ENGINEERING CATALOG

MT123 US

DEUBLIN®

Engineered for Performance

ROTATING UNIONS

For Machine Tools, Machining Centers and Transfer Lines

www.deublin.com

4 STEPS TO FINDING THE CORRECT UNION SERIES FOR YOUR MACHINE TOOL APPLICATION

1 Does the machine have a single supply connection (for example, coolant) or multiple connections (such as a combination of coolant, air, and hydraulic oil)?

2 What fluid or fluids must be transferred by the rotating union?

3 What is the maximum pressure required?

4 What is the maximum spindle speed required?

1 Number of Inputs	2 Fluid(s) to Transfer	3 Maximum Pressure	4 Maximum Speed (rpm)				
			up to 10K	up to 15K	up to 20K	up to 36K	over 36K
Single	Coolant or MQL (always present during rotation)	up to 70 bar	1116 series (p.11)	1101 series (p.12)	1108 series (p.13)		
		up to 140 bar	1117 series (p. 21), Multi-spindle unions (p. 22)				
	Coolant or MQL (rotation with no coolant is possible)	up to 70 bar	902 series (p.15)	1109 series (p.16, 17)			
		up to 140 bar	1121, 1129 and 1151 series (p. 23-25)				
	Air + Coolant/MQL (rotation with air pressure is possible)	up to 140 bar	1114 series (p.18, 19)				1154 series (p. 26)
	Air only	up to 10 bar	1115 series (p. 20)	1129 series (p. 25)			
	Hydraulic Oil	up to 70 bar	1005 series (p.14)	Contact *DEUBLIN*			
Multiple	Hydraulic Oil + Hydraulic Oil	up to 100 bar	2620-00x-xxx (p. 28)		Contact *DEUBLIN*		
		up to 140 bar	2620-04x-xxx (p. 29)				
	Hydraulic Oil + Air	up to 70 bar	2620-30x-xxx 2620-32x-xxx 2620-10x-xxx 2620-12x-xxx (p. 28)	2620-34x-xxx 2620-36x-xxx (p. 29)			
		up to 140 bar	2620-14x-xxx 2620-16x-xxx (p. 29)				
	Coolant or MQL + Air	up to 70 bar	2620-40x-xxx 2620-42x-xxx 2620-20x-xxx 2620-22x-xxx (p. 28)	2620-44x-xxx 2620-46x-xxx (p.29)	1139 series (p. 27)		
		up to 140 bar	2620-24x-xxx 2620-26x-xxx (p.29)				
	Coolant + Hydraulic Oil (with no interpassage leakage)	up to 140 bar	2630-1xx-xxx (p. 30)	Contact *DEUBLIN*			
	Air + Air	up to 10 bar	2620-5xx-xxx (p.28)				
	Coolant + Oil + Air	up to 140 bar	2630, 2640, 2650 series (p.30)				
	Air + Oil	up to 60 bar ≤ 250 rpm	1379 & 1479 series (p.31)				

Bearing-supported (one-piece) unions Bearingless (two-piece) unions Multi-passage unions

HOW TO GET THE MOST VALUE FROM THIS CATALOG

If you are less familiar with machine tool applications of rotating unions, or if you would like a quick review, please read the "Information" sections first. These sections contain important details about designing, installing, and using rotating unions in machine tools.

If you understand the principles of designing machines to use rotating unions completely, please use either the Selection Chart on the inside cover or Table of Contents to find the appropriate product page. These pages contain dimensions, performance data, and other necessary application information.

If you don't see what you need, please contact your local *DEUBLIN* office directly. Telephone, email, and address information are shown on the back cover of this catalog. Unions in this catalog are representative of most common applications, but other variations are available. *DEUBLIN* can customize the interface between machine and union, such as hose connections or rotor threading, to your specifications. Also, *DEUBLIN* easily can develop complete unions to meet special pressure, speed, or media requirements.

"If you don't see it, we probably have it. If we don't have it, we can create it."

DEUBLIN 1109 on vertical machining center

TABLE OF CONTENTS

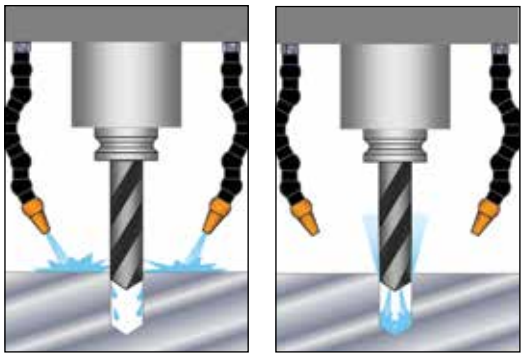
OPERATING PRINCIPLES OF ROTATING UNIONS

Advantage of Through-Spindle Coolant (TSC)

Nearly all modern machine tools and machining centers are equipped with so-called “flood coolant”. High-speed cutting tools require both cooling and lubrication to reduce the rate of tool wear and to prevent overheating, which degrade the tool’s strength. Flood coolant systems spray coolant fluid onto the work piece near the cutting tool. But for many machining operations, such as milling or hole drilling, these systems are less effective at getting coolant fluid to the cutting edge.

Without coolant, the flutes of the cutting tool can become packed with chips and the cutting edge loses hardness due to overheating. This leads to excessive wear and short tool life. Poor chip removal also can cause a poor surface finish on the work piece.

In machining centers with through-spindle coolant (TSC), coolant fluid is conducted directly through the cutting tool to cool the cutting edge, reduce friction, and remove chips. Coolant flows axially through a rotating union into the spindle and tool holder directly to the heat source. Compared to flood coolant systems, TSC pays for itself in terms of lower operating costs for tools and coolant. Better control of tool overheating also allows faster feed rates and higher productivity.



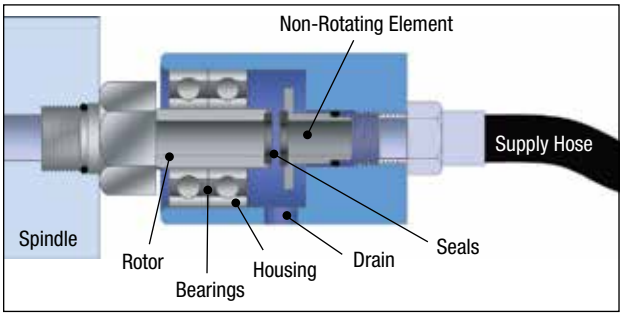
Flood Coolant **Through-Spindle Coolant**

How Rotating Unions Work

A rotating union is a precision mechanical device used to transfer coolant fluid or media from a stationary source, such as a pump, into a rotating device, such as a spindle with cutting tool. The typical coolant fluid is water-based, consisting of approximately 85-95% water for cooling, 2-12% oil for lubricating the cutting edge, and a small amount of other chemicals for keeping the water and oil mixed and for other purposes. *DEUBLIN* Rotating Unions also can transfer air/oil mist, known as Minimum Quantity Lubrication (MQL), cutting oils, and even dry air. The exact capabilities vary by model number, so please consult the product pages of this catalog for details.

In certain machine tool applications, rotating unions also are used to transfer hydraulic fluid or air for clamping or sensing.

Parts of a Rotating Union



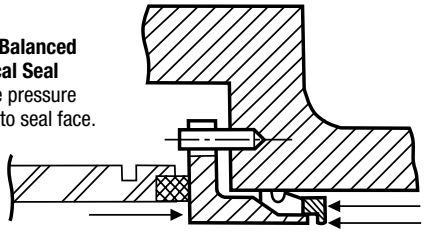
As shown in the picture above, a typical rotating union consists of a rotor that spins at the same speed as the machine tool spindle, a non-rotating element that closes precisely against the rotor, a housing that connects the supply hose to the non-rotating element, and seals that contain the coolant fluid. Bearing-supported unions connect the rotor to the housing with one or more bearings. Bearingless unions omit these bearings. Depending on the application, the housing may have one or more drain connections.

Seals are the heart of the rotating union. They must contain very high pressures while rotating at very high speeds. At 20,000 rpm, for example, the seals of a *DEUBLIN* 1129 series coolant union are moving at a relative speed of nearly 16 feet per second (5 meters per second), while containing 2030 psi (140 bar) of fluid pressure!

Micro-lapped *DEUBLIN* seal

For positive sealing, smooth rotation, and long service life, all *DEUBLIN* seals are micro-lapped with proprietary machines and compounds to achieve an optical flatness of 2 light bands (23 millionths of an inch, or 0.58 microns). In addition, all *DEUBLIN* coolant unions use seals made from special grades of silicon carbide. *DEUBLIN* seals therefore have superior resistance to wear and heat accumulation, compared to lesser materials.

Finally, *DEUBLIN* Rotating Unions are designed with balanced mechanical seals. With this technology, seal contact pressure and thrust load on the spindle are minimized, regardless of operating pressure. This reduces seal wear even further, resulting in longer life and more reliable performance.



***DEUBLIN* Balanced Mechanical Seal**
Partial line pressure is applied to seal face.

SELECTING THE RIGHT UNION FOR YOUR APPLICATION

Bearing-supported Rotor-mounted

Example: *DEUBLIN* 1109 series

Bearing-supported Bore-mounted

Example: *DEUBLIN* 1109 series

Bearingless

Example: *DEUBLIN* 1129 series

Bearing or Bearingless?

Rotating unions for machine tool applications are available in bearing-supported and bearingless configurations. Each kind has advantages and disadvantages for the machine tool designer.

Bearing-supported unions are easy to install and replace, because of their one-piece design. *DEUBLIN* makes two different mounting styles. The **rotor-mounted** style attaches to the machining center with a threaded rotor. The **bore-mounted** style slides into a precisely machined counterbore at the end of the spindle. A second advantage of both styles is that any leakage is channeled by the housing into a drain line. A third advantage is that rotor-mounted, bearing-supported unions absorb nearly all axial forces (thrust load) on the spindle caused by coolant pressure. For both bore-mounted and bearingless unions, however, coolant pressure creates a certain thrust load on the spindle.

Bearingless unions provide the machine tool designer with several advantages. First, eliminating bearings reduces cost while allowing an increase in maximum rpm. Second, since only a small rotor is directly attached to the spindle, there is no possibility for the union's housing to be a source of vibration. Third, without bearings the union is immune to side loading from, for example, too much tension in the coolant supply hose. Fourth, bearingless unions can be very small, ideal for applications with multiple, closely spaced spindles. However, bearingless unions must be installed in two pieces – the rotor and a small housing containing the non-rotating element and connection to the coolant supply. So, during installation, the micro-lapped seal faces are exposed and must be handled carefully.

DEUBLIN 1116 Bearing-Supported Unions on Automotive Transfer Line

DEUBLIN 1117 Bearingless Unions on Automotive Transfer Line

SELECTING THE RIGHT UNION FOR YOUR APPLICATION

Which *DEUBLIN*® Seal Technology?

DEUBLIN offers **five** different seal technologies, in order to provide the best solution for every machining application. Only *DEUBLIN* can offer such flexibility to the machine tool designer.

Closed Seal: As the name indicates, the seals stay closed with or without coolant pressure. Therefore, drain lines generally are not required. However, all rotating unions operate with a thin film of media between the seals. Over time, small, nearly invisible quantities of media can migrate across the seal faces. Therefore, proper venting provisions should be made. Closed seal unions generally are less affected by extremely contaminated coolant than other designs. However, closed seal unions should not be rotated for an extended time if coolant fluid is not present.

Controlled Leakage: The opposite of closed seals, controlled leakage seals always have a small gap between the seals, even when pressure is applied. For this reason, controlled leakage unions are excellent for high-speed applications with pressurized dry air. Controlled leakage unions generally are not suitable for coolant fluid applications.

Pop-Off™: This kind of seal closes only when pressure is applied. When pressure is removed, the seal faces separate by a very small distance. This eliminates friction and seal wear during operation without coolant, and therefore allows unlimited "dry running" at high speeds. Pop-Off™ designs should be considered when machining will occur with and without through-spindle coolant (TSC). Because the seals separate during tool changes when coolant pressure is off, residual coolant in the supply hose and spindle can drain through the seal faces. Therefore, a Pop-Off™ union generally requires a downward-pointing drain line to direct such residual coolant into the sump. Also note that Pop-Off™ unions are not intended for extended operation with pressurized dry air.

AutoSense™: The latest in a series of *DEUBLIN* innovations, this technology combines the best features of Pop-Off™ and controlled leakage designs. Like Pop-Off™ designs, AutoSense™ seals close when coolant pressure is applied to contain the coolant fluid, and "pop" apart in the absence of coolant pressure to allow unlimited dry running. Like controlled leakage designs, AutoSense™ seals handle pressurized dry air by creating a microscopic gap between the seal faces. AutoSense™ unions handle coolant, MQL, and dry air by sensing the kind of media and automatically changing seal operation in response. As with Pop-Off™ seals, a drain line generally is required.

All-Media: This technology gives the machine designer complete control over seal opening and closing. By controlling how the pressure is applied to the union's multiple connections, the machine designer can cause the seals to separate when necessary (for example, to transfer pressurized dry air) or close when appropriate (to transfer coolant fluid or oil mist). A drain line generally is required.

The table below summarizes the operation of each seal technology with different media.

<table>
<tr><th rowspan="2">Media</th><th colspan="5">Seal Technology</th></tr>
<tr><th>Closed Seal
(1005, 1101,1108, 1116, 1117 Series)</th><th>Pop-Off™
(902, 1109, 1121,1129 Series)</th><th>All-Media
(1139 Series)</th><th>AutoSense™
(1114, 1154 Series)</th><th>Controlled Leakage
(1115, 7000 Series)</th></tr>
<tr><td>No pressure</td><td rowspan="2">Not recommended with rotation</td><td colspan="3">Seals open automatically to prevent dry running</td><td rowspan="2">Micro-gap between seals to prevent dry running</td></tr>
<tr><td>Pressurized air</td></tr>
<tr><td>MQL</td><td colspan="3" rowspan="2">Seals are closed</td><td rowspan="2">Not recommended</td></tr>
<tr><td>Coolant</td></tr>
</table>

DEUBLIN engineers can help you choose the best technology for your application.

MOUNTING TOLERANCES

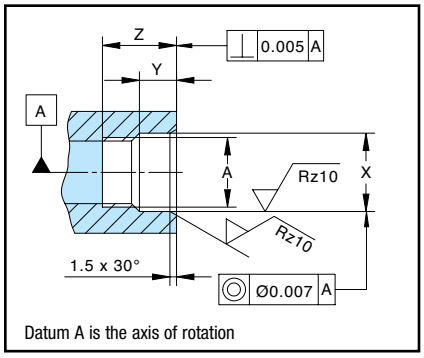
The interface between spindle and union must be manufactured to precise tolerance to ensure accurate, vibration-free operation. Bearingless unions and rotor-mounted, bearing-supported unions require the spindle end to be machined according to the following dimensions and tolerances:

Table shows reference data:
Please refer to the dimensions on the individual drawing when dimensioning the spindle.

Rotor Connection			Rotor Pilot		Spindle End			Tightening
A	F	H	I	M	X	Y	Z	Torque
5/8"-18 UNF	9/16"	15/16"	0.6555" / 0.6553"	3/16"	0.6560" / 0.6556"	9/32"	13/16"	35 Nm
5/8"-18 UNF	9/16"	15/16"	0.6249" / 0.6246"	3/32"	0.6254" / 0.6250"	3/16"	9/16"	35 Nm
M16 x 1.5	11	24	17.993 / 17.988	5	18.000 / 17.995	8.5	17	35 Nm
M16 x 1.5	11	24	16.025 / 16.020	5	16.037 / 16.027	7	17	35 Nm
M14 x 1.5	12	24	14.494 / 14.486	5	14.508 / 14.500	7	18	25 Nm
M12 x 1.25	11	24	13.994 / 13.989	5	14.005 / 14.000	7	17	15 Nm
M12 x 1 / M12 x 1.25	13	15	12.994 / 12.989	6	13.005 / 13.000	9	23	15 Nm
M10 x 1	11	17	10.994 / 10.989	3	11.008 / 11.000	5.2	15	10 Nm
M8 x 1	12.5	15	8.995 / 8.991	3.5	9.006 / 9.000	6	18	4 Nm

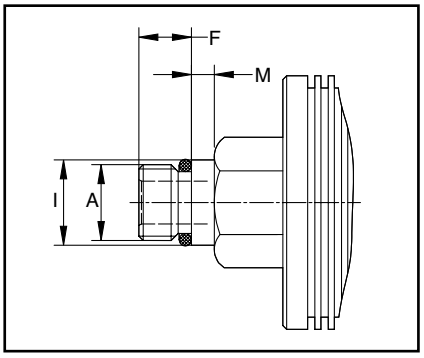
All dimensions in millimeters unless otherwise indicated.

