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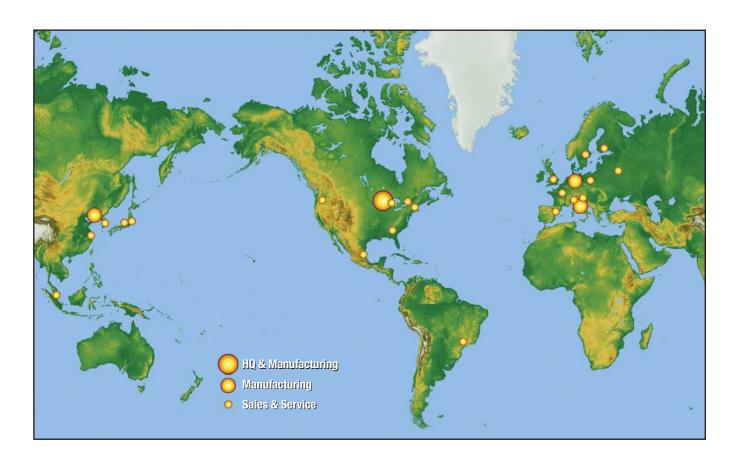




Rotating Unions
STEEL INDUSTRY

www.deublin.com

DEUBLIN KEEPS THE WORLD ROTATING



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, sales offices and warehouses located in 17 countries on four continents.

Our worldwide distribution network allows end users all over the world to specify *DEUBLIN* unions when purchasing equipment made in another country. We're manufacturers ourselves, so we understand the importance of fast response time to keep your manufacturing process rolling. Wherever you're located, *DEUBLIN* has a stocking distributor nearby to meet your requirements—quickly.



UNIQUE REQUIREMENTS DEMAND CUSTOM UNIONS

Rotating unions must accommodate a broad range of materials, viscosities, temperatures, pressures and speeds. That's why the *DEUBLIN* product line offers over 500 standard unions, over 3,000 separate models.

Even this extensive line cannot meet all the specialized needs required by our customers. That's why we manufacture an evergrowing line of custom unions to meet individual manufacturers' particular requirements. In many instances, we can adapt or convert an existing union and offer a cost-effective solution to meet your exact specifications.



ROTATING UNIONS FOR STEEL INDUSTRY

DEUBLIN has been the world's largest manufacturer of rotating unions for the general industry for over 65 years and specialty unions for the continuous casting industry for over 45 years. DEUBLIN has worked closely with designers and users of continuous casting equipment and as a result, has developed a number of solutions to the unique requirements of continuous casting applications.

Rotating unions are used to transmit cooling water in and out of the rolls of caster segments and, therefore, are critical components of every continuous casting machine (CCM). Rotating union performance can often make the difference between a productive operation or a casting operation with frequent downtime, maintenance, and repair.

A rotating union is composed of 3 parts—a housing that turns with the caster roll, a stationary hollow sleeve that connects the water supply and return and a balanced mechanical seal that acts as a leak-proof rotating connection. The critical component is the mechanical seal.

DEUBLIN unions have **balanced mechanical seals** with seal faces that are micro lapped to an optical flatness of better than 2 light bands. The seal faces are made of silicon carbide to provide the ultimate wear resistance in harsh and abrasive environments. While DEUBLIN's standard unions have a one-year warranty—the 2400 Series, due to its robust design and advanced technology, is offered with a **two-year warranty**.

In today's very competitive environment, *DEUBLIN* unions can help you reduce maintenance costs and enjoy the profitability of longer, high tonnage campaigns. *DEUBLIN* also offers **rebuilding and exchange programs**

that can be designed to complement your section-rebuilding schedule. This assures you of always having a dependable quality union at a fraction of the cost of a new union. *DEUBLIN* 55 Series unions for Tunnel Furnace applications are featured in our Standard Union Catalog.

