



AC Flange Backing Rings

Introduction	3-1
ANSI - AC Springer Steel Flange Ring	3-2
DIN - Steel Flange Ring	3-3
Installation Procedure for AC Backing Flanges	3-4



*We didn't set out to design the best **UltraPure**
Water sealing system . . .*

. . .but we did

KC Multi-Ring AC Flange Backing Rings

A line of steel backing flanges engineered using our patented design. The backing flanges are an integral part of the KC Sealing System of gaskets and flange backing rings.

For Existing piping systems, we split the flanges before coating. This extends the benefits of the KC Sealing System to existing piping systems.

KC Multi-Ring Products, Inc. gives the UPW user the most comprehensive and best-designed system for sealing and installing critical flanged joints. The KC Multi-Ring[®] backing flange directs the clamping force toward the pipe I.D. - eliminating any crevice at the joint that could potentially trap contaminants.

Comparative tests on 225mm/9" piping run at our state-of-the-art sealing test facility indicate that after bolt-up, conventional backing flanges deflect and single-point load the outside edge of the pipe flange, creating its seal on only approximately the last ¼" of the flange face.

With conventional backing flanges, the clamping force is approximately 2" outside of the pipe I.D. This in turn allows the flange face to deflect at pressures greater than 105 psig (lower than most users' initial hydro test) which allows hydro test medium and contaminants to be trapped between the flange face and the gasket surface. This is an ideal breeding ground for bacteria after the hydro test and flushing sequence. These contaminants may be introduced into the system contaminate the end product, or plug down-stream filters, whenever the pressure at a joint is raised above 105 psig by water "hammering" when valves open and close during normal system operation.

This loading has been known to distort the flange adapter, resulting in a "cupped" thermal set, particularly when installed with elastomeric gaskets. The KC Multi-Ring flange ring design, which directs the clamping force toward the pipe I.D., eliminates this flange distortion and will, over time, return a "cupped" flange adapter to its original flat state.

Conventional backing flanges have been known to distort the flange adapter, resulting in a "cupped" thermal set, particularly when installed with elastomeric gaskets. The KC Multi-Ring[®] backing flange design, which directs the clamping force toward the pipe I.D, eliminates this flange distortion and will, over time, return a "cupped" flange adapter to its original flat state.

Our tests further indicate that when the PTFE over EPDM gasket is used with conventional backing flanges, the clamping force is directed outside of the PTFE cover, which may allow the medium to contact the EPDM substrate.

On the other hand, the KC Multi-Ring[®] backing flange is loaded at a point at or near equilibrium. This means that equal, or near equal, clamping force is distributed from the I.D. to the O.D. All the while, the point of contact remains at a given point during tightening of the flange bolts. Independent Finite Element Analysis results show better loading and less flange stress than conventional backing rings, and the KC Multi-Ring[®] gasket is stressed equally and maintains a seal at the I.D. of the pipe.

Properly installed, there should be little or no bacteria breeding ground with the KC Multi-Ring[®] UltraPure gasket installed with the KC Multi-Ring[®] AC backing flange. Unlike conventional flange backing rings, the KC Multi-Ring[®] flange ring provides a positive seal before, during, and after hydro test and flushing, and, most importantly, during system operation.

The KC Multi-Ring[®] flange backing rings will make any gasket seal better than standard backing flanges. Best results are obtained when our flange is combined with the equal gasket compression characteristics of our KC Multi-Ring[®] UltraPure Gasket.

Competitive Advantages:

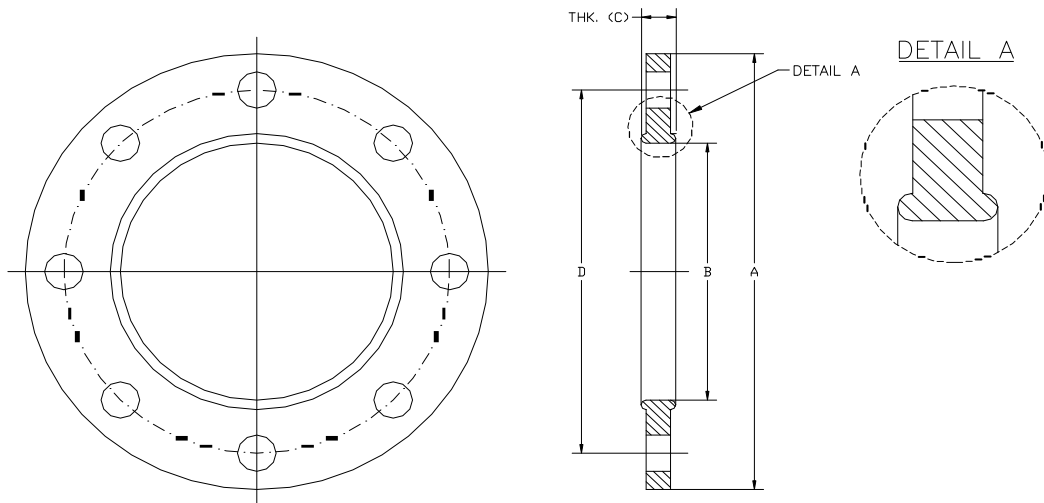
- Clamping force is directed to the pipe I.D. with standard non-engineered flange backing rings.
- AC flange backing rings improve the performance of any gasket.
- Optimal results are achieved when used with KC Multi-Ring[®]'s UltraPure Gasket.
- Available in the following:
 - thermoplastic coated steel
 - galvanized steel
 - primed steel
 - stainless steel.