Spindle End

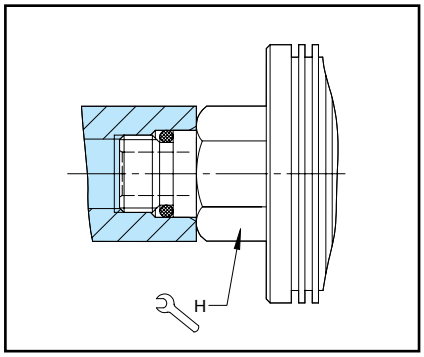


Datum A is the axis of rotation

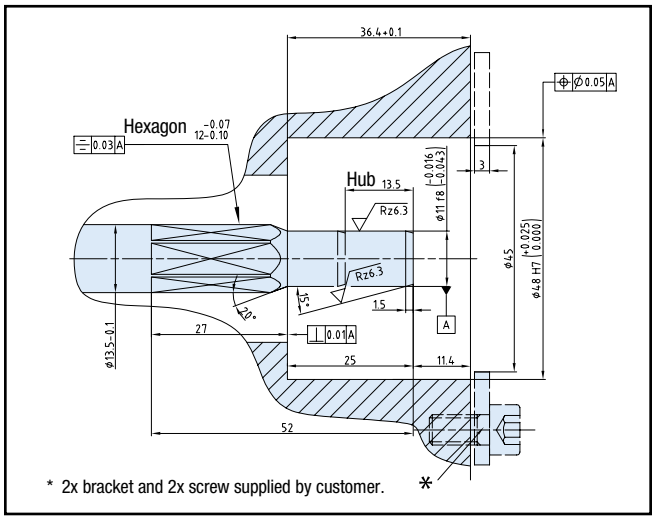
Rotor End



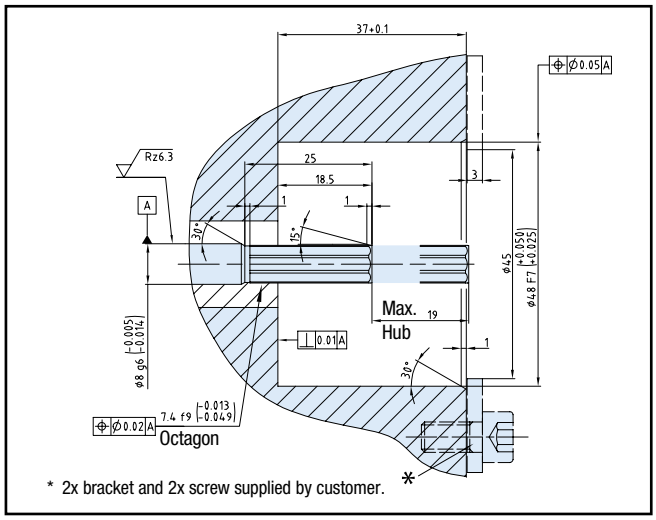
Installed Rotor



Bore-mounted, bearing-supported unions require one of the following two interfaces:



* 2x bracket and 2x screw supplied by customer.



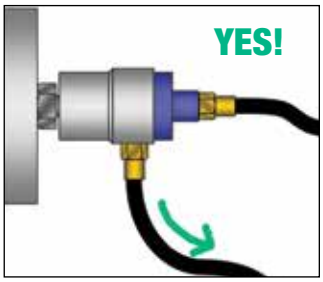
* 2x bracket and 2x screw supplied by customer.

DRAIN AND SUPPLY HOSE CONNECTIONS

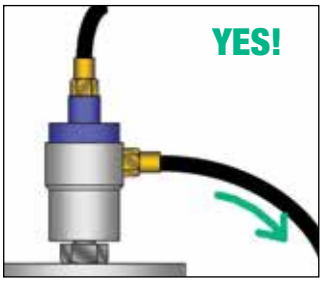
Drain Connection

All unions, even closed-seal designs, can experience migration of minimal amounts of media across the seal faces. Such media migration keeps the seals well lubricated and avoids the permanent seal damage that comes from dry running. In addition, even the best unions eventually will need replacement. Therefore, the machine tool designer should provide adequate drainage to prevent costly spindle damage.

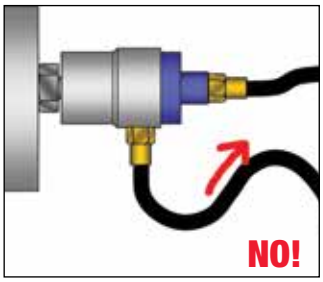
DEUBLIN designs are very advanced, but even *DEUBLIN* must obey the law of gravity! Therefore, it is critical that all drainage hoses and paths slope downward continuously, as shown in the diagrams to the right.



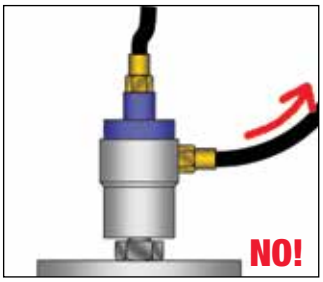
Drain hose always slopes downward



Drain hose always slopes downward



Part of drain hose slopes up

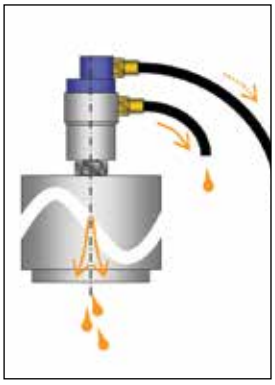


Drain hose slopes up from union

Supply Connection

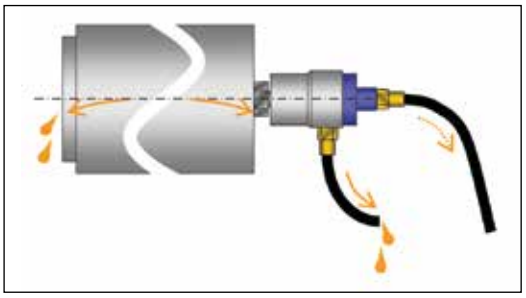
DEUBLIN Pop-Off™, AutoSense™, and All-Media unions offer unlimited "dry running" at high speeds. By allowing the seal faces to separate when coolant pressure is removed, seal wear during unpressurized operation is completely eliminated. One consequence is that the seals separate during tool changes, allowing residual coolant in the supply hose and spindle to drain through the seal faces. Careful orientation of the coolant supply hose can dramatically reduce this effect, as shown in the diagrams below.

Supply Hose Slopes Down From Union



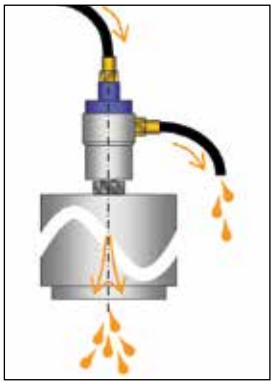
When the supply line runs down from the rotating union, any coolant between union and control valve will remain in the hose during tool change. This reduces the amount of drainage from both the spindle nose and the union drain line.

Tool change with vertical spindle



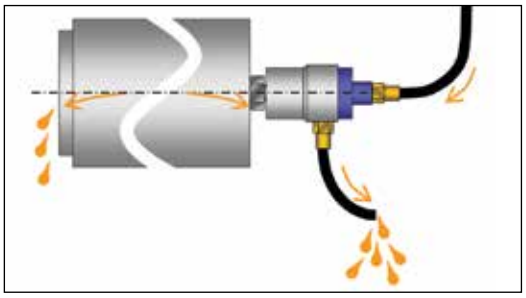
Tool change with horizontal spindle

Supply Hose Slopes Up From Union



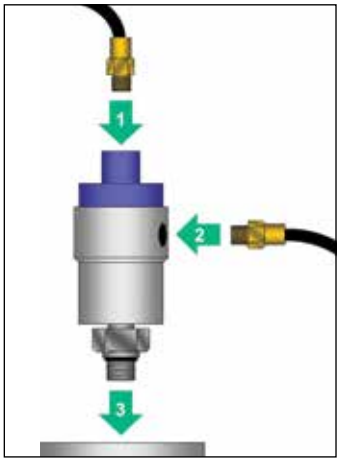
When the supply line runs up from the rotating union, any coolant between union and control valve will flow down during tool change. This increases the amount of drainage from both the spindle nose and the union drain line.

Tool change with vertical spindle



Tool change with horizontal spindle

INSTALLATION TECHNIQUES



Installing a *DEUBLIN* Rotating Union is as easy as 1-2-3. For maximum life and reliability, maintenance engineers and service technicians need only to follow a few simple rules.

1. For bearing-supported, rotor-mounted unions, connect both supply and drain hoses to the union before mounting the union on the spindle. Otherwise, bearings in the union may become brinnelled or galled when the hose connections are tightened.
2. Clean the mounting surfaces of the spindle thoroughly before mounting the union. The spindle pilot must be clean, with no chips, no burrs, and no dents. Otherwise, the union may exhibit runout and vibrate during rotation.
3. Make sure the drain hose runs downward continuously, with no "roller coaster" rises that could prevent proper drainage. If the spindle is horizontal, make sure that the union's drain hole is at 6 o'clock, pointing directly down. unions can do many things, but they can't break the law of gravity!

Following are examples of correct and incorrect installations, with an explanation of what is correct or incorrect about each example.

Examples of CORRECT Installations

WHAT'S RIGHT: Elbow fitting is used to avoid a tight bend in supply hose. Drain hose slopes downward.

WHAT'S RIGHT: Flexible hose between rigid supply pipe and union. Drain hose runs straight down.

WHAT'S RIGHT: Flexible hose between rigid supply pipe and union. Drain hose runs straight down.

WHAT'S RIGHT: Elbow prevents excessive side load on bearings when supply hose is pressurized.

Examples of INCORRECT Installations

WHAT'S WRONG: Drain line points up, which can flood the union's bearings.

WHAT'S WRONG: Union points up. Coolant contaminants will collect at the bottom and interfere with proper sealing.

WHAT'S WRONG: Union housing is rigidly attached to the spindle. Without 100% perfect alignment, this creates a side load leading to early bearing failure.

WHAT'S WRONG: Bend in supply hose is too tight. When pressurized, the supply hose may create a large side load on the union's bearings.

COOLANT FILTRATION AND MAINTENANCE

DEUBLIN unions are designed to handle the various coolant contaminants found in most manufacturing facilities. To ensure long union life and maximum productivity, however, coolant filtration should conform to ISO 4406:1999 Code 17/15/12, SAE 749 Class 5, or NAS 1638 Class 8, with a maximum particle size of 60 microns. For comparison, pumps (both fixed piston and variable volume) such as those used in coolant systems typically require ISO 4406 Code 16/14/11 or better – in other words, half as much contamination as *DEUBLIN*.

Only pure water should be used to make up for coolant evaporation. Calcium and magnesium salts in most tap water shorten coolant life, by depleting the chemicals in the coolant, by breaking down the water-oil emulsion, and by encouraging bacterial growth. These salts also can cause residue to build up inside the rotating union, leading to premature failure. One rule of thumb is that each additional "grain of hardness" (equivalent to 17 ppm or 17 mg/l of calcium carbonate) increases your annual coolant consumption by one percent. Proper coolant maintenance also prolongs tool life and improves the surface finish of your parts.

Unacceptable
(ISO 21/19/17 at 100x)

Acceptable
(ISO 16/14/11 at 100x)

ISO 4406:1999 Code 17/15/12	
Particle size (µm)	Particles per 100ml
4 – 6	≤130,000
6 – 14	≤32,000
14 – 60	≤4,000

NAS 1638 Class 8	
Particle size (µm)	Particles per 100ml
5 – 15	≤64,000
15 – 25	≤11,400
25 – 50	≤2,025
50 – 60	≤360

SAE 749-1963 Class 5	
Particle size (µm)	Particles per 100ml
5 – 10	≤87,000
10 – 25	≤21,400
25 – 50	≤3,130
50 – 60	≤430

THREAD EQUIVALENCE

Parallel or "straight" threads are indicated in this catalog by the symbol "G". British Standard Parallel threads are known by several other names in different parts of the world. Common symbols for this thread style include: BSP, BSPP, BSSPI, BSPF, BSPG, PF, Rp, and G. British Standard parallel threads also may be referred to as British Gas, British Pipe Parallel or Parallel Fastening Thread. The reference standards are described in ISO 228/1 and JIS B0202.

American Standard Unified threads, indicated by UN or UNF, also are parallel. However, they are not the same as and do not mate with G threads, since the thread angle and shape are different.

The following examples are equivalent parallel threads:

G 1/4"
G 1/4" cyl
PF 1/4"
R 1/4" Tr
1/4" BSP

Tapered threads are indicated in this catalog by the symbols "PT" and "NPT". British Standard Taper threads are known by several other names, including: BSPT, BSPTr, PS, PT, R, and Rc. British Standard taper threads also may be referred to as Pipe Taper or Conical Thread. The reference standards are described in ISO 7/1 and JIS B0203.

American Standard NPT threads also are tapered, but not the same as PT threads. Both the thread angle and shape are different, so mating NPT with PT may not create a reliable seal.

The following examples are equivalent tapered threads:

R 1/4" keg
G 1/4" co
PT 1/4""
R 1/4"
Rc 1/4"
1/4" BSPT

DEUBLIN

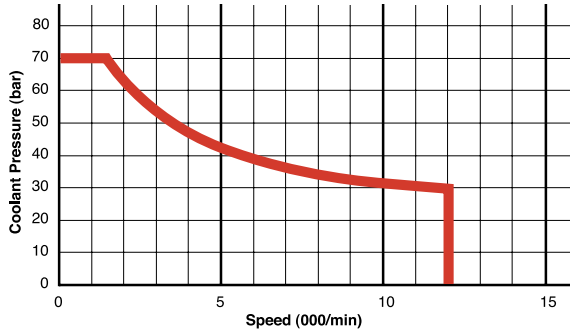
1116 Series "Closed Seal" Rotating Unions for Continuous Coolant Service

- Single passage for coolant or MQL
- Closed seals for transfer line and similar applications
- Full-flow design has no obstructions to trap chips or debris
- Bearing-supported with threaded rotor for easy installation
- Deep groove radial ball bearings for smooth operation
- Labyrinth system and large vents to protect ball bearings
- Balanced mechanical seals made from silicon carbide for long life even under difficult operating conditions
- Anodized aluminum housing resists corrosion

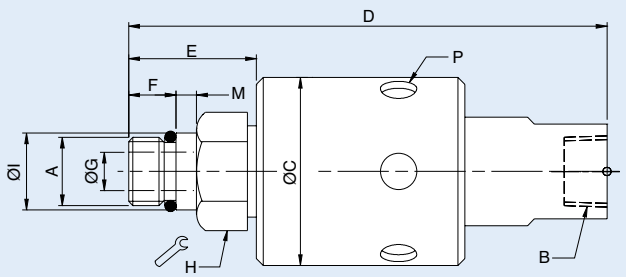
Operating Data

Media	Water-based Coolant MQL (oil mist) up to 10 bar (145 psi)	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	12,000 min^{-1}	12,000 rpm
Maximum Pressure	70 bar	1,015 psi
Maximum Flow	82 l/min	21.6 gpm
Maximum Temperature	71°C	160°F

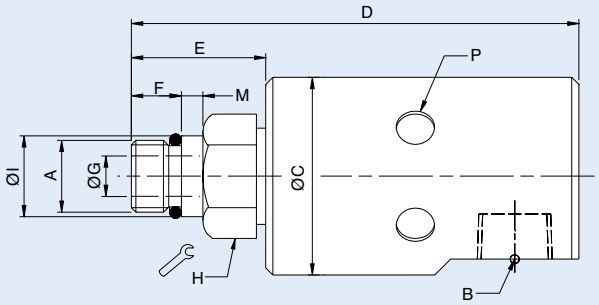
DO NOT RUN DRY



Axial Connection



Radial Connection



	Ordering Number	B Supply Connection	C Overall Diameter	D Overall Length	P Vent Size (6 X 60°)	A Rotor Connection	E Rotor Length	F Thread Length	G Bore Diameter	H Across Flats	I Pilot Diameter	M Pilot Length
Axial Connection	1116-048-064	1/4" NPT	44	115	9	5/8"-18 UNF RH	33	14	9	15/16"	0.6555" / 0.6553"	5
	1116-048-463	1/4" NPT	44	112	9	M16 x 1.5 LH	30	11	9	24	17.993 / 17.988	5
	1116-485-463	G 1/4"	44	112	9	M16 x 1.5 LH	30	11	9	24	17.993 / 17.988	5
	1116-580-343	3/8" PT	44	112	9	M12 x 1.25 LH	30	11	6	24	13.994 / 13.989	5
	1116-600-059	3/8" NPT	44	115	9	5/8"-18 UNF LH	33	14	9	15/16"	0.6555" / 0.6550"	5
	1116-600-463	3/8" NPT	44	112	9	M16 x 1.5 LH	30	11	9	24	17.993 / 17.988	5
	1116-610-463	G 3/8"	44	112	9	M16 x 1.5 LH	30	11	9	24	17.993 / 17.988	5
Radial Connection	1116-090-059	3/8" NPT	44	106	9	5/8"-18 UNF LH	33	14	9	15/16"	0.6555" / 0.6553"	5
	1116-090-064	3/8" NPT	44	106	9	5/8"-18 UNF RH	33	14	9	15/16"	0.6555" / 0.6553"	5
	1116-090-463	3/8" NPT	44	102	9	M16 x 1.5 LH	30	11	9	24	17.993 / 17.988	5
	1116-516-463[A]	G 3/8"	44	102	9	M16 x 1.5 LH	30	11	9	24	17.993 / 17.988	5
	1116-555-463	G 3/8"	44	103	9	M16 x 1.5 LH	30	11	9	24	17.993 / 17.988	5

Note A: Also suitable for Cutting Oil and Air.

