



# POWER JACKS

Manufacturers and European Distributors of **Duff-Norton** Actuators



## Duff-Norton<sup>®</sup> ROTARY UNIONS<sup>®</sup> PRODUCT GUIDE



# COMPANY OVERVIEW

*Company Overview*

**Company:** Power Jacks Limited  
**Type:** Manufacturer  
**Location:** Maconochie Road, Fraserburgh, AB43 8TE  
**Founded:** 1987  
**Company Logo:**



**BS EN ISO 9002:1994**  
**ISO 9002 Logo:**



Certificate No. FM23810



*Electro-mechanical Actuators*



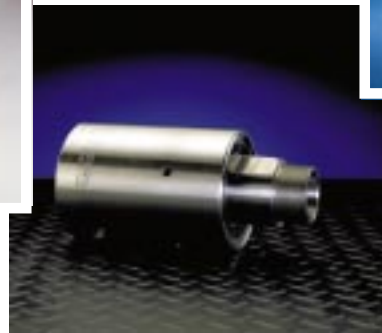
*Sym-metric Actuators*



*Mechanical Jacks*



*Mechanical Actuators*



*Rotary Unions®*



# ROTARY



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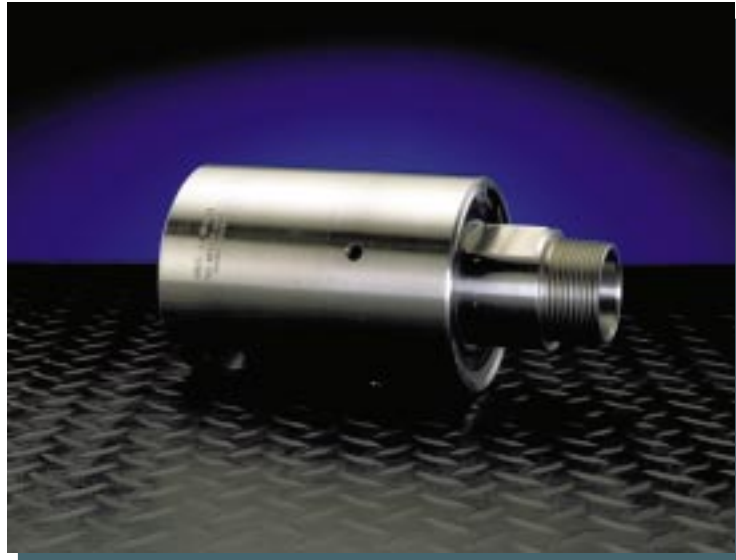




# SERIES 5000

*Series 5000*

The Series 5000 **general purpose rotating joint** is suitable for hot oil, steam, water, air and chemical use. It features all stainless steel hardwares for superior corrosion resistance. The fluorocarbon o-rings and bearing seals in the Series 5000 allow it to run at higher temperatures and ensure longer life with minimal maintenance. The integrated cartridge design makes refurbishment fast and easy.



Standard Mounting: Threaded Shaft  
or Quick Release

Size Range:  $\frac{3}{8}$ " - 2"

Flow Options: Single and Dual

Seal Type: Carbon Graphite  
vs. Stainless Steel

Max. Temperature: Water 300°F (150°C)  
Oil 395°F (200°C)  
Steam 350°F (175°C)  
Air 300°F (150°C)

Size (inches)	Steam, Hot Oil and Water		Air	Steam		Hot Oil		Water		Air	
	Max. Pipe Thread Speed (RPM)	Max. Machine Thread Speed (RPM)	Max. Shaft Speed (RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)
$\frac{3}{8}$	1000	3600	550	120	100000	100	105000	750	400000	300	90000
$\frac{1}{2}$	1000	3600	550	120	84000	100	85000	750	360000	300	72000
$\frac{3}{4}$	1000	3600	550	120	70000	100	75000	750	230000	300	60000
1	1000	3600	550	120	48000	100	68000	750	200000	300	45000
$1\frac{1}{4}$	1000	3600	550	120	45000	100	62500	750	200000	300	39000
$1\frac{1}{2}$	1000	2500	550	120	35000	100	60000	600	180000	300	33000
2	1000	2500	550	120	30000	100	55000	600	150000	300	27000