Quality Credentials

DEUBLIN pursues its design and manufacturing missions with a passionate belief in the premise that quality is designed-in, not inspected in—a philosophy that is at the heart of its independently registered ISO 9001 compliant Quality Management System. This recognition offers assurance that our customers' end-use environment, performance requirements and reliability expectations are always captured and expressed in our product designs, as well as at every stage of development and manufacture. It means that "lessons learned" in hundreds of product applications are projected forward into continual improvement of both our product and processes. Our ISO 9001 recognition is therefore simply more evidence of DEUBLIN's unmatched reputation for customer satisfaction and product quality.

In addition, *DEUBLIN* is certified as an Authorized Economic Operator (AEO), which provides assurance that *DEUBLIN*'s supply chain is approved as both secure and customs-reliable. This recognition fast-tracks the flow of goods and materials worldwide—a customer service advantage for all of our supply chain partners.

MANUFACTURING PROCESS

Foundry/Casting

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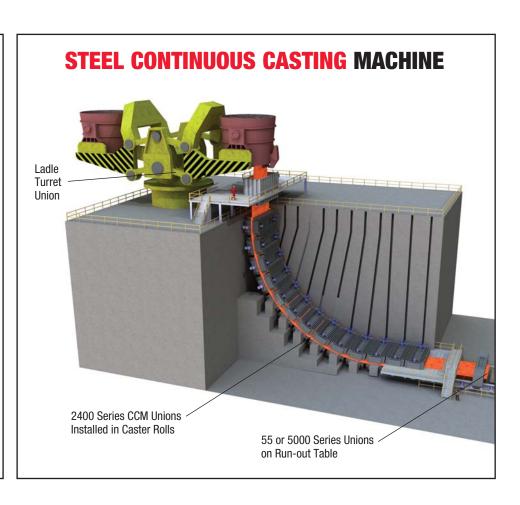
Hot Rolled

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Cold Rolled

V

Finishing



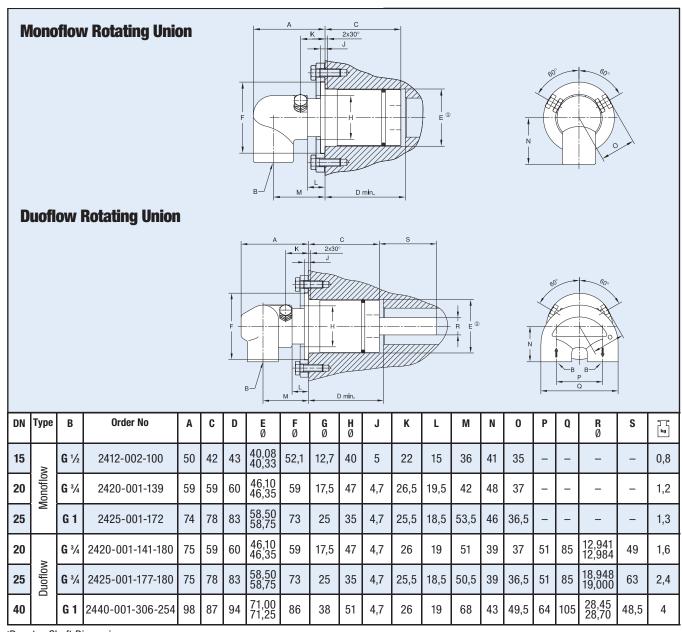
ROTATING UNIONS FOR CONTINUOUS CASTING



OPERATING DATA	2400 SERIES					
Max. Pressure	150 PSI	10 bar				
Max. Speed	100 RPM	100/min				
Max. Temperature	250 °F	120 °C				

DEUBLIN 2400 Series Rotating Union

- monoflow and duoflow design
- in-the-shaft mounted
- flanged housing or mounted with retaining plate
- high-wear resistant balanced mechanical seal
- seal combination: Silicon Carbide/Silicon Carbide
- brass housing and elbow
- stainless steel rotor and supply pipe
- long composite bearing
- bearing protected by O-ring
- full-media flow
- easily field repairable



*Denotes Shaft Dimension

BEARINGLESS UNIONS FOR CONTINUOUS CASTING

DEUBLIN Bearingless Technology

Max. Pressure

Max. Speed
Max. Temperature

Conventional unions are dependent on bearings for support and smooth low torque rotation. However, bearings inherently have limitations, one of which is premature failure as a result of side loading from piping connections. *DEUBLIN* has adapted this bearingless technology to CCM applications with proven in-the-field success. Call our Engineering Department for complete details and specifications.

