



TECHNICAL BULLETIN

Serck Audco

Super-H

SRENTB0004-04 A4 02/17



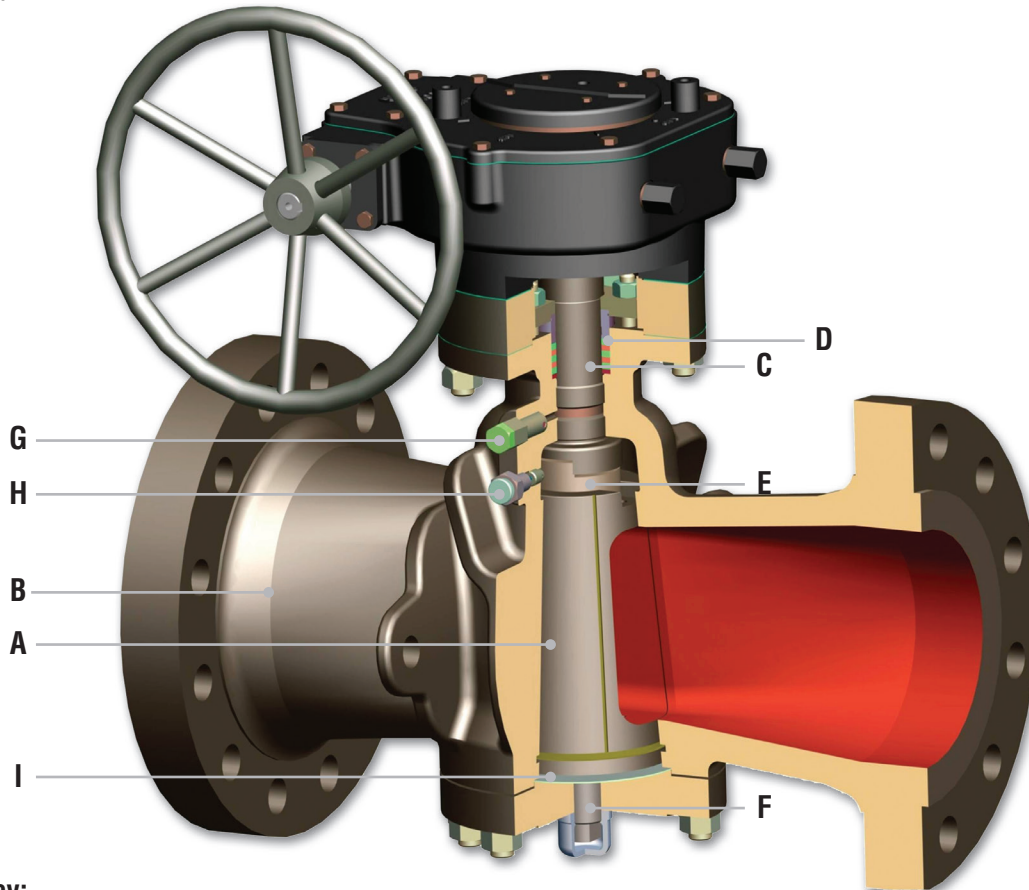
Contents

| | |
|---|----|
| Super-H Design | 3 |
| Super-H Features Explained..... | 4 |
| Why Select a Plug Valve? | 5 |
| Why Select a Super-H?..... | 5 |
| Range..... | 6 |
| Materials | 7 |
| Sample Applications | 8 |
| Figure Numbering | 10 |
| Standards and Quality Assurance | 11 |
| Pressure Testing | 12 |
| Super-H Operation | 13 |
| Accessories..... | 14 |
| Valve Data..... | 15 |
| Sealants | 36 |
| Sealants Injection Equipment..... | 38 |
| Sealants Packaging | 38 |
| Serck Audco Stem Packing Compound | 38 |
| The Products of Success | 39 |

Super-H Design

Super-H is the pressure balanced Plug Valve that Serck Audco has developed while leading the market over the last 90 years. With the most typical applications found in natural gas, upstream hydrocarbon and slurries, this well-established design has proven its suitability on a range of demanding applications when zero leakage or bubble tight shut-off and reliability of operation are of prime importance.

Basic design advantages such as metal-to-metal seats and a wide seating area, along with competitive pricing, have made plug valves the product of choice when the valve is operated in a difficult or dirty service and/or needs to be opened against full differential pressure. The robust metal-to-metal seats ensure long valve life on any service, even in presence of solid particles in the line media



Key:

| | |
|----------|--|
| A | Plug – Metal-to-metal wide seating area with Super LoMu Treatment for low torque |
| B | Body – Simple and robust design with no cavities |
| C | Stem – Anti blow out with Super LoMu Treatment |
| D | Gland – Adjustable with fugitive emission proof graphite packing |
| E | Equalizer ring – Prevents side loads for efficient stem to-plug connection |

| | |
|----------|---|
| F | Plug Loading Screw – Factory set to ensure seat tightness with low torque |
| G | Stem Packing Injector – Renews stem packing and allows full in-line maintenance |
| H | Sealant Injector – Maintains bubble tight shut-off for the life of the valve |
| I | Cover Seals – Metal for long life and increased fire safety |

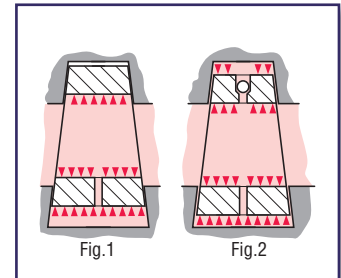
Super-H Features Explained

Plug Balancing

All Super-H valves are protected against the possibility of seizure due to taper locking.

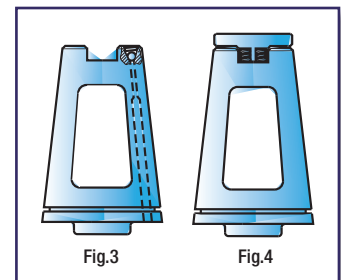
Taper locking is a phenomenon common to conventional type plug valves, caused by an imbalance of forces acting on the plug due to line pressure finding its way into the chamber at the larger end of the plug. As shown by the arrows in Fig. 1, the resultant force tends to push the plug into the taper, potentially jamming it in its tapered bore. The plug can remain locked even when line pressure is subsequently reduced.

In an attempt to combat taper locking, conventional plug valves utilise the pressure of the plug sealant, acting on the upper face of the plug, to react against the upwards force. This required frequent sealant injection maintains a smooth valve operation.



Pressure Balancing

Super-H valves incorporate pressure balanced plugs as standard, as shown in Fig. 2. The passages top and bottom with a check valve at the smaller end of the plug allow the line pressure itself to balance the forces acting on the plug, preventing any possibility of taper locking – thus maintaining trouble-free operation without the need for frequent sealant injection.



Protected Pressure Balancing

For increased reliability in service where there is a possibility of foreign particles in the media, we can incorporate as an option, the protected pressure balance system (Fig. 3). This design ensures that the balancing holes are not exposed to the line media in the plug port, providing added security compared with normal pressure balancing.

Plug Balancing Spring

This design (Fig. 4) preloads the plug to prevent taper locking during pressure and/or temperature transients. Available as an option, this also enables total flexibility in piping configuration, regardless of valve orientation.



Super LoMu®

Super LoMu is our proprietary PTFE based anti-friction treatment. All Super-H plugs and stems are Super LoMu treated to ensure our valves have the lowest possible torques over the longest possible lifetime.

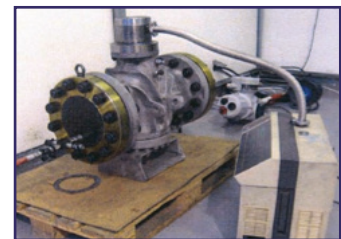
Super LoMu is a treatment of the metal surface that reduces coefficient of friction while maintaining a true metal-to-metal contact, and we can apply it to every material combination.

Super LoMu has extreme durability, as can be seen in the photograph illustrating the difference after 20,000 cycles between a conventional anti-friction treatment, compared with our Super LoMu treatment.



Fire Safety

Super-H Valves are designed to perform well when subjected to a fire, not only a standard defined fire but also the varying temperatures and durations likely in a real plant fire. The Super-H design is inherently fire-safe as it is free from plastic materials or elastomers. The plug seats are metal-to-metal, the cover seal is metal-to-metal or graphite and the stem seal is graphite. Additionally, Super LoMu will ensure operability even after exposure to fire test conditions. Super-H has been fire tested and will meet all published fire test standards worldwide, including ISO 10497 and API 6FA.



Emission Control

Industry standards are tightening the requirements on emissions levels permitted from pressurized equipment. Super-H valves are ahead of the game and are designed and tested to meet the most stringent fugitive emission requirements. Our adjustable gland design, combined with high performance graphite stem packing materials, ensures low emissions over extensive temperature and mechanical cycling, even without the use of O-rings or PTFE seals.

Why Select a Plug Valve?

Robust **metal-to-metal seats** cope well with the solid impurities that can run at high velocities in close proximity to the integral seating surfaces, particularly when the valve is opened against a high differential pressure. Plug valves are the preferred choice for bypass and equalisation on main gas pipelines by most major gas transportation companies. (Fig. 5)

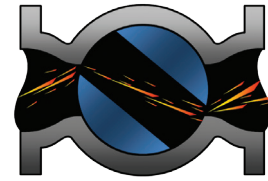


Fig.5

Robust metal-to-metal seats have also high resistance to solids objects and **lack of gap/cavity** between plug and body ensure that particles do not become trapped between plug and body thus avoiding damage to the seats while closing the valve. (Fig. 6)



Fig.6

Large seating area further enhances the Super-H resistance to erosion. The wide area maximizes the effectiveness of sealant, so that if the valve starts passing it can quickly be solved by injecting Serck Audco Sealant, restoring the valve's **bubble tight shut-off** capabilities without the need of valve overhaul. Sealant can be injected with the valve in any position and also under pressure, making the valve **in-line maintainable**. (Fig. 7)

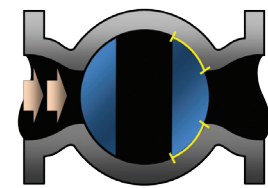


Fig.7

When the valve is open, unlike in other valve designs, the **seats are well protected** from the line media. This ensures that even if the valve is left open for long periods of time, its seating areas will not get damaged, thus ensuring good sealing and **long valve life**. (Fig. 8)

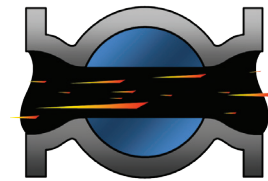


Fig.8

Why Select a Super-H?

With experience in valves manufacturing dating back to 1869 and a continuous drive for improvement, Serck Audco has all the knowledge to make the finest quality plug valve, including:

| Benefit | How It Is Achieved |
|---|---|
| <ul style="list-style-type: none"> • Certainty of zero leakage sealing down the line, even with damaged metal seats | <ul style="list-style-type: none"> • Precise seat mating procedures • Effective sealant injection system combined with wide seating areas |
| <ul style="list-style-type: none"> • Certainty of operation with low and consistent torque which is stable over long periods of time • Minimal maintenance regime | <ul style="list-style-type: none"> • Pressure balanced plug as standard, with option of Protected Pressure balance® • Super LoMu Anti Friction Treatment on plug and stem • Precise factory set plug loading |
| <ul style="list-style-type: none"> • Full in-line maintainability even under full pressure and without any need of shut down | <ul style="list-style-type: none"> • Provision for sealant injection for the seats • Provision for stem packing re-injection |
| <ul style="list-style-type: none"> • Assured sealing to atmosphere | <ul style="list-style-type: none"> • Independent stem sealing design that can meet stringent fugitive emissions requirements • All pressure seals in fire safe metal or graphite |

Range

Super-H valves are available in Regular, Short or Venturi Pattern, in accordance with API 6D, API 599 and BS 5353. The different patterns vary in regard to face-to-face dimension and port area for a given size of valve.

- Regular Pattern valves have the largest port area and the same face-to-face dimension as ball valves.
- Short Pattern valves have a reduced port area as a consequence of their compact face-to-face dimensions, which match those of gate valves, and are used on low pressure classes.
- Venturi Pattern valves have a reduced port area and a flow path approximating a Venturi shape to aid pressure recovery. They tend to be used in larger size valves.