DEUBLIN

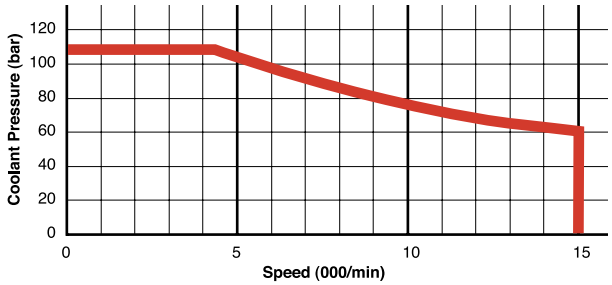
1101 Series "Closed Seal" Rotating Unions for Continuous Coolant Service

- Single passage for coolant or MQL
- Closed seals for transfer line and similar applications
- Full-flow design has no obstructions to trap chips or debris
- Bearing-supported with threaded rotor for easy installation
- Deep groove radial ball bearings for smooth operation
- Labyrinth system and large vents to protect ball bearings
- Balanced mechanical seals made from silicon carbide for long life even under difficult operating conditions
- Anodized aluminum components resist corrosion

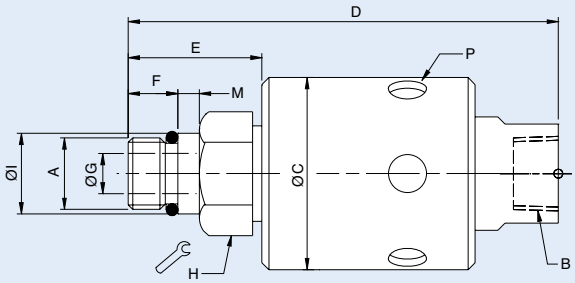
Operating Data

Media	Water-based Coolant MQL (oil mist) up to 10 bar (145 psi)	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	15,000 min^{-1}	15,000 rpm
Maximum Pressure	105 bar	1,520 psi
Maximum Flow	20 l/min	5.3 gpm
Maximum Temperature	71°C	160°F

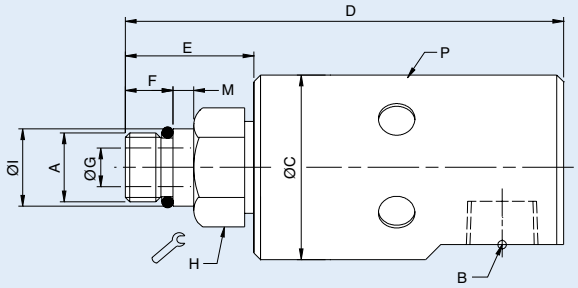
DO NOT RUN DRY



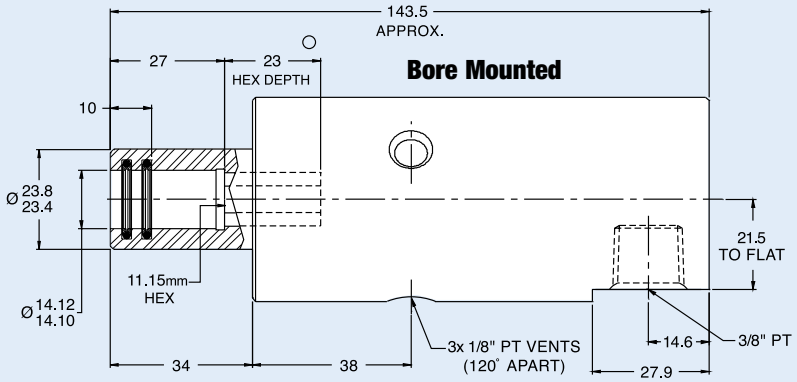
Axial Connection



Radial Connection



Bore Mounted



	Ordering Number	B Supply Connection	C Overall Diameter	D Overall Length	P Vent Size (6 X 60°)	A Rotor Connection	E Rotor Length	F Thread Length	G Bore Diameter	H Across Flats	I Pilot Diameter	M Pilot Length
Axial Connection	1101-235-238	3/8" NPT	43	100	9	5/8"-18 UNF LH	33	14	6	15/16"	0.6555" / 0.6553"	5
	1101-235-239	3/8" NPT	43	100	9	5/8"-18 UNF RH	33	14	6	15/16"	0.6555" / 0.6553"	5
	1101-235-343	3/8" NPT	43	96	9	M16 x 1.5 LH	30	11	6	24	17.993 / 17.988	5
	1101-235-424	3/8" NPT	43	93	9	M10 x 1 LH	27	11	3.2	24	10.994 / 10.989	3
	1101-359-343	G 3/8"	43	96	9	M16 x 1.5 LH	30	11	6	24	17.993 / 17.988	5
	1101-620-343	3/8" NPT	43	96	9	M16 x 1.5 LH	30	11	6	24	17.993 / 17.988	5
Radial	1101-195-343	G 3/8"	43	97	9	M16 x 1.5 LH	30	11	6	24	17.993 / 17.988	5
	1101-615-598[A]	3/8" PT	49	144	3 x 1/8" PT	14 mm female hex	34	NA	6	NA	14.122 / 14.097	27

Note A: This union is a bore-mounted design.

This series includes additional models. For more information, contact *DEUBLIN* at +1-847-689-8600 or www.deublin.com

DEUBLIN

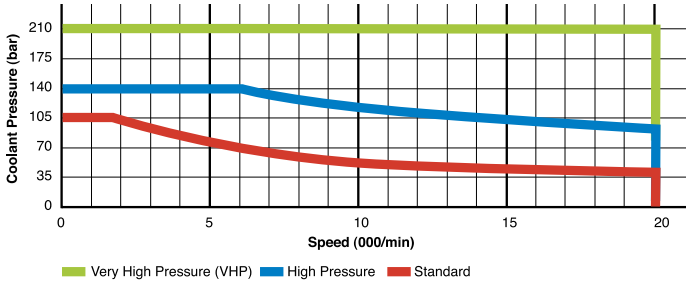
1108 Series "Closed Seal" Rotating Unions for Continuous Coolant Service

- Single passage for coolant or MQL
- Closed seals for transfer line and similar applications
- Full-flow design has no obstructions to trap chips or debris
- Bearing-supported with threaded rotor for easy installation
- Dual ABEC 7 (ISO class P4) angular contact ball bearings
- Labyrinth system and large vents to protect ball bearings
- Balanced mechanical seals made from silicon carbide for long life even under difficult operating conditions
- Anodized aluminum housing resists corrosion

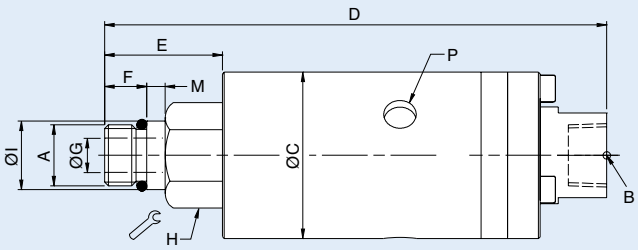
Operating Data

Media	Water-based Coolant MQL (oil mist) up to 10 bar (145 psi)		
Filtration	ISO 4406 Class 17/15/12, max. 60 micron		
Maximum Speed	20,000 min^{-1}	20,000 rpm	
Maximum Pressure	See chart		
Maximum Flow	82 l/min 24.3 l/min 2.7 l/min	21.6 gpm 6.4 gpm 0.7 gpm	Standard High Pressure Very High Pressure (VHP)
Maximum Temperature	71°C	160°F	

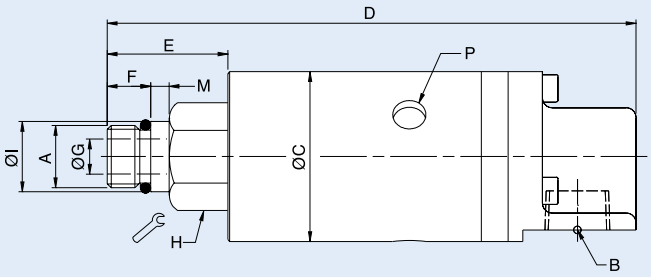
DO NOT RUN DRY



Axial Connection



Radial Connection



	Ordering Number	B Supply Connection	C Overall Diameter	D Overall Length	P Vent Size (3 X 120°)	A Rotor Connection	E Rotor Length	F Thread Length	G Bore Diameter	H Across Flats	I Pilot Diameter	M Pilot Length
Standard	1108-002-102	3/8" NPT Axial	44	132	9	5/8"-18 UNF LH	34	14	9	15/16"	0.6555" / 0.6553"	5
	1108-002-153	3/8" NPT Axial	44	132	9	M16 x 1.5 LH	31	11	9	24	17.993 / 17.988	5
	1108-032-153	G 3/8" Axial	44	129	9	M16 x 1.5 LH	31	11	9	24	17.993 / 17.988	5
	1108-001-102	3/8" NPT Radial	44	138	9	5/8"-18 UNF LH	34	14	9	15/16"	0.6555" / 0.6553"	5
	1108-001-153	3/8" NPT Radial	44	135	9	M16 x 1.5 LH	31	11	9	24	17.993 / 17.988	5
	1108-011-153	G 3/8" Radial	44	135	9	M16 x 1.5 LH	30	11	9	24	17.993 / 17.988	5
High Pressure	1108-019-107	1/4" NPT Axial	44	132	9	5/8"-18 UNF LH	34	14	9	15/16"	0.6555" / 0.6553"	5
	1108-019-212	1/4" NPT Axial	44	129	9	M16 x 1.5 LH	30	11	9	24	17.993 / 17.988	5
	1108-034-212	G 1/4" Axial	53	129	G 1/4"	M16 x 1.5 LH	30	11	9	24	17.993 / 17.988	5
	1108-058-212	G 1/4" Radial	53	135	G 1/4"	M16 x 1.5 LH	30	11	9	24	17.993 / 17.988	5
VHP	1108-093-559	1/4" NPT Axial	44	132	9	M16 x 1.5 LH	30	11	9	24	17.993 / 17.988	5
	1108-093-568	1/4" NPT Axial	44	132	9	5/8"-18 UNF LH	34	14	9	15/16"	0.6555" / 0.6553"	5

This series includes additional models. For more information, contact *DEUBLIN* at +1-847-689-8600 or www.deublin.com

DEUBLIN

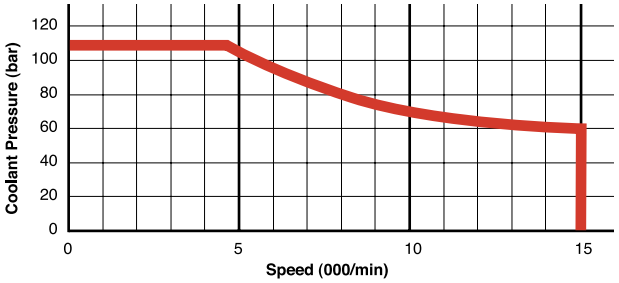
1005 Series "Closed Seal" Rotating Unions for Continuous Coolant Service

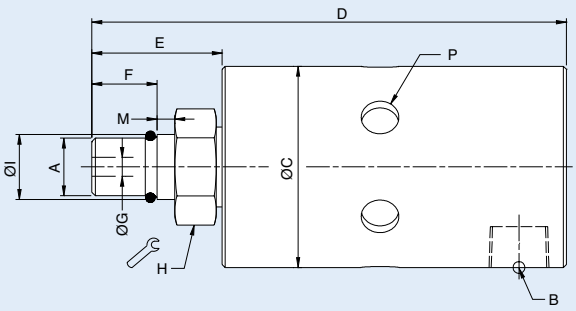
- Single passage for coolant or MQL
- Closed seals for transfer line and similar applications
- Full-flow design has no obstructions to trap chips or debris
- Bearing-supported with threaded rotor for easy installation
- Labyrinth system and vents to protect ball bearings
- Balanced mechanical seals made from silicon carbide for long life even under difficult operating conditions
- Anodized housing and stainless steel rotor resist corrosion

Operating Data

Media	Water-based Coolant MQL (oil mist) up to 10 bar (145 psi)	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	15,000 min^{-1}	15,000 rpm
Maximum Pressure	105 bar	1,520 psi
Maximum Flow	6.7 l/min	1.8 gpm
Maximum Temperature	71°C	160°F

DO NOT RUN DRY





Other 1005 models are available for use with oil or dry air. Please refer to the *DEUBLIN* Engineering Catalog 2600.

	Ordering Number	B Supply Connection	C Overall Diameter	D Overall Length	P Vent Size (6 X 60°)	A Rotor Connection	E Rotor Length	F Thread Length	G Bore Diameter	H Across Flats	I Pilot Diameter	M Pilot Length
Radial Conn.	1005-402-401	1/8" NPT	34	80	6.4	M10 x 1 RH	22	11	3.2	17	10.994 / 10.989	3
	1005-402-448	1/8" NPT	34	80	6.4	M10 x 1 LH	22	11	3.2	17	10.994 / 10.989	3
	1005-633-401	1/8" NPT	34	80	1 x M7	M10 x 1 RH	22	11	3.2	17	10.994 / 10.989	3
	1005-354-434[A]	1/8" NPT	34	80	6.4	M10 x 1 RH	22	11	3.2	17	10.994 / 10.989	3

Note A: This union offers limited dry running capability.

This series includes additional models. For more information, contact *DEUBLIN* at +1-847-689-8600 or www.deublin.com

DEUBLIN

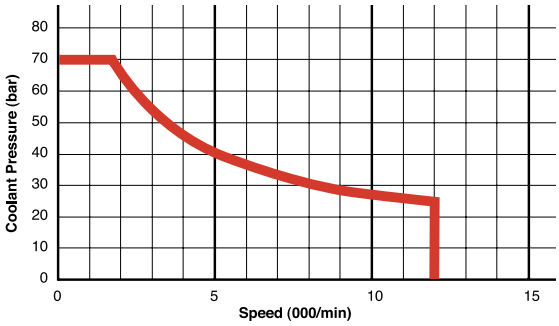
902 Series Pop-Off™ Rotating Unions for Coolant Service with Dry Running

- Single passage for coolant or MQL
- Pop-Off™ technology allows unlimited dry running without media pressure
- Full-flow design has no obstructions to trap chips or debris
- Bearing-supported with threaded rotor for easy installation
- Deep groove radial ball bearings for smooth operation
- Labyrinth system and large vents to protect ball bearings
- Balanced mechanical seals made from silicon carbide for long life even under difficult operating conditions
- Anodized aluminum housing resists corrosion

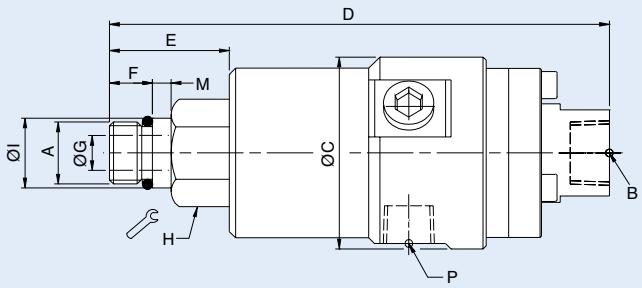
Operating Data

Media	Water-based Coolant MQL (oil mist) up to 10 bar (145 psi)	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	12,000 min^{-1}	12,000 rpm
Maximum Pressure	70 bar	1,015 psi
Maximum Flow	82 l/min	21.6 gpm
Maximum Temperature	71°C	160°F

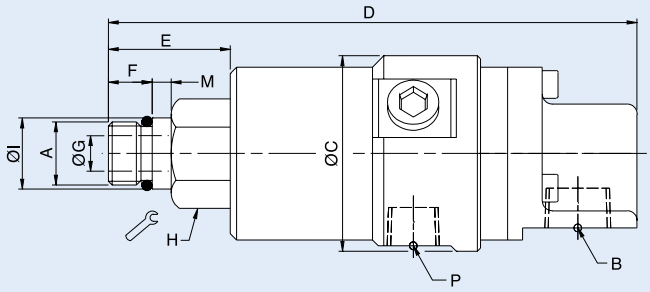
NO AIR PRESSURE WITH ROTATION



Axial Connection



Radial Connection



	Ordering Number	B Supply Connection	C Overall Diameter	D Overall Length	P Vent Size (3 X 120°)	A Rotor Connection	E Rotor Length	F Thread Length	G Bore Diameter	H Across Flats	I Pilot Diameter	M Pilot Length
Axial Connection	902-111-165	3/8" NPT	49.5	132	1/4" NPT	5/8"-18 UNF LH	36	15	9	15/16"	0.6555" / 0.6553"	5
	902-121-188	G 3/8"	49.5	129	G 1/4"	M16 x 1.5 LH	33	11	9	24	17.993 / 17.988	5
	902-138-188	G 3/8"	49.5	129	G 1/4"	M16 x 1.5 LH	33	11	9	24	17.993 / 17.988	5
	902-141-188	3/8" PT	49.5	129	1/4" PT	M16 x 1.5 LH	33	11	9	24	17.993 / 17.988	5
Radial Connection	902-110-165	3/8" NPT	49.5	138	1/4" NPT	5/8"-18 UNF LH	36	15	9	15/16"	0.6555" / 0.6553"	5
	902-120-188	G 3/8"	49.5	135	G 1/4"	M16 x 1.5 LH	33	11	9	24	17.993 / 17.988	5
	902-137-188	G 3/8"	49.5	135	G 1/4"	M16 x 1.5 LH	33	11	9	24	17.993 / 17.988	5
	902-140-188	3/8" PT	49.5	135	1/4" PT	M16 x 1.5 LH	33	11	9	24	17.993 / 17.988	5
	902-225-101[A]	G 3/8"	49.5	135	G 1/4"	Two-Flat 12	26	NA	9	NA	11.984 / 11.966	16
	902-225-104[A]	G 3/8"	49.5	137	G 1/4"	Female 12	34	NA	9	24	12.027 / 12.000	32
	902-253-220	G 3/8"	46.8	139	G 1/4"	Hexagon 11	34	NA	9	NA	12.984 / 12.957	21

Note A: This union is a bore-mounted design.

