



POLYMER

INDUSTRIAL PRODUCTS CO.
LLC



Curing Bladders

PIPCO
CURING & TURN-UP
BLADDERS

POLYMER

INDUSTRIAL PRODUCTS Co., LLC

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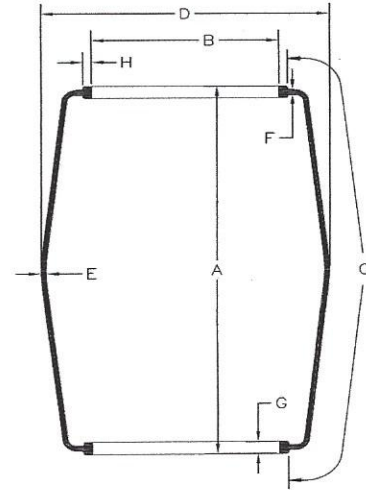
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**BOM/OPEN-END TYPE
BIAS BLADDERS**



TOLERANCES			
SPEC GAGE	ANY POINT	CIRCULAR	TOP TO BOTTOM
Below .250"	+/- .015	0.020	0.020
Greater than .250"	+/- .020	0.020	0.020

SPECIFICATIONS											
BLADDER CODE		Overall Height	Foot I.D.	Usable Periphery	Outside Diameter	Gauge		Bead		Weight	Bladder Vents/ Etching
		A	B	C	D	Center	Neck	Width	Height	lb. kilo	
309	inch	8.75	2.69	9.00	4.78	0.28	0.27	0.62	0.30	1.44	Raised V
	mm	222.3	68.3	228.6	121.4	7.0	6.9	15.7	7.6	0.65	
465	inch	11.65	2.87	12.25	5.75	0.32	0.32	0.78	0.40	2.78	V/E
	mm	295.9	72.9	311.2	146.1	8.1	8.1	19.8	10.2	1.26	
315	inch	8.50	3.38	8.75	5.50	0.25	0.25	0.62	0.35	1.54	Raised V
	mm	215.9	85.9	222.3	139.7	6.4	6.4	15.7	8.9	0.70	
311	inch	12.25	3.38	13.40	5.75	0.38	0.38	0.75	0.37	3.32	Raised V
	mm	311.2	85.9	340.4	146.1	9.7	9.7	19.1	9.4	1.51	
340	inch	12.50	3.75	12.75	6.50	0.27	0.33	0.60	0.30	2.81	V/E
	mm	317.5	95.3	323.9	165.1	6.9	8.4	15.2	7.6	1.27	
306	inch	14.75	3.05	15.00	5.70	0.26	0.28	0.72	0.38	2.82	Raised V
	mm	374.7	77.5	381.0	144.8	6.6	7.1	18.3	9.7	1.28	
310	inch	17.75	3.38	18.00	7.00	0.31	0.30	0.70	0.40	4.55	Raised V
	mm	450.9	85.9	457.2	177.8	7.9	7.6	17.8	10.2	2.06	
338	inch	10.00	4.50	10.75	8.00	0.30	0.37	0.84	0.50	3.41	Raised V
	mm	254.0	114.3	273.1	203.2	7.6	9.4	21.3	12.7	1.55	
350	inch	10.25	4.63	12.04	8.50	0.28	0.30	0.64	0.43	3.56	V/E
	mm	260.4	117.6	305.8	215.9	7.1	7.6	16.3	10.9	1.61	
304	inch	11.00	4.50	11.50	8.25	0.36	0.38	0.93	0.50	4.22	Raised V
	mm	279.4	114.3	292.1	209.6	9.1	9.7	23.6	12.7	1.91	
313	inch	12.93	4.50	13.75	8.25	0.25	0.37	0.91	0.50	4.30	Raised V
	mm	328.4	114.3	349.3	209.6	6.4	9.4	23.1	12.7	1.95	
351	inch	13.25	4.63	15.04	8.50	0.29	0.30	0.63	0.43	4.45	V/E
	mm	336.6	117.6	382.0	215.9	7.4	7.6	16.0	10.9	2.02	
305	inch	14.00	4.50	14.50	8.25	0.26	0.35	0.89	0.50	4.26	Raised V
	mm	355.6	114.3	368.3	209.6	6.6	8.9	22.6	12.7	1.93	
300	inch	17.50	4.50	18.00	8.15	0.26	0.30	0.84	0.50	5.40	V/E
	mm	444.5	114.3	457.2	207.0	6.6	7.6	21.3	12.7	2.45	
301	inch	19.50	4.50	20.00	8.15	0.43	0.38	0.91	0.50	8.10	V/E
	mm	495.3	114.3	508.0	207.0	10.9	9.7	23.1	12.7	3.67	
325	inch	19.48	6.00	21.13	11.38	0.41	0.37	0.93	0.50	10.71	V/E
	mm	494.8	152.4	536.7	289.1	10.4	9.4	23.6	12.7	4.86	
326	inch	15.36	6.00	16.18	11.38	0.44	0.34	0.86	0.50	8.34	V/E
	mm	390.1	152.4	411.0	289.1	11.2	8.6	21.8	12.7	3.78	
344	inch	10.25	6.63	10.50	9.75	0.37	0.37	0.80	0.38	4.70	V/E
	mm	260.4	168.4	266.7	247.7	9.4	9.4	20.3	9.7	2.13	
352	inch	18.00	4.63	19.79	8.50	0.30	0.30	0.66	0.45	5.76	V/E
	mm	457.2	117.6	502.7	215.9	7.6	7.6	16.8	11.4	2.61	

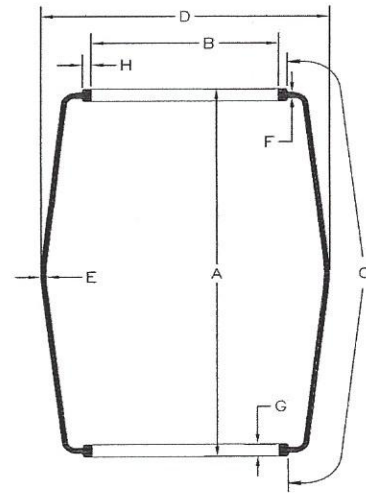
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BOM/OPEN-END TYPE

BIAS BLADDERS



TOLERANCES			
SPEC GAGE	ANY POINT	CIRCULAR	TOP TO BOTTOM
Below .250"	+/- .015	0.020	0.020
Greater than .250"	+/- .020	0.020	0.020

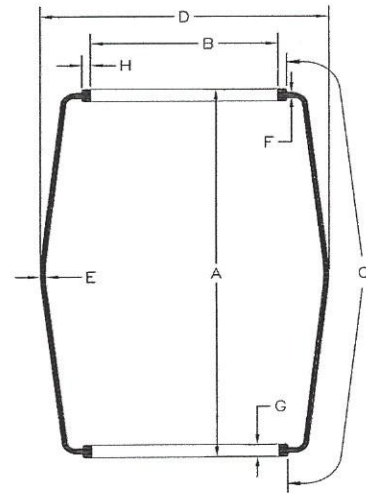
SPECIFICATIONS											
BLADDER CODE		Overall Height	Foot I.D.	Usable Periphery	Outside Diameter	Gauge		Bead		Weight lb. kilo	Bladder Vents/ Etching
						Center	Neck	Width	Height		
		A	B	C	D	E	F	G	H		
353	inch	21.00	4.63	22.78	8.50	0.30	0.30	0.66	0.45	6.67	V/E
	mm	533.4	117.6	578.6	215.9	7.6	7.6	16.8	11.4	3.03	
308	inch	14.00	6.63	14.75	10.75	0.40	0.38	0.84	0.50	7.86	V/E
	mm	355.6	168.4	374.7	273.1	10.2	9.7	21.3	12.7	3.57	
312	inch	14.00	6.63	14.75	10.75	0.25	0.38	0.84	0.50	5.32	V/E
	mm	355.6	168.4	374.7	273.1	6.4	9.7	21.3	12.7	2.41	
339	inch	21.50	6.50	21.75	12.50	0.36	0.35	0.83	0.50	10.64	Raised V
	mm	546.1	165.1	552.5	317.5	9.1	8.9	21.1	12.7	4.83	
307	inch	11.00	8.63	11.75	12.88	0.43	0.38	0.88	0.50	7.92	Raised V
	mm	279.4	219.2	298.5	327.2	10.9	9.7	22.4	12.7	3.59	
316	inch	13.38	8.63	14.25	12.88	0.44	0.39	0.88	0.50	9.32	Raised V
	mm	339.9	219.2	362.0	327.2	11.2	9.9	22.4	12.7	4.23	
327	inch	16.16	8.62	16.25	13.88	0.44	0.34	0.85	0.50	10.94	V/E
	mm	410.5	218.9	412.8	352.6	11.2	8.6	21.6	12.7	4.96	
336	inch	17.50	8.63	18.00	12.75	0.24	0.36	0.85	0.50	9.26	Raised V
	mm	444.5	219.2	457.2	323.9	6.1	9.1	21.6	12.7	4.20	
324	inch	19.00	8.88	20.25	16.00	0.33	0.35	0.75	0.50	12.48	E
	mm	482.6	225.6	514.4	406.4	8.4	8.9	19.1	12.7	5.66	
329	inch	13.25	9.00	13.65	14.75	0.35	0.34	0.78	0.50	8.88	V/E
	mm	336.6	228.6	346.7	374.7	8.9	8.6	19.8	12.7	4.03	
480	inch	16.25	9.88	17.00	14.69	0.20	0.35	0.92	0.50	7.72	V/E
	mm	412.8	251.0	431.8	373.1	5.1	8.9	23.4	12.7	3.50	
317	inch	17.51	9.88	18.50	14.73	0.26	0.35	0.93	0.50	10.30	V/E
	mm	444.8	251.0	469.9	374.1	6.6	8.9	23.6	12.7	4.67	
481	inch	19.01	9.88	19.75	14.88	0.27	0.36	0.89	0.50	12.02	V/E
	mm	482.9	251.0	501.7	378.0	6.9	9.1	22.6	12.7	5.45	
333	inch	13.25	10.88	14.50	16.75	0.35	0.34	0.76	0.50	11.24	E
	mm	336.6	276.4	368.3	425.5	8.9	8.6	19.3	12.7	5.10	
330	inch	15.85	10.88	17.00	15.84	0.24	0.37	0.88	0.50	10.30	V/E
	mm	402.6	276.4	431.8	402.3	6.1	9.4	22.4	12.7	4.67	
483	inch	16.88	10.88	17.75	15.84	0.25	0.38	0.88	0.50	10.82	V/E
	mm	428.8	276.4	450.9	402.3	6.4	9.7	22.4	12.7	4.91	
479	inch	17.85	10.88	19.00	15.84	0.26	0.38	0.88	0.50	11.25	V/E
	mm	453.4	276.4	482.6	402.3	6.6	9.7	22.4	12.7	5.10	
482	inch	17.75	10.25	18.50	15.20	0.25	0.34	0.88	0.50	11.07	E
	mm	450.9	260.4	469.9	386.1	6.4	8.6	22.4	12.7	5.02	

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TOLERANCES			
SPEC GAGE	ANY POINT	CIRCULAR	TOP TO BOTTOM
Below .250"	+/- .015	0.020	0.020
Greater than 250"	+/- .020	0.020	0.020