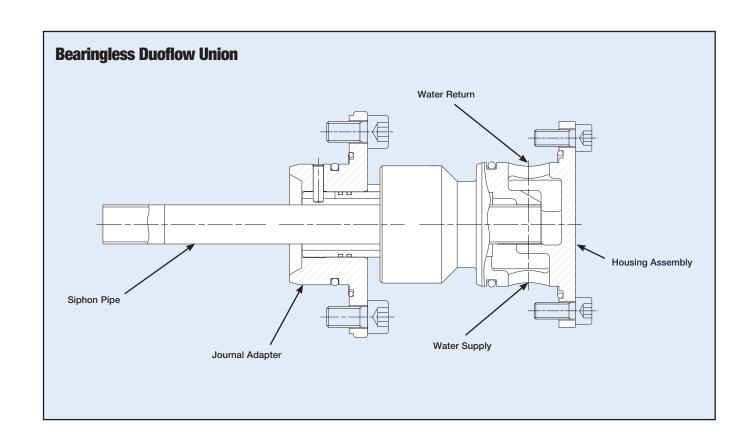


150 PSI 100 RPM

250 °F

DEUBLINBearingless CCM Union

- monoflow and duoflow design
- hose-free installation
- integrated installation into the roller frame
- balanced mechanical seal
- seal combination: Silicon Carbide/Silicon Carbide
- brass housing
- stainless steel rotor and siphon pipe
- full-media flow
- easily field repairable
- · no internal bearing



10 bar

120°C

100/min

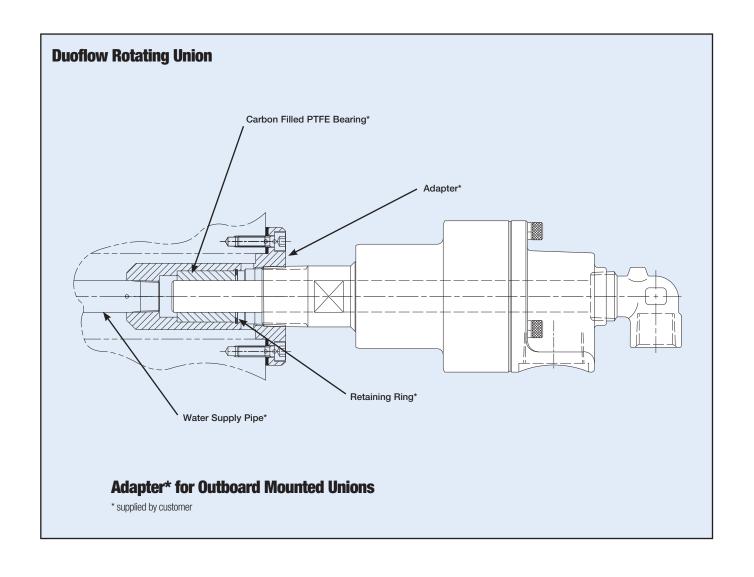
ROTATING UNIONS FOR CONTINUOUS CASTING

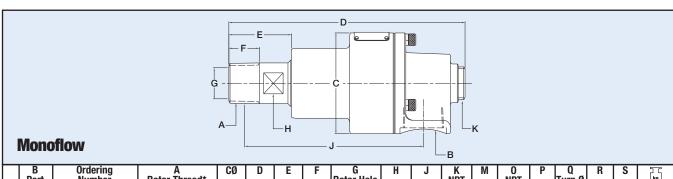


OPERATING DATA	5000 SERIES					
Max. Pressure	150 PSI	10 bar				
Max. Speed	100 RPM	100/min				
Max. Temperature	250 ℉	120 °C				