Face-to-face and end-to-end dimensions conform to ANSI B16.10 and BS 2080.

The table shows our current production range with a coloured indication of the usually selected patterns. For many size/pressure class combinations, more than one pattern is available as indicated in the cells.

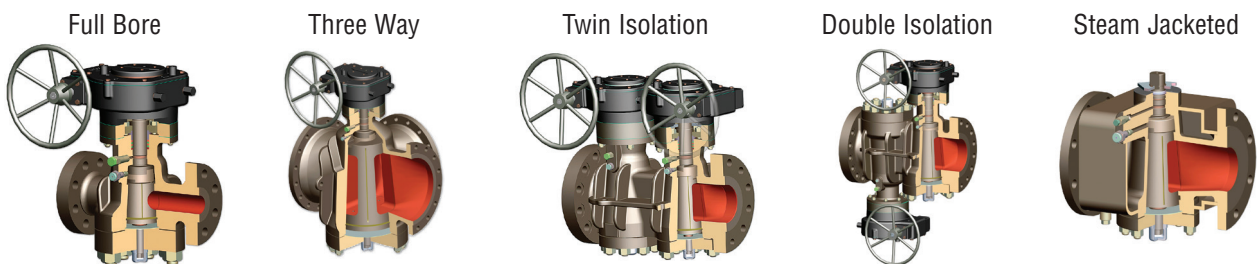
Serck Audco can make special configurations/sizes/classes and our actual range is wider than shown below, so for valves not shown in the table please contact Serck Audco with specific requirements.

| API 6D Dimensions | in | ½ | ¾ | 1 | 1½ | 2 | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 | 26 | 28 | 30 | 36 | 42 | |
|-------------------|-----|-----|-----|-----|---------|--------|-------|--------|--------|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|---|
| | mm | 15 | 20 | 25 | 40 | 50 | 80 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 600 | 650 | 700 | 750 | 900 | 1050 | |
| PN20 - ANSI 150 | S/R | S/R | S/R | S/R | S/R | S/R | S/R | S/R | S/R | S/R | S/R | S/R/V | V | V | V | V | V | V | V | V | V | V | V |
| PN50 - ANSI 300 | S/R | S/R | S/R | S/R | S/R | S/R | S/R | S/R | R/V | R/V | R/V | R/V | V | V | V | V | V | V | V | V | V | V | V |
| PN100 - ANSI 600 | R | R | R | R | R | R | R | R | R/V | R/V | R/V | R/V | R/V | R/V | R/V | R/V | V | V | V | V | V | V | V |
| PN150 - ANSI 900 | R | R | R | R | R | R | R | R | R | R | R/V | R/V | V | V | V | V | V | V | V | V | V | V | V |
| PN250 - ANSI 1500 | R | R | R | R | R | R | R | R | R | R/V | R/V | R/V | V | V | V | V | V | V | V | V | V | V | V |
| PN420 - ANSI 2500 | R | R | R | R | R | R | R | R | R | R | R | R | V | V | | | | | | | | | |
| API 2000 | | | | | | • | • | • | • | | | | | | | | | | | | | | |
| API 3000 | | | | | | • | • | • | • | | | | | | | | | | | | | | |
| API 5000 | | | | | | • | • | • | • | | | | | | | | | | | | | | |
| API 10000 | | | | | • | • | • | • | • | | | | | | | | | | | | | | |
| API 15000 | | | | | • | • | • | • | • | | | | | | | | | | | | | | |
| API 6A Dimensions | in | | | | 1 13/16 | 2 1/16 | 3 1/8 | 4 1/16 | 7 1/16 | | | | | | | | | | | | | | |
| | mm | | | | 46 | 52 | 78 | 103 | 179 | | | | | | | | | | | | | | |

| Most Common Pattern: |
|----------------------|
| Short |
| Regular |
| Venturi |
| API 6A |

Refer to individual cells for all available patterns

Serck Audco Valves also manufactures the Super-H pressure balanced Plug Valve in special configurations such as:



Other particular configurations can be considered upon request to suit particular application

Material

Serck Audco Valves has extensive experience in manufacturing our Super-H in a wide range of materials to comply with any particular application or project specification. Below are few samples of the most common material combinations:

| Service | Body / Cover | Plug | Stem / Eq Ring | Cover Bolting |
|--|--|--|--|---|
| Sweet Natural Gas and most non-aggressive services | Carbon Steel ASTM A216 WCB/WCC | ASTM A216WCB/WCC + Case Hardening | Alloy Steel ASTM A322 4140 | ASTM A193 B7 + ASTM A194 2H (B7M/2HM if NACE bolting is required) |
| Sour Services (ISO 15156 – NACE) | | ASTM A216WCB/WCC + ENP | | |
| Abrasive Services | | 17-4PH Martensitic Stainless Steel ASTM A747 Gr. Cb7Cu1 | 17-4PH Martensitic Stainless Steel ASTM A564 Ty 630 | |
| API 6A | 60K Carbon Steel ASTM A487 Gr 4 | | | |
| Low Temperature Services | Low Temp. Carbon Steel ASTM A352 LCB/LCC | ASTM A352 LCB/LCC + ENP | ASTM A322 4140 | ASTM 320 L7 + ASTM A194 7 |
| Corrosive Services | Austenitic Stainless Steel ASTM A351 CF3M/CF8M | ASTM A351 CF3M/CF8M + ENP | ASTM A564 Ty 630 | ASTM A193 B8M + ASTM A194 8M |
| Corrosive and Abrasive Services | Duplex / Super Duplex Stainless Steel ASTM A995 4A/5A | ASTM A995 4A/5A + ENP | ASTM A182 F51/F55 | UNS S32760 |
| Highly Corrosive Services | ASTM A216 WCB/WCC + Inconel 625 Overlay | ASTM A216 WCB/WCC + Inconel 625 Overlay + ENP | Inconel 718 | ASTM A193 B7 + ASTM A194 2H |
| Highly Abrasive Services | ASTM A216 WCB/WCC + Stellite Hard Facing | ASTM A216 WCB/WCC + Stellite Hard Facing | ASTM A322 4140 | |

Notes: Other Material combinations are available

Super LoMu Anti Friction Treatment (AFT) is always applied on plugs and stem to reduce friction

For small or flat parts, equivalent forged or plate grade is also widely used in lieu of castings

Super-H for Special Abrasive and Corrosive Services

Super-H plug valves are ideally suited to applications where the line media is abrasive or corrosive, even with standard materials. For very aggressive services, the internal surfaces of the valves can be hard faced or overlaid with a selection of alloys specially identified and tested by Serck Audco Valves. The choice of materials and surface treatments depends on the nature of the service. Hard facing and overlay can be applied to internal parts in four levels of increasing coverage:

- On the seating surfaces of plug and body only
- On the all surface of the body and plug tapers
- On the all surface of the body and plug tapers plus the body and plug flow bore
- On all wetted parts

The result is superior technical performance and dramatically extended valve life at an affordable cost.

We recommend that customers consider hard facing or overlay for severe applications, such as: sand entrained oil and gas production, water injection, high temperature catalyst conveying, slurry handling and transportation etc.

For very highly abrasive services, hard faced valves are also available in full bore construction.



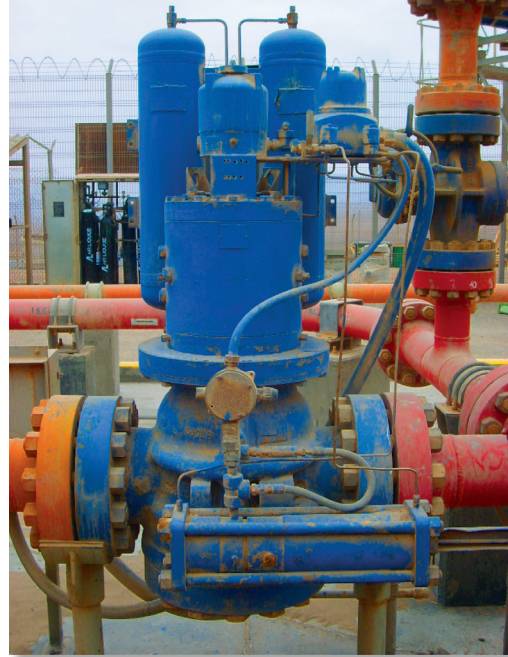
Sample Applications

Super-H Plug Valves should be selected whenever bubble tight shut-off (zero leakage) is needed and there is a concern about seat damage due to valves being opened against a full differential pressure and/or the presence of solids or impurities in the process medium.



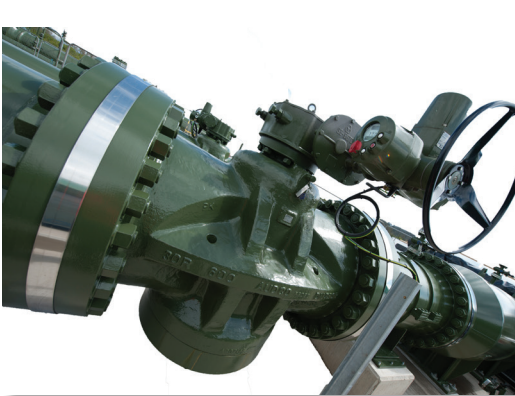
High Pressure Gas Isolation

Bubble tight shut-off on one of the more searching medias



Slurry Isolation

Extremely abrasive services, a robust valve with no cavities



Kicker, Vent and Drain on Scraper Traps

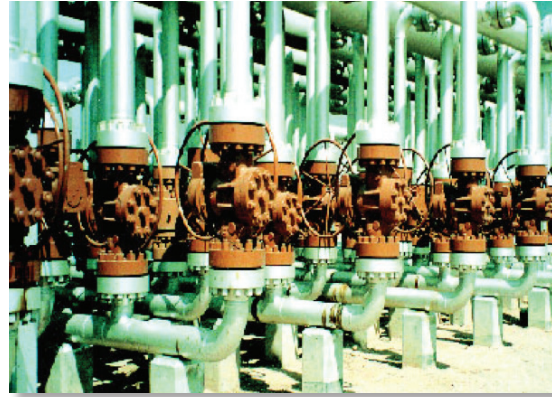
Tight shut-off combined with limited throttling capabilities

Sample Applications



Bypass Equalizing Valves

To resist the erosion caused by full differential pressure openings on a transmission line, it will seal to protect the main line valve



Flowline Manifold Isolation

Isolation ensured on high pressure dirty service



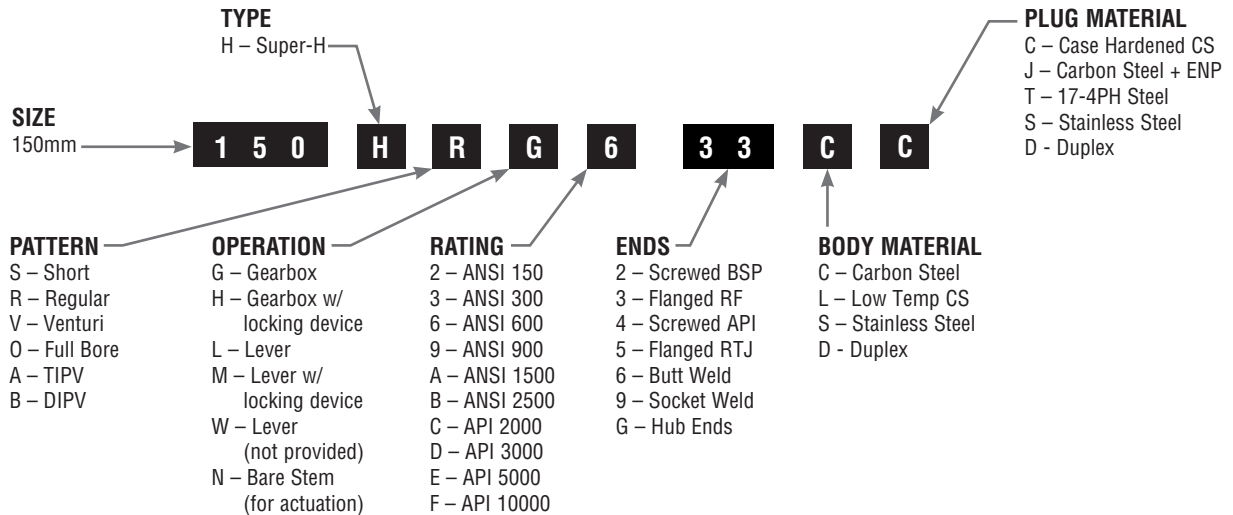
Underground Storage

Protected metal seating to resist impurities and give zero leakage even on the highest pressures

Figure Numbering

A familiarity with our figure numbering system is not necessary when specifying or ordering our valves. Providing a full description of the valve is given, our sales office will translate this into a figure number. A full description of the valve begins with 'Super-H Pressure Balanced Valve', and gives size, pressure rating, flanging details, materials of construction, application and every customer datasheet or specification available.