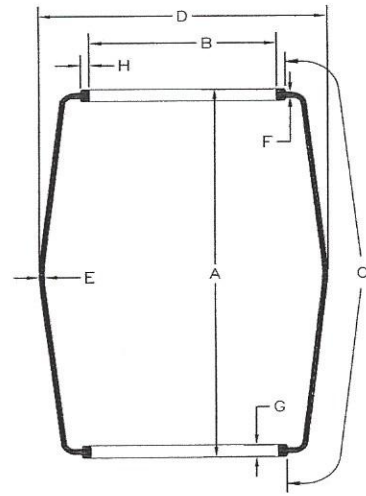
SPECIFICATIONS											
BLADDER CODE	Overall Height	Foot I.D.	Usable Periphery	Outside Diameter	Gauge		Bead		Weight lb. kilo	Bladder Vents/ Etching	
					Center	Neck	Width	Height			
	A	B	C	D	E	F	G	H			
331	inch	19.13	10.88	20.20	15.84	0.25	0.35	0.88	0.50	11.50	V/E
	mm	485.9	276.4	513.1	402.3	6.4	8.9	22.4	12.7	5.22	
322	inch	COMPRESSION MOLDED 322 HAS BEEN OBSOLETE DUE TO MOLD WEAR. SEE PAGE IM1 FOR THE INJECTION MOLDED 322i.								V/E	
	mm										
328	inch	26.50	10.88	26.50	16.75	0.31	0.38	0.88	0.50	17.78	V/E
	mm	673.1	276.4	673.1	425.5	7.9	9.7	22.4	12.7	8.06	
332	inch	29.50	10.88	29.50	16.75	0.31	0.38	0.88	0.50	19.70	V/E
	mm	749.3	276.4	749.3	425.5	7.9	9.7	22.4	12.7	8.94	
354	inch	19.50	12.75	20.02	19.00	0.25	0.35	0.90	0.50	13.36	V/E
	mm	495.3	323.9	508.5	482.6	6.4	8.9	22.9	12.7	6.06	
319	inch	19.75	15.13	21.25	22.50	0.32	0.48	1.07	0.50	20.13	V/E
	mm	501.7	384.3	539.8	571.5	8.1	12.2	27.2	12.7	9.13	
323	inch	24.50	15.13	25.50	22.50	0.28	0.50	1.10	0.50	25.72	V/E
	mm	622.3	384.3	647.7	571.5	7.1	12.7	27.9	12.7	11.67	
355	inch	19.75	14.00	22.38	22.50	0.30	0.50	1.10	0.50	19.08	V/E
	mm	501.7	355.6	568.5	571.5	7.6	12.7	27.9	12.7	8.65	
356	inch	24.50	14.00	26.63	22.50	0.30	0.50	1.10	0.50	22.98	V/E
	mm	622.3	355.6	676.4	571.5	7.6	12.7	27.9	12.7	10.42	

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TOLERANCES			
SPEC GAGE	ANY POINT	CIRCULAR	TOP TO BOTTOM
Below .250"	+/- .015	0.020	0.020
Greater than .250"	+/- .020	0.020	0.020

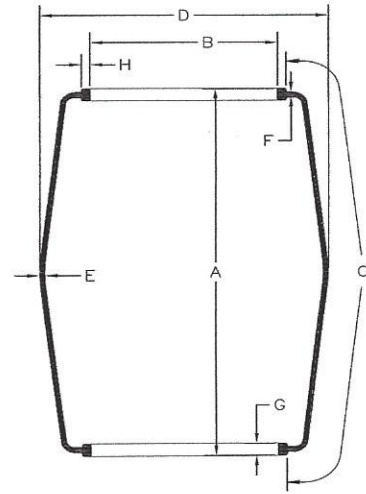
SPECIFICATIONS											
BLADDER CODE		Overall Height	Foot I.D.	Usable Periphery	Outside Diameter	Gauge		Bead		Weight lb. kilo	Bladder Vents/ Etching
						Center	Neck	Width	Height		
		A	B	C	D	E	F	G	H		
600	inch	8.50	2.26	9.27	5.00	0.30	0.30	0.60	0.32	1.50	V
	mm	215.9	57.4	235.5	127.0	7.6	7.6	15.2	8.1	0.68	
601	inch	10.75	2.25	11.52	5.00	0.30	0.28	0.57	0.30	1.82	V
	mm	273.1	57.2	292.6	127.0	7.6	7.1	14.5	7.6	0.83	
602	inch	8.00	3.50	8.80	6.50	0.28	0.30	0.60	0.30	1.79	V
	mm	203.2	88.9	223.5	165.1	7.1	7.6	15.2	7.6	0.81	
603	inch	12.50	3.50	13.05	6.25	0.30	0.30	0.58	0.35	2.80	V
	mm	317.5	88.9	331.5	158.8	7.6	7.6	14.7	8.9	1.27	
604	inch	13.75	3.50	15.14	9.00	0.30	0.30	0.60	0.30	4.10	V
	mm	349.3	88.9	384.6	228.6	7.6	7.6	15.2	7.6	1.86	
605	inch	17.50	3.50	18.15	6.25	0.30	0.30	0.60	0.35	3.94	V
	mm	444.5	88.9	461.0	158.8	7.6	7.6	15.2	8.9	1.79	
606	inch	7.25	4.75	8.82	7.50	0.30	0.28	0.62	0.42	2.27	V
	mm	184.2	120.7	224.0	190.5	7.6	7.1	15.7	10.7	1.03	
607	inch	10.25	4.75	11.22	7.50	0.30	0.30	0.65	0.40	3.04	V
	mm	260.4	120.7	285.0	190.5	7.6	7.6	16.5	10.2	1.38	
608	inch	10.25	4.75	11.72	10.00	0.28	0.30	0.62	0.40	3.72	V
	mm	260.4	120.7	297.7	254.0	7.1	7.6	15.7	10.2	1.69	
609	inch	13.25	4.75	14.35	9.00	0.29	0.28	0.63	0.40	4.28	V
	mm	336.6	120.7	364.5	228.6	7.4	7.1	16.0	10.2	1.94	
610	inch	19.25	4.75	20.32	9.00	0.30	0.30	0.65	0.40	5.84	V
	mm	489.0	120.7	516.1	228.6	7.6	7.6	16.5	10.2	2.65	
611	inch	8.75	6.19	9.78	10.00	0.30	0.30	0.65	0.44	3.60	V
	mm	222.3	157.2	248.4	254.0	7.6	7.6	16.5	11.2	1.63	
612	inch	11.25	6.19	12.28	10.00	0.30	0.28	0.62	0.45	4.50	V
	mm	285.8	157.2	311.9	254.0	7.6	7.1	15.7	11.4	2.04	
613	inch	15.00	6.19	15.97	10.00	0.30	0.30	0.65	0.40	5.58	V
	mm	381.0	157.2	405.6	254.0	7.6	7.6	16.5	10.2	2.53	
614	inch	17.50	6.19	18.47	10.00	0.30	0.29	0.62	0.40	6.30	V
	mm	444.5	157.2	469.1	254.0	7.6	7.4	15.7	10.2	2.86	
615	inch	19.00	6.19	20.32	11.40	0.30	0.30	0.65	0.40	7.84	V
	mm	482.6	157.2	516.1	289.6	7.6	7.6	16.5	10.2	3.56	
616	inch	21.50	6.19	22.82	11.40	0.30	0.26	0.62	0.40	9.90	V
	mm	546.1	157.2	579.6	289.6	7.6	6.6	15.7	10.2	4.49	
641	inch	16.75	6.19	18.02	10.00	0.30	0.35	0.65	0.45	6.26	V
	mm	425.5	157.2	457.7	254.0	7.6	8.9	16.5	11.4	2.84	
617	inch	12.60	6.25	14.20	12.25	0.25	0.30	0.62	0.40	4.88	V
	mm	320.0	158.8	360.7	311.2	6.4	7.6	15.7	10.2	2.21	

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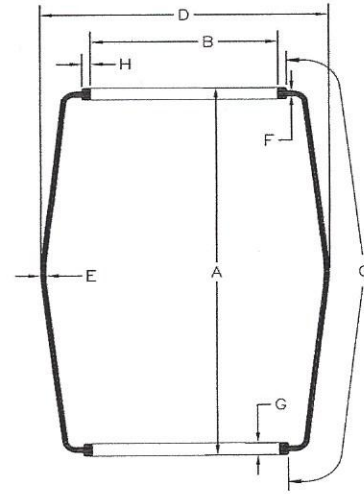
SPECIFICATIONS											
BLADDER CODE		Overall Height	Foot I.D.	Usable Periphery	Outside Diameter	Gauge		Bead		Weight	Bladder Vents/ Etching
		A	B	C	D	E	F	Width	Height	lb.	
618	inch	29.25	7.00	29.95	12.00	0.40	0.38	0.90	0.45	18.00	V
	mm	743.0	177.8	760.7	304.8	10.2	9.7	22.9	11.4	8.16	
619	inch	9.00	7.44	10.36	12.00	0.35	0.38	0.75	0.50	5.30	V
	mm	228.6	189.0	263.1	304.8	8.9	9.7	19.1	12.7	2.40	
620	inch	11.50	7.44	12.86	12.00	0.35	0.38	0.75	0.50	6.56	V
	mm	292.1	189.0	326.6	304.8	8.9	9.7	19.1	12.7	2.98	
621	inch	14.00	7.44	15.77	14.00	0.34	0.35	0.72	0.50	8.34	V
	mm	355.6	189.0	400.6	355.6	8.6	8.9	18.3	12.7	3.78	
622	inch	16.50	7.44	18.27	14.00	0.35	0.36	0.72	0.50	9.74	V
	mm	419.1	189.0	464.1	355.6	8.9	9.1	18.3	12.7	4.42	
623	inch	19.00	7.44	21.18	15.00	0.35	0.38	0.75	0.50	12.10	V
	mm	482.6	189.0	538.0	381.0	8.9	9.7	19.1	12.7	5.49	
624	inch	22.00	7.44	24.18	15.00	0.35	0.37	0.72	0.50	13.80	V
	mm	558.8	189.0	614.2	381.0	8.9	9.4	18.3	12.7	6.26	
625	inch	11.50	8.88	12.93	14.00	0.30	0.35	0.75	0.50	7.22	V
	mm	292.1	225.6	328.4	355.6	7.6	8.9	19.1	12.7	3.27	
626	inch	13.75	8.88	15.18	14.00	0.30	0.35	0.75	0.50	8.34	V
	mm	349.3	225.6	385.6	355.6	7.6	8.9	19.1	12.7	3.78	
627	inch	15.00	8.88	16.94	16.00	0.35	0.37	0.77	0.50	10.40	E
	mm	381.0	225.6	430.3	406.4	8.9	9.4	19.6	12.7	4.72	
628	inch	17.00	8.88	18.94	16.00	0.34	0.36	0.77	0.50	11.46	E
	mm	431.8	225.6	481.1	406.4	8.6	9.1	19.6	12.7	5.20	
629	inch	19.38	8.88	21.00	15.12	0.35	0.35	0.75	0.50	12.78	V
	mm	492.3	225.6	533.4	384.0	8.9	8.9	19.1	12.7	5.80	
630	inch	22.00	8.88	24.00	17.00	0.35	0.37	0.75	0.50	15.16	V
	mm	558.8	225.6	609.6	431.8	8.9	9.4	19.1	12.7	6.88	
631	inch	25.00	8.88	27.00	17.00	0.35	0.35	0.75	0.50	18.15	V
	mm	635.0	225.6	685.8	431.8	8.9	8.9	19.1	12.7	8.23	
632	inch	15.25	10.88	18.02	20.00	0.35	0.37	0.80	0.50	13.61	V
	mm	387.4	276.4	457.7	508.0	8.9	9.4	20.3	12.7	6.17	
633	inch	17.25	10.88	20.02	20.00	0.33	0.37	0.77	0.50	15.46	V
	mm	438.2	276.4	508.5	508.0	8.4	9.4	19.6	12.7	7.01	
634	inch	28.00	10.88	30.38	16.75	0.35	0.38	0.80	0.05	19.75	V
	mm	711.2	276.4	771.7	425.5	8.9	9.7	20.3	1.3	8.96	
638	inch	15.00	10.88	17.49	16.00	0.50	0.37	0.80	0.50	14.42	V
	mm	381.0	276.4	444.2	406.4	12.7	9.4	20.3	12.7	6.54	
639	inch	17.75	10.88	20.24	16.00	0.25	0.37	0.72	0.50	10.02	V
	mm	450.9	276.4	514.1	406.4	6.4	9.4	18.3	12.7	4.54	

