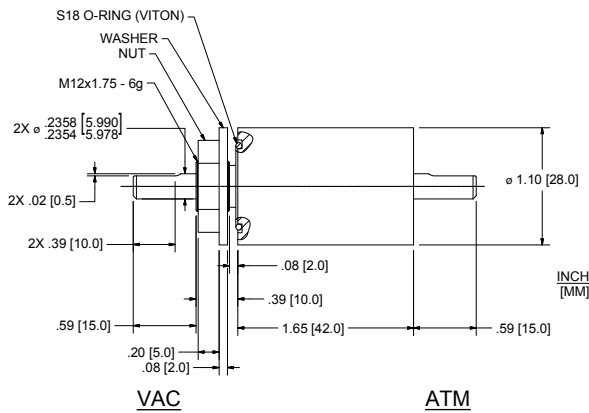
Fluid:	Standard
Bearing type/material:	6908
Dim A: Dimension to process bearings	19.3 mm
Dim B: Dimension between bearings	22.6 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	0.64 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	0.35 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1.06 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.57 N-mm
Shaft Torque Capacity:	0.69 N-m
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

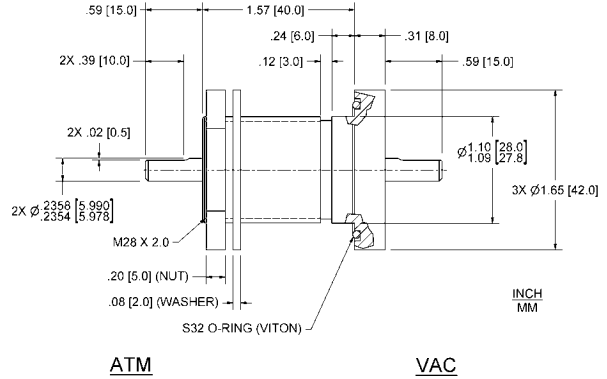
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.



### MODEL: SSL-006-NN



### MODEL: SNL-006-NN



Part No.: 133602

Fluid:	Standard
Bearing type/material:	627
Dim A: Dimension to process bearings	32.5 mm
Dim B: Dimension between bearings	28 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	1.06 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	0.64 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1.91 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.99 N-mm
Shaft Torque Capacity:	1.41 N-m
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

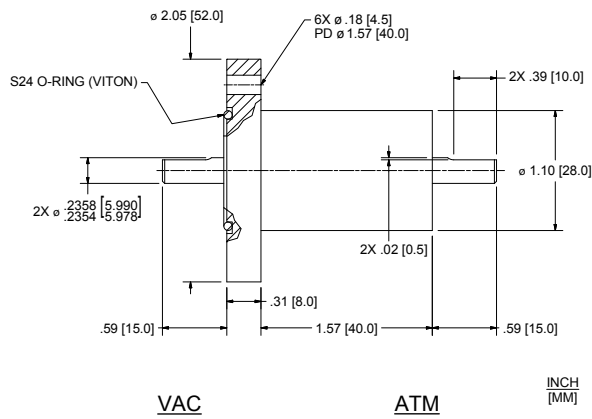
Part No.: 133029

Fluid:	Standard
Bearing type/material:	SR61
Dim A: Dimension to process bearings	22.9 mm
Dim B: Dimension between bearings	33.3 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	2.9 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	1.7 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	5.3 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	2.61 N-mm
Shaft Torque Capacity:	2.89 N-m
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: SFL-006-NN**

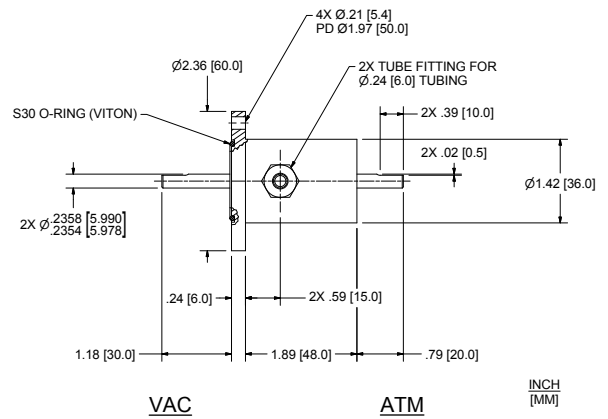


VAC

ATM

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[MM]

**MODEL: SFL-006-WN**



VAC

ATM

INCH  
[MM]

**Part No.: 133567**

Fluid:	Standard
Bearing type/material:	627
Dim A: Dimension to process bearings	28.5 mm
Dim B: Dimension between bearings	28 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	1.06 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	0.64 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1.91 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.99 N-mm
Shaft Torque Capacity:	1.41 N-m
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133572**

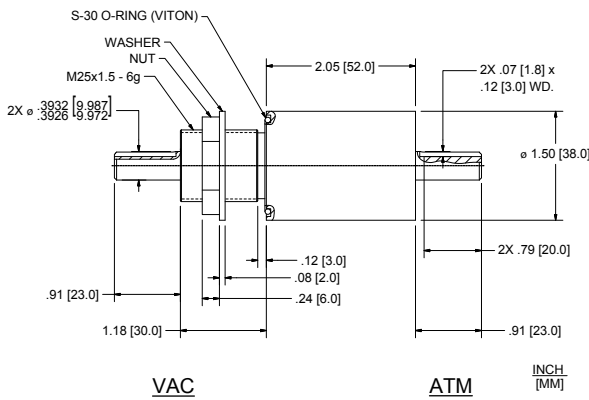
Fluid:	Standard
Bearing type/material:	636
Dim A: Dimension to process bearings	37.5 mm
Dim B: Dimension between bearings	40 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	1.06 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	0.64 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1.91 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	0.99 N-mm
Shaft Torque Capacity:	1.41 N-m
Limiting Speed:	10000 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

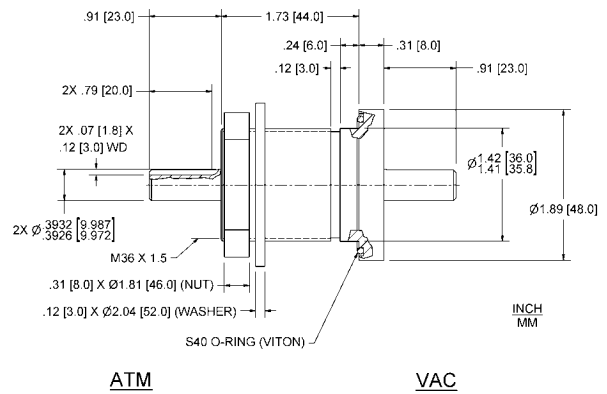
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: SSL-010-NN**



**MODEL: SNL-010-NN**



**Part No.: 133603**

Fluid:	Standard
Bearing type/material:	6200
Dim A: Dimension to process bearings	61.5 mm
Dim B: Dimension between bearings	35 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	4.87 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	2.9 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	8.9 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	4.45 N-mm
Shaft Torque Capacity:	8.92 N-m
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

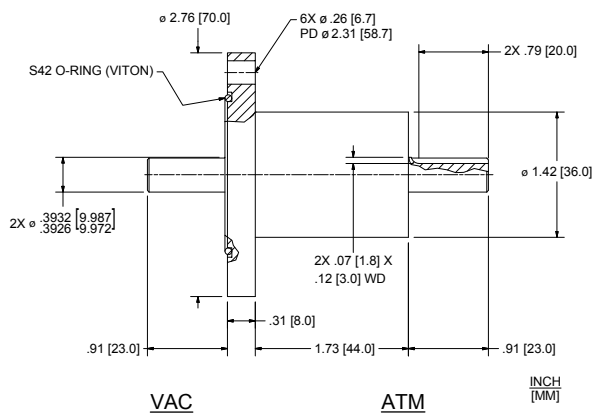
**Part No.: 121503**

Fluid:	Standard
Bearing type/material:	6001
Dim A: Dimension to process bearings	30.8 mm
Dim B: Dimension between bearings	35.1 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	5.44 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	3.25 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	9.89 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	4.94 N-mm
Shaft Torque Capacity:	13.5 N-m
Limiting Speed:	10000 rpm

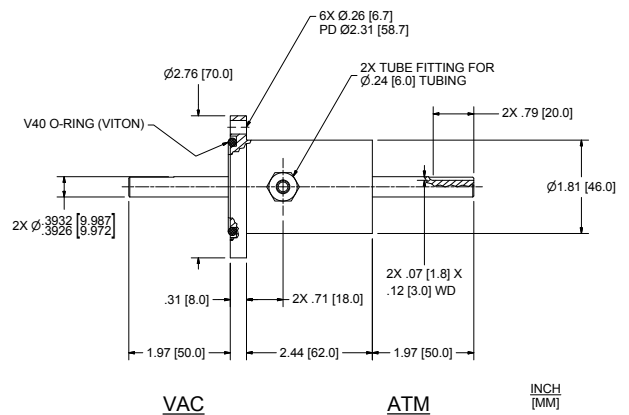
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: SFL-010-NN**



**MODEL: SFL-010-WN**



SOLID | METRIC

**Part No.: 131383**

Fluid:	Standard
Bearing type/material:	6001
Dim A: Dimension to process bearings	32.1 mm
Dim B: Dimension between bearings	35.1 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	5.44 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	3.25 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	9.89 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	4.94 N-mm
Shaft Torque Capacity:	13.5 N-m
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133573**

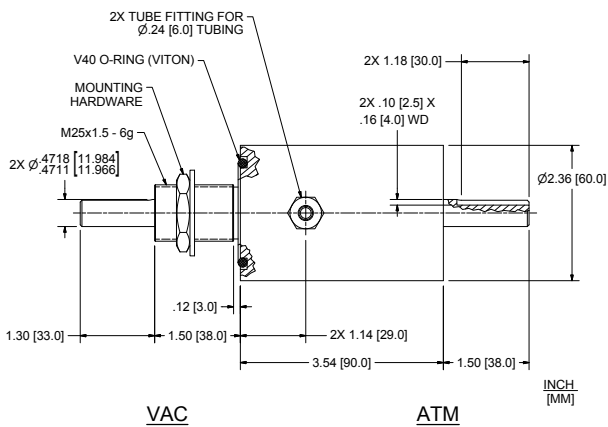
Fluid:	Standard
Bearing type/material:	6200
Dim A: Dimension to process bearings	59 mm
Dim B: Dimension between bearings	52.5 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	4.87 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	2.9 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	8.9 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	4.45 N-mm
Shaft Torque Capacity:	8.92 N-m
Limiting Speed:	10000 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

### MODEL: SSL-012-WN

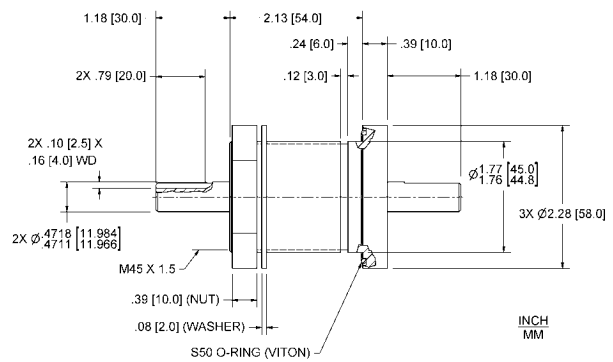


VAC

ATM

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[MM]

### MODEL: SNL-012-NN



ATM

VAC

INCH  
MM

Part No.: 133576

Fluid:	Standard
Bearing type/material:	6301
Dim A: Dimension to process bearings	83.5 mm
Dim B: Dimension between bearings	67.5 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	8.4 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	5.01 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	15.3 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	7.63 N-mm
Shaft Torque Capacity:	16.6 N-m
Limiting Speed:	10000 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

Part No.: 133599

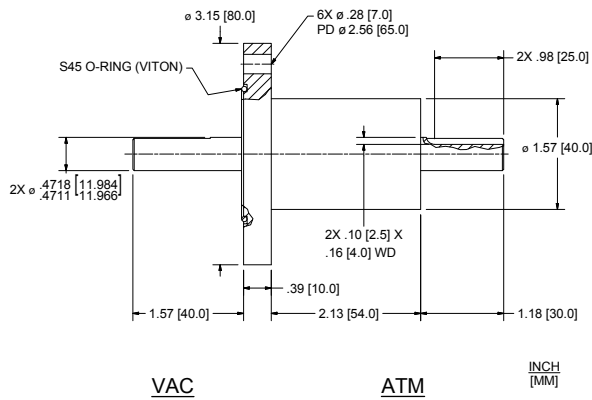
Fluid:	Standard
Bearing type/material:	6201
Dim A: Dimension to process bearings	42 mm
Dim B: Dimension between bearings	43 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	8.4 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	5.01 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	15.3 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	7.63 N-mm
Shaft Torque Capacity:	16.6 N-m
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

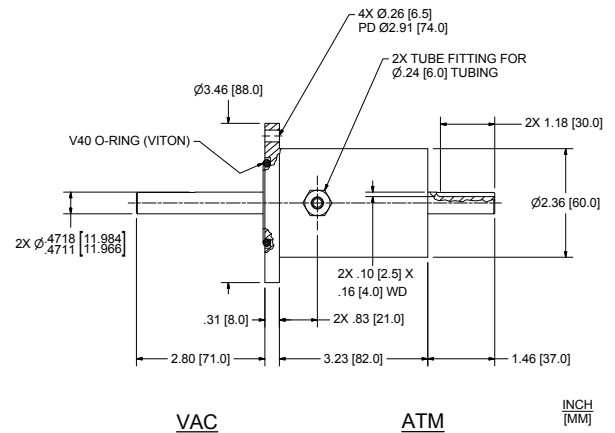
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.



