

DEUBLIN®
Engineered for Performance



MULTI-PASSAGE ROTATING UNIONS

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DEUBLIN Multi-Passage Rotating Unions

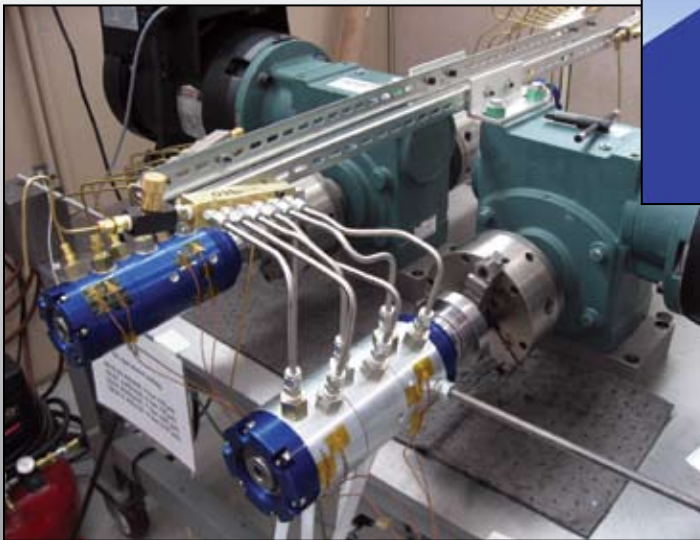
A rotating union connects a stationary pressurized supply line to a rotating machine part such as a cylinder, roll, spindle, clutch, etc. It can be used to convey virtually any liquid or gas medium: steam for heating, water or water/glycol solutions for cooling, hydraulic fluids, cutting fluids, air, inert gas or even a vacuum. The task becomes more complicated when more than one medium must be conveyed simultaneously. This is the role of a multi-passage union – to provide multiple independent passages for the same or several different media to different rotating feed points within the same axis.

Typically, each passage is isolated from all other passages and different media cannot be allowed to mix. The key to reliable function of a multi-passage union thus lies in the sealing technology. Different seal types are indicated by the operating conditions – temperature, pressure, rotation speed, torque, medium chemistry and passage size.

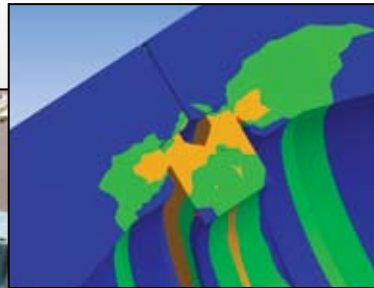
Because each application is unique in terms of passage diameter, number of passages, flange configuration and operating conditions, **DEUBLIN** brings to bear unparalleled engineering expertise and experience to match your operational needs. Whether a standard model can be applied or a custom solution is indicated, you can rely on **DEUBLIN** for the optimal solution and long-term performance reliability.

TYPICAL APPLICATIONS FOR MULTI-PASSAGE UNIONS

- Steel industry: ladle turrets for continuous casting operations
- Semiconductor industry: Physical Vapor Deposition (PVD), wafer processing or Chemical Mechanical Planarization (CMP) operations
- Plastics & rubber industries: injection and rotary molding operations
- Machining operations: workholding and clamping functions
- Aerospace manufacturing and flight simulators
- Industrial cranes
- Rail transportation
- De-scaling operations
- ..and many more



DEUBLIN Multi-Passage unions testing fixture.



Designed and engineered with Finite Element Analysis (FEA), and validated by extensive testing.

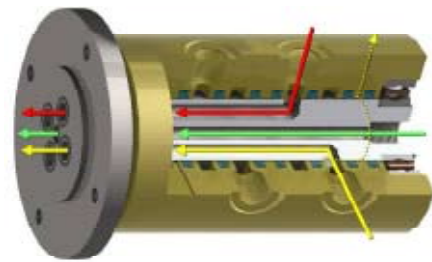
DEUBLIN Sealing Solutions

DEUBLIN multi-passge unions draw from three different sealing technologies, optimized for the application's rotational speed and torque, delivered media pressure, operating temperature, physical size and other factors. Hardened chrome sealing surfaces are standard to ensure minimal wear and a long service life.