POLYMER

INDUSTRIAL PRODUCTS CO., LLC

McNEIL

**BOM/OPEN-END TYPE
BIAS BLADDERS**



TOLERANCES			
SPEC GAGE	ANY POINT	CIRCULAR	TOP TO BOTTOM
Below .250"	+/- .015	0.020	0.020
Greater than .250"	+/- .020	0.020	0.020

SPECIFICATIONS											
BLADDER CODE		Overall Height	Foot I.D.	Usable Periphery	Outside Diameter	Gauge		Bead		Weight	Bladder Vents/ Etching
		A	B	C	D	E	F	G	H	lb. kilo	
646	inch	27.80	12.00	30.94	22.00	0.38	0.40	1.17	0.50	28.75	V/E
	mm	706.1	304.8	785.9	558.8	9.7	10.2	29.7	12.7	13.04	
635	inch	21.25	13.38	22.38	19.50	0.61	0.60	1.15	0.55	29.54	V
	mm	539.8	339.9	568.5	495.3	15.5	15.2	29.2	14.0	13.40	
636	inch	28.30	13.38	30.70	19.50	0.60	0.63	1.15	0.55	39.70	V
	mm	718.8	339.9	779.8	495.3	15.2	16.0	29.2	14.0	18.01	
637	inch	32.50	13.38	33.88	15.50	0.60	0.63	1.20	0.56	47.07	V
	mm	825.5	339.9	860.6	393.7	15.2	16.0	30.5	14.2	21.35	
642	inch	39.00	13.38	42.55	24.00	0.60	0.62	1.20	0.56	64.48	V
	mm	990.6	339.9	1080.8	609.6	15.2	15.7	30.5	14.2	29.25	
643	inch	43.00	13.38	46.55	24.00	0.60	0.62	1.20	0.56	70.90	V
	mm	1092.2	339.9	1182.4	609.6	15.2	15.7	30.5	14.2	32.16	
644	inch	32.00	13.38	35.22	22.00	0.60	0.63	1.20	0.55	50.32	V
	mm	812.8	339.9	894.6	558.8	15.2	16.0	30.5	14.0	22.82	
645	inch	36.00	13.38	39.22	22.00	0.60	0.63	1.20	0.55	57.82	V
	mm	914.4	339.9	996.2	558.8	15.2	16.0	30.5	14.0	26.23	
648	inch	28.18	13.38	32.55	25.00	0.38	0.63	1.20	0.56	35.66	V
	mm	715.8	339.9	826.8	635.0	9.7	16.0	30.5	14.2	16.18	
640	inch	12.00	15.12	14.41	20.00	0.35	0.36	0.75	0.52	11.98	V
	mm	304.8	384.0	366.0	508.0	8.9	9.1	19.1	13.2	5.43	
650	inch	19.21	15.13	24.48	28.00	0.40	0.60	1.10	0.56	28.03	V
	mm	487.9	384.3	621.8	711.2	10.2	15.2	27.9	14.2	12.71	
651	inch	22.18	15.13	27.50	29.00	0.37	0.59	1.09	0.50	31.85	V
	mm	563.4	384.3	698.5	736.6	9.4	15.0	27.7	12.7	14.45	
647	inch	25.60	15.25	28.47	30.00	0.38	0.59	1.10	0.50	36.12	V
	mm	650.2	387.4	723.1	762.0	9.7	15.0	27.9	12.7	16.38	
649	inch	20.62	17.13	26.23	31.00	0.40	0.60	1.10	0.56	33.40	V
	mm	523.7	435.1	666.2	787.4	10.2	15.2	27.9	14.2	15.15	
652	inch	27.62	17.13	33.23	31.00	0.40	0.59	1.09	0.50	43.15	V
	mm	701.5	435.1	844.0	787.4	10.2	15.0	27.7	12.7	19.57	

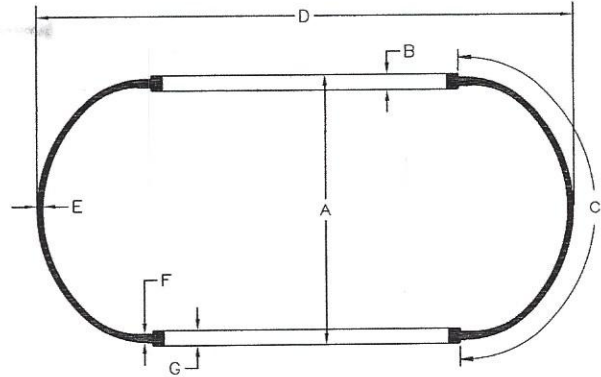
POLYMER

INDUSTRIAL PRODUCTS CO., LLC

McNEIL

BOM OPEN END TYPE

TORODIAL SHAPE BLADDER



TOLERANCES			
SPEC GAGE	ANY POINT	CIRCULAR	TOP TO BOTTOM
Below .250"	+/- .015	0.020	0.020
Greater than .250"	+/- .020	0.020	0.020

SPECIFICATIONS											
BLADDER CODE		Overall Height	Foot I.D.	Usable Periphery	Outside Diameter	Gauge		Bead		Weight lb.	Bladder Vents/ Etching
						Center	Neck	Width	Height		
						A	B	C	D		
520	inch	9.20	8.80	13.30	18.00	0.17	0.32	0.89	0.50	5.33	V/E
	mm	233.7	223.5	337.8	457.2	4.3	8.1	22.6	12.7	2.42	
521	inch	10.45	8.80	14.13	18.00	0.17	0.32	0.89	0.50	5.78	V/E
	mm	265.4	223.5	358.9	457.2	4.3	8.1	22.6	12.7	2.62	
522	inch	11.75	8.80	15.43	18.00	0.17	0.32	0.89	0.50	6.12	V/E
	mm	298.5	223.5	391.9	457.2	4.3	8.1	22.6	12.7	2.78	
523	inch	10.35	9.80	14.50	19.00	0.17	0.32	0.89	0.50	6.14	V/E
	mm	262.9	248.9	368.3	482.6	4.3	8.1	22.6	12.7	2.79	
524	inch	11.85	9.80	16.00	19.00	0.17	0.32	0.89	0.50	6.80	V/E
	mm	301.0	248.9	406.4	482.6	4.3	8.1	22.6	12.7	3.08	
528	inch	12.00	9.80	16.93	20.50	0.17	0.32	0.89	0.50	7.80	V/E
	mm	304.8	248.9	430.0	520.7	4.3	8.1	22.6	12.7	3.54	
525	inch	12.00	10.92	16.93	22.00	0.17	0.32	0.89	0.50	8.38	V/E
	mm	304.8	277.4	430.0	558.8	4.3	8.1	22.6	12.7	3.80	
526	inch	15.00	10.92	19.93	22.00	0.17	0.32	0.89	0.50	9.50	V/E
	mm	381.0	277.4	506.2	558.8	4.3	8.1	22.6	12.7	4.31	
527	inch	11.63	11.92	14.50	19.00	0.17	0.32	0.89	0.50	7.02	V/E
	mm	295.4	302.8	368.3	482.6	4.3	8.1	22.6	12.7	3.18	
529	inch	14.00	11.92	19.61	24.00	0.17	0.32	0.89	0.50	9.96	V/E
	mm	355.6	302.8	498.1	609.6	4.3	8.1	22.6	12.7	4.52	
530	inch	14.75	11.92	17.47	20.50	0.17	0.32	0.89	0.50	8.32	V/E
	mm	374.7	302.8	443.7	520.7	4.3	8.1	22.6	12.7	3.77	
531	inch	15.75	15.13	20.20	25.00	0.30	0.38	1.00	0.50	19.40	V/E
	mm	400.1	384.3	513.1	635.0	7.6	9.7	25.4	12.7	8.80	
532	inch	18.75	15.13	22.70	25.00	0.30	0.38	1.00	0.50	21.80	V/E
	mm	476.3	384.3	576.6	635.0	7.6	9.7	25.4	12.7	9.89	

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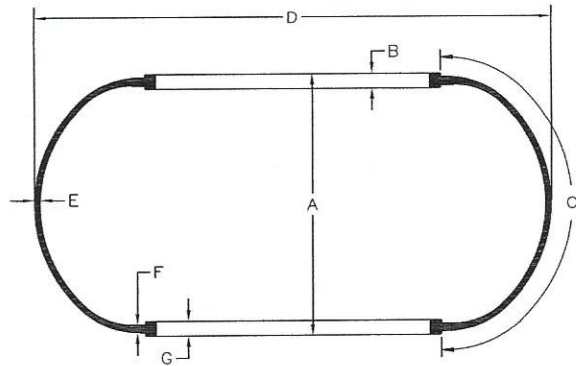
POLYMER

INDUSTRIAL PRODUCTS CO., LLC

McNEIL

BOM OPEN END TYPE

Radial Design



TOLERANCES			
SPEC GAGE	ANY POINT	CIRCULAR	TOP TO BOTTOM
Below .250"	+/- .015	0.020	0.020
Greater than .250"	+/- .020	0.020	0.020

SPECIFICATIONS												
BLADDER CODE		Overall Height	Foot I.D.	Usable Periphery	Outside Diameter	Gauge		Bead		Weight	Bladder Vents/ Etching	
						Center	Neck	Width	Height			
						A	B	C	D	E		F
538	inch	14.11	12.88	16.56	21.25	0.24	0.38	0.89	0.50	10.88	V/E	17
	mm	358.4	327.2	420.6	539.8	6.1	9.7	22.6	12.7	4.94		
539i	inch	17.52	12.88	21.50	24.50	0.25	0.38	0.90	0.50	16.20	V/E	
	mm	445.0	327.2	546.1	622.3	6.4	9.7	22.9	12.7	7.35		
541i	inch	17.52	12.88	21.50	24.50	0.20	0.38	0.90	0.50	14.06	V/E	
	mm	445.0	327.2	546.1	622.3	5.1	9.7	22.9	12.7	6.38		
542i	inch	14.00	16.00	19.89	27.00	0.20	0.38	0.85	0.50	14.78	DV/E	20
	mm	355.6	406.4	505.2	685.8	5.1	9.7	21.6	12.7	6.70		
540	inch	16.00	16.50	22.69	30.00	0.26	0.63	1.10	0.72	24.00	V/E	20
	mm	406.4	419.1	576.3	762.0	6.6	16.0	27.9	18.3	10.89		
550	inch	17.36	14.00	27.50	34.25	0.25	0.42	1.10	0.72	31.00	V/E	24
	mm	440.9	355.6	698.5	870.0	6.4	10.7	27.9	18.3	14.06		

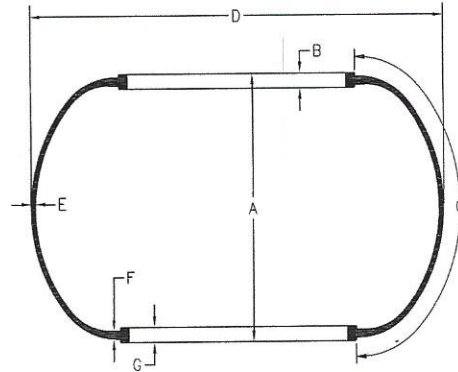
Bladder codes with the letter "i" are injection molded.