DEUBLIN

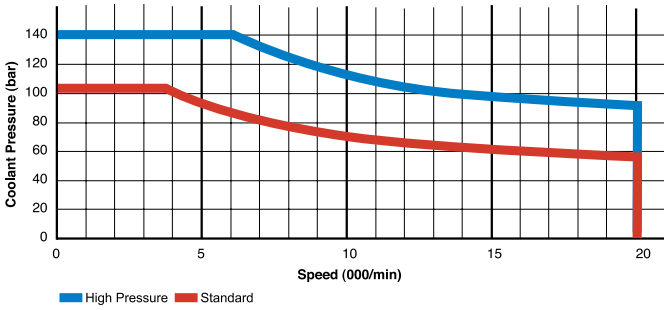
1109 Series Pop-Off™ Rotor-Mounted Rotating Unions for Coolant Service with Dry Running

- Single passage for coolant or MQL
- Pop-Off™ technology allows unlimited dry running without media pressure
- Full-flow design has no obstructions to trap chips or debris
- Bearing-supported with threaded rotor for easy installation
- Dual ABEC 7 (ISO class P4) angular contact ball bearings
- Labyrinth system and large vents to protect ball bearings
- Balanced mechanical seals made from silicon carbide for long life even under difficult operating conditions
- Anodized aluminum housing resists corrosion

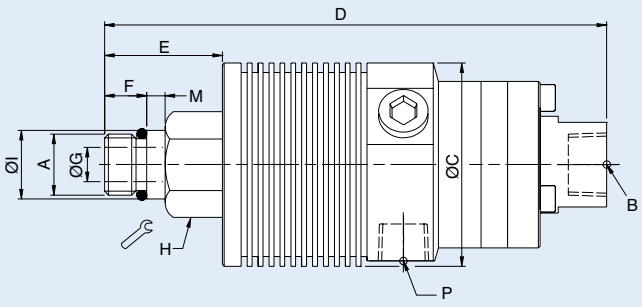
Operating Data

Media	Water-based Coolant MQL (oil mist) up to 10 bar (145 psi)		
Filtration	ISO 4406 Class 17/15/12, max. 60 micron		
Maximum Speed	20,000 min^{-1}	20,000 rpm	
Maximum Pressure	See chart		
Maximum Flow	82 l/min	21.6 gpm	Standard
	24.3 l/min	6.4 gpm	High Pressure
Maximum Temperature	71°C	160°F	

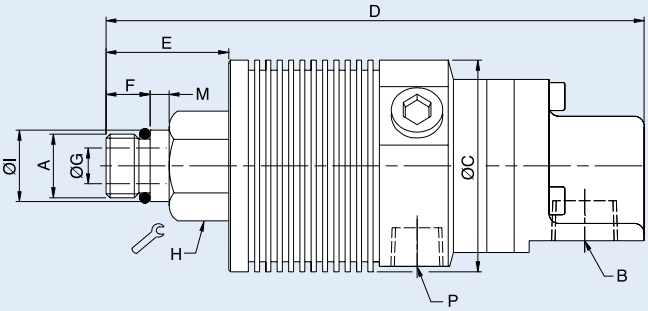
NO AIR PRESSURE WITH ROTATION



Axial Connection



Radial Connection



	Ordering Number	B Supply Connection	C Overall Diameter	D Overall Length	P Vent Size (3 X 120°)	A Rotor Connection	E Rotor Length	F Thread Length	G Bore Diameter	H Across Flats	I Pilot Diameter	M Pilot Length
Standard	1109-011-165	3/8" NPT Axial	53	132	1/4" NPT	5/8"-18 UNF LH	34	14	9	15/16"	0.6555" / 0.6553"	5
	1109-021-188	G 3/8" Axial	53	129	G 1/4"	M16 x 1.5 LH	31	11	9	24	17.993 / 17.988	5
	1109-041-188	3/8" PT Axial	53	129	1/4" PT	M16 x 1.5 LH	31	11	9	24	17.993 / 17.988	5
	1109-010-165	3/8" NPT Radial	53	138	1/4" NPT	5/8"-18 UNF LH	34	14	9	15/16"	0.6555" / 0.6553"	5
	1109-020-188	G 3/8" Radial	53	135	G 1/4"	M16 x 1.5 LH	31	11	9	24	17.993 / 17.988	5
	1109-040-188	3/8" PT Radial	53	135	1/4" PT	M16 x 1.5 LH	31	11	9	24	17.993 / 17.988	5
High Pressure	1109-014-196	1/4" NPT Axial	53	132	1/4" NPT	5/8"-18 UNF LH	34	14	9	15/16"	0.6555" / 0.6553"	5
	1109-024-212	G 1/4" Axial	53	129	G 1/4"	M16 x 1.5 LH	31	11	9	24	17.993 / 17.988	5
	1109-044-212	1/4" PT Axial	53	129	1/4" PT	M16 x 1.5 LH	31	11	9	24	17.993 / 17.988	5
	1109-013-196	1/4" NPT Radial	53	138	1/4" NPT	5/8"-18 UNF LH	34	14	9	15/16"	0.6555" / 0.6553"	5
	1109-023-212	G 1/4" Radial	53	135	G 1/4"	M16 x 1.5 LH	31	11	9	24	17.993 / 17.988	5
	1109-043-212	1/4" PT Radial	53	135	1/4" PT	M16 x 1.5 LH	31	11	9	24	17.993 / 17.988	5

This series includes additional models. For more information, contact *DEUBLIN* at +1-847-689-8600 or www.deublin.com

DEUBLIN

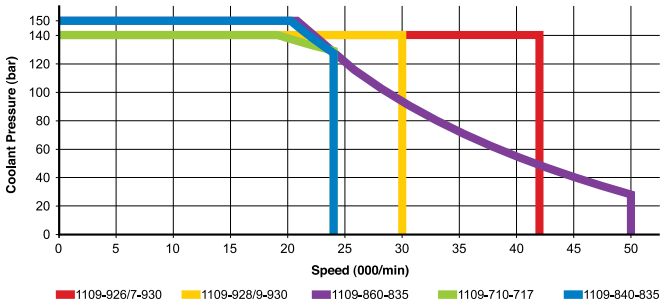
1109 Series Pop-Off™ Bore-Mounted Rotating Unions for Coolant Service with Dry Running

- Single passage for coolant or MQL
- Pop-Off™ technology allows unlimited dry running without media pressure
- Accepts up to 19 mm of axial drawbar movement
- Full-flow design has no obstructions to trap chips or debris
- Bore-mounted design for easy installation
- Matched, ISO class P4 hybrid ball bearings for smooth operation at high speeds
- Labyrinth system and large vents to protect ball bearings
- Balanced mechanical seals made from silicon carbide for long life even under difficult operating conditions
- Anodized aluminum and stainless steel parts resist corrosion

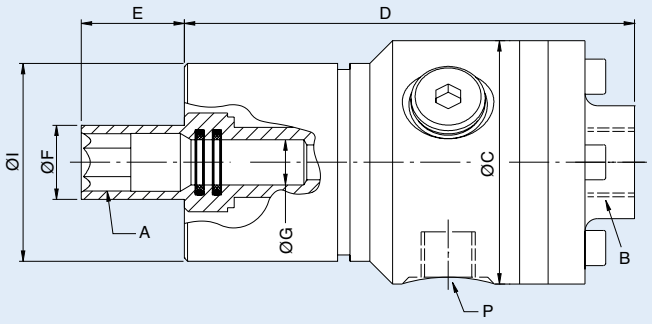
Operating Data

Media	Water-based Coolant MQL (oil mist) up to 10 bar (145 psi)	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	See chart	
Maximum Pressure	140 bar	2,030 psi
Maximum Flow 1109-710-717	24.3 l/min 82 l/min	6.4 gpm 21.6 gpm
Maximum Temperature	71°C	160°F

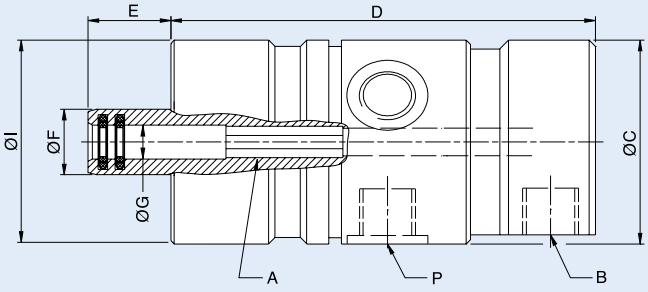
NO AIR PRESSURE WITH ROTATION



Axial Connection (1109-710-717 shown)



Radial Connection



	Ordering Number	B Supply Connection	C Overall Diameter	D Housing Length	P Vent Size (3 X 120°)	A Rotor Connection	E Rotor Length	F Rotor O.D.	G Bore Diameter	I Housing Pilot Dia.	Maximum Speed (rpm)	Maximum Pressure (bar)
	1109-840-835	G 1/4" axial & radial	48	109	G 1/4"	Octagon 7.4 D10	19.5	16.5	8.1F9	48 g6	24,000	150
	1109-710-717	G 3/8" axial	59	109	G 1/4"	Hexagon 12 D10	25	18	11H7	48 g6	24,000	140
	1109-929-930	G 1/4" axial	48	93	G 1/4"	Octagon 7.4 D10	19.5	15.4	8.1F9	48 h7	30,000	140
	1109-928-930	G 1/4" radial	48	93	G 1/4"	Octagon 7.4 D10	19.5	15.4	8.1F9	48 h7	30,000	140
	1109-927-930	G 1/4" axial	48	93	G 1/4"	Octagon 7.4 D10	19.5	15.4	8.1F9	48 h7	42,000	140
	1109-926-930	G 1/4" radial	48	93	G 1/4"	Octagon 7.4 D10	19.5	15.4	8.1F9	48 h7	42,000	140
	1109-860-835	G 1/4" axial & radial	48	109	G 1/4"	Octagon 7.4 D10	19.5	16.5	8.1F9	48 g6	50,000	150

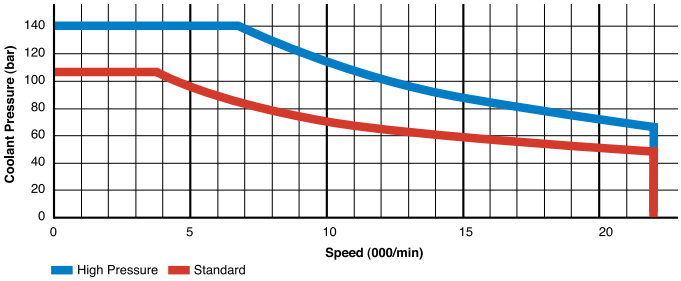
DEUBLIN

1114 Series AutoSense™ Rotor-Mounted Rotating Unions for Coolant and Air Service with Dry Running

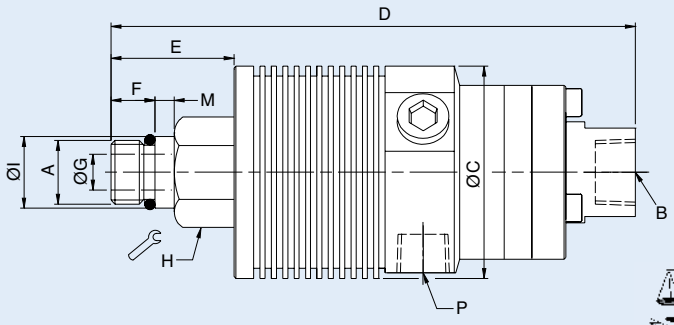
- Single passage for both coolant and dry air
- Patented AutoSense™ technology automatically changes between closed seals and controlled leakage operation in response to the kind of media
- Dual ABEC 7 (ISO class P4) angular contact ball bearings
- Threaded rotor for easy installation
- Full-flow design has no obstructions to trap chips or debris
- Labyrinth system and large vents to protect bearings
- Balanced mechanical seals made from silicon carbide for long life even under difficult operating conditions
- Anodized aluminum housing resists corrosion

Operating Data

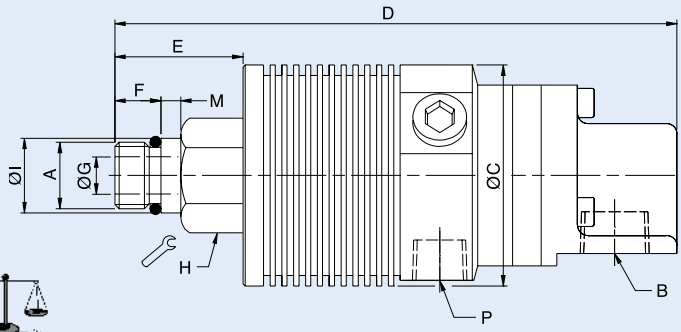
Media	Water-based Coolant MQL (oil mist) up to 10 bar (145 psi) Air up to 10 bar (145 psi)		
Filtration	ISO 4406 Class 17/15/12, max. 60 micron		
Maximum Speed	22,000 min^{-1}	22,000 rpm	
Maximum Pressure	See chart		
Maximum Flow	82 l/min	21.6 gpm	Standard
	24.3 l/min	6.4 gpm	High Pressure
Maximum Temperature	71°C	160°F	



Axial Connection



Radial Connection



	Ordering Number	B Supply Connection	C Overall Diameter	D Overall Length	P Vent Size (3 X 120°)	A Rotor Connection	E Rotor Length	F Thread Length	G Bore Diameter	H Across Flats	I Pilot Diameter	M Pilot Length
Standard	1114-011-165	3/8" NPT Axial	53	134	1/4" NPT	5/8"-18 UNF LH	34	14	9	15/16"	0.6555" / 0.6553"	5
	1114-021-188	G 3/8" Axial	53	131	G 1/4"	M16 x 1.5 LH	31	11	9	24	17.993 / 17.988	5
	1114-041-188	3/8" PT Axial	53	131	1/4" PT	M16 x 1.5 LH	31	11	9	24	17.993 / 17.988	5
	1114-010-165	3/8" NPT Radial	53	140	1/4" NPT	5/8"-18 UNF LH	34	14	9	15/16"	0.6555" / 0.6553"	5
	1114-020-188	G 3/8" Radial	53	137	G 1/4"	M16 x 1.5 LH	31	11	9	24	17.993 / 17.988	5
	1114-040-188	3/8" PT Radial	53	137	1/4" PT	M16 x 1.5 LH	31	11	9	24	17.993 / 17.988	5
High Pressure	1114-024-212	G 1/4" Axial	53	131	G 1/4"	M16 x 1.5 LH	31	11	9	24	17.993 / 17.988	5
	1114-044-212	1/4" PT Axial	53	131	1/4" PT	M16 x 1.5 LH	31	11	9	24	17.993 / 17.988	5
	1114-043-212	1/4" PT Radial	53	137	1/4" PT	M16 x 1.5 LH	31	11	9	24	17.993 / 17.988	5

This series includes additional models. For more information, contact *DEUBLIN* at +1-847-689-8600 or www.deublin.com

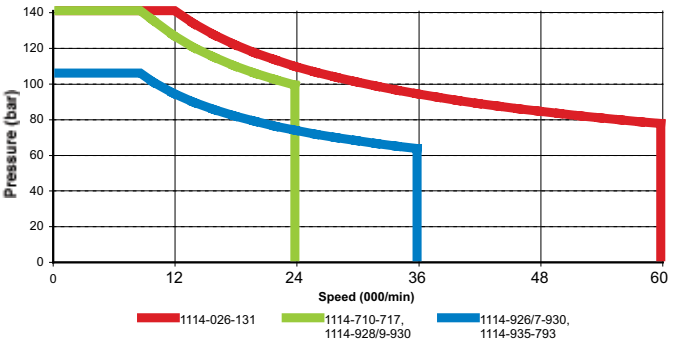
DEUBLIN

1114 Series AutoSense™ Bore-Mounted Rotating Unions for Coolant and Air Service with Dry Running

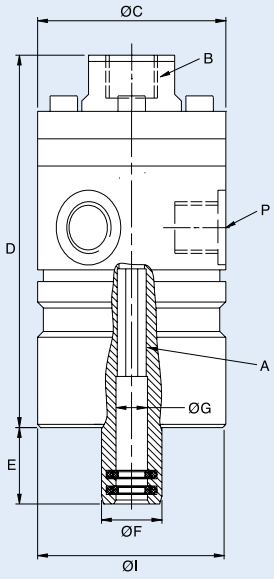
- Single passage for both coolant and dry air
- Patented AutoSense™ technology automatically changes between closed seals and controlled leakage operation in response to the kind of media
- Bore-mounted design for easy installation
- Accepts up to 19 mm of axial drawbar movement
- Matched, ISO class P4 hybrid ball bearings for smooth operation at high speeds
- Labyrinth system and large vents to protect ball bearings
- Full-flow design has no obstructions to trap chips or debris
- Balanced mechanical seals made from silicon carbide for long life even under difficult operating conditions
- Anodized aluminum and stainless steel parts resist corrosion