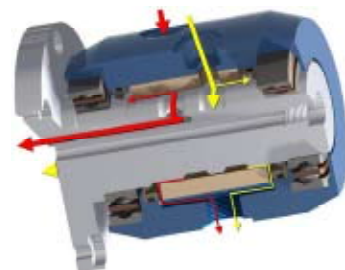
- **Plastomeric Seals** – essentially a combination of plastic and elastomer – use custom formulated compounds to offer superior resistance to high temperatures and pressures compared to traditional elastomers. Seal geometry and treatment of the rotor mating surface must be carefully matched to the rotational speed and to the media chemistry and pressure for the specific application. Plastomeric seals are appropriate for slow or intermittent rotation applications.
- **Hydrostatic Seals** contain high-pressure fluids without physical contact between surfaces, even at high rotating speeds. Fluid circulates through the precisely controlled clearance between the stationary and rotating surfaces – as little as 10 microns – to provide reliable operation with little torque. Traditionally, multi-passge rotating unions with hydrostatic seals use the same medium in all passages, due to the possibility of cross-talk between passages. For most hydraulic operations, this is not a concern. For other operations, special designs can overcome this cross-talk.
- **Mechanical Seals** can handle high pressure and high speed simultaneously, similar to hydrostatic seals. Because mechanical seals are in positive physical contact, media migration across the sealing surfaces is virtually eliminated. DEUBLIN's advanced ceramic and metallic seal materials require very little torque and minimize wear and media contamination for an exceptional operating life.

DEUBLIN's experienced engineers will help choose the right sealing technology for your specific operation.

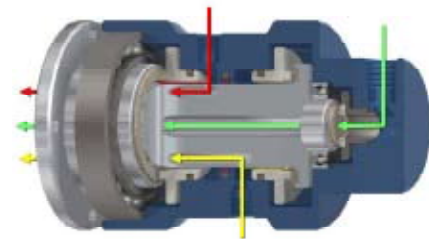
TANDEM ROTATING UNION WITH PLASTOMERIC SEALS



