

Ameriforge

An AFG Holdings Company



CofferLok™ Compact Flange - Economy

Less Cost, Less Size and More Reliable

Taper-Lok[®] and CoffeLok[™] Connection Systems

Our process piping, pipeline, riser and exchanger connection systems provide the solutions to chronic problems associated with standard ANSI and API flange connections.



Leak-Free Reliability

Ameriforge metal-to-metal seal ring technology offers leak-free reliability over traditional ANSI and API gaskets. Our seal rings offer welded joint integrity and can be used in critical and chronic leak areas.



Weight Savings

With weight savings of up to 80% in comparison to ANSI flanges, our connection systems can typically save up to 1 million lbs. of weight on an offshore floating platform.



Space Savings

Space savings of up to 82% with smaller O.D. and length dimensions compared to ANSI/API flanges. Pipe runs are closer together for more room for process equipment and future tie-backs. Ideal for small O.D. pull-in-head requirements.



External Loads

Our connectors are able to handle high fatigue and high bending moments. We can optimize the design of the connector as needed to meet project requirements.



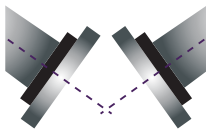
Quick Assembly

Our connection systems typically use less and smaller bolts in comparison to ANSI or API flanges. Our catalog of connectors include clamps that only require four bolts and connectors that are self aligning.



Cost Savings

In many cases, our connector assemblies are less expensive to purchase than the corresponding ANSI or API flange assembly. Our leak-free seal rings save operational costs.



Misalignment Capability

Ameriforge offers connection systems that are self-aligning and offer up to 20° of misalignment capability.



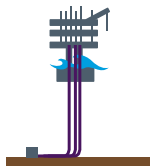
High Pressure/Temperature

Our connector systems have applications in high pressure and/or high temperature where they out perform ANSI and API flanges in terms of reliability and leak free service.

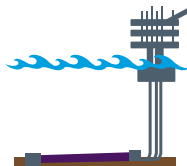
Connector Applications



TOPSIDES



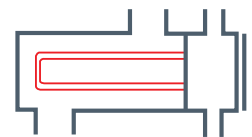
RISERS



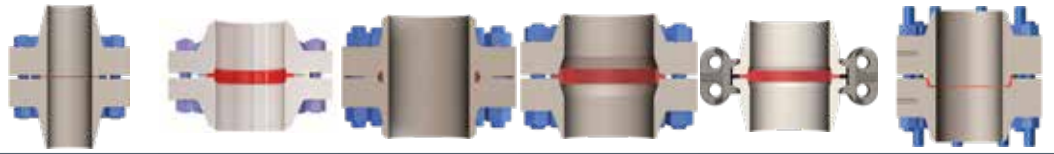
SUBSEA



REFINERY &
PETROCHEMICAL



HEAT EXCHANGER
RETROFITS



		ANSI / API Flanges	CoffeLok Compact Flange (Economy)	CoffeLok Compact Flange (NORSOK L-005) ISO 27509	CoffeLok Compact Flange (Standard)	CoffeLok Clamp Connector	Taper-Lok Connector
Leak-Free Reliability							
Weight Savings							
Space Savings							
External Loads							
Quick Assembly							
Cost Savings							
Misalignment Capability							
High Pressure/ Temperature							

ICON RANK = 1 6
OK Superior

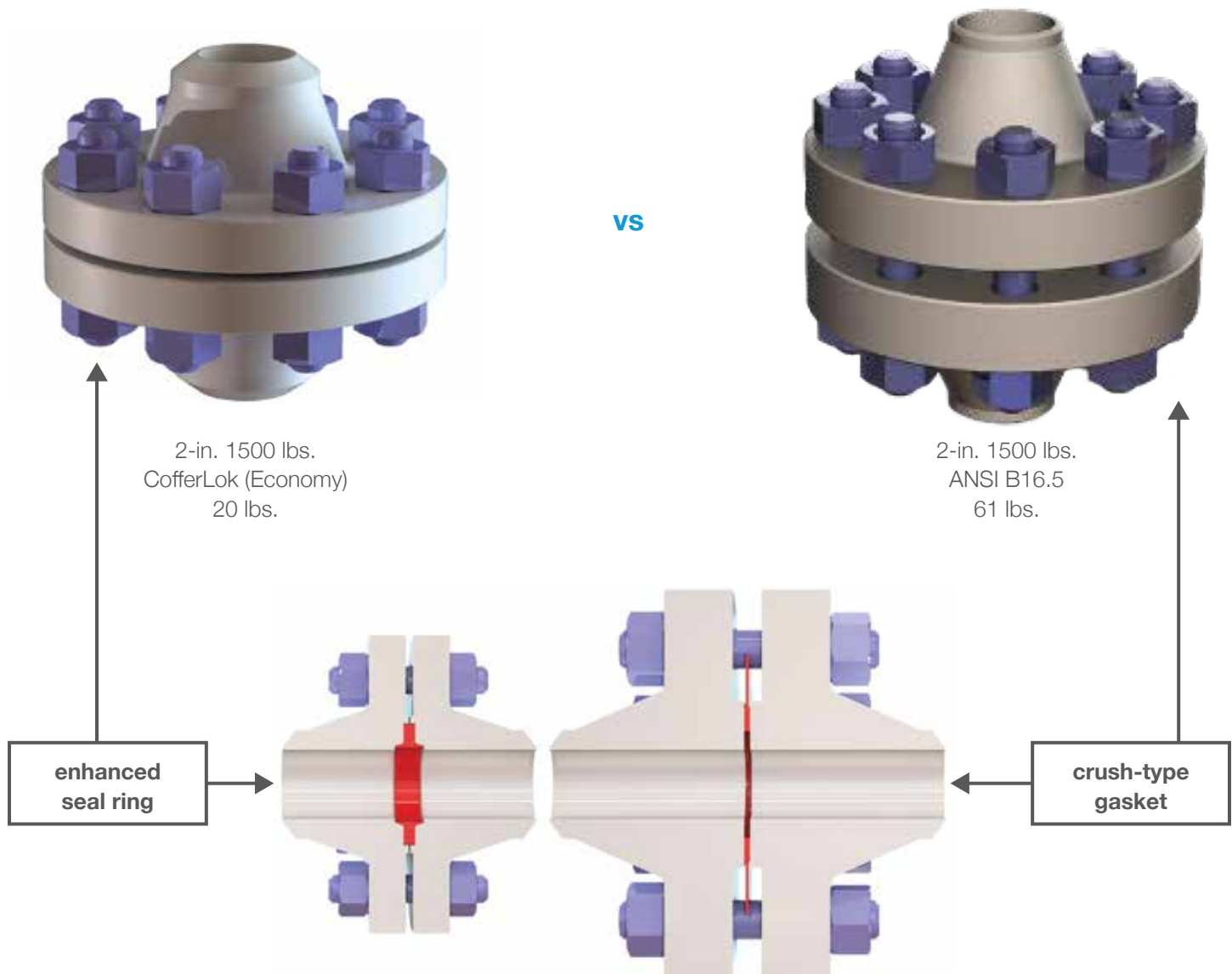
Advantages of CoffeLok™ Flanges vs ANSI/API Flanges