Operating Data

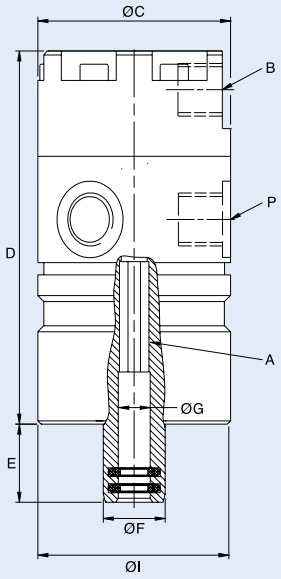
Media	Water-based Coolant MQL (oil mist) up to 10 bar (145 psi) Air up to 10 bar (145 psi)	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	See chart	
Maximum Pressure	See chart	
Maximum Flow	24.3 l/min	6.4 gpm
Maximum Temperature	71°C	160°F



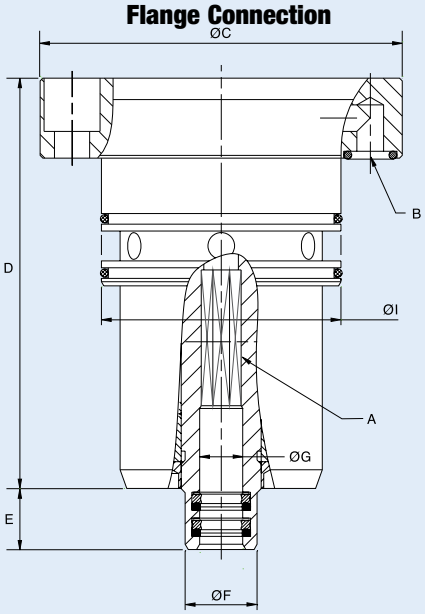
Axial Connection



Radial Connection

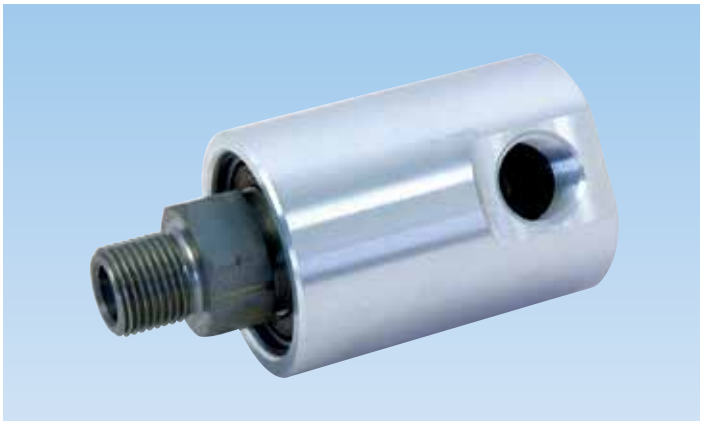


Flange Connection



Ordering Number	B Supply Connection	C Overall Diameter	D Housing Length	P Vent Size (3 X 120°)	A Rotor Connection	E Rotor Length	F Rotor O.D.	G Bore Diameter	I Housing Pilot Dia.	Maximum Speed (rpm)	Maximum Pressure (bar)
1114-710-717	G 3/8" axial	59	111	G 1/4"	Hexagon 12 D10	25	18	11 H7	48 g6	24,000	80
1114-928-930	G 1/4" radial	48	95	G 1/4"	Octagon 7.4 D10	19.5	15.4	8.1 F9	48 h7	24,000	105
1114-929-930	G 1/4" axial	48	95	G 1/4"	Octagon 7.4 D10	19.5	15.4	8.1 F9	48 h7	24,000	105
1114-926-930	G 1/4" radial	48	95	G 1/4"	Octagon 7.4 D10	19.5	15.4	8.1 F9	48 h7	36,000	105
1114-927-930	G 1/4" axial	48	95	G 1/4"	Octagon 7.4 D10	19.5	15.4	8.1 F9	48 h7	36,000	105
1114-935-793	Ø5 flange	68	77	6 X Ø5	Octagon 7.4 D10	11.5	13.5	8.1 F9	45 f7	27,000	105
1114-026-131	G 1/8" axial & radial	32	79	5 X G 1/8"	Hexagon 4.5 D10	11	11.5	5.1 H10	32 h7	60,000	150

This series includes additional models. For more information, contact *DEUBLIN* at +1-847-689-8600 or www.deublin.com



DEUBLIN

7000 and 1115 Series "Controlled Leakage" Rotating Unions for Dry Air or Vacuum at High Speed

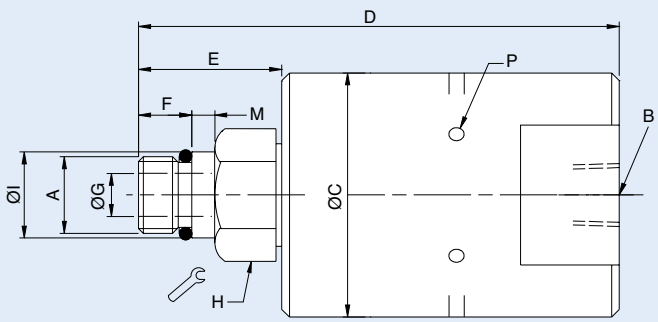
- Single passage for dry or lubricated air
- Bearings are lubricated for life
- Full-flow design has no obstructions to trap chips or debris
- Threaded rotor for easy installation
- Balanced mechanical seals made from silicon carbide for long life even under difficult operating conditions
- Anodized aluminum and stainless steel parts resist corrosion

Operating Data

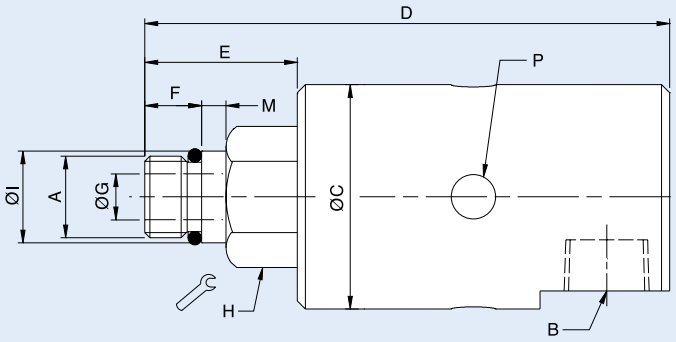
Media	Air (dry or lubricated) Vacuum (7000-027-468 only)	
Maximum Speed		
1115-114-xxx	15,000 min^{-1}	15,000 rpm
1115-680-xxx	15,000 min^{-1}	15,000 rpm
7000-xxx-xxx	18,000 min^{-1}	18,000 rpm
Maximum Pressure	10 bar	145 psi
Maximum Flow		
1115-114-xxx	2,460 l/min	87 SCFM
1115-680-xxx	2,460 l/min	87 SCFM
7000-xxx-xxx	1,060 l/min	37 SCFM
Maximum Temperature	121°C	250°F

OK
DRY AIR SERVICE

Axial Connection (7000 Series)



Radial Connection (1115 Series)



	Ordering Number	B Supply Connection	C Overall Diameter	D Overall Length	P Vent Size (6 X 60°)	A Rotor Connection	E Rotor Length	F Thread Length	G Bore Diameter	H Across Flats	I Pilot Diameter	M Pilot Length
Axial Connection	7000-003-117	1/4" PT	51	97	3	M16 x 1.5 RH	26	11	6	24	17.993 / 17.988	5
	7000-003-118	1/4" PT	51	97	3	M16 x 1.5 LH	26	11	6	24	17.993 / 17.988	5
	7000-003-224	1/4" PT	51	100	3	5/8"-18 UNF RH	30	14	6	15/16"	0.6555" / 0.6553"	5
	7000-003-225	1/4" PT	51	100	3	5/8"-18 UNF LH	30	14	6	15/16"	0.6555" / 0.6553"	5
	7000-027-468[A]	3/8" NPT	51	100	3	5/8"-18 UNF LH	30	14	9	15/16"	0.6555" / 0.6553"	5
	Ordering Number	B Supply Connection	C Overall Diameter	D Overall Length	P Vent Size (4 X 90°)	A Rotor Connection	E Rotor Length	F Thread Length	G Bore Diameter	H Across Flats	I Pilot Diameter	M Pilot Length
Radial Connection	1115-114-402	G 3/8"	44	106	9	5/8"-18 UNF LH	33	14	9	15/16"	0.6555" / 0.6553"	5
	1115-114-556	G 3/8"	44	106	9	M16 x 1.5 LH	30	11	9	24	17.993 / 17.988	5
	1115-680-402	3/8" NPT	44	106	9	5/8"-18 UNF LH	33	14	9	15/16"	0.6555" / 0.6553"	5
	1115-680-403	3/8" NPT	44	106	9	5/8"-18 UNF RH	33	14	9	15/16"	0.6555" / 0.6553"	5

Note: Special two-passage unions for air and oil (used for MQL mixed in the spindle) may be found on page 32.
Note A: Model 7000-027-468 is for vacuum and air service.

This series includes additional models. For more information, contact at +1-847-689-8600 or www.deublin.com

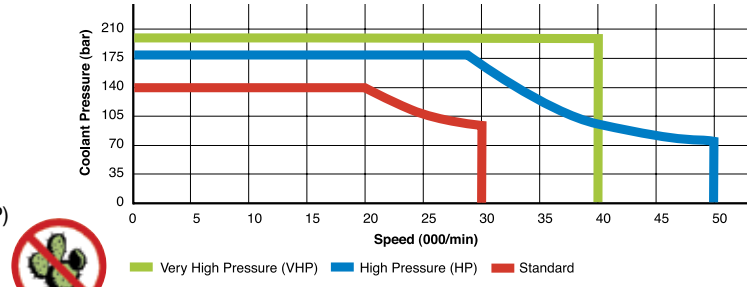
DEUBLIN

1117 Series Bearingless "Closed Seal" Rotating Unions for Continuous Coolant Service

- Single passage for coolant or MQL
- Closed seals for transfer line and similar applications
- Full-flow design has no obstructions to trap chips or debris
- Balanced mechanical seals made from silicon carbide for long life even under difficult operating conditions
- Compact size can be adapted for custom installations
- Anodized aluminum housing resists corrosion

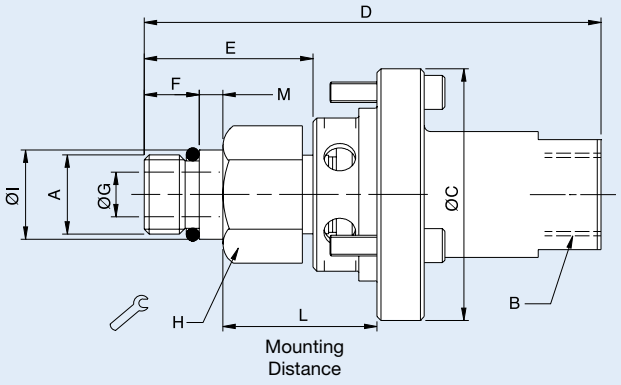
Operating Data

Media	Water-based Coolant MQL (oil mist) up to 10 bar (145 psi)		
Filtration	ISO 4406 Class 17/15/12, max. 60 micron		
Maximum Speed	See table		
Maximum Pressure	See Chart		
Maximum Flow	82 l/min 24.3 l/min 2.7 l/min	21.6 gpm 6.4 gpm 0.7 gpm	Standard High Pressure (HP) Very High Pressure (VHP)
Maximum Temperature	71°C	160°F	

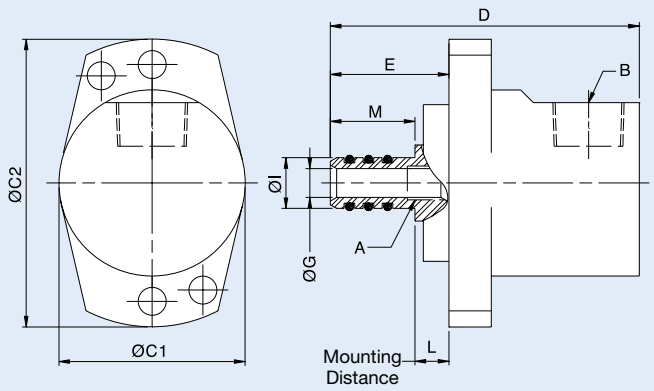


DO NOT RUN DRY

Axial Connection



Radial Connection



		Ordering Number	B Supply Connection	C Overall Diameter	D Overall Length	L Mounting Distance	A Rotor Connection	E Rotor Length	G Bore Diameter	H Across Flats	I Pilot Diameter	M Pilot Length	Max Speed (rpm)
Standard VHP HP	Radial	1117-706	G 3/8"	44	72	7.5 / 7.0	12 f7	21	7	NA	11.984 / 11.966	20	10,000[A]
		1117-711	3/8" NPT	44 x 68	73	8.0 / 7.5	12 f7	28	7	NA	11.984 / 11.966	20	10,000[A]
		1117-792	G 3/8"	44	72	7.5 / 7.0	12 f7	21	7	NA	11.984 / 11.966	20	30,000
	Axial Connection	1117-002-110	3/8" NPT	51	95	31.7 / 30.5	5/8"-18 UNF RH	37	9	15/16"	0.6555" / 0.6553"	5	30,000
		1117-002-111	3/8" NPT	51	95	31.7 / 30.5	5/8"-18 UNF LH	37	9	15/16"	0.6555" / 0.6553"	5	30,000
		1117-002-116	3/8" NPT	51	92	31.7 / 30.5	M16 x 1.5 LH	34	9	24	17.993 / 17.988	5	30,000
		1117-058-116	G 3/8"	51	92	31.7 / 30.5	M16 x 1.5 LH	34	9	24	17.993 / 17.988	5	30,000
		1117-028-374	20 h5	40	63	25	M12 x 1.25 LH	28	6	17	12.994 / 12.989	6	46,000
		1117-789	25 f7	36 x 52	56	23.7 / 23.3	12 f7	28	7	NA	11.984 / 11.996	20	30,000
		1117-490-493	3/8" PT	54	105	39.6 / 38.6	M12 x 1.25 LH	40	5	18	14.000 / 13.995	5	50,000
		1117-063-294	G 1/4"	51	92	31.7 / 30.5	M16 x 1.5 LH	34	5	24	17.993 / 17.988	5	40,000

Note A: Union includes integral lip seal for added spindle protection.