**MODEL: SFL-012-NN**



**MODEL: SFL-012-WN**



**Part No.: 133568**

Fluid:	Standard
Bearing type/material:	6201
Dim A: Dimension to process bearings	52 mm
Dim B: Dimension between bearings	43 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	8.4 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	5.01 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	15.3 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	7.63 N-mm
Shaft Torque Capacity:	16.6 N-m
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133574**

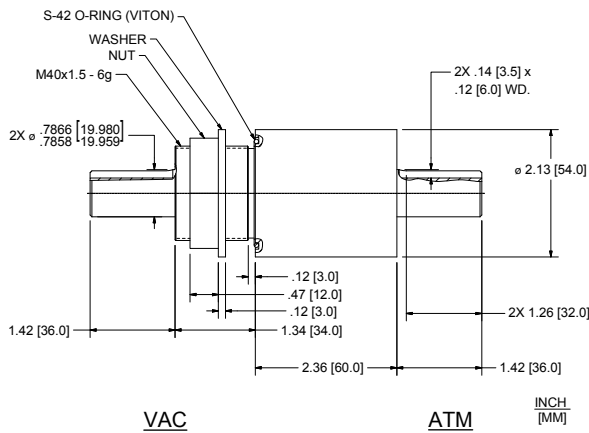
Fluid:	Standard
Bearing type/material:	6301
Dim A: Dimension to process bearings	83.5 mm
Dim B: Dimension between bearings	67.5 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	8.4 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	5.01 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	15.3 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	7.63 N-mm
Shaft Torque Capacity:	16.6 N-m
Limiting Speed:	10000 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

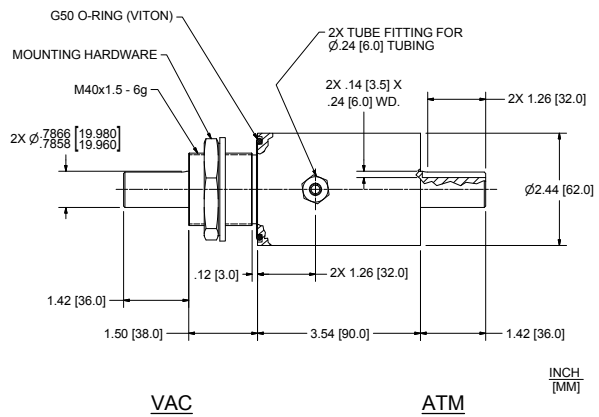
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

### MODEL: SSL-020-NN



### MODEL: SSL-020-WN



**Part No.: 133604**

Fluid:	Standard
Bearing type/material:	6004
Dim A: Dimension to process bearings	83 mm
Dim B: Dimension between bearings	37 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	39 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	23 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	70.8 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	35.4 N-mm
Shaft Torque Capacity:	88.4 N-m
Limiting Speed:	8385 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133577**

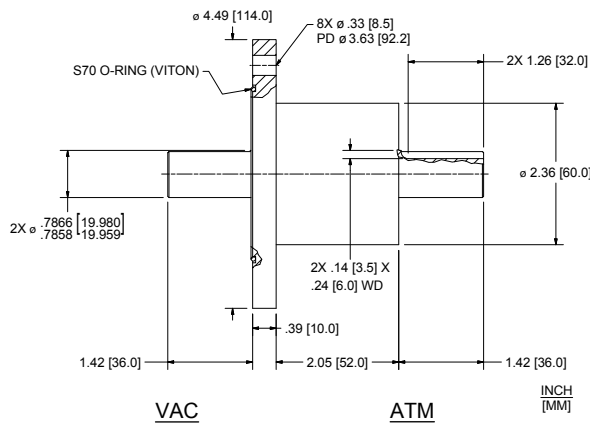
Fluid:	Standard
Bearing type/material:	6004
Dim A: Dimension to process bearings	85 mm
Dim B: Dimension between bearings	69 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	39 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	23 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	70.8 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	35.4 N-mm
Shaft Torque Capacity:	88.4 N-m
Limiting Speed:	8385 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

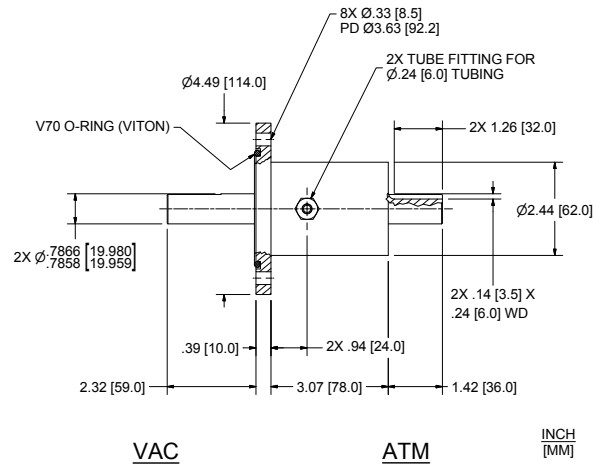
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: SFL-020-NN**



**MODEL: SFL-020-WN**



**Part No.: 133569**

Fluid:	Standard
Bearing type/material:	6004
Dim A: Dimension to process bearings	51 mm
Dim B: Dimension between bearings	37 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	39 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	23 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	70.8 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	35.4 N-mm
Shaft Torque Capacity:	88.4 N-m
Limiting Speed:	8385 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133575**

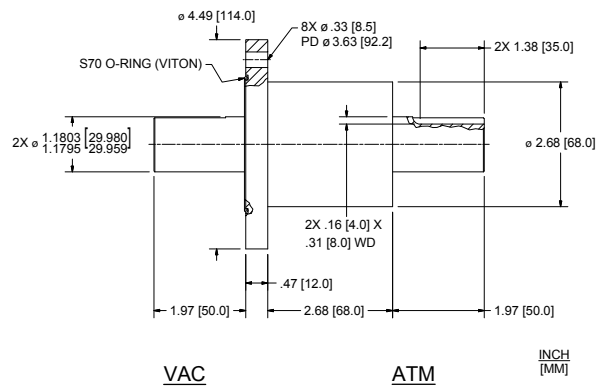
Fluid:	Standard
Bearing type/material:	6004
Dim A: Dimension to process bearings	74 mm
Dim B: Dimension between bearings	63 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	39 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	23 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	70.8 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	35.4 N-mm
Shaft Torque Capacity:	88.4 N-m
Limiting Speed:	8385 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

## MODEL: SFL-030-NN



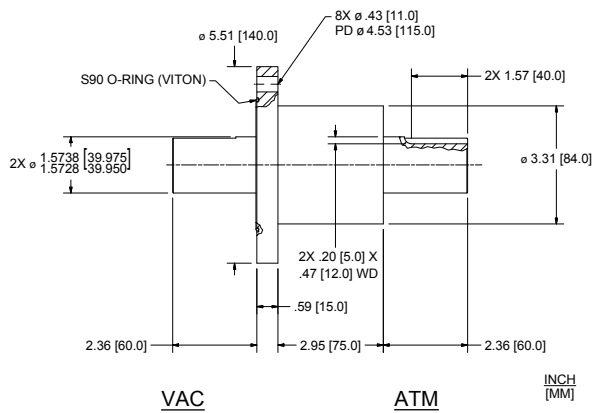
**Part No.: 133570**

Fluid:	Standard
Bearing type/material:	6006
Dim A: Dimension to process bearings	65.5 mm
Dim B: Dimension between bearings	54 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	132 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	77.8 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	239 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	120 N-mm
Shaft Torque Capacity:	320 N-m
Limiting Speed:	4645 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: SFL-040-NN**



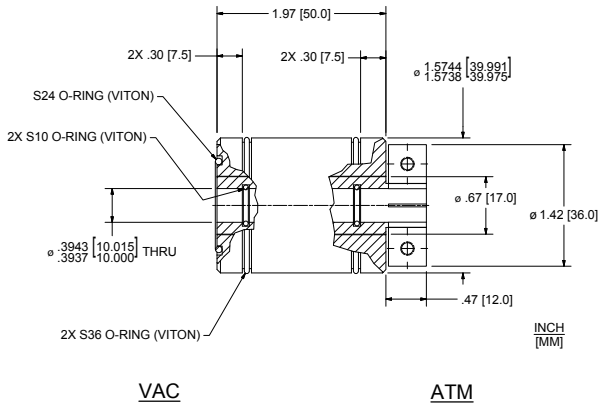
**Part No.: 133571**

Fluid:	Standard
Bearing type/material:	6908
Dim A: Dimension to process bearings	76 mm
Dim B: Dimension between bearings	63 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	312 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	184 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	567 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	284 N-mm
Shaft Torque Capacity:	783 N-m
Limiting Speed:	3055 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

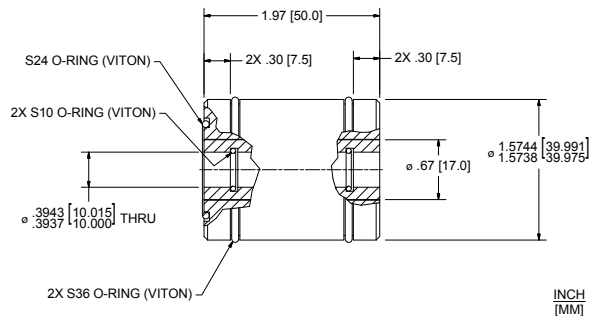
**MODEL: HTL-010-CN**



VAC

ATM

**MODEL: HTL-010-NN**



VAC

ATM

**Part No.: 133558**

Fluid:	Standard
Bearing type/material:	16003
Dim A: Dimension to process bearings	10 mm
Dim B: Dimension between bearings	31 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	26.62 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	15.75 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	48.37 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	24.15 N-mm
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

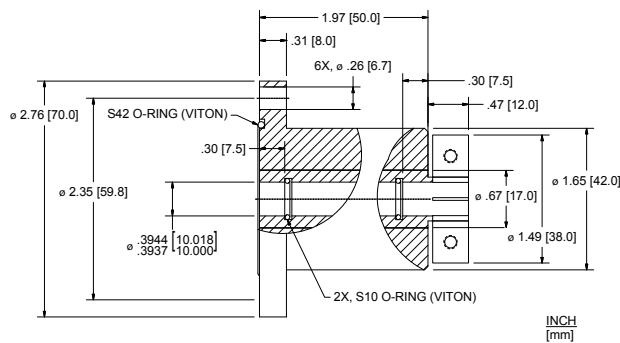
**Part No.: 133554**

Fluid:	Standard
Bearing type/material:	16003
Dim A: Dimension to process bearings	10 mm
Dim B: Dimension between bearings	31 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	26.62 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	15.75 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	48.37 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	24.15 N-mm
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

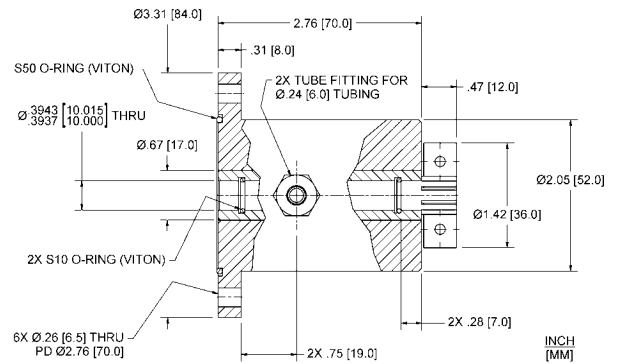
**MODEL: HFL-010-CN**



VAC

ATM

**MODEL: HFL-010-MN**



VAC

ATM

**Part No.: 133606**

Fluid:	Standard
Bearing type/material:	16003
Dim A: Dimension to process bearings	10 mm
Dim B: Dimension between bearings	31 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	26.62 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	15.75 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	48.37 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	24.15 N-mm
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133588**

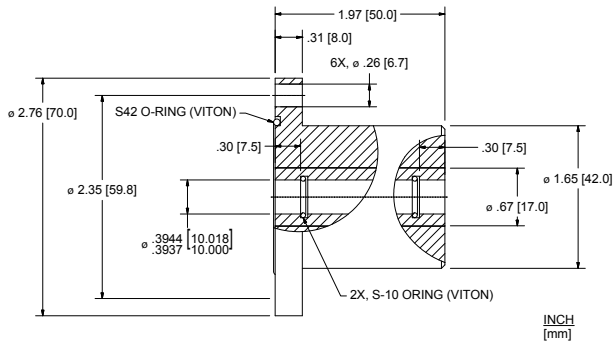
Fluid:	Standard
Bearing type/material:	16003
Dim A: Dimension to process bearings	9 mm
Dim B: Dimension between bearings	51.5 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	26.62 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	15.75 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	48.37 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	24.15 N-mm
Limiting Speed:	10000 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

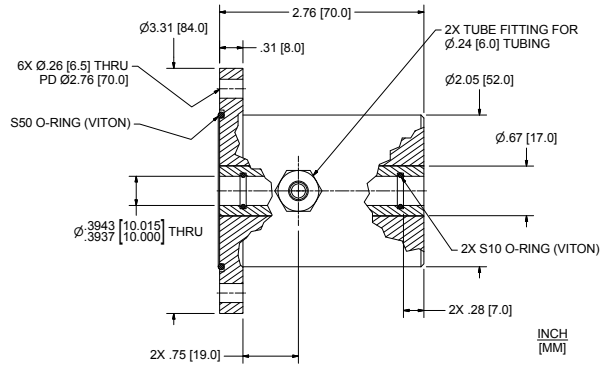
**MODEL: HFL-010-NN**



VAC

ATM

**MODEL: HFL-010-WN**



VAC

ATM

**Part No.: 133605**

Fluid:	Standard
Bearing type/material:	16003
Dim A: Dimension to process bearings	10 mm
Dim B: Dimension between bearings	31 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	26.62 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	15.75 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	48.37 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	24.15 N-mm
Limiting Speed:	10000 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133578**

Fluid:	Standard
Bearing type/material:	16003
Dim A: Dimension to process bearings	9 mm
Dim B: Dimension between bearings	51.5 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	26.62 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	15.75 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	48.37 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	24.15 N-mm
Limiting Speed:	10000 rpm*

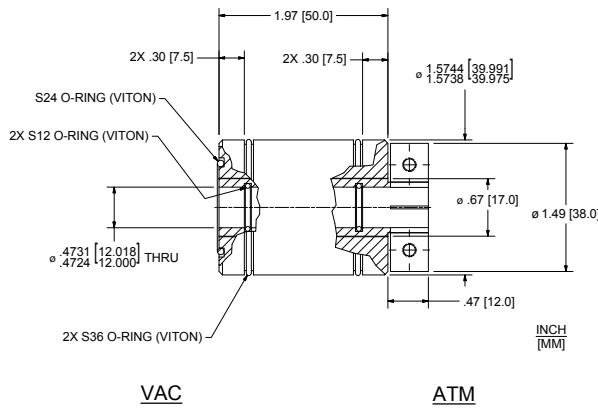
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.



