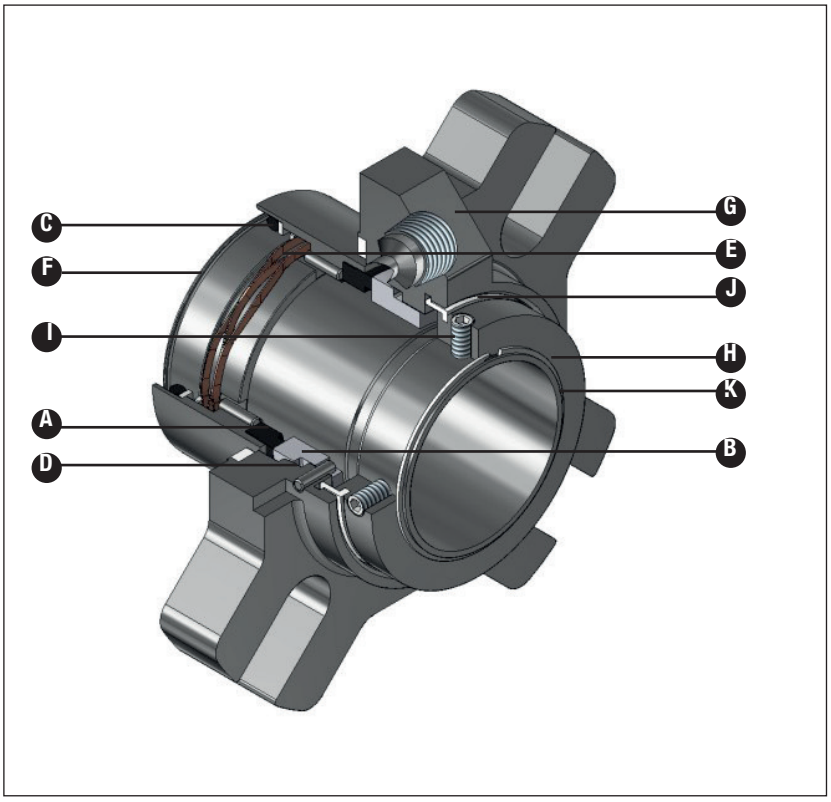
TYPE 4610/4620P

SINGLE AND DUAL COMPACT CARTRIDGE O-RING PUSHER SEALS

Technical Specification

A - Face/Primary Ring Ass'y
B - Seat/Mating Ring
C - Dynamic O-Ring
D - Static O-Ring
E - Nonclogging Wave Spring
F - Sleeve
G - Gland
H - Collar
I - Set Screws
J - Centralizing Spacer Ring
K - Retaining Ring



4610 shown

Product Description

The 4600 series cartridge seal is the complete, affordable and off-the-shelf sealing solution for industrial liquid applications.

Type 4600 series meets key industry pump standards, and is designed to permit use in rotating shaft equipment including ANSI/DIN pumps, close-coupled pumps, vertical pumps, and similar rotating shaft equipment.

Typical Applications

- Water and wastewater
- Pulp and paper
- Power generation
- Chemical
- Food and beverage
- Pharmaceutical
- Mining
- Steel production
- General industrial

Design Features

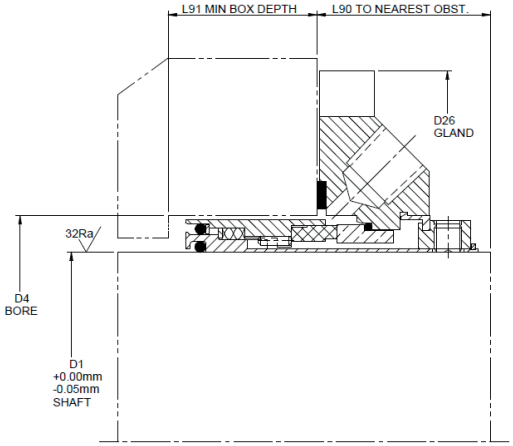
- Single and Dual O-ring Pusher Design
- Optimized running face design
- Non-clogging, crest-to-crest wave spring
- Pre-assembled unique centralizing spacer ring does not require removal before equipment startup
- Compact cartridge design
- Dual arrangement design can operate as tandem (unpressurized) or double (pressurized)
- Dual seal sleeve offers standard pumping vanes which improve flow and cooling
- Robust pin drive mechanism for both primary and mating ring