DEUBLIN

Special Bearingless Rotating Unions for Multi-Spindle Applications

1117-510-511

Features

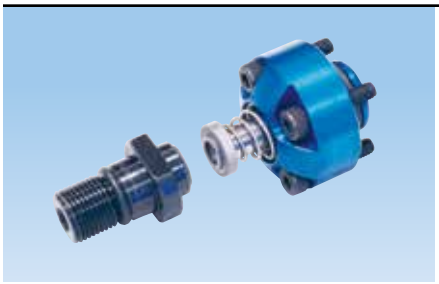
- Closed seals
- Single passage for coolant or MQL
- Small size for closely-spaced spindles: 22 mm housing and 1/4”-28 UNF rotor

DO NOT RUN DRY

Operating Data

Media	Water-based coolant MQL (oil mist) up to 10 bar (145 psi)	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	50,000 min^{-1}	50,000 rpm
Maximum Pressure	180 bar	2,610 psi
Maximum Flow	9.7 l/min	2.6 gpm
Maximum Temperature	71°C	160°F

1157-022-109



Features

- Closed seals
- Single passage for coolant or MQL
- Small size for closely-spaced spindles: 31 mm diameter housing and M12 x 1 rotor

DO NOT RUN DRY

Operating Data

Media	Water-based coolant MQL (oil mist) up to 10 bar (145 psi)	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	40,000 min^{-1}	40,000 rpm
Maximum Pressure	140 bar	2,030 psi
Maximum Flow	24.3 l/min	6.4 gpm
Maximum Temperature	71°C	160°F

1121-910-913

Features

- Patented Pop-Off™ technology
- Single passage for coolant or MQL
- Small size for closely-spaced spindles: Housing fits M18 x1.5 counterbore; rotor threads are M5

NO AIR PRESSURE WITH ROTATION

Operating Data

Media	Water-based coolant MQL (oil mist) up to 10 bar (145 psi) Cutting oil	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	50,000 min^{-1}	50,000 rpm
Maximum Pressure	180 bar	2,610 psi
Maximum Flow	2.3 l/min	0.6 gpm
Maximum Temperature	71°C	160°F

1151-020-127

Features

- Patented Pop-Off™ technology
- Single passage for coolant or MQL
- Small size for closely-spaced spindles: 32 mm diameter housing and M10 x 1 rotor

NO AIR PRESSURE WITH ROTATION

Operating Data

Media	Water-based coolant MQL (oil mist) up to 10 bar (145 psi)	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	40,000 min^{-1}	40,000 rpm
Maximum Pressure	140 bar	2,030 psi
Maximum Flow	24.3 l/min	6.4 gpm
Maximum Temperature	71°C	160°F

This series includes additional models. For more information, contact *DEUBLIN* at +1-847-689-8600 or www.deublin.com

DEUBLIN

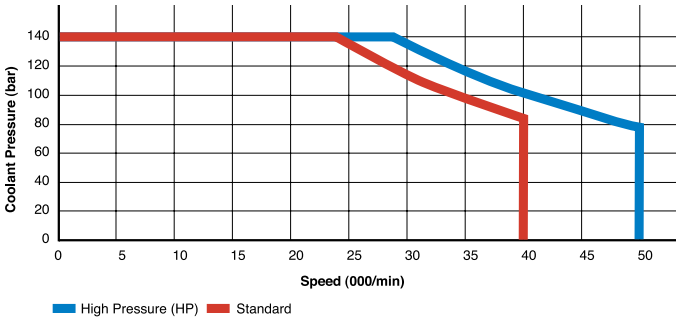
1121 Series Bearingless Pop-Off™ "Micro Stroke" Rotating Unions for Coolant Service

- Single passage for coolant or MQL
- Patented Pop-Off™ technology allows unlimited dry running without media pressure
- Ultra-short 0.1 mm pop-off stroke restricts drainage of residual coolant during tool change
- Full-flow design has no obstructions to trap chips or debris
- Balanced mechanical seals made from silicon carbide for long life even under difficult operating conditions
- Anodized aluminum housing resists corrosion

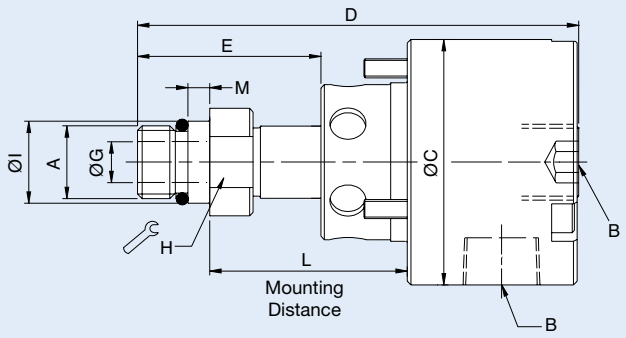
Operating Data

Media	Water-based Coolant MQL (oil mist) up to 10 bar (145 psi)	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	40,000 min^{-1} 50,000 min^{-1}	40,000 rpm Standard 50,000 rpm High Pressure (HP)
Maximum Pressure	140 bar	2,030 psi
Maximum Flow 1121-330-327 1121-330-345	24.3 l/min 38.7 l/min 82 l/min	6.4 gpm 10.2 gpm 21.6 gpm
Maximum Temperature	71°C	160°F

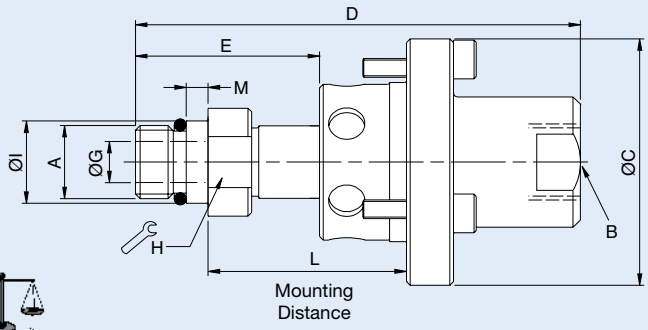
NO AIR PRESSURE WITH ROTATION



Dual Connection



Axial Connection



		Ordering Number	B Supply Connection	C Overall Diameter	D Overall Length	L Mounting Distance	A Rotor Connection	E Rotor Length	G Bore Diameter	H Across Flats	I Pilot Diameter	M Pilot Length	Max Speed (rpm)
Standard	Dual Connection	1121-300-327	3/8" PT	54	94	39.6 / 38.6	M12 x 1.25 LH	37	6	18	14.000 / 13.995	5	40,000
		1121-300-345	3/8" PT	54	97	44.0 / 43.0	M16 x 1.5 LH	40	9	21	17.993 / 17.988	5	40,000
		1121-330-327	3/8" PT	54	94	39.6 / 38.6	M12 x 1.25 LH	37	6	18	14.000 / 13.995	5	40,000
		1121-330-345	3/8" PT	54	97	44.0 / 43.0	M16 x 1.5 LH	40	9	21	17.993 / 17.988	5	40,000
		1121-380-327	G 3/8" Radial 1/4" PT Axial	54	98	39.6 / 38.6	M12 x 1.25 LH	37	6	18	14.000 / 13.995	5	40,000
		1121-380-345	G 3/8" Radial 1/4" PT Axial	54	102	44.0 / 43.0	M16 x 1.5 LH	40	9	21	17.993 / 17.988	5	40,000
	Axial Connection	1121-400-327	3/8" PT	54	94	39.6 / 38.6	M12 x 1.25 LH	37	6	18	14.000 / 13.995	5	40,000
		1121-400-345	3/8" PT	54	98	44.0 / 43.0	M16 x 1.5 LH	40	9	21	17.993 / 17.988	5	40,000
HP		1121-410-493	3/8" PT	54	105	39.6 / 38.6	M12 x 1.25 LH	40	5	18	14.000 / 13.995	5	50,000
		1121-430-431	3/8" PT	54	108	44.0 / 43.0	M16 x 1.5 LH	43	5	21	17.993 / 17.988	5	50,000

This series includes additional models. For more information, contact *DEUBLIN* at +1-847-689-8600 or www.deublin.com

DEUBLIN

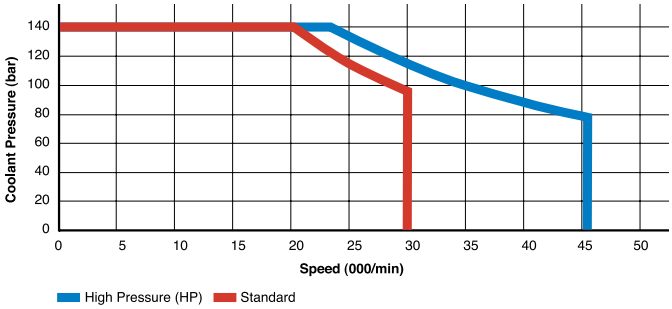
1129 Series Bearingless Pop-Off™ Rotating Unions for Coolant Service

- Single passage for coolant or MQL
- Patented Pop-Off™ technology allows unlimited dry running without media pressure
- Pop-off stroke of 0.7-3.0 mm compensates for thermal expansion of spindle during extended operation as well as variations in drawbar position
- Full-flow design has no obstructions to trap chips or debris
- Balanced mechanical seals made from silicon carbide for long life even under difficult operating conditions
- Anodized aluminum housing resists corrosion

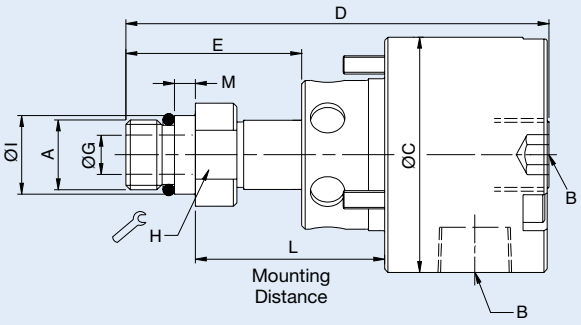
Operating Data

Media	Water-based Coolant MQL (oil mist) up to 10 bar (145 psi)		
Filtration	ISO 4406 Class 17/15/12, max. 60 micron		
Maximum Speed	30,000 min^{-1} 46,000 min^{-1}	30,000 rpm 46,000 rpm	Standard High Pressure (HP)
Maximum Pressure	140 bar	2,030 psi	
Maximum Flow 1129-016-301	24.3 l/min 53.0 l/min	6.4 gpm 14.0 gpm	
Maximum Temperature	71°C	160°F	

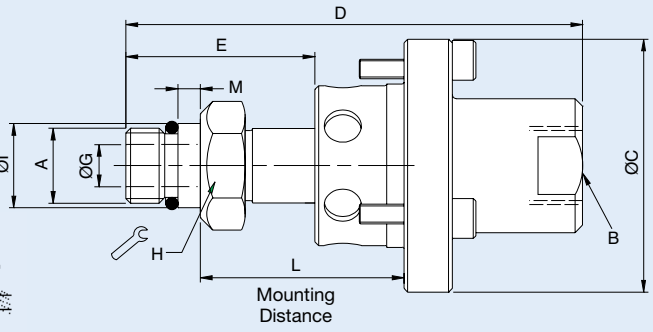
NO AIR PRESSURE WITH ROTATION



Dual Connection



Axial Connection



		Ordering Number	B Supply Connection	C Overall Diameter	D Overall Length	L Mounting Distance	A Rotor Connection	E Rotor Length	G Bore Diameter	H Across Flats	I Pilot Diameter	M Pilot Length	Max Speed (rpm)
Standard	Dual Connection	1129-033-301	3/8" PT	54	97	44.0 / 43.0	M16 x 1.5 LH	40	9	24	17.993 / 17.988	5	30,000
		1129-033-327	3/8" PT	54	94	39.6 / 38.6	M12 x 1.25 LH	37	6	18	14.000 / 13.995	5	30,000
		1129-050-301	G 3/8"	54	101	44.0 / 43.0	M16 x 1.5 LH	40	9	24	17.993 / 17.988	5	30,000
		1129-859-731	G 3/8"	54	106	39.2 / 38.8	M12 x 1.25 LH	37	5	18	14.000 / 13.995	5	30,000
	Axial Connection	1129-016-301	3/8" PT	54	97	44.0 / 43.0	M16 x 1.5 LH	40	9	24	17.993 / 17.988	5	30,000
		1129-036-301	3/8" PT	54	98	44.0 / 43.0	M16 x 1.5 LH	40	9	24	17.993 / 17.988	5	30,000
		1129-036-327	3/8" PT	54	94	39.6 / 38.6	M12 x 1.25 LH	37	6	18	14.000 / 13.995	5	30,000
		1129-039-301	3/8" PT	54	97	44.0 / 43.0	M16 x 1.5 LH	40	9	24	17.993 / 17.988	5	30,000
		1129-730-731	G 3/8"	54	94	39.2 / 38.8	M12 x 1.25 LH	37	5	18	14.000 / 13.995	5	30,000
		1129-927-929	G 3/8"	54	101	39.2 / 38.8	M14 x 1.5 LH	37	7	24	14.494 / 14.489	5	30,000
		1129-330-342	30 mm Counterbore	48	72	37.5	M12 x 1 RH	28	6	22.2	13.000 / 12.992	7	20,000
HP		1129-053-137	20 mm Counterbore	40	63	27.0/24.0	M12 x 1.25 LH	28	6	17	13.000 / 12.995	6	46,000

This series includes additional models. For more information, contact *DEUBLIN* at +1-847-689-8600 or www.deublin.com

DEUBLIN

1129 Series Bearingless "Controlled Leakage" Rotating Unions for Dry Air at High Speed

- Single passage for dry or lubricated air

Operating Data

Media	Air (dry or lubricated)	
Maximum Speed	20,000 min^{-1}	20,000 rpm
Maximum Pressure	10 bar	145 psi
Maximum Temperature	71°C	160°F

OK
DRY AIR SERVICE

	Ordering Number	B Supply Connection	C Overall Diameter	D Overall Length	L Mounting Distance	A Rotor Connection	E Rotor Length	G Bore Diameter	H Across Flats	I Pilot Diameter	M Pilot Length	Max Speed (rpm)
Axial	1129-051-482	30 f7 Counterbore	48	72	40	M12 x 1 RH	33	6	17	12.994 / 12.989	6	20,000
	1129-490-489	30 f7 Counterbore	48	84	40.8 / 40.2	M12 x 1 RH	40	6	19	13.000 / 12.995	15	20,000
	1129-775	44 e8 Counterbore	44	63	38.5	12 e7	25	7	NA	11.984 / 11.966	24	20,000

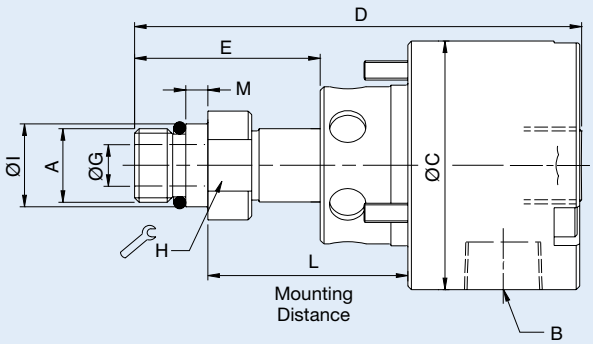
Bearingless Rotating Unions Available Configurations

DEUBLIN bearingless Pop-Off™ unions are available to fit virtually every machine tool in the world. Shown below are only some of the many configurations available from *DEUBLIN*.

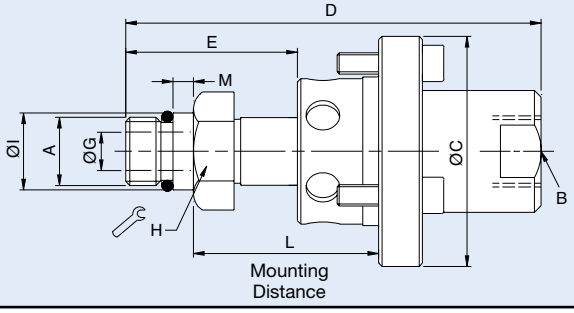
Outboard Mounting

With outboard mounting, the union housing is installed from outside the spindle. Replacement is faster and easier with this mounting style.

Dual Port



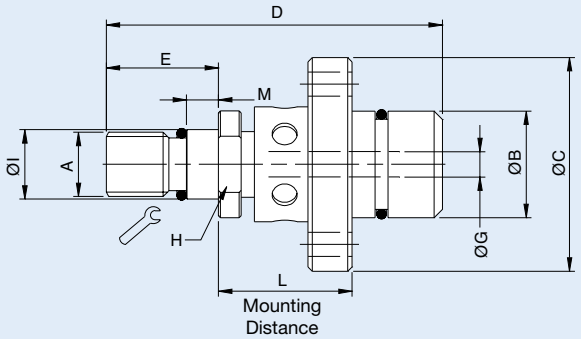
Axial Port



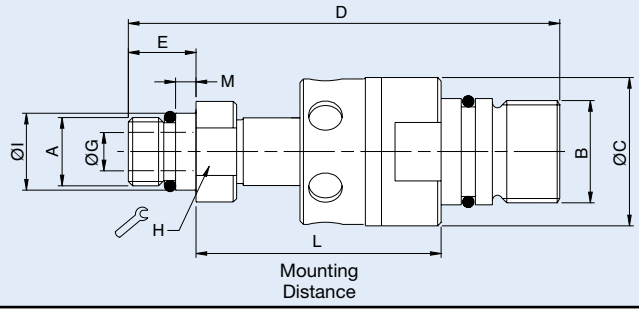
Inboard Mounting

With inboard mounting, the union housing is installed inside the spindle, typically within or near the tool clamping unit. Because a hose connection is not required, this mounting style can be very compact.

