







Heaps & Partners Phase Ball Valve

Phase trunnion mounted ball valves are part of the Phase valve range, designed and manufactured in Britain by Heap & Partners Ltd. Phase ball valves are a range of soft and metal seated ball valves for the Energy, Power and Industrial markets. We also have double block and bleed designs and three way designs within the range.

Phase trunnion mounted ball valves are designed to order thus ensuring they exactly match your process requirements. Whether it is for Oil & Gas Topside or Subsea, Energy including Nuclear or Industrial applications.





3" ASME 600 RTJ Subsea Ball Valves c/w Double Acting Actuator

Applications

The safe isolation of pipeline production and process equipment for applications such as: ESDV (Emergency Shut Down Valves), BDV (Blowdown Valves), SDV (Shut Down Valves), HIPPS (High Integrity Pressure Protection System), MIV (Manual Isolation Valves) and MOV (Motor Operated Valves) are critical to all of our customers and with this in mind, all our valves go through a rigorous testing process prior to manufacture and dispatch.

The use of our equipment on sour and corrosive service leads to the requirements for all materials to be supplied fully in accordance with NACE MR-01-75 (ISO 15156) and the use of corrosion resistant alloys including but not limited to: Nickel alloys, Chrome alloys (Duplex and Super Duplex), 6% Moly and also Titanium are also typical.

We have considerable expertise in the use of Inconel 625 weld overlays clad on low alloy steels such as A350-LF2 and AISI 4130, this can lead to more commercially attractive equipment which would otherwise be cast or forged in highly alloyed materials.

Our unique design with respect to the use of high integrity sealing in both elastomeric and polymeric materials is also well founded as in the use of Tungsten Carbide based metal to metal sealing technology on the ball to seat sealing surfaces. With this, our experience in the design and manufacturing processes required to obtain high pressure gas leakage within our customers' specified requirements has been developed.

Engineering Capability

Phase Ball Valves are an engineered valve solution for High Criticality Applications and are well proven in the arduous operating conditions of the UK sectors of the North Sea and beyond.

The current range of ball valve products available from Heap & Partners includes:

- Ball Valves Side and Top Entry
- Double Block & Bleed Ball Valves
- Three Way Ball Valves

The Phase range has been through extensive testing which includes:

- Extended Shell and Seat testing
- Cyclic Temperature testing
- High Pressure Gas testing
- Fire testing

The company has completed an extensive Fire Testing programme - (in accordance ISO 10497) to support the Phase range of valves in respect of seat styles, seat types and materials of construction.

The full range of ball valves are available in both metal seated and soft seated designs, our standard specification for metal to metal seats can use either HVOF or CVD Tungsten Carbide or alternative Stellite based fusion bonded coating. These offer excellent resistance to applications with Solids / Abrasive flows.

To further complement our Design and Manufacturing capability, we have also invested in our own PMI (Positive Material Identification) Gun to ensure that we can further verify the exact materials of construction, and a CMM machine for ensuring dimensional accuracy and quality control.

All valves can be manufactured in a full range of exotic materials to EN 10204 3.1 and 3.2.





Design and Analysis

Our Ball Valves are manufactured and tested in accordance with API 6D (ISO 14313) and API 6A (ISO 10423), all valves generally designed in accordance with ASME B16.34 / ASME VIII and supplied with application specific end connections which include flanges in accordance with ASME B16.5, ASME B16.47, BWE connections and hubbed connections are also available to recognised industry profiles.

The valves are designed using AutoCAD Inventor which is a 3D drafting system integrated with ANSYS Structural & Design space 9.1 for Finite Element Analysis to be undertaken where desired.

Set Up & Testing

Set-up and testing services are provided to ensure that when it comes to on-site installation, you are safe in the knowledge that the equipment we have supplied will work in your environment.

Our test facilities can accommodate valve sizes 1/2" up to 24" with pressures from vacuum and low pressure to high pressure of 22,500 psi in our custom-made bays with remote monitoring from anywhere in the world.

ts are provided with login credentials giving them control of four CCTV cameras that deliver real-time as well as information from the Data Logger displaying Hydrostatic Pressure, Low Air Test Pressure, Temperature, and Seat Leakage rate.

Manufacturing & Capability

Heap & Partners stock and manufacture a complimentary range of products to support our Phase Ball valves. Whilst the Phase product is aimed at the high pressure applications (#600 hrough #2500), we hold stocks of Floating Ball valves to cover ASME 150/300 applications.