DEUBLIN 5000 Series Rotating Union

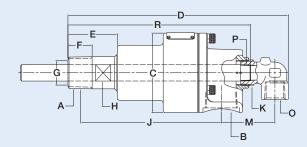
- monoflow and duoflow design
- externally mounted
- self-supported rotating union
- radial housing connection
- balanced mechanical seal
- seal combination standard: Carbon Graphite/Silicon Carbide
- keyed rotor seal
- cast iron body/brass end-cap
- stainless steel rotor (3/4"-11/2")
- engineered sleeve bearing
- easily field repairable
- special options: threaded vent holes





Г	B Port	Ordering Number	A Rotor Thread*	CØ	D	E	F	G Rotor Hole	Н	J	K NPT	M	0 NPT	Р	Q Turn Ø	R	S	kg
Г		5075-001-101	¾" (NPT) RH	25//"	57%"	1½"	7/8"	11/16"	11/4"	4½"			-					3½#
	3/4"	5075-001-102	¾" (NPT) LH	2% 3	3%	1 72	78	716	1 74	4/2	1			_		_	_	3 /2#
	NPT	5075-001-117	G¾" (BSP) RH	67	150	38	19	17	32	105								16 / 0
		5075-001-118	G¾" (BSP) LH	07	150	30	30 19	17	32	105	_	_	_	_	-		_	1,6 Kg
>		5100-060-160	1" (NPT) RH	31/4"	7%"	" 1¾"	3/11	1"	11//8"	5½"	3/11							6#
Monoflow	1"	5100-060-161	1" (NPT) LH	J/4			74	1	I /8	J/2	/4							0#
<u>ğ</u>	NPT	5100-060-171	G1" (BSP) RH	82	187 44	, 44	21,5	25,4	28	128	3/11						_	2,8 Kg
≥		5100-060-172	G1" (BSP) LH	02	107	44	4 21,3	25,4	20	120	/4		_					2,0 Kg
		5150-001-117	1½" (NPT) RH	41/4"	9¾"	27/16"	13/16"	1½"	13/4"	4" 71/16"	71/16" 11/4"	_	_	_	_		_	12#
	11/2"	5150-001-118	1½" (NPT) LH	4 /4	4" 9%" 27	Z /16	I 716	I ½	1 /4							_		12#
	NPT		238	62	29	38	44	174	11/4"							5,6 Kg		
		5150-001-157	G1½" (BSP) LH	100	230	UZ	29	50	+4	174	1 /4	_	_	_		_	_	3,0 Kg

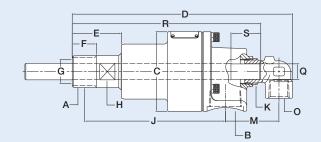
*Female Thread also available



Duoflow-Fixed Supply Pipe

	Port	Ordering Number	A Rotor Thread*	CØ	ט	Ŀ	ŀ	Rotor Hole	Н	J	NPT	IVI	U NPT	P	U Turn Ø	К	8	kg
Supply Pipe		5100-060-160-083	1" (NPT) RH	31/4"	87%"	1¾"	3/11	1"	11///"	5½"	3/11	23/16"	1/11	%" N.P.T.		75%"		6#
<u> </u>	1"	5100-060-161-083	1" (NPT) LH	3/4	078	1 /4	/4		1 /8	J/2	/4	Z /16	/2	/8 IN.I . I .		1 /8		Oπ
를	NPT	5100-060-171-255	G1" (BSP) RH	82	225	44	21.5	25.4	28	128	3/11	55	1/2"	G%" (BSP)		183		2,8 Kg
Sp		5100-060-172-255	G1" (BSP) LH	02	223	44	21,5	25,4	20	120	/4	55	/2	lu% (DSF)	_	103		2,0 Kg
Fixed		5150-001-117-013	1½" (NPT) RH	/I1/II	115/16"	27/.11	13/.11	1½"	13/11	71/."	11/11	215/16"	3/11	¾" N.P.T.		913/16"		12#
l≽	1 ¹ /2"	5150-001-118-013	1½" (NPT) LH	4/4	I I /16	Z/16	I /16	I /2	1 /4	I /16	1 /4	Z /16	/4	/4 IN.F.I.	_	9 /16		12#
Duoflo	NPT	5150-001-156-221	G1½" (BSP) RH	108	287	62	29	38	44	174	11/"	75	3/11	G¾" (BSP)		241		5,6 Kg
虘		5150-001-157-221	G1½" (BSP) LH	100	201	02	29	30	44	174	1 /4	75	/4	U/4 (DOF)		241		5,0 Kg