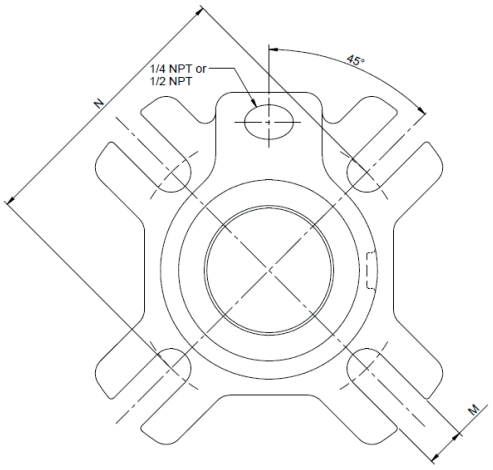
TYPE 4610/4620P

SINGLE AND DUAL COMPACT CARTRIDGE O-RING PUSHER SEALS

Technical Specification

Type 4610 Standard Bore Arrangement





See Intallation Instructions for piping arrangements

TYPE 4610/4620P

SINGLE AND DUAL COMPACT CARTRIDGE O-RING PUSHER SEALS

Technical Specification

Type 4610 Standard Bore Dimensional Data

inches

Seal Size IN	Seal Size MM	Size Code	D1 Shaft Size	D4 Box Bore Min.	D4 Box Bore Max.	D26	L90	L91	M	N
	24	0240	0.945	1.575	1.937	4.126	1.476	1.260	0.437	2.626
	25	0250	0.984	1.614	1.937	4.126	1.476	1.260	0.437	2.626
1.000		0254	1.000	1.614	1.937	4.126	1.476	1.260	0.437	2.626
	28	0280	1.102	1.732	2.063	4.252	1.476	1.260	0.437	2.752
1.125		0285	1.125	1.732	2.063	4.252	1.476	1.260	0.437	2.752
	30	0300	1.181	1.811	2.189	4.370	1.476	1.260	0.437	2.874
1.250		0317	1.250	1.874	2.189	4.370	1.476	1.260	0.437	2.874
	32	0320	1.260	1.874	2.189	4.370	1.476	1.260	0.437	2.874
	33	0330	1.299	1.929	2.311	4.500	1.476	1.260	0.437	3.063
1.375		0349	1.375	2.000	2.311	4.500	1.476	1.260	0.437	3.063
	35	0350	1.378	2.000	2.311	4.500	1.476	1.260	0.437	3.063
	38	0380	1.496	2.250	2.500	5.000	1.476	1.299	0.563	3.437
1.500		0381	1.500	2.250	2.500	5.000	1.516	1.299	0.563	3.437
	40	0400	1.575	2.362	2.500	5.000	1.516	1.299	0.563	3.437
1.625		0412	1.625	2.362	2.500	5.000	1.516	1.299	0.563	3.437
	43	0430	1.693	2.480	2.626	5.252	1.516	1.299	0.563	3.563
1.750		0444	1.750	2.500	2.626	5.252	1.516	1.299	0.563	3.563
	45	0450	1.772	2.500	2.626	5.252	1.516	1.299	0.563	3.563
1.875		0476	1.875	2.626	3.000	5.500	1.516	1.299	0.563	3.874
	48	0480	1.890	2.626	3.000	5.500	1.516	1.299	0.563	3.874
	50	0500	1.969	2.750	3.000	5.500	1.516	1.299	0.563	3.874
2.000		0508	2.000	2.750	3.000	5.500	1.516	1.299	0.563	3.874
	53	0530	2.087	2.874	3.311	5.748	1.516	1.299	0.689	4.374
2.125		0539	2.125	2.874	3.311	5.748	1.516	1.299	0.689	4.374
	55	0550	2.165	2.874	3.311	5.748	1.516	1.299	0.689	4.374
2.250		0571	2.250	3.000	3.311	5.748	1.516	1.299	0.689	4.374
	58	0580	2.283	3.126	3.563	6.000	1.516	1.299	0.689	4.626
	60	0600	2.362	3.126	3.563	6.000	1.516	1.299	0.689	4.626
2.375		0603	2.375	3.126	3.563	6.000	1.516	1.299	0.689	4.626
	63	0630	2.480	3.252	3.874	6.252	1.516	1.417	0.689	4.874
2.500		0635	2.500	3.252	3.874	6.252	1.516	1.417	0.689	4.874
	65	0650	2.559	3.500	3.874	6.252	1.516	1.417	0.689	4.874
2.625		0666	2.625	3.500	3.874	6.252	1.516	1.417	0.689	4.874
2.750		0698	2.750	3.740	3.874	6.252	1.516	1.417	0.689	4.874
	70	0700	2.756	3.740	3.874	6.252	1.516	1.417	0.689	4.874
2.875		0730	2.875	4.000	4.500	8.110	1.811	1.673	0.811	5.709
	75	0750	2.953	4.000	4.500	8.110	1.811	1.673	0.811	5.709
3.000		0762	3.000	4.000	4.500	8.110	1.811	1.673	0.811	5.709
3.125		0793	3.125	4.252	4.748	8.110	1.811	1.673	0.811	5.945
	80	0800	3.150	4.252	4.748	8.110	1.811	1.673	0.811	5.945
3.250		0825	3.250	4.252	4.748	8.110	1.811	1.673	0.811	5.945
	85	0850	3.346	4.370	4.874	8.110	1.811	1.673	0.811	6.063
3.375		0857	3.375	4.370	4.874	8.110	1.811	1.673	0.811	6.063
3.500		0889	3.500	4.500	5.000	8.504	1.811	1.673	0.811	6.220
	90	0900	3.543	4.626	5.118	8.504	1.811	1.673	0.811	6.299
3.625		0920	3.625	4.626	5.118	8.504	1.811	1.673	0.811	6.299
	95	0950	3.740	4.752	5.252	9.685	1.811	1.673	0.811	6.457
3.750		0952	3.750	4.752	5.252	9.685	1.811	1.673	0.811	6.457
3.875		0984	3.875	4.874	5.374	9.685	1.811	1.673	0.811	6.575
	100	1000	3.937	5.000	5.512	9.685	1.811	1.673	0.811	6.732
4.000		1016	4.000	5.000	5.512	9.685	1.811	1.673	0.811	6.732
4.125		1047	4.125	5.252	5.906	9.685	2.441	1.732	0.811	7.126
	105	1050	4.134	5.252	5.906	9.685	2.441	1.732	0.811	7.126
4.250		1079	4.250	5.252	5.906	9.685	2.441	1.732	0.811	7.126
	110	1100	4.331	5.500	6.102	9.685	2.441	1.732	0.811	7.402
4.375		1111	4.375	5.500	6.102	9.685	2.441	1.732	0.811	7.402
4.500		1143	4.500	5.500	6.102	9.685	2.441	1.732	0.811	7.402
	115	1150	4.528	5.500	6.102	9.685	2.441	1.732	0.811	7.402
4.625		1174	4.625	5.752	6.378	10.472	2.441	1.732	0.811	7.638
	120	1200	4.724	5.752	6.378	10.472	2.441	1.732	0.811	7.638
4.750		1206	4.750	5.752	6.378	10.472	2.441	1.732	0.811	7.638
4.875		1238	4.875	6.299	6.929	10.472	2.441	1.732	0.811	8.268
	125	1250	4.921	6.299	6.929	10.472	2.441	1.732	0.811	8.268
5.000		1270	5.000	6.299	6.929	10.472	2.441	1.732	0.811	8.268
	130	1300	5.118	6.299	6.929	10.472	2.441	1.732	0.811	8.268
5.125		1301	5.125	6.299	6.929	10.472	2.441	1.732	0.811	8.268
5.250		1333	5.250	6.850	7.480	11.654	2.441	1.732	0.937	8.898
	135	1350	5.315	6.850	7.480	11.654	2.441	1.732	0.937	8.898
5.375		1365	5.375	6.850	7.480	11.654	2.441	1.732	0.937	8.898
5.500		1397	5.500	6.850	7.480	11.654	2.441	1.732	0.937	8.898
	140	1400	5.512	6.850	7.480	11.654	2.441	1.732	0.937	8.898
5.625		1428	5.625	6.850	7.480	11.654	2.441	1.732	0.937	8.898