POLYMER

INDUSTRIAL PRODUCTS CO., LLC

McNEIL

**Injection Molded
BOM OPEN END TYPE
Radial Design**

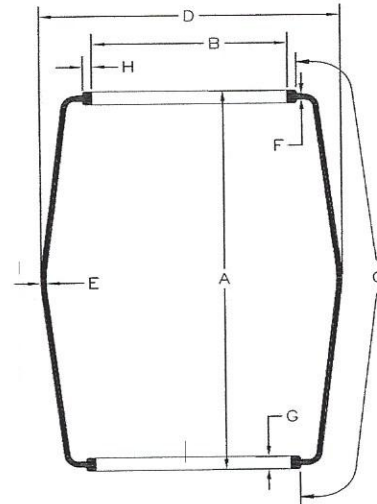


TOLERANCES			
SPEC GAGE	ANY POINT	CIRCULAR	TOP TO BOTTOM
Below .250"	+/- .015	0.020	0.020
Greater than .250"	+/- .020	0.020	0.020

SPECIFICATIONS											
BLADDER CODE		Overall Height	Foot I.D.	Usable Periphery	Outside Diameter	Gauge		Bead		Weight	Bladder Vents/ Etching
						Center	Neck	Width	Height		
		A	B	C	D	E	F	G	H	kilo	
527i	inch	11.63	11.92	14.50	19.00	0.17	0.32	0.89	0.50	7.02	V/E
	mm	295.4	302.8	368.3	482.6	4.3	8.1	22.6	12.7	3.18	
539i	inch	17.52	12.88	21.50	24.50	0.25	0.38	0.90	0.50	16.20	V/E
	mm	445.0	327.2	546.1	622.3	6.4	9.7	22.9	12.7	7.35	
541i	inch	17.52	12.88	21.50	24.50	0.20	0.38	0.90	0.50	14.06	V/E
	mm	445.0	327.2	546.1	622.3	5.1	9.7	22.9	12.7	6.38	
542i	inch	14.00	16.00	19.89	27.00	0.20	0.38	0.85	0.50	14.78	DV/E
	mm	355.6	406.4	505.2	685.8	5.1	9.7	21.6	12.7	6.70	

McNEIL

**Injection Molded
BOM/OPEN-END TYPE
BIAS BLADDERS**



TOLERANCES			
SPEC GAGE	ANY POINT	CIRCULAR	TOP TO BOTTOM
Below .250"	+/- .015	0.020	0.020
Greater than .250"	+/- .020	0.020	0.020

SPECIFICATIONS											
BLADDER CODE		Overall Height	Foot I.D.	Usable Periphery	Outside Diameter	Gauge		Bead		Weight	Bladder Vents/ Etching
						Center	Neck	Width	Height		
		A	B	C	D	E	F	G	H	kilo	
322i	inch	22.00	10.88	22.20	15.84	0.25	0.38	0.88	0.50	14.40	V/E
	mm	558.8	276.4	563.9	402.3	6.4	9.7	22.4	12.7	6.53	

POLYMER

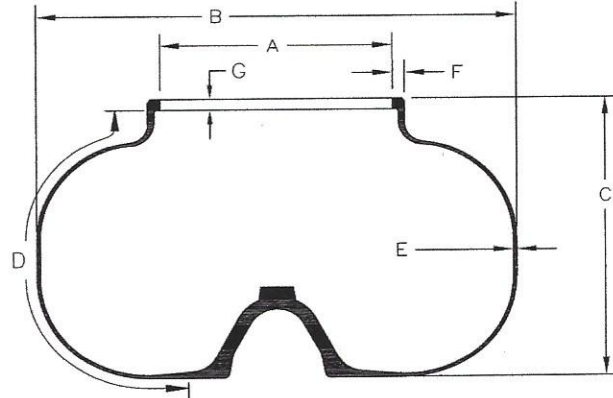
INDUSTRIAL PRODUCTS CO., LLC

NRM

AUTOFORM BLADDER

Bagwell size 12"/13"

Radial Design



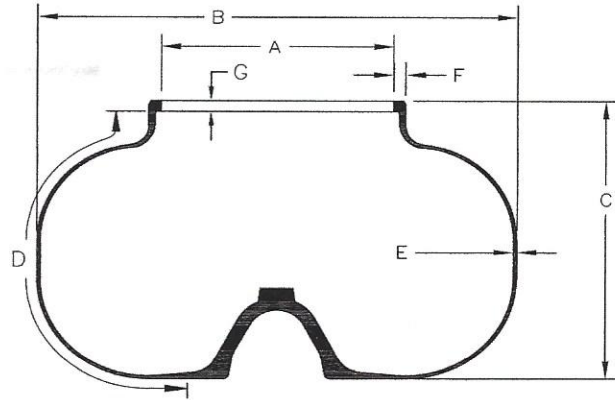
TOLERANCES			
SPEC GAGE	ANY POINT	CIRCULAR	TOP TO BOTTOM
Below .250"	+/- .015	0.020	0.020
Greater than .250"	+/- .020	0.020	0.020

BLADDER CODE		SPECIFICATIONS								Bladder Vents/ Etching
		Foot I.D.	Outside Diameter	Overall Height	Usable Periphery	Gauge Center	Bead		Weight	
		A	B	C	D	E	Width G	Height H	lb. kilo	
470	inch	10.66	16.50	8.50	12.37	0.16	0.57	0.54	6.45	V/E
	mm	270.8	419.1	215.9	314.2	4.1	14.5	13.7	2.9	
468	inch	10.66	16.50	10.50	14.39	0.16	0.57	0.54	7.20	V/E
	mm	270.8	419.1	266.7	365.5	4.1	14.5	13.7	3.3	
486	inch	10.66	18.80	10.00	14.50	0.20	0.57	0.54	7.92	V/E
	mm	270.8	477.5	254.0	368.3	5.1	14.5	13.7	3.6	
493	inch	10.66	18.80	10.00	14.50	0.16	0.57	0.54	7.27	V/E
	mm	270.8	477.5	254.0	368.3	4.1	14.5	13.7	3.3	
471	inch	10.66	16.50	12.00	15.87	0.16	0.57	0.54	8.30	V/E
	mm	270.8	419.1	304.8	403.1	4.1	14.5	13.7	3.8	
487	inch	10.66	18.80	12.00	16.50	0.20	0.57	0.54	9.10	V/E
	mm	270.8	477.5	304.8	419.1	5.1	14.5	13.7	4.1	
494	inch	10.66	18.80	12.00	16.25	0.16	0.57	0.54	8.05	V/E
	mm	270.8	477.5	304.8	412.8	4.1	14.5	13.7	3.7	
467	inch	10.66	18.80	13.00	17.25	0.16	0.57	0.54	8.20	V/E
	mm	270.8	477.5	330.2	438.2	4.1	14.5	13.7	3.7	
490	inch	10.66	20.50	11.00	16.50	0.16	0.57	0.54	8.15	V/E
	mm	270.8	520.7	279.4	419.1	4.1	14.5	13.7	3.7	
488	inch	10.66	20.50	11.00	16.75	0.20	0.57	0.54	9.34	V/E
	mm	270.8	520.7	279.4	425.5	5.1	14.5	13.7	4.2	
489	inch	10.66	20.50	12.50	18.00	0.20	0.57	0.54	9.82	V/E
	mm	270.8	520.7	317.5	457.2	5.1	14.5	13.7	4.5	
492	inch	10.66	20.50	12.50	18.00	0.16	0.57	0.54	8.66	V/E
	mm	270.8	520.7	317.5	457.2	4.1	14.5	13.7	3.9	
459	inch	10.66	20.50	14.25	19.75	0.16	0.57	0.54	9.10	V/E
	mm	270.8	520.7	362.0	501.7	4.1	14.5	13.7	4.1	
484	inch	10.66	22.00	13.10	19.25	0.20	0.57	0.54	11.11	V/E
	mm	270.8	558.8	332.7	489.0	5.1	14.5	13.7	5.0	
491	inch	10.66	22.00	13.10	19.25	0.16	0.57	0.54	9.80	V/E
	mm	270.8	558.8	332.7	489.0	4.1	14.5	13.7	4.4	
476	inch	10.66	22.00	14.10	20.50	0.17	0.57	0.54	10.10	V/E
	mm	270.8	558.8	358.1	520.7	4.3	14.5	13.7	4.6	
485	inch	10.66	22.00	15.10	21.25	0.20	0.57	0.54	12.05	V/E
	mm	270.8	558.8	383.5	539.8	5.1	14.5	13.7	5.5	
499	inch	10.66	22.00	15.10	21.25	0.16	0.57	0.54	10.75	V/E
	mm	270.8	558.8	383.5	539.8	4.1	14.5	13.7	4.9	
496	inch	10.66	22.00	16.10	22.25	0.20	0.57	0.54	12.25	V/E
	mm	270.8	558.8	408.9	565.2	5.1	14.5	13.7	5.6	

POLYMER

INDUSTRIAL PRODUCTS CO., LLC

NRM
AUTOFORM BLADDER
Bagwell size 12"/13"
Radial Design



TOLERANCES			
SPEC GAGE	ANY POINT	CIRCULAR	TOP TO BOTTOM
Below .250"	+/- .015	0.020	0.020
Greater than .250"	+/- .020	0.020	0.020

SPECIFICATIONS										
BLADDER CODE		Foot I.D.	Outside Diameter	Overall Height	Usable Periphery	Gauge Center	Bead		Weight	Bladder Vents/ Etching
		A	B	C	D	E	Width G	Height H	lb. kilo	
472	inch	10.66	22.00	16.10	22.25	0.16	0.57	0.54	11.52	V/E
	mm	270.8	558.8	408.9	565.2	4.1	14.5	13.7	5.2	
497	inch	10.66	22.00	17.10	23.25	0.20	0.57	0.54	12.35	V/E
	mm	270.8	558.8	434.3	590.6	5.1	14.5	13.7	5.6	
473	inch	10.66	22.00	17.10	23.25	0.16	0.57	0.54	11.87	V/E
	mm	270.8	558.8	434.3	590.6	4.1	14.5	13.7	5.4	
498	inch	10.66	22.00	19.10	25.25	0.20	0.57	0.54	14.50	V/E
	mm	270.8	558.8	485.1	641.4	5.1	14.5	13.7	6.6	
500 *	inch	10.66	24.30	17.75	25.12	0.24	0.57	0.54	18.22	V/E
	mm	270.8	617.2	450.9	638.0	6.1	14.5	13.7	8.3	

* Code 500 was designed for a Bagwell 17",

POLYMER

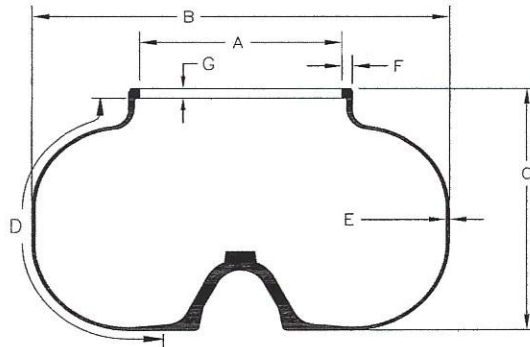
INDUSTRIAL PRODUCTS CO., LLC

NRM

AUTOFORM BLADDER

Bagwell size 12"/13"