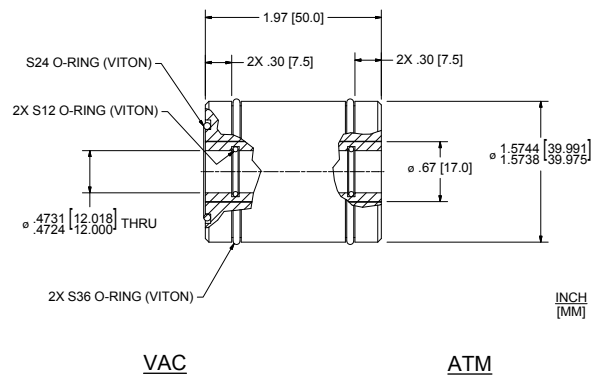
**MODEL: HTL-012-CN**



VAC

ATM

**MODEL: HTL-012-NN**



VAC

ATM

**Part No.: 133559**

Fluid:	Standard
Bearing type/material:	16003
Dim A: Dimension to process bearings	10 mm
Dim B: Dimension between bearings	31 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	36.79 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	21.75 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	66.87 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	33.40 N-mm
Limiting Speed:	8625 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

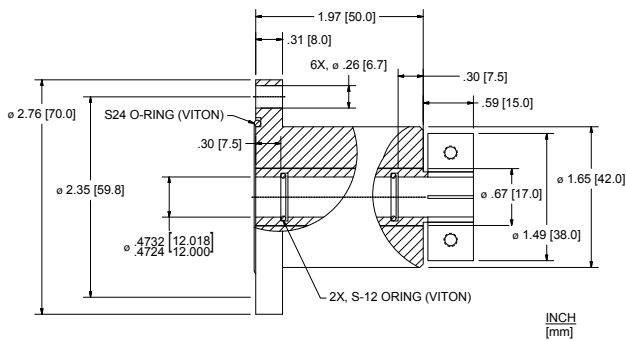
**Part No.: 132761**

Fluid:	Standard
Bearing type/material:	16003
Dim A: Dimension to process bearings	9.4 mm
Dim B: Dimension between bearings	31.5 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	30.4 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	17.9 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	55.2 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	27.6 N-mm
Limiting Speed:	8625 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

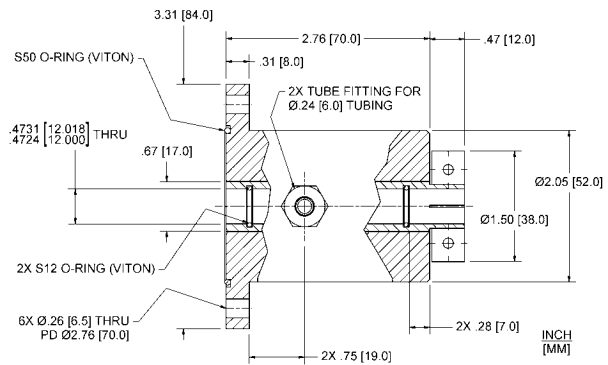
**MODEL: HFL-012-CN**



VAC

ATM

**MODEL: HFL-012-MN**



VAC

ATM

**Part No.: 133608**

Fluid:	Standard
Bearing type/material:	16003
Dim A: Dimension to process bearings	10 mm
Dim B: Dimension between bearings	31 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	36.79 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	21.75 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	66.87 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	33.40 N-mm
Limiting Speed:	8625 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133589**

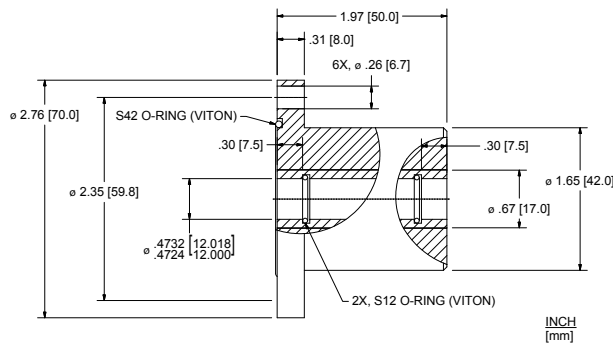
Fluid:	Standard
Bearing type/material:	16003
Dim A: Dimension to process bearings	9 mm
Dim B: Dimension between bearings	51.5 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	36.79 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	21.75 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	66.87 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	33.40 N-mm
Limiting Speed:	8625 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

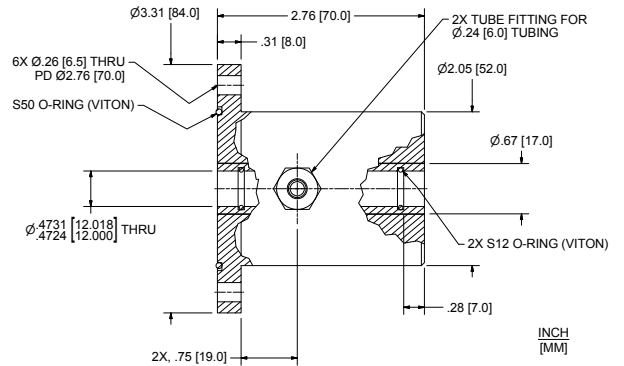
**MODEL: HFL-012-NN**



VAC

ATM

**MODEL: HFL-012-WN**



VAC

ATM

**Part No.: 133607**

Fluid:	Standard
Bearing type/material:	16003
Dim A: Dimension to process bearings	10 mm
Dim B: Dimension between bearings	31 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	36.79 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	21.75 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	66.87 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	33.40 N-mm
Limiting Speed:	8625 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133579**

Fluid:	Standard
Bearing type/material:	16003
Dim A: Dimension to process bearings	9 mm
Dim B: Dimension between bearings	51.5 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	36.79 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	21.75 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	66.87 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	33.40 N-mm
Limiting Speed:	8625 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

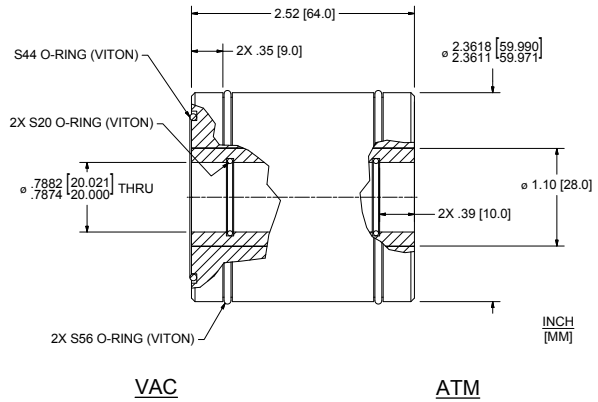
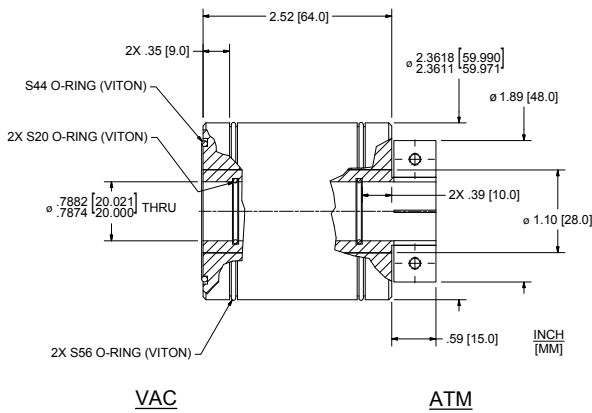
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HTL-020-CN**



**MODEL: HTL-020-NN**



**Part No.: 133560**

Fluid:	Standard
Bearing type/material:	60/28
Dim A: Dimension to process bearings	11 mm
Dim B: Dimension between bearings	42 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	84.5 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	49.9 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	153.5 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	76.8 N-mm
Limiting Speed:	4640 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133600**

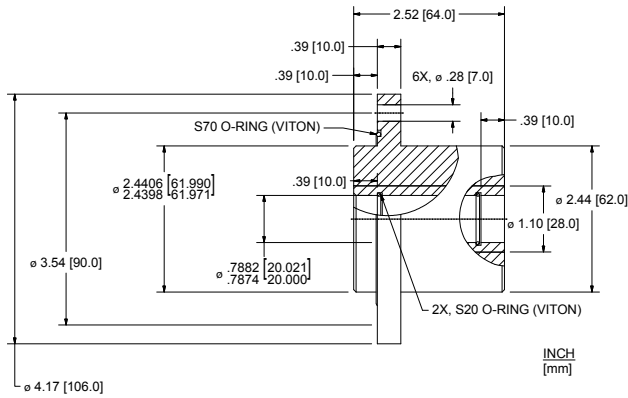
Fluid:	Standard
Bearing type/material:	60/28
Dim A: Dimension to process bearings	11 mm
Dim B: Dimension between bearings	42 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	84.5 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	49.9 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	153.5 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	76.8 N-mm
Limiting Speed:	4640 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.



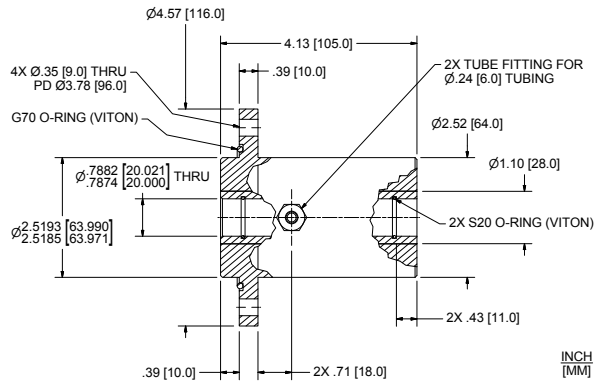
**MODEL: HFL-020-NN**



VAC

ATM

**MODEL: HFL-020-WN**



VAC

ATM

**Part No.: 133609**

Fluid:	Standard
Bearing type/material:	60/28
Dim A: Dimension to process bearings	11 mm
Dim B: Dimension between bearings	42 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	84.5 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	49.9 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	153.5 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	76.8 N-mm
Limiting Speed:	4640 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133580**

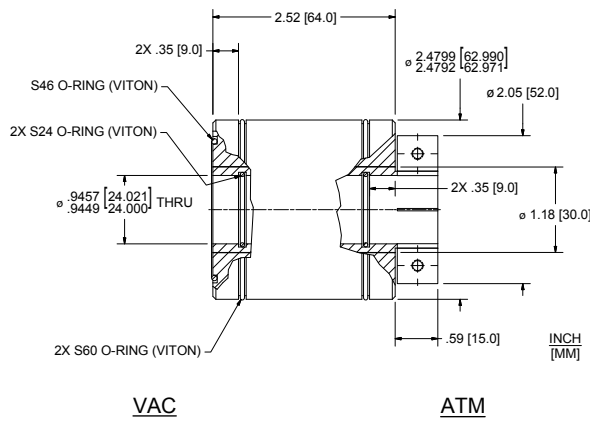
Fluid:	Standard
Bearing type/material:	60/28
Dim A: Dimension to process bearings	13 mm
Dim B: Dimension between bearings	79 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	84.5 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	49.9 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	153.5 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	76.8 N-mm
Limiting Speed:	4640 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

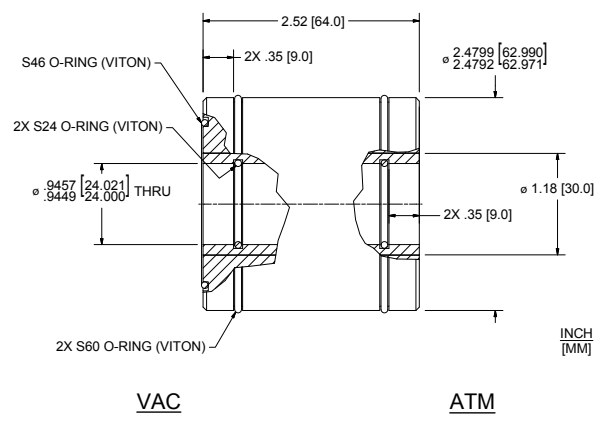
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HTL-024-CN**



**MODEL: HTL-024-NN**



**Part No.: 133433**

Fluid:	Standard
Bearing type/material:	6006
Dim A: Dimension to process bearings	10.9 mm
Dim B: Dimension between bearings	42 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	78.2 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	46.3 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	142 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	71.2 N-mm
Limiting Speed:	3720 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

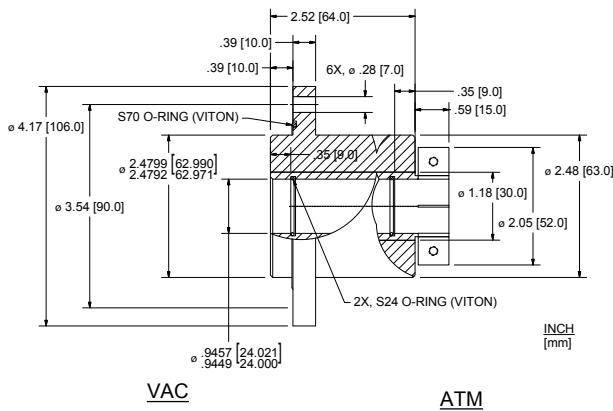
**Part No.: 133097**

Fluid:	Standard
Bearing type/material:	6006
Dim A: Dimension to process bearings	10.9 mm
Dim B: Dimension between bearings	42 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	78.2 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	46.3 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	142 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	71.2 N-mm
Limiting Speed:	3720 rpm

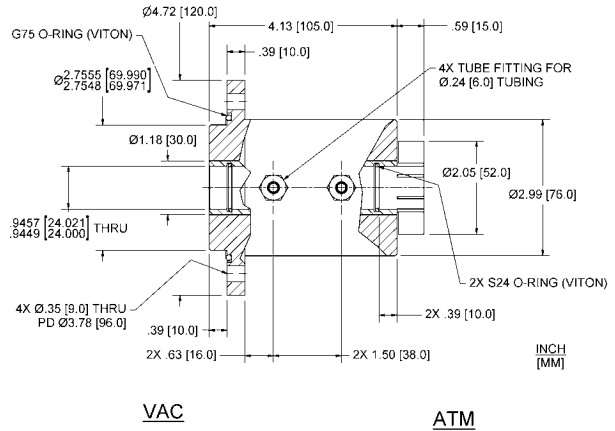
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: HFL-024-CN**



**MODEL: HFL-024-MN**



**Part No.: 133612**

Fluid:	Standard
Bearing type/material:	6006
Dim A: Dimension to process bearings	12.5 mm
Dim B: Dimension between bearings	41 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	78.2 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	46.3 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	142 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	71.2 N-mm
Limiting Speed:	3720 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133591**

Fluid:	Standard
Bearing type/material:	6006
Dim A: Dimension to process bearings	10.5 mm
Dim B: Dimension between bearings	84 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	78.2 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	46.3 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	142 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	71.2 N-mm
Limiting Speed:	3720 rpm*

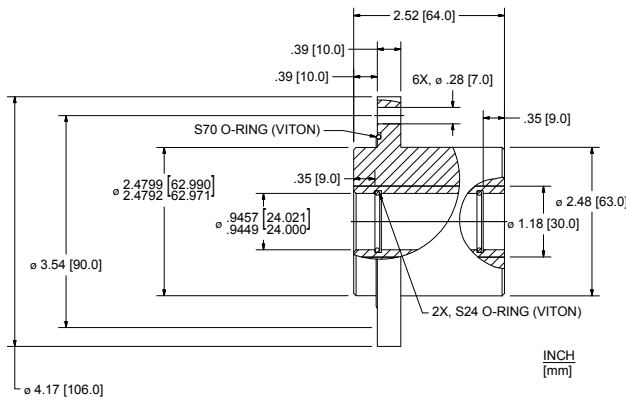
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.