metric

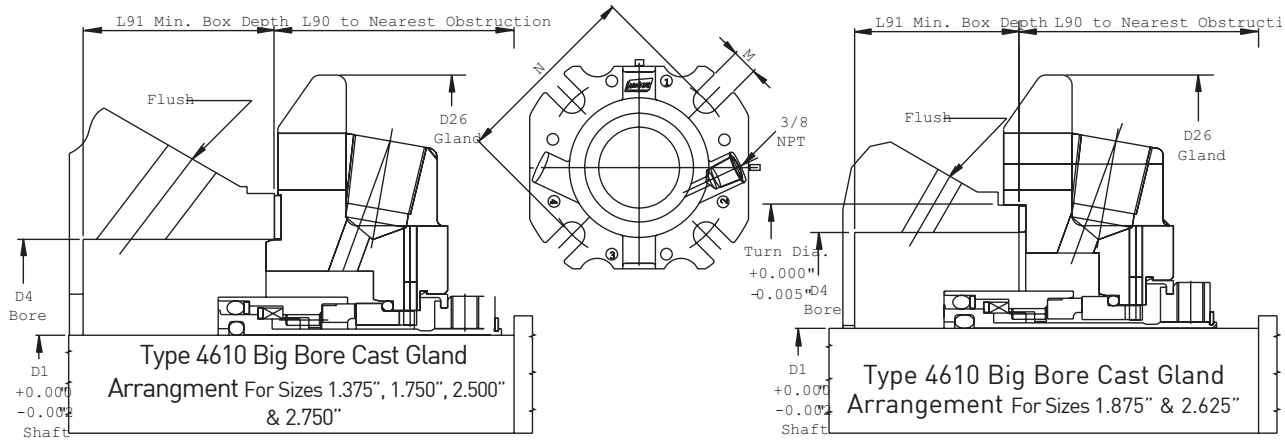
Seal Size IN	Seal Size MM	Size Code	D1 Shaft Size	D4 Box Bore Min.	D4 Box Bore Max.	D26	L90	L91	M	N
	24	0240	24.00	40.00	49.20	104.80	37.50	32.00	11.10	66.70
	25	0250	25.00	41.00	49.20	104.80	37.50	32.00	11.10	66.70
1.000		0254	25.40	41.00	49.20	104.80	37.50	32.00	11.10	66.70
	28	0280	28.00	44.00	52.40	108.00	37.50	32.00	11.10	69.90
1.125		0285	28.50	44.00	52.40	108.00	37.50	32.00	11.10	69.90
	30	0300	30.00	46.00	55.60	111.00	37.50	32.00	11.10	73.00
1.250		0317	31.70	47.60	55.60	111.00	37.50	32.00	11.10	73.00
	32	0320	32.00	47.60	55.60	111.00	37.50	32.00	11.10	73.00
	33	0330	33.00	49.00	58.70	114.30	37.50	32.00	11.10	77.80
1.375		0349	34.90	50.80	58.70	114.30	37.50	32.00	11.10	77.80
	35	0350	35.00	50.80	58.70	114.30	37.50	32.00	11.10	77.80
	38	0380	38.00	57.15	63.50	127.00	38.50	33.00	14.30	87.30
1.500		0381	38.10	57.15	63.50	127.00	38.50	33.00	14.30	87.30
	40	0400	40.00	60.00	63.50	127.00	38.50	33.00	14.30	87.30
1.625		0412	41.20	60.00	63.50	127.00	38.50	33.00	14.30	87.30
	43	0430	43.00	63.00	66.70	133.40	38.50	33.00	14.30	90.50
1.750		0444	44.40	63.50	66.70	133.40	38.50	33.00	14.30	90.50
	45	0450	45.00	63.50	66.70	133.40	38.50	33.00	14.30	90.50
1.875		0476	47.60	66.70	76.20	139.70	38.50	33.00	14.30	98.40
	48	0480	48.00	66.70	76.20	139.70	38.50	33.00	14.30	98.40
	50	0500	50.00	69.85	76.20	139.70	38.50	33.00	14.30	98.40
2.000		0508	50.80	69.85	76.20	139.70	38.50	33.00	14.30	98.40
	53	0530	53.00	73.00	84.10	146.00	38.50	33.00	17.50	111.10
2.125		0539	53.90	73.00	84.10	146.00	38.50	33.00	17.50	111.10
	55	0550	55.00	73.00	84.10	146.00	38.50	33.00	17.50	111.10
2.250		0571	57.10	76.20	84.10	146.00	38.50	33.00	17.50	111.10
	58	0580	58.00	79.40	90.50	152.40	38.50	33.00	17.50	117.50
	60	0600	60.00	79.40	90.50	152.40	38.50	33.00	17.50	117.50
2.375		0603	60.30	79.40	90.50	152.40	38.50	33.00	17.50	117.50
	63	0630	63.00	82.60	98.40	158.80	38.50	36.00	17.50	123.80
2.500		0635	63.50	82.60	98.40	158.80	38.50	36.00	17.50	123.80
	65	0650	65.00	88.90	98.40	158.80	38.50	36.00	17.50	123.80
2.625		0666	66.60	88.90	98.40	158.80	38.50	36.00	17.50	123.80
2.750		0698	69.80	95.00	98.40	158.80	38.50	36.00	17.50	123.80
	70	0700	70.00	95.00	98.40	158.80	38.50	36.00	17.50	123.80
2.875		0730	73.03	101.60	114.30	206.00	46.00	42.50	20.60	145.00
	75	0750	75.00	101.60	114.30	206.00	46.00	42.50	20.60	145.00
3.000		0762	76.20	101.60	114.30	206.00	46.00	42.50	20.60	145.00
3.125		0793	79.38	108.00	120.60	206.00	46.00	42.50	20.60	151.00
	80	0800	80.00	108.00	120.60	206.00	46.00	42.50	20.60	151.00
3.250		0825	82.55	108.00	120.60	206.00	46.00	42.50	20.60	151.00
	85	0850	85.00	111.00	123.80	206.00	46.00	42.50	20.60	154.00
3.375		0857	85.73	111.00	123.80	206.00	46.00	42.50	20.60	154.00
3.500		0889	88.90	114.30	127.00	216.00	46.00	42.50	20.60	158.00
	90	0900	90.00	117.50	130.00	216.00	46.00	42.50	20.60	160.00
3.625		0920	92.08	117.50	130.00	216.00	46.00	42.50	20.60	160.00
	95	0950	95.00	120.70	133.40	246.00	46.00	42.50	20.60	164.00
3.750		0952	95.25	120.70	133.40	246.00	46.00	42.50	20.60	164.00
3.875		0984	98.43	123.80	136.50	246.00	46.00	42.50	20.60	167.00
	100	1000	100.00	127.00	140.00	246.00	46.00	42.50	20.60	171.00
4.000		1016	101.60	127.00	140.00	246.00	46.00	42.50	20.60	171.00
4.125		1047	104.77	133.4	150.00	246.00	62.00	44.00	20.60	181.00
	105	1050	105.00	133.4	150.00	246.00	62.00	44.00	20.60	181.00
4.250		1079	107.95	133.4	150.00	246.00	62.00	44.00	20.60	181.00
	110	1100	110.00	139.7	155.00	246.00	62.00	44.00	20.60	188.00
4.375		1111	111.12	139.7	155.00	246.00	62.00	44.00	20.60	188.00
4.500		1143	114.30	139.7	155.00	246.00	62.00	44.00	20.60	188.00
	115	1150	115.00	139.7	155.00	246.00	62.00	44.00	20.60	188.00
4.625		1174	117.47	146.1	162.00	266.00	62.00	44.00	20.60	194.00
	120	1200	120.00	146.1	162.00	266.00	62.00	44.00	20.60	194.00
4.750		1206	120.65	146.1	162.00	266.00	62.00	44.00	20.60	194.00
4.875		1238	123.82	160.00	176.00	266.00	62.00	44.00	20.60	210.00
	125	1250	125.00	160.00	176.00	266.00	62.00	44.00	20.60	210.00
5.000		1270	127.00	160.00	176.00	266.00	62.00	44.00	20.60	210.00
	130	1300	130.00	160.00	176.00	266.00	62.00	44.00	20.60	210.00
5.125		1301	130.17	160.00	176.00	266.00	62.00	44.00	20.60	210.00
5.250		1333	133.35	174.00	190.00	296.00	62.00	44.00	23.80	226.00
	135	1350	135.00	174.00	190.00	296.00	62.00	44.00	23.80	226.00
5.375		1365	136.52	174.00	190.00	296.00	62.00	44.00	23.80	226.00
5.500		1397	139.70	174.00	190.00	296.00	62.00	44.00	23.80	226.00
	140	1400	140.00	174.00	190.00	296.00	62.00	44.00	23.80	226.00
5.625		1428	142.87	174.00	190.00	296.00	62.00	44.00	23.80	226.00