Size (inches)	Steam, Hot Oil and Water		Air	Steam		Hot Oil		Water		Air	
	Max. Pipe Thread Speed (RPM)	Max. Machine Thread Speed (RPM)	Max. Shaft Speed (RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)
$\frac{3}{8}$	1000	3600	550	8,2	6900	6,8	7240	52,0	27600	20,4	6200
$\frac{1}{2}$	1000	3600	550	8,2	5800	6,8	5860	52,0	24830	20,4	4970
$\frac{3}{4}$	1000	3600	550	8,2	4830	6,8	5170	52,0	15860	20,4	4140
1	1000	3600	550	8,2	3310	6,8	4700	52,0	13800	20,4	3100
$1\frac{1}{4}$	1000	3600	550	8,2	3100	6,8	4310	52,0	13800	20,4	2700
$1\frac{1}{2}$	1000	2500	550	8,2	2410	6,8	4140	41,4	12400	20,4	2280
2	1000	2500	550	8,2	2070	6,8	3800	41,4	10350	20,4	1860

Note: PN = psi x RPM. Maximum pressure, speed and PN values may not be exceeded





## SERIES 5000T

*Series 5000T*

The Series 5000T offers all of the advantages of the Series 5000 with a **longer wearing seal face combination**. The 5000T features a carbon graphite seal ring against a tungsten carbide face ring to provide longer seal life in general purpose applications.

Standard Mounting: Threaded Shaft  
or Quick Release

Size Range:  $\frac{3}{8}$ " - 2"

Flow Options: Single and Dual

Seal Type: Carbon Graphite  
vs. Tungsten Carbide

Max. Temperature: Water 300°F (150°C)  
Oil 395°F (200°C)  
Steam 350°F (175°C)  
Air 300°F (150°C)



Size (inches)	Steam, Hot Oil and Water		Air	Steam		Hot Oil		Water		Air	
	Max. Pipe Thread Speed (RPM)	Max. Machine Thread Speed (RPM)	Max. Shaft Speed (RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)
$\frac{3}{8}$	1000	3600	550	120	100000	100	165000	750	400000	300	90000
$\frac{1}{2}$	1000	3600	550	120	84000	100	131000	750	360000	300	72000
$\frac{3}{4}$	1000	3600	550	120	70000	100	122000	750	230000	300	60000
1	1000	3600	550	120	48000	100	88000	750	200000	300	45000
$1\frac{1}{4}$	1000	3600	550	120	45000	100	78000	750	200000	300	39000
$1\frac{1}{2}$	1000	2500	550	120	35000	100	63200	600	180000	300	33000
2	1000	2500	550	120	30000	100	58000	600	150000	300	27000

Size (inches)	Steam, Hot Oil and Water		Air	Steam		Hot Oil		Water		Air	
	Max. Pipe Thread Speed (RPM)	Max. Machine Thread Speed (RPM)	Max. Shaft Speed (RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)
$\frac{3}{8}$	1000	3600	550	8,2	6900	6,8	11400	52,0	27600	20,4	6200
$\frac{1}{2}$	1000	3600	550	8,2	5800	6,8	9000	52,0	24800	20,4	5000
$\frac{3}{4}$	1000	3600	550	8,2	4800	6,8	8400	52,0	15800	20,4	4140
1	1000	3600	550	8,2	3300	6,8	6000	52,0	13800	20,4	3100
$1\frac{1}{4}$	1000	3600	550	8,2	3100	6,8	5400	52,0	13800	20,4	2700
$1\frac{1}{2}$	1000	2500	550	8,2	2400	6,8	4400	41,4	12400	20,4	2300
2	1000	2500	550	8,2	2050	6,8	4000	41,4	10350	20,4	1860

Note: PN = psi x RPM. Maximum pressure, speed and PN values may not be exceeded





# SERIES 5000 ASM

*Series 5000 ASM*

**D**uff-Norton's Series 5000ASM features **Advanced Seal Materials** for abrasive applications, where softer sealing faces are subject to grooving. The ASM seal is a tungsten carbide face ring against a siliconized graphite seal ring, offering unsurpassed protection against grooving in applications where other materials fail.