Within the Phase brand, we also manufacture our own ranges of:

Diaphragm Valves

- LCSB Linear Compact Switchboxes
- LCA Linear Compact Actuators Wafer Check Valves
- Air Headers / Distribution Manifolds Mounting Kits for valve actuators
- and associated equipment





Options and Operating Philosophy

Our product can be tailored to meet the most exacting specifications currently available with; application specific sealing, seating and other requirements such as special overlays, end connections and these features combined with single and double piston metal seated solutions.

Heap & Partners have supplied standard equipment specified with Nylon seats and elastomeric sealing. However, we have also supplied bespoke equipment specified with polymeric seals and seats (PTFE and PEEK respectively) on critical high pressure gas applications.

Where Piping debris on particulates are specified within the process stream, the use of Tungsten Carbide coated balls and seats are required, these must meet and exceed customers leakage requirements and remain maintenance free for the lifetime of the product when specified.



Single Piston Effect Seat (SPE) The seat operates in the direction of pressure, which amplifies the differential annular area. As pressure increases, so too does the load.







Single Piston Effect Seat (SPE) cavity relieving with pressure In the reverse pressure direction (pressurised from the cavity), the single piston effect seat will pressure relieve when the reverse load overcomes the spring force and pushes the seat away











d from the ball.



Side Entry Ball valve class & size tables



| ASME 6 | 00 | | | | | | | | | | | |
|--------|-----|------|----------|------|-----|-------|-----|---------------------------|-----|---------------------------------------|--------|------|
| SIZE | RF | | A BWE | | RTJ | | В | | С | | WEIGHT | |
| Ins. | mm | ins. | mm | ins. | mm | ins. | mm | ins. | mm | ins. | Kg | lbs |
| 2″ | 292 | 11½ | 292 | 11½ | 295 | 115⁄8 | 109 | 4 ⁵ ⁄16 | 126 | 4½ | 43 | 99 |
| 3″ | 356 | 14 | 356 | 14 | 359 | 141⁄8 | 144 | 5 ¹¹ /16 | 160 | 6 ⁵ ⁄16 | 78 | 172 |
| 4″ | 432 | 17 | 432 | 17 | 435 | 171⁄8 | 157 | 6 ³ /16 | 177 | 7 | 127 | 280 |
| 6″ | 559 | 22 | 559 | 22 | 562 | 221/8 | 196 | 7 ³ ⁄4 | 247 | 9 ³ ⁄4 | 295 | 651 |
| 8″ | 660 | 26 | 660 | 26 | 664 | 261/8 | 261 | 10¼ | 298 | 11¾ | 512 | 1129 |
| 10″ | 787 | 31 | 787 | 31 | 791 | 311⁄8 | 286 | 11¼ | 328 | 12 ³ ⁄ ₄ | 820 | 1808 |
| 12″ | 838 | 33 | 838 | 33 | 841 | 331/8 | 321 | 125⁄8 | 380 | 141/8 | 1200 | 2646 |

| ASME 9 | 00 | | | | | | | | | | | |
|--------|-----|------|----------|------|-----|------------|-------|--------------------------------------|-----|----------------------------|--------|------|
| SIZE | RF | | A BWE | | RTJ | | В | | С | | WEIGHT | |
| Ins. | mm | ins. | mm | ins. | mm | ins. | mm | ins. | mm | ins. | Kg | lbs |
| 2″* | 368 | 14½ | 368 | 14½ | 371 | 145⁄8 | 118 | 4 5⁄8 | 136 | 53⁄8 | 68 | 150 |
| 3″* | 381 | 15 | 381 | 15 | 384 | 151⁄8 | 152 | 6 | 166 | 6 %16 | 86 | 190 |
| 4″* | 457 | 18 | 457 | 18 | 460 | 181⁄8 | 168 | 6 ⁵ / ₈ | 190 | 71⁄2 | 262 | 578 |
| 6″ | 610 | 24 | 610 | 24 | 613 | 241⁄8 | 226 | 8 ¹⁵ /16 | 252 | 91 ⁵ ⁄16 | 406 | 895 |
| 8″ | 737 | 29 | 737 | 29 | 740 | 29½ | 262 | 105⁄16 | 297 | 1111/16 | 891 | 1965 |
| 10″ | 838 | 33 | 838 | 33 | 841 | 331⁄8 | 280 | 111⁄16 | 370 | 14%16 | 1200 | 2646 |
| 12″ | 965 | 38 | 965 | 38 | 968 | 381⁄8 | 350 1 | 31 ³ ⁄16 | 402 | 157⁄8 | 1360 | 2998 |

