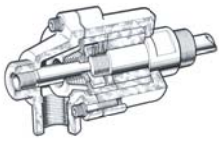


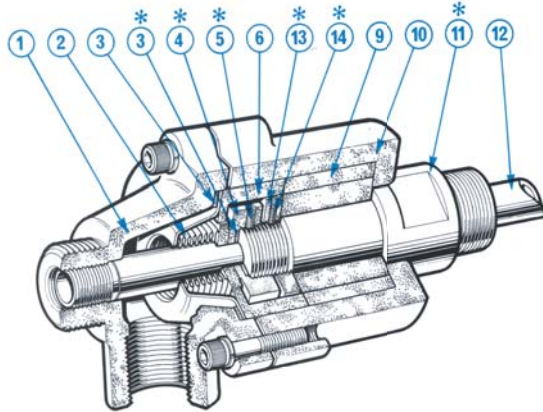
ROTARY C.B.N. UNION





ROTARY (C.B.N.) UNIONS

High Temperature
1-1/2" to 6"



* Note: The components indicated by (*) rotate with the machine shaft.

Rotary (C.B.N.) Union - Type B.E.

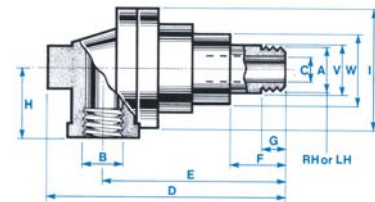
1. Adaptor, s.g. iron
2. Bellows subassembly, brazed stainless steel / carbon
3. Gaskets
4. Spacer, plated steel
5. Seal ring, hardened stainless steel
6. Locking screws, h.t. steel
7. Thrust bearing, carbon
8. Journal bearing, carbon
9. Body, s.g. iron
10. Rotary spindle, steel

Description

The rotary C.B.N. union is a self-contained, self-supporting rotary seal for the leak-proof transfer of fluids such as steam, water, air and oil to and from rotating machine shafts. The type of rotary seal fitted to this model is a Filton® Bellows Seal containing a flexible stainless steel bellows which is self-adjusting, eliminating the maintenance common with conventional packed glands. Rotary sealing is created by relative rotation between extremely flat sealing faces (see item #2 and #5 in diagram above) held in contact by the spring characteristics of the bellows combined with an additional sealing force created by the pressure of the fluid passing through the rotary union. The bearings fitted to the union are separate carbon thrust and journal bearings in which a hard chromed and ground spindle rotates. There are three variations of the stationary adapter end:

1) Type B.E. - Single Flow

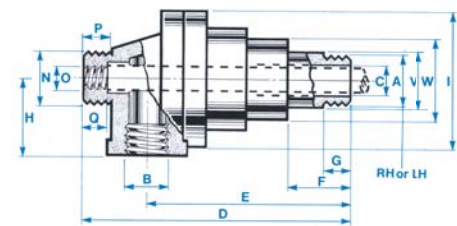
A single flow union suitable for transferring fluid in to or out of rotating machines.



Type B.E.

2) Type S.T. - Double Flow (Stationary Center Tube)

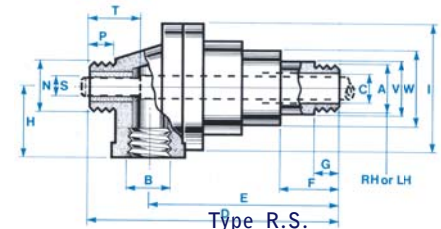
Fitted with an adapter suitable for double flow with a stationary center tube. This gives flow areas through the center tube and annulus. The center tube - provided only if ordered - is fixed to the union end by means of a screw thread (dimension "O"). Flow can pass in through the center tube and return through the annulus or be reversed. For steam applications, the center tube is curved to reach the condensate in the bottom of the cylinder. If the roll neck diameter to length ratio prevents the use of a curved tube, a syphon elbow can be specified instead. See the Accessory Section or contact us for more information about the options available.



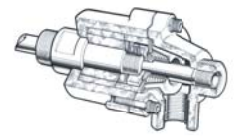
Type S.T.