We give an example below with the most common coding in order to illustrate a typical figure number:



Super Duplex Super-H with Hub Ends is a typical requirement on offshore oil production platforms, and is preferred to other valves due to its compact and lightweight form and resistance to foreign particles.



Standards and Quality Assurance

Super-H valves meet the requirements of API 6D, API 599, BS5353 and ANSI B16.34 as standard. Valves to meet API 6A are also available. Typical industry standards that we are often asked to comply with are listed in the below table. Other standards can be considered against specific request.

| | |
|--|--|
| API 6D (ISO 14313) | Specification for pipeline valves |
| API 6A (ISO 10423) | Specification for wellhead equipment |
| API 599 | Metal plug valves – flanged, threaded and welding ends |
| BS 5353 | Specification for steel plug valves |
| ASME B16.34 | Valves – flanged, threaded and welding end |
| BS EN14141 | Valves for natural gas transportation in pipelines. Performance requirements and tests |
| ISO 15848-1/2 | Industrial valves. Measurement, test and qualification procedures for fugitive emissions |
| ASME B16.10 | Face-to-face and end-to-end dimensions of valves |
| BS EN 12627 BS EN 558 (formerly BS 2080) | Face-to-face, center-to-face, end-to-end, and center-to-end dimensions of flanged and butt welding end steel valves for the petroleum, petrochemical and allied industries |
| ASME B16.5 | Pipe flanges and flanged fittings |
| BS EN 12266-1 BS EN 12266-2 API 598 | Industrial valves. Testing of valves. Pressure tests, test procedures and acceptance criteria. |
| ISO 10497 | Testing of valves. Fire type-testing requirements |
| API 6FA | Specification for fire test for valves |
| BS EN ISO 15156 (formerly NACE MR0175) | Sulphide stress cracking resistant metallic material for oilfield equipment |
| BS EN ISO 9001 | Quality assurance approval standard |
| 97/23/EC | Pressure equipment directive |

The Search for Quality

The name Serck Audco Valves is synonymous with quality assured products throughout the petrochemical and process industries. This reputation has been achieved over the years by careful attention to all aspects of quality control and assurance.

The entire manufacturing process follows procedures as laid down in the Flowserve Company Quality Assurance Manual. Regular systems audits by third parties, our own QA department and customer assessments ensure these procedures are regularly revised and updated. The manual complies with BS EN ISO 9001 and API Q1 (ISO TS 29001).

Quality Assurance, Inspection and Testing

With Super-H, quality is present at every stage to ensure that the range is manufactured to a consistently high standard. All suppliers are assessed to ensure they meet our rigorous standards. Goods Received Inspection maintains performance records and vendor ratings. By using the latest technology such as CNC machining and CMM inspection, the machining accuracy on the Super-H product range is outstanding. Stringent control of all processes including hard facing and Super LoMu Treatment ensures a uniformly high-quality, low-friction product. All manufacturing and assembly processes are monitored to ensure the product is right the first time with trouble-free installation, commissioning and a very long life.

Exhaustive testing at component and final product stages ensure that every valve meets the required performance levels. The Customer Inspection Department handles all materials witnessed by the customer or third party inspectors. All tests are substantiated as a minimum by EN 10204 3.1 certificates on pressure tests, NDTs and pressure containing parts mechanical and chemical tests.

Pressure Testing

All Super-H valves are hydrostatically tested on body and seats at the following pressures before dispatch:

| Valve Rating | Maximum C.W.P. | | Body Test | | Seat Test | |
|-------------------|----------------|-------|-----------|-------|-----------|--------|
| | Bar | Psi | Bar | Psi | Bar | Psi |
| PN20 - ANSI 150 | 19.5 | 285 | 29.3 | 427.5 | 21.5 | 313.5 |
| PN50 - ANSI 300 | 51.1 | 740 | 76.7 | 1110 | 56.3 | 814 |
| PN100 - ANSI 600 | 102.1 | 1480 | 153.2 | 2220 | 112.4 | 1628 |
| ANSI 800 | 138 | 2000 | 207 | 3000 | 151.8 | 2200 |
| PN150 - ANSI 900 | 153.2 | 2220 | 229.8 | 3330 | 168.6 | 2442 |
| PN250 - ANSI 1500 | 255.3 | 3705 | 383 | 5558 | 280.9 | 4075.5 |
| PN420 - ANSI 2500 | 425.5 | 6170 | 638.3 | 9255 | 468.1 | 6787 |
| API 2000 | 138 | 2000 | 276 | 4000 | 138 | 2000 |
| API 3000 | 207 | 3000 | 414 | 6000 | 207 | 3000 |
| API 5000 | 345 | 5000 | 517 | 7500 | 345 | 5000 |
| API 10000 | 690 | 10000 | 1035 | 15000 | 690 | 10000 |

(Class 800 pressures are taken from BS 5353, API pressures are taken from API 6A, all other pressures are taken from ANSI 16.34. The test pressures from ASME B16.34 are those relevant to Carbon Steel ASTM A216 Gr.WCB)

Even though API6D generally allows a seat leakage rate while testing metal seated valves, it shall be noted that for lubricated plug valves (such as the Super-H) in accordance with API6D no seat leakage is allowed (ISO 5208 class A).

Each relevant standard defines the minimum length of time for which each test pressure is to be maintained and also the testing operations sequence, Super-H valves are tested as a minimum to API 6D, whose test durations are longer than API 598 and BS EN 12266-1

| Valve Size | | API 6D | |
|------------|---------|------------------|-----------------|
| Mm | In | Shell Test (min) | Seat Test (min) |
| ≤ 50 | ≤ 2 | 2 | 2 |
| 65 – 100 | 2 ½ - 4 | 2 | 2 |
| 150 | 6 | 5 | 5 |
| 200 – 250 | 8 – 80 | 5 | 5 |
| 300 | 12 | 15 | 5 |
| 350 – 450 | 14 – 18 | 15 | 5 |
| ≥ 500 | ≥ 20 | 30 | 5 |

Other test durations can be accommodated to satisfy a particular order specification, optional special tests are also available such as

- Low pressure air test
- High pressure gas test
- Fugitive emission testing
- Low and high temperature testing



3 1/16" API 10,000 Super-H

Super-H Operation

The pressure balance and Super-LoMu features ensure that a Super-H valve always turns with the lowest possible effort

Torque Figures

All Super-H valves manual operating mechanisms are sized to allow valve operation with a maximum effort of 350N, a gearbox is always fitted when this effort cannot be obtained by using a lever.

Figures given in the table are the maximum turning efforts at the valve stem that will occur while opening the valve against full differential pressure. The figures quoted are based on actual test data and have been chosen to give a good approximation to a normally expected operating maximum torque, with the inclusion of an adequate safety factor.

Be aware that torque figures may change between different patterns or materials of construction. Line pressure has a direct effect on turning effort - for example if the line pressure is reduced to zero, the torque at the stem will be approximately 75% of the figures shown for full differential pressure. There are many other factors which influence the valve torque, including the operating regime of the valve and the extent of any erosive or corrosive damage.

Always refer to Serck Audco Valve to know the exact torque figure of the valve supplied.

| SIZE | | 150 | | | 300 | | | 600 | | 900 | | 1500 | | 2500 |
|------|-----|------|------|------|-----|------|------|-------|------|------|-------|------|-------|------|
| mm | in | SHT | REG | VEN | SHT | REG | VEN | REG | VEN | REG | VEN | REG | VEN | REG |
| 40 | 1.½ | 95 | 95 | | 95 | 95 | | 170 | | 212 | | 272 | | 694 |
| 50 | 2 | 95 | 95 | | 95 | 95 | | 190 | | 367 | | 462 | | 694 |
| 80 | 3 | 163 | 163 | | 231 | 231 | | 340 | | 476 | | 714 | | 976 |
| 100 | 4 | 238 | 238 | | 340 | 340 | | 680 | | 707 | | 748 | | 2400 |
| 150 | 6 | 299 | 612 | | | 612 | 424 | 1088 | 680 | 1265 | | 1591 | | 2598 |
| 200 | 8 | 646 | 1000 | | | 1220 | 612 | 2040 | 1088 | 2149 | | 3400 | 3400 | 5195 |
| 250 | 10 | 1020 | 1900 | | | 1999 | 1224 | 2715 | 2040 | 3801 | 3801 | 4700 | 4700 | 5195 |
| 300 | 12 | 1496 | 2448 | 2448 | | 2448 | 1909 | 4080 | 2992 | 5501 | 3979 | 5698 | 5698 | 8990 |
| 350 | 14 | | | 2584 | | | 3808 | 4420 | 4080 | | 6800 | | 5698 | |
| 400 | 16 | | | 2584 | | | 3808 | 7004 | 4420 | | 6800 | | 10159 | |
| 450 | 18 | | | 2720 | | | 4200 | 7602 | 6038 | | 8622 | | | |
| 500 | 20 | | | 3951 | | | 5440 | 10200 | 7190 | | 12039 | | 11404 | |
| 600 | 24 | | | 4012 | | | 6000 | | 9799 | | 12702 | | 18999 | |

Above Values are in Nm, to convert to lbf multiply by 0.738

Actuators

Due to the quarter-turn nature of the valve design, Super-H valves can easily be actuated by all the industry quarter-turn actuators, including electric, pneumatic, hydraulic, electro hydraulic etc. Serck Audco has years of experience with all major actuator manufacturers. We are happy to include your choice of actuator when manufacturing our valves. Alternatively, we source actuators to your specifications from leading actuator manufacturers around the world. Our plant has the facility to test most common types of actuators while mounted on the valve; giving peace of mind for the complete assembly. When sizing an actuator, a further safety factor of at least 30% is always added to the expected operating torque figures to allow for variations in working conditions.

When selecting a valve actuator, any actuator sizing should be checked with Serck Audco Valves.

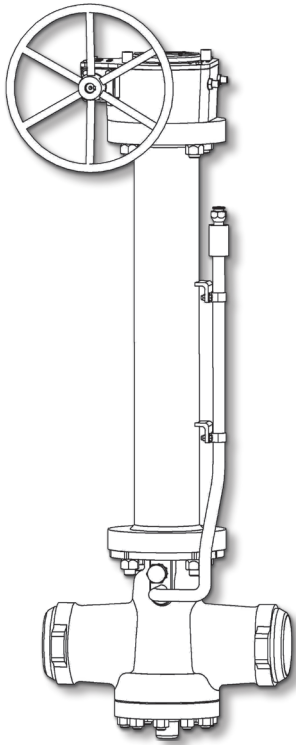


Accessories

Extension Columns

Valves for below ground operation are available with elevated gear unit mounting as shown. Extension can be made with the spindle length required to bring operator to surface. Extension columns in other configurations are available on request. Please contact Serck Audco Valves for more information.

Valve Stands



Valve stands for heavier valves when required to comply with installation procedures are available as an option.

Limit Switches

We can include limit switches on all types of valves for both visual and electronic indication of the valve position. Please specify your requirements when ordering.

Special Gearboxes

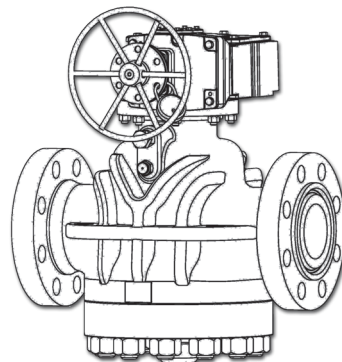
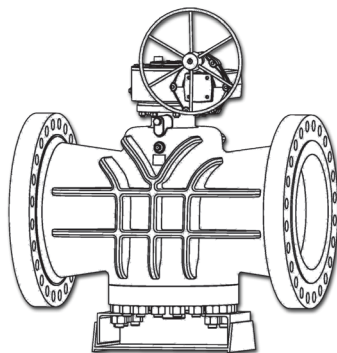
Special gearboxes can be provided, these can have different orientation drives for valves installed in difficult locations such as underground pits.