**MODEL: HFL-024-NN**



VAC

ATM

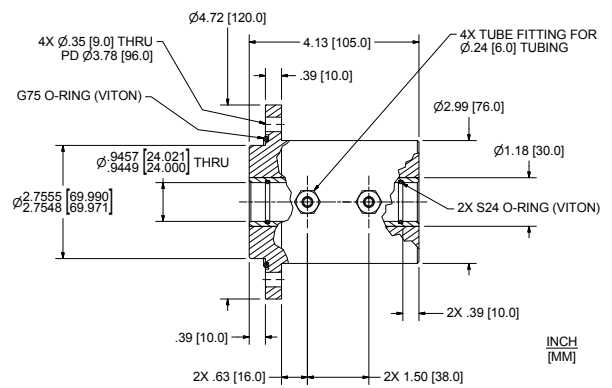
**Part No.: 133611**

Fluid:	Standard
Bearing type/material:	6006
Dim A: Dimension to process bearings	12.5 mm
Dim B: Dimension between bearings	41 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	78.2 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	46.3 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	142 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	71.2 N-mm
Limiting Speed:	3720 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: HFL-024-WN**



VAC

ATM

**Part No.: 133581**

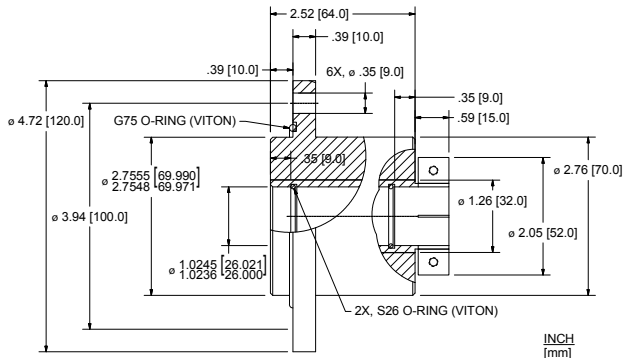
Fluid:	Standard
Bearing type/material:	6006
Dim A: Dimension to process bearings	10.5 mm
Dim B: Dimension between bearings	84 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	78.2 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	46.3 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	142 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	71.2 N-mm
Limiting Speed:	3720 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

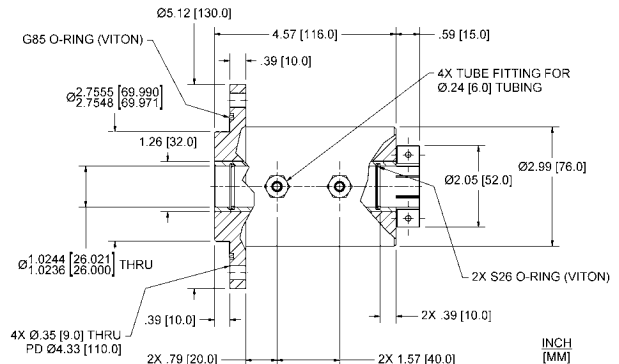
**MODEL: HFL-026-CN**



VAC

ATM

**MODEL: HFL-026-MN**



VAC

ATM

**Part No.: 133614**

Fluid:	Standard
Bearing type/material:	60/32
Dim A: Dimension to process bearings	13.5 mm
Dim B: Dimension between bearings	39 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	225 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	133 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	409 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	204 N-mm
Limiting Speed:	3280 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133592**

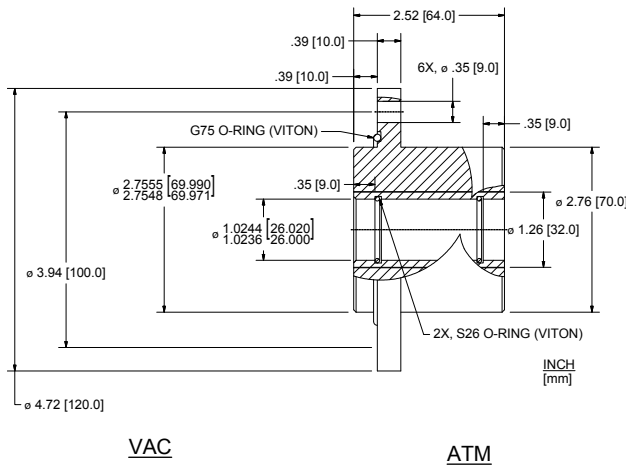
Fluid:	Standard
Bearing type/material:	60/32
Dim A: Dimension to process bearings	14.5 mm
Dim B: Dimension between bearings	90 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	225 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	133 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	409 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	204 N-mm
Limiting Speed:	3280 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

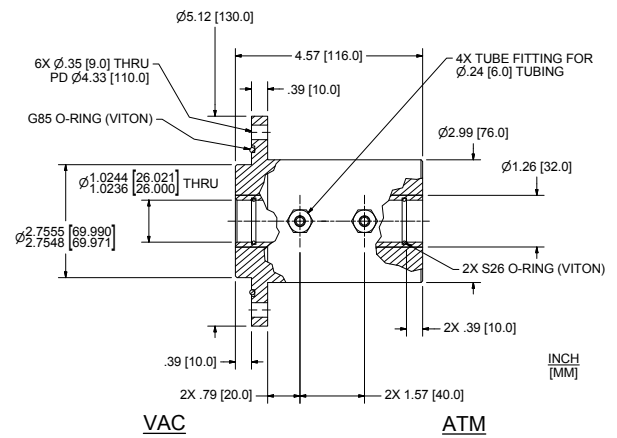
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HFL-026-NN**



**MODEL: HFL-026-WN**



**Part No.: 133613**

Fluid:	Standard
Bearing type/material:	60/32
Dim A: Dimension to process bearings	13.5 mm
Dim B: Dimension between bearings	39 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	225 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	133 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	409 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	204 N-mm
Limiting Speed:	3280 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133582**

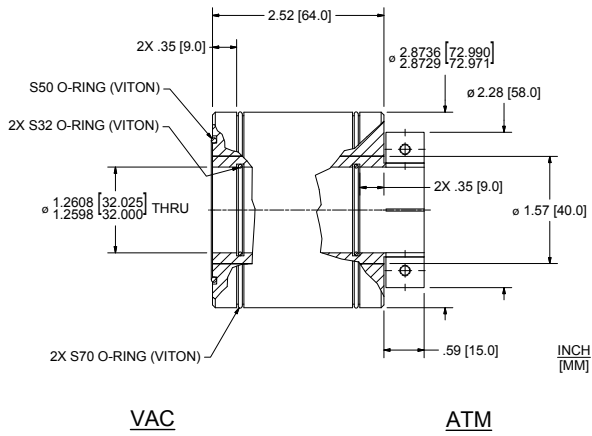
Fluid:	Standard
Bearing type/material:	60/32
Dim A: Dimension to process bearings	14.5 mm
Dim B: Dimension between bearings	90 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	225 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	133 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	409 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	204 N-mm
Limiting Speed:	3280 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

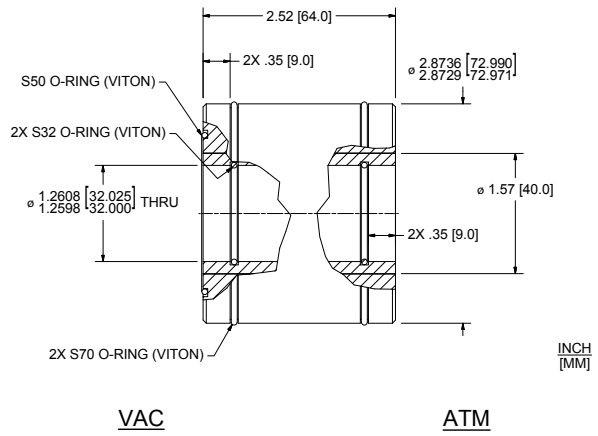
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HTL-032-CN**



**MODEL: HTL-032-NN**



**Part No.: 133561**

Fluid:	Standard
Bearing type/material:	6908
Dim A: Dimension to process bearings	13 mm
Dim B: Dimension between bearings	40 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	286 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	169 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	519 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	260 N-mm
Limiting Speed:	2920 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

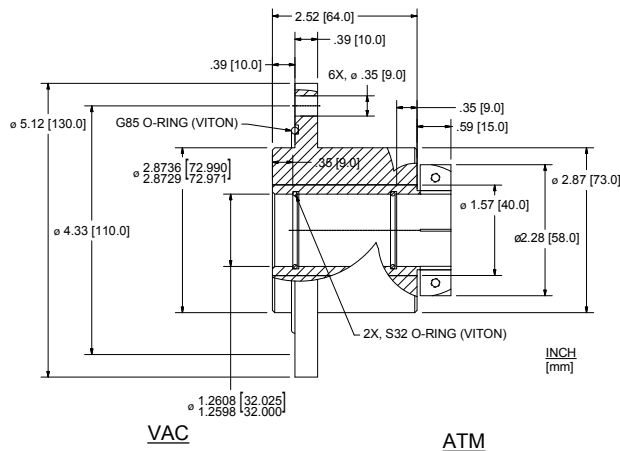
**Part No.: 133555**

Fluid:	Standard
Bearing type/material:	6908
Dim A: Dimension to process bearings	13 mm
Dim B: Dimension between bearings	40 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	286 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	169 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	519 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	260 N-mm
Limiting Speed:	2920 rpm

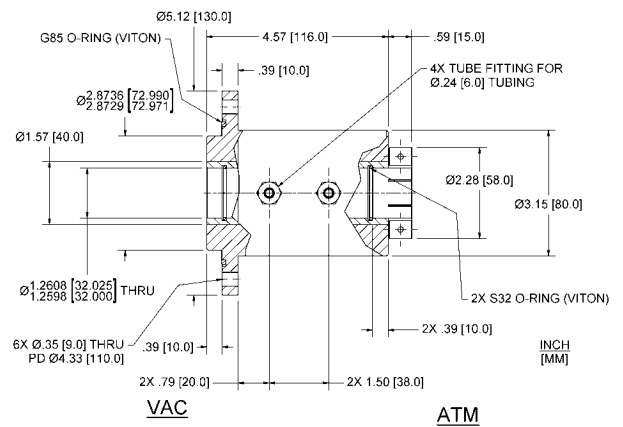
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: HFL-032-CN**



**MODEL: HFL-032-MN**



**Part No.: 133616**

Fluid:	Standard
Bearing type/material:	6908
Dim A: Dimension to process bearings	13 mm
Dim B: Dimension between bearings	40 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	286 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	169 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	519 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	260 N-mm
Limiting Speed:	2920 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133593**

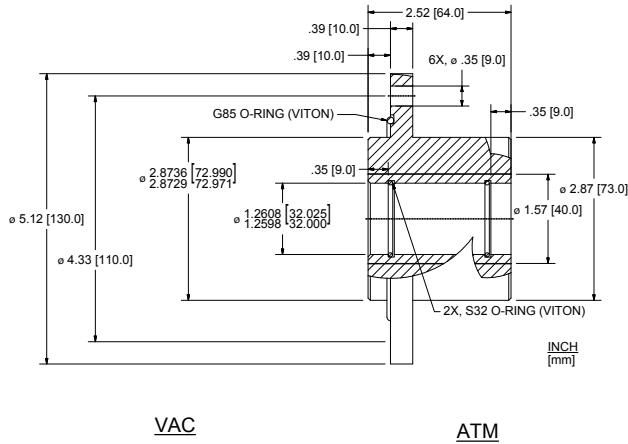
Fluid:	Standard
Bearing type/material:	6908
Dim A: Dimension to process bearings	12 mm
Dim B: Dimension between bearings	92 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	286 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	169 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	519 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	260 N-mm
Limiting Speed:	2920 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

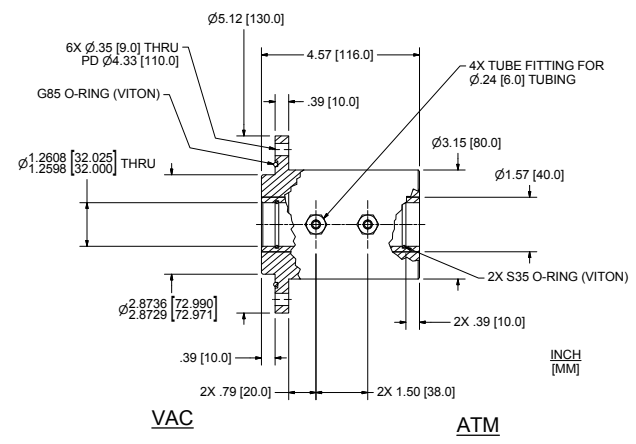
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HFL-032-NN**