CoffeLok Compact Flange (Economy)

- Purchase price for two flanges, seal ring and bolting set is often less than its ANSI flange counterpart of the same size and pressure class
- Smaller and lighter flange forging
- Self energized and pressure enhanced seal ring
- Seal ring is designed to be reused
- Smaller and often less bolts
- Less bolt torque required to seat and maintain
- Metal seal ring is more reliable in processes where ANSI flange gaskets typically fail or leak.
- Smooth internal bore works well with erosive and corrosive media

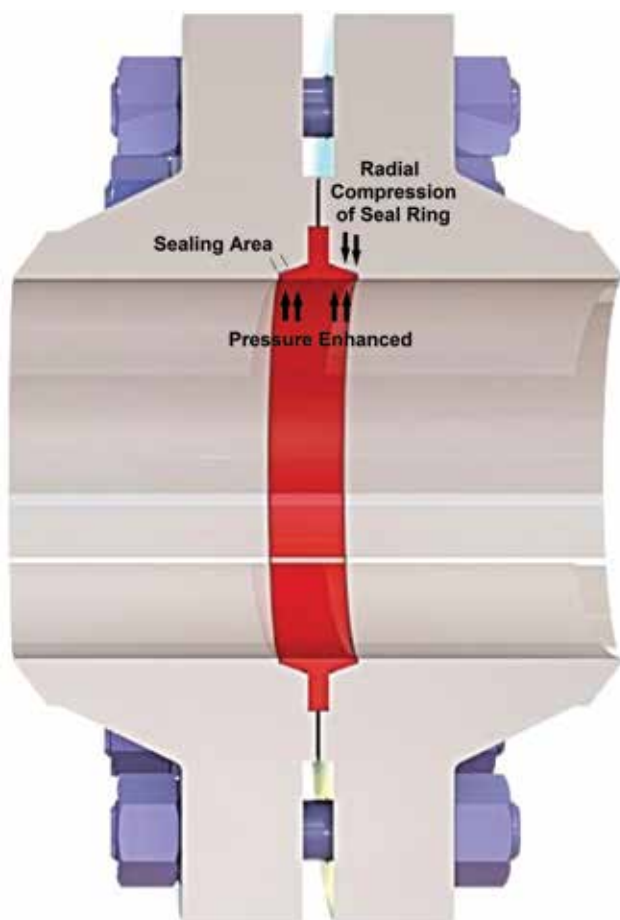
ANSI B16.5 Flanges

- More expensive to buy and maintain (total installed cost)
- Less reliable and typically leak in critical services
- Larger and bulkier flange forging
- Often more and larger bolts
- Generally a crush type gasket
- High bolt torque required to seat and maintain
- Poor adaptability to changing conditions (temperature)
- Even make-up required to avoid impingement of gasket
- Gasket is not reusable
- Gasket is asked to handle piping bending loads
- Performance not good in high vibration
- ANSI Flange design is almost 100 years old

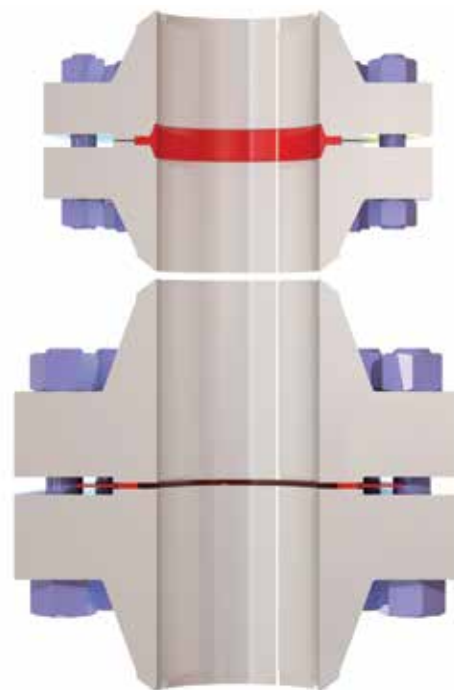


CofferLok™ Compact Flange (Economy)

