

DIMENSIONS AND MATERIAL CODES

SEAL TYPE	SEAL O.D.	W.L.	SEAT STYLE	SEAT BORE	SEAT THICK	MAT'L CODE	SPEC. NO	RSD P/N
	3.230	2.500	2	3.250	0.562	BCFKF	12409	12409
	3.230	1.813	2	3.250	0.562	BCFKF	12410	12410
	3.230	1.813	-			BCF-F	12415	12415
	3.230	2.500	-			BCF-F	12416	12416
21D	3.230	2.375	2	3.250	0.562	BCFKF	12411	12411
	3.230	2.375	2	3.250	0.562	BCFKF	12412	12412
	3.230	3.500	2	3.250	0.562	BCFKF	12414	12414
	3.230	2.375	-			BCF-F	12417	12417
	3.230	3.500	-			BCF-F	12418	12418

2.500 Shaft Size

21	3.390	2.500	1	3.375	0.562	BCFKF	12508	12508
	3.390	2.500	1	3.375	0.562	NCFKF		12508N
	3.390	1.813	1	3.250	0.437	BCFKF	12509	12509
	3.390	1.813	1	3.375	0.562	BCFKF	12512	12512
	3.390	1.813	1	3.375	0.562	ECFKF		12512E
	3.390	2.500	2	3.375	0.562	BCFKF	12514	12514
	3.390	1.813	-			BCF-F	12517	12517
	3.390	1.813	-			VCF-F	12518	12517V
	3.390	2.500	-			BCF-F	12519	12519
	3.390	2.500	2	3.375	0.562	BCFJF	12520	12520
	3.390	1.813	2	3.375	0.562	BCFJF	12521	269
	3.390	2.500	2	3.375	0.562	BCFJF	12520	279-21
	3.390	2.500	2	3.375	0.562	BZFZF	32517	32517
	3.390	1.250	2	3.375	0.562	NCFKF	12553	335N
	3.390	2.500	2	3.375	0.562	BCFKF	12514	349-21
	3.390	1.813	2	3.375	0.562	BCFKF	12515	463
	3.390	1.813	2	3.375	0.562	VCFKF	12557	463V
	3.625	1.813	2	3.250	0.437	BCFJF	12542	468
	3.390	1.813	2	3.250	0.437	BCFKF	12523	469
	3.390	1.813	2	3.375	0.562	BCFJF	12521	835
	3.390	1.813	2	3.375	0.562	BCFKF	12515	853
	3.390	2.500	2	3.375	0.562	BCFJF	12520	916-21

21D	3.390	2.562	2	3.375	0.531	NCFKF	12516	12516N
	3.390	2.375	-			BCF-F	12529	12529
	3.390	2.375	-			NCF-F		12529N
	3.390	3.500	-			BCF-F	12530	12530
	3.390	2.375	2	3.375	0.562	BCFJF	12532	12532
	3.390	2.375	2	3.375	0.562	BCFKF	12533	12533
	3.390	3.500	2	3.375	0.562	BCFJF	12534	12534
	3.390	2.375	1	3.375	0.562	BCFKF	12536	12536
	3.390	3.500	2	3.375	0.562	BCFKF	12537	12537
	3.390	2.187	2	3.375	0.531	NCFKF	12524	889N

37	3.500	0.625	5	Shaft mtd	0.562	BMDAF	72501	72501
	3.500	0.625	-			BMD-F	72502	72502
	3.500	0.625	-			BCD-F	72503	72503

51	3.062	2.500	2	3.375	0.562	BCRJR	52508	279
	3.062	2.500	2	3.375	0.562	BCRKR	52536	349
	3.062	2.500	2	3.375	0.562	VCRKR		349V
	3.062	2.500	2	3.375	0.562	BCRJR	52508	916