Standard Mounting: Threaded Shaft  
or Quick Release

Size Range:  $\frac{3}{8}$ " - 2"

Flow Options: Single and Dual

Seal Type: Siliconized Graphite  
vs. Tungsten Carbide

Max. Temperature: Water 300°F (150°C)  
Oil 395°F (200°C)  
Steam 350°F (175°C)  
Air 300°F (150°C)



Size (inches)	Steam, Hot Oil and Water		Air	Steam		Hot Oil		Water		Air	
	Max. Pipe Thread Speed (RPM)	Max. Machine Thread Speed (RPM)	Max. Shaft Speed (RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)
$\frac{3}{8}$	1000	3600	550	120	100000	100	165000	750	400000	300	90000
$\frac{1}{2}$	1000	3600	550	120	84000	100	131000	750	360000	300	72000
$\frac{3}{4}$	1000	3600	550	120	70000	100	122000	750	230000	300	60000
1	1000	3600	550	120	48000	100	88000	750	200000	300	45000
$1\frac{1}{4}$	1000	3600	550	120	45000	100	78000	750	200000	300	39000
$1\frac{1}{2}$	1000	2500	550	120	35000	100	63200	600	180000	300	33000
2	1000	2500	550	120	30000	100	58000	600	150000	300	27000

Size (inches)	Steam, Hot Oil and Water		Air	Steam		Hot Oil		Water		Air	
	Max. Pipe Thread Speed (RPM)	Max. Machine Thread Speed (RPM)	Max. Shaft Speed (RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)
$\frac{3}{8}$	1000	3600	550	8,2	6900	6,8	11400	52,0	27600	20,4	6200
$\frac{1}{2}$	1000	3600	550	8,2	5800	6,8	9000	52,0	24800	20,4	5000
$\frac{3}{4}$	1000	3600	550	8,2	4800	6,8	8400	52,0	15800	20,4	4140
1	1000	3600	550	8,2	3300	6,8	6000	52,0	13800	20,4	3100
$1\frac{1}{4}$	1000	3600	550	8,2	3100	6,8	5400	52,0	13800	20,4	2700
$1\frac{1}{2}$	1000	2500	550	8,2	2400	6,8	4400	41,4	12400	20,4	2300
2	1000	2500	550	8,2	2050	6,8	4000	41,4	10350	20,4	1860

Note: PN = psi x RPM. Maximum pressure, speed and PN values may not be exceeded





## SERIES 5000 CARTRIDGES AND ELBOWS

*Series 5000: Cartridges and Elbows*

**T**he Series 5000, 5000T and 5000ASM feature a **cartridge design for all models**. All Series 5000 cartridges feature a one-year warranty. Replacement cartridges are installed by simply removing the housing retaining ring, inserting the new cartridge and o-ring, and replacing the retaining ring.

In addition, Series 5000, 5000T and 5000ASM cartridges are designed to fit the same housings for greater interchangeability of parts. This modular cartridge design allows for more flexibility during refurbishments.

Size Range:  $\frac{3}{8}$ " - 2"

Flow Options: Single and Dual

Seal Type: Carbon Graphite vs. Stainless Steel (5000)  
Carbon Graphite vs. Tungsten Carbide (5000T)  
Siliconized Graphite vs. Tungsten Carbide (5000ASM)

Operating Parameters: See pages 4 (5000), 5 (5000T) and 6 (5000ASM)



**S**tainless steel elbows are used to convert single flow Series 5000, 5000T and 5000ASM units for dual flow use. Elbows are available for stationary syphon operation.

All Series 5000 Rotary Unions® are shipped ready for single flow operation. For dual flow operation, simply remove the plug at the back of the unit and thread the appropriate elbow into place. Elbows are available for all global thread standards.

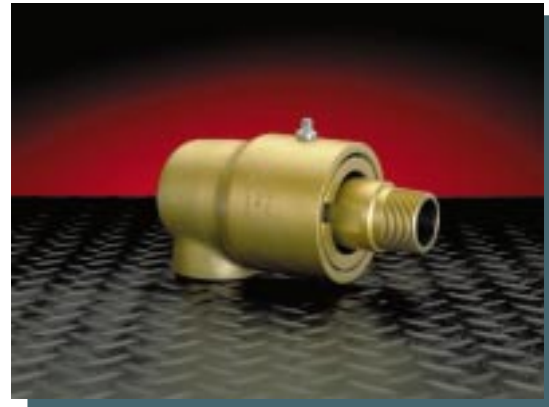




# SERIES 9000

*Series 9000*

The Series 9000 General Purpose Rotary Union® features a **bellows-type** seal to provide greater flexibility where equipment misalignment is inherent, and to resist seal hang-up in media contaminated with debris and suspensions. All sizes over 1¼" have dual bearings for additional load support. The Series 9000 is available with either flanged or threaded shaft connections for greater mounting flexibility.