Counterbore



Threaded



This series includes additional models. For more information, contact *DEUBLIN* at +1-847-689-8600 or www.deublin.com

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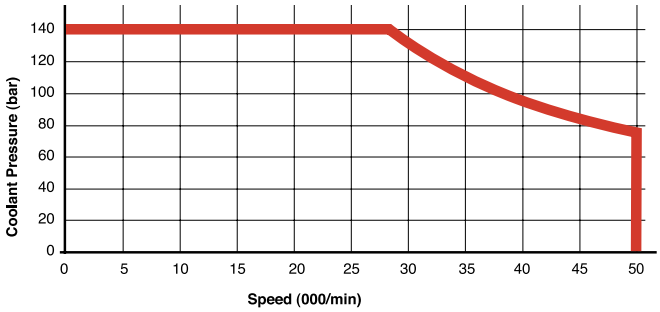
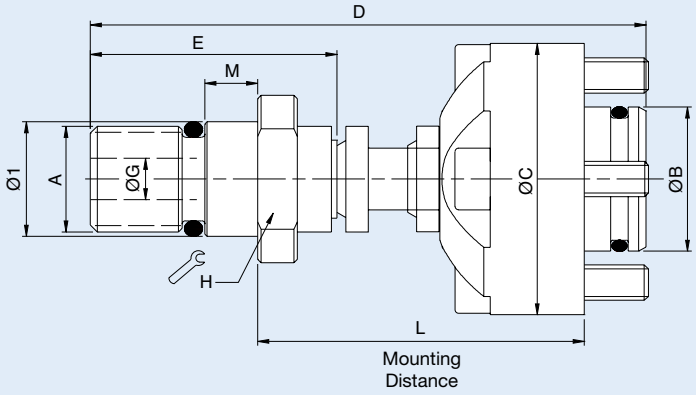
1154 Series Bearingless AutoSense™ "Long Stroke" Rotating Unions for Coolant and Air Service

- Single passage for coolant or MQL
- Patent-pending AutoSense™ technology automatically changes between closed seals and controlled leakage operation in response to the kind of media
- Non-rotating element has a "stroke" (axial movement) of more than 8 mm, to track drawbar movement even when union is mounted on the clamping device
- Full-flow design has no obstructions to trap chips or debris
- Balanced mechanical seals made from silicon carbide for long life even under difficult operating conditions
- Anodized aluminum housing resists corrosion

Operating Data

Media	Water-based Coolant MQL (oil mist) up to 10 bar (145 psi) Air up to 10 bar (145 psi)	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	40,000 min^{-1}	40,000 rpm
Maximum Pressure	140 bar	2,030 psi
Maximum Flow	24.3 l/min	6.4 gpm
Maximum Temperature	71°C	160°F





	Ordering Number	B Supply Connection	C Overall Diameter	D Overall Length	L Mounting Distance	A Rotor Connection	E Rotor Length	G Bore Diameter	H Across Flats	I Pilot Diameter	M Pilot Length	Max Speed (rpm)
Axial	1154-002-105	16.4 mm Counterbore	31	72	49.0 / 42.0	M8 x 1 RH	37	4	15	8.995 / 8.991	3.5	40,000
	1154-002-109	16.4 mm Counterbore	31	63	37.0 / 30.0	M12 x 1 RH	28	5	15	12.994 / 12.989	6	40,000
	1154-002-133	16.4 mm Counterbore	31	65	37.0 / 30.0	M16 x 1.5 LH	30	4	19	17.994 / 17.989	6	40,000
	1154-002-140	16.4 mm Counterbore	31	63	37.0 / 30.0	M12 x 1.25 LH	28	5	15	12.994 / 12.989	6	40,000
	1154-003-107	20 mm Counterbore	39	71	40.0 / 33.0	M12 x 1.25 LH	36	5	15	12.994 / 12.989	6	40,000
	1154-003-137	20 mm Counterbore	38.5	62	31.0 / 25.0	M12 x 1.25 LH	27	5	15	12.994 / 12.989	6	40,000
	1154-004-109	30 mm Counterbore	48.5	69	42.0 / 35.0	M12 x 1 RH	28	5	15	12.994 / 12.989	6	40,000
	1154-005-109	16.4 mm Counterbore	31	87	49.0 / 42.0	M12 x 1 RH	28	5	15	12.994 / 12.989	6	40,000
	1154-012-109[A]	16.4 mm Counterbore	31	63	37.0 / 30.0	M12 x 1 RH	28	5	15	12.994 / 12.989	6	40,000
	1154-012-133[A]	16.4 mm Counterbore	31	65	37.0 / 30.0	M16 x 1.5 RH	30	5	19	17.994 / 17.989	6	40,000

Note A: 1154-012-xxx include a spring to fully retract the non-rotating element when pressure is discontinued.
Note B: Overall Length (D) is at maximum Mounting Distance (L).

This series includes additional models. For more information, contact *DEUBLIN* at +1-847-689-8600 or www.deublin.com

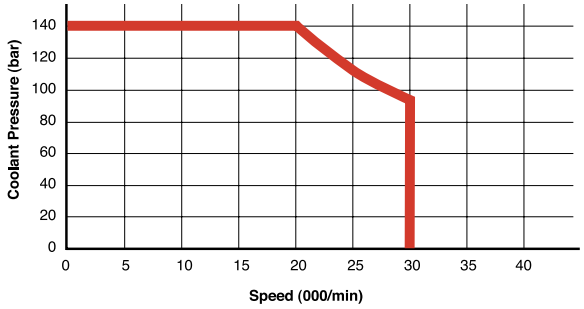
DEUBLIN

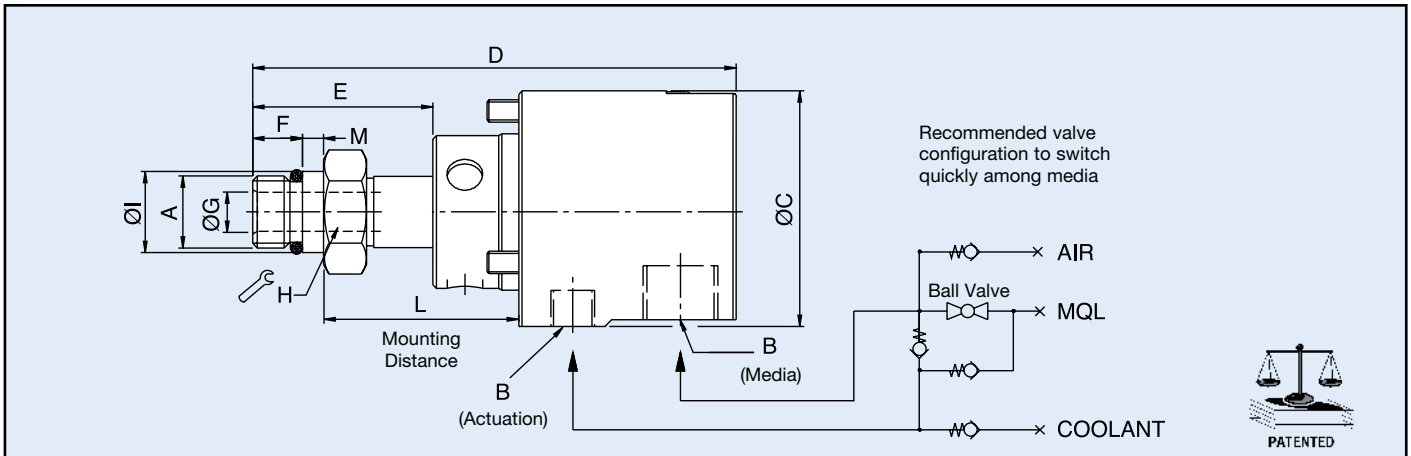
1139 Series Bearingless "All-Media" Rotating Unions for Coolant, MQL, and Air Service

- Single passage for all media
- Patented technology operates with closed seals for coolant, as a Pop-Off™ when pressure is removed, and as with a microscopic gap between the seals ("controlled leakage") with pressurized dry air
- Non-rotating element has a "stroke" (axial movement) of 0.7-3.0 mm, for reliable sealing even with thermal expansion of spindle and variations in drawbar position
- Full-flow design has no obstructions to trap chips or debris
- Balanced mechanical seals made from silicon carbide for long life even under difficult operating conditions
- Anodized aluminum housing resists corrosion

Operating Data

Media	Water-based Coolant MQL (oil mist) Air, dry or lubricated		
Filtration	ISO 4406 Class 17/15/12, max. 60 micron		
Maximum Speed	30,000 min^{-1}	30,000 rpm	
Maximum Pressure	140 bar 10 bar	2,030 psi 145 psi	Coolant MQL, Air
Maximum Flow	28 l/min	7.4 gpm	
Maximum Temperature	71°C	160°F	





	Ordering Number	B Supply Connection[A]	C Overall Diameter	D Overall Length	L Mounting Distance	A Rotor Connection	E Rotor Length	F Thread Length	G Bore Diameter	H Across Flats	I Pilot Diameter	M Pilot Length
Axial Connection	1139-020-116	3/8" NPT Axial 1/8" NPT Radial	51	97	31.6 / 30.6	M16 x 1.5 LH	28	11	9	24	17.993 / 17.988	5
	1139-032-301	3/8" PT Axial 1/8" PT Radial	54	109	44.0 / 43.0	M16 x 1.5 LH	40	11	9	24	17.993 / 17.988	5
	1139-032-327	3/8" PT Axial 1/8" PT Radial	54	106	39.6 / 38.6	M12 x 1.25 LH	37	12	6	21	14.000 / 13.995	5
	1139-041-301	3/8" PT Axial 1/8" PT Radial	54	109	44.0 / 43.0	M16 x 1.5 LH	40	11	9	24	17.993 / 17.988	5
	1139-744-301	G 3/8" Axial G 1/8" Radial	54	101	44.0 / 43.0	M16 x 1.5 LH	40	11	9	24	17.993 / 17.988	5
Radial	1139-746-301	G 3/8" Radial G 1/8" Radial	54	108	44.0 / 43.0	M16 x 1.5 LH	40	11	9	24	17.993 / 17.988	5
	1139-746-327	G 3/8" Radial G 1/8" Radial	54	105	44.0 / 43.0	M12 x 1.25 LH	37	12	6	24	14.000 / 13.995	5

Note A: All 1139 series have a 1/8" radial connection for the actuation port.

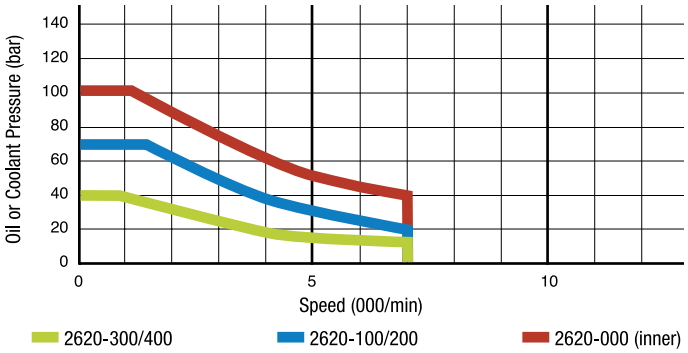
DEUBLIN

2620 Series 2-Passage Rotating Unions for Various Media

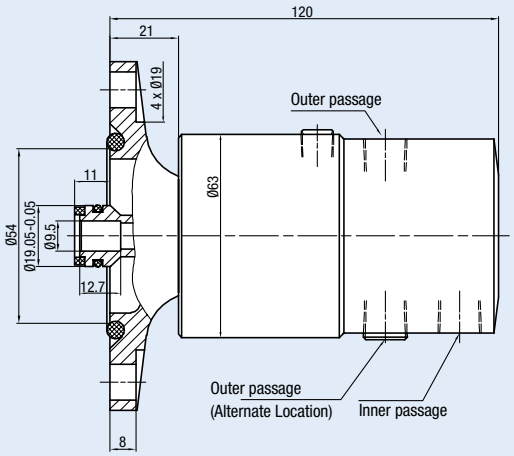
- Two independent passages for applications such as clamping and unclamping
- Balanced mechanical seals for each passage provide long life and reduced torque even at maximum pressure
- Closed seals provide continuous containment of media
- Dual precision ball bearings for smooth operation
- Labyrinth protection for ball bearings
- Mountings options are compatible with *DEUBLIN* 2520 or 1579 series unions

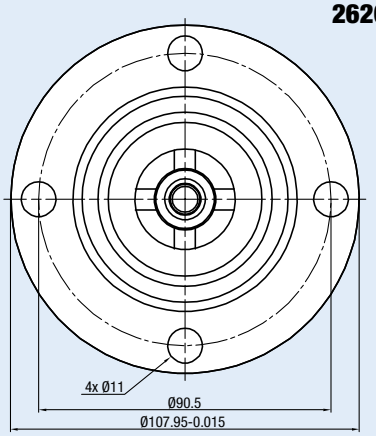
Operating Data

Media	See table	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	7,000 min^{-1}	7,000 rpm
Maximum Pressure	See table	
Maximum Flow	69 l/min	18.2 gpm (per passage)
Maximum Temperature	71°C	160°F



2620-XXX-252 shown





	With Ø 108 mm flanged rotor		With Ø 88 mm flanged rotor			With Ø 81 mm flanged rotor		Inner Passage		Outer Passage		Notes
	Ordering Number	Supply Connections Inner and Outer Passage	Ordering Number	Supply Connections Inner Passage	Supply Connections Outer Passage	Ordering Number	Supply Connections Inner and Outer Passage	Media	Max. Pressure {bar}	Media	Max. Pressure {bar}	
	2620-000-252	1/4 NPT	2620-002-940	G1/4"	G1/4"	2620-000-157	1/4 NPT	Hydraulic oil	100	Hydraulic oil	30	
	2620-100-252	1/4 NPT	2620-102-940	G3/8"	G1/8"	2620-100-157	1/4 NPT	Hydraulic oil	70	Air	6	Air seals may be lubricated through oil cup or by using oiled air.
	2620-120-252	1/4 NPT	2620-122-940	G3/8"	G1/8"	2620-120-157	1/4 NPT	Hydraulic oil	70	Air	10	
	2620-200-252	1/4 NPT	2620-202-940	G3/8"	G1/8"	2620-200-157	1/4 NPT	Coolant	70	Air	6	
	2620-220-252	1/4 NPT	2620-222-940	G3/8"	G1/8"	2620-220-157	1/4 NPT	Coolant	70	Air	10	
	2620-300-252	1/4 NPT	2620-302-940	G1/4"	G1/4"	2620-300-157	1/4 NPT	Air	6	Hydraulic oil	40	Air seals require no external lubrication.
	2620-320-252	1/4 NPT	2620-322-940	G1/4"	G1/4"	2620-320-157	1/4 NPT	Air	10	Hydraulic oil	40	
	2620-400-252	1/4 NPT	2620-402-940	G1/4"	G1/4"	2620-400-157	1/4 NPT	Air	6	Coolant	40	
	2620-420-252	1/4 NPT	2620-422-940	G1/4"	G1/4"	2620-420-157	1/4 NPT	Air	10	Coolant	40	
	2620-500-252	1/4 NPT	2620-502-940	G3/8"	G1/8"	2620-500-157	1/4 NPT	Air	6	Air	6	Consult *DEUBLIN* regarding maximum speed.
	2620-520-252	1/4 NPT	2620-522-940	G3/8"	G1/8"	2620-520-157	1/4 NPT	Air	10	Air	10	

This series includes additional models. For more information, contact *DEUBLIN* at +1-847-689-8600 or www.deublin.com

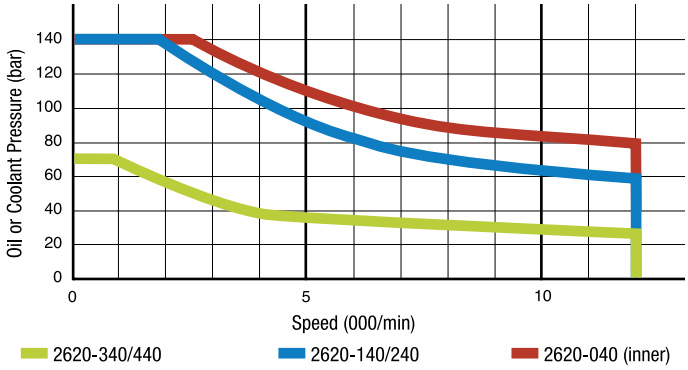
DEUBLIN

2620 Series 2-Passage Rotating Unions for Various Media

- Two independent passages for applications such as clamping and unclamping, work piece sensing, and cooling
- Balanced mechanical seals for each passage provide long life and reduced torque even at maximum pressure
- Closed seals provide continuous containment of media
- Dual precision ball bearings for smooth operation
- Labyrinth protection for ball bearings
- Mountings options are compatible with *DEUBLIN* 2520 or 1579 series unions

Operating Data

Media	See table	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	12,000 min^{-1}	12,000 rpm
Maximum Pressure	See table	
Maximum Flow	69 l/min	18.2 gpm (per passage)
Maximum Temperature	71°C	160°F



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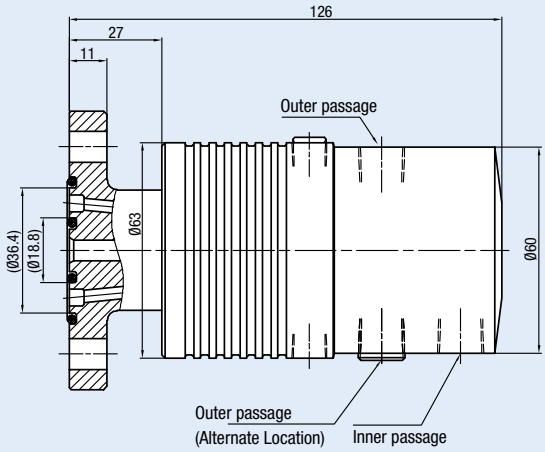
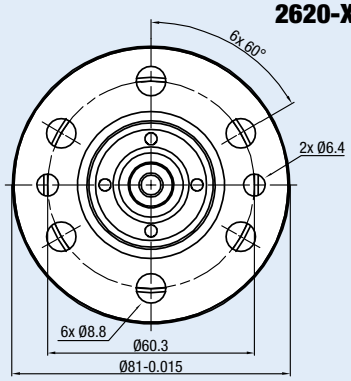




	With Ø 108 mm flanged rotor		With Ø 88 mm flanged rotor			With Ø 81 mm flanged rotor		Inner Passage		Outer Passage		Notes
	Ordering Number	Supply Connections Inner and Outer Passage	Ordering Number	Supply Connections Inner Passage	Supply Connections Outer Passage	Ordering Number	Supply Connections Inner and Outer Passage	Media	Max. Pressure {bar}	Media	Max. Pressure {bar}	
	2620-040-252	1/4 NPT	2620-042-940	G1/4"	G1/4"	2620-040-157	1/4 NPT	Hydraulic oil	140	Hydraulic oil	70	
	2620-140-252	1/4 NPT	2620-142-940	G3/8"	G1/8"	2620-140-157	1/4 NPT	Hydraulic oil	140	Air	6	Air seals may be lubricated through oil cup or by using oiled air.
	2620-160-252	1/4 NPT	2620-162-940	G3/8"	G1/8"	2620-160-157	1/4 NPT	Hydraulic oil	140	Air	10	
	2620-240-252	1/4 NPT	2620-242-940	G3/8"	G1/8"	2620-240-157	1/4 NPT	Coolant	140	Air	6	
	2620-260-252	1/4 NPT	2620-262-940	G3/8"	G1/8"	2620-260-157	1/4 NPT	Coolant	140	Air	10	
	2620-340-252	1/4 NPT	2620-342-940	G1/4"	G1/4"	2620-340-157	1/4 NPT	Air	6	Hydraulic oil	70	Air seals require no external lubrication.
	2620-360-252	1/4 NPT	2620-362-940	G1/4"	G1/4"	2620-360-157	1/4 NPT	Air	10	Hydraulic oil	70	
	2620-440-252	1/4 NPT	2620-442-940	G1/4"	G1/4"	2620-440-157	1/4 NPT	Air	6	Coolant	70	
	2620-460-252	1/4 NPT	2620-462-940	G1/4"	G1/4"	2620-460-157	1/4 NPT	Air	10	Coolant	70	