2.625 Shaft Size

21	3.390	1.937	-			BCF-F	12604	12604
	3.390	2.750	-			BCF-F	12605	12605

	3.390	1.937	2	3.375	0.625	BCFKF	12610	12610
	3.390	1.055	2	4.000	0.500	BCFKF	12612	12612
	3.390	2.750	2	3.375	0.625	BCFKF	12617	12617
	3.390	2.750	2	3.375	0.625	BCFJF	12620	12620
	3.390	1.937	2	3.375	0.625	BCFJF	12621	12621
	3.390	1.937	1	3.375	0.625	BCFKF	12630	12630
	3.390	2.750	1	3.375	0.625	BCFKF	12631	12631
	3.390	2.750	2	3.375	0.625	BCFJF	12620	328-21
	3.390	2.750	2	3.375	0.625	BCFKF	12617	542-21
	3.390	2.732	2	3.336	0.531	NCFKF	12616	571N

21D	3.390	2.562	1	3.643	0.562	BCFJF	12611	1106
	3.390	2.562	1	3.643	0.562	BCFKF	12618	12618
	3.390	2.500	-			BCF-F	12622	12622
	3.390	3.375	-			BCF-F	12623	12623
	3.390	2.500	2	3.375	0.625	BCFJF	12624	12624
	3.390	2.500	2	3.375	0.625	BCFKF	12625	12625
	3.390	3.375	2	3.375	0.625	BCFJF	12626	12626
	3.390	3.375	2	3.375	0.625	BCFKF	12627	12627
	3.390	2.500	1	3.375	0.625	BCFKF	12628	12628
	3.390	3.375	1	3.375	0.625	BCFKF	12629	12629

51	3.187	2.750	2	3.375	0.625	BCRJR	52608	328
	3.187	2.750	2	3.375	0.625	BCRKR	52636	542

2.750 Shaft Size

21	3.500	1.937	1	3.500	0.625	BCFKF	12704	12704
	3.500	1.937	-			BCF-F	12705	12705
	3.500	2.750	1	3.500	0.625	BCFKF	12709	12709
	3.500	1.687	3	4.390	0.812	VCFKF	12701	12710V
	3.500	2.750	-			BCF-F	12720	12720
	3.500	2.750	2	3.500	0.625	BCFKF	12711	321
	3.500	2.750	2	3.500	0.625	VCFKF		321V
	3.500	1.937	2	3.750	0.625	NCFKF	12722	337N
	3.500	1.937	2	3.500	0.625	BCFKF	12713	464
	3.500	1.937	2	3.500	0.625	BCFKF	12713	483
	3.500	1.937	2	3.500	0.625	BCFJF	12712	836
	3.500	1.937	2	3.500	0.625	BCFJF	12712	837
	3.500	2.750	2	3.500	0.625	BCFJF	12710	838


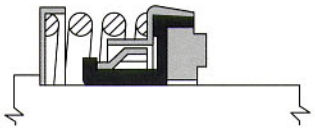

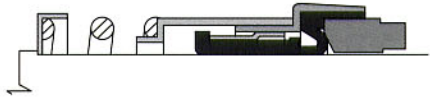

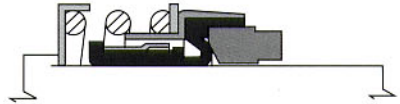

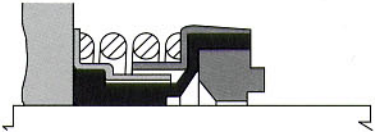

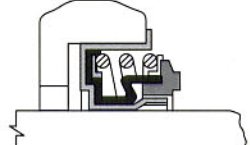
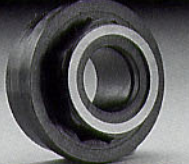
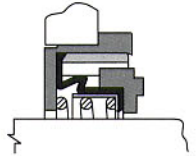
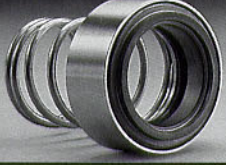