Standard Mounting: Threaded Shaft or Flange

Size Range: ¼" - 5"

Flow Options: Single and Dual

Seal Type: Carbon Graphite vs. Stainless Steel

Max. Temperature: Water 375°F (190°C)  
 Oil 375°F (190°C)  
 Steam 375°F (190°C)  
 Air 350°F (175°C)

Size (inches)	Steam, Hot Oil and Water		Air	Steam		Hot Oil		Water		Air	
	Max. Pipe Thread Speed (RPM)	Max. Machine Thread Speed (RPM)	Max. Shaft Speed (RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)
¼	700	1500	320	150	85000	100	190000	250	190000	100	8300
⅜	700	1500	320	150	85000	100	190000	250	190000	100	8300
½	700	1200	240	150	85000	100	190000	250	190000	100	6200
¾	700	1000	210	150	85000	100	190000	250	190000	100	5400
1	700	1000	170	150	85000	100	190000	250	190000	100	4600
1¼	500	1000	140	150	67000	100	150000	250	150000	100	3600
1½	500	900	118	150	67000	100	138000	250	138000	100	3000
2	500	800	90	150	23000	100	52000	250	52000	100	2300
2½	500	700	77	150	20000	100	45000	250	45000	100	2000
3	500	600	67	150	11000	100	24000	250	24000	100	1700
4	-	500	56	150	11000	100	24000	250	24000	100	1500
5	-	400	47	150	11000	100	24000	250	24000	100	1200

Size (inches)	Steam, Hot Oil and Water		Air	Steam		Hot Oil		Water		Air	
	Max. Pipe Thread Speed (RPM)	Max. Machine Thread Speed (RPM)	Max. Shaft Speed (RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)
¼	700	1500	320	10,2	5862	6,8	13103	17,0	13103	6,8	572
⅜	700	1500	320	10,2	5862	6,8	13103	17,0	13103	6,8	572
½	700	1200	240	10,2	5862	6,8	13103	17,0	13103	6,8	428
¾	700	1000	210	10,2	5862	6,8	13103	17,0	13103	6,8	372
1	700	1000	170	10,2	5862	6,8	13103	17,0	13103	6,8	317
1¼	500	1000	140	10,2	4621	6,8	10345	17,0	10345	6,8	248
1½	500	900	118	10,2	4621	6,8	9517	17,0	9517	6,8	207
2	500	800	90	10,2	1586	6,8	3586	17,0	3586	6,8	159
2½	500	700	77	10,2	1379	6,8	3103	17,0	3103	6,8	138
3	500	600	67	10,2	759	6,8	1655	17,0	1655	6,8	117
4	-	500	56	10,2	759	6,8	1655	17,0	1655	6,8	103
5	-	400	47	10,2	759	6,8	1655	17,0	1655	6,8	83

Note: PN = psi x RPM. Maximum pressure, speed and PN values may not be exceeded





## SERIES 9000G

Series 9000G

The Series 9000G utilises a carbon graphite bearing for **higher temperature applications**. Because there is no rolling element bearing, no lubrication is required, therefore the 9000G operates free of maintenance. The 9000G thrust collar allows for thermal expansion, making this an ideal union for high temperature general purpose applications.