This series includes additional models. For more information, contact *DEUBLIN* at +1-847-689-8600 or www.deublin.com

DEUBLIN

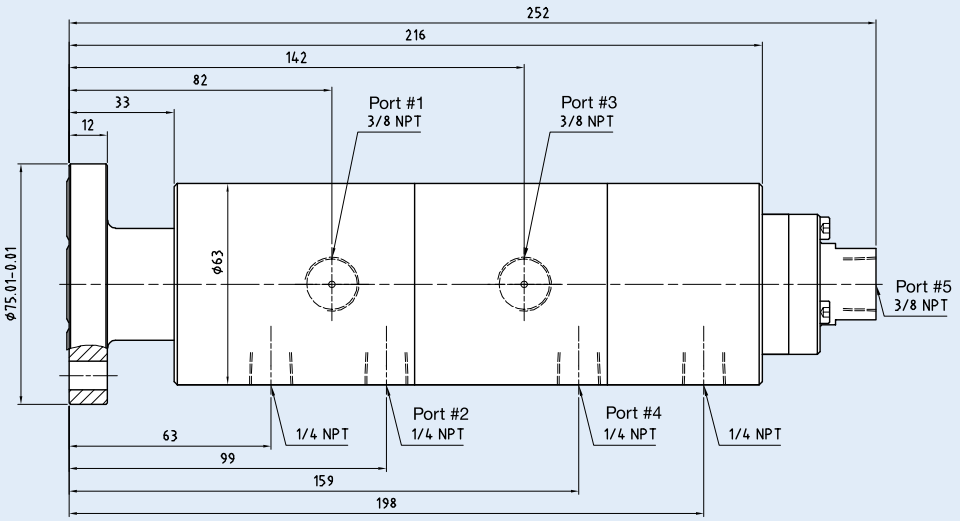
2630/2640 Series 3 to 5-Passage Rotating Unions for Various Media

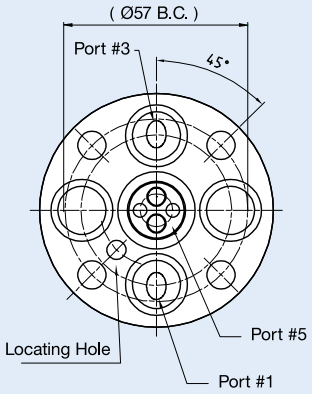
- Three to five independent passages for applications such as clamping and unclamping, work piece or tool sensing, and spindle cooling
- Balanced mechanical seals in all passages for low torque and long life even with high speeds and pressures
- Closed seals provide continuous containment of media
- No external lubrication of air seals is required
- Dual precision ball bearings for smooth operation
- Labyrinth protection for ball bearings

Operating Data

Media	See table	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	10,000 min^{-1}	10,000 rpm
Maximum Pressure		
Coolant or oil	140 bar	2,030 psi
Air	10 bar	145 psi
Maximum Flow Per Passage		
2630 Series	39 l/min	10.2 gpm
2640 Series	17 l/min	4.5 gpm
2650 Series	17 l/min	4.5gpm
Maximum Temperature	71°C	160°F

End View (2630-100-001 shown)





Number of Passages	Ordering Number	Port #1	Port #2	Port #3	Port #4	Port #5
3	2630-000-001	Hydraulic or Cooling Oil	Drain	Water	Drain	Coolant / MQL / Dry Air[A]
	2630-100-001	Hydraulic or Cooling Oil	Drain	Hydraulic or Cooling Oil	Drain	Coolant / MQL / Dry Air[A]
	2630-200-001	Hydraulic or Cooling Oil	Air[B]	Coolant	Drain	NA
	2630-300-001	NA	Air[B]	Coolant	Air[B]	NA
	2630-400-001	NA	Air[B]	Coolant	Drain	Coolant / MQL / Dry Air[A]
4	2640-000-001	Hydraulic or Cooling Oil	Air[B]	Coolant	Drain	Coolant / MQL / Dry Air[A]
	2640-100-001	Hydraulic or Cooling Oil	Air[B]	Hydraulic or Cooling Oil	Drain	Coolant / MQL / Dry Air[A]
5	2650-000-001	Hydraulic or Cooling Oil	Air[B]	Coolant	Air[B]	Hydraulic or Cooling Oil

Note A: This passage features AutoSense™ technology. With dry air, it operates with controlled leakage with MQL and coolant, it operates with closed seals.
Note B: This passage operates with closed seals, appropriate for tool or work piece sensing applications.

This series includes additional models. For more information, contact *DEUBLIN* at +1-847-689-8600 or www.deublin.com

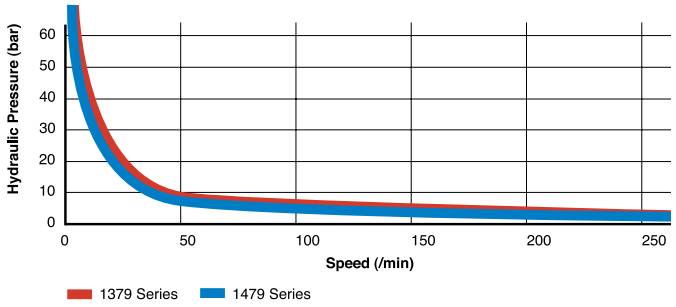
DEUBLIN

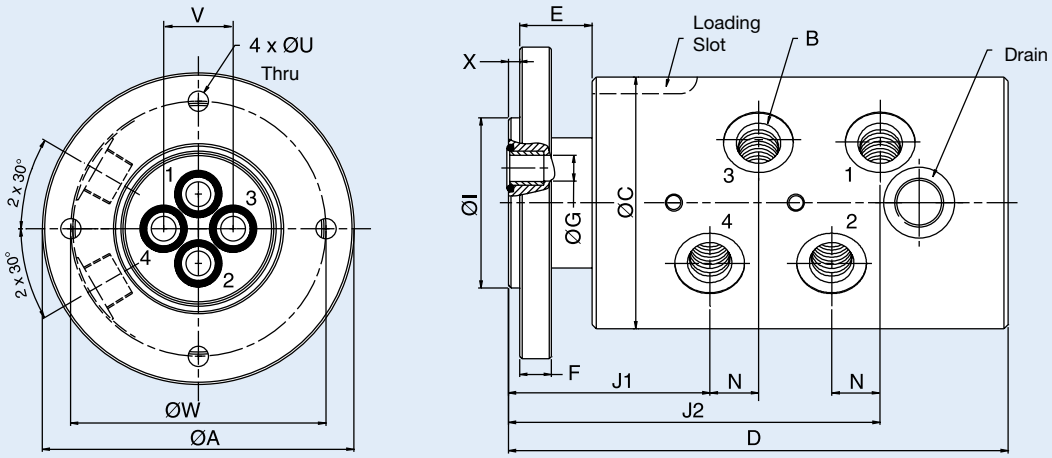
1379 and 1479 Series 4-Passage Rotating Unions for Various Media

- Four independent passages for applications such as clamping and unclamping, work piece or tool sensing, and spindle cooling
- Vent between passages 2 and 3 allows use of two different media without cross contamination. For example, water in passages 1 and 2 and hydraulic oil in passages 3 and 4
- Stainless steel and brass components resist corrosion
- Hardened chrome sealing surface and elastomer-energized seals
- Dual, widely spaced ball bearings absorb large side loads

Operating Data

Media	Hydraulic oil Air (dry or lubricated)	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	250 min^{-1}	250 rpm
Maximum Pressure		
Hydraulic oil	60 bar	870 psi (rotating)
	250 bar	3,625 psi (very slow rotation)
Air	10 bar	145 psi
Maximum Flow Per Passage		
1379 Series	53 l/min	14 gpm
1479 Series	108 l/min	28.5 gpm
Maximum Temperature	80°C	175°F





	Ordering Number	B Supply Connection	A Flange Dia.	C Housing Dia.	D Overall Length	E Rotor Length	F Flange Thickness	G Bore Dia.	I Pilot Dia.	J1	J2	N	U	V	W B.C. Ø	X Pilot Length
	1379-460	3/8" NPT	110	89	176	25	10.5	9	60.000 59.981	72	142	17	7.2	24.5	90	4
	1379-160	G 3/8"	110	89	176	25	10.5	9	60.000 59.981	72	142	17	7.2	24.5	90	4
	1479-400	1/2" NPT	130	108	202	25	13.5	13	75.000 74.981	81	169	23	9	29	110	4
	1479-100	G 1/2"	130	108	202	25	13.5	13	75.000 74.981	81	169	23	9	29	110	4

DEUBLIN

Special 2-Passage Rotating Unions for MQL Mixed in the Spindle

1112-100-101

Features

- Two concentric passages for mixing oil and air in the spindle
- Rotating inner passage for oil lance
- Compact housing is only 95 mm long and 45 mm diameter
- Threaded rotor for easy installation
- Full-flow design has no obstructions to trap chips or debris

Operating Data

Media	Oil or Water (inner passage) Air (outer passage)	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	20,000 min^{-1}	20,000 rpm
Maximum Pressure		
Oil / Water	62 bar	900 psi
Air	10 bar	145 psi
Maximum Flow	2.3 l/min	0.6 gpm
Maximum Temperature	71°C	160°F

1112-240-001

Features

- Two concentric passages for mixing oil and air in the spindle
- Rotating inner passage for oil lance
- Bore mounted design for easy installation
- Patented Pop-Off™ and AutoSense™ technologies allow unlimited dry running without media pressure

Operating Data

Media	Oil or Coolant (Inner Passage) Air (outer passage)	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	30.000 min^{-1}	30,000 rpm
Maximum Pressure		
Oil / Coolant	140	2030 psi
Air	8 bar	116 psi
Max. Flow	6 l/min	1.6 gpm
Maximum Temperature	71°C	160°F

1122-923-852

Features

- Two concentric passages for mixing oil and air in the spindle
- Non-rotating inner passage for oil lance
- Bearingless design

Operating Data

Media	Oil (inner passage) Air (outer passage)	
Filtration	ISO 4406 Class 17/15/12, max. 60 micron	
Maximum Speed	20,000 min^{-1}	20,000 rpm
Maximum Pressure		
Oil / Water	12 bar	174 psi
Air	8 bar	116 psi
Maximum Flow	2.3 l/min	0.6 gpm
Maximum Temperature	71°C	160°F

This series includes additional models. For more information, contact *DEUBLIN* at +1-847-689-8600 or www.deublin.com

WARRANTY AND OTHER IMPORTANT INFORMATION

Service and Support

Rotating unions are critical to the performance of your machining centers, so *DEUBLIN* products are designed for maximum reliability. *DEUBLIN* service is just as reliable. To provide you with local and emergency service, *DEUBLIN* has a worldwide service network of wholly-owned subsidiaries and authorized distributors. Whether you need a spare part, new product, technical advice, or help with a design project, *DEUBLIN's* experienced customer service representatives and application engineers are available to provide immediate assistance.

Warranty

For a period of one year from the date of shipment, *DEUBLIN* warrants that the products sold by it are free from defects in materials and workmanship. The liability of *DEUBLIN* is limited expressly to the replacement or rebuilding of any article, or part thereof, proven defective, when returned to the *DEUBLIN* Company, transportation prepaid, within a reasonable time after termination of the 365-day warranty period.

This warranty is void if the product is dismantled, modified, altered, or damaged from improper maintenance, side loading, excessive temperature, abrasive or chemical action, or other abuse. No representative, agent, or employee of *DEUBLIN* has any authority to modify the terms of this warranty. *DEUBLIN* will not be responsible for any consequential or resulting damage which may be claimed to have occurred through the sale or use of such products or parts, thereof, which might be defective.

There are no warranties which extend beyond the description contained under this heading, express or implied, including warranties of fitness for a particular purpose.

Important Notice

The *DEUBLIN* Rotating Union is a precision-made piece of equipment and should be handled accordingly. It is a rotating sealing device – not just a plumbing union. Improper use or installation can result in premature leakage or failure. While *DEUBLIN* unions are of the highest quality and precision, they are "wear and tear" items. It is important that they are periodically inspected and, as the seals wear out, replaced or repaired to avoid the consequences of leakage.

DEUBLIN unions never should be used for applications other than as specified in the catalog. *DEUBLIN* unions should not be used to seal hydrocarbons or other flammable media as leakage may result in explosions or fires. The use of our product on hazardous or corrosive media is strictly forbidden.

For applications other than as stated in the catalog, contact *DEUBLIN's* Engineering Department for recommendations.

These instructions are provided as general guidelines. They do not contain exhaustive information about the installation, use or maintenance of unions. Purchasers and users of *DEUBLIN* unions should be certain that they have reviewed *DEUBLIN's* catalog and have sufficient experience and training in the use of unions before attempting installation or use of *DEUBLIN* products. The principal responsibility for the safe and effective use of *DEUBLIN* unions rests with the user and its employees. *DEUBLIN* will provide, upon request, whatever assistance it can to advise users about the use of its products and about any difficulties or problems which are brought to its attention.

Factory Testing

All *DEUBLIN* Rotating Unions are factory-tested under pressure prior to shipment. This thorough check ensures that each *DEUBLIN* union performs as intended. *DEUBLIN* Rotating Unions can be installed with the confidence that they will operate to your complete satisfaction.

GETTING TECHNICAL OR DESIGN ASSISTANCE FROM *DEUBLIN*

Since 1945, *DEUBLIN* has grown from a small garage shop to the world's largest manufacturer of rotating unions. Today, *DEUBLIN's* international headquarters is located in Waukegan, Illinois, with manufacturing facilities and sales offices located in 17 countries on four continents. *DEUBLIN's* state-of-the-art manufacturing facilities feature the latest technologies, including multi-axis CNC, robotics, single point threading, and cylindrical grinding.

Advanced machining techniques and proprietary processes allow *DEUBLIN* to achieve the most precise tolerances in the industry and to ensure superior performance and union life. Our worldwide distribution network allows machine operators all over the world to specify *DEUBLIN* unions when purchasing equipment made in another country. We are manufacturers ourselves, so we understand the importance of fast response time to keep your manufacturing process rolling. Wherever you are located, *DEUBLIN* has a stocking distributor nearby to meet your requirements – quickly.

DEUBLIN Unions making *DEUBLIN* Unions

ORDERING CHECK LIST

Because rotating unions must accommodate a broad range of speeds, pressures, and media, the *DEUBLIN* product line includes thousands of standard models. But sometimes even this extensive selection may not meet your specialized needs. That's why we manufacture an ever-growing line of custom unions to meet the particular requirements of world-leading manufacturers. In many situations, we can adapt an existing union design in order to offer a cost-effective solution that meets your exact specifications.

DEUBLIN 2-passage Unions on CNC Turning Center

When you contact us, we will ask a number of questions to make sure that we completely understand your application. These questions may include:

Machine Type	❑ CNC Machining Center ❑ Gun Drilling ❑ Transfer Line or Flex Line ❑ Turning Machine ❑ Grinding ❑ Multiple Spindle Head ❑ Other _____
Orientation	❑ Horizontal ❑ Vertical ❑ Multi-axis: Vertical +_____ ° and – _____ °
Union Location	❑ Spindle ❑ Motor Spindle ❑ Indexing Table or Pallet ❑ Other: _____
Available Space	Maximum overall length = _____mm Maximum diameter = _____mm (Please attach drawings or photographs of the area where the union will be installed.)
Mounting	Bearing-supported: ❑ Rotor-mounted ❑ Bore-mounted Bearingless: ❑ Outboard mounting ❑ Inboard mounting ❑ Around the shaft (shaft diameter = _____mm) ❑ Other: _____
Rotor Style	❑ Threaded (pitch and diameter = _____) ❑ Flanged (diameter = _____) ❑ Other: _____
Media	❑ Water-based coolant ❑ Cutting oil ❑ Hydraulic oil ❑ Air-oil mist ❑ Lubricated air ❑ Dry air ❑ Other: _____
Operating Conditions	❑ Maximum pressure _____ bar (when rotating) _____ bar (when stopped) ❑ Maximum speed _____ rpm ❑ Maximum flow _____ liters per minute ❑ Maximum temperature _____ °C

The better we understand your requirements, the faster and more accurately we can respond.

Since its establishment in 1945, Deublin 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, 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

DEUBLIN®
Engineered for Performance

***DEUBLIN* products & services are available throughout the world.**

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Printed in the U.S.A. MT123 US