- The CofferLok Compact Flange (Economy) is lighter, smaller and easier to install than an ANSI raised face or ring joint flanges
- The CofferLok Compact Flange (Economy) is available in all sizes/pressure classes and designed to offer improved sealing integrity while saving weight, space and cost
- It achieves extremely high levels of performance by incorporating the three most important concepts in piping connector design
 1. Seal at the smallest possible diameter (to reduce separation loads)
 2. Use the CofferLok pressure enhanced metal seal (to reduce make-up load requirements)
 3. Isolate the seal from piping loads (to maintain performance under changing conditions)
- All of these concepts allow the CofferLok Compact Flange (Economy) to be more compact than standard ANSI flanges, yet still meet the design requirements of ASME BPVC Section 8, Divisions 1 & 2, ASME B31.3 and ASME B31.1



Flange Comparison



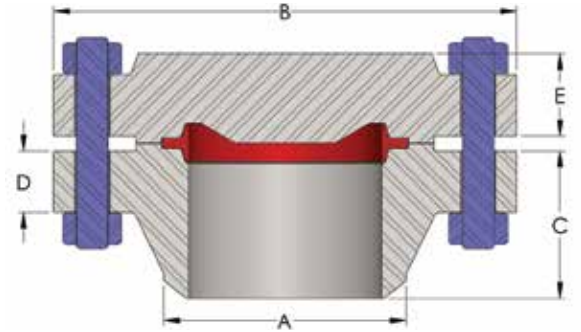
8-in. 1500 lbs.
CofferLok
(Economy)
276 lbs.

8-in. 1500 lbs.
ANSI B16.5
658 lbs.

CofferLok™ Compact Flange (Economy)

Standard materials are A105 for carbon steel piping and A182-F316 for stainless piping. Any machinable alloy can be substituted when required.

Class 150 lbs. and 300 lbs. are available. Contact us for details.



CLASS 600

PIPE SIZE	SIZE DN	PIPE OUTSIDE DIAMETER (A)		MAX. SEALRING NOTE 1	FLANGE OUTSIDE DIAMETER (B) NOTE 2		FLANGE LENGTH (C)		FLANGE THICKNESS (D)		BLIND THICKNESS (E)		RAISED FACE THICKNESS		NO. OF BOLTS	BOLT NOTE 3	BOLT DIA LENGTH NOTE 4		FLANGE WEIGHT NOTE 5	
		ins	mm		ins	mm	ins	mm	ins	mm	ins	mm	ins	mm			ins	mm	ins	mm
1	25	1.32	33.4	11	4.250	108.0	2.190	55.6	0.560	14.2	0.560	14.2	0.060	1.5	4	0.500	2.500	63.5	3	1.4
2	50	2.38	60.3	20	6.000	152.4	2.500	63.5	0.750	19.1	0.880	22.4	0.060	1.5	4	0.625	3.250	82.6	6	2.7
3	75	3.50	88.9	31	7.500	190.5	2.750	69.9	0.940	23.9	1.000	25.4	0.060	1.5	4	0.625	3.500	88.9	10	4.5
4	100	4.50	114.3	42	9.000	228.6	3.000	76.2	0.940	23.9	1.250	31.8	0.060	1.5	8	0.625	3.500	88.9	15	6.8
6	150	6.63	168.3	64	12.500	317.5	3.880	98.6	1.440	36.6	1.750	44.5	0.060	1.5	12	0.750	4.750	120.7	42	19.0
8	200	8.63	219.1	82	15.000	381.0	4.380	111.3	1.630	41.4	2.130	54.1	0.060	1.5	12	0.875	5.500	139.7	67	30.4
10	250	10.75	273.1	102	17.500	444.5	4.630	117.6	1.880	47.8	2.500	63.5	0.060	1.5	16	1.000	6.250	158.8	91	41.3
12	300	12.75	323.9	124	20.500	520.7	5.130	130.3	2.000	50.8	3.000	76.2	0.060	1.5	16	1.125	6.750	171.5	140	63.5
14	350	14.00	355.6	140	23.000	584.2	5.630	143.0	2.130	54.1	3.380	85.9	0.060	1.5	20	1.125	7.000	177.8	180	81.6
16	400	16.00	406.4	160	25.500	647.7	5.750	146.1	2.250	57.2	3.750	95.3	0.060	1.5	20	1.250	7.500	190.5	250	113.4
18	450	18.00	457.2	180	25.000	635.0	5.500	139.7	1.560	39.6	4.130	104.9	0.060	1.5	16	1.125	6.000	152.4	150	68.0
20	500	20.00	508.0	200	27.500	698.5	5.690	144.5	1.960	49.8			0.060	1.5	20	1.125	6.500	165.1	180	81.6
24	600	24.00	609.6	232	32.000	812.8	6.000	152.4	1.880	47.8			0.060	1.5	20	1.250	7.000	177.8	260	117.9