*Female Thread also available



Duoflow-Rotating Supply Pipe

	B Port	Ordering Number	A Rotor Thread*	CØ	D	Е	F	G Rotor Hole	Н	7	K NPT	M	O NPT	Р	Q Turn Ø	R	S	kg	
Pipe		5100-060-160-163	1" (NPT) RH	31/4"	87%"	1¾"	3/11	1"	1½"	5½"	3/11	23/16"	1/2"		.621" .619"	7%6"	11/4"	6#	
들	1"	5100-060-161-163	1" (NPT) LH	J/4	0/8	1 /4	/4	1	1 /8	J/2	/4	Z/16	/2		.619"	1 /16	1 /4	0#	
Supply	NPT	5100-060-171-347	G1" (BSP) RH	82	225	44	21,5	25,4	28	128	3/11	55	1//"		15,95 15,90	196	31	2,8 Kg	
		5100-060-172-347	G1" (BSP) LH	02	223	223 44	21,5	25,4	20	120	/4	1 55	/2		15,90	190	J1	2,0 Kg	
läg		5150-001-117-144	1½" (NPT) RH	41/4"	115/16"	27/.11	27/211	1 3/16"	1½"	13/4"	71/16"	1 1/"	215/16"	3/11		1.000" .998"	915/16"	13/11	12#
oflow-Rotating	11/2"	5150-001-118-144	1½" (NPT) LH	4/4	I I /16	Z /16	I /16	I /2	1 74	I /16	1 /4	Z 716	/4		.998"	9 /16	1 /4	12#	
흫	NPT	5150-001-156-468	G1½" (BSP) RH	108	287	62	29	38	44	174	11/4"	75	3/11		25,91 25,81	263	44	5,6 Kg	
ă		5150-001-157-468	G1½" (BSP) LH	100	201	02	29	30	44	174	1 /4	73	/4		25,81	203	44	3,0 Kg	

*Female Thread also available

ROTATING UNIONS FOR STEEL COIL WINDING

Typical Examples



2-Passage Rotating Union with Hydrostatic Seal

 for clamping-unclamping applications at steel-strip winders

OPERATING DATA	7100	-535
Max. Pressure	2,900 PSI	200 bar
Max. Speed	500 RPM	500/min
Max. Temperature	158 °F	70°C



3-Passage Rotating Union with Hydrostatic Seal

 for clamping-unclamping applications at steel-strip winders

In combination with SP0077 (2-Passage)

 grease is supplied to the winding mandrel to lubricate the moving elements of the winder

OPERATING DATA	7100	-1010	SPO	077
Media	Hydr	aulic	Gre	ase
Max. Pressure	1,450 PSI	100 bar	5,800 PSI	400 bar
Max. Speed	450 RPM	450/min	600 RPM	600/min
Max. Temperature	160 ℉	70 °C	160 °F	70 °C



Other Models Available

2-Passage Rotating Union with Mechanical Seal – for Around-the-Shaft Application

 for clamping-unclamping applications at steel-strip winders

In combination with SP0077 (2-Passage)

• grease is supplied to the winding mandrel to lubricate the moving elements of the winder