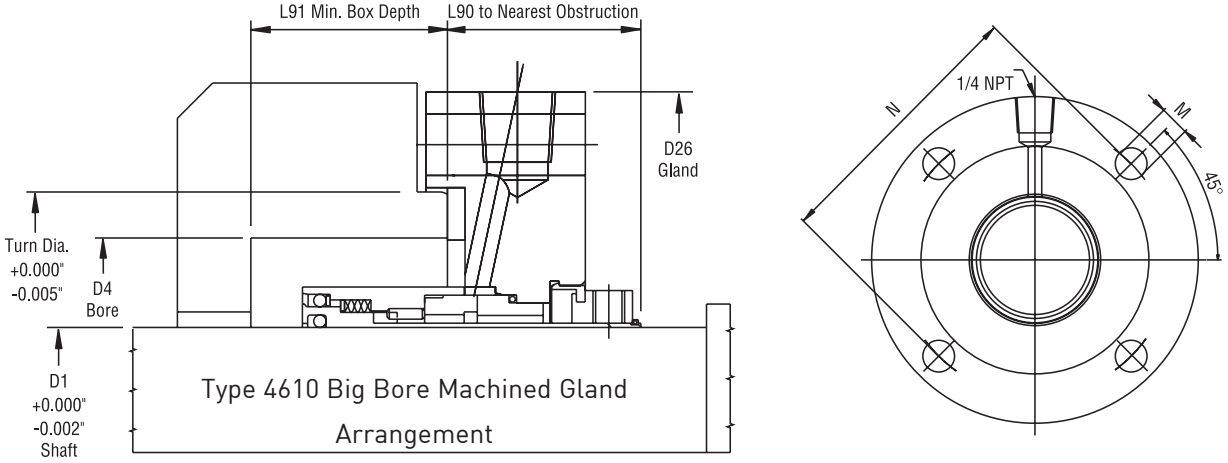
TYPE 4610/4620P

SINGLE AND DUAL COMPACT CARTRIDGE O-RING PUSHER SEALS

Technical Specification

Type 4610 Big Bore Typical Arrangement





Type 4610 Big Bore Dimensional Data

Big Bore Cast Gland (inches)

Pump Manufacturer	D1 Shaft Size	D4 Box Bore Min.	D4 Box Bore Max.	D26	L90	L91	M	N	Turn Dia.
Durco Mk III Group IK, Goulds 3196 STX, Sulzer ALB #1	**1.375**	**2.875**	**3.023**	**5.375**	**2.059**	**0.600**	**0.562**	**4.062**	**–**
Goulds 3196 MTX	**1.750**	**3.500**	**3.925**	**6.500**	**2.100**	**0.638**	**0.687**	**5.093**	**–**
Durco Mk III Group II	**1.875**	**3.625**	**3.734**	**6.500**	**1.929**	**0.809**	**0.687**	**5.093**	**4.125**
Goulds 3196 XLTX	**2.500**	**4.750**	**4.875**	**8.000**	**2.479**	**0.377**	**0.687**	**6.062**	**–**
Durco Mk III Group III	**2.625**	**4.625**	**4.740**	**8.000**	**2.432**	**0.424**	**0.687**	**6.062**	**5.125**
Goulds 3196 X-17	**2.750**	**4.750**	**4.875**	**8.000**	**2.386**	**0.470**	**0.687**	**6.062**	**–**

Big Bore Machined Gland (inches)

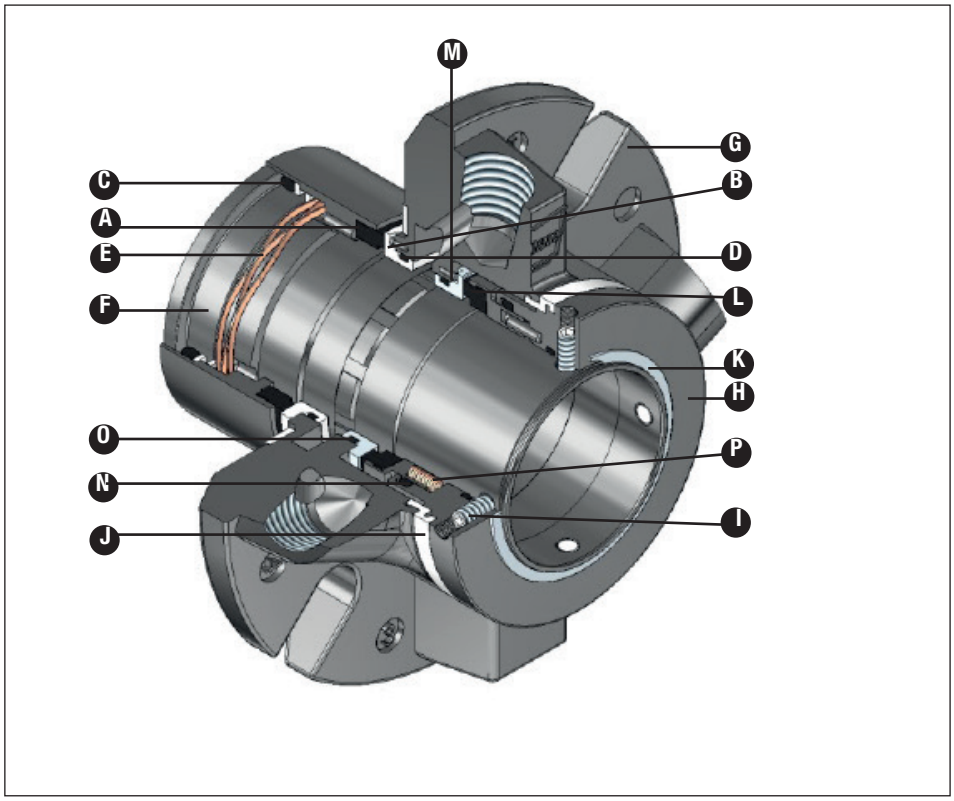
Durco Mk III Group IJ	**1.125**	**1.730**	**2.750**	**4.500**	**1.422**	**1.180**	**0.437**	**3.750**	**3.125**
Goulds 3196 LTX	**2.125**	**2.875**	**4.336**	**7.125**	**1.462**	**1.220**	**0.687**	**6.000**	**4.711**
Sulzer ALB #2	**2.125**	**2.875**	**4.187**	**7.156**	**1.462**	**1.220**	**0.437**	**5.250**	**4.562**
Sulzer ALB #3	**2.500**	**3.250**	**4.750**	**8.000**	**1.462**	**1.220**	**0.562**	**6.000**	**5.125**

TYPE 4610/4620P

SINGLE AND DUAL COMPACT CARTRIDGE O-RING PUSHER SEALS

Technical Specification

A- Inboard Face/ Primary Ring Ass'y
B- Inboard Seat/ Mating Ring
C- Inboard Dynamic O-Ring
D- Inboard Static O-Ring
E- Non-clogging Wave Spring
F- Sleeve
G- Gland
H- Collar
I- Set Screws
J- Centralizing Spacer Ring
K- Retaining Ring
L- Outboard Face/ Primary Ring Ass'y
M- Outboard Seat/ Mating Ring
N- Outboard Dynamic O-Ring
O- Outboard Static O-Ring
P- Outboard Springs



4620P shown

Product Description

The 4600 series cartridge seal is the complete, affordable and off-the-shelf sealing solution for industrial liquid applications.