3) Type R.S. - Double Flow (Rotary Center Tube)

Fitted with an adapter suitable for a rotating center tube which must be located and driven by the machine. The center tube - provided only if ordered - rotates in a carbon bush. Flow can pass in through the center tube with the return through the annulus or be reversed. The center tube "sealing" system allows for a slight internal leakage between the supply and return lines. If these fluids must not mix, alternate designs are available. Please contact us for additional information.



Type R.S.



Model and Dimensional Information

Nominal Size	Rotary (C.B.N.) Union - Model Part Number			Dimensions (mm unless specified otherwise)														
	B.E. (R or L)	S.T. (R or L)	R.S. (R or L)	A ⁽ⁱ⁾	B, N	C	D	E	F	G, P	H	I	O	Q	S ⁽ⁱⁱ⁾	T	V	W
40 (1-1/2")	18101	18102	18103	G. 1-1/2"	G. 1-1/2"	35	263	207	56	25	72	128	G. 3/4"	14	25.4, f8	50	64	78
50 (2")	15471	15472	15473	G. 2"	G. 2"	48	293	226	64	28	83	137	G. 1"	19	31.8, f8	60	76	94
65 (2-1/2")	18240	18241	18242	G. 2-1/2"	G. 2-1/2"	57	356	278	75	30	102	186	G. 1-1/4"	25	40, f8	55	90	112
80 (3")	15477	15478	15479	G. 3"	G. 3"	70	407	323	80	30	120	200	G. 1-1/2"	25	45, f8	70	110	130
90 (3-1/2")	16171	16172	16173	G. 3-1/2"	G. 4"	82	518	405	110	40	130	250	G. 2"	30	60, f8	60	140	160
100 (4")	16174	16175	16176	G. 4"	G. 4"	95	518	405	110	40	130	250	G. 2-1/2"	30	75, f8	60	140	160
125 (5")	15468.SF	15487.SF	15488.SF	Flanged ⁽ⁱⁱⁱ⁾	G. 5"	115	688	513	115	45	167	325	G. 3"	40	88, f8	70	192	220
150 (6")	16704.SF	16703.SF	16702.SF	Flanged ⁽ⁱⁱⁱ⁾	G. 6"	140	688	513	115	45	167	325	G. 3-1/2"	40	100, f8	70	192	220

- (i) "G" is the designation for parallel pipe threads to BS.2779 and ISO 228/1.
- (ii) The tolerance "f8" is to BS.EN 20286-2 and ISO 286-2.
- (iii) Please contact us for more information about flanged dimensions.

Flow Capacity

Nominal Size	Rotary (C.B.N.) Union - Model	Water ^(iv)		Steam ^(v)	Air ^(vi)	Nominal Size	Rotary (C.B.N.) Union - Model	Water ^(iv)		Steam ^(v)	Air ^(vi)
		m ³ /h	l/min	kg/h	m ³ /h			m ³ /h	l/min	kg/h	m ³ /h
40 (1-1/2")	B.E.	10.4	173	381	364	90 (3-1/2")	B.E.	57.0	950	2091	1996
	S.T. / R.S.	3.8	63	151	135		S.T. / R.S.	23.4	390	942	818
50 (2")	B.E.	19.5	325	717	684	100 (4")	B.E.	76.6	1277	2807	2679
	S.T. / R.S.	6.3	105	357	215		S.T. / R.S.	27.6	460	982	937
65 (2-1/2")	B.E.	30.5	508	1120	1069	125 (5")	B.E.	112.2	1870	4859	4639
	S.T. / R.S.	10.8	180	547	376		S.T. / R.S.	45.3	755	1617	1544
80 (3")	B.E.	41.6	693	1524	1455	150 (6")	B.E.	166.3	2772	6997	6680
	S.T. / R.S.	14.9	248	807	511		S.T. / R.S.	73.7	1228	2862	2760

- (iv) Flow measured in cubic metres/hour at a velocity of 3 metres/second. (Also applies to other liquids.)
- (v) Flow in kilograms/hour at a velocity of 30 metres/second and a pressure of 6 bar.
- (vi) Flow in cubic metres/hour free air at a velocity of 15 metres/second and a pressure of 6 bar.

Maximum Operating Recommendations

Fluids: Water, steam, mineral oils and compressed air (lubricated). All fluids should be clean and free from abrasive particles.

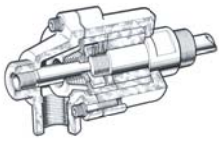
Pressure: 17 bar maximum.