**MODEL: HFL-032-WN**



**Part No.: 133615**

Fluid:	Standard
Bearing type/material:	6908
Dim A: Dimension to process bearings	13 mm
Dim B: Dimension between bearings	40 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	286 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	169 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	519 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	260 N-mm
Limiting Speed:	2920 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133583**

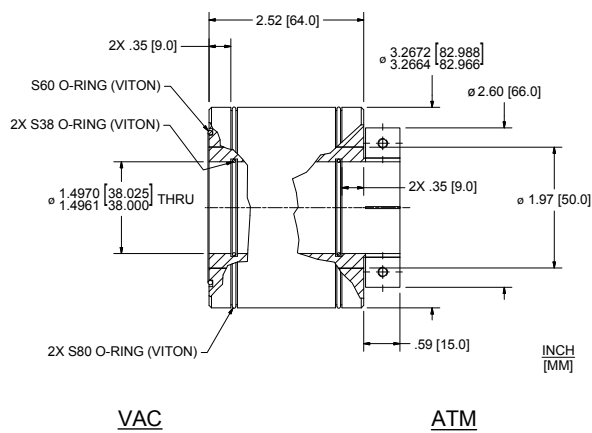
Fluid:	Standard
Bearing type/material:	6908
Dim A: Dimension to process bearings	12 mm
Dim B: Dimension between bearings	92 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	286 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	169 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	519 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	260 N-mm
Limiting Speed:	2920 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

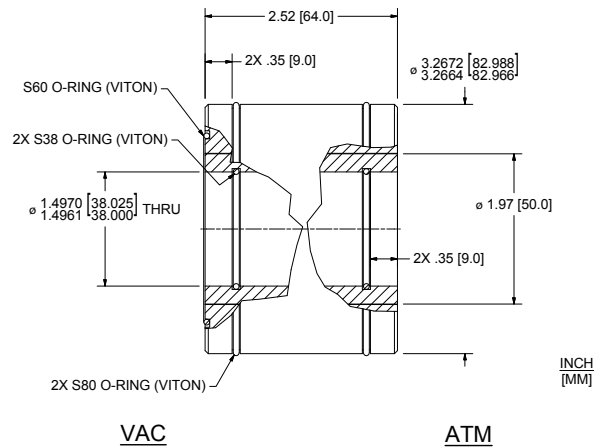
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HTL-038-CN**



**MODEL: HTL-038-NN**



**Part No.: 133562**

Fluid:	Standard
Bearing type/material:	6910
Dim A: Dimension to process bearings	13 mm
Dim B: Dimension between bearings	40 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	357 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	211 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	649 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	324 N-mm
Limiting Speed:	2620 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

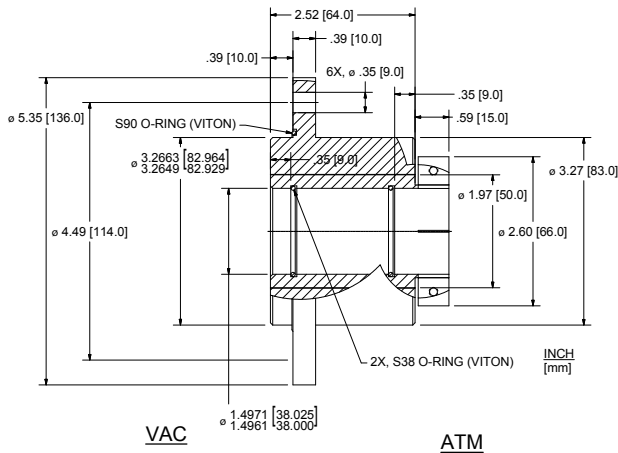
**Part No.: 133556**

Fluid:	Standard
Bearing type/material:	6910
Dim A: Dimension to process bearings	13 mm
Dim B: Dimension between bearings	40 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	357 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	211 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	649 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	324 N-mm
Limiting Speed:	2620 rpm

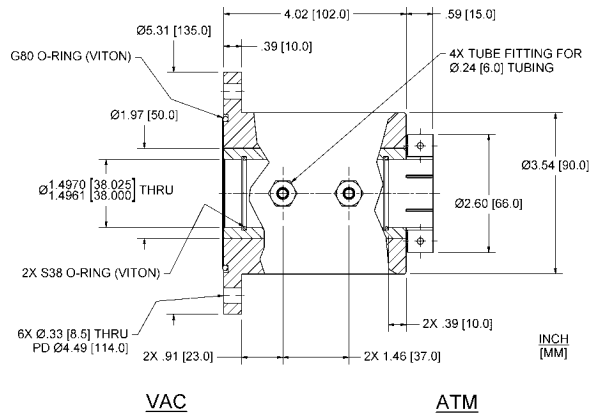
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: HFL-038-CN**



**MODEL: HFL-038-MN**



**Part No.: 133618**

Fluid:	Standard
Bearing type/material:	6910
Dim A: Dimension to process bearings	13 mm
Dim B: Dimension between bearings	40 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	357 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	211 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	649 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	324 N-mm
Limiting Speed:	2620 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133594**

Fluid:	Standard
Bearing type/material:	6910
Dim A: Dimension to process bearings	13 mm
Dim B: Dimension between bearings	77 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	357 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	211 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	649 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	324 N-mm
Limiting Speed:	2620 rpm*

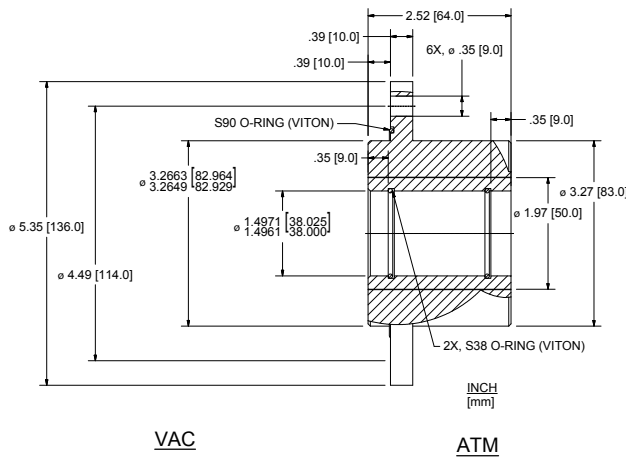
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.



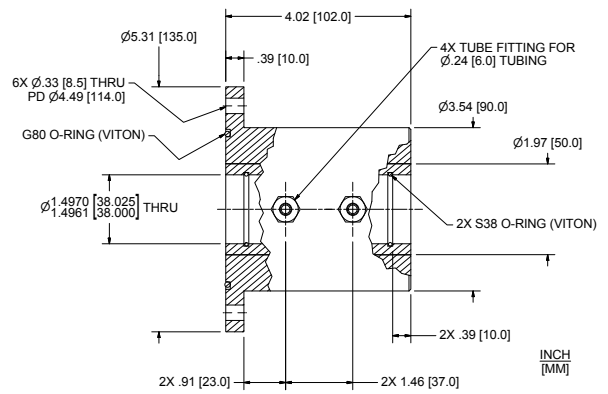
**MODEL: HFL-038-NN**



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**MODEL: HFL-038-WN**



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**Part No.: 133617**

Fluid:	Standard
Bearing type/material:	6910
Dim A: Dimension to process bearings	13 mm
Dim B: Dimension between bearings	40 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	357 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	211 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	649 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	324 N-mm
Limiting Speed:	2620 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133584**

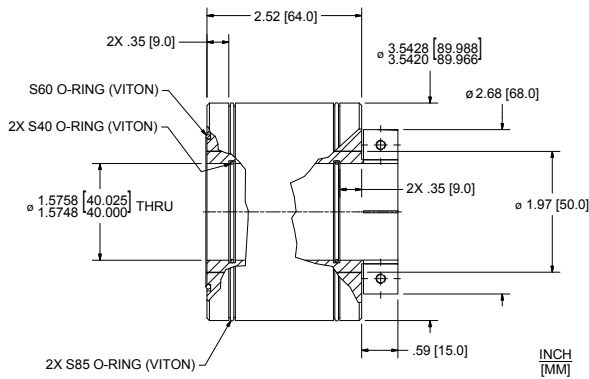
Fluid:	Standard
Bearing type/material:	6910
Dim A: Dimension to process bearings	13 mm
Dim B: Dimension between bearings	77 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	357 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	211 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	649 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	324 N-mm
Limiting Speed:	2620 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

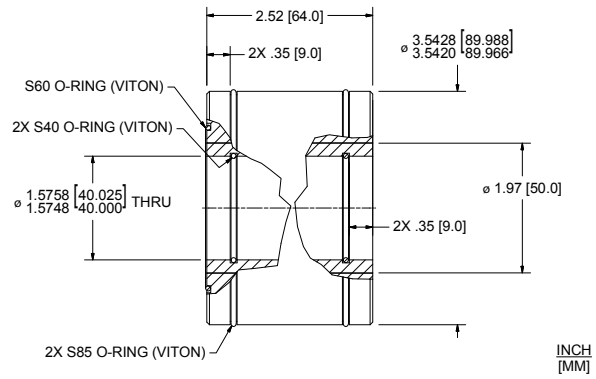
**MODEL: HTL-040-CN**



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**MODEL: HTL-040-NN**



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**Part No.: 133563**

Fluid:	Standard
Bearing type/material:	6910
Dim A: Dimension to process bearings	13 mm
Dim B: Dimension between bearings	40 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	439 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	259 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	798 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	399 N-mm
Limiting Speed:	2370 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

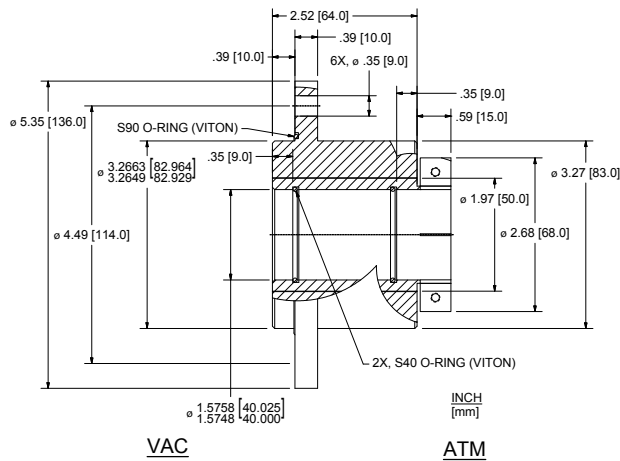
**Part No.: 133557**

Fluid:	Standard
Bearing type/material:	6910
Dim A: Dimension to process bearings	13 mm
Dim B: Dimension between bearings	40 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	439 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	259 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	798 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	399 N-mm
Limiting Speed:	2370 rpm

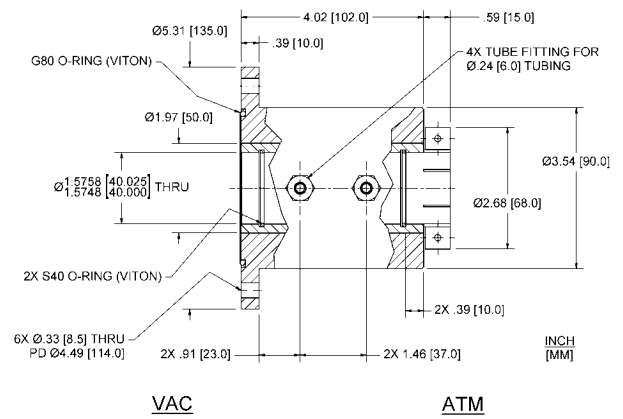
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: HFL-040-CN**



**MODEL: HFL-040-MN**



**Part No.: 133620**

Fluid:	Standard
Bearing type/material:	6910
Dim A: Dimension to process bearings	13 mm
Dim B: Dimension between bearings	40 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	439 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	259 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	798 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	399 N-mm
Limiting Speed:	2370 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133595**

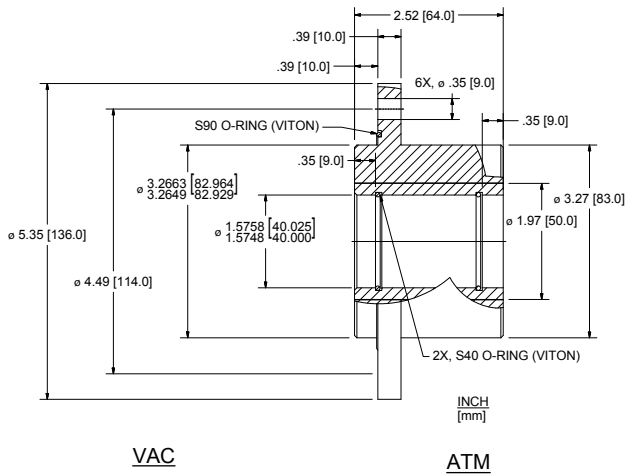
Fluid:	Standard
Bearing type/material:	6910
Dim A: Dimension to process bearings	13 mm
Dim B: Dimension between bearings	77 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	439 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	259 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	798 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	399 N-mm
Limiting Speed:	2370 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

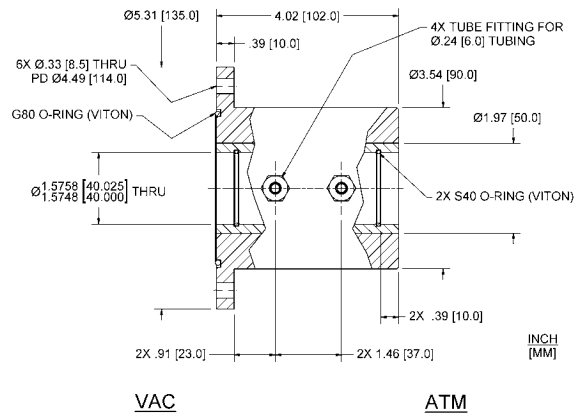
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HFL-040-NN**