CLASS 900

PIPE SIZE	SIZE DN	PIPE OUTSIDE DIAMETER (A)		MAX. SEALRING NOTE 1	FLANGE OUTSIDE DIAMETER (B) NOTE 2		FLANGE LENGTH (C)		FLANGE THICKNESS (D)		BLIND THICKNESS (E)		RAISED FACE THICKNESS		NO. OF BOLTS	BOLT DIA NOTE 3	BOLT LENGTH NOTE 4		FLANGE WEIGHT NOTE 5	
		ins	mm		ins	mm	ins	mm	ins	mm	ins	mm	ins	mm			ins	mm	ins	mm
1	25	1.32	33.4	11	4.250	108.0	2.190	55.6	0.560	14.2	0.630	16.0	0.060	1.5	4	0.500	2.500	63.50	3	1.4
2	50	2.38	60.3	20	6.000	152.4	2.500	63.5	0.750	19.1	1.000	25.4	0.060	1.5	4	0.625	3.250	82.55	6	2.7
3	75	3.50	88.9	31	8.250	209.6	3.130	79.5	1.130	28.7	1.250	31.8	0.060	1.5	8	0.750	4.250	107.95	15	6.8
4	100	4.50	114.3	42	10.000	254.0	3.380	85.9	1.250	31.8	1.630	41.4	0.060	1.5	8	0.750	4.500	114.30	25	11.3
6	150	6.63	168.3	64	12.500	317.5	3.880	98.6	1.440	36.6	2.130	54.1	0.060	1.5	12	0.750	4.750	120.65	42	19.0
8	200	8.63	219.1	82	16.500	419.1	5.250	133.4	2.190	55.6	2.630	66.8	0.250	6.4	12	1.125	7.750	196.85	120	54.4
10	250	10.75	273.1	102	17.500	444.5	4.630	117.6	1.880	47.8	3.380	85.9	0.060	1.5	16	1.000	6.250	158.75	91	41.3
12	300	12.75	323.9	124	22.000	558.8	6.130	155.7	2.630	66.8	3.630	92.2	0.250	6.4	20	1.125	8.750	222.25	225	102.0
14	350	14.00	355.6	140	23.000	584.2	5.630	143.0	2.130	54.1	4.130	104.9	0.060	1.5	20	1.125	7.000	177.80	180	81.6
16	400	16.00	406.4	160	25.500	647.7	5.750	146.1	2.250	57.2	4.750	120.7	0.060	1.5	20	1.125	7.500	190.50	250	113.4
18	450	18.00	457.2	180	28.000	711.2	6.250	158.8	2.380	60.5	5.130	130.3	0.060	1.5	24	1.125	7.750	196.85	320	145.1
20	500	20.00	508.0	200	30.500	774.7	6.380	162.1	2.500	63.5			0.060	1.5	24	1.125	8.250	209.55	400	181.4
24	600	24.00	609.6	232	36.000	914.4	6.630	168.4	2.750	69.9			0.060	1.5	24	1.500	9.250	234.95	580	263.0

CLASS 1500

PIPE SIZE	SIZE DN	PIPE OUTSIDE DIAMETER (A)		MAX. SEALRING NOTE 1	FLANGE OUTSIDE DIAMETER (B) NOTE 2		FLANGE LENGTH (C)		FLANGE THICKNESS (D)		BLIND THICKNESS (E)		RAISED FACE THICKNESS		NO. OF BOLTS	BOLT DIA NOTE 3	BOLT LENGTH NOTE 4		FLANGE WEIGHT NOTE 5	
		ins	mm		ins	mm	ins	mm	ins	mm	ins	mm	ins	mm			ins	mm	ins	mm
1	25	1.32	33.4	11	4.250	108.0	2.190	55.6	0.560	14.2	0.750	19.1	0.060	1.5	4	0.500	2.500	63.5	3	1.4
2	50	2.38	60.3	20	6.500	165.1	2.750	69.9	0.880	22.4	1.250	31.8	0.060	1.5	8	0.625	3.500	88.9	9	4.1
3	75	3.50	88.9	27	8.250	209.6	3.130	79.5	1.130	28.7	1.630	41.4	0.060	1.5	8	0.750	4.250	108.0	15	6.8
4	100	4.50	114.3	40	10.750	273.1	4.000	101.6	1.500	38.1	2.000	50.8	0.250	6.4	8	0.825	5.750	146.1	42	19.0
6	150	6.63	168.3	62	14.000	355.6	4.630	117.6	1.880	47.8	2.880	73.2	0.250	6.4	12	1.000	6.750	171.5	81	36.7
8	200	8.63	219.1	82	16.500	419.1	5.250	133.4	2.190	55.6	3.750	95.3	0.250	6.4	12	1.125	7.750	196.9	120	54.4
10	250	10.75	273.1	102	20.000	508.0	6.000	152.4	2.500	63.5	4.620	117.3	0.250	6.4	16	1.250	8.500	215.9	190	86.2
12	300	12.75	323.9	116	24.000	609.6	7.880	200.2	3.130	79.5	5.500	139.7	0.250	6.4	20	1.375	10.000	254.0	325	147.4
14	350	14.00	355.6	130	23.750	603.3	6.500	165.1	2.750	69.9	5.500	139.7	0.250	6.4	20	1.375	9.250	235.0	280	127.0
16	400	16.00	406.4	144	27.000	685.8	7.000	177.8	3.000	76.2	6.750	171.5	0.250	6.4	20	1.500	10.000	254.0	390	176.9
18	450	18.00	457.2	170	29.250	743.0	7.250	184.2	3.250	82.6	6.750	171.5	0.250	6.4	20	1.625	10.750	273.1	475	215.4
20	500	20.00	508.0	185	30.500	774.7	6.380	162.1	2.500	63.5			0.060	1.5	24	1.250	8.250	209.6	400	181.4
24	600	24.00	609.6	220	36.000	914.4	6.630	168.4	2.750	69.9			0.060	1.5	24	1.500	9.250	235.0	580	263.0