Type 4600 series meets key industry pump standards, and is designed to permit use in rotating shaft equipment including ANSI/DIN pumps, close-coupled pumps, vertical pumps, and similar rotating shaft equipment.

Typical Applications

- Water and wastewater
- Pulp and paper
- Power generation
- Chemical
- Food and beverage
- Pharmaceutical
- Mining
- Steel production
- General industrial

Design Features

- Single and Dual O-ring Pusher Design
- Optimized running face design
- Non-clogging, crest-to-crest wave spring
- Pre-assembled unique centralizing spacer ring does not require removal before equipment startup
- Compact cartridge design
- Dual arrangement design can operate as tandem (unpressurized) or double (pressurized)
- Dual seal sleeve offers standard pumping vanes which improve flow and cooling
- Robust pin drive mechanism for both primary and mating ring

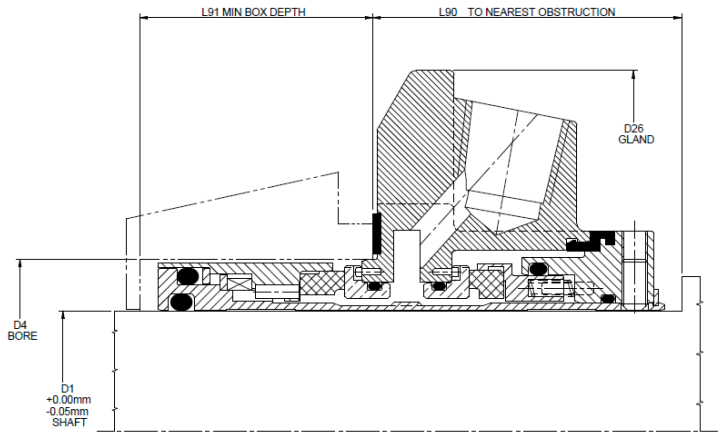
TYPE 4610/4620P

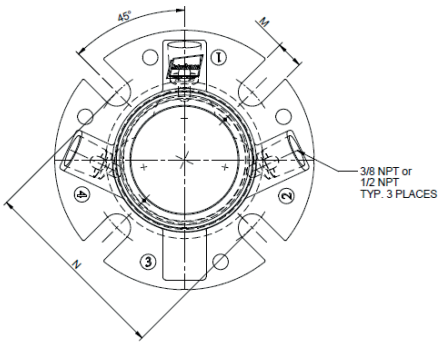
SINGLE AND DUAL COMPACT CARTRIDGE O-RING PUSHER SEALS

Technical Specification

Type 4620P Standard Bore Arrangement

Type 4620P Standard Bore





See Installation Instructions for piping arrangements

TYPE 4610/4620P

SINGLE AND DUAL COMPACT CARTRIDGE O-RING PUSHER SEALS

Technical Specification

Type 4620P Standard Bore Dimensional Data

inches

Seal Size IN	Seal Size MM	Size Code	D1 Shaft Size	D4 Box Bore Min.	D4 Box Bore Max.	D26	L90	L91	M	N
	24	0240	0.945	1.626	1.890	4.000	2.000	1.634	0.524	2.803
	25	0250	0.984	1.626	1.890	4.000	2.000	1.634	0.524	2.803
1.000		0254	1.000	1.626	1.890	4.000	2.000	1.634	0.524	2.803
	28	0280	1.102	1.752	2.016	4.126	2.126	1.602	0.524	2.933
1.125		0285	1.125	1.752	2.016	4.126	2.126	1.602	0.524	2.933
	30	0300	1.181	1.811	2.295	4.252	2.126	1.602	0.524	3.213
1.250		0317	1.250	1.874	2.295	4.252	2.126	1.602	0.524	3.213
	32	0320	1.260	1.874	2.295	4.252	2.126	1.602	0.524	3.213
	33	0330	1.299	2.000	2.421	4.374	2.126	1.602	0.524	3.339
1.375		0349	1.375	2.000	2.421	4.374	2.126	1.602	0.524	3.339
	35	0350	1.378	2.000	2.421	4.374	2.126	1.602	0.524	3.339
	38	0380	1.496	2.252	2.681	4.874	2.185	1.681	0.524	3.598
1.500		0381	1.500	2.252	2.681	4.874	2.185	1.681	0.524	3.598
	40	0400	1.575	2.374	2.811	5.000	2.185	1.681	0.563	3.768
1.625		0412	1.625	2.374	2.811	5.000	2.185	1.681	0.563	3.768
	43	0430	1.693	2.500	2.917	5.252	2.185	1.681	0.563	3.874
1.750		0444	1.750	2.500	2.917	5.252	2.185	1.681	0.563	3.874
	45	0450	1.772	2.500	2.917	5.252	2.185	1.681	0.563	3.874
1.875		0476	1.875	2.626	2.917	5.252	2.185	1.681	0.563	3.874
	48	0480	1.890	2.626	2.917	5.252	2.185	1.681	0.563	3.874
	50	0500	1.969	2.752	3.016	5.500	2.374	1.713	0.563	4.000
2.000		0508	2.000	2.752	3.016	5.500	2.374	1.713	0.563	4.000
	53	0530	2.087	2.874	3.358	5.858	2.374	1.713	0.689	4.469
2.125		0539	2.125	2.874	3.358	5.858	2.374	1.713	0.689	4.469
	55	0550	2.165	2.874	3.358	5.858	2.374	1.713	0.689	4.469
2.250		0571	2.250	3.000	3.484	6.500	2.476	1.713	0.689	4.567
	58	0580	2.283	3.126	3.610	6.500	2.528	1.713	0.689	4.720
	60	0600	2.362	3.126	3.610	6.500	2.528	1.713	0.689	4.720
2.375		0603	2.375	3.126	3.610	6.500	2.528	1.713	0.689	4.720
	63	0630	2.480	3.374	3.890	6.752	2.626	1.705	0.689	5.000
2.500		0635	2.500	3.374	3.890	6.752	2.626	1.705	0.689	5.000
	65	0650	2.559	3.374	3.890	6.752	2.626	1.705	0.689	5.000
2.625		0666	2.625	3.685	4.063	6.752	2.563	1.728	0.689	5.169
2.750		0698	2.750	3.685	4.063	6.752	2.563	1.728	0.689	5.169
	70	0700	2.756	3.685	4.063	6.752	2.563	1.728	0.689	5.169
2.875		0730	2.874	3.812	4.186	7.000	2.562	1.727	0.687	5.312
	75	0750	2.953	4.000	4.469	7.750	2.625	2.250	0.812	5.720
3.000		0762	3.000	4.000	4.469	7.750	2.625	2.250	0.812	5.720
3.125		0793	3.125	4.125	4.600	7.875	2.687	2.250	0.812	5.845
	80	0800	3.150	4.125	4.600	7.437	2.635	2.250	0.812	5.845
3.250		0825	3.250	4.125	4.600	7.437	2.635	2.250	0.812	5.845
	85	0850	3.346	4.375	4.850	8.125	2.687	2.250	0.812	6.095
3.375		0857	3.375	4.375	4.850	8.125	2.687	2.250	0.812	6.095
3.500		0889	3.500	4.500	4.975	8.250	2.687	2.250	0.812	6.220
	90	0900	3.543	4.625	5.100	8.375	2.687	2.250	0.688	6.250
3.625		0920	3.625	4.625	5.100	8.375	2.687	2.250	0.688	6.250
	95	0950	3.740	4.724	5.199	8.750	2.687	2.250	0.688	6.770
3.750		0952	3.750	4.724	5.199	8.750	2.687	2.250	0.688	6.770
3.875		0984	3.875	4.875	5.375	8.750	2.687	2.250	0.812	6.636
	100	1000	3.937	5.000	5.500	9.000	2.687	2.250	0.812	6.761
4.000		1016	4.000	5.000	5.500	9.000	2.687	2.250	0.812	6.761
4.125		1047	4.125	5.125	5.625	9.000	2.687	2.250	0.812	6.886
	105	1050	4.134	5.125	5.625	9.000	2.687	2.250	0.812	6.886
4.250		1079	4.250	5.250	5.750	9.250	2.687	2.625	0.812	7.011
	110	1100	4.331	5.500	6.000	9.500	2.687	2.625	0.812	7.261
4.375		1111	4.375	5.500	6.000	9.500	2.687	2.625	0.812	7.261
4.500		1143	4.500	5.500	6.000	9.500	2.687	2.625	0.812	7.261
	115	1150	4.528	5.500	6.000	9.500	2.687	2.625	0.812	7.261
4.625		1174	4.625	5.750	6.313	10.375	2.687	2.625	0.812	7.574
	120	1200	4.724	5.750	6.313	10.375	2.687	2.625	0.812	7.574
4.750		1206	4.750	5.750	6.313	10.375	2.687	2.625	0.812	7.574
	125	1250	4.921	6.350	7.260	12.000	3.168	2.598	0.812	10.000
5.000		1270	5.000	6.350	7.260	12.000	3.168	2.598	0.812	10.000
	130	1300	5.118	6.600	7.510	12.250	3.168	2.598	0.812	10.250
5.250		1333	5.250	6.600	7.510	12.250	3.168	2.598	0.812	10.250
	135	1350	5.315	6.850	8.000	12.687	3.168	2.598	0.937	10.500
5.500		1397	5.500	6.850	8.000	12.687	3.168	2.598	0.937	10.500
	140	1400	5.512	6.850	8.000	12.687	3.168	2.598	0.937	10.500

