



# High Leverage Spring-Loaded Ball Float Type Drain Traps

For Low Flows at Pressures to 255 bar and Specific Gravity Down to 0,40

The Armstrong High Leverage Series of liquid drain traps was developed especially for draining low specific gravity fluids from gases at high pressures. They use standard Armstrong forged steel bodies with very high leverage systems and spring assist.

Because of design considerations in this drain trap, it is essential that a safety factor of at least 2 be applied to the peak liquid load for sizing purposes.

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

Do not use HLS drain traps on steam service.

**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.

Model No.	Float Diameter	Unbalanced Float Weight
2313-HLS 2413-HLS 25133G-HLS	89 mm	113 g
2315-HLS 2415-HLS 25155G-HLS 26155G-HLS	102 mm	128 g
2316-HLS 2416-HLS	127 mm	170 g

Model No.	Sp. Grav.	1,00	0,95	0,90	0,85	0,80	0,75	0,70	0,65	0,60	0,55	0,50	0,45	0,40
		Maximum Operating Pressure in bar @ 38°C												
Orifice (in)		bar	bar	bar	bar	bar	bar	bar	bar	bar	bar	bar	bar	bar
2313-HLS	1/16"	69	69	69	69	69	69	69	69	69	69	69	69	43
	5/64"	69	69	69	69	69	69	69	69	69	69	65	47	29
	3/32"	69	69	69	69	69	69	69	69	69	58	46	33	20
	7/64"	69	69	69	69	69	69	69	69	63	53	44	34	25
	1/8"	69	69	69	69	69	63	56	48	41	34	26	19	11,7
2315-HLS	3/32"	69	69	69	69	69	69	69	69	69	69	69	69	66
	1/8"	69	69	69	69	69	69	69	69	69	69	62	50	38
	5/32"	69	69	69	69	69	69	69	64	56	48	40	33	25
	3/16"	69	69	69	67	61	56	50	45	39	34	28	23	17
2316-HLS	3/32"	69	69	69	69	69	69	69	69	69	69	69	69	69
	1/8"	69	69	69	69	69	69	69	69	69	69	69	69	69
	5/32"	69	69	69	69	69	69	69	69	69	69	69	69	69
	3/16"	69	69	69	69	69	69	69	69	69	69	69	69	57
2413-HLS	7/32"	69	69	69	69	69	69	69	69	69	69	61	52	43
	1/16"	103	103	103	103	103	103	103	103	103	103	98	71	43
	5/64"	103	103	103	103	103	103	103	103	101	83	65	47	29
	3/32"	103	103	103	103	103	103	97	84	71	58	46	33	20
2415-HLS	7/64"	103	103	103	101	91	82	72	63	53	44	34	25	15
	3/32"	124	124	124	124	124	124	124	124	124	124	108	87	66
	1/8"	124	124	124	124	124	122	110	98	86	74	62	50	38
	5/32"	119	111	103	95	87	80	72	64	56	48	40	33	25
2416-HLS	3/16"	83	78	72	67	61	56	50	45	39	34	28	23	17
	3/32"	110	110	110	110	110	110	110	110	110	110	110	110	110
	1/8"	110	110	110	110	110	110	110	110	110	110	110	110	110
	5/32"	110	110	110	110	110	110	110	110	110	110	110	102	84
25133G-HLS	3/16"	110	110	110	110	110	110	110	110	109	97	84	72	59
	7/32"	110	110	110	110	110	108	99	90	81	71	62	53	44
	1/16"	146	146	146	146	146	146	146	146	146	125	98	71	43
	5/64"	146	146	146	146	146	146	137	119	101	83	65	47	29
25155G-HLS	3/32"	146	146	146	135	122	110	97	84	71	58	46	33	20
	7/64"	129	120	110	101	91	82	72	63	53	44	34	25	15
	5/64"	174	174	174	174	174	174	174	174	174	174	152	123	93
	3/32"	174	174	174	174	174	174	174	170	150	129	108	87	66
26155G-HLS	1/8"	174	171	159	147	135	122	110	98	86	74	62	50	38
	5/32"	119	111	103	95	87	80	72	64	56	48	40	33	25
	3/16"	83	78	72	67	61	56	50	45	39	34	28	23	17
	5/64"	255	255	255	255	255	255	255	241	211	182	152	123	93
26155G-HLS	3/32"	255	255	255	254	233	212	191	170	150	129	108	87	66
	1/8"	183	171	159	147	135	122	110	98	86	74	62	50	38
	5/32"	119	111	103	95	87	80	72	64	56	48	40	33	25
	3/16"	83	78	72	67	61	56	50	45	39	34	28	23	17
<b>Specific Gravity</b>	<b>1,00</b>	<b>0,95</b>	<b>0,90</b>	<b>0,85</b>	<b>0,80</b>	<b>0,75</b>	<b>0,70</b>	<b>0,65</b>	<b>0,60</b>	<b>0,55</b>	<b>0,50</b>	<b>0,45</b>	<b>0,40</b>	