ANSI—Springer™ Steel Backing Flange

For use with non-metallic Metric piping (PVDF, polypropylene, etc.), IR Butt-Weld and Socket Fusion Type Flange Adapter. * Bolt holes drilled in accordance with ANSI B16.5 class150 bolt pattern. (Requires the use of hardened SAE washers.)

Pipe Size mm	Pipe Size * inches	Part #	A	B	C	D	Bolt Holes	
							Number	Dia. In.
20	1/2"	ACS.F02.0CS	3.50	1.100	0.545	2.375	4	0.625
25	3/4"	ACS.F02.5CS	3.88	1.308	0.545	2.750	4	0.625
32	1"	ACS.F03.2CS	4.25	1.638	0.545	3.125	4	0.625
40	1-1/4"	ACS.F04.0CS	4.63	1.988	0.545	3.500	4	0.625
50	1-1/2"	ACS.F05.0CS	5.00	2.440	0.660	3.875	4	0.625
63	2"	ACS.F06.3CS	6.00	3.030	0.685	4.750	4	0.750
75	2-1/2"	ACS.F07.5CS	7.00	3.600	0.685	5.500	4	0.750
90	3"	ACS.F09.0CS	7.50	4.340	0.685	6.000	4	0.750
110	4"	ACS.F11.0CS	9.00	5.170	0.760	7.500	8	0.750
125	5"	ACS.F12.5CS	9.00	5.294	0.760	7.500	8	0.750
140	5-1/2"	ACS.F14.ORS	10.00	6.110	0.750	8.500	8	0.875
160	6"	ACS.F16.0CS	11.00	6.950	0.810	9.500	8	0.875
200	8"	ACS.F20.0CS	13.50	9.230	0.910	11.750	8	0.875
225	8"	ACS.F22.5CS	13.50	9.350	0.910	11.750	8	0.875
250	10"	ACS.F25.0CS	16.00	11.250	0.935	14.250	12	1.000
315	12"	ACS.F31.5CS	19.00	13.300	1.060	17.000	12	1.000
355	14"	ACS.F35.5CS	21.00	14.810	1.185	18.750	12	1.125
400	16"	ACS.F40.0CS	23.50	16.900	1.310	21.250	16	1.125
450	18"	ACS.F45.0CS	25.00	18.476	1.310	22.750	16	1.250
452	20"	ACS.F45.2CS	27.50	20.340	1.435	25.000	20	1.250
500	20"	ACS.F50.0CS	27.50	20.990	1.560	25.000	20	1.250



Our gaskets are covered under US Patent #5,362,115 and Others Pending.

SAMPLE SPECIFICATION

Patented KC Multi-Ring® low torque design UltraPure expanded PTFE gasket, KC Multi-Ring Products, Inc., sole source. To ensure proper laminar flow, geometrically align gasket and flange faces. Install using zinc-plated fasteners, no thread lubricants. Tighten fasteners in a star pattern, using progressive 4-pass tightening, to proper torque values.

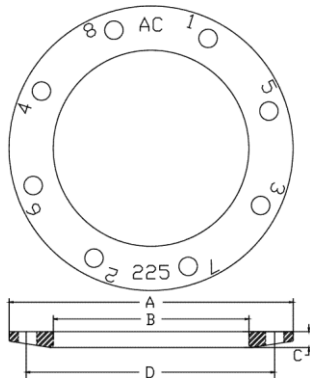
Contact KC Multi-Ring Products, Inc. for sizes and materials not listed.