OPERATING DATA	SPO	283	SP0077				
Media	Hydr	aulic	Gre	ase			
Max. Pressure	2,610 PSI	180 bar	5,800 PSI	400 bar			
Max. Speed	800 RPM	800/min	600 RPM	600/min			
Max. Temperature	160 °F	70 °C	160 °F	70 °C			

UNIONS FOR LADLE TURRETS



Ladle Turret Union

- Ladle turrets require complex, heavy-duty multi-passage unions that support the hydraulic lifting of the ladle for each pour of molten metal. DEUBLIN Ladle Turret Unions accommodate multiple media including hydraulic oil, argon, air and water.
- Typical number of ports: up to 26.

OPERATING DATA		LADLE TURRET										
Media	Hydrau	ılic Oil	Argon		А	ir	Water					
Max. Pressure	3,625 PSI	250 bar	150 PSI	10 bar	150 PSI	10 bar	300 PSI	20 bar				
Max. Speed	20 RPM	20/min	20 RPM	20/min	20 RPM	20/min	20 RPM	20/min				
Max. Temperature	250 ℉	120°C	250 °F	120°C	250 °F	120°C	250 °F	120 °C				

PLANE & SELF-ALIGNING SWIVEL JOINTS



Plane Swivel Joints

- Handles 360° single & multi-plane swivel movement with positive sealing
- Available in 1" through 6" sizes in threaded, welded or flanged styles
- Available in three seal materials that are compatible with many gasses, fluid & chemicals
- Spring energized seals offer leak-tight sealing at all pressures, including vacuum
- Seal can be replaced without removing bearings



Self-Aligning Swivel Joints

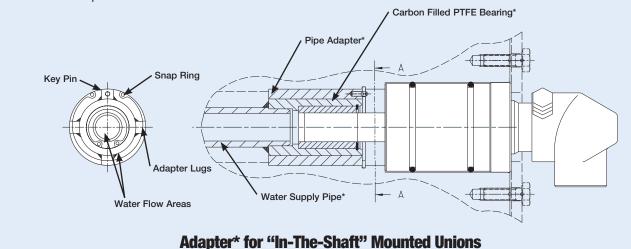
- Handles 360° rotary and 10° angular alignment motion with positive sealing
- Conveys hot and cold water, alternating steam and water and heat transfer fluids
- Eliminate the hazards of leaking pipe connections or catastrophic hose failures
- Outperforms and outlasts flexible hose with lower pressure drops

INSTALLATION INSTRUCTIONS

PROPER MOUNTING ENSURES LONGER UNION LIFE

Flexible hose must be used to connect the rotating union to its supply and return lines. Flexible hose ensures less side load and wear on the bearing surfaces of the union. Rigid piping should not be used. The hose should connect directly to the union, if possible, by way of a live swivel that will eliminate any torsional stress from the pressurized hose. The table shows minimum recommended lengths for the different hose diameters to provide flexible installation.

	HOSE LENGTH								
HOSE DIAMETER	INCHES	mm							
1/2"	12	305							
3/4"	14	355							
1	16	405							
1 ¹ / ₄ "	18	460							
1 ¹ /2"	20	510							

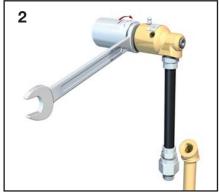


Flexible Hose Installation Instructions for *DEUBLIN* Rotating Unions*

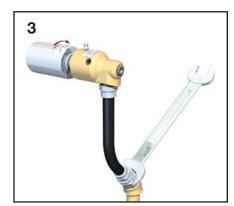


* supplied by customer

Mount housing in a bench vise and install hose.



Install rotating union into machine.



Connect flexible hose to supply line.

*Consult DEUBLIN website for installation instructions for Bearingless 2400 Unions.