ROTATING UNION WITH HYDROSTATIC SEALS



ROTATING UNION WITH MECHANICAL SEALS



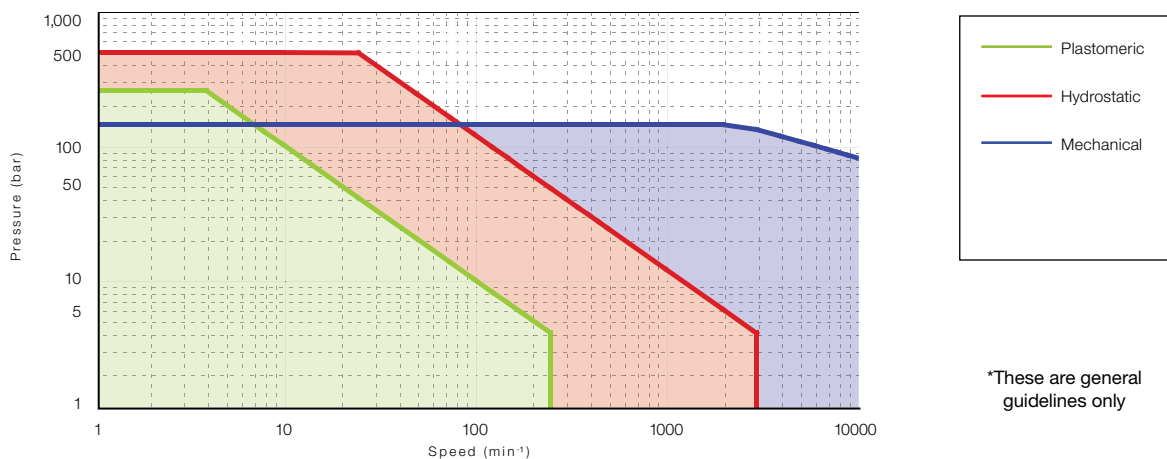
DEUBLIN Modular Design

DEUBLIN's approach to multi-passagage union design is uniquely modular, in which modules can be combined to configure the required number of media passages and ports from 2 to 12. This configuration results in faster delivery, lower spare parts inventory requirements and faster, easier maintenance.

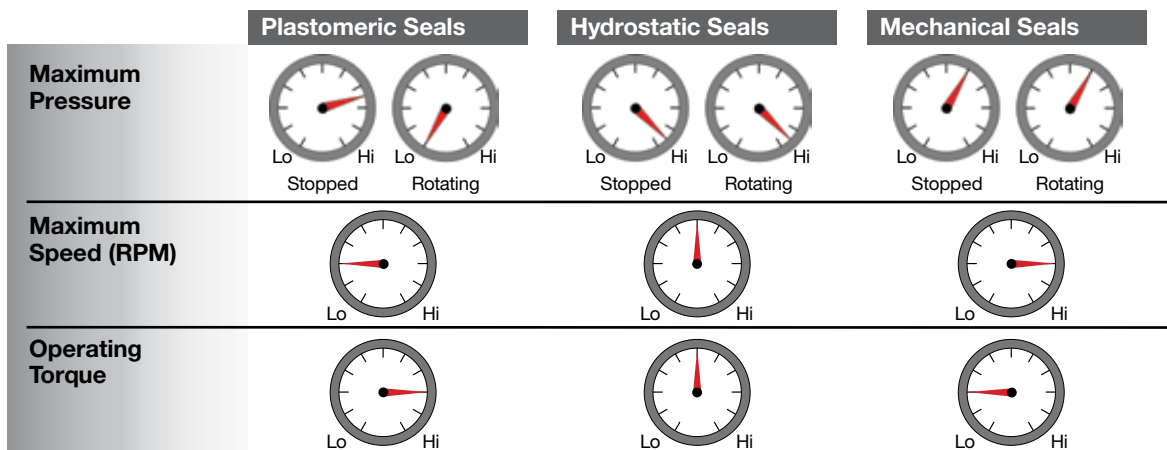
Each two-port module incorporates:

- Standard chrome-plated rotor (proven superior to "hardened and ground" rotors)
- Dual, widely-spaced ball bearings to ensure smooth running and extended seal life, while absorbing large side loads
- Standard housing for each diameter that accommodates G, SAE, NPT ports and can be provided in aluminum, carbon steel, stainless steel or brass
- Full range of port sizes available from 1/8" to 1 1/4"
- Radial ports for medium passages and drain lines
- Electrical slip rings for multiple circuits as required
- Different seal materials and technologies are employed based on application pressure up to 400 bar (5800 psi), operating temperature, passage size, rotational speed and torque

COMPARISON OF SEAL TECHNOLOGY PERFORMANCE



COMPARISON OF SEAL TECHNOLOGY CHARACTERISTICS



Application Worksheet

Interested in how **DEUBLIN** can fulfill your need for a multi-passage union? Simply complete the questionnaire, and fax to 1-847-689-8690. A **DEUBLIN** application specialist will contact you with a recommendation. To specify a multi-passage union for your application, start by making one selection from each category below:

