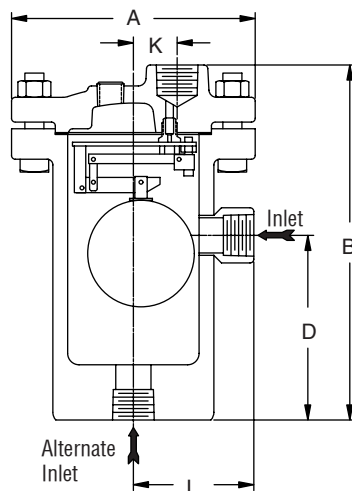


High Leverage Ball Float Type Air Relief Traps

For Low Flows at Pressures to 2,700 (186 bar) or Specific Gravity Down to 0.49



The Armstrong High Leverage Series of Air Relief traps were developed especially for venting gases from low specific gravity fluids at high pressures. They use standard Armstrong forged steel bodies with very high leverage air relief mechanisms. Available with screwed, socketweld or flanged connections.

NOTE: Models 2313-HLAR, 2316-HLAR, 2413-HLAR and 2415-HLAR are also available with cast T-316 stainless steel body and all-stainless steel internals. Consult factory.

Sour Gas Service

Forged steel and stainless steel traps can be modified to resist hydrogen sulfide stress corrosion. These modifications involve annealing the float, which will reduce the maximum working pressure of the float to about half its normal value. Consult Armstrong Application Engineering for allowable working pressures.

Physical Data—High Leverage Ball Float Type Air Relief Traps

Model No.	2313-HLAR†	2315-HLAR	2316-HLAR	2413-HLAR†	2415-HLAR	2416-HLAR	25133G-HLAR	25155G-HLAR	26155G-HLAR
Pipe Connections	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm
	1/2, 3/4, 1	1, 1-1/4, 1-1/2	1-1/2, 2	1/2, 3/4, 1	1, 1-1/4, 1-1/2	1-1/2, 2	1/2, 3/4, 1	3/4, 1, 1-1/4	1, 1-1/4
"A"	8	203	248	11-7/8	302	8-5/8	219	10-3/4	273
"B"	11-9/16	294	15-1/16	383	17-1/8	435	11-7/8	302	15
"D"	6-1/16	154	7-13/16	198	9	229	5-3/8	137	7-1/4
"G"	5-1/8	130	6-7/8	175	8-3/8	213	5-3/8	137	6-7/8
"K"	1-7/16	37	1-3/4	44	2-1/8	54	1-7/16	37	1-3/4
"L"	3-7/8	98	4-11/16	119	5-3/4	146	4	102	4-13/16
Weight, lbs (kg)	46 (21)	98 (44)	160 (73)	69 (31)	130 (59)	210 (95)	113 (51)	171 (78)	325 (147)
Maximum Allowable Pressure (Vessel Design)	1,000 psig @ 100°F (69 bar @ 38°C) 600 psig @ 750°F (41 bar @ 400°C)			1,500 psig @ 100°F (103 bar @ 38°C) 900 psig @ 850°F (62 bar @ 454°C)		1,800 psig @ 100°F (125 bar @ 38°C) 900 psig @ 900°F (62 bar @ 482°C)		2,120 psig @ 100°F (146 bar @ 38°C) 1,700 psig @ 900°F (117 bar @ 482°C)	
								2,520 psig @ 100°F (174 bar @ 38°C) 2,000 psig @ 900°F (138 bar @ 482°C)	
								3,700 psig @ 100°F (255 bar @ 38°C) 3,000 psig @ 900°F (207 bar @ 482°C)	

†Available with cast 316 stainless steel body and all stainless steel internals. Consult factory.

List of Materials

Model No.	Valve & Seat	Leverage System	Float	Body & Cap	Gasket
2313-HLAR 2315-HLAR 2316-HLAR	Stainless Steel			ASTM A105 Forged Steel	Compressed Asbestos-free
2413-HLAR 2415-HLAR 2416-HLAR				ASTM A182 Grade F22 Forged Steel	
25133G-HLAR 25155G-HLAR 26155G-HLAR					
					Spiral Wound Stainless Steel non-asbestos

2315-HLAR Maximum Operating Pressures

Specific Gravity	1.00 – 0.61		0.60 – 0.51	
Float Weight, oz (g)	9.0 (255)		7.1 (201)	
Orifice	Maximum Operating Pressure			
	psi	bar	psi	bar
3/16	825	56	600	41
5/32	1,000	69		
1/8				
3/32				

Maximum Operating Pressures of free floating lever vents with weighted floats for different orifice sizes, and the specific gravities on which they can be used.