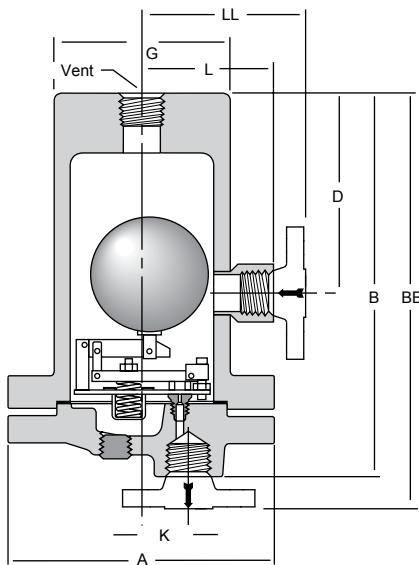
**Note:** If actual specific gravity falls between those shown in above table, use next lower. For example, if actual gravity is 0,73, use 0,70 data.

# High Leverage Spring-Loaded Ball Float Type Drain Traps

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Table LD-401-1. HLS Series List of Materials					
Model No.	Valve & Seat	Leverage System	Float	Body & Cap	Gasket
2313-HLS 2315-HLS 2316-HLS	Stainless Steel			ASTM A105 Forged Steel	Compressed Asbestos-free
2413-HLS 2415-HLS 2416-HLS 25133G-HLS 25155G-HLS 26155G-HLS				ASTM A182 Grade F22 Forged Steel	



**Figure LD-401-1.**  
High leverage ball float drain trap.

Table LD-401-2. HLS Series Physical Data in mm									
Model No.	2313-HLS †	2315-HLS	2316-HLS †	2413-HLS †	2415-HLS †	2416-HLS	25133G-HLS	25155G-HLS	26155G-HLS
Pipe Connections	15 – 20 – 25	25 – 32 – 40	40 – 50	15 – 20 – 25	25 – 32 – 40	40 – 50	15 – 20 – 25	20 – 25 – 32	25 – 32 – 40
"A"	203	248	302	219	273	318	216	263	298
"B"	295	381	435	305	379	448	362	412	613
"BB" (PN100 – 160 – 250*)	343 – 349 – 355	442 – 444 – 446	500 – 505	353 – 360 – 366	440 – 444 – 448	515 – 526	472 – 473 – 487	540 – 540 – 540	740 – 740
"D"	154	198	229	137	184	229	75	102	127
"G"	130	175	213	137	175	219	146	187	213
"K"	37	44	54	37	44	54	33	44	44
"L"	98	119	146	102	122	148	—	—	—
"LL" (PN100 – 160 – 250*)	145 – 153 – 159	171 – 173 – 175	198 – 204	149 – 156 – 162	181 – 183 – 187	211 – 244	185 – 187 – 190	214 – 214 – 214	224 – 224
Weight in kg (screwed & SW)	21	44	73	31	59	95	51	78	147
Weight in kg (PN100 – 160 – 250*)	23,0 – 25,0 – 26,0	46,0 – 50,0 – 53,0	84,2 – 88,2	35,0 – 37,0 – 38,0	60,6 – 64,6 – 67,6	104,0 – 108,0	56,0 – 57,0 – 58,0	101,0 – 102,0 – 103,0	154,2 – 160,2
Maximum Allowable Pressure (Vessel Design)††	69 bar @ 38°C 41 bar @ 400°C			103 bar @ 38°C 62 bar @ 454°C	125 bar @ 38°C 62 bar @ 482°C		146 bar @ 38°C 117 bar @ 482°C	174 bar @ 38°C 138 bar @ 482°C	255 bar @ 38°C 207 bar @ 482°C

**Note:** Available with screwed, socketweld or flanged connections.  
 † Available with cast 316 stainless steel body and all stainless steel internals. Consult factory.  
 †† May be derated depending on flange rating and type.  
 \* Other flange sizes, ratings and face-to-face dimensions are available on request.  
 All products are CE Marked according to the PED (2014/68/UE).

**All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.**