Bias Design



TOLERANCES			
SPEC GAGE	ANY POINT	CIRCULAR AR	TOP TO BOTTOM
Below .250"	+/- .015	0.020	0.020
Greater than .250"	+/- .020	0.020	0.020

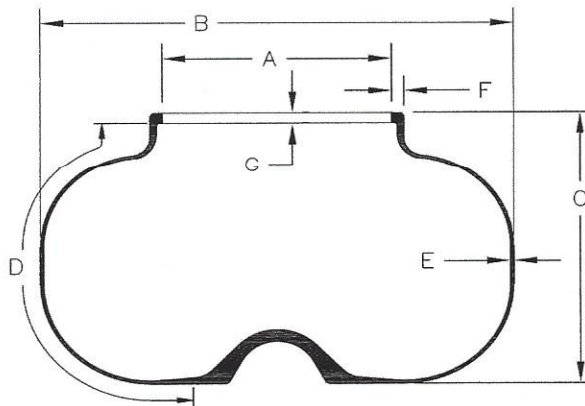
SPECIFICATIONS										
BLADDER CODE	Foot I.D.	Outside Diameter	Overall Height	Usable Periphery	Gauge	Bead		Weight	Bladder Vents/ Etching	
					Center	Width	Height			
	A	B	C	D	E	G	H	lb. kilo		
743	inch	10.66	16.50	20.00	22.50	0.27	0.57	0.54	13.52	V
	mm	270.8	419.1	508.0	571.5	6.9	14.5	13.7	6.13	
744	inch	10.66	16.50	23.00	25.50	0.27	0.57	0.54	15.00	V
	mm	270.8	419.1	584.2	647.7	6.9	14.5	13.7	6.80	
745	inch	10.66	16.50	24.25	26.75	0.27	0.57	0.54	16.50	V
	mm	270.8	419.1	616.0	679.5	6.9	14.5	13.7	7.48	
747	inch	10.66	16.50	15.50	16.36	0.26	0.57	0.54	10.40	V/E
	mm	270.8	419.1	393.7	415.5	6.6	14.5	13.7	4.72	

NRM

AUTOFORM BLADDER

Bagwell size 12"/13"

Radial Design



TOLERANCES			
SPEC GAGE	ANY POINT	CIRCULAR AR	TOP TO BOTTOM
Below .250"	+/- .015	0.020	0.020
Greater than .250"	+/- .020	0.020	0.020

SPECIFICATIONS										
BLADDER CODE	Foot I.D.	Outside Diameter	Overall Height	Usable Periphery	Gauge	Bead		Weight	Bladder Vents/ Etching	
					Center	Width	Height			
	A	B	C	D	E	G	H	lb. kilo		
746	inch	10.66	14.90	16.38	18.27	0.26	0.57	0.54	10.25	V
	mm	270.8	378.5	416.1	464.1	6.6	14.5	13.7	4.65	
	inch									
	mm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	
	inch									
	mm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	

POLYMER

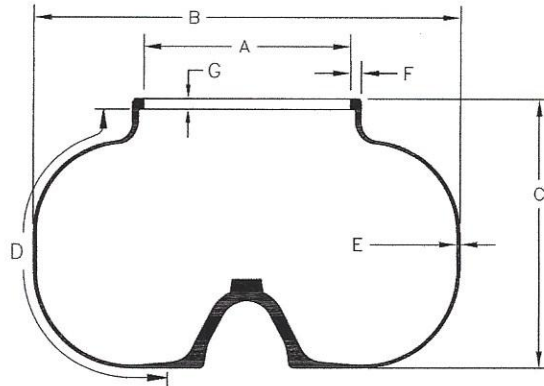
INDUSTRIAL PRODUCTS CO., LLC

NRM

AUTOFORM BLADDER

Bagwell size 17"

Radial Design



TOLERANCES			
SPEC GAGE	ANY POINT	CIRCULAR	TOP TO BOTTOM
Below .250"	+/- .015	0.020	0.020
Greater than 250"	+/- .020	0.020	0.020

SPECIFICATIONS										
BLADDER CODE		Foot I.D.	Outside Diameter	Overall Height	Usable Periphery	Gauge Center	Bead		Weight	Bladder Vents/ Etching
		A	B	C	D	E	Width G	Height H	lb. kilo	
495	inch	13.61	23.00	27.00	31.00	0.50	0.88	0.80	40.55	E
	mm	345.7	584.2	685.8	787.4	12.7	22.4	20.3	18.39	
716	inch	13.61	23.00	22.50	25.09	0.50	0.88	0.80	35.46	V
	mm	345.7	584.2	571.5	637.3	12.7	22.4	20.3	16.08	
717	inch	13.61	23.00	25.50	28.09	0.50	0.88	0.80	39.73	V
	mm	345.7	584.2	647.7	713.5	12.7	22.4	20.3	18.02	
718	inch	13.61	26.00	19.50	26.82	0.50	0.88	0.80	34.95	V
	mm	345.7	660.4	495.3	681.2	12.7	22.4	20.3	15.85	

POLYMER

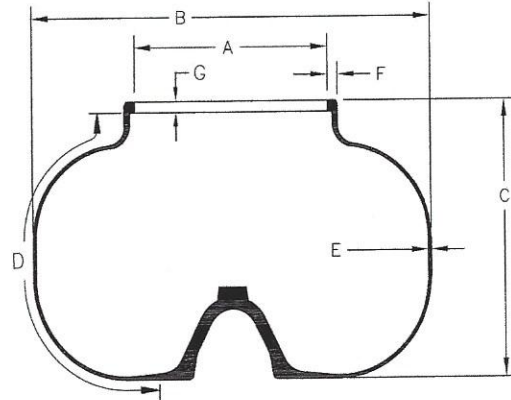
INDUSTRIAL PRODUCTS CO., LLC

NRM

AUTOFORM BLADDER

Bagwell size 20"

Radial Design



TOLERANCES			
SPEC GAGE	ANY POINT	CIRCULAR	TOP TO BOTTOM
Below .250"	+/- .015	0.020	0.020
Greater than .250"	+/- .020	0.020	0.020

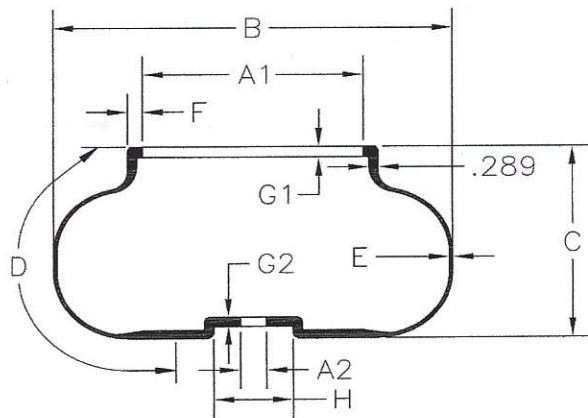
SPECIFICATIONS										
BLADDER CODE		Foot I.D.	Outside Diameter	Overall Height	Usable Periphery	Gauge Center	Bead		Weight	Bladder Vents/ Etching
		A	B	C	D	E	Width G	Height H	lb. kilo	
710	inch	15.99	31.25	15.92	28.35	0.32	0.88	0.80	28.30	V
	mm	406.1	793.8	404.4	720.1	8.1	22.4	20.3	12.84	
711	inch	15.99	31.25	17.82	30.25	0.32	0.88	0.80	30.63	V
	mm	406.1	793.8	452.6	768.4	8.1	22.4	20.3	13.89	
720	inch	15.99	24.03	23.00	28.97	0.43	0.88	0.80	32.10	V
	mm	406.1	610.4	584.2	735.8	10.9	22.4	20.3	14.56	
721	inch	15.99	26.00	23.00	29.47	0.40	0.88	0.80	0.00	V
	mm	406.1	660.4	584.2	748.5	10.2	22.4	20.3	0.00	
722	inch	15.99	26.00	26.00	32.47	0.40	0.88	0.80	0.00	V
	mm	406.1	660.4	660.4	824.7	10.2	22.4	20.3	0.00	
723	inch	15.99	26.00	29.00	36.47	0.40	0.88	0.80	0.00	V
	mm	406.1	660.4	736.6	926.3	10.2	22.4	20.3	0.00	
724	inch	15.99	26.00	32.00	38.47	0.40	0.88	0.80	0.00	V
	mm	406.1	660.4	812.8	977.1	10.2	22.4	20.3	0.00	

POLYMER

INDUSTRIAL PRODUCTS CO., LLC

Autoform Standing Post Bladder

TOLERANCES			
SPEC GAGE	ANY POINT	CIRCULAR	TOP TO BOTTOM
Below .250"	+/- .015	0.020	0.020
Greater than .250"	+/- .020	0.020	0.020

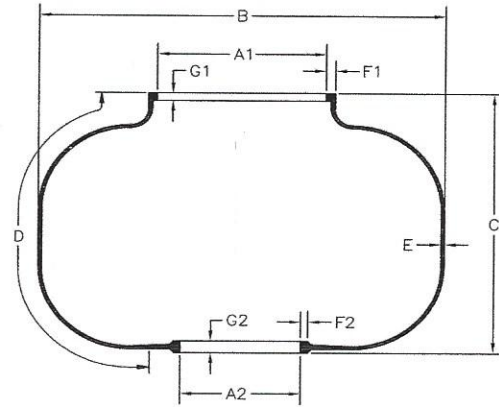


SPECIFICATIONS													
BLADDER CODE	Foot I.D.	Foot Id	Outside Diameter	Overall Height	Usable Periphery	Crown		Bead				Weight	Bladder Vents/ Etching
						Gauge	Width	Width	Height	Height	Height		
	A1	A2	B	C	D	E	F	H	G1	G2	kilo		
921	inch	10.39	1.25	18.80	10.00	14.34	0.17	0.54	3.75	0.53	0.49	7.18	V/E
	mm	263.9	31.8	477.5	254.0	364.2	4.3	13.7	95.3	13.5	12.4	3.26	
922	inch	10.39	1.25	18.80	13.00	17.34	0.17	0.54	3.75	0.53	0.49	8.13	V/E
	mm	263.9	31.8	477.5	330.2	440.4	4.3	13.7	95.3	13.5	12.4	3.69	

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INDUSTRIAL PRODUCTS CO., LLC

KOBE Style Bladders



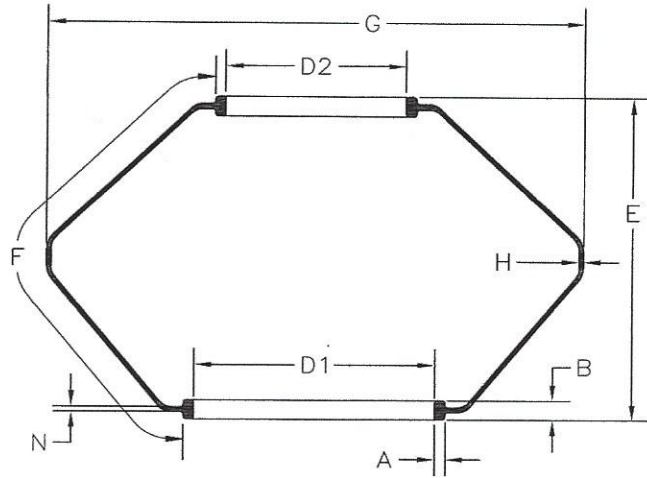
TOLERANCES			
SPEC GAGE	ANY POINT	CIRCULAR	TOP TO BOTTOM
Below .250"	+/- .015	0.020	0.020
Greater than .250"	+/- .020	0.020	0.020