2313-HLAR Maximum Operating Pressures

C-1000 Maximum Operating Pressures				
Specific Gravity	1.00 - 0.69		0.68 - 0.54	
Float Weight, oz (g)	6.75 (191)		4.75 (135)	
Orifice size (in)	Maximum Operating Pressure			
	psi	bar	psi	bar
1/8	1,000	69	475	33
7/64				
3/32				
5/64				
1/16				

2316-HLAR Maximum Operating Pressures

Specific Gravity	1.00 – 0.70		0.69 – 0.55	
Float Weight, oz (g)	22 (624)		15.5 (439)	
Orifice	Maximum Operating Pressure			
	psi	bar	psi	bar
7/32	1,000	69	475	33
3/16				
5/32				
1/8				
3/32				

Designs, materials, weights and performance ratings are approximate and subject to change without notice. Visit armstronginternational.com for up-to-date information.

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Maximum Operating Pressures of free floating lever vents with weighted floats for different orifice sizes, and the specific gravities on which they can be used.

2413-HLAR Maximum Operating Pressures						
Specific Gravity	1.00 – 0.90		0.89 – 0.69		0.68 – 0.54	
Float Weight, oz (g)	9.375 (266)		6.75 (191)		4.75 (135)	
Orifice size (in)	Maximum Operating Pressure					
	psi	bar	psi	bar	psi	bar
1/8	1,500	103	1,000	69	475	33
7/64						
3/32						
5/64						
1/16						

2416-HLAR Maximum Operating Pressures				
Specific Gravity	1.00 – 0.70		0.69 – 0.55	
Float Weight, oz (g)	22 (624)		15.5 (439)	
Orifice	Maximum Operating Pressure			
	psi	bar	psi	bar
7/32	1,400	96	475	33
3/16				
5/32				
1/8				
3/32				

2415-HLAR Maximum Operating Pressures						
Specific Gravity	1.00 – 0.85		0.84 – 0.61		0.60 – 0.51	
Float weight, oz (g)	13.75 (390)		9.0 (255)		7.1 (201)	
Orifice	Maximum Operating Pressure					
	psi	bar	psi	bar	psi	bar
3/16	1,200	83	825	56	600	41
5/32	1,725	119	1,150	80		
1/8	1,800	124	1,200	83		
3/32						

25133G HLAR Maximum Operating Pressures								
Specific gravity	1.00 – 0.98		0.97 – 0.90		0.89 – 0.69		0.68 – 0.54	
Float weight, oz (g)	10.5 (298)		9.375 (266)		6.75 (191)		4.75 (135)	
Orifice	Maximum Operating Pressure							
	psi	bar	psi	bar	psi	bar	psi	bar
7/64	2,125	146	1,500	103	1,000	69	475	33
3/32								
5/64								
1/16								

25155G HLAR Maximum Operating Pressures								
Specific gravity	1.00 – 0.95		0.94 – 0.86		0.85 – 0.63		0.62 – 0.52	
Float weight, oz (g)	15.4 (437)		13.75 (390)		9.25 (262)		7.1 (201)	
Orifice	Maximum Operating Pressure							
	psi	bar	psi	bar	psi	bar	psi	bar
3/16	1,350	93	1,200	83	825	58	600	41
5/32	1,925	132	1,725	119	1,200	82		
1/8	2,500	172	2,000	138	1,200	83		
3/32								

26155G HLAR Maximum Operating Pressures								
Specific gravity	1.00 – 0.95		0.94 – 0.86		0.85 – 0.63		0.62 – 0.52	
Float weight, oz (g)	15.4 (437)		13.75 (390)		9.25 (262)		7.1 (201)	
Orifice	Maximum Operating Pressure							
	psi	bar	psi	bar	psi	bar	psi	bar
3/16	1,350	93	1,200	83	825	58	600	41
5/32	1,925	132	1,725	119	1,200	82		
1/8	2,700	186	2,000	138	1,200	83		
3/32								

Air Vents

