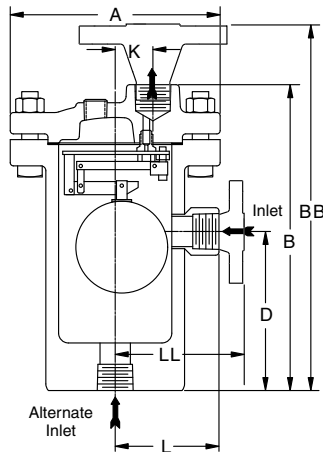




High Leverage Ball Float Type Air Relief Traps

For Low Flows at Pressures to 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.

Table AV-402-1. 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 | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| | 15 – 20 – 25 | 25 – 32 – 40 | 40 – 50 | 15 – 20 – 25 | 25 – 32 – 40 | 40 – 50 | 15 – 20 – 25 | 20 – 25 – 32 | 25 – 32 |
| "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*) | 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 (SW) | 21 | 44 | 73 | 31 | 59 | 95 | 51 | 78 | 147 |
| Weight in kg (flanged 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 @ 399°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 | 159 bar @ 38°C 131 bar @ 482°C | 255 bar @ 38°C 207 bar @ 482°C |

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

* Other flange sizes, ratings and face-to-face dimensions are available on request.

All standard products are CE Marked according to the PED (97/23/EC).

Table AV-402-2. HLAR Series 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 | |
| 25133G-HLAR 25155G-HLAR 26155G-HLAR | | | | Grade F22 Forged Steel | Spiral Wound Stainless Steel non-asbestos |

Table AV-402-3. 2315-HLAR Maximum Operating Pressures

| | | |
|-----------------------|-----------------------------------|-------------|
| Specific Gravity | 1,00 – 0,61 | 0,60 – 0,49 |
| Float weight in grams | 255 | 191 |
| Orifice size (in) | Maximum Operating Pressure in bar | |
| 3/16" | 56 | 41 |
| 5/32" | 69 | |
| 1/8" | | |
| 3/32" | | |

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

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High Leverage Ball Float Type Air Relief Traps

For Low Flows at Pressures to 186 bar or Specific Gravity Down to 0,49



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.

| Specific Gravity | 1,00 – 0,69 | 0,68 – 0,54 |
|-----------------------|-----------------------------------|-------------|
| Float weight in grams | 191 | 135 |
| Orifice size (in) | Maximum Operating Pressure in bar | |
| 1/8" | 69 | 33 |
| 7/64" | | |
| 3/32" | | |
| 5/64" | | |
| 1/16" | | |

| Specific Gravity | 1,00 – 0,61 | 0,60 – 0,49 |
|-----------------------|-----------------------------------|-------------|
| Float weight in grams | 624 | 439 |
| Orifice size (in) | Maximum Operating Pressure in bar | |
| 7/32" | 69 | 33 |
| 3/16" | | |
| 5/32" | | |
| 1/8" | | |
| 3/32" | | |

| Specific Gravity | 1,00 – 0,90 | 0,89 – 0,69 | 0,68 – 0,54 |
|-----------------------|-----------------------------------|-------------|-------------|
| Float weight in grams | 266 | 191 | 135 |
| Orifice size (in) | Maximum Operating Pressure in bar | | |
| 1/8" | 103 | 69 | 33 |
| 7/64" | | | |
| 3/32" | | | |
| 5/64" | | | |
| 1/16" | | | |

| Specific Gravity | 1,00 – 0,70 | 0,69 – 0,55 |
|-----------------------|-----------------------------------|-------------|
| Float weight in grams | 624 | 439 |
| Orifice size (in) | Maximum Operating Pressure in bar | |
| 7/32" | 103 | 33 |
| 3/16" | | |
| 5/32" | | |
| 1/8" | | |
| 3/32" | | |

| Specific Gravity | 1,00 – 0,85 | 0,84 – 0,61 | 0,60 – 0,49 |
|-----------------------|-----------------------------------|-------------|-------------|
| Float weight in grams | 390 | 255 | 191 |
| Orifice size (in) | Maximum Operating Pressure in bar | | |
| 3/16" | 83 | 56 | 41 |
| 5/32" | 119 | 80 | |
| 1/8" | 124 | 83 | |
| 3/32" | | | |

| Specific Gravity | 1,00 – 0,98 | 0,97 – 0,90 | 0,89 – 0,69 | 0,68 – 0,54 |
|-----------------------|-----------------------------------|-------------|-------------|-------------|
| Float weight in grams | 298 | 266 | 191 | 135 |
| Orifice size (in) | Maximum Operating Pressure in bar | | | |
| 1/8" | 146 | 103 | 69 | 33 |
| 7/64" | | | | |
| 3/32" | | | | |
| 5/64" | | | | |
| 1/16" | | | | |

| Specific Gravity | 1,00 – 0,95 | 0,94 – 0,86 | 0,85 – 0,63 | 0,62 – 0,50 |
|-----------------------|-----------------------------------|-------------|-------------|-------------|
| Float weight in grams | 437 | 390 | 262 | 191 |
| Orifice size (in) | Maximum Operating Pressure in bar | | | |
| 3/16" | 93 | 83 | 58 | 41 |
| 5/32" | 132 | 119 | 82 | |
| 1/8" | 172 | 138 | 83 | |
| 3/32" | | | | |

| Specific Gravity | 1,00 – 0,95 | 0,94 – 0,86 | 0,85 – 0,63 | 0,62 – 0,50 |
|-----------------------|-----------------------------------|-------------|-------------|-------------|
| Float weight in grams | 437 | 390 | 262 | 191 |
| Orifice size (in) | Maximum Operating Pressure in bar | | | |
| 3/16" | 93 | 83 | 58 | 41 |
| 5/32" | 132 | 119 | 82 | |
| 1/8" | 186 | 138 | 83 | |
| 3/32" | | | | |