Temperature: 100°C to 300°C (lower temperatures dependant on other conditions)

Speed: 300 r.p.m. maximum up to size 50 (2")
 250 r.p.m. for 65 (2-1/2") and 80 (3")
 200 r.p.m. for 90 (3-1/2") and 100 (4")
 150 r.p.m. for 125 (5") and 150 (6")

Storage: Store indoors in a dry area between the temperatures ranges of -10°C to 30°C.

* Note: It is not advisable to exceed or combine maximums.

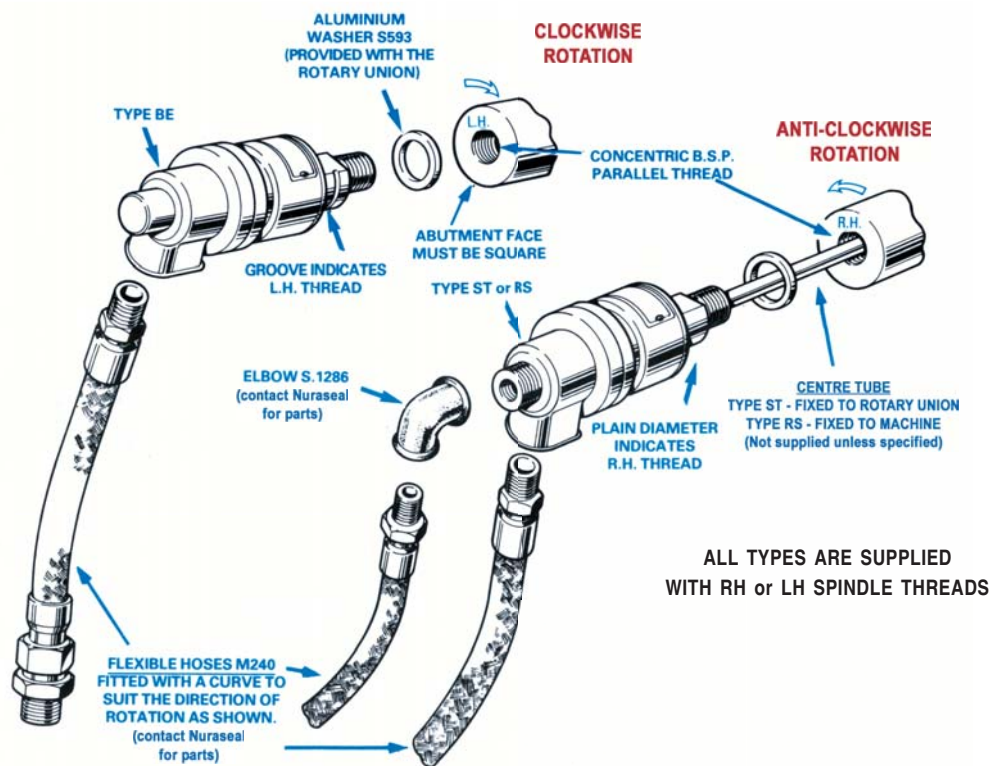


ROTARY (C.B.N.) UNIONS

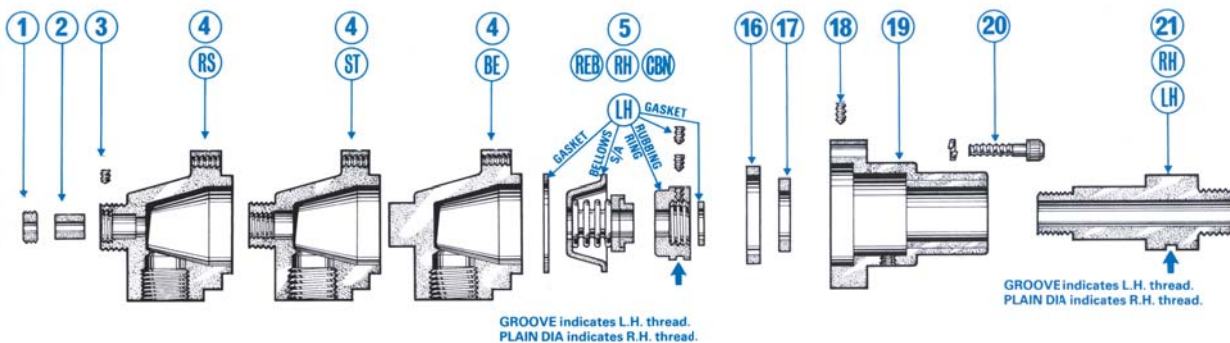
High Temperature
1-1/2" to 6"