**MODEL: HFL-040-MN**



**Part No.: 133619**

Fluid:	Standard
Bearing type/material:	6910
Dim A: Dimension to process bearings	13 mm
Dim B: Dimension between bearings	40 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	439 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	259 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	798 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	399 N-mm
Limiting Speed:	2370 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133585**

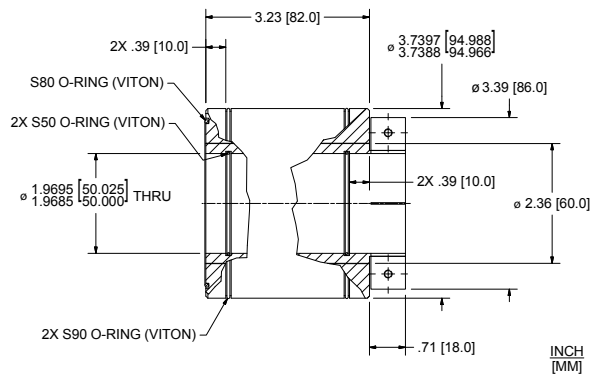
Fluid:	Standard
Bearing type/material:	6910
Dim A: Dimension to process bearings	13 mm
Dim B: Dimension between bearings	77 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	439 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	259 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	798 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	399 N-mm
Limiting Speed:	2370 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

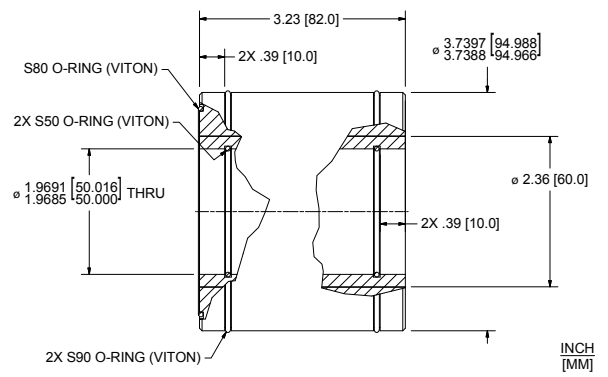
**MODEL: HTL-050-CN**



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**MODEL: HTL-050-NN**



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**Part No.: 133564**

Fluid:	Standard
Bearing type/material:	6912
Dim A: Dimension to process bearings	15.5 mm
Dim B: Dimension between bearings	56 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	750 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	443 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1360 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	682 N-mm
Limiting Speed:	1695 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

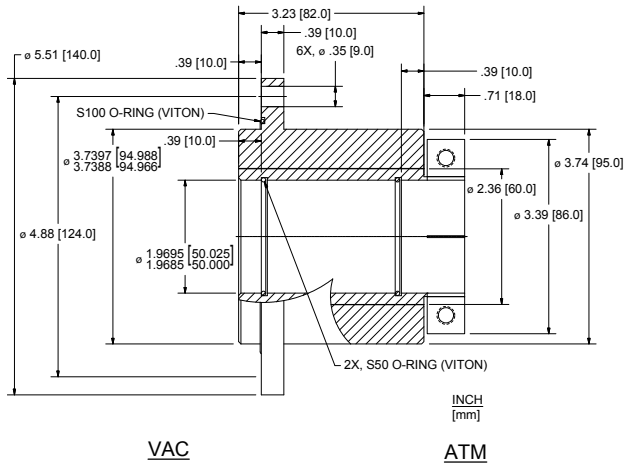
**Part No.: 120509**

Fluid:	Standard
Bearing type/material:	6912
Dim A: Dimension to process bearings	12.5 mm
Dim B: Dimension between bearings	55.3 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	997 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	589 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1810 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	907 N-mm
Limiting Speed:	1695 rpm

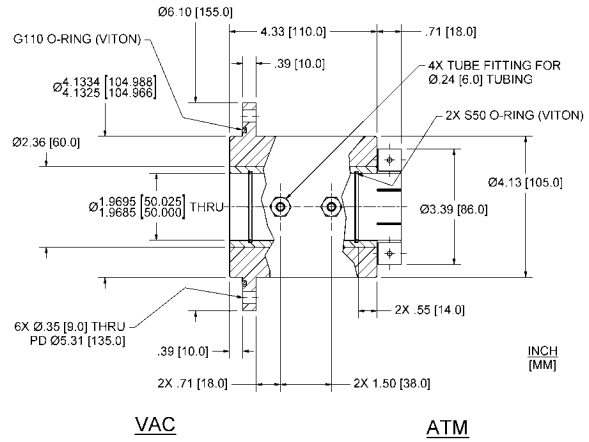
<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**MODEL: HFL-050-CN**



**MODEL: HFL-050-MN**



**Part No.: 133622**

Fluid:	Standard
Bearing type/material:	6912
Dim A: Dimension to process bearings	15.5 mm
Dim B: Dimension between bearings	56 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	594 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	351 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1080 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	540 N-mm
Limiting Speed:	1695 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133596**

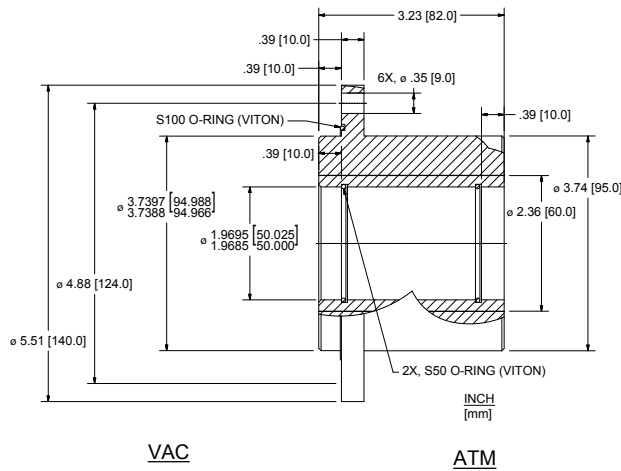
Fluid:	Standard
Bearing type/material:	6912
Dim A: Dimension to process bearings	15.5 mm
Dim B: Dimension between bearings	83 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	750 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	443 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1360 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	682 N-mm
Limiting Speed:	1695 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

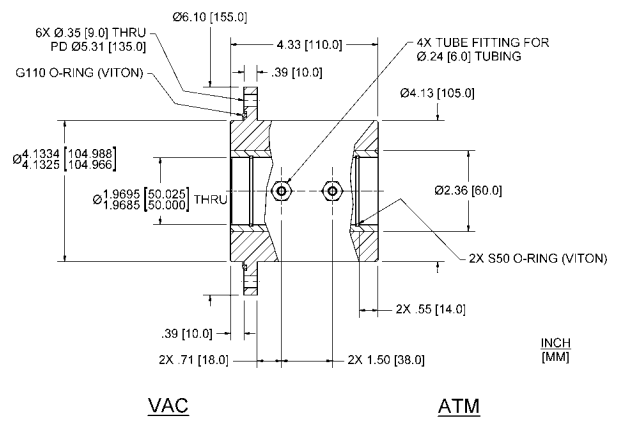
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HFL-050-NN**



**MODEL: HFL-050-WN**



**Part No.: 133621**

Fluid:	Standard
Bearing type/material:	6912
Dim A: Dimension to process bearings	15.5 mm
Dim B: Dimension between bearings	56 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	750 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	443 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1360 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	682 N-mm
Limiting Speed:	1695 rpm

<sup>†</sup> See page xi for the definition of starting torque.  
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

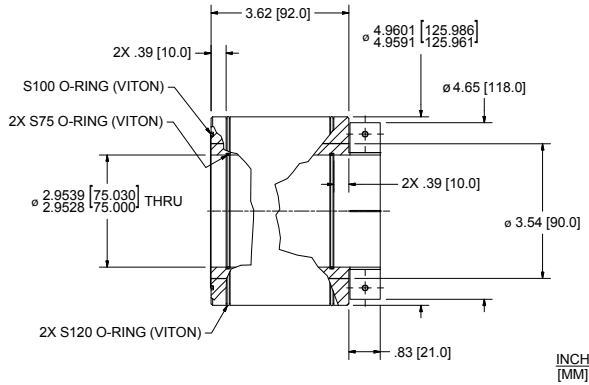
**Part No.: 133586**

Fluid:	Standard
Bearing type/material:	6912
Dim A: Dimension to process bearings	15.5 mm
Dim B: Dimension between bearings	83 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	750 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	443 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	1360 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	682 N-mm
Limiting Speed:	1695 rpm*

<sup>†</sup> See page xi for the definition of starting torque.  
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HTL-075-CN**

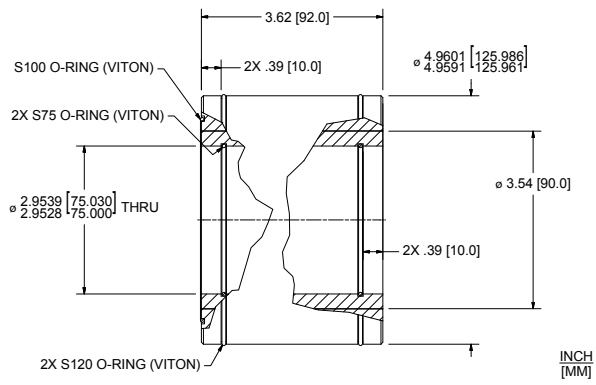


VAC

ATM

INCH  
[MM]

**MODEL: HTL-075-NN**



VAC

ATM

INCH  
[MM]

**Part No.: 133565**

Fluid:	Standard
Bearing type/material:	6818
Dim A: Dimension to process bearings	16.5 mm
Dim B: Dimension between bearings	64.5 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	2550 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	1510 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	4640 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	2320 N-mm
Limiting Speed:	935 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 121504**

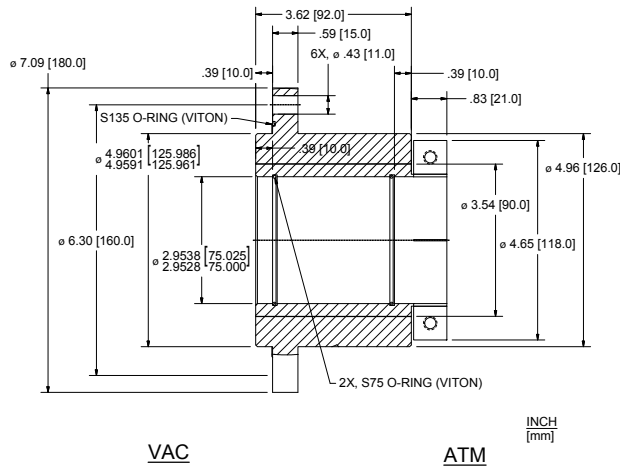
Fluid:	Standard
Bearing type/material:	6818
Dim A: Dimension to process bearings	17 mm
Dim B: Dimension between bearings	61.4 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	2890 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	1710 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	5260 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	2630 N-mm
Limiting Speed:	935 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.



**MODEL: HFL-075-CN**

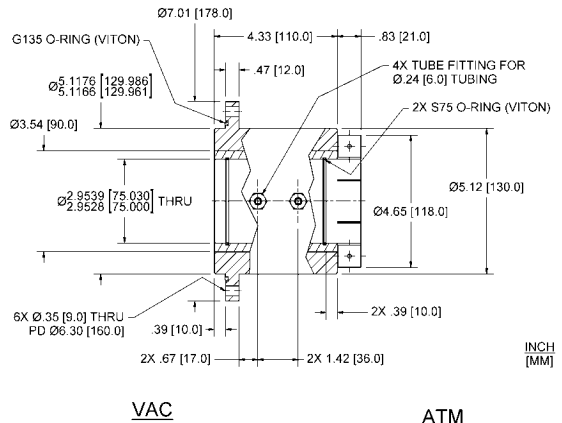


VAC

ATM

INCH  
[mm]

**MODEL: HFL-075-MN**



VAC

ATM

INCH  
[MM]

**Part No.: 133624**

Fluid:	Standard
Bearing type/material:	6818
Dim A: Dimension to process bearings	16.5 mm
Dim B: Dimension between bearings	64 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	2550 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	1510 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	4640 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	2320 N-mm
Limiting Speed:	935 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133597**

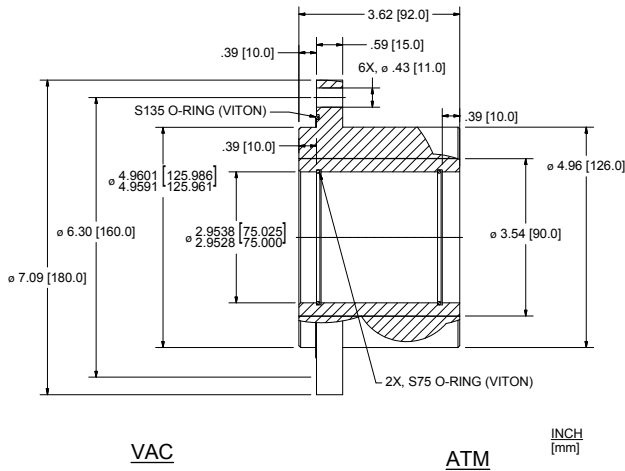
Fluid:	Standard
Bearing type/material:	6818
Dim A: Dimension to process bearings	15.5 mm
Dim B: Dimension between bearings	83 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	2550 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	1510 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	4640 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	2320 N-mm
Limiting Speed:	935 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

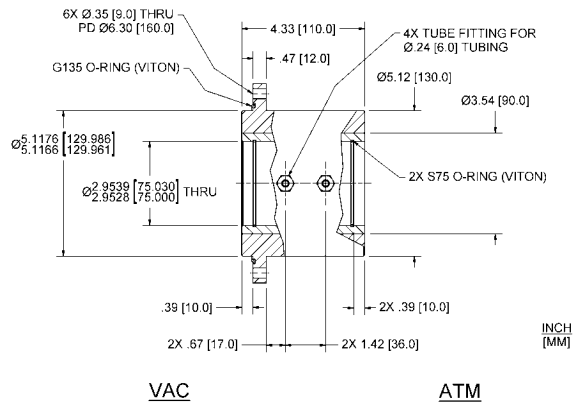
<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

**MODEL: HFL-075-NN**



**MODEL: HFL-075-WN**



**Part No.: 133623**

Fluid:	Standard
Bearing type/material:	6818
Dim A: Dimension to process bearings	16.5 mm
Dim B: Dimension between bearings	64 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	2550 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	1510 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	4640 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	2320 N-mm
Limiting Speed:	935 rpm

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

**Part No.: 133587**

Fluid:	Standard
Bearing type/material:	6818
Dim A: Dimension to process bearings	15.5 mm
Dim B: Dimension between bearings	83 mm
Predicted Starting Torque <sup>†</sup> 100 rpm:	2550 N-mm
Predicted Running Torque <sup>††</sup> 100 rpm:	1510 N-mm
Predicted Starting Torque <sup>†</sup> 1000 rpm:	4640 N-mm
Predicted Running Torque <sup>††</sup> 1000 rpm:	2320 N-mm
Limiting Speed:	935 rpm*

<sup>†</sup> See page xi for the definition of starting torque.