Locking Devices

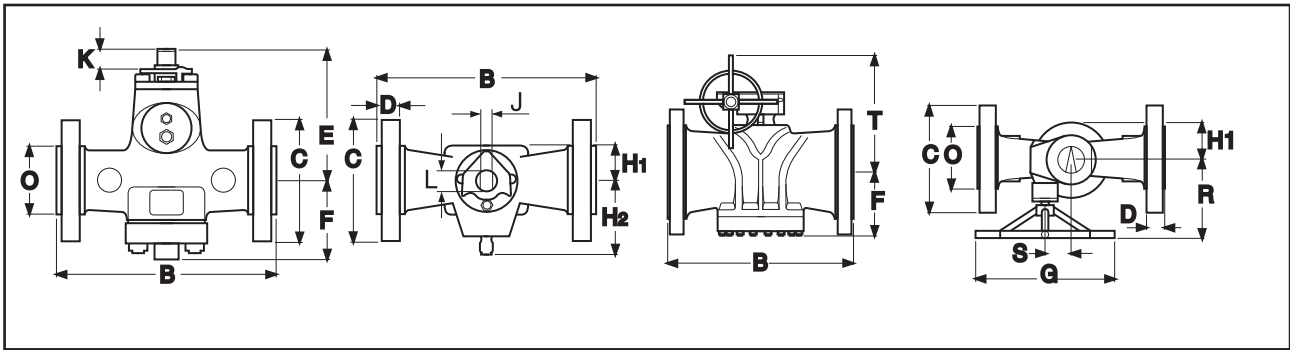
Locking and interlocking devices are available as option for all Super-H valves. They enable the gearbox or lever to be locked in either the OPEN or SHUT position. Please specify if these are required when ordering.

Other Accessories

Serck Audco is used to handling specific requirements and we are flexible to accommodate non-standard demands. Please contact Serck Audco for more information.



CLASS 150 SHORT PATTERN



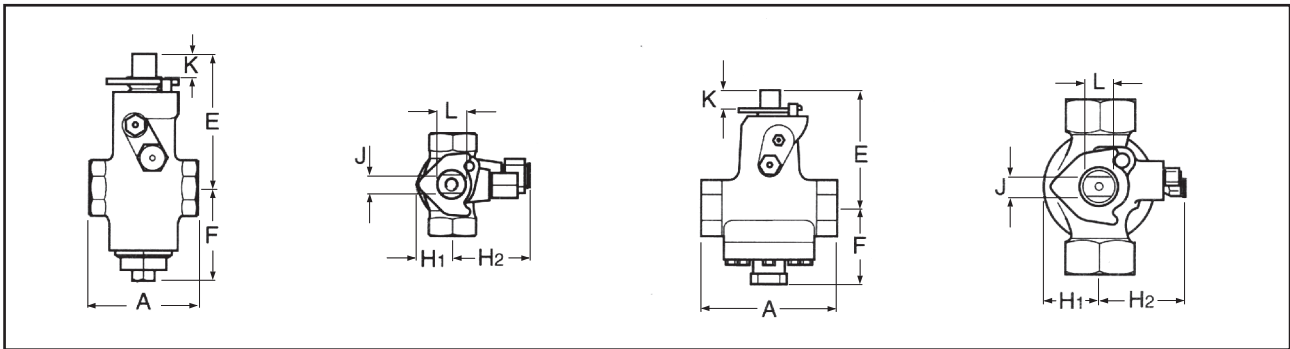
| | | 50 (2") | 80 (3") | 100 (4") | 150 (6") | 200 (8") | 250 (10") | 300 (12") |
|----|-----------------------------------|------------|------------|-------------|-------------|-------------|--------------|--------------|
| B | Face-to-face RF | 178 | 203 | 229 | 267 | 292 | 330 | 356 |
| C | Flange diameter | 153 | 191 | 229 | 280 | 343 | 407 | 483 |
| D | Total flange thickness RF | 16 | 19 | 24 | 25.4 | 28.5 | 30.5 | 32 |
| E | CL to top of stem | 158 | 195 | 205 | 250 | 390 | 457 | 420 |
| F | CL to bottom of body/cap | 121 | 161 | 179 | 209 | 225 | 255 | 282 |
| G | Hand wheel diameter | -- | -- | -- | -- | 600 | 700 | 600 |
| H1 | Body width from CL | 58 | 84 | 93 | 105 | 120 | 130 | 145 |
| H2 | Body width from CL | 111 | 120 | 134 | 134 | -- | -- | -- |
| J | Stem Across Flats | 19 | 25.3 | 25.3 | 28.5 | -- | -- | -- |
| K | Depth of flats without stop plate | 25 | 26 | 26 | 34 | -- | -- | -- |
| K | Depth of flats without stop plate | 32 | 34 | 34 | 42 | -- | -- | -- |
| L | Stem diameter | 27 | 35 | 35 | 41 | | | |
| O | Raised face diameter RF | 92 | 127 | 157.2 | 216 | 270 | 324 | 381 |
| R | CL to face of hand wheel | -- | -- | -- | -- | 390 | 461 | 390 |
| S | CL valve to CL operating spindle | -- | -- | -- | -- | 105 | 148 | 105 |
| T | CL to top of hand wheel | -- | -- | -- | -- | 625 | 715 | 655 |
| U | CL to end of fitted wrench | 494 | 684 | 684 | 933 | -- | -- | -- |
| | Weight (approx) kg | 19 | 33 | 52 | 80 | 162 | 245 | 350 |
| | Wrench Number | B4 | B5S | B5S | B7 | -- | -- | -- |

HSL233
Flanged Class 150RF
50-150mm (2-6")

HSG233
Flanged Class 150RF
150-300mm (6-12")

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

CLASS 150 REGULAR PATTERN



| | | 15 (1/2") | 20 (3/4") | 25 (1") | 40 (1 1/2") | 50 (2") |
|----|-----------------------------------|--------------|--------------|------------|----------------|------------|
| A | End-to-end Screwed / SWE | 89 | 133 | 133 | 229 | 229 |
| E | CL to top of stem | 120 | 127 | 154 | 154 | 174 |
| F | CL to bottom of body/ cap | 76 | 97 | 97 | 110 | 133 |
| H1 | Body width from CL | 31 | 36 | 42 | 57 | 72.5 |
| H2 | Body width from CL | 68 | 76 | 76 | 106 | 106 |
| J | Stem across flats | 13 | 17 | 17 | 19 | 25.3 |
| K | Depth of flats with stop plate | 18 | 24 | 24 | 26 | 26 |
| K | Depth of flats without stop plate | 25 | 30 | 30 | 35 | 35 |
| L | Stem diameter | 19 | 22.2 | 22.2 | 35 | 35 |
| U | CL to end of fitted wrench | 230 | 318 | 318 | 685 | 685 |
| Z | ID socket | 21.7 | 27.5 | 34.1 | 49 | 61.2 |
| ZA | Depth of socket | 10 | 13 | 13 | 13 | 16 |
| | Weight (approx) kg | 2.5 | 6.8 | 6.8 | 22 | 24.5 |
| | Wrench number | B8 | B9 | B9 | B5S | B5S |

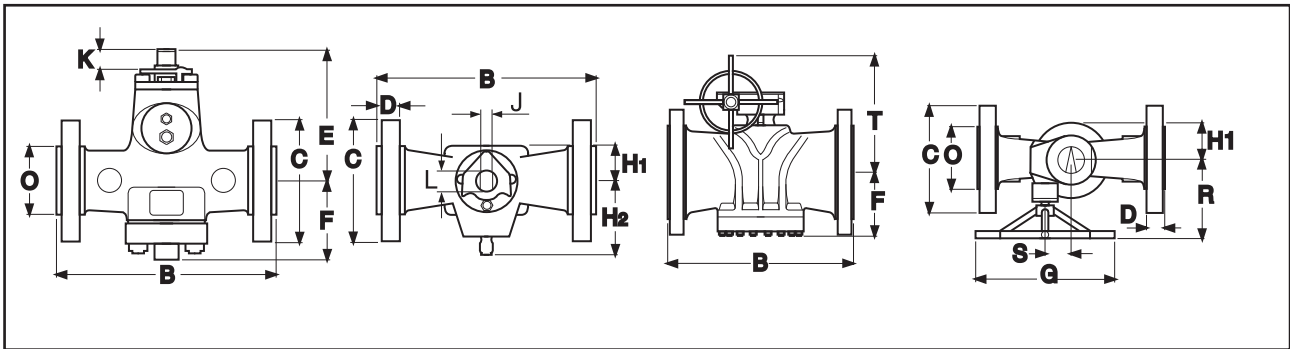
HRL222
Screwed BSP Tpr
15-50mm (1/2-2")

HRL244
Screwed API
15-50mm (1/2-2")

HRL299
Socket Weld End
15-50mm (1/2-2")

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

CLASS 150 REGULAR PATTERN



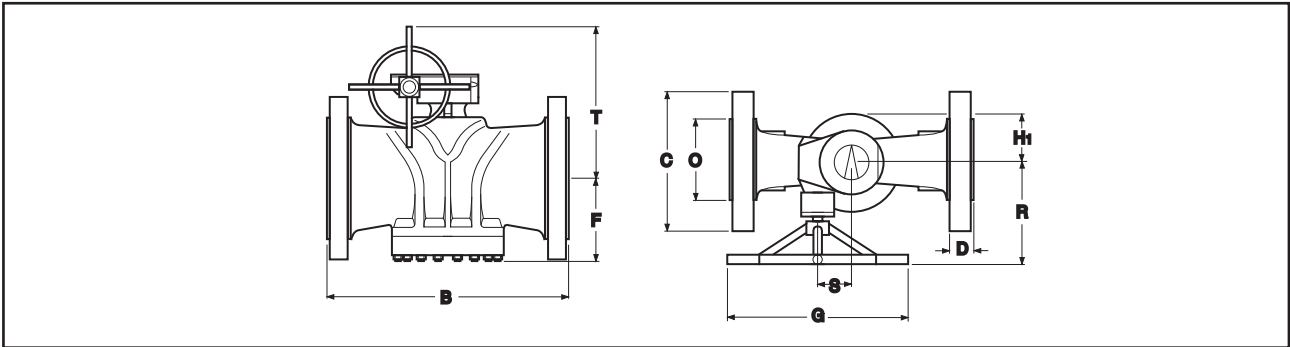
HRL233
Flanged Class 150RF
50-150mm (2-6")

HRG233
Flanged Class 150RF
150-300mm (6-12")

| | 15 (1/2") | 20 (3/4") | 25 (1") | 40 (1 1/2") | 50 (2") | 80 (3") | 100 (4") | 150 (6") | 200 (8") | 250 (10") | 300 (12") |
|--|--------------|--------------|------------|----------------|------------|------------|-------------|-------------|-------------|--------------|--------------|
| B Face-to-face RF | 108 | 117 | 139,7 | 165 | 203 | 241 | 305 | 394 | 457 | 533 | 610 |
| C Flange diameter | 88,9 | 98,6 | 108 | 127 | 153 | 191 | 229 | 280 | 343 | 407 | 483 |
| D Total flange thickness RF | 9,7 | 12,7 | 11,1 | 14,2 | 16 | 19 | 24 | 25,4 | 28,5 | 30,5 | 32 |
| E CL to top of stem | 105 | 127 | 127 | 160 | 158 | 195 | 205 | 258 | 365 | 485 | 544 |
| F CL to bottom of body/cap | 105 | 127 | 127 | 160 | 121 | 166 | 185 | 191 | 295 | 285 | 405 |
| G Hand wheel diameter | -- | -- | -- | -- | -- | -- | -- | -- | 600 | 700 | 700 |
| H1 Body width from CL | 29 | 41,5 | 41,5 | 58 | 58 | 85 | 93 | 105 | 150 | 145 | 178 |
| H2 Body width from CL | 75 | 80 | 80 | 100 | 100 | 120 | 133 | 133 | -- | -- | -- |
| J Stem across flats | 13 | 17 | 17 | 19 | 19 | 25,3 | 25,3 | 28,6 | -- | -- | -- |
| K Depth of flats with stop plate | 25 | 25 | 24 | 25 | 25 | 26 | 26 | 34 | -- | -- | -- |
| K Depth of flats without stop plate | 20 | 30 | 29 | 32 | 32 | 34 | 34 | 42 | -- | -- | -- |
| L Stem diameter | 19 | 22,2 | 22,2 | 27 | 27 | 35 | 35 | 41 | | | |
| O Raised face diameter RF | 35 | 42,9 | 50,8 | 73,2 | 92 | 127 | 157 | 216 | 270 | 324 | 381 |
| R CL to face of hand wheel | -- | -- | -- | -- | -- | -- | -- | -- | 390 | 461 | 461 |
| S CL valve to CL operating spindle | -- | -- | -- | -- | -- | -- | -- | -- | 105 | 148 | 148 |
| T CL to top of hand wheel | -- | -- | -- | -- | -- | -- | -- | -- | 590 | 760 | 820 |
| U CL to end of fitted wrench | 230 | 318 | 318 | 494 | 494 | 684 | 684 | 933 | -- | -- | -- |
| Weight (approx) kg | 5.3(FL) | 8 (FL) | 10(FL) | 19.5 (FL) | 22 | 38 | 60 | 92 | 225 | 282 | 415 |
| Wrench Number | B8 | B9 | B9 | B4 | B4 | B5S | B5S | B7 | -- | -- | -- |