Standard Mounting: Threaded Shaft or Flange

Size Range: 1/4" - 5"

Flow Options: Single and Dual

Seal Type: Carbon Graphite vs. Stainless Steel

Max. Temperature: Water 600°F (315°C)  
Oil 600°F (315°C)  
Steam 600°F (315°C)  
Air 350°F (175°C)



Size (inches)	Steam, Hot Oil and Water		Air		Steam		Hot Oil		Water		Air	
	Max. Shaft Speed (RPM)	Max. Shaft Speed (RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)
1/4	700	320	175	43000	100	100000	250	100000	100	8300		
3/8	700	320	175	43000	100	100000	250	100000	100	8300		
1/2	600	240	175	43000	100	55000	250	55000	100	6200		
3/4	500	210	175	43000	100	36000	250	36000	100	5400		
1	500	170	175	43000	100	34000	250	34000	100	4600		
1 1/4	500	140	150	34000	100	32000	250	32000	100	3600		
1 1/2	400	118	150	34000	100	25000	250	25000	100	3000		
2	400	90	150	12000	100	18000	250	18000	100	2300		
2 1/2	300	77	150	10000	100	14000	250	14000	100	2000		
3	300	67	150	6000	100	9000	250	9000	100	1700		
4	250	56	150	6000	100	5000	250	5000	100	1500		
5	250	47	150	6000	100	3200	250	3200	100	1200		

Size (inches)	Steam, Hot Oil and Water		Air		Steam		Hot Oil		Water		Air	
	Max. Shaft Speed (RPM)	Max. Shaft Speed (RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)
1/4	700	320	11,9	2,9	6,8	6897	17,0	6897	6,8	572		
3/8	700	320	11,9	2,9	6,8	6897	17,0	6897	6,8	572		
1/2	600	240	11,9	2,9	6,8	3793	17,0	3793	6,8	428		
3/4	500	210	11,9	2,9	6,8	2483	17,0	2483	6,8	372		
1	500	170	11,9	2,9	6,8	2345	17,0	2345	6,8	317		
1 1/4	500	140	10,2	2,3	6,8	2207	17,0	2207	6,8	248		
1 1/2	400	118	10,2	2,3	6,8	1724	17,0	1724	6,8	207		
2	400	90	10,2	0,8	6,8	1241	17,0	1241	6,8	159		
2 1/2	300	77	10,2	0,7	6,8	966	17,0	966	6,8	138		
3	300	67	10,2	0,4	6,8	621	17,0	621	6,8	117		
4	250	56	10,2	0,4	6,8	345	17,0	345	6,8	103		
5	250	47	10,2	0,4	6,8	221	17,0	221	6,8	83		

Note: PN = psi x RPM. Maximum pressure, speed and PN values may not be exceeded





## SERIES 2000

*Series 2000*

The Series 2000 is designed with two ball bearings spaced to withstand **radial and thrust loads**. The compression springs in the Series 2000 provide even loading across the seal surfaces to maintain zero leakage even in low pressure applications.

Standard Mounting: Flange

Size Range: 2" - 5"

Flow Options: Single and Dual

Seal Type: Carbon Graphite vs.  
Hardened Tempered  
Stainless Steel

Max. Temperature: Water 375°F (190°C)  
Oil 550°F (290°C)  
Steam 375°F (190°C)  
Air 350°F (175°C)



Size (inches)	Max. Shaft Speed (RPM)	Hot Oil		Water		Air	
		Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)
2	500	100	45000	150	45000	100	10000
3	500	100	24000	150	24000	100	6000
4	500	100	32000	150	32000	100	8000
5	500	100	24000	150	24000	100	4500

Size (inches)	Max. Shaft Speed (RPM)	Hot Oil		Water		Air	
		Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)
2	500	6.8	3103	10.2	3103	6.8	690
3	500	6.8	1655	10.2	1655	6.8	414
4	500	6.8	2207	10.2	2207	6.8	552
5	500	6.8	1655	10.2	1655	6.8	310

Note: PN = psi x RPM. Maximum pressure, speed and PN values may not be exceeded





## SERIES 2500

### Series 2500

Features like the John Crane® welded-edge metal bellows type seal, secondary lip seal, air circulated insulating sleeve and finned housing of the Series 2500 make it the **best hot oil joint on the market**. The Series 2500 is designed to dissipate heat and withstand shock and vibration to ensure reliable, trouble-free performance.