metric

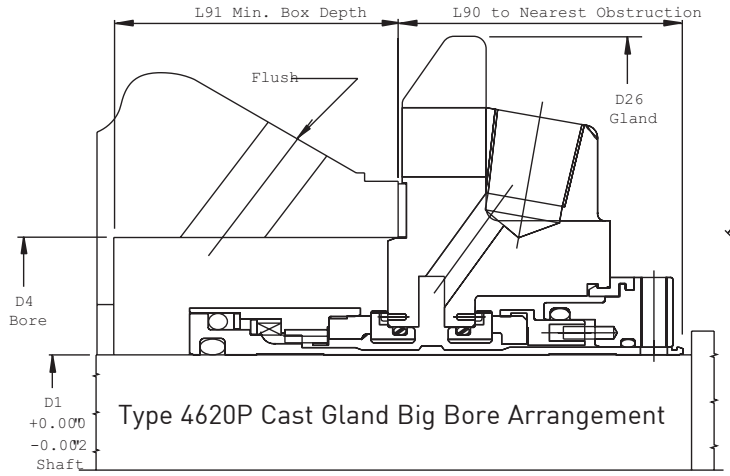
Seal Size IN	Seal Size MM	Size Code	D1 Shaft Size	D4 Box Bore Min.	D4 Box Bore Max.	D26	L90	L91	M	N
	24	0240	24.00	41.3	48.0	101.6	50.8	41.5	13.3	71.2
	25	0250	25.00	41.3	48.0	101.6	50.8	41.5	13.3	71.2
1.000		0254	25.40	41.3	48.0	101.6	50.8	41.5	13.3	71.2
	28	0280	28.00	44.5	51.2	104.8	54.0	40.7	13.3	74.5
1.125		0285	28.58	44.5	51.2	104.8	54.0	40.7	13.3	74.5
	30	0300	30.00	46.0	58.3	108.0	54.0	40.7	13.3	81.6
1.250		0317	31.75	47.6	58.3	108.0	54.0	40.7	13.3	81.6
	32	0320	32.00	47.6	58.3	108.0	54.0	40.7	13.3	81.6
	33	0330	33.00	50.8	61.5	111.1	54.0	40.7	13.3	84.8
1.375		0349	34.93	50.8	61.5	111.1	54.0	40.7	13.3	84.8
	35	0350	35.00	50.8	61.5	111.1	54.0	40.7	13.3	84.8
	38	0380	38.00	57.2	68.1	123.8	55.5	42.7	13.3	91.4
1.500		0381	38.10	57.2	68.1	123.8	55.5	42.7	13.3	91.4
	40	0400	40.00	60.3	71.4	127.0	55.5	42.7	14.3	95.7
1.625		0412	41.28	60.3	71.4	127.0	55.5	42.7	14.3	95.7
	43	0430	43.00	63.5	74.1	133.4	55.5	42.7	14.3	98.4
1.750		0444	44.45	63.5	74.1	133.4	55.5	42.7	14.3	98.4
	45	0450	45.00	63.5	74.1	133.4	55.5	42.7	14.3	98.4
1.875		0476	47.63	66.7	74.1	133.4	55.5	42.7	14.3	98.4
	48	0480	48.00	66.7	74.1	133.4	55.5	42.7	14.3	98.4
	50	0500	50.00	69.9	76.6	139.7	60.3	43.5	14.3	101.6
2.000		0508	50.80	69.9	76.6	139.7	60.3	43.5	14.3	101.6
	53	0530	53.00	73.0	85.3	148.8	60.3	43.5	17.5	113.5
2.125		0539	53.98	73.0	85.3	148.8	60.3	43.5	17.5	113.5
	55	0550	55.00	73.0	85.3	148.8	60.3	43.5	17.5	113.5
2.250		0571	57.15	76.2	88.5	165.1	62.9	43.5	17.5	116.0
	58	0580	58.00	79.4	91.7	165.1	64.2	43.5	17.5	119.9
	60	0600	60.00	79.4	91.7	165.1	64.2	43.5	17.5	119.9
2.375		0603	60.33	79.4	91.7	165.1	64.2	43.5	17.5	119.9
	63	0630	63.00	85.7	98.8	171.5	66.7	43.3	17.5	127.0
2.500		0635	63.50	85.7	98.8	171.5	66.7	43.3	17.5	127.0
	65	0650	65.00	85.7	98.8	171.5	66.7	43.3	17.5	127.0
2.625		0666	66.68	93.6	103.2	171.5	65.1	43.9	17.5	131.3
2.750		0698	69.85	93.6	103.2	171.5	65.1	43.9	17.5	131.3
	70	0700	70.00	93.6	103.2	171.5	65.1	43.9	17.5	131.3
2.875		0730	73.03	96.8	106.3	177.8	65.1	43.9	17.5	134.9
	75	0750	75.00	101.60	113.51	196.85	66.68	57.15	20.62	145.29
3.000		0762	76.20	101.60	113.51	196.85	66.68	57.15	20.62	145.29
3.125		0793	79.38	104.78	116.84	200.03	68.25	57.15	20.62	148.46
	80	0800	80.00	104.78	116.84	188.90	66.93	57.15	20.62	148.46
3.250		0825	82.55	104.78	116.84	188.90	66.93	57.15	20.62	148.46
	85	0850	85.00	111.13	123.19	206.38	68.25	57.15	20.62	154.81
3.375		0857	85.73	111.13	123.19	206.38	68.25	57.15	20.62	154.81
3.500		0889	88.90	114.30	126.37	209.55	68.25	57.15	20.62	157.99
	90	0900	90.00	117.48	129.54	212.73	68.25	57.15	17.48	158.75
3.625		0920	92.08	117.48	129.54	212.73	68.25	57.15	17.48	158.75
	95	0950	95.00	119.99	132.05	222.25	68.25	57.15	17.48	171.96
3.750		0952	95.25	119.99	132.05	222.25	68.25	57.15	17.48	171.96
3.875		0984	98.43	123.83	136.53	222.25	68.25	57.15	20.62	168.55
	100	1000	100.00	127.00	139.70	228.60	68.25	57.15	20.62	171.73
4.000		1016	101.60	127.00	139.70	228.60	68.25	57.15	20.62	171.73
4.125		1047	104.78	130.18	142.88	228.60	68.25	57.15	20.62	174.90
	105	1050	105.00	130.18	142.88	228.60	68.25	57.15	20.62	174.90
4.250		1079	107.95	133.35	146.05	234.95	68.25	66.68	20.62	178.08
	110	1100	110.00	139.70	152.40	241.30	68.25	66.68	20.62	184.43
4.375		1111	111.12	139.70	152.40	241.30	68.25	66.68	20.62	184.43
4.500		1143	114.30	139.70	152.40	241.30	68.25	66.68	20.62	184.43
	115	1150	115.00	139.70	152.40	241.30	68.25	66.68	20.62	184.43
4.625		1174	117.47	146.05	160.35	263.53	68.25	66.68	20.62	192.38
	120	1200	120.00	146.05	160.35	263.53	68.25	66.68	20.62	192.38
4.750		1206	120.65	146.05	160.35	263.53	68.25	66.68	20.62	192.38
	125	1250	125.00	161.29	184.40	304.80	80.47	65.99	20.62	254.00
5.000		1270	127.00	161.29	184.40	304.80	80.47	65.99	20.62	254.00
	130	1300	130.00	167.64	190.75	311.15	80.47	65.99	20.62	260.35
5.250		1333	133.35	167.64	190.75	311.15	80.47	65.99	20.62	260.35
	135	1350	135.00	173.99	203.20	322.25	80.47	65.99	23.80	266.70
5.500		1397	139.70	173.99	203.20	322.25	80.47	65.99	23.80	266.70
	140	1400	140.00	173.99	203.20	322.25	80.47	65.99	23.80	266.70