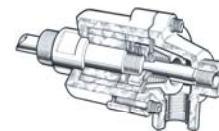
Installation Procedures

- 1) A suitable run-in period before fitting is recommended. Rotate the C.B.N. at 50 r.p.m. for 1 hour for sizes ranging from 40 (1-1/2") to 80 (3") and at 25 r.p.m. for 2 hours for all other sizes above.
- 2) Add system liquid if seals squeak.
- 3) A torque arrestor should be fitted, but this must not restrict the rotary union.
- 4) Ensure that the spindle thread is RH or LH to suit the direction of rotation of the machine shaft.
- 5) If the machine shaft reverses direction of rotation, securely lock the spindle or (preferably) use a flanged connection.
- 6) DO NOT fix valves etc. directly on to the rotary union.
- 7) DO NOT connect with rigid pipe.
- 8) DO NOT clamp the rotary union.



Part Identification





Part Identification (Continued)

Nominal Size	1	2	3	4 - Adapter			5	16	17	18	19	20	21
	Retainer	C/T Bearing	Screw	B.E.	S.T.	R.S.	Seal Kit	Spacer	Thrust Pad	Screw	Body S/A	Bolt	Spindle
40 (1-1/2")	18103/3	18103/2	M5 x 0.8	18103/1	18102/1	18101/1	S. 1151/3	18101/10	18101/5	N/A	18101/12	M8 x 1.25	18101/8
50 (2")	15473/1	15473/3	M5 x 0.8	15473/2	15472/1	15471/1	S. 1151/4	15325/7	15325/11	N/A	15325/15	M8 x 1.25	15472/3
65 (2-1/2")	15476/3	18133/2	M6 x 1.0	18133/1	18132/1	18131/1	S. 1151/8	18240/6	18240/2	N/A	18240/7	M10 x 1.5	18240/5
80 (3")	15479/3	15479/2	M6 x 1.0	15479/1	15478/1	15477/1	S. 1151/5	15478/7	15478/10	N/A	15478/14	M12 x 1.75	15478/13
90 (3-1/2")	16173/3	16173/2	M6 x 1.0	16173/1	16172/1	16171/1	S. 1151/6	16172/12	16172/17	N/A	16172/16	M12 x 1.75	16172/10
100 (4")	16176/3	16176/2	M6 x 1.0	16176/1	16175/1	16174/1	S. 1151/6	16172/12	16172/7	N/A	16172/16	M12 x 1.75	16172/2
125 (5")	15488/3	15488/2	M8 x 1.25	15488/1	15487/1	15486/1	S. 1151/7	16702/13	16702/9	M12 x 1.75	16702/16	M16 x 2.0	15487/2
150 (6")	16702/1	16702/3	M8 x 1.25	16702/2	16703/2	16704/1	S. 1151/7	16702/13	16702/9	M12 x 1.75	16702/16	M16 x 2.0	16702/12

Maintenance and Overhaul

- 1) Remove bolts and washers (20) which allows for the removal of adaptor (4).
- 2) Remove bellows subassembly and gasket of seal kit (5) and spacer (6). Note that for the 125 (5") and the 150 (6"), the locking screw (18) will need removing as spacer (16) is screwed RH thread and should be adjusted to give 6mm compression on the bellows subassembly during refitting.
- 3) Remove locking screws (7) from the rubbing ring of seal kit (5) through the bleed port in body S/A (19) and unscrew the rubbing ring (RH or LH thread) and remove the gasket and thrust pad (17).
- 4) Remove spindle (21) from body S/A (19) and check the bore of the carbon bearing and the bearing surface of the spindle for excessive wear.
- 5) If the adaptor (4) is Type R.S., remove locking screw (3), unscrew locking ring (1) and remove C/T bearing (2).
- 6) Replace seal kit (5) and thrust pad (17) at a minimum.
- 7) Replace body S/A (19) and spindle (21) depending on condition. If type RS, replace C/T bearing (2).
- 8) Thoroughly clean all parts before reassembly (which is virtually the reverse of the above steps).
- 9) Handle seal kits with care to avoid damaging the precision lapped seal faces.
- 10) After reassembly, follow the recommended installation procedures and allow for a suitable run-in to period ensure the seals are working correctly before refitting to the machine.