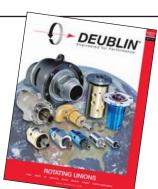


DEUBLIN unions should not be used to convey flammable media (flash point ≤ 140 °F or 60 °C) as leakage may result in explosions or fires. DEUBLIN unions should be used in accordance with standard safety guidelines for the media, and in a well-ventilated area. The use of our product on hazardous or corrosive media is strictly forbidden.

ADDITIONAL LITERATURE

DEUBLIN Rotating Unions General Catalog

From the world leader in rotating unions, the *DEUBLIN* general engineering catalog provides application information and specifications for over 500 standard unions and 3000 models used with a broad range of materials, viscosities, temperatures, pressures and speeds. *DEUBLIN* unions accommodate water, steam, hot oil, coolant and air for thousands of manufacturing, equipment and process applications. Custom unions are also available to address specific requirements.



DEUBLIN Rotating Unions for Machine Tool

Whether CNC machining centers or automotive transfer lines, *DEUBLIN* offers the broadest range of rotating union solutions for continuous through-the-spindle coolant applications. State-of-the-art features include silicon carbide seals, and dry running capability with or without pressure.



DEUBLIN Steam Joints and Siphon Systems for the Paper Industry

DEUBLIN has a complete line of steam inducing and condensate removal products designed specifically for the paper industry. These products are contained in a dedicated catalog.

This line features the revolutionary FS Series Steam Joint with the Deltasint Stationary Siphon System designed and proven for today's high-speed paper machine's dryer sections.



DEUBLIN Wind Energy Brochure

DEUBLIN manufactures a complete line of high pressure hydraulic unions for wind energy applications. Available in configurations ranging from monoflow to four passage designs, with central passages for cable connection to electrical slip rings. Durability features such as water resistant construction and hardened stainless steel rotors provide unparalleled lifecycle reliability over millions of cycles.



DEUBLIN Slip Ring Brochure

DEUBLIN is a leader in the manufacturing of electrical slip rings, and complete slip ring/rotary union combinations for use in a variety of applications including wind turbines, robotics, centrifuges, milling, plastic molding, semiconductor and more. Custom slip rings can be designed to address such challenges as RF shielding, mixed signal handling, high frequency impedance matching, reduced temperature generation, and miniaturization.





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





Dalian, China

DEUBLIN products & services are available throughout the world.

www.deublin.com

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AMERICAS

DEUBLIN USA

2050 Norman Drive Waukegan, IL 60085-6747 U.S.A. Phone: +1 847 689-8600

+1 847 689-8690 Fax: e-mail: customerservice@deublin.com

DEUBLIN Brazil

Rua Santo Antonio, 1426 - Vila Galvão Guarulhos, São Paulo Brazil 07071-000

Phone: +55 11-2455-3245 +55 11-2455-2358 Fax:

e-mail: deublinbrasil@deublinbrasil.com.br

DEUBLIN Canada

3090 Boul. Le Carrefour, Suite 505 Laval, Quebéc H7T 2J7 Canada Phone: +1 514 745-4100 +1 514 745-8612

e-mail: customerservice@deublin.com

DEUBLIN Mexico

Norte 79-A No. 77, Col. Claveria 02080 Mexico, D.F.

Phone: +52 55-5342-0362 +52 55-5342-0157 e-mail: deublin@prodigy.net.mx

ASIA

DEUBLIN China

No. 2, 6th DD Street, DD Port Dalian Liaoning Province, 116620, P.R. China

Phone: +86 411-87549678 +86 411-87549679 e-mail: info@deublin.cn

China Merchants Plaza 12th Floor, Suite (East) 1208, 333 Chengdubei Road Shanghai, 200041, P.R. China

Phone: +86 21-52980791 +86 21-52980790 Fax: e-mail: service@deublin.cn

DEUBLIN Asia Pacific

51 Goldhill Plaza, #11-11/12

Singapore 308900 Phone: +65 6259-9225 +65 6259-9723 e-mail: deublin@singnet.com.sg