CLASS 2500

PIPE SIZE	SIZE DN	PIPE OUTSIDE DIAMETER (A)		MAX. SEALRING NOTE 1	FLANGE OUTSIDE DIAMETER (B) NOTE 2		FLANGE LENGTH (C)		FLANGE THICKNESS (D)		BLIND THICKNESS (E)		RAISED FACE THICKNESS		NO. OF BOLTS	BOLT DIA NOTE 3	BOLT LENGTH NOTE 4		FLANGE WEIGHT NOTE 5	
		ins	mm		ins	mm	ins	mm	ins	mm	ins	mm	ins	mm			ins	mm	ins	mm
1	25	1.32	33.4	11	4.880	124.0	2.440	62.0	0.690	17.5	1.000	25.4	0.060	1.5	4	0.625	3.000	76.2	4	1.8
2	50	2.38	60.3	20	6.500	165.1	2.880	73.2	1.000	25.4	1.500	38.1	0.250	6.4	8	0.625	4.250	108.0	12	5.4
3	75	3.50	88.9	31	9.500	241.3	4.000	101.6	1.500	38.1	2.380	60.5	0.250	6.4	8	0.825	5.750	146.1	31	14.1
4	100	4.50	114.3	42	11.500	292.1	4.500	114.3	1.750	44.5	2.750	69.9	0.250	6.4	8	1.125	6.750	171.5	53	24.0
6	150	6.63	168.3	64	15.000	381.0	5.500	139.7	2.190	55.6	3.880	98.6	0.250	6.4	12	1.125	7.750	196.9	110	49.9
8	200	8.63	219.1	82	19.000	482.6	8.380	212.9	3.630	92.2	4.880	124.0	0.250	6.4	12	1.630	11.500	292.1	275	124.7
10	250	10.75	273.1	102	23.000	584.2	10.000	254.0	4.250	108.0	4.620	117.3	0.250	6.4	12	1.880	13.250	336.6	190	86.2
12	300	12.75	323.9	124	24.000	609.6	7.880	200.2	3.130	79.5	5.500	139.7	0.250	6.4	16	2.000	14.750	374.7	325	147.4
14	350	14.00	355.6	140	23.750	603.3	6.500	165.1	2.750	69.9	5.500	139.7	0.250	6.4	16	2.250	16.000	406.4	280	127.0
16	400	16.00	406.4	160	27.750	704.9	8.500	215.9	3.500	88.9	8.750	222.3	0.250	6.4	20	1.625	11.250	285.8	495	224.5
18	450	18.00	457.2	180	29.250	743.0	7.250	184.2	3.250	82.6	9.630	244.6	0.250	6.4	20	1.625	10.750	273.1	475	215.4
20	500	20.00	508.0	200	32.000	812.8	7.500	190.5	3.500	88.9			0.250	6.4	24	1.625	11.500	292.1	590	267.6
24	600	24.00	609.6	232	37.000	939.8	8.000	203.2	4.000	101.6			0.250	6.4	24	1.825	13.000	330.2	830	376.4

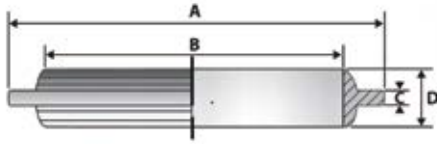
CLASS 4500 (UP TO 11,250 PSI DEPENDING ON MATERIAL SELECTION)

PIPE SIZE	SIZE DN	PIPE OUTSIDE DIAMETER (A)		MAX. SEALRING NOTE 1	FLANGE OUTSIDE DIAMETER (B) NOTE 2		FLANGE LENGTH (C)		FLANGE THICKNESS (D)		BLIND THICKNESS (E)		RAISED FACE THICKNESS		NO. OF BOLTS	BOLT DIA NOTE 3	BOLT LENGTH NOTE 4		FLANGE WEIGHT NOTE 5	
		ins	mm		ins	mm	ins	mm	ins	mm	ins	mm	ins	mm			ins	mm	lbs	kg
1	25	1.32	33.4	7	4.880	124.0	2.440	62.0	0.690	17.5	1.250	31.8	0.250	6.4	4	0.625	3.500	88.9	4	1.8
2	50	2.38	60.3	16	8.500	215.9	4.000	101.6	1.500	38.1	2.000	50.8	0.250	6.4	8	0.825	5.750	146.1	25	11.3
3	75	3.50	88.9	25	10.500	266.7	4.630	117.6	1.880	47.8	3.000	76.2	0.250	6.4	8	1.125	7.000	177.8	48	21.8
4	100	4.50	114.3	34	12.250	311.2	4.880	124.0	2.130	54.1	3.630	92.2	0.250	6.4	8	1.250	7.750	196.9	73	33.1
6	150	6.63	168.3	52	15.500	393.7	6.750	171.5	3.250	82.6	5.000	127.0	0.250	6.4	12	1.375	10.250	260.4	165	74.8
8	200	8.63	219.1	67	21.750	552.5	12.500	317.5	5.000	127.0	6.750	171.5	0.250	6.4	12	2.000	15.000	381.0	580	263.0

Notes:

1. Flange bore is specified by user
2. Blind thickness is reduced at bolt circle to comply with specified weld neck bolt lengths
3. Bolt thread is the same as found in ANSI B16.5
4. Bolt length can be increased for use with tensioners
5. Flange weight is for a single weld neck flange
6. All dimensions are for reference only
7. Large size flanges in all classes available upon request
8. Pressure and temperature ratings are the same as those listed in ANSI B16.5