Standard Mounting: Flange

Size Range: 2" - 6"

Flow Options: Single and Dual

Seal Type: John Crane® Welded-Edge Metal Bellows with Tungsten Carbide and Silicon Carbide face materials

Max. Temperature: Oil 600°F (315°C) Water 350°F (180°C)



Size (inches)	Max. Shaft Speed (RPM)	Hot Oil				Water			
		Below 200°F		200°F - 350°F		Below 200°F		200°F - 350°F	
		Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)
2	2000	300	165000	260	150500	300	180000	260	175000
3	2000	230	92000	190	85500	230	109000	190	104000
4	2000	200	70000	170	68000	200	80000	170	70000
5	2000	180	54000	150	56000	180	67500	150	63800
6	2000	150	37500	130	36000	150	49000	130	45000

Size (inches)	Max. Shaft Speed (RPM)	Hot Oil				Water			
		Below 95°C		95°C - 180°C		Below 95°C		95°C - 180°C	
		Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)
2	2000	21	11379	18	10379	21	12414	18	12069
3	2000	16	6345	13	5897	16	7517	13	7172
4	2000	14	4828	12	4690	14	5517	12	4828
5	2000	12	3724	10	3862	12	4655	10	4400
6	2000	10	2586	9	2483	10	3379	9	3103

Size (inches)	Max. Shaft Speed (RPM)	Hot Oil			
		350°F - 450°F		450°F - 600°F	
		Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)
2	2000	230	138000	200	130000
3	2000	170	84000	150	79000
4	2000	150	64000	130	58000
5	2000	130	58000	120	48000
6	2000	110	44000	100	40000

Size (inches)	Max. Shaft Speed (RPM)	Hot Oil			
		180°C - 235°C		235°C - 315°C	
		Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)
2	2000	16	9517	14	8966
3	2000	12	5793	10	5448
4	2000	10	4414	9	4000
5	2000	9	4000	8	3310
6	2000	8	3034	7	2759

Note: PN = psi x RPM. Maximum pressure, speed and PN values may not be exceeded





## SERIES 8000 and 8000T

*Series 8000 and 8000T*

Available in sizes ranging from 1/2" to 4", the Series 8000 is designed for **operation in a variety of steam applications**. The anti-torque mounting lug of the Series 8000 prevents rotation of the housing while in operation. The special carbon graphite bearing is lubricated by the process fluid and requires no additional lubrication.

Standard Mounting: Threaded Shaft or Quick Release Flange

Size Range: 1/2" - 4"

Flow Options: Single and Dual

Seal Type: Carbon Graphite vs. Nickel Plated Steel

Max. Temperature: Steam 450°F (230°C)



### Steam

Size (inches)	Max. Shaft Speed (RPM)	Max. Pressure (psi)	Max PN (psi x RPM)
1/2	600	175	65000
3/4	600	175	38000
1	600	175	36000
1 1/4	600	175	32000
1 1/2	600	175	21000
2	600	175	18000
2 1/2	600	175	12000
3	600	175	9000
4	600	175	7500

The 8000T is designed specifically for the textile industry. Available in single and dual flow models, the 8000T is intended for use on slashers and ranges.

The Series 8000T features a hardened nickel plated shaft and stainless steel insert in the housing for additional corrosion resistance. The 8000T has two anti-torque lugs, 90° apart, for convenient torque bar installation. The heavy duty spring ensures sealing in low pressure and light vacuum applications.

The 8000T is field repairable for shortened maintenance time. In addition, the 8000T features a two year warranty in saturated steam applications.

### Steam

Size (inches)	Max. Shaft Speed (RPM)	Max. Pressure (bar)	Max PN (bar x RPM)
1/2	600	11,9	4483
3/4	600	11,9	2621
1	600	11,9	2483
1 1/4	600	11,9	2207
1 1/2	600	11,9	1448
2	600	11,9	1241
2 1/2	600	11,9	828
3	600	11,9	621
4	600	11,9	517

Note: PN = psi x RPM. Maximum pressure, speed and PN values may not be exceeded





## SERIES 8000-HO: HOT OIL

*Series 8000-Ho: Hot Oil*

The 8000-HO offers the same design features as the Series 8000 with a special grade carbon graphite bearing for **hot oil applications**. The Series 8000-HO has a high temperature seal ring for long seal life in hot oil applications. In addition, the Series 8000-HO is suitable for use in applications where abrasive wear is the primary cause of failure.