SPECIFICATIONS													
BLADDER CODE		Foot I.D.	Foot Id	Outside Diameter	Overall Height	Usable Periphery	Crown Gauge	Foot				Weight	Bladder Vents/ Etching
								Width	Width	Height	Height		
		A1	A2	B	C	D	E	F1	F2	G1	G2	lb.	
901	inch	9.11	6.00	21.50	12.83	20.80	0.17	0.50	0.50	0.59	0.85	8.65	V/E
	mm	231.4	152.4	546.1	325.9	528.3	4.3	12.7	12.7	15.0	21.6	3.92	
902	inch	9.11	6.00	22.20	17.00	25.50	0.17	0.50	0.50	0.59	0.85	10.32	V/E
	mm	231.4	152.4	563.9	431.8	647.7	4.3	12.7	12.7	15.0	21.6	4.68	
903	inch	9.11	6.00	22.20	17.00	25.50	0.20	0.50	0.50	0.68	0.85	12.58	V/E
	mm	231.4	152.4	563.9	431.8	647.7	5.1	12.7	12.7	17.3	21.6	5.71	
904	inch	10.50	7.50	25.25	17.70	25.28	0.24	0.57	0.56	0.54	0.82	16.27	V/E
	mm	266.7	190.5	641.4	449.6	642.1	6.1	14.5	14.2	13.7	20.8	7.38	
911	inch	8.92	6.12	20.80	12.48	21.38	0.17	0.70	0.50	0.74	0.82	9.21	V/E
	mm	226.6	155.4	528.3	317.0	543.1	4.3	17.8	12.7	18.8	20.8	4.18	
905	inch	9.00	6.00	24.30	17.74	26.37	0.20	0.57	0.51	0.60	0.86	15.50	V/E
	mm	228.6	152.4	617.2	450.6	669.8	5.0	14.5	13.0	15.2	21.8	7.03	

POLYMER

INDUSTRIAL PRODUCTS CO., LLC

Krupp Style Bladders



TOLERANCES

SPEC GAGE	ANY POINT	CIRCULAR	TOP TO BOTTOM
Below .250"	+/- .015	0.020	0.020
Greater than .250"	+/- .020	0.020	0.020

SPECIFICATIONS

BLADDER CODE		Clamp ID	Clamp ID	Overall Height	Usable Periphery	Outside Diameter	Gauge		Bead		Weight	Bladder Vents/ Etching
							Neck	Center	Width	Height		
801	inch	8.87	6.69	12.75	17.80	19.40	0.38	0.16	0.50	0.93	8.00	V/E
	mm	225.3	169.9	323.9	452.1	492.8	9.7	4.1	12.7	23.6	3.63	
801	inch	8.87	6.69	15.15	20.68	22.00	0.35	0.16	0.42	0.94	9.50	V/E
	mm	225.3	169.9	384.8	525.3	558.8	8.9	4.1	10.7	23.9	4.31	

POLYMER

INDUSTRIAL PRODUCTS CO., LLC

PACKAGING SPECIFICATIONS

CODE	BOX QTY.		Bladder Weight	PLASTIC PALLET	WOOD PALLET	EXPORT PALLET
300	50	LBS	5.83	330	352	357
		KILOS	2.6	149.5	159.4	161.7
301	50	LBS	8.07	442	464	469
		KILOS	3.7	200.3	210.2	212.5
304	80	LBS	4.31	383	405	410
		KILOS	2.0	173.6	183.6	185.9
305	50	LBS	4.26	251	273	278
		KILOS	1.9	113.9	123.8	126.1
306	128	LBS	2.9	409	431	436
		KILOS	1.3	185.6	195.6	197.9
307	25	LBS	7.92	236	258	263
		KILOS	3.6	107.0	117.0	119.3
308	32	LBS	7.25	270	292	297
		KILOS	3.3	122.5	132.5	134.7
309	280	LBS	1.38	424	446	451
		KILOS	0.6	192.5	202.5	204.8
310	48	LBS	4.66	262	284	289
		KILOS	2.1	118.7	128.7	130.9
311	140	LBS	3.32	503	525	530
		KILOS	1.5	228.1	238.0	240.3
312	32	LBS	5.29	207	229	234
		KILOS	2.4	94.0	104.0	106.3
313	60	LBS	4.41	303	325	330
		KILOS	2.0	137.3	147.2	149.5
315	250	LBS	1.54	406	445	450
		KILOS	0.7	184.1	201.9	204.1
316	25	LBS	9.52	441	298	303
		KILOS		200.0	135.2	137.4
317	35	LBS	10.79	544	438	443
		KILOS		246.8	198.5	200.8
319	15	LBS	20.23	438	363	368
		KILOS		198.9	164.9	167.1
320	35	LBS	10.25	318	419	424
		KILOS		144.2	189.9	192.2
322	25	LBS	14.54	349	424	429
		KILOS		158.5	192.1	194.4
323	15	LBS	21.75	360	386	391
		KILOS		163.3	175.2	177.5
324	25	LBS	12.64	333	376	381
		KILOS		151.0	170.6	172.8
325	25	LBS	10.62	203	326	331
		KILOS		91.9	147.6	149.9
326	30	LBS	8.44	273	313	318
		KILOS		123.8	142.1	144.3
327	30	LBS	10.86	358	386	391
		KILOS		162.2	175.0	177.3
328	25	LBS	18.16	309	514	519
		KILOS		140.0	233.2	235.4
329	30	LBS	9.1	272	333	338
		KILOS		123.4	151.0	153.3
330	35	LBS	10.51	305	428	433
		KILOS		138.3	194.1	196.3
331	35	LBS	11.51	377	463	468
		KILOS		170.9	209.9	212.2

CODE	BOX QTY.		Bladder Weight	PLASTIC PALLET	WOOD PALLET	EXPORT PALLET
332	25	LBS	20.24	317	566	571
		KILOS	9.2	143.9	256.7	259.0
333	35	LBS	11.44	381	460	465
		KILOS	5.2	172.7	208.8	211.1
336	30	LBS	9.33	493	340	345
		KILOS	4.2	223.6	154.2	156.4
338	90	LBS	3.46	308	371	376
		KILOS	1.6	139.7	168.5	170.7
339	30	LBS	10.73	448	382	387
		KILOS	4.9	203.2	173.2	175.5
340	100	LBS	2.95	470	355	360
		KILOS	1.3	213.2	161.0	163.3
343	35	LBS	4.7	493	225	230
		KILOS	2.1	223.6	101.8	104.1
344	50	LBS	4.7	507	295	300
		KILOS	2.1	230.1	133.8	136.1
350	90	LBS	3.55	441	380	385
		KILOS	1.6	200.1	172.1	174.4
351	60	LBS	4.51	453	331	336
		KILOS	2.0	205.7	150.0	152.2
352	40	LBS	5.85	457	294	299
		KILOS	2.7	207.3	133.4	135.6
353	40	LBS	6.67	469	327	332
		KILOS	3.0	212.7	148.2	150.5
354	25	LBS	13.55	392	399	404
		KILOS	6.1	177.6	180.9	183.1
355	15	LBS	18.62	365	339	344
		KILOS	8.4	165.7	153.9	156.2
356	15	LBS	22.85	38	403	408
		KILOS	10.4	17.2	182.7	185.0
459	50	LBS	9.1	38	515	520
		KILOS	4.1	17.2	233.6	235.9
465	100	LBS	2.7	38	330	335
		KILOS	1.2	17.2	149.7	152.0
467	50	LBS	8.2	38	470	475
		KILOS	3.7	17.2	213.2	215.5
468	60	LBS	7.2	38	492	497
		KILOS	3.3	17.2	223.2	225.4
470	70	LBS	6.5	38	515	520
		KILOS	2.9	17.2	233.6	235.9
471	60	LBS	7.82	38	529	534
		KILOS	3.5	17.2	240.0	242.3
472	35	LBS	11.52	38	463	468
		KILOS	5.2	17.2	210.1	212.4
473	35	LBS	11.87	38	475	480
		KILOS	5.4	17.2	215.7	217.9
474	35	LBS	11.97	38	479	484
		KILOS	5.4	17.2	217.3	219.5
475	35	LBS	12.31	38	491	496
		KILOS	5.6	17.2	222.6	224.9
476	35	LBS	10.1	38	414	419
		KILOS	4.6	17.2	187.6	189.8
476-9	35	LBS	9.35	38	387	392
		KILOS	4.2	17.2	175.7	177.9

POLYMER

INDUSTRIAL PRODUCTS CO., LLC

PACKAGING SPECIFICATIONS

CODE	BOX QTY.		Bladder Weight	PLASTIC PALLET	WOOD PALLET	EXPORT PALLET
479	35	LBS	11.42	438	460	465
		KILOS	5.2	198.5	208.5	210.8
480	35	LBS	7.83	312	334	339
		KILOS	3.6	141.5	151.5	153.8
481	35	LBS	12.14	463	485	490
		KILOS	5.5	210.0	220.0	222.2
482	35	LBS	11.14	428	450	455
		KILOS	5.1	194.1	204.1	206.3
483	35	LBS	11.2	430	452	457
		KILOS	5.1	195.0	205.0	207.3
484	35	LBS	11.11	427	449	454
		KILOS	5.0	193.6	203.6	205.9
485	35	LBS	12.05	460	482	487
		KILOS	5.5	208.5	218.5	220.8
486	50	LBS	7.92	434	456	461
		KILOS	3.6	196.9	206.8	209.1
487	50	LBS	9.1	493	515	520
		KILOS	4.1	223.6	233.6	235.9
488	50	LBS	9.34	505	527	532
		KILOS	4.2	229.1	239.0	241.3
489	50	LBS	9.82	529	551	556
		KILOS	4.5	240.0	249.9	252.2
490	50	LBS	8.15	446	468	473
		KILOS	3.7	202.1	212.1	214.3
491	35	LBS	9.8	381	403	408
		KILOS	4.4	172.8	182.8	185.1
492	50	LBS	8.8	478	500	505
		KILOS	4.0	216.8	226.8	229.1
493	50	LBS	7.27	402	424	429
		KILOS	3.3	182.1	192.1	194.4
494	50	LBS	8.05	441	463	468
		KILOS	3.7	199.8	209.8	212.1
495	8	LBS	40.55	362	384	389
		KILOS	18.4	164.4	174.4	176.6
496	35	LBS	12.25	467	489	494
		KILOS	5.6	211.7	221.7	224.0
497	35	LBS	12.35	470	492	497
		KILOS	5.6	213.3	223.3	225.6
498	35	LBS	14.5	546	568	573
		KILOS	6.6	247.4	257.4	259.7
499	35	LBS	10.7	413	435	440
		KILOS	4.9	187.1	197.1	199.4
500	25	LBS	18.22	494	516	521
		KILOS	8.3	223.9	233.8	236.1
487 (INJ)	50	LBS	9.15	496	518	523
		KILOS	4.2	224.8	234.7	237.0
520	50	LBS	5.33	305	327	332
		KILOS	2.4	138.1	148.1	150.4
521	50	LBS	5.78	327	349	354
		KILOS	2.6	148.3	158.3	160.6
522	50	LBS	6.12	344	366	371
		KILOS	2.8	156.0	166.0	168.3
523	50	LBS	6.14	345	367	372
		KILOS	2.8	156.5	166.5	168.7