CofferLok™ Seal Rings



PIPE SIZE	PIPE SCHEDULE	SEAL RING SIZE	A		B		C		D		SEAL RING WEIGHT	
			ins	mm	ins	mm	ins	mm	ins	mm	lbs	kg
1		4	1.000	25.4	0.500	12.7	0.125	3.2	0.375	9.5	0.03	0.01
1	XXS	5	1.094	27.8	0.625	15.9	0.125	3.2	0.375	9.5	0.03	0.01
1	160	7	1.375	34.9	0.906	23	0.125	3.2	0.375	9.5	0.04	0.02
		8	1.625	41.3	1.000	25.4	0.125	3.2	0.375	9.5	0.04	0.02
1	40/80	11	1.750	44.5	1.125	28.6	0.125	3.2	0.375	9.5	0.06	0.03
		13	2.375	60.3	1.500	38.1	0.125	3.2	0.375	9.5	0.11	0.05
2	XXS	14	2.625	66.7	1.609	40.9	0.250	6.4	0.563	14.3	0.28	0.13
2	160	16	2.750	69.9	1.868	47.4	0.250	6.4	0.625	15.9	0.28	0.13
2	40/80	20	3.250	82.6	2.063	52.4	0.250	6.4	0.750	19.1	0.45	0.2
3	XXS	23	3.500	88.9	2.375	60.3	0.250	6.4	0.750	19.1	0.48	0.22
3	160	25	4.000	102	2.672	67.9	0.250	6.4	0.750	19.1	0.62	0.28
3	40/80	27	4.250	108	3.063	77.8	0.250	6.4	0.750	19.1	0.62	0.28
4	XXS	31	4.500	114	3.250	82.6	0.250	6.4	0.750	19.1	0.69	0.31
4	120/160	34	5.000	127	3.688	93.7	0.250	6.4	0.750	19.1	0.80	0.36
4	40/80	40	5.500	140	4.063	103	0.250	6.4	1.000	25.4	1.13	0.51
		42	6.375	162	4.188	106	0.250	6.4	1.000	25.4	1.68	0.76
		46	6.250	159	4.750	121	0.250	6.4	1.000	25.4	1.34	0.61
6	160/XXS	52	6.625	168	5.313	135	0.250	6.4	1.000	25.4	1.33	0.6
6	120	54	6.812	173	5.500	140	0.250	6.4	1.000	25.4	1.57	0.71
6	80	56	7.500	191	5.750	146	0.250	6.4	1.000	25.4	1.82	0.83
6	40	62	7.875	200	6.065	154	0.375	9.5	1.375	34.9	3.13	1.42
		64	8.625	219	6.500	165	0.375	9.5	1.375	34.9	3.80	1.72
8	160/XXS	67	8.750	222	6.875	175	0.375	9.5	1.375	34.9	3.61	1.64
8	120/140	72	9.500	241	7.250	184	0.375	9.5	1.375	34.9	4.40	2
8	80/100	76	10.000	254	7.750	197	0.375	9.5	1.375	34.9	4.67	2.12
8	40	82	10.125	257	8.250	210	0.375	9.5	1.375	34.9	4.26	1.93
10	160	84	11.125	283	8.500	216	0.375	9.5	1.375	34.9	5.79	2.63
10	XXS	87	11.375	289	8.875	225	0.375	9.5	1.375	34.9	5.77	2.62
10	120	91	11.500	292	9.125	232	0.375	9.5	1.375	34.9	5.66	2.57
		92	11.625	295	9.250	235	0.375	9.5	1.375	34.9	5.78	2.62
10	100	94	11.750	298	9.500	241	0.375	9.5	1.375	34.9	5.61	2.54
10	80	97	12.000	305	9.875	251	0.375	9.5	1.375	34.9	5.55	2.52
12	40	102	12.250	311	10.250	260	0.375	9.5	1.375	34.9	5.48	2.49
12	XXS/120	106	12.750	324	10.750	273	0.375	9.5	1.375	34.9	5.72	2.59
12	100	112	14.125	359	11.250	286	0.625	15.9	1.625	41.3	12.33	5.59
12	80	116	14.125	359	11.750	298	0.375	9.5	1.375	34.9	7.21	3.27
12	40	120	13.875	352	12.000	305	0.375	9.5	1.375	34.9	6.04	2.74
		122	14.125	359	12.250	311	0.375	9.5	1.375	34.9	6.16	2.79
		124	14.625	371	12.500	318	0.375	9.5	1.375	34.9	7.10	3.22
16	160	130	15.000	381	13.000	330	0.500	12.7	1.500	38.1	8.47	3.84
16	140	134	15.500	394	13.500	343	0.500	12.7	1.500	38.1	8.78	3.98
16	120	137	16.500	419	13.875	352	0.625	15.9	1.625	41.3	13.70	6.21
16	100	140	16.500	419	14.000	356	0.500	12.7	1.500	38.1	10.98	4.98
18	160	144	17.000	432	14.500	368	0.500	12.7	1.500	38.1	11.35	5.15
18	120/140	152	17.750	451	15.250	387	0.500	12.7	1.500	38.1	11.89	5.39
20	160	160	18.500	470	16.000	406	0.500	12.7	1.500	38.1	12.44	5.64
20	120/140	170	19.438	494	17.000	432	0.500	12.7	1.750	44.5	13.84	6.28
20	80/100	180	20.500	521	18.000	457	0.500	12.7	1.750	44.5	14.61	6.63
20	60	185	21.250	540	18.625	473	0.500	12.7	1.750	44.5	16.37	7.43
		192	22.000	559	19.250	489	0.500	12.7	1.750	44.5	17.16	7.78
24	140/160	200	22.750	578	20.000	508	0.500	12.7	1.750	44.5	17.80	8.07
24	100/120	210	24.000	610	21.000	533	0.500	12.7	2.000	50.8	21.36	9.69
24	60/80	220	25.000	635	22.000	559	0.500	12.7	2.000	50.8	22.32	10.12
24	40	225	25.750	654	22.625	575	0.500	12.7	2.000	50.8	24.19	10.97
		232	26.375	670	23.250	591	0.500	12.7	2.000	50.8	24.29	11.02
		240	27.500	699	24.000	610	0.500	12.7	2.000	50.8	27.42	12.44
		244	27.750	705	24.500	622	0.500	12.7	2.000	50.8	26.34	11.95
		254	28.875	733	25.500	648	0.500	12.7	2.000	50.8	28.20	12.79
		264	30.000	762	26.500	673	0.500	12.7	2.000	50.8	30.12	13.66
		274	31.125	791	27.500	699	0.500	12.7	2.000	50.8	32.31	14.66
		284	32.250	819	28.500	724	0.500	12.7	2.000	50.8	34.36	15.59
		292	32.250	819	29.250	743	0.5	12.7	2.000	50.8	29.30	13.29

Note: Some seal ring sizes are used in other pipe sizes/schedules besides what is shown in this table

CofferLok seal rings are available in a number of carefully selected materials and are coated to provide lubrication during makeup. Seal rings are typically made of 4140 or 17-4PH material and come with PTFE or MoS2 coating, but can be manufactured of other materials or coatings to meet specific service conditions.