TYPE 4610/4620P

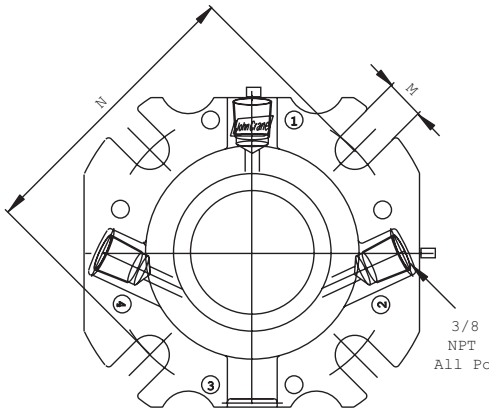
SINGLE AND DUAL COMPACT CARTRIDGE O-RING PUSHER SEALS

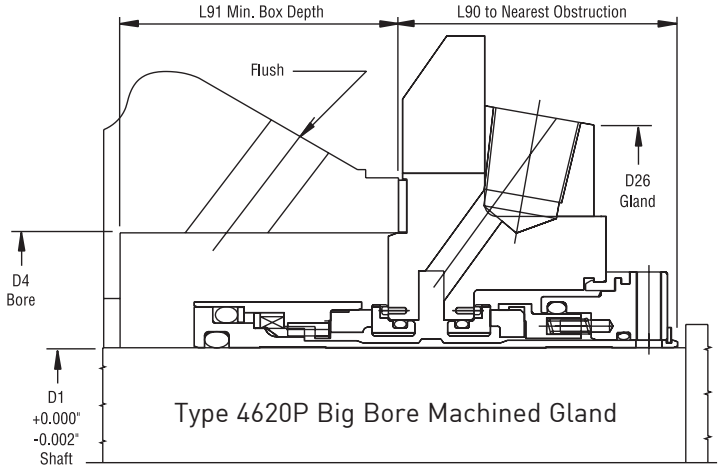
Technical Specification

Type 4620P Big Bore Typical Arrangement

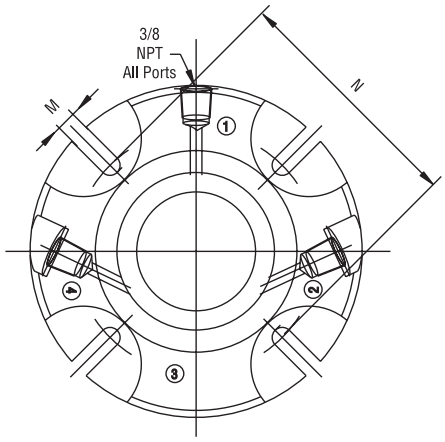


Type 4620P Cast Gland Big Bore Arrangement





Type 4620P Big Bore Machined Gland



Type 4620P Big Bore Dimensional Data

Big Bore Cast Gland (inches)

Pump Manufacturer	D1 Shaft Size	D4 Box Bore Min.	D4 Box Bore Max.	D26	L90	L91	M	N
Durco Mk III Group IK, Goulds 3196 STX, Sulzer ALB #1	**1.375**	**2.875**	**3.023**	**5.375**	**2.125**	**1.603**	**0.562**	**4.062**
Goulds 3196 MTX	**1.750**	**3.500**	**3.925**	**6.500**	**2.187**	**1.680**	**0.687**	**5.093**
Durco Mk III Group II	**1.875**	**3.625**	**3.734**	**6.500**	**2.187**	**1.680**	**0.687**	**5.093**
Goulds 3196 XLTX	**2.500**	**4.750**	**4.875**	**8.000**	**2.532**	**1.859**	**0.687**	**6.062**
Durco Mk III Group III	**2.625**	**4.625**	**4.740**	**8.000**	**2.562**	**1.727**	**0.687**	**6.062**
Goulds 3196 X-17	**2.750**	**4.750**	**4.875**	**8.000**	**2.532**	**1.820**	**0.687**	**6.062**

Big Bore Machined Gland (inches)

Goulds 3196 LTX	**2.125**	**3.875**	**4.250**	**7.156**	**2.408**	**1.742**	**0.687**	**5.687**
Sulzer ALB #2	**2.125**	**4.125**	**4.250**	**7.156**	**2.407**	**1.742**	**0.437**	**5.250**
Sulzer ALB #3	**2.500**	**4.750**	**4.875**	**8.000**	**2.532**	**1.859**	**0.687**	**6.062**