<sup>††</sup> Values are for a feedthrough at room temperature. Under continuous rotation the unit will warm-up, and the running torque will decrease.

\* Water cooling may permit significantly higher speed. Consult your Field Engineer.

# Standard Seal Specifications—Inch

## Inch Solid Shaft

Header-Size	Model Number	Part Number	Fluid	Bearing	Dim A	Dim B	S Torque 100rpm	R Torque 100rpm	S Torque 1000rpm	R Torque 1000rpm	Limit Speed [rpm]	Max Torque
0.1875 in	SS-188-SLAA	103971	Standard	SR3	0.97 in	0.9 in	0.12 in-oz	0.07 in-oz	0.21 in-oz	0.11 in-oz	10000	8.8 in-lb
0.1875 in	SS-188-SLES	103073	Standard	SR166	0.41 in	0.6 in	0.2 in-oz	0.12 in-oz	0.37 in-oz	0.19 in-oz	10000	12.9 in-lb
0.1875 in	SS-188-SLES	103074	Standard	SR166	1.34 in	0.6 in	0.2 in-oz	0.12 in-oz	0.37 in-oz	0.19 in-oz	10000	12.9 in-lb
0.1875 in	SS-188-SLES	103075	Standard	SR166	1.34 in	0.6 in	0.2 in-oz	0.12 in-oz	0.37 in-oz	0.19 in-oz	10000	12.9 in-lb
0.25 in	SS-250-SLAB	103978	Standard	SR4	1.3 in	1.17 in	0.19 in-oz	0.11 in-oz	0.34 in-oz	0.17 in-oz	10000	15.5 in-lb
0.25 in	SS-250-SLBD	103236	Standard	SR4	1.3 in	1.17 in	0.19 in-oz	0.11 in-oz	0.34 in-oz	0.17 in-oz	10000	15.5 in-lb
0.25 in	SS-250-SLBE	103237	Standard	SR4	1.3 in	1.17 in	0.19 in-oz	0.11 in-oz	0.34 in-oz	0.17 in-oz	10000	15.5 in-lb
0.25 in	SS-250-SLBE	103982	Standard	SR4	1.3 in	1.17 in	0.19 in-oz	0.11 in-oz	0.34 in-oz	0.17 in-oz	10000	15.5 in-lb
0.25 in	SS-250-SLBE	107519	Standard	SR4	0.94 in	1.2 in	0.19 in-oz	0.11 in-oz	0.34 in-oz	0.17 in-oz	10000	15.5 in-lb
0.25 in	SS-250-SLCA	103915	Standard	SR4	1.12 in	1.17 in	0.19 in-oz	0.11 in-oz	0.34 in-oz	0.17 in-oz	10000	15.5 in-lb
0.25 in	SS-250-SLCB	103532	Standard	SR4	1.51 in	1.17 in	0.19 in-oz	0.11 in-oz	0.34 in-oz	0.17 in-oz	10000	15.5 in-lb
0.375 in	SS-375-SLBE	103990	Standard	SR61	1.1 in	1.88 in	0.57 in-oz	0.34 in-oz	1.04 in-oz	0.52 in-oz	10000	67.1 in-lb
0.375 in	SS-375-SLBE	132910	Standard	R6, JT-66	1.1 in	1.17 in	0.2 in-oz	0.12 in-oz	0.36 in-oz	0.18 in-oz	10000	201 in-lb
0.375 in	SS-375-SLBF	103991	Standard	SR61	1.11 in	1.88 in	0.57 in-oz	0.34 in-oz	1.04 in-oz	0.52 in-oz	10000	67.1 in-lb
0.375 in	SS-375-SLFS	114892	Standard	SR61	2.05 in	2.68 in	0.57 in-oz	0.34 in-oz	1.04 in-oz	0.52 in-oz	10000	201 in-lb
0.375 in	SS-375-SLCB	103154	Standard	SR61	1.32 in	1.77 in	0.57 in-oz	0.34 in-oz	1.04 in-oz	0.52 in-oz	10000	67.1 in-lb
0.375 in	SS-375-SLCBW	103912	Standard	SR61	1.32 in	2.25 in	0.75 in-oz	0.44 in-oz	1.36 in-oz	0.68 in-oz	10000	67.1 in-lb
0.375 in	SS-375-CFCB	121060	Reactive Gas	DDL-1910	2.64 in	0.88 in	1.94 in-oz	1.15 in-oz	3.53 in-oz	1.77 in-oz	10000	67.1 in-lb
0.375 in	SS-375-SLKC	121062	Standard	SR61	1.12 in	1.77 in	0.57 in-oz	0.34 in-oz	1.04 in-oz	0.52 in-oz	10000	67.1 in-lb
0.5 in	SS-500-SLAE	103191	Standard	SR8	4.29 in	2.92 in	2.72 in-oz	1.61 in-oz	4.94 in-oz	2.47 in-oz	10000	178 in-lb
0.5 in	SS-500-SLAEW	103204	Standard	SR8	4.29 in	2.92 in	2.72 in-oz	1.61 in-oz	4.94 in-oz	2.47 in-oz	10000	178 in-lb
0.5 in	SS-500-SLFA	103244	Standard	SR8	1.5 in	2.92 in	1.78 in-oz	1.05 in-oz	3.23 in-oz	1.62 in-oz	10000	178 in-lb
0.5 in	SS-500-SLFAW	103182	Standard	SR8	1.5 in	2.92 in	2.44 in-oz	1.44 in-oz	4.44 in-oz	2.22 in-oz	10000	178 in-lb
0.5 in	SS-500-SLCB	103909	Standard	SR8	4.13 in	2.92 in	1.78 in-oz	1.05 in-oz	3.23 in-oz	1.62 in-oz	10000	178 in-lb
0.75 in	SS-750-SLAE	103193	Standard	SSR12	4.36 in	2.8 in	3.81 in-oz	2.25 in-oz	6.92 in-oz	3.46 in-oz	9000	67.1 in-lb
0.75 in	SS-750-SLAEW	103206	Standard	SSR12	4.36 in	2.8 in	4.76 in-oz	2.82 in-oz	8.66 in-oz	4.33 in-oz	9000	67.1 in-lb
0.75 in	SS-750-SLFA	103246	Standard	SSR12	1.57 in	2.89 in	3.81 in-oz	2.25 in-oz	6.92 in-oz	3.46 in-oz	9000	67.1 in-lb
0.75 in	SS-750-SLFAW	121101	Standard	SSR12	1.91 in	2.8 in	2.99 in-oz	1.77 in-oz	5.44 in-oz	2.72 in-oz	9000	67.1 in-lb
0.75 in	HD-750-SLFFW	103904	Standard	7305	3.26 in	3.65 in	19.3 in-oz	11.4 in-oz	35 in-oz	17.5 in-oz	6060	2470 in-lb
1 in	SS-1000-SLFA	121152	Standard	6906	2.52 in	2.21 in	29.2 in-oz	17.3 in-oz	53.1 in-oz	26.6 in-oz	3900	1960 in-lb
1 in	SS-1000-SLFAW	121159	Standard	6906	2.52 in	2.21 in	29.2 in-oz	17.3 in-oz	53.1 in-oz	26.6 in-oz	3900	1960 in-lb
1 in	SS-1000-CFCDW	121153	Reactive Gas	7206	5.94 in	1.28 in	44.2 in-oz	26.1 in-oz	80.4 in-oz	40.2 in-oz	5920	1630 in-lb

## Inch Hollow Shaft

Header-Size	Model Number	Part Number	Fluid	Bearing	Dim A	Dim B	S Torque 100rpm	R Torque 100rpm	S Torque 1000rpm	R Torque 1000rpm	Limit Speed [rpm]
0.5 in	HS-500-SLXSC	132405	Standard	16003	0.27 in	2.17 in	4.92 in-oz	2.9 in-oz	8.94 in-oz	4.47 in-oz	9000
0.5 in	HS-500-SLFAC	103358	Standard	6903	0.3 in	2.13 in	4.92 in-oz	2.9 in-oz	8.94 in-oz	4.47 in-oz	9000
0.5 in	HS-500-SLFACW	105395	Standard	6903	0.42 in	2.13 in	8.6 in-oz	5.08 in-oz	15.6 in-oz	7.82 in-oz	9000
0.75 in	HS-750-CFFBWPS	107426	Reactive Gas	7007	2.95 in	0.55 in	134 in-oz	79.1 in-oz	243 in-oz	122 in-oz	3710
0.75 in	CM-750-CLFSWC	132121	Standard	6007	2.62 in	2.31 in	25.3 in-oz	15 in-oz	46 in-oz	23 in-oz	3710
1 in	HS-1000-SLXSC	103319	Standard	6906	0.26 in	2.21 in	29.2 in-oz	17.3 in-oz	53.1 in-oz	26.6 in-oz	3900
1 in	HS-1000-SLFBC	103359	Standard	6906	0.34 in	2.13 in	29.2 in-oz	17.3 in-oz	53.1 in-oz	26.6 in-oz	3900
1 in	HS-1000-SLFBCW	105396	Standard	6906	0.27 in	2.21 in	29.2 in-oz	17.3 in-oz	53.1 in-oz	26.6 in-oz	3900
1 in	HS-1000-CFFBWP	107423	Reactive Gas	7007	2.95 in	0.55 in	134 in-oz	79.1 in-oz	243 in-oz	122 in-oz	3710
1 in	CM-1000-CLFSWC	132122	Standard	6007	2.62 in	2.31 in	21.6 in-oz	12.8 in-oz	39.3 in-oz	19.7 in-oz	3710
1.25 in	HS-1250-CFFBWPS	107427	Reactive Gas	7009	2.99 in	0.63 in	397 in-oz	234 in-oz	721 in-oz	360 in-oz	2370
1.5 in	HS-1500-SLXSC	103320	Standard	6909	0.33 in	2.33 in	96.9 in-oz	57.2 in-oz	176 in-oz	88.1 in-oz	2320
1.5 in	HS-1500-SLFBC	103360	Standard	6909	0.33 in	2.33 in	96.9 in-oz	57.2 in-oz	176 in-oz	88.1 in-oz	2320
1.5 in	HS-1500-SLFBCW	103354	Standard	6909	0.33 in	2.33 in	71.1 in-oz	42 in-oz	129 in-oz	64.7 in-oz	2320
1.5 in	HS-1500-CFFBWP	107424	Reactive Gas	7009	2.99 in	0.63 in	397 in-oz	234 in-oz	721 in-oz	360 in-oz	2370
1.5 in	HS-1500-CFFCWPS	107428	Reactive Gas	7012	3.16 in	0.69 in	800 in-oz	473 in-oz	1450 in-oz	727 in-oz	1560
1.5 in	CM-1500-CLFSWC	132123	Standard	6012	2.77 in	2.08 in	131 in-oz	77.7 in-oz	239 in-oz	120 in-oz	1695
1.75 in	HS-1750-CFFBWP	107425	Reactive Gas	7012	3.16 in	0.69 in	800 in-oz	473 in-oz	1450 in-oz	727 in-oz	1560
2 in	HS-2000-SLXSC	103321	Standard	6911	0.43 in	2.37 in	164 in-oz	96.7 in-oz	298 in-oz	149 in-oz	1640
2 in	HS-2000-SLFBC	103361	Standard	6911	0.43 in	2.37 in	164 in-oz	96.7 in-oz	298 in-oz	149 in-oz	1640
2 in	HS-2000-SLFBCW	103921	Standard	6911	0.43 in	2.37 in	191 in-oz	113 in-oz	347 in-oz	174 in-oz	1640
2 in	CM-2000-CLFSWC	122151	Standard	6012	2.77 in	2.08 in	91 in-oz	53.8 in-oz	165 in-oz	82.7 in-oz	1695
2.5 in	CM-2500-CLFSWC	132124	Standard	6918	2.77 in	2.83 in	444 in-oz	262 in-oz	808 in-oz	404 in-oz	940
3 in	HS-3000-SLXSC	133759	Standard	6917	0.64 in	2.3 in	258 in-oz	152 in-oz	469 in-oz	234 in-oz	880
3 in	HS-3000-SLFEC	133218	Standard	6917	0.64 in	2.51 in	258 in-oz	152 in-oz	469 in-oz	234 in-oz	880
3 in	HS-3000-SLFBCW	133760	Standard	6917	0.64 in	2.51 in	258 in-oz	152 in-oz	469 in-oz	234 in-oz	880
3 in	CM-3000-CLFSWC	132125	Standard	6918	2.77 in	2.83 in	444 in-oz	262 in-oz	808 in-oz	404 in-oz	940