The CofferLok seal ring is a reusable solid metal double cone-shaped ring, designed for an interference load when installed in mating hubs or flanges.

High loading combined with the strength of the seal material provides considerable stored energy in the seal. Since the seal is exposed to line pressure, the additional benefit of a pressure enhanced seal is obtained. The CofferLok seal ring will provide leak tight service in dynamic systems of vibration or thermal cycling where normal seals are inadequate.



Transition seal rings, Orifice seal rings and Blind seal rings are also available.

Seal Ring materials include: AISI 4130/4140, A182 F316, A182 F44, A564 630 (17-4PH), A182 F51, A182 F55, Alloy 718, 625 and X 750.



Providing ANSI Flanges Ameriforge, Coffer, Maass, Texas Metal Works and FVC on AMLs

ANSI Flanges

ANSI FLANGES		ANSI SPECIALTY FLANGES	
			
DIAMETER	½-in. to 200-in.	DIAMETER	½-in. to 200-in.
PRESSURE CLASS	150 psi to CL 2500 psi	PRESSURE CLASS	150 psi to CL 2500 psi
FACES	Multiple facing configurations with other combinations of diameter and pressure class available up to 200-in. OD	FACES	Multiple facing configurations with other combinations of diameter and pressure class available up to 200-in. OD
MATERIALS GRADES	Stainless, Nickel Alloys, Carbon and Alloy, Precipitation Hardening	MATERIALS GRADES	Stainless, Nickel Alloys, Carbon and Alloy, Precipitation Hardening
TRUSTED BRANDS: AMERIFORGE • COFFER • FVC • MAASS • TMW			

AFG Holdings Locations



Retrofit Existing ANSI Flanges to CofferLok™ Flanges

Solve Chronic Leak Problems in Your Plant

Upgrade your existing ANSI connector pressure class rating at the same time

- Provides permanent solution to leaky connections
- Upgrades flange pressure class

Ameriforge can retrofit or replace existing costly leaky connections on-site with our proven metal seal technology during your next plant shut down. We can help make your connection “leak free”.

Where operating conditions combine to create problem connections, conversion to the CofferLok seal is a proven solution. CofferLok metal seal technology replaces existing ANSI flat face, raised-face or ring-type joint (RTJ) gaskets. As an additional benefit to converting to the CofferLok concept, the pressure rating of the connection can be increased.

Any bolted flange can be converted on-site to the CofferLok design.

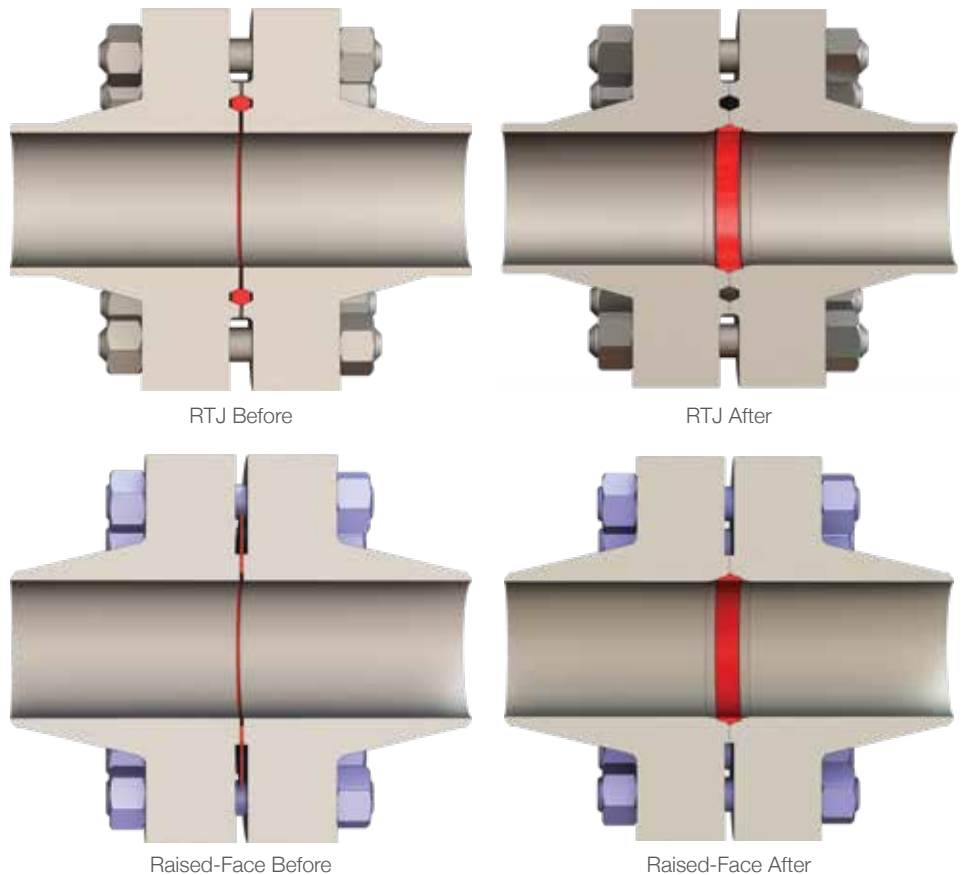
Prime candidates for conversion are flange connections, manways, valve ends or any problematic mechanical joint. Conversion of the connection requires the CofferLok seal groove to be machined into the existing connection face and doesn't interfere with the RTJ groove (if there is one).