DEUBLIN Japan

2-13-1, Minamihanayashiki Kawanishi City 666-0026, Japan Phone: +81 72-757-0099 +81 72-757-0120

e-mail: customerservice@deublin-japan.co.jp

2-4-10-3F Ryogoku

Sumida-Ku, Tokyo 130-0026, Japan

Phone: +81 35-625-0777 +81 35-625-0888

e-mail: customerservice@deublin-japan.co.jp

DEUBLIN Korea

Star Tower #1003, Sangdaewon-dong 223-25, Jungwon-gu, Seongnam-si, Gyeonggi-do,

South Korea

Phone: +82-31-8018-5777 Fax: +82-31-8018-5780

e-mail: customerservice@deublin.co.kr

EUROPE

DEUBLIN Germany

Nassaustraße 10 65719 Hofheim a. Ts., Germany Phone: +49 6122-8002-0 +49 6122-15888 Fax: e-mail: info@deublin.de

DEUBLIN Italy

Via G. Rossa 9, Loc. Monteveglio 40053 Comune di Valsamoggia (BO), Italy

Phone: +39 051-835611 +39 051-832091 Fax: e-mail: mauro.pozzato@deublin.it

Via Giovanni Falcone 36 20010 Bareggio (MI), Italy Phone: +39 02-90312711 +39 02-90278189 e-mail: info@deublin.it

DEUBLIN Austria

Trazerberggasse 1/2 1130 Wien, Austria Phone: +43 1-8768450 +43 1-876845030 Fax: e-mail: info@deublin.at

DEUBLIN France

61 bis, Avenue de l'Europe Z.A.C de la Malnoue 77184 Emerainville, France Phone: +33 1-64616161 Fax: +33 1-64616364 e-mail: service.client@deublin.fr

DEUBLIN Poland

ul. Kamienskiego 201-219 51-126 Wroclaw, Poland Phone: +48 71-3528152 +48 71-3276278 e-mail: info@deublin.pl

DEUBLIN Russia

ul. Kosygina, 13, 5th entrance, 1-st floor

119334, Moscow, Russia Phone: +7 495 647-14-34 +7 495 938-89-49 Fax: e-mail: info@deublinrussia.ru

DEUBLIN Spain

C/Lola Anglada, 20 local 1, 08228 Terrassa, Spain Phone: +34 93-2211223 +34 93-2212093 Fax: e-mail: deublin@deublin.es

DEUBLIN Sweden

Cylindervägen 18, Box 1113 13 126 Nacka Strand, Sweden Phone: +46 8 716 2033 +46 8 601 3033 Fax: e-mail: info@deublin.se

DEUBLIN United Kingdom

6 Sopwith Park, Royce Close, West Portway

Andover SP10 3TS, UK Phone: +44 1264-333355 +44 1264-333304 Fax: e-mail: info@deublin.co.uk



Myynti

Vantaa Turku Tampere Oulu
Pyymosantie 4 Polttolaitoksenkatu 5 Lentokentänkatu 9 C Revontie 2
01720 Vantaa 20380 Turku 33900 Tampere 90830 Haukipudas

Huolto ja kokoonpano

Vantaa Turku Puh. 010 8345 500

Pyymosantie 4 Polttolaitoksenkatu 5 power.hydraulics@masino.fi
01720 Vantaa 20380 Turku power.hydraulics@masino.fi
www.masino.fi/masino-konaflex

Masino Group on yritysryhmä, joka tarjoaa voimansiirtoratkaisuja, hydrauliikkaa ja suodatustekniikkaa, pumppuja, puhaltimia ja teollisuushuoltoa, putkistotuotteita, kiinnitystekniikkaa, hitsaustekniikkaa, juotostekniikkaa, kallionlujitustuotteita, betonikuituja sekä talotekniikan kiinnitysja asennustarvikkeita. Liikevaihtomme on noin 65 M€ ja henkilöstön määrä 160. Toimipisteemme sijaitsevat Vantaalla (2), Ylöjärvellä, Tampereella ja Turussa.