# Standard Seal Specifications—Metric

## Metric Solid Shaft

Header-Size	Model Number	Part Number	Fluid	Bearing	Dim A	Dim B	S Torque 100rpm	R Torque 100rpm	S Torque 1000rpm	R Torque 1000rpm	Limit Speed [rpm]	Max Torque
5 mm	SSL-005-NN	133601	Standard	695	23.5 mm	22.5 mm	0.64 N-mm	0.35 N-mm	1.06 N-mm	0.57 N-mm	10000	0.69 N-m
5 mm	SNL-005-NN	133598	Standard	6908	19.3 mm	22.6 mm	0.64 N-mm	0.35 N-mm	1.06 N-mm	0.57 N-mm	10000	0.69 N-m
5 mm	SFL-005-NN	133566	Standard	695	20 mm	22.7 mm	0.64 N-mm	0.35 N-mm	1.06 N-mm	0.57 N-mm	10000	0.69 N-m
6 mm	SSL-006-NN	133602	Standard	627	32.5 mm	28 mm	1.06 N-mm	0.64 N-mm	1.91 N-mm	0.99 N-mm	10000	1.41 N-m
6 mm	SNL-006-NN	133029	Standard	SR61	22.9 mm	33.3 mm	2.9 N-mm	1.7 N-mm	5.3 N-mm	2.61 N-mm	10000	2.89 N-m
6 mm	SFL-006-NN	133567	Standard	627	28.5 mm	28 mm	1.06 N-mm	0.64 N-mm	1.91 N-mm	0.99 N-mm	10000	1.41 N-m
6 mm	SFL-006-WN	133572	Standard	636	37.5 mm	40 mm	1.06 N-mm	0.64 N-mm	1.91 N-mm	0.99 N-mm	10000	1.41 N-m
10 mm	SSL-010-NN	133603	Standard	6200	61.5 mm	35 mm	4.87 N-mm	2.9 N-mm	8.9 N-mm	4.45 N-mm	10000	8.92 N-m
10 mm	SNL-010-NN	121503	Standard	6001	30.8 mm	35.1 mm	5.44 N-mm	3.25 N-mm	9.89 N-mm	4.94 N-mm	10000	13.5 N-m
10 mm	SFL-010-NN	131383	Standard	6001	32.1 mm	35.1 mm	5.44 N-mm	3.25 N-mm	9.89 N-mm	4.94 N-mm	10000	13.5 N-m
10 mm	SFL-010-WN	133573	Standard	6200	59 mm	52.5 mm	4.87 N-mm	2.9 N-mm	8.9 N-mm	4.45 N-mm	10000	8.92 N-m
12 mm	SSL-012-WN	133576	Standard	6301	83.5 mm	67.5 mm	8.4 N-mm	5.01 N-mm	15.3 N-mm	7.63 N-mm	10000	16.6 N-m
12 mm	SNL-012-NN	133599	Standard	6201	42 mm	43 mm	8.4 N-mm	5.01 N-mm	15.3 N-mm	7.63 N-mm	10000	16.6 N-m
12 mm	SFL-012-NN	133568	Standard	6201	52 mm	43 mm	8.4 N-mm	5.01 N-mm	15.3 N-mm	7.63 N-mm	10000	16.6 N-m
12 mm	SFL-012-WN	133574	Standard	6301	83.5 mm	67.5 mm	8.4 N-mm	5.01 N-mm	15.3 N-mm	7.63 N-mm	10000	16.6 N-m
20 mm	SSL-020-NN	133604	Standard	6004	83 mm	37 mm	39 N-mm	23 N-mm	70.8 N-mm	35.4 N-mm	8385	88.4 N-m
20 mm	SSL-020-WN	133577	Standard	6004	85 mm	69 mm	39 N-mm	23 N-mm	70.8 N-mm	35.4 N-mm	8385	88.4 N-m
20 mm	SFL-020-NN	133569	Standard	6004	51 mm	37 mm	39 N-mm	23 N-mm	70.8 N-mm	35.4 N-mm	8385	88.4 N-m
20 mm	SFL-020-WN	133575	Standard	6004	74 mm	63 mm	39 N-mm	23 N-mm	70.8 N-mm	35.4 N-mm	8385	88.4 N-m
30 mm	SFL-030-NN	133570	Standard	6006	65.5 mm	54 mm	132 N-mm	77.8 N-mm	239 N-mm	120 N-mm	4645	320 N-m
40 mm	SFL-040-NN	133571	Standard	6908	76 mm	63 mm	312 N-mm	184 N-mm	567 N-mm	284 N-mm	3055	783 N-m

# Metric Hollow Shaft

Header-Size	Model Number	Part Number	Fluid	Bearing	Dim A	Dim B	S Torque 100rpm	R Torque 100rpm	S Torque 1000rpm	R Torque 1000rpm	Limit Speed [rpm]
10 mm	HTL-010-CN	133558	Standard	16003	10 mm	31 mm	26.62 N-mm	15.75 N-mm	48.37 N-mm	24.15 N-mm	10000
10 mm	HTL-010-NN	133554	Standard	16003	10 mm	31 mm	26.62 N-mm	15.75 N-mm	48.37 N-mm	24.15 N-mm	10000
10 mm	HFL-010-CN	133606	Standard	16003	10 mm	31 mm	26.62 N-mm	15.75 N-mm	48.37 N-mm	24.15 N-mm	10000
10 mm	HFL-010-MN	133588	Standard	16003	9 mm	51.5 mm	26.62 N-mm	15.75 N-mm	48.37 N-mm	24.15 N-mm	10000
10 mm	HFL-010-NN	133605	Standard	16003	10 mm	31 mm	26.62 N-mm	15.75 N-mm	48.37 N-mm	24.15 N-mm	10000
10 mm	HFL-010-WN	133578	Standard	16003	9 mm	51.5 mm	26.62 N-mm	15.75 N-mm	48.37 N-mm	24.15 N-mm	10000
12 mm	HTL-012-CN	133559	Standard	16003	10 mm	31 mm	36.79 N-mm	21.75 N-mm	66.87 N-mm	33.40 N-mm	8625
12 mm	HTL-012-NN	132761	Standard	16003	9.4 mm	31.5 mm	30.4 N-mm	17.9 N-mm	55.2 N-mm	27.6 N-mm	8625
12 mm	HFL-012-CN	133608	Standard	16003	10 mm	31 mm	36.79 N-mm	21.75 N-mm	66.87 N-mm	33.40 N-mm	8625
12 mm	HFL-012-MN	133589	Standard	16003	9 mm	51.5 mm	36.79 N-mm	21.75 N-mm	66.87 N-mm	33.40 N-mm	8625
12 mm	HFL-012-NN	133607	Standard	16003	10 mm	31 mm	36.79 N-mm	21.75 N-mm	66.87 N-mm	33.40 N-mm	8625
12 mm	HFL-012-WN	133579	Standard	16003	9 mm	51.5 mm	36.79 N-mm	21.75 N-mm	66.87 N-mm	33.40 N-mm	8625
20 mm	HTL-020-CN	133560	Standard	60/28	11 mm	42 mm	84.5 N-mm	49.9 N-mm	153.5 N-mm	76.8 N-mm	4640
20 mm	HTL-020-NN	133600	Standard	60/28	11 mm	42 mm	84.5 N-mm	49.9 N-mm	153.5 N-mm	76.8 N-mm	4640
20 mm	HFL-020-CN	133610	Standard	60/28	11 mm	42 mm	84.5 N-mm	49.9 N-mm	153.5 N-mm	76.8 N-mm	4640
20 mm	HFL-020-MN	133590	Standard	60/28	13 mm	79 mm	84.5 N-mm	49.9 N-mm	153.5 N-mm	76.8 N-mm	4640
20 mm	HFL-020-NN	133609	Standard	60/28	11 mm	42 mm	84.5 N-mm	49.9 N-mm	153.5 N-mm	76.8 N-mm	4640
20 mm	HFL-020-WN	133580	Standard	60/28	13 mm	79 mm	84.5 N-mm	49.9 N-mm	153.5 N-mm	76.8 N-mm	4640
24 mm	HTL-024-CN	133433	Standard	6006	10.9 mm	42 mm	78.2 N-mm	46.3 N-mm	142 N-mm	71.2 N-mm	3720
24 mm	HTL-024-NN	133097	Standard	6006	10.9 mm	42 mm	78.2 N-mm	46.3 N-mm	142 N-mm	71.2 N-mm	3720
24 mm	HFL-024-CN	133612	Standard	6006	12.5 mm	41 mm	78.2 N-mm	46.3 N-mm	142 N-mm	71.2 N-mm	3720
24 mm	HFL-024-MN	133591	Standard	6006	10.5 mm	84 mm	78.2 N-mm	46.3 N-mm	142 N-mm	71.2 N-mm	3720
24 mm	HFL-024-NN	133611	Standard	6006	12.5 mm	41 mm	78.2 N-mm	46.3 N-mm	142 N-mm	71.2 N-mm	3720
24 mm	HFL-024-WN	133581	Standard	6006	10.5 mm	84 mm	78.2 N-mm	46.3 N-mm	142 N-mm	71.2 N-mm	3720
26 mm	HFL-026-CN	133614	Standard	60/32	13.5 mm	39 mm	225 N-mm	133 N-mm	409 N-mm	204 N-mm	3280
26 mm	HFL-026-MN	133592	Standard	60/32	14.5 mm	90 mm	225 N-mm	133 N-mm	409 N-mm	204 N-mm	3280
26 mm	HFL-026-NN	133613	Standard	60/32	13.5 mm	39 mm	225 N-mm	133 N-mm	409 N-mm	204 N-mm	3280
26 mm	HFL-026-WN	133582	Standard	60/32	14.5 mm	90 mm	225 N-mm	133 N-mm	409 N-mm	204 N-mm	3280
32 mm	HTL-032-CN	133561	Standard	6908	13 mm	40 mm	286 N-mm	169 N-mm	519 N-mm	260 N-mm	2920
32 mm	HTL-032-NN	133555	Standard	6908	13 mm	40 mm	286 N-mm	169 N-mm	519 N-mm	260 N-mm	2920
32 mm	HFL-032-CN	133616	Standard	6908	13 mm	40 mm	286 N-mm	169 N-mm	519 N-mm	260 N-mm	2920
32 mm	HFL-032-MN	133593	Standard	6908	12 mm	92 mm	286 N-mm	169 N-mm	519 N-mm	260 N-mm	2920
32 mm	HFL-032-NN	133615	Standard	6908	13 mm	40 mm	286 N-mm	169 N-mm	519 N-mm	260 N-mm	2920
32 mm	HFL-032-WN	133583	Standard	6908	12 mm	92 mm	286 N-mm	169 N-mm	519 N-mm	260 N-mm	2920
38 mm	HTL-038-CN	133562	Standard	6910	13 mm	40 mm	357 N-mm	211 N-mm	649 N-mm	324 N-mm	2620
38 mm	HTL-038-NN	133556	Standard	6910	13 mm	40 mm	357 N-mm	211 N-mm	649 N-mm	324 N-mm	2620
38 mm	HFL-038-CN	133618	Standard	6910	13 mm	40 mm	357 N-mm	211 N-mm	649 N-mm	324 N-mm	2620
38 mm	HFL-038-MN	133594	Standard	6910	13 mm	77 mm	357 N-mm	211 N-mm	649 N-mm	324 N-mm	2620
38 mm	HFL-038-NN	133617	Standard	6910	13 mm	40 mm	357 N-mm	211 N-mm	649 N-mm	324 N-mm	2620
38 mm	HFL-038-WN	133584	Standard	6910	13 mm	77 mm	357 N-mm	211 N-mm	649 N-mm	324 N-mm	2620
40 mm	HTL-040-CN	133563	Standard	6910	13 mm	40 mm	439 N-mm	259 N-mm	798 N-mm	399 N-mm	2370
40 mm	HTL-040-NN	133557	Standard	6910	13 mm	40 mm	439 N-mm	259 N-mm	798 N-mm	399 N-mm	2370
40 mm	HFL-040-CN	133620	Standard	6910	13 mm	40 mm	439 N-mm	259 N-mm	798 N-mm	399 N-mm	2370
40 mm	HFL-040-MN	133595	Standard	6910	13 mm	77 mm	439 N-mm	259 N-mm	798 N-mm	399 N-mm	2370
40 mm	HFL-040-NN	133619	Standard	6910	13 mm	40 mm	439 N-mm	259 N-mm	798 N-mm	399 N-mm	2370
40 mm	HFL-040-WN	133585	Standard	6910	13 mm	77 mm	439 N-mm	259 N-mm	798 N-mm	399 N-mm	2370
50 mm	HTL-050-CN	133564	Standard	6912	15.5 mm	56 mm	750 N-mm	443 N-mm	1360 N-mm	682 N-mm	1695
50 mm	HTL-050-NN	120509	Standard	6912	12.5 mm	55.3 mm	997 N-mm	589 N-mm	1810 N-mm	907 N-mm	1695
50 mm	HFL-050-CN	133622	Standard	6912	15.5 mm	56 mm	594 N-mm	351 N-mm	1080 N-mm	540 N-mm	1695
50 mm	HFL-050-MN	133596	Standard	6912	15.5 mm	83 mm	750 N-mm	443 N-mm	1360 N-mm	682 N-mm	1695
50 mm	HFL-050-NN	133621	Standard	6912	15.5 mm	56 mm	750 N-mm	443 N-mm	1360 N-mm	682 N-mm	1695
50 mm	HFL-050-WN	133586	Standard	6912	15.5 mm	83 mm	750 N-mm	443 N-mm	1360 N-mm	682 N-mm	1695
75 mm	HTL-075-CN	133565	Standard	6818	16.5 mm	64.5 mm	2550 N-mm	1510 N-mm	4640 N-mm	2320 N-mm	935
75 mm	HTL-075-NN	121504	Standard	6818	17 mm	61.4 mm	2890 N-mm	1710 N-mm	5260 N-mm	2630 N-mm	935
75 mm	HFL-075-CN	133624	Standard	6818	16.5 mm	64 mm	2550 N-mm	1510 N-mm	4640 N-mm	2320 N-mm	935
75 mm	HFL-075-MN	133597	Standard	6818	15.5 mm	83 mm	2550 N-mm	1510 N-mm	4640 N-mm	2320 N-mm	935
75 mm	HFL-075-NN	133623	Standard	6818	16.5 mm	64 mm	2550 N-mm	1510 N-mm	4640 N-mm	2320 N-mm	935
75 mm	HFL-075-WN	133587	Standard	6818	15.5 mm	83 mm	2550 N-mm	1510 N-mm	4640 N-mm	2320 N-mm	935



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