ASME 1500

| | | | Α | | | | | В | с | | | |
|------|------|-------------|------|---------------------------|------|----------------|-----|--------------------------|-----|---------------------|------|------|
| SIZE | RF | | BWE | | RTJ | | | | | | WEI | GHT |
| Ins. | mm | ins. | mm | ins. | mm | ins. | mm | ins. | mm | ins. | Kg | lbs |
| 2″ | 368 | 14½ | 368 | 14½ | 371 | 145⁄8 | 118 | 45⁄8 | 203 | 8 | 75 | 166 |
| 3″ | 470 | 18½ | 470 | 18½ | 473 | 18 5⁄/8 | 154 | 6½ | 190 | 71⁄2 | 140 | 309 |
| 4″ | 546 | 21½ | 546 | 21 ½ | 549 | 215⁄8 | 190 | 7½ | 227 | 8 ¹⁵ ⁄16 | 281 | 620 |
| 6″ | 705 | 27 ¾ | 705 | 27 ³ ⁄4 | 711 | 28 | 237 | 9 ³ ⁄4 | 266 | 10½ | 514 | 1134 |
| 8″ | 832 | 32 ¾ | 832 | 32 ³ ⁄4 | 841 | 331⁄8 | 321 | 10¼ | 331 | 16¾ | 785 | 1731 |
| 10″ | 991 | 39 | 991 | 39 | 1000 | 39 ¾ | 352 | 131⁄8 | 528 | 201/8 | 1800 | 3968 |
| 12″ | 1130 | 44½ | 1130 | 441/2 | 1146 | 451/8 | 423 | 15 | 510 | 22 | 3645 | 8036 |

| ASME 1 | 500 | | | | | | | | | | | |
|--------|------|---------------------------------------|----------|---------------------------------------|------|-------|-----|--------------------------------------|-----|-----------------------------|--------|-------|
| SIZE | RF | | A BWE | | RTJ | | В | | с | | WEIGHT | |
| Ins. | mm | ins. | mm | ins. | mm | ins. | mm | ins. | mm | ins. | Kg | lbs |
| 2″ | 451 | 15 ¾ | 451 | 17 ³ ⁄4 | 454 | 171⁄8 | 118 | 4 5⁄8 | 160 | 5 ³ ⁄4 | 116 | 256 |
| 3″ | 578 | 22 ³ ⁄ ₄ | 578 | 22 ³ ⁄ ₄ | 584 | 23 | 194 | 6 ³ ⁄ ₄ | 215 | 101⁄16 | 251 | 554 |
| 4″ | 673 | 26 ½ | 673 | 26½ | 683 | 261/8 | 217 | 7½ | 256 | 10 ¹³ ⁄16 | 280 | 618 |
| 6″ | 914 | 36 | 914 | 36 | 927 | 361/2 | 302 | 9½ | 318 | 17½ | 963 | 2123 |
| 8″ | 1022 | 40¼ | 1022 | 40¼ | 1038 | 401/8 | 392 | 115⁄8 | 403 | 19 ½ | 1642 | 3620 |
| 10″ | 1270 | 50 | 1270 | 50 | 1292 | 50% | 402 | 153⁄8 | 668 | 263/8 | 3560 | 7849 |
| 12″ | 1422 | 56 | 1422 | 56 | 1445 | 561/8 | 414 | 187/16 | 627 | 32 ⁵ ⁄16 | 4610 | 10164 |

NB: Larger sizes are available on request



Double Block & Bleed class & size tables



| ASME 6 | 00 | | | | | | | | | | | - |
|--------|------|---------------------------|----------|-------------|------|----------------------------|-----|--------------------------------------|-----|-----------------------------|--------|------|
| SIZE | RF | | A BWE | | RTJ | | В | | с | | WEIGHT | |
| Ins. | mm | ins. | mm | ins. | mm | ins. | mm | ins. | mm | ins. | Kg | lbs |
| 2″* | 511 | 201⁄8 | 511 | 201⁄8 | 516 | 20 ⁵ ⁄16 | 109 | 4 ³ ⁄ ₄ | 126 | 41⁄8 | 46 | 102 |
| 3″* | 623 | 24½ | 623 | 24½ | 628 | 24 ¾ | 144 | 511⁄16 | 160 | 6¹¹⁄ 16 | 82 | 181 |
| 4″* | 756 | 29 ³ ⁄4 | 756 | 29 ¾ | 761 | 30 | 157 | 6 ³ ⁄16 | 177 | 7 | 206 | 454 |
| 6″ | 978 | 38½ | 978 | 38½ | 984 | 38 ¾ | 196 | 7 ³ / ₈ | 247 | 9 5⁄8 | 310 | 684 |
| 8″ | 1155 | 45½ | 1155 | 45½ | 1162 | 45 ¾ | 261 | 10¾ | 298 | 11¾ | 490 | 1080 |
| 10″ | 1377 | 54¼ | 1377 | 54¼ | 1384 | 54½ | 286 | 115⁄16 | 328 | 12 ¹⁵ ⁄16 | 910 | 2006 |
| 12″ | 1467 | 57 ¾ | 1467 | 57 ¾ | 1472 | 58 | 321 | 12 5⁄8 | 380 | 14 ¹⁵ ⁄16 | 1058 | 2333 |