TYPE 4610/4620P

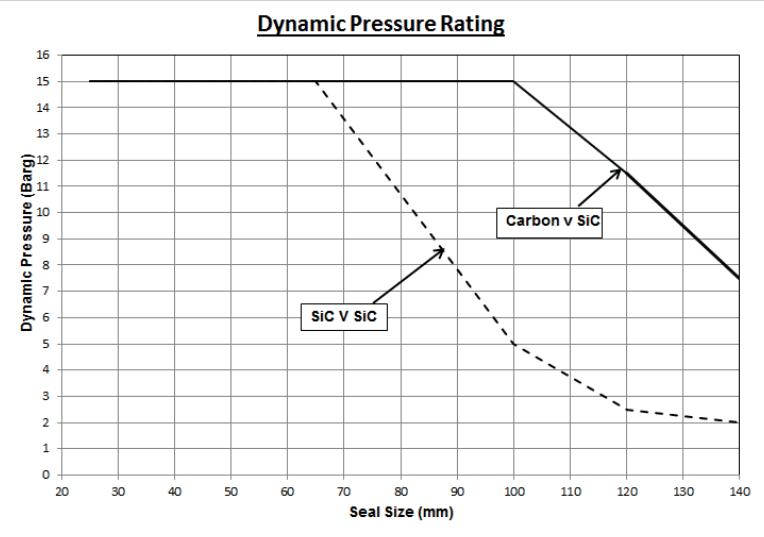
SINGLE AND DUAL COMPACT CARTRIDGE O-RING PUSHER SEALS

Technical Specification

Materials of Construction

SEAL COMPONENTS	MATERIALS	
Description	**Standard**	**Options**
Face/Primary Ring	Carbon Graphite	Silicon Carbide (Inboard Only)
Seat/Mating Ring	Silicon Carbide	–
O-ring	Fluoroelastomer	EPDM TFE Propylene Perfluoroelastomer
Springs	Alloy-C-276	–
Gasket, Centering Ring	Glass-filled PTFE Note: Some sizes have Sint. 316SS Spacers	–
Hardware	316SS or better	
Inboard Primary Ring Adaptor	Duplex SS	–
Outboard Primary Ring Adaptor	Alloy 20	–

Basic Pressure Rating



The basic pressure rating is for a standard seal, as shown in the typical arrangement, when installed according to the criteria given in this data sheet and generally industrial practices. The basic pressure rating assumes stable operation at the speeds indicated on the above chart in a clean, cool, lubricating, nonvolatile liquid with an adequate flush rate. When used with the multiplier factors, the basic pressure rating can be adjusted to provide a conservative estimate of the dynamic pressure rating. For process services outside this range or a more accurate assessment of the dynamic pressure rating, contact John Crane for more information.

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Middle East & Africa
United Arab Emirates
Tel: 971-481-27800
Fax: 971-488-62830

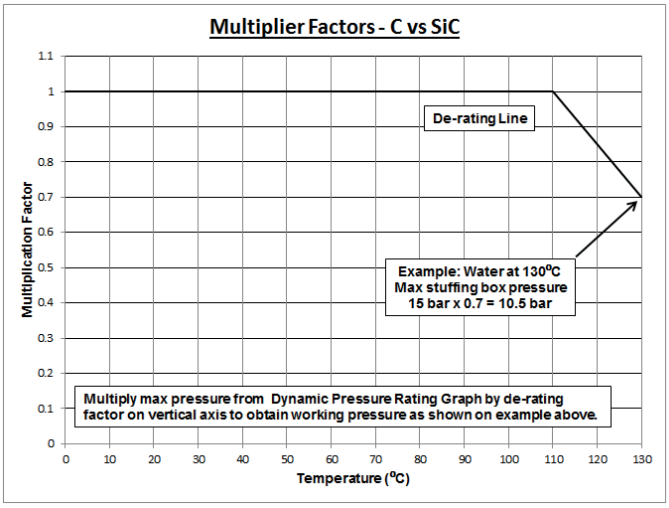
Asia Pacific
Singapore
Tel: 65-6518-1800
Fax: 65-6518-1803

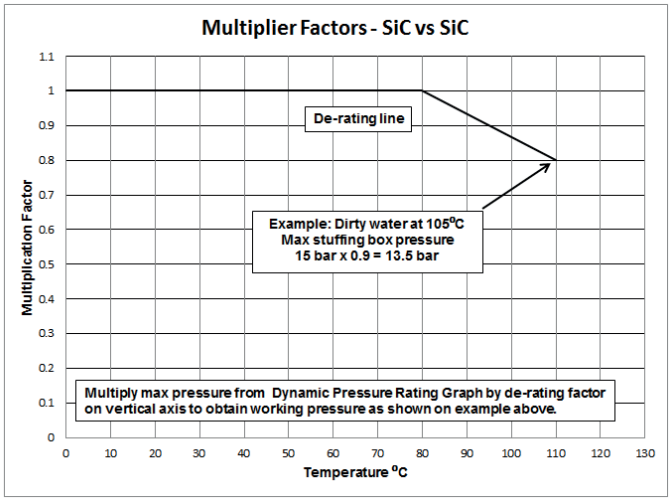
TYPE 4610/4620P

SINGLE AND DUAL COMPACT CARTRIDGE O-RING PUSHER SEALS

Technical Specification

Multiplier Factors





Single Type 4610 and Tandem[1] Type 4620P	Double[2] Type 4620P	
Process Pressure	Barrier Fluid Pressure[2]	Inboard Seal Internal Pressure Rating[3]
Up to 15barg or 220 psig Seal size and material dependent See Dynamic Pressure Rating Graph	Up to 15 barg or 220 psig Seal Size, Material & Barrier Fluid dependent[2] See Dynamic Pressure Rating Graph	1-2 barg or 15-30 psig

[1]Tandem (Unpressurized) : Uses a "buffer" with pressure lower than process seal chamber or stuffing box pressure (Plan 52). Pressure rating is same as Single.

[2]Double (Pressurized): Uses a "barrier" fluid with pressure higher than process seal chamber fluid or stuffing box pressure (Plan 53).

As a Double (Pressurized) Arrangement, maximum barrier fluid pressure is same as Dynamic Pressure Rating for Type 4620P carbon vs. SiC inboard seal (see Figure 3).

Maximum barrier fluid pressure is 9 barg or 130 psig for 3.000" (75mm) and larger sizes when barrier fluid is oil and shaft speed is greater than 1800 rpm.

[3]Inboard Seal Internal Pressure Rating = Barrier Pressure – Process Pressure

When using as a Double Pressurized Arrangement, set the barrier fluid pressure at 15-30 psig / 1-2 barg above process fluid.

It is not recommended to operate at higher pressure differential due to the inboard seal internal pressure limit.

Additional Notes:

*Barrier fluid must have a viscosity less than 15 cSt/65 SSU and fluid lubricity equal or better than water at 40°C. It is recommended that the barrier temperature be maintained below 65°C.

**The ratio of sealed pressure to vapor pressure must be greater than 1.5, otherwise contact Engineering. If the specific gravity is less than 0.6, contact Engineering.