DIN - Steel Flange Ring

For use with non-metallic Metric piping (PVDF, polypropylene, etc.) IR Butt-Weld and Socket Fusion Type Flange Adapter.

Bolt holes drilled in accordance with DIN PN 10 and 16 bolt pattern.



PN	Pipe Size mm	Part #	A mm	B mm	C mm	D mm	Bolt Holes	
							Number	Dia.
16	20	ACx.F02.0zz	95	29	12	65	4	14
16	25	ACx.F02.5zz	105	34	12	75	4	14
16	32	ACx.F03.2zz	115	42	12	85	4	14
16	40	ACx.F04.0zz	140	51	12	100	4	18
16	50	ACx.F05.0zz	150	62	15	110	4	18
16	63	ACx.F06.3zz	165	78	16	125	4	18
16	75	ACx.F07.5zz	185	92	16	145	4	18
16	90	ACx.F09.0zz	200	110	16	160	8	18
16	110	ACx.F11.0zz	220	130	18	180	8	18
10	125	ACx.F12.5zz	220	135	18	180	8	18
10	140	ACx.F14.0zz	250	158	19	210	8	18
16	160	ACx.F16.0zz	285	180	19	240	8	22
10	160	ACx.F16.0zz	285	180	19	240	8	22
10	200	ACx.F20.0zz	340	236	21	295	8	22
16	225	ACx.F22.5zz	340	240	21	295	12	22
10	225	ACx.F22.5zz	340	240	21	295	8	22
10	250	ACx.F25.0zz	395	286	22	350	12	22
10	280	ACx.F28.0zz	409	294	22	350	12	22
10	315	ACx.F31.5zz	445	337	25	400	12	22
10	355	ACx.F35.5zz	515	376	25	460	16	22

x - indicates the Backing Flange Style:

G - DIN PN 16 Standard

H - DIN PN 10 Standard

zz - indicates the Backing Flange Construction:

CS - Thermoplastic coated Steel

SS - Stainless Steel

GS - Galvanized Steel

PS - Primered Steel

NOTE: BEVELED SIDE CONTACTS FLANGE ADAPTER AND NUTS, BOLTS AND WASHERS ARE INSTALLED AGAINST THE FLAT SIDE.

Our backing flanges are covered under US patent #5,716,083 and others pending.

SAMPLE SPECIFICATION

Patented KC Multi-Ring® thermoplastic-coated AC backing rings, KC Multi-Ring Products, Inc., sole source. DIN PN 10 and 16 bolt pattern. Install with bevel facing flange adapter. Also available in stainless steel, galvanized and red oxide primered.

Contact KC Multi-Ring products, Inc. for sizes and materials not listed.



INSTALLATION PROCEDURE FOR AC BACKING FLANGE

Installation

1. Inspect box for damage from shipping. Notify carrier of any damage and make claims as required.
2. After removing the AC Backing Flange from the box, inspect the beveled surface between the AC Backing Flange inside diameter (ID) for any sharp protrusion which could come into contact with the flange adapter. Any sharp edge in this area is cause for rejection.
3. When installation is required, verify that each AC Backing Flange is the proper size, flange type, and coating for the given application.
4. If AC Backing Flange is rejected due to a surface deformation in the above noted area, set aside for return and specify reason for rejection.
5. Slip AC Backing Flange over flange adapter and rotate ring to confirm correct fit and size.

Note: Beveled surface on AC Backing Flange faces flange adapter; washers, bolts, and nuts go on flat surface of AC Backing Flange. As with any flange made to ANSI drilling, optimal distribution of clamping force is obtained through the use of heavy-duty washers.

6. Select one AC Backing Flange on each joint for determining the flange tightening sequence, and follow the "star" pattern for all tightening passes on that joint.
7. Install all AC Backing Flanges using a calibrated torque wrench or a KC Multi-Ring® SmartBox™. Whenever possible, apply the torque to the nut. All passes are to be made following the tightening sequence described above. For pass 1, torque each nut to 33% of the desired torque value. For pass 2, re-torque each nut to 66% of the desired torque value. For pass 3, re-torque each nut to 100% of the desired torque value. Wait two minutes and re-torque to 100% value. (Note that for speed and ease of installation, the KC Multi-Ring® SmartBox™ is calibrated to the recommended bolt torque for each pipe size using KC Multi-Ring® gaskets, allowing the use of an electric impact wrench for the first 3 passes - a calibrated torque wrench is always used for the final Quality Control pass.)

Note: Optimal results are obtained when used in conjunction with KC Multi-Ring® reduced surface area low-torque gaskets.