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

CLASS 150 VENTURI PATTERN



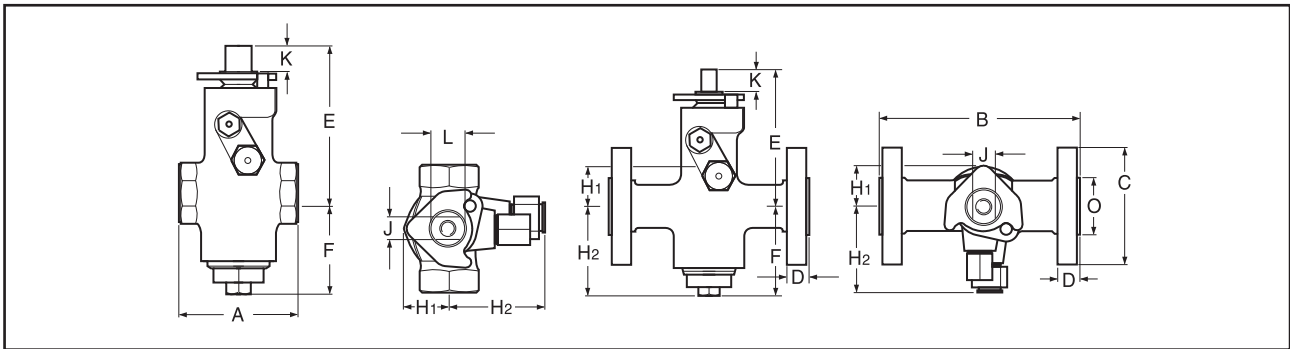
HVG233

Flanged Class 150RF
250-1050mm (10-42")

| | | 250 (10") | 300 (12") | 350 (14") | 400 (16") | 450 (18") | 500 (20") | 600 (24") | 750 (30") | 900 (36") | 100 (40") | 1050 (42") |
|-----------|----------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| B | Face-to-face RF | 533 | 610 | 686 | 762 | 864 | 914 | 1067 | 1295 | 1524 | 1850 | 1900 |
| C | Flange diameter | 406 | 483 | 534 | 597 | 635 | 698.5 | 813 | 985 | 1168.4 | 1290 | 1345 |
| D | Total flange thickness RF | 30.2 | 31.8 | 35.1 | 36.5 | 39.6 | 42.9 | 48 | 75 | 90.5 | 90.5 | 97 |
| F | CL to bottom of body/cap | 282 | 403 | 400 | 392 | 395 | 497.5 | 485.5 | 672 | 897 | 897 | 975 |
| G | Hand wheel diameter | 700 | 700 | 700 | 500 | 800 | 700 | 650 | 650 | 762 | 762 | 1000 |
| H1 | Body width from CL | 148 | 178 | 214 | 214 | 239 | 270 | 264 | 400 | 508 | 508 | 550 |
| O | Raised face diameter RJ | 324 | 381 | 413 | 470 | 533 | 584 | 693 | 857 | 1022 | 1124 | 1194 |
| R | CL to face of hand wheel | 422 | 422 | 545 | 501 | 564 | 557 | 580 | 620 | 631 | 631 | 770 |
| S | CL valve to CL operating spindle | 148 | 148 | 57.5 | 138 | 63 | 26 | 29 | 215 | 235 | 235 | 125 |
| T | CL to top of hand wheel | 738 | 837 | 800 | 672 | 833 | 898.5 | 868 | 1141 | 1132 | 1132 | 1635 |
| | Weight (approx) kg | 280 | 415 | 560 | 630 | 900 | 1160 | 1270 | 4015 | Refer to SAV | Refer to SAV | Refer to SAV |

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

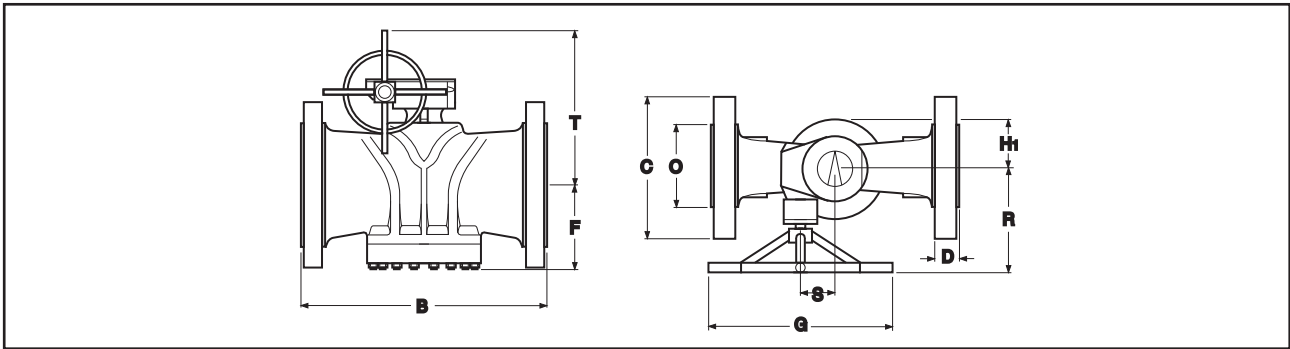
CLASS 300 SHORT PATTERN



| | 15 (1/2") | 20 (3/4") | 25 (1") | 40 (1.1/2") | 50 (2") | 80 (3") | 100 (4") | | |
|----|-----------------------------------|-----------------------|-----------------------|----------------------|-----------------------|------------|-------------|--|---|
| A | End-to-end screwed &SWE | 89 | 133 | 133 | 228 | | | HSL333 Flanged Class 300RF 40-100mm (1 1/2-4") | |
| B | Face-to-face RF | 139.7 | 152.4 | 158.8 | 190 | 216 | 283 | 305 | HSL322 Screwed BSP Tpr 15-40mm (1/2-1 1/2") |
| C | Flange diameter | 95.5 | 117.5 | 124 | 156 | 165 | 210 | 254 | |
| D | Total flange thickness RF | 14.2 | 15.8 | 17.5 | 20.6 | 22.2 | 28.6 | 31.8 | HSL344 Screwed API 15-40mm (1/2- 1 1/2") |
| E | CL to top of stem | 105 | 127 | 127 | 150 | 160 | 194 | 210 | |
| F | CL to bottom of body/cap | 76 | 97 | 97 | 105 | 125 | 153 | 110 | |
| H1 | Body width from CL | 29 | 41.5 | 41.5 | 57 | 58 | 85 | 93 | |
| H2 | Body width from CL | 70 | 80 | 80 | 100 | 110 | 120 | 134 | HSL399 Socket Weld End 15-40mm (1/2-1 1/2") |
| J | Stem across flats | 13 | 17 | 17 | 19 | 19 | 25.3 | 25.3 | |
| K | Depth of flats with stop plate | 19 | 24 | 24 | 25 | 25 | 26 | 26 | |
| K | Depth of flats without stop plate | 24 | 29 | 29 | 32 | 32 | 34 | 34 | |
| L | Stem diameter | 19 | 22.2 | 22.2 | 27 | 27 | 35 | 35 | |
| O | Raised face diameter RF | 35 | 42.9 | 50.8 | 73.2 | 92 | 127 | 157 | |
| U | CL to end of fitted wrench | 230 | 318 | 318 | 494 | 494 | 684 | 684 | |
| Z | ID of socket SWE | 21.7 | 27.4 | 34.1 | 49 | | | | |
| ZA | Depth of socket SWE | 10 | 13 | 13 | 13 | | | | |
| | Weight (approx) kg | 2.5(SC/SW) 5.3(FL) | 6.8(SC/SW) 9.0(FL) | 6.8(SC/SW) 10(FL) | 22(SC/SW) 19.5(FL) | 24 | 45 | 64 | |
| | Wrench number | B8 | B9 | B9 | B4 | B4 | B5S | B5S | |

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

CLASS 300 REGULAR PATTERN

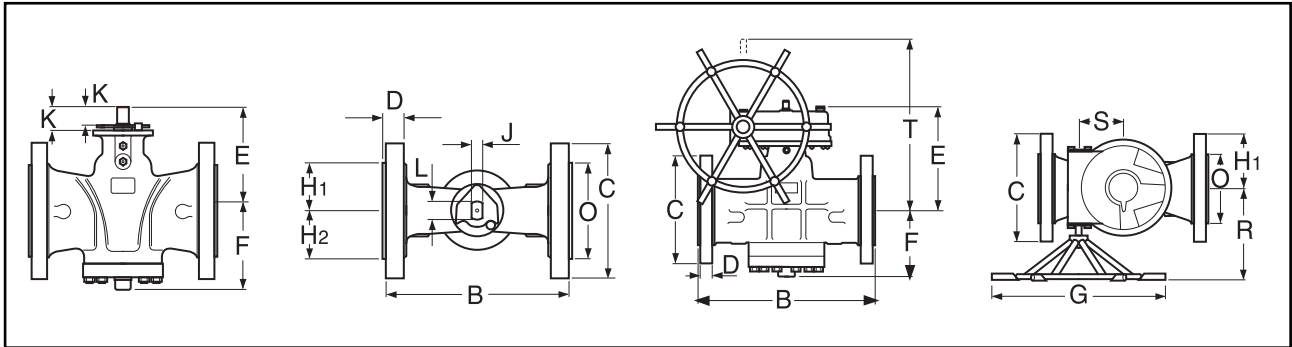


| | | 150 (6") | 200 (8") | 250 (10") | 300 (12") |
|----|----------------------------------|-------------|-------------|--------------|--------------|
| B | Face-to-face RF | 403 | 502 | 568.5 | 711.2 |
| C | Flange diameter | 318 | 381 | 445 | 521 |
| D | Total flange thickness RF | 36.5 | 41.1 | 47.8 | 50.8 |
| F | CL to bottom of body/cap | 240 | 260 | 340 | 370 |
| G | Hand wheel diameter | 600 | 600 | 700 | 787 |
| H1 | Body width from CL | 115 | 146.5 | 178 | 191 |
| O | Raised face diameter RF | 216 | 270 | 324 | 381 |
| R | CL to face of hand wheel | 390 | 422 | 461 | 575 |
| S | CL valve to CL operating spindle | 105 | 148 | 148 | 195 |
| T | CL to top of hand wheel | 580 | 640 | 770 | 850 |
| | Weight (approx) kg | 150 | 262 | 385 | 550 |

HRG333
Flanged Class 300RF
150-300mm (6-12")

