Buckeye Rubber & Packing Co.
The Sealing Specialists

Corporate Office
23940 Mercantile Rd
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Phone: (216) 464-8900
Fax: (216) 831-0254

Standard Homogeneous U-Cup PackingsSeries 14

1. GENERAL

Buckeye U-cup packings have certain characteristics, which make them very useful for some applications. For sealing purposes, the U-cup depends upon contact made by its flexible lips. The solid section at the heel of the cup is generally narrower than the packing groove width and does not come into contact with the groove base and the adjacent part until pressure is applied. Therefore, when installed, the U-cup packing is slightly preloaded. The U-cup packing has low frictional qualities and is completely automatic in action. Its design makes it possible for it to be assembled satisfactorily in glands which hew wide variations in cross-sectional dimensions, thus permitting more liberal manufacturing tolerances. U-cup packings have also been successfully used in applications where it is desirable to eliminate excessive packing friction at low operating pressures, without narrowing the manufacturing tolerances. U-cup packings may be applied as suction seals on piston rods to prevent the entrance of air into the cylinder under certain conditions. They may also be used as wiper rings to remove dirt and dust from rods where the use of metal scraper rings is not satisfactory.

2. DESIGN & INSTALLATION DATA

Whenever possible, it is recommended that spring-loaded U-cup installations, similar to those shown on Figures 21 and 22, be used. Spring-loading automatically provides the correct adjustment built into the assembly, thus making it impossible for the gland to be over or under-tightened. The metal adapter keeps the lips of the cup evenly spread against the cylinder wall and the rod or piston, providing perfect sealing action under zero or low fluid pressures. The adapters shown provide centering of the springs at all times. The gland ring, supporting the heel of the packing, must be close fit to the rod having a maximum radial clearance of .003 It is recommended that the rod surface finish should be 16 micro-inch RMS (max.). Internal or external threads should be offset so that no damage will be done to the U-cup lips upon installation. Where spring.loading is not feasible, the U-cup installations shown on Figure 23 are recommended. Drawing I shows a typical outside packed installation and Drawing 2 illustrates an inside packed one, the same general design rules apply for these types also. However, provision should be made for support of the cup at the base of the groove, permitting the lips to flex under varying pressure loads. The metal support ring or adapter used for this purpose however should not exert axial pressure at the base of the groove, since this would tend to refract the lips of the cup away from the sealed surfaces. It is suggested that the metal support ring be constructed so that it will be properly centered.

Dimensional information for the installation of standard sizes of Buckeye U-cup packings may be taken from the corresponding Dash numbers of Table 9 up to and including Dash 40, For Dash 4J through Dash 53, as well as for non-standard sizes, installation diameters should be the nominal dimensions which will result in a cross section corresponding to one of the standard cross-section sizes, such as if 1W', IC', etc. (Figure 20, page 69).

3. OPERATING PRESSURE

Series 14 U-cup packings are not generally recommended where operating pressures exceed 1000 p.s.i. On installations where operating pressures over 300 p.s.i. are encountered, diametric clearances at the heel of the U-cup should be held to .004" - .006"

4. FINISHES

All cylinder and valve bores should have a smooth ground and lapped or honed finish on all surfaces through which the packing moves. All external surfaces should have a polished hard chrome surface or the equivalent, recommended finishes are as follows: Piston rod or cylinder bore: 16 micro-inches RMS (max.) Other surfaces against which packing must seal statically: 32 micro-inches RMS (max.) Needless to say, rougher surfaces have been and may be used, but in general the expected life of the packing depends directly on the surface finishes of the moving parts. Extended operation of U-cups against rods and Cylinder continue to the surface until a finish of approximately 2-4 micro-inches RMS is reached. At this point, greatly increased packing and bearing life can be expected (as much as 2 to 3 times that of the original installation) Where the metal surfaces contacting the packing can be kept free of abrasive foreign particles.

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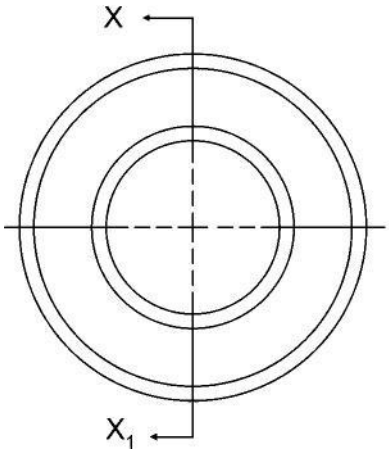