CODE	BOX QTY.		Bladder Weight	PLASTIC PALLET	WOOD PALLET	EXPORT PALLET
524	50	LBS	6.8	378	400	405
		KILOS	3.1	171.5	181.4	183.7
525	50	LBS	8.38	457	479	484
		KILOS	3.8	207.3	217.3	219.5
526	40	LBS	9.5	418	440	445
		KILOS	4.3	189.6	199.6	201.9
527	50	LBS	7.02	389	411	416
		KILOS	3.2	176.5	186.4	188.7
528	50	LBS	7.8	428	450	455
		KILOS	3.5	194.1	204.1	206.4
529	30	LBS	10.5	353	375	380
		KILOS	4.8	160.1	170.1	172.4
530	40	LBS	8.82	391	413	418
		KILOS	4.0	177.3	187.2	189.5
531	20	LBS	19.46	427	449	454
		KILOS	8.8	193.8	203.8	206.0
532	15	LBS	21.72	364	386	391
		KILOS	9.9	165.0	175.0	177.3
538	50	LBS	10.68	572	594	599
		KILOS	4.8	259.5	269.4	271.7
539 (INJ)	20	LBS	16.3	364	386	391
		KILOS	7.4	165.1	175.1	177.4
540	15	LBS	26.6	437	459	464
		KILOS	12.1	198.2	208.2	210.5
541 (INJ)	20	LBS	14.06	319	341	346
		KILOS	6.4	144.8	154.8	157.0
542 (INJ)	15	LBS	14.78	260	282	287
		KILOS	6.7	117.8	127.8	130.0
550	10	LBS	33.25	371	393	398
		KILOS	15.1	168.1	178.0	180.3
600	280	LBS	1.45	444	466	471
		KILOS	0.7	201.4	211.4	213.6
601	140	LBS	1.84	296	318	323
		KILOS	0.8	134.1	144.1	146.3
602	250	LBS	1.83	496	518	523
		KILOS	0.8	224.8	234.7	237.0
603	100	LBS	2.76	314	336	341
		KILOS	1.3	142.4	152.4	154.7
604	60	LBS	4.17	288	310	315
		KILOS	1.9	130.7	140.7	143.0
605	60	LBS	3.85	269	291	296
		KILOS	1.7	122.0	132.0	134.3
606	120	LBS	2.23	306	328	333
		KILOS	1.0	138.6	148.6	150.9
607	80	LBS	3.02	280	302	307
		KILOS	1.4	126.8	136.8	139.1
608	50	LBS	3.8	228	250	255
		KILOS	1.7	103.4	113.4	115.7
609	60	LBS	4.33	298	320	325
		KILOS	2.0	135.1	145.1	147.3
610	40	LBS	5.93	275	297	302
		KILOS	2.7	124.8	134.8	137.1
611	60	LBS	3.7	260	282	287
		KILOS	1.7	117.9	127.9	130.2

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PACKAGING SPECIFICATIONS

CODE	BOX QTY.		Bladder Weight	PLASTIC PALLET	WOOD PALLET	EXPORT PALLET
612	50	LBS	4.65	271	293	298
		KILOS	2.1	122.7	132.7	134.9
613	40	LBS	5.85	272	294	299
		KILOS	2.7	123.4	133.4	135.6
614	35	LBS	6.76	275	297	302
		KILOS	3.1	124.6	134.5	136.8
615	35	LBS	7.94	316	338	343
		KILOS	3.6	143.3	153.3	155.5
616	35	LBS	8.9	350	372	377
		KILOS	4.0	158.5	168.5	170.8
617	32	LBS	4.55	184	206	211
		KILOS	2.1	83.3	93.3	95.5
618	12	LBS	18	254	276	281
		KILOS	8.2	115.2	125.2	127.5
619	36	LBS	5.35	231	253	258
		KILOS	2.4	104.6	114.6	116.8
620	35	LBS	6.57	268	290	295
		KILOS	3.0	121.5	131.5	133.8
621	35	LBS	8.28	328	350	355
		KILOS	3.8	148.7	158.7	160.9
622	35	LBS	9.88	384	406	411
		KILOS	4.5	174.1	184.1	186.3
623	35	LBS	12.17	464	486	491
		KILOS	5.5	210.4	220.4	222.7
624	25	LBS	13.92	386	408	413
		KILOS	6.3	175.1	185.1	187.3
625	50	LBS	7.34	405	427	432
		KILOS	3.3	183.7	193.7	196.0
626	35	LBS	8.54	337	359	364
		KILOS	3.9	152.8	162.8	165.1
627	35	LBS	10.43	403	425	430
		KILOS	4.7	182.8	192.8	195.1
628	35	LBS	11.6	444	466	471
		KILOS	5.3	201.4	211.4	213.6
629	35	LBS	13.08	496	518	523
		KILOS	5.9	224.9	234.9	237.1
630	25	LBS	16.18	443	465	470
		KILOS	7.3	200.7	210.7	213.0
631	25	LBS	18.39	498	520	525
		KILOS	8.3	225.8	235.8	238.0
632	25	LBS	14.14	392	414	419
		KILOS	6.4	177.6	187.6	189.8
633	25	LBS	15.68	430	452	457
		KILOS	7.1	195.0	205.0	207.3
634	25	LBS	18.98	513	535	540
		KILOS	8.6	232.5	242.4	244.7
635	15	LBS	29.54	481	503	508
		KILOS	13.4	218.2	228.2	230.5
636	10	LBS	39.78	436	458	463
		KILOS	18.0	197.7	207.7	209.9
637	15	LBS	47.07	744	766	771
		KILOS	21.4	337.5	347.5	349.7
638	35	LBS	14.65	551	573	578
		KILOS	6.6	249.8	259.8	262.1

CODE	BOX QTY.		Bladder Weight	PLASTIC PALLET	WOOD PALLET	EXPORT PALLET
639	35	LBS	10.28	398	420	425
		KILOS	4.7	180.4	190.4	192.7
640	20	LBS	12.2	282	304	309
		KILOS	5.5	127.9	137.9	140.2
641	35	LBS	6.47	264	286	291
		KILOS	2.9	120.0	129.9	132.2
642	8	LBS	64.95	558	580	585
		KILOS	29.5	252.9	262.9	265.2
643	8	LBS	70.3	600	622	627
		KILOS	31.9	272.3	282.3	284.6
644	8	LBS	50.64	443	465	470
		KILOS	23.0	201.0	211.0	213.2
645	8	LBS	56.39	489	511	516
		KILOS	25.6	221.9	231.8	234.1
646	8	LBS	28.75	268	290	295
		KILOS	13.0	121.6	131.5	133.8
647	10	LBS	35.2	390	412	417
		KILOS	16.0	176.9	186.9	189.2
648	10	LBS	33.72	375	397	402
		KILOS	15.3	170.2	180.2	182.4
649	10	LBS	33.4	372	394	399
		KILOS	15.2	168.7	178.7	181.0
650	10	LBS	28.03	318	340	345
		KILOS	12.7	144.4	154.4	156.6
651	10	LBS	32.11	359	381	386
		KILOS	14.6	162.9	172.9	175.1
652	5	LBS	43.15	254	276	281
		KILOS	19.6	115.1	125.1	127.3
710	8	LBS	28.3	264	286	291
		KILOS	12.8	119.9	129.9	132.2
711	10	LBS	31.08	349	371	376
		KILOS	14.1	158.2	168.2	170.5
716	8	LBS	35.46	322	344	349
		KILOS	16.1	145.9	155.9	158.2
717	8	LBS	39.73	356	378	383
		KILOS	18.0	161.4	171.4	173.7
718	8	LBS	34.95	318	340	345
		KILOS	15.9	144.1	154.0	156.3
720	8	LBS	32.1	295	317	322
		KILOS	14.6	133.7	143.7	146.0
721	8	LBS	34.62	315	337	342
		KILOS	15.7	142.9	152.8	155.1
722	8	LBS	39.73	356	378	383
		KILOS	18.0	161.4	171.4	173.7
723	7	LBS	42.43	335	357	362
		KILOS	19.2	152.0	161.9	164.2
724	7	LBS	46.2	361	383	388
		KILOS	21.0	163.9	173.9	176.2
743	18	LBS	13.52	281	303	308
		KILOS	6.1	127.6	137.6	139.9
744	18	LBS	15	308	330	335
		KILOS	6.8	139.7	149.7	152.0
745	18	LBS	16.5	335	357	362
		KILOS	7.5	152.0	161.9	164.2

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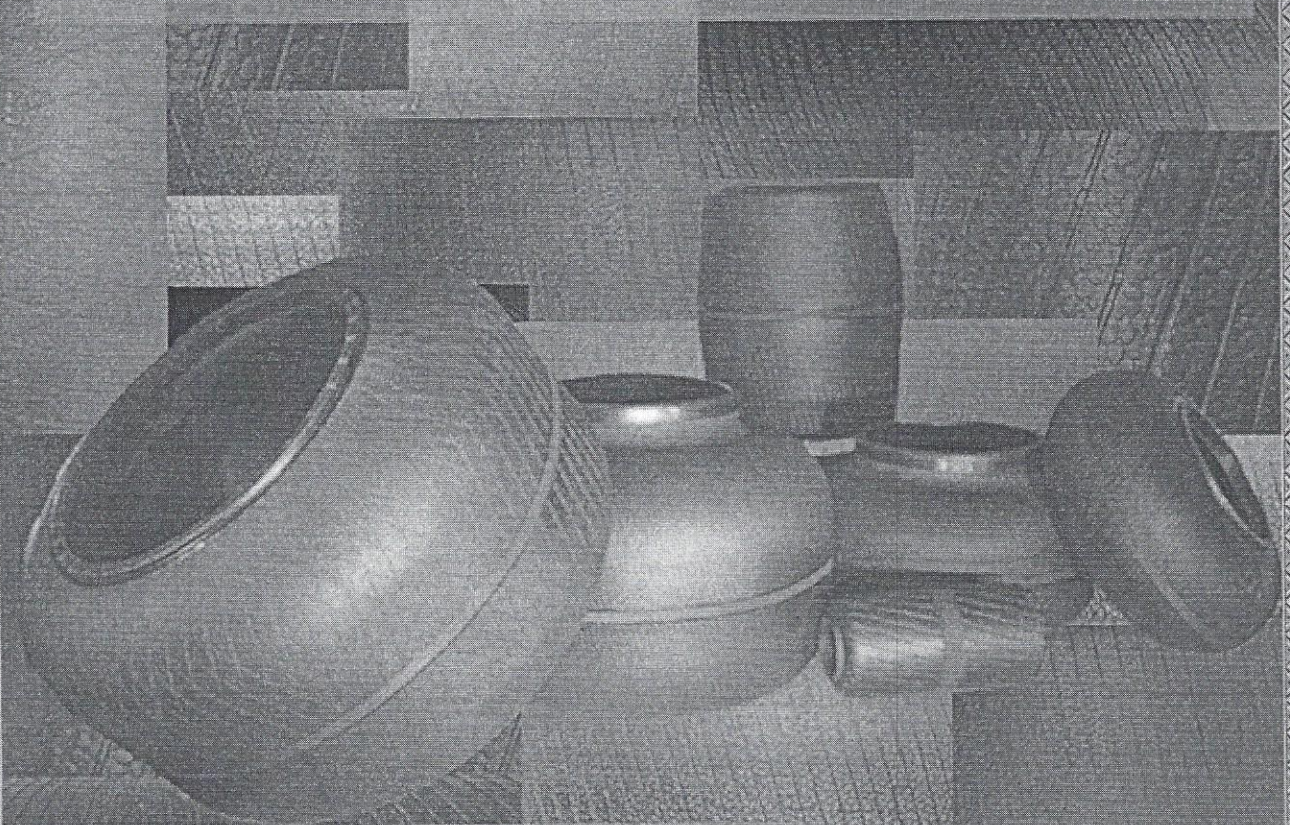
**PACKAGING
SPECIFICATIONS**

CODE	BOX QTY.		Bladder Weight	PLASTIC PALLET	WOOD PALLET	EXPORT PALLET
746	30	LBS	10.25	346	368	373
		KILOS	4.6	156.7	166.7	169.0
747	25	LBS	10.4	298	320	325
		KILOS	4.7	135.2	145.2	147.4
801	50	LBS	8	438	460	465
		KILOS	3.6	198.7	208.7	210.9
802	40	LBS	9.5	418	440	445
		KILOS	4.3	189.6	199.6	201.9
901	40	LBS	8.65	384	406	411
		KILOS	3.9	174.2	184.2	186.4
902	40	LBS	10.32	451	473	478
		KILOS	4.7	204.5	214.5	216.7
903	40	LBS	12.58	541	563	568
		KILOS	5.7	245.5	255.5	257.7
904	30	LBS	16.27	526	548	553
		KILOS	7.4	238.6	248.6	250.9
905	30	LBS	15.05	490	512	517
		KILOS	6.8	222.0	232.0	234.3
911	35	LBS	9.25	362	384	389
		KILOS	4.2	164.1	174.1	176.3
921	50	LBS	7.18	397	419	424
		KILOS	3.3	180.1	190.1	192.3
922	50	LBS	8.13	445	467	472
		KILOS	3.7	201.6	211.6	213.9



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INDUSTRIAL PRODUCTS CO.