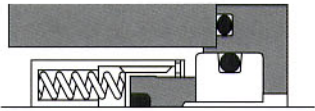

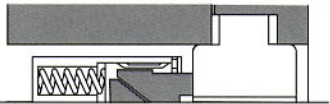
21D	3.500	3.750	1	3.500	0.625	BCFKF	12706	12706
	3.500	3.750	-			BCF-F	12707	12707
	3.500	2.500	2	3.500	0.625	BCFKF	12716	12716
	3.500	2.500	1	3.500	0.625	BCFKF	12717	12717
	3.500	3.750	1	3.500	0.625	BCFJF	12718	12718
	3.500	2.500	2	3.500	0.625	BCFJF	12719	12719
	3.500	2.500	-			BCF-F	12721	12721
	3.500	3.750	2	3.500	0.625	BCFKF	12715	322

2.875 Shaft Size

21	3.800	2.062	-			BCF-F	12802	12802
	3.800	2.062	1	3.750	0.625	BCFKF	12804	12804
	3.800	2.875	1	3.750	0.625	BCFKF	12805	12805
	3.800	2.875	-			BCF-F	12816	12816
	3.800	2.062	1	3.875	0.625	NCFKF	12819	12819N
	3.800	2.062	2	3.750	0.625	BCFJF	12809	270
	3.800	2.875	2	3.750	0.625	BCFKF	12806	329

* Spring retainer not needed

SEAL TYPE	SEAL O.D.	W.L.	SEAT STYLE	SEAT BORE	SEAT THICK	MAT'L CODE	SPEC. NO	RSD P/N
2.875 Shaft Size (cont.)								
21	3.800	2.062	2	3.750	0.625	BCFKF	12808	839
	3.800	2.875	2	3.750	0.625	BCFKF	12806	841
21D	3.800	3.875	2	3.750	0.625	BCFKF	12810	12810
	3.800	3.875	2	3.750	0.625	BCFJF	12811	12811
	3.800	3.875	1	3.750	0.625	BCFKF	12812	12812
	3.800	2.750	2	3.750	0.625	BCFKF	12813	12813
	3.800	2.750	2	3.750	0.625	BCFJF	12814	12814
	3.800	2.750	1	3.750	0.625	BCFKF	12815	12815
	3.800	2.750	-			BCF-F	12817	12817
	3.800	3.875	-			BCF-F	12818	12818
	3.000 Shaft Size							
21	3.800	2.062	-			BCF-F	13001	13001
	3.800	2.062	1	3.875	0.625	BCFKF	13014	13014
	3.800	2.813	-			BCF-F	13018	13018
	3.800	2.813	1	3.875	0.625	BCFKF	13019	13019
	3.800	2.062	2	3.875	0.625	BCFKF	13025	2115
	3.800	2.062	2	3.875	0.625	BCFJF	13024	2116
	3.800	2.813	2	3.875	0.625	BCFJF	13026	324
	3.800	2.062	2	3.875	0.625	BCFKF	13025	465
	3.800	2.813	2	3.875	0.625	BCFKF	13017	475
	3.800	2.813	2	3.875	0.625	VCFKF		475V
	3.800	2.062	2	3.875	0.625	BCFJF	13024	761
3.800	3.375	2	3.875	0.625	BCFJF	13037	897	
21D	3.800	2.750	1	4.250	0.562	BCFKF	13015	13015
	3.800	2.750	1	4.125	0.562	BCFKF	13020	13020
	3.800	2.750	-			BCF-F	13028	13028
	3.800	2.750	-			VCF-F	13077	13028V
	3.800	2.750	1	3.875	0.625	BCFKF	13029	13029
	3.800	2.750	2	3.875	0.625	BCFJF	13030	13030
	3.800	2.062	1	4.125	0.562	BCFJF	13031	13031
	3.800	3.875	-			BCF-F	13033	13033
	3.800	3.875	1	3.875	0.625	BCFKF	13034	13034
	3.800	3.875	2	3.875	0.625	BCFKF	13035	13035
	3.800	3.875	2	3.875	0.625	BCFJF	13036	13036
	3.800	2.750	2	3.875	0.625	BCFKF	13023	284
	3.800	2.750	1	4.250	0.562	BCFJF	13032	893
	3.250 Shaft Size							
40	4.250	0.915	-			BMD-F	43201	43201
52	4.162	1.562	2	4.125	0.781	BCRKR	23281	23281