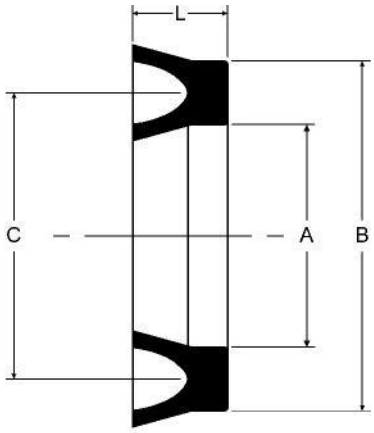

Dash No.	W & L	Nominal I.D.	Nominal O.D.	Diameters A	Diameters B	Diameters C
1	3/16	1/8	1/2	.140	.485	5/16
2	3/16	3/16	9/16	.203	.548	3/8
3	3/16	1/4	5/8	.265	.610	7/16
4	3/16	5/16	11/16	.328	.673	1/2
5	3/16	3/8	3/4	.390	.735	9/16
6	3/16	7/16	13/16	.453	.798	5/8
7	3/16	1/2	7/8	.515	.860	11/16
8	1/4	1/4	3/4	.265	.735	1/2
9	1/4	5/16	13/16	.328	.798	9/16
10	1/4	3/8	7/8	.390	.860	5/8
11	1/4	7/16	15-16	.453	.923	11/16
12	1/4	1/2	1	.515	.985	3/4
13	1/4	9/16	1-1/16	.578	1.048	13/16
14	1/4	5/8	1-1/8	.640	1.110	7/8
15	1/4	11/16	1-3/16	.703	1.173	15/16
16	1/4	3/4	1-1/4	.745	1.235	1
17	1/4	13/16	1-5/16	.828	1.298	1-1/16
18	1/4	7/8	1-3/8	.890	1.360	1-1/8
19	1/4	15/16	1-7/16	.953	1.423	1-3/16
20	1/4	1	1-1/2	1.015	1.485	1-1/4
21	1/4	1-1/16	1-9/16	1.078	1.548	1-5/16
22	1/4	1-1/8	1-5/8	1.140	1.610	1-3/8
23	1/4	1-3/16	1-11/16	1.203	1.673	1-7/16
24	1/4	1-1/4	1-3/4	1.265	1.735	1-1/2
25	5/16	1-1/4	1-7/8	1.265	1.860	1-9/16
26	5/16	1-3/8	2	1.390	1.985	1-11/16
27	5/16	1-1/2	2-1/8	1.151	3.110	1-13/16
28	5/16	1-5/8	2-1/4	1.640	2.235	1-15/16
29	5/16	1-3/4	2-3/8	1.765	2.360	2-1/16
30	5/16	1-7/8	2-1/2	1.890	2.485	2-3/16
31	5/16	2	2-5/8	2.015	2.610	2-5/16
32	5/16	2-1/8	2-3/4	2.140	2.735	2-7/16
33	5/16	2-1/4	2-7/8	2.265	2.860	2-9/16
34	5/16	2-3/8	3	2.390	2.985	2-11/16
35	5/16	2-1/2	3-1/8	2.515	3.110	2-13/16
36	3/8	2-1/2	3-1/4	2.515	3.235	2-7/8
37	3/8	2-5/8	3-3/8	2.640	3.360	3
38	3/8	2-3/4	3-1/2	2.765	3.485	3-1/8
39	3/8	2-7/8	3-5/8	2.890	3.610	3-1/4
40	3/8	3	3-3/4	3.015	3.735	3-3/8
41	1/8	1/8	3/8	.135	.365	1/4
42	1/8	3/16	7/16	.197	.427	5/16
43	1/8	1/4	1/2	.250	.490	3/8
44	1/8	5/16	9/16	.322	.552	7/16
45	1/8	3/8	5/8	.385	.615	1/2
46	1/8	7/16	11/16	.447	.677	9/16
47	1/8	1/2	3/4	.510	.740	5/8
48	3/16	5/8	1	.640	.984	13/16
49	3/16	3/4	1-1/8	.765	1.109	15/16
50	3/16	7/8	1-1/4	.890	1.234	1-1/16
51	3/16	1	1-3/8	1.015	1.359	1-3/16
52	3/16	1-1/8	1-1/2	1.140	1.484	1-5/16
53	3/16	1-1/4	1-5/8	1.265	1.609	1-7/16

All sizes correspond dimensionally to AN6226 series.

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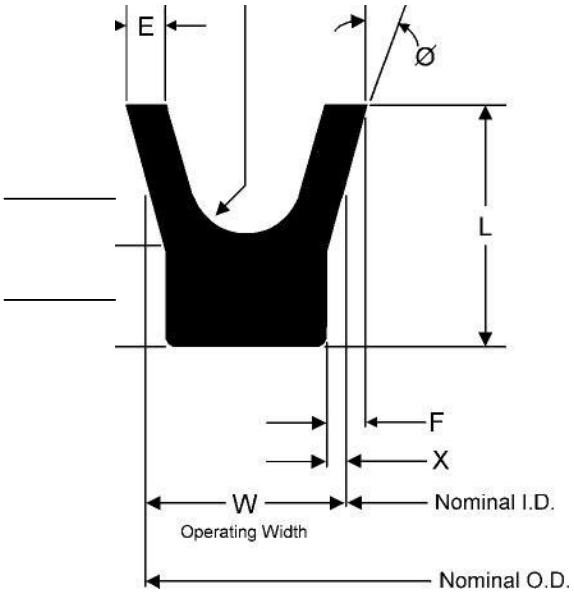

W & L	D	E	F	R	N	Ø	X
1/8	3/64	.030	.020	.020	1/64	13°	.005
3/16	1/16	.038	.030	.050	1/32	13°	.006
1/4	3/32	.045	.030	.070	1/32	11°	.006
5/16	1/8	.050	.032	.083	1/32	10°	.008
3/8	1/8	.054	.035	.125	3/64	8°	.008

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