Curing Bladders

PIPICO
CURING & TURN-UP
BLADDERS

PIPICO[®] ELASTOMERIC
PRODUCTS

Trouble Shooting
Guide

Tire Curing Bladder Guide

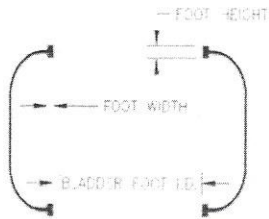
The following is not only a source for operational conditions with curing bladder, but it is also a tool to assist in problem analysis when dealing with curing bladder issues.

Contents

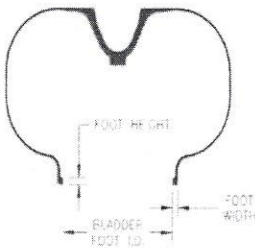
- Bladder Types
- Compression and Stretch Limits
- Defects and possible causes
- Warming up the bladders
- Bladder Storage

Bladder Types

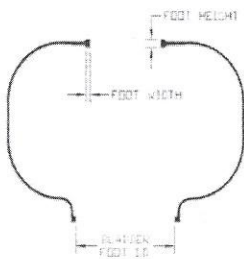
Curing Bladders come in varying shapes and sizes. Below is a list a few of the more commonly known styles or types.



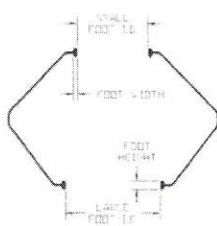
- Bag-O-Matic (BOM) or open ended type – this type of bladder is normally divided into two subcategories, Radial and Bias. The radial type is often referred to as toroidal.



- NRM or Autoform – this type of bladder is closed on one end and open on the other. This bladder style is primarily used in radial tire production although Autoform presses are used in the production of many bias-ply medium truck and agriculture tires.

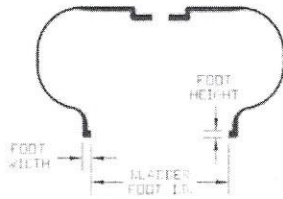


- KOBE – this style of bladder operates in similar manner the NRM with the exception that the KOBE is open on both ends. This bladder clamps with two different clamp diameters. Kobe presses are mainly used for radial tire production.



- Krupp Autolok - these bladders are similar to the BOM bladders with the exception that the two ends have different clamping diameters. Krupp Autolok bladders are mainly used in production of radial tires.

- Standing Post – these bladders are similar to the NRM bladders with the difference being this bladder utilizes a post in the press instead of a ram and bull nose.



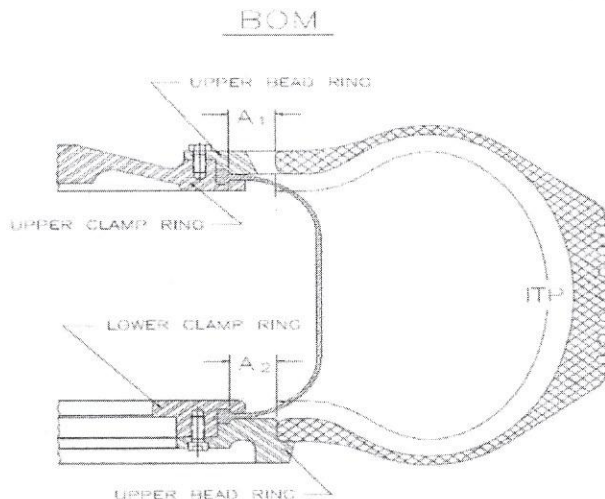
Recommended Compression and Stretch Limits

Depending on the type of bladder that is being used, compression on the bead(s) and neck of the bladder can affect the life of the bladder. Too little and the T-lock or beads will not seal and too much the bladder can fail from compression cracking. The following is the compression guidelines we recommend.

- T-Lock (Bead) 20% maximum compression
- Neck 5% compression

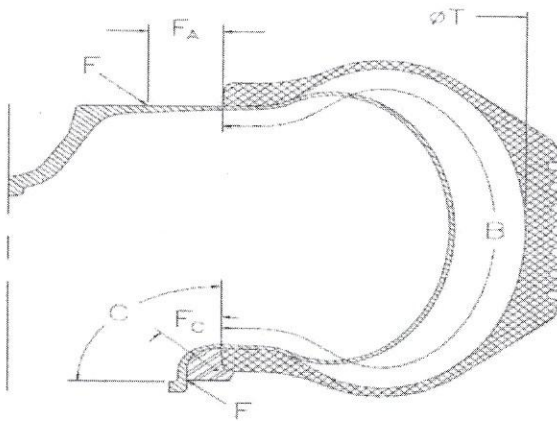
When determining stretch limits different tire types have different limits. The following stretches should be considered. Please contact PIPCO for particular sizing and stretch calculations.

- BOM Presses
 - Cross Sectional Stretch 10-20%
 - Stacking Height Stretch 7% minimum, 40% maximum
 - Bladder Area Stretch 45-75%
 - Circumferential Stretch 20-30%
 - Service Gauge at Crown .13" min. (3.3 mm) passenger, .16" min (4.1 mm) light truck, .20" min. (5.1 mm) tractor



- NRM Press
 - Cross Sectional Stretch 10-20%
 - Combined Stretch 70-90%
 - Circumferential Stretch 20-30%
 - Service Gauge at Crown .13" min. (3.3 mm) passenger,
.16" min. (4.1 mm) light truck

NRM



F TO F = BLADDER PERIPHERY (CATALOG)
B = INSIDE TIRE PERIPHERY
T = TIRE INSIDE DIA. AT CROWN

Problems and Possible Causes

This section deals only with issues that can be caused by something in the tire curing process. The following is a guide to assist in making these identifications.

- Issues
 - Flex Cracking and Tearing
 - Delamination
 - Buckling
 - Pin Hole Leaking
 - Blistering
 - Nose Cone Cracking

Now we will look at each of the issues and possible causes of each. Again, please note this is only a guideline and should not be considered as the definitive source for troubleshooting curing bladder problems.

Cracking and Tearing

Cracks and tears can have many causes. The following is a list of the most probable ones.

- Application of the bladder as related to the tire size being cured
- Fit of the bladder to the clamp rings
- Bladder coatings and inside tire paints
- Improper Stacking heights
- Lack of pre-flexing of bladder prior to first cure
- Proper shaping of the tire
- Green tire lubricants
- Exposure of UV Rays, heat and light while in storage
- Exposure to excessive heat when left in press over an extended period of time while not in production

Delamination

- Bladder being over stretched
- Bladder being attacked by water treatment chemicals or direct steam
- Excess condensation causing “after swell” from water flashing back to steam

Buckling

- Bladder not properly sized to the tire. Usually this is seen when the bladder does not stretch enough.
- Compound being softer than ideal for specific application

Pin Holes

- Pin Holes can develop for various reasons such as sharp edges or rough edges on hardware like rings and press loaders/unloaders.

Blistering

- Blistering; like pin holes, can have various causes. Look for damage from the steam inlets.

Nose Cone Cracking

- This cracking can occur if the bladder is forced into the well prior to properly warming the bladder. Other causes can be from excess force being applied by the bull nose and ram to the bladder or using the ram and bull nose to remove the bladder from the cured tire when the bladder is stuck inside.

If no cause can be determined, then other causes may be in play. By sending samples of the problem condition and supplying the following information to the bladder supplier a complete evaluation can begin.

- Inside tire diameter at centerline
- Inside tire length or toe to toe periphery
- Stacking Height if applicable
- Bladder coatings and inside tire paints used
- Any changes made to mold and press operation

Installation and Warming Up (Exercising) the Bladders

Prior to the first cure a newly installed bladder must first be exercised. This will eliminate many issues that can develop during curing and can lead to longer cycle life.

- BOM Type – Bias
 - 1) Installed so that the top bead is within .5" (12.5 mm) of top clamp ring
 - 2) Warm up (exercise) by shaping out to the perimeter of the installed mold (within the mold cavity) and deflated manually a minimum of 10 times. Installer should be present and watch closely for irregular formation, steam leaks or to coat the bladder with an additional pre-cure paint if the plant technical staff specifies one.
 - 3) For bias tires; load a green tire and adjust shaping so that the top bead slides slowly down as the press closing approaches the top bladder assembly. There should not be excessive amounts of exposed bladder visible during the closing cycle otherwise buckling will form.
For radial tires;
 - 4) Shaping pressure and hydraulic release should be set to activate by either a cam setting on the press or by PLC.
 - 5) Observe the initial cure cycle through to press close. The press operator should follow the first three (3) cure cycles closely to make adjustments to prevent either over or under shaping of subsequent cures.
 - 6) The lower bead should mirror the top bead during the shaping process as far as maintaining the same amount of exposed bladder.

- BOM Type - Radial
 - 1) The loaders will present the green tire over the assembly and lower it so that the bottom bead on the green tire sets ¼" above the bottom bead ring on the assembly.
 - 2) The bladder should be inflated out away from the ram (so that it is not cut by the spacers on the ram) and then dropping the bladder into the tire.
 - 3) The loading height for the bladder is such that allows the green tire to lower over the assembly without restrictions with the bladder slightly stretched and then the shaping height during the shaping process when the bladder drops within the green tire.
 - 4) The entire bladder should be within the green tire so that it shapes and then slightly deflates in pre-determined cycles and the last shaping "puff" then holds the tire firm while the loaders collapse and release from the top bead.
 - 5) The shaping pressure never decreases and may possibly increase when needed.

- Autoform Type –
 - 1) Install the bladder such that the bead of the bladder is firmly seated in the clamping mechanism.
 - 2) Warm up or exercise the bladder by shaping it to the mold perimeter (within the mold cavity) and deflate it manually for a minimum of 10 times. Care should be taken not to excessively inflate the bladder or "egg shaping" can occur.
 - 3) Shaping pressure should be observed and adjusted if necessary, on the next two or three tires after a bladder change.
 - 4) Never force a newly installed bladder into the well of the press prior to warming it up.

Bladder Storage

Curing bladders should remain in the containers they are shipped in with the lid closed. Light and UV Rays will damage the bladders. Bladders should be stored away from heat sources.

Summary

Please contact PIPCO personnel to assist anytime during the root cause analysis process.

Regards,

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