Nominal Size	Length (mm)	Part Number
40 (1-1/2")	460	M.240/7
50 (2")	610	M.240/8
65 (2-1/2")	610	M.240/9
80 (3")	760	M.240/10
90 (3-1/2")	760	M.240/10
100 (4")	915	M.240/11
125 (5")	915	M.240/12
150 (6")	915	M.240/13

* Note: For the 125 (5") and 150 (6") models, there is spacer (16) and a locking screw (18) which can be adjusted to give 6mm compression on the bellows subassembly if necessary.

Lubrication

The bellows seal fitted to the rotary C.B. union is self-adjusting within its working life. The union has dry carbon journal and thrust bearings operating on hardened surfaces. DO NOT GREASE. We advise periodic inspection for bearing wear.

For nearly three decades, Nuraseal has been providing sales and service for all Filton® Rotary Union Products. Whether you require new or custom unions, replacement components, technical support or assistance with maintenance inquiries, Nuraseal will be able to help you solve your application requirements throughout North America and abroad. Contact us to find out how we can help you today!

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In order to better serve your needs, it is helpful to collect some basic information prior to contacting us. Most of this information will be located on a plate fastened to the unit itself or easily identified by visual inspection.

- Rotary Union Model type i.e. Rotary R.E. Union
- Part number i.e. 16663.
- Serial number - generally identified either by a combination of two letters followed by four numbers or four numbers followed by a single letter i.e. ZN5631
- Nominal size
- Direction of rotation - if there is a groove in the spindle, it is a left-hand thread.

Other information that is helpful, especially when trying to select a suitable model or when troubleshooting during times of maintenance or unit failure, include:

- Type of fluid, flow rate, pressure, temperature
- Ambient temperature
- Rotational speed
- Working cycle
- Any unusual conditions i.e. exposure to harsh environments, etc.

Quick Selection and Reference Guide

Check the Application Requirement column below for the appropriate fluid and size range. Turn to the page for the model indicated and check the full working conditions and limitations. If more than one model is indicated, examine the application information on the appropriate pages. Contact us for more information.

Application Requirements								Rotary Union Model Type	Available Size Range ⁽¹⁾
Air	Gas ⁽³⁾	Oil (Lubricating)	Oil (Hydraulic)	Oil (Heat Transfer)	Steam	Vacuum	Water		
Y ⁽²⁾	Y	Y	--	Y	Y	Y	Y	R.E.	8 (1/4") - 32 (1 1/4")
Y ⁽²⁾	Y	Y	--	--	--	Y	Y	P.B.	15 (1/2") - 25 (1")
Y ⁽²⁾	Y	Y	--	Y	Y	Y	Y	R.E.B.	40 (1 1/2") - 150 (6") ⁽⁵⁾
--	--	--	--	Y ⁽⁴⁾	Y	--	Y	C.B.	8 (1/4") - 32 (1 1/4")
--	--	--	--	Y ⁽⁴⁾	Y	--	Y	C.B.N.	40 (1 1/2") - 150 (6") ⁽⁵⁾
Y ⁽²⁾	--	Y	--	--	--	--	Y	L.C.	8 (1/4") - 20 (3/4")
Y	--	--	--	--	--	Y	--	P.N.	8 (1/4") - 20 (3/4")
Y ⁽²⁾	Y	Y	Y	--	--	Y	--	M.C.T.	8 (1/4") - 25 (1")
Y ⁽²⁾	--	Y	Y	--	--	Y	Y	I.N.T.	8 (1/4") - 25 (1")

Legend:

- (Y) Suitable for your application, but check the working condition information
- (1) Size range as measured at the rotary spindle connection end
- (2) Lubricated air only (if air is dry and P.N. model is unsuitable, special seals are available)
- (3) Depends on type of gas and working conditions
- (4) Flanges may be required depending on the working conditions
- (5) Flanges may be fitted to assist for removal and maintenance on sizes 100 (4") and larger.

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