| 00 | | | | | | | | | | | |
|------|--|---|--|--|--|--|--|--|--|--|--|
| DE | | А | | | | В | | С | | | |
| R | F | BW | /E | R | ΓJ | | | | | WEI | GHT |
| mm | ins. | mm | ins. | mm | ins. | mm | ins. | mm | ins. | Kg | lbs |
| 644 | 253/8 | 644 | 25 ³ ⁄ ₈ | 649 | 25 ⁵ /8 | 118 | 4¼ | 136 | 55⁄8 | 58 | 128 |
| 667 | 26 ¹ ⁄ ₄ | 667 | 26¼ | 672 | 26 ⁵ / ₈ | 152 | 6 | 166 | 6 %16 | 88 | 194 |
| 800 | 31½ | 800 | 31½ | 805 | 31 ¾ | 168 | 6 ⁵ ⁄8 | 199 | 71/8 | 262 | 578 |
| 1068 | 42 | 1068 | 42 | 1073 | 42 ¹ ⁄ ₄ | 226 | 8 ¾ | 252 | 9 ¹⁵ ⁄16 | 360 | 794 |
| 1290 | 50 ¾ | 1290 | 50 ³ ⁄4 | 1295 | 51 | 262 | 105⁄16 | 297 | 11 ¹¹ ⁄16 | 572 | 1261 |
| 1467 | 57 ¾ | 1467 | 57 ³ ⁄4 | 1472 | 58 | 280 | 111/16 | 370 | 14%16 | 992 | 2187 |
| 1689 | 66½ | 1689 | 66½ | 1694 | 66 ³ ⁄4 | 350 | 13¾ | 402 | 157⁄8 | 1342 | 2959 |
| | R mm 644 667 800 1068 1290 1467 1689 | RF mm ins. 644 25¾ 667 26¼ 800 31½ 1068 42 1290 50¾ 1467 57¾ 1689 66½ | RF A mm ins. mm 644 25¾ 644 667 26¼ 667 800 31½ 800 1068 42 1068 1290 50¾ 1290 1467 57¾ 1467 1689 66½ 1689 | RF A BWE mm ins. 644 25⅔ 667 26¼ 667 26¼ 800 31½ 1068 42 1290 50¾ 1467 57¾ 1689 66½ | RF A BWE R 644 253% 644 253% 649 667 2614 667 2614 672 800 311½ 800 31½ 805 1068 42 1068 42 1073 1290 50¾ 1290 50¾ 1295 1467 57¾ 1467 57¾ 1472 1689 66½ 1689 66½ 1694 | RF A BWE RTJ mm ins. mm ins. 6644 253% 6644 253% 6649 255% 6667 2614 6667 2614 672 265% 800 311/2 800 311/2 805 3134 1068 42 1068 42 1073 4214 1290 5034 1290 5034 1295 51 1467 5734 1467 5734 1467 564 1689 66½ 1689 66½ 1694 6634 | RF A BWE RTJ mm 644 253% 644 253% 649 255% 118 667 2614 667 2614 672 265% 152 800 31½ 800 31½ 805 3134 168 1068 42 1068 42 1073 42¼ 226 1290 5034 1290 5034 1295 51 262 1467 5734 1467 5734 1469 6634 350 | RF A BWE RTJ B 644 253% 644 253% 649 25% 118 4¼ 667 26¼ 667 26¼ 672 26% 152 6 800 31½ 800 31½ 805 31¾ 168 6% 1068 42 1068 42 1073 42¼ 226 8¾ 1290 50¾ 1290 50¾ 1295 51 262 10% 1467 57¾ 1467 57¾ 1472 58 280 11¼6 1689 66½ 1694 66¾ 350 13¾ | $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | $\begin{array}{c c c c c c c c c c c c c c c c c c c $ |