PASSAGES ¹	PORT STYLE ²	PORT DIAMETER ²	MEDIA ²
<input type="checkbox"/> 2 passages	<input type="checkbox"/> G (BSPP)	<input type="checkbox"/> 1/8" (-2 for SAE)	<input type="checkbox"/> Hydraulic oil
<input type="checkbox"/> 4 passages	<input type="checkbox"/> NPT	<input type="checkbox"/> 1/4" (-4 for SAE)	<input type="checkbox"/> Water
<input type="checkbox"/> 6 passages	<input type="checkbox"/> PT (BSPT)	<input type="checkbox"/> 3/8" (-6 for SAE)	<input type="checkbox"/> Coolant
<input type="checkbox"/> 8 passages	<input type="checkbox"/> SAE	<input type="checkbox"/> 1/2" (-8 for SAE)	<input type="checkbox"/> Air/inert gas
<input type="checkbox"/> 10 passages	<input type="checkbox"/> Other _____	<input type="checkbox"/> 3/4" (-12 for SAE)	<input type="checkbox"/> Vacuum
<input type="checkbox"/> 12 passages		<input type="checkbox"/> 1" (-16 for SAE)	
		<input type="checkbox"/> 1 1/4" (-20 for SAE)	

FLANGE	HOUSING MATERIAL	ELECTRICAL SLIP RING
<input type="checkbox"/> Statically sealed media ports, standard spacing	<input type="checkbox"/> Anodized aluminum (standard for ≤ 250 bar)	<input type="checkbox"/> None
<input type="checkbox"/> Statically sealed media ports, custom spacing	<input type="checkbox"/> Carbon steel with zinc chromate plating (standard for 250-400 bar)	<input type="checkbox"/> 6 circuits, each 2A at 240 VAC/210 VDC
<input type="checkbox"/> Threaded media ports, radial only	<input type="checkbox"/> Stainless steel	<input type="checkbox"/> 6 circuits, 3 at 10A + 3 at 2A, 120 VAC
<input type="checkbox"/> Threaded media ports, axial only	<input type="checkbox"/> Brass	<input type="checkbox"/> 12 circuits, each 2A at 240 VAC/210 VDC
<input type="checkbox"/> Threaded media ports, axial & radial		<input type="checkbox"/> 18 circuits, each 2A at 240 VAC/210 VDC
		<input type="checkbox"/> 24 circuits, each 2A at 240 VAC/210 VDC
		<input type="checkbox"/> 24 circuits, 4 each 10A + 20 at 2A, 240 VAC
		<input type="checkbox"/> 36 circuits, each 2A at 240 VAC
		<input type="checkbox"/> 56 circuits, each 2A at 240 VAC
		<input type="checkbox"/> Other (please call)

¹ For applications with odd number of passages, select the next larger even number and plug the extra port

² Port style, port diameter and media may be specified separately for each pair of passages. For example, a 6-passage union may be configured with 1/4" ports for hydraulic oil and 1/8" ports for air.

PRESSURE (PSI)	ROTATION TYPE	TORQUE REQUIREMENT
_____	<input type="checkbox"/> Continuous	<input type="checkbox"/> Not Important
SPEED (RPM)	<input type="checkbox"/> Intermittent and bi-directional	<input type="checkbox"/> Important
Operating _____	degrees of rotation/cycle _____	Specify (ft lbs. or Nm) _____
Maximum _____	<input type="checkbox"/> Intermittent and uni-directional	
	degrees of rotation/cycle _____	
	cycles/hour _____	

Name: _____ Title: _____

Company: _____

Application Description: _____

Location (City/State or Province/Country): _____

Telephone: _____ Fax: _____

Email: _____

Questions or Concerns? _____



Since its establishment in 1945, the DEUBLIN COMPANY has consistently adhered to a policy of producing the best product of its kind in the market. The result of this policy has been constant growth through the years. For this progress we are grateful to our many loyal customers. We cordially invite you to visit our modern manufacturing facilities in Waukegan, Illinois; Hofheim-Wallau, Germany; Monteveglio, Italy and Dalian, China.

Sincerely,

Donald L. Deubler,
Chairman of the Board



Global Headquarters in Waukegan, Illinois, U.S.A.



Hofheim, Germany



Monteveglio, Italy



Dalian, China

AMERICAS

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