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

CLASS 300 VENTURI PATTERN



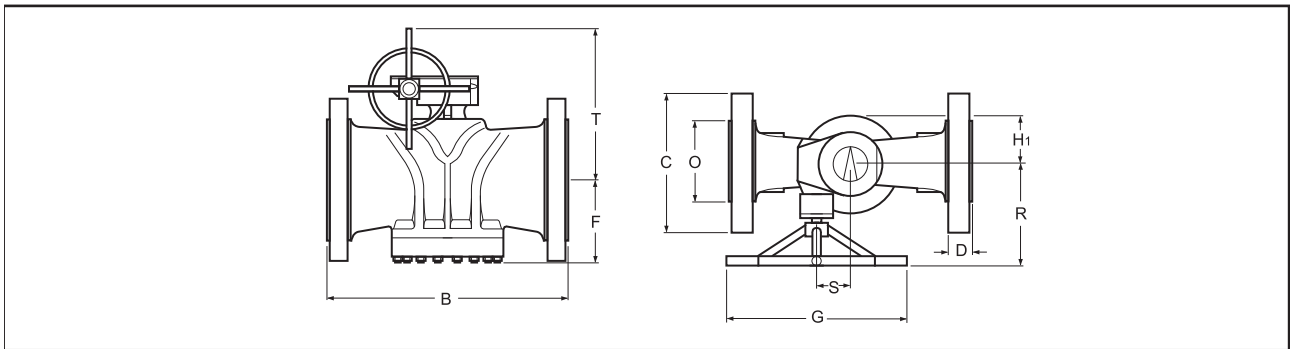
| | | 150 (6") | 150 (6") | 200 (8") | 250 (10") | 300 (12") |
|----|------------------------------------|----------|----------|----------|-----------|-----------|
| B | Face-to-face RF | 403 | 403 | 419.1 | 457 | 502 |
| C | Flange diameter | 318 | 318 | 381 | 444 | 521 |
| D | Total flange thickness RF | 36.5 | 36.5 | 41.1 | 47.6 | 50.8 |
| E | CL to top of stem | 238 | 304 | 335 | 450 | 495 |
| F | CL to bottom of body/cap | 177 | 180 | 210 | 300 | 330 |
| G | Hand wheel diameter | | 600 | 600 | 600 | 700 |
| H1 | Body width from CL | 96 | 96 | 115 | 145 | 189 |
| H2 | Body width from CL | 131.8 | - | - | - | - |
| J | Stem across flats | 28.5 | - | - | - | - |
| K | Depth of flats with stop plate | 42 | - | - | - | - |
| K | Depth of flats without stop plate | 34 | - | - | - | - |
| L | Stem diameter | 41 | - | - | - | - |
| O | Raised face diameter RF | 216 | 216 | 270 | 324 | 381 |
| R | CL to face of hand wheel | | 390 | 390 | 425 | 461 |
| S | CL valve to CL of operator spindle | | 104.8 | 104.8 | 148 | 148 |
| T | CL to top of hand wheel | | 540 | 570 | 680 | 770 |
| U | CL to end of fitted wrench | 933 | - | - | - | - |
| | Weight (approx) kg | 101 | 121 | 192 | 305 | 508 |
| | Wrench number | B7 | - | - | - | - |

HVL333
Flanged Class 300RF
150mm (6")

HVG333
Flanged Class 300RF
150-300mm (6"-12")

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

CLASS 300 VENTURI PATTERN



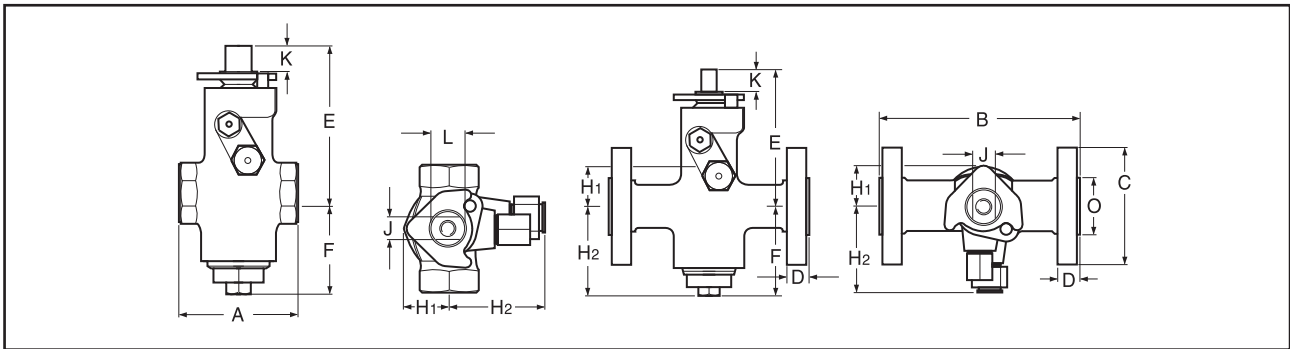
HVG333

Flanged Class 300RF
350-1050mm (14-42")

| | | 350 (14") | 400 (16") | 450 (18") | 500 (20") | 600 (24") | 750 (30") | 900 (36") | 1000 (40") | 1050 (42") |
|----|------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|
| B | Face-to-face RF | 762 | 838 | 914 | 991 | 1143 | 1397 | 1727 | 1850 | 1900 |
| C | Flange diameter | 584 | 648 | 711 | 775 | 914 | 1092 | 1270 | 1240 | 1290 |
| D | Total flange thickness RF | 54.1 | 57.2 | 60.3 | 63.5 | 70 | 92 | 104.6 | 114.8 | 119.5 |
| F | CL to bottom of body/cap | 395 | 400 | 415 | 520 | 500 | 672 | 837 | 897 | 975 |
| G | Hand wheel diameter | 787 | 775 | 775 | 700 | 700 | 700 | 610 | 1000 | 1000 |
| H1 | Body width from CL | 230 | 215 | 243 | 270 | 265 | 400 | 498 | 550 | 550 |
| O | Raised face diameter RF | 413 | 470 | 533 | 584 | 692 | 857 | 1022 | 1086 | 1137 |
| R | CL to face of hand wheel | 690 | 542 | 557 | 381 | 581 | 620 | 652 | 770 | 770 |
| S | CL valve to CL of operator spindle | 22.7 | 63 | 25.5 | 51 | 51 | 215 | 305 | 125 | 125 |
| T | CL to top of hand wheel | 835 | 825 | 900 | 915 | 895 | 1166 | 1305 | 1500 | 1635 |
| | Weight (approx) kg | 750 | 902 | 1097 | 1525 | 2060 | Refer to SAV | 9000 | Refer to SAV | Refer to SAV |

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

CLASS 600 REGULAR PATTERN



| | | 15 (1/2") | 20 (3/4") | 25 (1") | 40 (1 1/2") | 40 (1 1/2") | 50 (2") | 50 (2") |
|----|-----------------------------------|-----------------------|-----------------------|----------------------|----------------|----------------|--------------------|------------|
| A | End-to-end screwed &SWE | 89 | 133 | 133 | 228 | - | 229 | - |
| B | End-to-end butt weld valves | - | - | - | - | - | 292 | - |
| B | face-to-face RF | 165.1 | 190.5 | 216 | - | 241.3 | - | 292 |
| B | Face-to-face RJ | 163.5 | 190.5 | 216 | - | 241.3 | - | 295 |
| C | Flange diameter | 95.5 | 117.5 | 124 | - | 156 | - | 165 |
| D | Total flange thickness RF | 20.7 | 22.2 | 23.9 | - | 29.4 | - | 31.8 |
| D | Total flange thickness RJ | 19.8 | 22.2 | 23.9 | - | 29.4 | - | 33.32 |
| E | CL to top of stem | 120 | 127 | 140 | 135 | 135 | - | 175 |
| F | CL to bottom of body/cap | 90 | 97 | 97 | 105 | 105 | - | 121.5 |
| H1 | Body width from CL | 29 | 41.5 | 41.5 | 57 | 57 | 56 | 86.5 |
| H2 | Body width from CL | 86.5 | 76 | 76 | 105 | 104 | 105 | 110.8 |
| J | Stem across flats | 13 | 17 | 17 | 19 | 19 | 19 | 19 |
| K | Depth of flats with stop plate | 19 | 24 | 24 | 25 | 25 | 25 | 25 |
| K | Depth of flats without stop plate | 24 | 29 | 29 | 32 | 32 | 32 | 32 |
| L | Stem diameter | 19 | 22.2 | 22.2 | 27 | 27 | 27 | 27 |
| O | Raised face diameter RF | 35 | 42.9 | 50.8 | 73.2 | 73.2 | 92 | 92 |
| O | Raised face diameter RJ | 50.8 | 63.5 | 69.8 | 90.4 | 90.4 | 108 | 108 |
| U | CL to end of fitted wrench | 230 | 318 | 318 | 494 | 494 | 495 | 495 |
| Z | ID of socket SWE | 21.7 | 27,4 | 34,1 | 49 | - | 61.2 | - |
| ZA | Depth of socket SWE | 10 | 13 | 13 | 13 | - | 16 | - |
| | Weight (approx) kg | 2.5(SC/SW) 5.3(FI) | 6.8(SC/SW) 9.0(FI) | 6.8(SC/SW) 10(FI) | 22(SC/SW) | 19.5(FI) | 24.5(SC) 21(BW) | 21.3(FI) |
| | Wrench Number | B8 | B9 | B9 | B4 | B4 | B4 | B4 |

HRL622
Screwed BSP Tpr
15-50mm (1/2-2")

HRL633
Flanged Class 600RF
15-50mm (1/2-2")

HRL644
Screwed API
15-50mm (1/2-2")

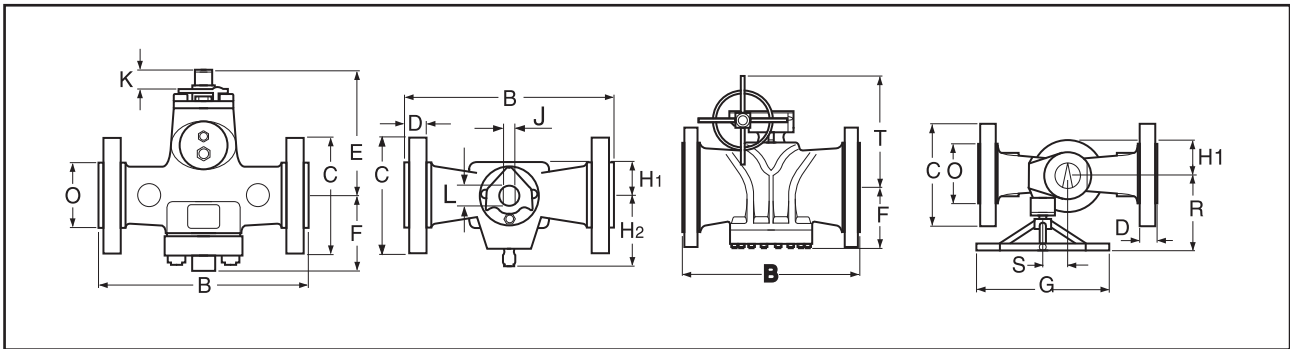
HRL655
Flanged Class 600RJ
15-50mm (1/2-2")

HRL666
Butt Weld End
50mm (2")

HRL699
Socket Weld End
15-50mm (1/2-2")

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

CLASS 600 REGULAR PATTERN



| | | 80 (3") | 100 (4") | 150 (6") | 200 (8") | 250 (10") | 300 (12") |
|----|-----------------------------------|------------------|------------------|--------------------|--------------------|--------------------|--------------------|
| B | End-to-end butt weld valves | 356 | 432 | 559 | 660 | 787 | 838 |
| B | Face-to-face RF | 356 | 432 | 559 | 660 | 787 | 838 |
| B | Face-to-face RJ | 359 | 435 | 562 | 663.5 | 791 | 841 |
| C | Flange diameter | 210 | 273 | 356 | 419 | 508 | 559 |
| D | Total flange thickness RF | 38.2 | 44.5 | 54 | 62 | 70 | 73 |
| D | Total flange thickness RJ | 39.7 | 46 | 55.7 | 63.6 | 71.4 | 74.4 |
| E | CL to top of stem | 210 | 232 | | | | |
| F | CL to bottom of body/cap | 148 | 165 | 202 | 263 | 313 | 386.5 |
| G | Hand wheel diameter | | | 600 | 700 | 775 | 700 |
| H1 | Body width from CL | 85 | 93 | 125 | 155 | 184 | 205 |
| H2 | Body width from CL | 100 | 112 | | | | |
| J | Stem across flats | 25.3 | 25.3 | | | | |
| K | Depth of flats with stop plate | 26 | 26 | | | | |
| K | Depth of flats without stop plate | 34 | 34 | | | | |
| L | Stem diameter | 35 | 35 | | | | |
| O | Raised face diameter RF | 127 | 157 | 216 | 270 | 324 | 381 |
| O | Raised face diameter RJ | 146 | 175 | 241 | 302 | 356 | 413 |
| R | CL to face of hand wheel | | | 383 | 421 | 520.5 | 514 |
| S | CL valve to CL operating spindle | | | 150 | 150 | 63 | 25 |
| T | CL to top of hand wheel | | | 702 | 774 | 834 | 836 |
| U | CL to end of fitted wrench | 922 | 922 | | | | |
| | Weight (approx) kg | 41(BW) 52(FL) | 62(BW) 80(FL) | 168(BW) 200(FL) | 330(BW) 457(FL) | 540(BW) 650(FL) | 740(BW) 810(FL) |
| | Wrench Number | B5S | B5L | - | - | - | - |