SEAL		SEAL ASSEMBLY	EQUIVALENT
21 (31)			US SEAL C CRANE 21 & 2 SEALOL 43 CU SHORT
51			US SEAL E CRANE 1 & 1A SEALOL 43 CE LONG
52			US SEAL D CRANE 2, SEALOL 43 CE SHORT & 43 BE BURGMANN M3, M377
16			US SEAL A CRANE 6 SEALOL 60L BURGMANN MG
68			US SEAL B CRANE 6A
29			US SEAL B CRANE 6A
37			BURGMANN M2 & M3
40			CRANE 11A
8			CRANE 8I & 8TI BURGMANN TF, M74, H74
9			CRANE 9I & 9TI BURGMANN TF, M74, H74

PAC-SEAL SEAT TYPES



TYPE 21



TYPE 51



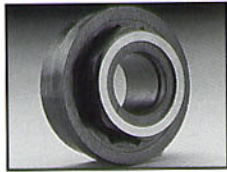
TYPE 52



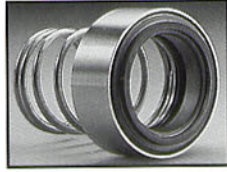
TYPE 16



TYPE 68



TYPE 29



TYPE 37



TYPE 40

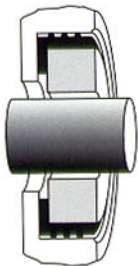


TYPE 8

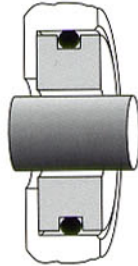


TYPE 9

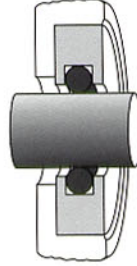
PAC-SEAL SEAT STYLES



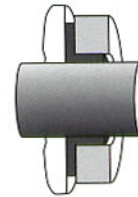
STYLE 1
CUP MOUNT



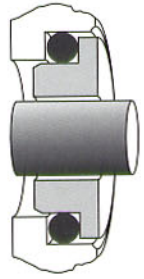
STYLE 2
O-RING MOUNT



STYLE 5



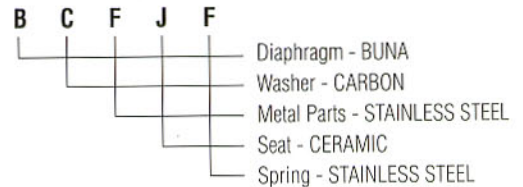
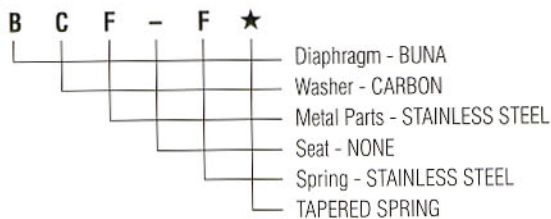
STYLE 9



DIN 24960
(Available with
anti-rotation notches)

PAC-SEAL MATERIAL CODES

EXAMPLES



PAC-SEAL MATERIAL CODE

ELASTOMER	WASHERS	METAL PARTS	SEATS	SPRINGS
B. Buna, UL	C. Carbon	F. Stainless Steel	J. Ceramic	F. Stainless Steel
E. Ept.*	M. Phenolic	L. Monel	K. Ni-Resist	L. Monel
N. Neoprene**	X. Silicon Carbide	R. 316 Stainless Steel	X. Silicon Carbide	R. 316 Stainless Steel
U. Buna, FDA	Z. Tungsten Carbide		Z. Tungsten Carbide	
V. Viton***				

*White identification mark. **Red identification mark ***Green identification mark

TROUBLE SHOOTING GUIDE

For an evaluation of seal failure, return entire seal with note of operating conditions to your local distributor.