Standard Mounting: Threaded Shaft  
 Size Range: 1/2" - 3"  
 Flow Options: Single and Dual  
 Seal Type: Carbon Graphite vs. Nickel Plated Steel  
 Max. Temperature: Oil 600°F (315°C)



Hot Oil

Size (inches)	Max. Shaft Speed (RPM)	Max. Pressure (psi)	Max PN (psi x RPM) at 450°F	Max PN (psi x RPM) at 500°F	Max PN (psi x RPM) at 550°F	Max PN (psi x RPM) at 600°F
1/2	600	100	55000	48000	32000	16000
3/4	600	100	36000	28000	19000	9500
1	600	100	34000	27000	18000	9000
1 1/4	600	100	32000	24000	16000	8000
1 1/2	600	100	21000	16000	10000	5000
2	600	100	18000	13000	9000	4500
2 1/2	600	100	12000	9000	6000	3000
3	600	100	9000	6700	4500	2250

Hot Oil

Size (inches)	Max. Shaft Speed (RPM)	Max. Pressure (bar)	Max PN (bar x RPM) at 232°C	Max PN (bar x RPM) at 260°C	Max PN (bar x RPM) at 288°C	Max PN (bar x RPM) at 316°C
1/2	600	6.8	3793	3310	2207	1103
3/4	600	6.8	2483	1931	1310	655
1	600	6.8	2345	1862	1241	621
1 1/4	600	6.8	2207	1655	1103	552
1 1/2	600	6.8	1448	1103	690	345
2	600	6.8	1241	897	621	310
2 1/2	600	6.8	828	621	414	207
3	600	6.8	621	462	310	155

Note: PN = psi x RPM. Maximum pressure, speed and PN values may not be exceeded





## SERIES 4000

*Series 4000*

The Series 4000 is the perfect choice for **high speed applications**. The Series 4000 features a unique balanced seal for long life and low torque and a double row ball bearing for radial and thrust loads.

Standard Mounting: Threaded Shaft

Size Range: 1/8" - 1"

Flow Options: Single and Dual

Seal Type: Carbon Graphite vs. Ceramic

Max. Temperature: Water 200°F (93°C)  
 Oil 200°F (93°C)  
 Steam 200°F (93°C)  
 Air 150°F (65°C)



Size (inches)	Max. Pipe Thread Speed (RPM)	Max. Machine Thread Speed (RPM)	Water		Hot Oil		Air	
			Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)	Max. Pressure (psi)	Max PN (psi x RPM)
1/8	750	5000	1000	370000	1000	370000	100	96000
1/4	750	5000	1000	365000	1000	365000	100	94000
3/8	750	5000	1000	365000	1000	365000	100	94000
1/2	750	5000	1000	300000	1000	300000	100	80000
3/4	750	5000	1000	290000	1000	290000	100	75000
1	750	5000	1000	225000	1000	225000	100	65000

Size (inches)	Max. Pipe Thread Speed (RPM)	Max. Machine Thread Speed (RPM)	Water		Hot Oil		Air	
			Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)	Max. Pressure (bar)	Max PN (bar x RPM)
1/8	750	5000	68,0	25517	68,0	25517	6,8	6621
1/4	750	5000	68,0	25172	68,0	25172	6,8	6483
3/8	750	5000	68,0	25172	68,0	25172	6,8	6483
1/2	750	5000	68,0	20690	68,0	20690	6,8	5517
3/4	750	5000	68,0	20000	68,0	20000	6,8	5172
1	750	5000	68,0	15517	68,0	15517	6,8	4483

Note: PN = psi x RPM. Maximum pressure, speed and PN values may not be exceeded



PROTARY



# ACCESSORIES

## Accessories

- Flanges
- Braided Stainless Steel Hose - Male NPT or Flanged Connections
- Rubber Hose
- Syphon Elbows
- Lubricants



• QUICK RELEASE FLANGES



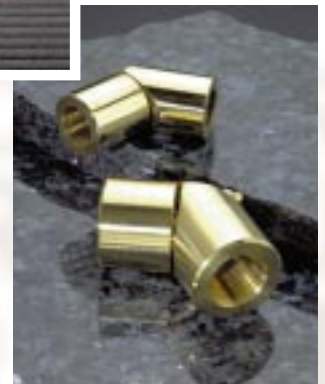
• STAINLESS STEEL HOSE



• LUBRICANTS



• RUBBER HOSE



• SYPHON ELBOWS





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