HRL633
Flanged Class 600RF
80 & 100mm (3 & 4")

HRL655
Flanged Class 600RJ
80 & 100mm (3 & 4")

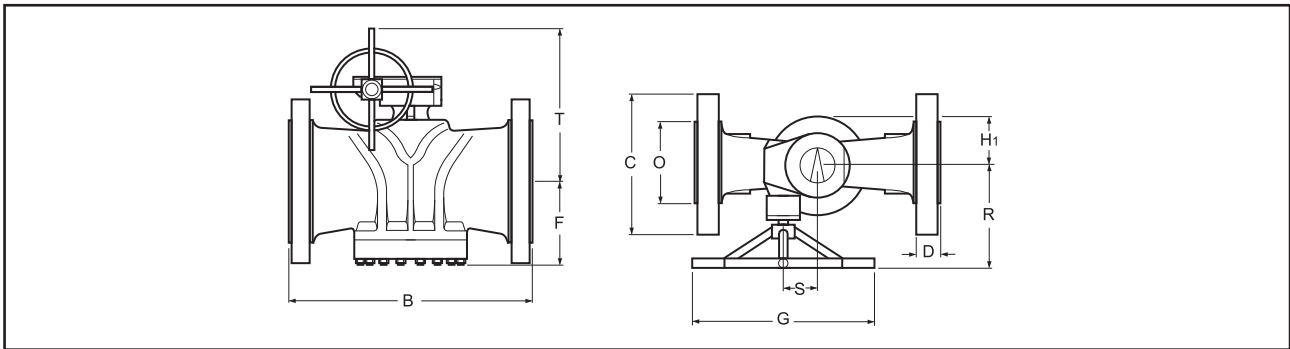
HRL666
Butt Weld End
80 & 100mm (3 & 4")

HRG633
Flanged Class 600RF
150-300mm (6-12")

HRG655
Flanged Class 600RJ
150-300mm (6-12")

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

CLASS 600 VENTURI PATTERN



| | | 150 (6") | 200 (8") | 250 (10") | 300 (12") |
|----|----------------------------------|--------------------|--------------------|--------------|--------------------|
| B | End-to-end butt weld valves | 559 | 660 | 787 | 838 |
| B | face-to-face RF | 559 | 660 | 787 | 838 |
| B | Face-to-face RJ | 562 | 664 | 791 | 841 |
| C | Flange diameter | 356 | 419 | 508 | 559 |
| D | Total flange thickness RF | 54.2 | 62 | 70 | 73 |
| D | Total flange thickness RJ | 55.7 | 63.5 | 71.5 | 74.5 |
| F | CL to bottom of body/cap | 178 | 203 | 261 | 340 |
| G | Hand wheel diameter | 600 | 600 | 600 | 650 |
| H1 | Body width from CL | 96 | 150 | 159 | 195 |
| O | Raised face diameter RF | 216 | 270 | 324 | 381 |
| O | Raised face diameter RJ | 241 | 301.8 | 356 | 413 |
| R | CL to face of hand wheel | 350 | 382 | 382 | 583 |
| S | CL valve to CL operating spindle | 105 | 148 | 148 | 58 |
| T | CL to top of hand wheel | 546 | 685 | 700 | 792 |
| | Weight (approx) kg | 127(BW) 160(FL) | 180(BW) 244(FL) | 452 (FL) | 455(BW) 633(FL) |

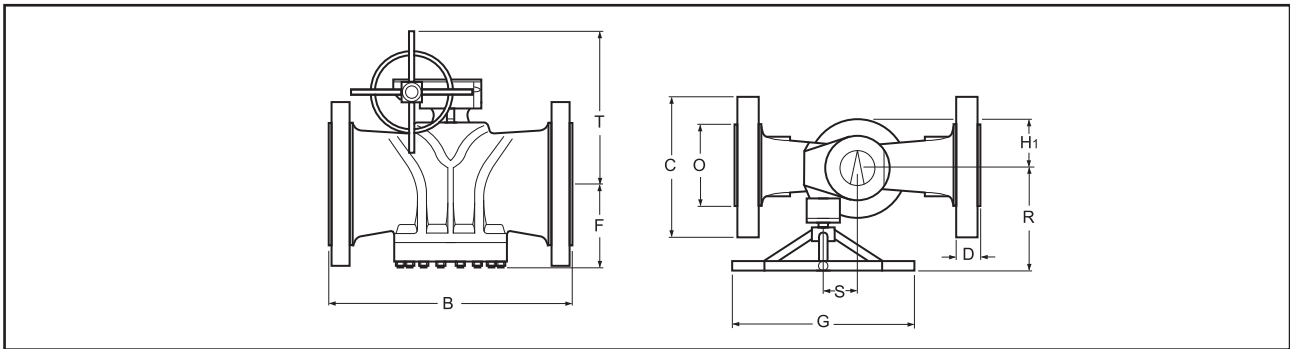
HVG633
Flanged Class 600RF
150-300mm (6-12")

HVG655
Flanged Class 600RJ
150-300mm (6-12")

HVG666
Butt Weld End
150-300mm (6-12")

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

CLASS 600 VENTURI PATTERN



HVG633

Flanged Class 600RF
350-1050mm (14-42")

HVG655

Flanged Class 600RJ
350-1050mm (14-42")

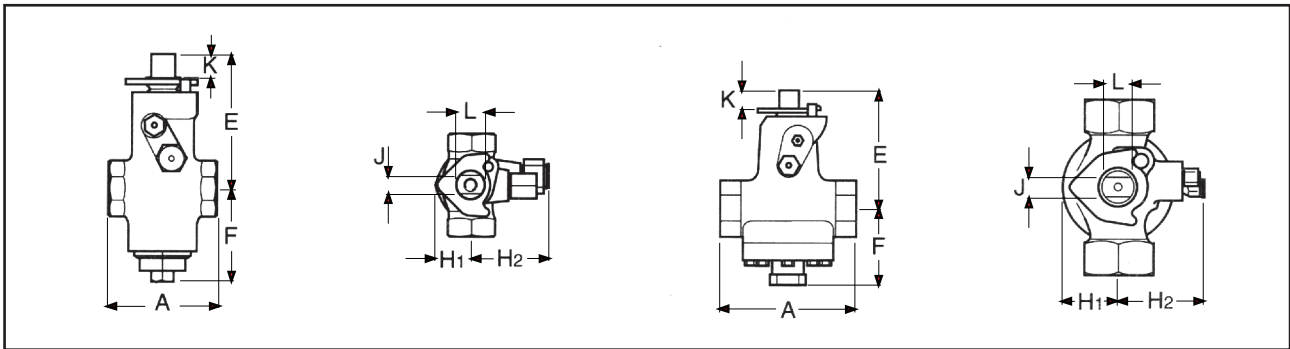
HVG666

Butt Weld End
350-1050mm (14-42")

| | | 350 (14") | 400 (16") | 450 (18") | 500 (20") | 600 (24") | 650 (26") | 750 (30") | 900 (36") | 1000 (40") | 1050 (42") |
|----|----------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|
| B | End-to-end butt weld valves | 889 | 990.6 | 1092 | 1194 | 1397 | 1448 | 1651 | 2083 | 2100 | 2100 |
| B | face-to-face RF | 889 | 990.6 | 1092 | 1194 | 1397 | 1448 | 1651 | 2083 | 2100 | 2100 |
| B | Face-to-face RJ | 892 | 994 | 1095 | 1200 | 1407 | 1461 | 1664 | 2099 | - | - |
| C | Flange diameter | 603 | 686 | 743 | 813 | 940 | 1016 | 1130 | 1315 | 1320 | 1405 |
| D | Total flange thickness RF | 76.5 | 82.6 | 89 | 95.4 | 108 | 114.4 | 120.7 | 131.4 | 166 | 175 |
| D | Total flange thickness RJ | 78 | 84.2 | 90.5 | 98.5 | 112.8 | 120.8 | 127 | 139.3 | - | - |
| F | CL to bottom of body/cap | 388 | 417 | 451 | 485 | 512 | 689 | 689 | 858 | 930 | 1035 |
| G | Hand wheel diameter | 650 | 700 | 700 | 800 | 800 | 800 | 800 | 1000 | 1000 | 1000 |
| H1 | Body width from CL | 207 | 221 | 305 | 325 | 365 | 460 | 506 | 700 | 550 | 600 |
| O | Raised face diameter RF | 413 | 470 | 533.4 | 584.2 | 692.2 | 749.3 | 857.3 | 1022.3 | 1111 | 1168 |
| O | Raised face diameter RJ | 457.2 | 508 | 574.5 | 635 | 749.3 | 810 | 917.5 | 1092.2 | - | - |
| R | CL to face of hand wheel | 583 | 512 | 630 | 610 | 610 | 610 | 610 | 820 | 770 | 770 |
| S | CL valve to CL operating spindle | 57.5 | 25.5 | 215 | 230 | 230 | 230 | 230 | 340 | 125 | 125 |
| T | CL to top of hand wheel | 817 | 877 | 915 | 1076 | 1114 | 1304 | 1304 | 1584 | 1500 | 1635 |
| | Weight (approx) kg | 880 | 1260 | 1673 | 2380 | 3140 | 4900 | 6350 | 9720 | Refer to SAV | Refer to SAV |

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

CLASS 800 REGULAR PATTERN



| | | 15 (1/2") | 20 (3/4") | 25 (1") | 40 (1 1/2") | 50 (2") |
|----|-----------------------------------|--------------|--------------|------------|----------------|------------|
| A | End-to-end Screwed / SWE | 89 | 133 | 133 | 229 | 229 |
| E | CL to bottom of stem / injector | 121 | 141 | 141 | 191 | 191 |
| f | CL to bottom of body / cap | 76 | 97 | 97 | 126 | 126 |
| H1 | Body width from CL | 31 | 41.5 | 41.5 | 63 | 63 |
| H2 | Body width from CL | 73 | 76 | 76 | 106 | 106 |
| J | stem across flats | 13 | 17 | 17 | 25.3 | 25.3 |
| K | Depth of flats with stop plate | 18 | 24 | 24 | 26 | 26 |
| K | Depth of flats without stop plate | 25 | 30 | 30 | 35 | 35 |
| L | Stem diameter | 19 | 22.2 | 22.2 | 35 | 35 |
| U | CL to end of fitted wrench | 231 | 318 | 318 | 685 | 685 |
| Z | ID socket | 21.7 | 27.5 | 34.1 | 49 | 61.2 |
| ZA | Depth of socket | 10 | 13 | 13 | 13 | 16 |
| | Weight (approx) kg | 2.5 | 6.8 | 6.8 | 22 | 24.5 |
| | Wrench number | B8 | B9 | B9 | B5S | B5S |