TRUBLE	POSSIBLE CAUSE	REMEDY
Cracked or broken stationary seat (ceramic).*	Seal ran dry and heated up. When liquid reached seal faces it was cooler, causing thermal cracks.	Check to insure seal chamber is full of liquid before starting pump. On high temperature application insure proper flushing at seal faces.
Carbon washer scored and grooved.*	Dirty system.	Have system cleaned and flushed. Consider use of Tungsten Carbide or Silicon Carbide Rings.
Carbon washer worn unevenly.*	Seal improperly installed.	Check installation instructions for proper assembly.
Flexible Diaphragm broken.*	Coupling misalignment.	Realign pump and motor.
Short seal life in treated systems.	Treatment level and temperature higher than anticipated.	Advise factory of pump temperature and PPM Treatment Level, for alternate seal recommendation.
Buna Diaphragm hard and brittle. Rapid carbon wear.	Temperature too high.	Use Viton Elastomers, High Temperature Carbon, Ni Resist Tungsten Carbide or Silicon Carbide Seat.
Diaphragm soft and sticky; appears to be dissolving.	Bellows not compatible with material being pumped.	Consult factory for recommendation advising of pumpage and temperature.

*In all of the above cases of trouble, make sure the seal when fully compressed is not longer than the length of the seal cavity in which it is installed. Over compression is a major cause of failure.

WARRANTY

Pac-Seal warrants that the material and workmanship of our products will provide satisfactory service only if the buyer has selected the correct materials and the end user makes a proper installation. As it is beyond our means to assure the correct selection of material or correct installation, we assume no responsibility for any damage after our products have been put into service.

Any of our products found to be defective prior to being used will be replaced at no charge, or the purchase price refunded at our option. This shall be our maximum liability. the sale of Pac-Seal products under any other warranty or guarantee, expressed or implied, is not authorized by Flowserve corporation.

ELASTOMERS

Buna-N (Nitrile Rubber)

This copolymer of butadiene and acrylonitrile has good resistance to weak and strong acids as well as alkalis. It offers superior resistance to aliphatic hydrocarbons, petroleum, mineral and vegetable oils. It has excellent water swell resistance, and its mechanical properties actually improve at higher temperatures. Buna-N is not recommended for use with high polar solvents such as acetone, MEK and chlorinated hydrocarbons. Tear resistance is not the best.

Viton® (DuPont)

Viton is a synthetic elastomer with the best proven fluid resistant characteristics of any commercial rubber. It has excellent resistance to oils, fuels, lubricants and most mineral acids. This fluorelastomer resists many aliphatic and aromatic hydrocarbons that act as solvents in other rubbers. It is not recommended for low molecular weight esters and ethers, ketones, certain amines, hot and hydrous hydrofluoric acid, chlorosulfonic acids and caustics.

Ethylene Propylene (NORDEL®-DuPont) EPT/EPDM

EPDM is a synthetic elastomer which affords excellent low and high temperature characteristics. It resists attack by a wide range of acids and strong alkalis, detergents, phosphates, ketones, alcohol and glycols. EPDM does not tend to absorb fluid or swell.

It is not recommended for use with aromatic hydrocarbons. This material is frequently used in preference to Neoprene.

Neoprene

This is a synthetic elastomer with excellent resistance to dilute acids and weak and strong alkalis. It has good resistance to concentrated acids, oil and petroleum. It is not recommended for strong oxidizing acids, esters, ketones or chlorinated aromatic hydrocarbons. It has a tendency to absorb water.