ASME 1500

| | | | A | | | | | В | | с | | |
|------|------|---------------------------------------|------|---------------------------------------|------|-----------------------------|-----|---------------------------|-----|---------------------|------|------|
| SIZE | RF | | BWE | | RTJ | | | | | | WEI | GHT |
| Ins. | mm | ins. | mm | ins. | mm | ins. | mm | ins. | mm | ins. | Kg | lbs |
| 2″* | 644 | 25 ³ / ₈ | 644 | 25 ³ / ₈ | 649 | 25 ⁵ /8 | 118 | 4½ | 203 | 8 | 88 | 194 |
| 3″* | 823 | 32 ³ / ₈ | 823 | 32 ³ ⁄ ₈ | 828 | 32 5⁄8 | 154 | 6½ 16 | 190 | 7½ | 122 | 269 |
| 4″* | 956 | 375⁄8 | 956 | 375⁄8 | 961 | 371/8 | 190 | 7½ | 227 | 8 ¹⁵ ⁄16 | 198 | 437 |
| 6″ | 1234 | 48%16 | 1234 | 48%16 | 1244 | 49 | 237 | 9 ⁵ ⁄16 | 266 | 10½ | 490 | 1080 |
| 8″ | 1456 | 57 ⁵ ⁄16 | 1456 | 57 ⁵ ⁄16 | 1472 | 58 | 321 | 9 5⁄8 | 331 | 131/16 | 780 | 1720 |
| 10″ | 1734 | 68¼ | 1734 | 68¼ | 1750 | 68 ¹⁵ ⁄16 | 352 | 137⁄8 | 528 | 20¾ | 1382 | 3047 |
| 12″ | 1978 | 771/8 | 1978 | 771/8 | 2006 | 79 | 423 | 165⁄16 | 510 | 201/16 | 2012 | 4436 |

| ASME 2500 | | | | | | | | | | | | |
|-----------|------|---------------------------------------|----------|---------------------------------------|------|----------------------------|-------|-----------------------------|-----|----------------------------|--------|------|
| SIZE | RF | | A BWE | | RTJ | | В | | С | | WEIGHT | |
| Ins. | mm | ins. | mm | ins. | mm | ins. | mm | ins. | mm | ins. | Kg | lbs |
| 2″ | 789 | 311⁄16 | 789 | 311⁄16 | 795 | 31 ⁵ ⁄16 | 118 | 4 5⁄8 | 160 | 65⁄16 | 160 | 353 |
| 3″ | 1012 | 39 ¹³ ⁄16 | 1012 | 39 ¹³ ⁄16 | 1022 | 40¼ | 194 | 75⁄8 | 215 | 81⁄2 | 278 | 613 |
| 4″ | 1178 | 46 ³ ⁄ ₈ | 1178 | 46 ³ / ₈ | 1195 | 47 | 217 | 8%16 | 256 | 101⁄16 | 358 | 790 |
| 6″ | 1600 | 63 | 1600 | 63 | 1622 | 631/8 | 302 | 11 ¹⁵ ⁄16 | 318 | 12½ | 802 | 1768 |
| 8″ | 1789 | 70 ⁷ ⁄16 | 1789 | 70 ½6 | 1817 | 71½ | 392 | 157⁄16 | 403 | 157⁄8 | 3050 | 6724 |
| 10″ | 2223 | 871⁄2 | 2223 | 871⁄2 | 2261 | 90 | 402 | 15 ¹³ ⁄16 | 668 | 26 ⁵ /16 | 3580 | 7893 |
| 12″ | 2489 | 98 | 2489 | 98 | 2529 | 99½ | 414 1 | 6 ⁵ /16 | 627 | 24¹¹⁄ 16 | 4442 | 9793 |

NB: Larger sizes are available on request

Heap & Partners initiative for a GREENER world

We believe that profitable growth is vital; not to simply fund business as usual but to enable it to do its part in solving some of the problems the world faces. Heap & Partners are to present our 3Ps Program. The 3Ps take into consideration People, Planet, and Profit. This three pronged initiative covers Profitable growth, minimising our impact on the Planet and helping local and overseas People with our radical volunteering program. PHASE Ball Valves





Staff understand our aims and work with the company to reduce

our carbon footprint

Invest profits into low carbon technologies

Happier staff means better productivity and retention, which equals more profits

Invest Profits into staff volunteering

scheme to help

local charities

A lower cost base means more profits ie 60% reduction in electricity consumed



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