For new build or expansion projects

For new projects, save costs by specifying the CofferLok compact flange (economy) into the piping specifications during the FEED stage of the project.

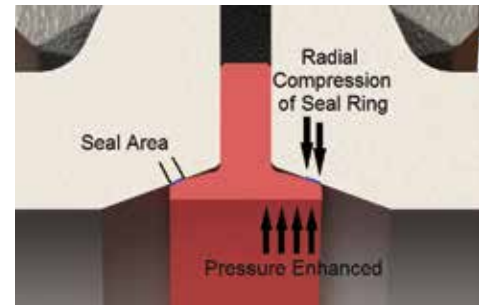
Technical Overview

- Meets design requirements of ASME BPVC Section VIII, Divisions 1 and 2, ASME B31.3 and ASME B31.1
- Metal-to-metal seal ring ½-in to 84-in.
- Services of -350°F to 1,500°F
- Pressures from vacuum to 20,000 psi (higher pressures available)
- Seal ring is designed to be reused
- Requires less bolt loads/torque to make-up connection
- Works with all material types (carbon, stainless, duplex, among others)

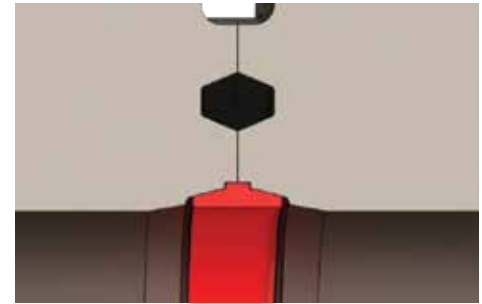


Retrofit Existing ANSI Flanges to CoffeLok™ Flanges

- The metal seal ring is radially compressed by using sealing angles on the ring and different angles on the flange seat pocket to cause a metal-to-metal interference fit
- Seals at the smallest possible diameter to reduce separation loads
- Seal is pressure enhanced to reduce make-up load requirements
- Design places the seal ring in a protective seat pocket that isolates it from mechanical loads to maintain performance under changing conditions
- Historically, this type of seal ring has undergone helium leak tests of 1×10^{-7} cc/sec sensitivity with no detectable leaks



CoffeLok Seal Ring



Modified CoffeLok Seal with Existing RTJ (empty)

CoffeLok Conversion

Pressure Class Up-rating Chart

		CURRENT ANSI PRESSURE CLASS					
		150# 285 PSI	300# 740 PSI	600# 1480 PSI	900# 2220 PSI	1500# 3705 PSI	2500# 6170 PSI
NEW UP-RATED ANSI PRESSURE CLASS	NOM	CL SEAL	CL SEAL	CL SEAL	CL SEAL	CL SEAL	CL SEAL
	SIZE (IN.)	CL SEAL	CL SEAL	CL SEAL	CL SEAL	CL SEAL	CL SEAL
	0.5	NC	2500#*	10K psi*	10K psi*	10K psi*	10K psi*
	0.75	1500#*	1500#*	1500#*	10K psi*	10K psi*	10K psi*
	1	1500#*	2500#*	10K psi*	10K psi*	10K psi*	10K psi*
	1.5	1500#*	2500#*	2500#*	10K psi*	10K psi*	10K psi*
	2	900#*	1500#*	2500#*	10K psi*	10K psi*	10K psi*
	2.5	900#*	1500#*	2500#*	10K psi*	10K psi*	10K psi
	3	600#*	1500#*	1500#*	2500#*	10K psi*	10K psi
	3.5	900#*	1500#*	2500#*	2500#*	2500#*	NC
	4	600#*	900#*	1500#*	2500#*	10K psi*	10K psi
	5	400#*	900#*	1500#*	2500#	10K psi	10K psi
	6	400#*	900#*	1500#*	2500#*	10K psi	10K psi
	8	300#*	600#*	1500#*	1500#*	2500#	10K psi
	10	400#*	900#*	1500#	1500#	2500#*	10K psi
	12	300#	600#	900#	1500#	2500#	10K psi
	14	400#	900#	1500#	1500#	2500#	
	16	400#	900#	1500#	2500#	10K psi	
	18	600#	900#	6170 psi	6170 psi	10K psi	
	20	600#	1500#	6170 psi	6170 psi	10K psi	
	24	600#	900#	6170 psi	6170 psi	10K psi	
	30				10K psi*		
	36				10K psi*		

Note: Chart is based on 100°F using carbon steel flanges

-Asterisk "*" denotes when CoffeLok seal ring rib will need to be reduced to clear RTJ groove

-Blind flanges will need to be replaced with a thicker blind but can maintain same O.D. as original

-NC = No change

ASME B31.3		
UNLISTED PRODUCTS		LISTED PRODUCTS
ASME VIII Div 1	ASME VIII Div 2	ASME B16.5 ASME B16.47 MSS SP-44
Taper-Lok and CofferLok Products	Taper-Lok and CofferLok Products	

DNV RULES
SUBMARINE PIPELINE SYSTEMS DNV OSF 101
ASME VIII Div 2
Taper-Lok and CofferLok Products

API / BOILER & PRESSURE VESSEL		
ASME VIII DIV 1	ASME VIII DIV 2	
Calculations and Acceptable Criteria	Part 4 Design by Rules	Part 5 Design by Analysis
Taper-Lok and CofferLok Products	Calculations and Acceptable Criteria	Numerical Analysis and Code Validation
	Taper-Lok and CofferLok Products	Taper-Lok and CofferLok Products

Customer references and test reports available upon request.



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