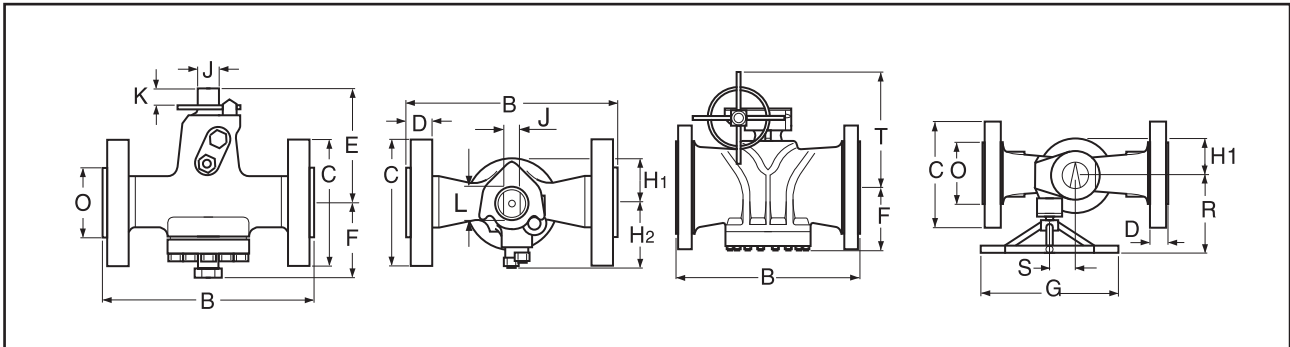
HRL822
Screwed BSP Tpr
15-50mm (1/2-2")

HRL844
Screwed API
15-50mm (1/2-2")

HRL899
Socket Weld End
15-50mm (1/2-2")

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

CLASS 900 REGULAR PATTERN



| | | 15-50 (1/2"-2") | 80 (3") | 100 (4") | 150 (6") | 200 (8") | 250 (10") | 300 (12") |
|----|-----------------------------------|---|------------|-------------|-------------|-------------|--------------|--------------|
| B | Face-to-face RF | Screwed end valve dimensions are same as Class 800 Regular pattern Flanged valve dimensions are same as Class 1500 Regular pattern | 381 | 457 | 610 | 737 | 838 | 965 |
| B | Face-to-face RJ | | 384 | 460 | 613 | 740 | 841 | 968 |
| C | Flange diameter | | 242 | 293 | 381 | 470 | 546 | 610 |
| D | Total flange thickness RF | | 44.5 | 50.9 | 62 | 69.9 | 76.4 | 85.7 |
| D | Total flange thickness RJ | | 46 | 52.4 | 63.5 | 71.4 | 77.9 | 87.2 |
| E | CL to top of stem | | 234 | 232 | -- | -- | -- | -- |
| F | CL to bottom of body/cap | | 163 | 182.3 | 231.7 | 284.3 | 283.2 | 354 |
| G | Hand wheel diameter | | -- | 600 | 700 | 700 | 700 | 700 |
| H1 | Body width from CL | | 89 | 99 | 130 | 317 | 179 | 220 |
| H2 | Body width from CL | | 130.7 | 144.2 | -- | 279 | -- | -- |
| J | Stem across flats | | 28.5 | -- | -- | -- | -- | -- |
| K | Depth of flats with stop plate | | 34 | 34 | -- | -- | -- | -- |
| K | Depth of flats without stop plate | | 42 | 42 | -- | -- | -- | -- |
| L | Stem diameter | | 41 | 41 | -- | -- | -- | -- |
| O | Raised face diameter RF | | 127 | 157.3 | 215.9 | 269.7 | 323.85 | 381 |
| O | Raised face diameter RJ | | 155 | 181 | 241 | 308 | 362 | 419 |
| R | CL to face of hand wheel | | -- | 429 | 422 | 422 | 437 | 557 |
| S | CL valve to CL operating spindle | | -- | 104.8 | 148 | 147.86 | 227 | 138 |
| T | CL to top of hand wheel | | -- | 720 | 256 | 775 | 766 | 766 |
| U | CL to end of fitted wrench | | 933 | 913 | -- | -- | -- | -- |
| | Weight (approx) kg | 78 | 125 | 274 | 470 | 860 | 1075 | |
| | Wrench number | B7 | B7 | -- | -- | -- | -- | |

HRL922
Screwed BSP Tpr
15-50mm (1/2-2")

HRL933
Flanged Class 900RF
80 & 100mm (3 & 4")

HRL944
Screwed API
15-50mm (1/2-2")

HRL955
Flanged Class 900RJ
80-100mm (3 & 4")

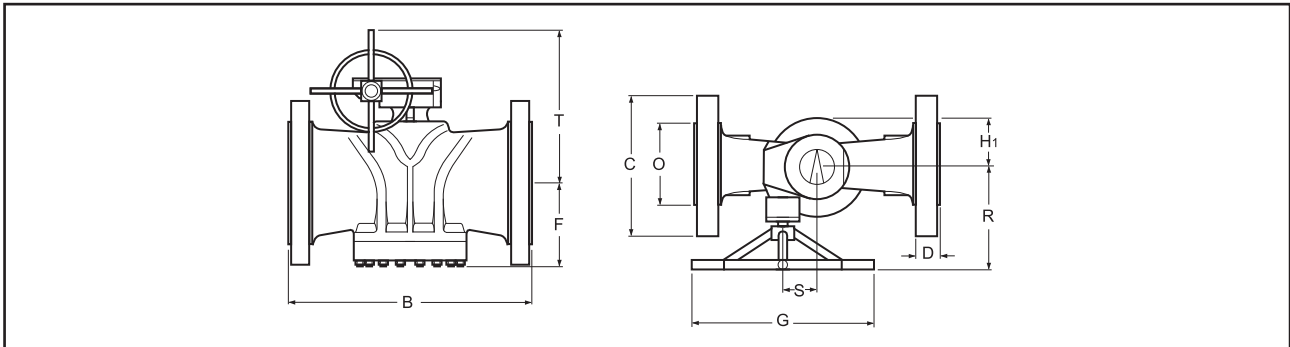
HRL999
Socket Weld End
15-50mm (1/2-2")

HRG933
Flanged Class 900RF
150-300mm (6-12")

HRG955
Flanged Class 900RJ
150-300mm (6-12")

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

CLASS 900 VENTURI PATTERN



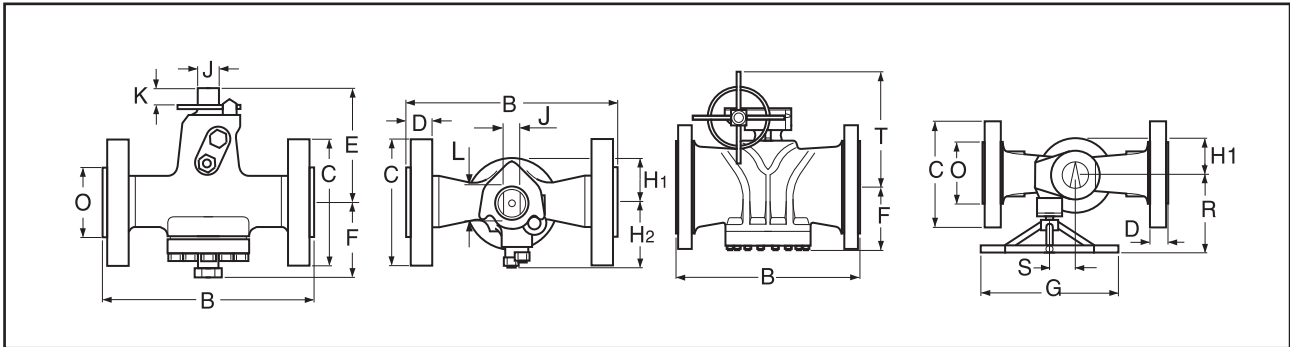
| | | 300 (12") | 350 (14") | 400 (16") | 450 (18") | 500 (20") | 600 (24") |
|----|----------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| B | Face-to-face RF | 965 | 1029 | 1130 | 1219 | 1321 | 1549 |
| B | Face-to-face RJ | 968.4 | 1038.6 | 1140 | 1231.8 | 1333.5 | 1568.5 |
| C | Flange diameter | 610 | 641.4 | 705 | 787.4 | 857.25 | 1042 |
| D | Total flange thickness RF | 85.7 | 92.3 | 95.3 | 108 | 114.3 | 146.1 |
| D | Total flange thickness RJ | 87.22 | 97 | 100.02 | 114.3 | 120.65 | 155.6 |
| F | CL to bottom of body/cap | 354 | 486 | 491 | 522 | 556 | 663 |
| G | Hand Wheel diameter | 700 | 700 | 700 | 800 | 800 | 900 |
| H1 | Body width from CL | 220 | 273 | 273 | 243 | 397 | 450 |
| O | Raised face diameter RF | 381 | 412.8 | 469.9 | 534 | 584.2 | 692.5 |
| O | Raised face diameter RJ | 419 | 466.9 | 524 | 594 | 647.7 | 771.7 |
| R | CL to Face of handwheel | 557 | 629.5 | 629.5 | 579 | 579 | 629 |
| S | CL Valve to CL Operating Spindle | 138 | 215 | 215 | 230 | 230 | 280.5 |
| T | CL Valve to Top of Hand wheel | 766 | 1003 | 1037.5 | 1178 | 1181.7 | 1304 |
| | Weight (approx) kg | 1075 | 1130 | 2050 | 2350 | 3400 | 5450 |

HVG933
Flanged Class 900RF
300-600mm (12-24")

HVG955
Flanged Class 900RJ
300-600mm (12-24")

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

CLASS 1500 REGULAR PATTERN



| | | 15 (1/2") | 20 (3/4") | 25 (1") | 40 (1.1/2") | 50 (2") | 80 (3") | 100 (4") | 150 (6") |
|----|-----------------------------------|--------------|--------------|------------|----------------|------------|------------|-------------|--------------|
| B | Face-to-face RF | 216 | 229 | 254 | 305 | 368 | 470 | 546 | 705 |
| B | Face-to-face RJ | 216 | 229 | 254 | 305 | 371 | 473 | 549 | 711 |
| C | Flange diameter | 121 | 130 | 149.5 | 178 | 216 | 267 | 311.5 | 394 |
| D | Total flange thickness RF | 28.8 | 31.8 | 34.9 | 38.2 | 44.5 | 54.2 | 60.2 | 88.9 |
| D | Total flange thickness RJ | 28.75 | 31.8 | 34.9 | 38.2 | 46 | 55.72 | 61.75 | 92 |
| E | CL to top of stem | 119 | 141 | 180 | 296 | 302 | 322 | 442 | 565 |
| F | CL to bottom of body/cap | 80 | 97 | 97 | 151 | 151 | 182 | 229 | 288 |
| G | Hand Wheel diameter | -- | -- | -- | 600 | 600 | 600 | 600 | 600 |
| H1 | Body width from CL | 29 | 41.5 | 44.5 | 105 | 105 | 114 | 111 | 152 |
| H2 | Body width from CL | 44 | 52 | 52 | 105 | 105 | 114 | 111 | 152 |
| J | Stem across flats | 13 | 17 | 17 | 28.5 | -- | -- | -- | -- |
| K | Depth of flats with stop plate | 17.6 | 22.6 | 22.6 | 34 | -- | -- | -- | -- |
| K | Depth of flats without stop plate | 25 | 30 | 30 | 42 | -- | -- | -- | -- |
| L | Stem diameter | 19 | 22.2 | 22.2 | 41/45 | 45 | 45 | 45 | 70 |
| O | Raised face diameter RF | 35 | 42.9 | 50.8 | 73.2 | 92 | 127 | 157.3 | 215.9 |
| O | Raised face diameter RJ | 60.5 | 66.6 | 71.4 | 91.9 | 123.9 | 168.2 | 193.6 | 247.7 |
| R | CL to Face of handwheel | -- | -- | -- | 340 | 340 | 340 | 422 | 593 |
| S | CL Valve to CL Operating Spindle | -- | -- | -- | 86 | 86 | 86 | 148 | 58 |
| T | CL Valve to Top of Hand wheel | -- | -- | -- | 528 | 528 | 554 | 588 | 627 |
| U | CL to end of fitted wrench | 230 | 318 | 318 | -- | -- | -- | -- | -- |
| | Weight (approx) kg | 4.5 | 8.5 | 13.5 | 40/60 | 85 | 140 | 170 | Refer to SAV |
| | Wrench number | B8 | B9 | B9 | B7 | -- | -- | -- | -- |

HRLA22
Screwed BSP Tpr *
15-50mm (1/2-2")

HRLA33
Flanged Class 1500RF
15-80mm (1/2-3")

HRLA44
Screwed API *
15-50mm (1/2-2")

HRGA33
Flanged Class 1500RF
100 & 150mm (4 & 6")

HRLA55
Flanged Class 1500RJ
15-80mm (1/2-3")

HRLA66
Butt Weld End
50mm (2")

HRLA99
Socket Weld End *
15-50mm (1/2-2")

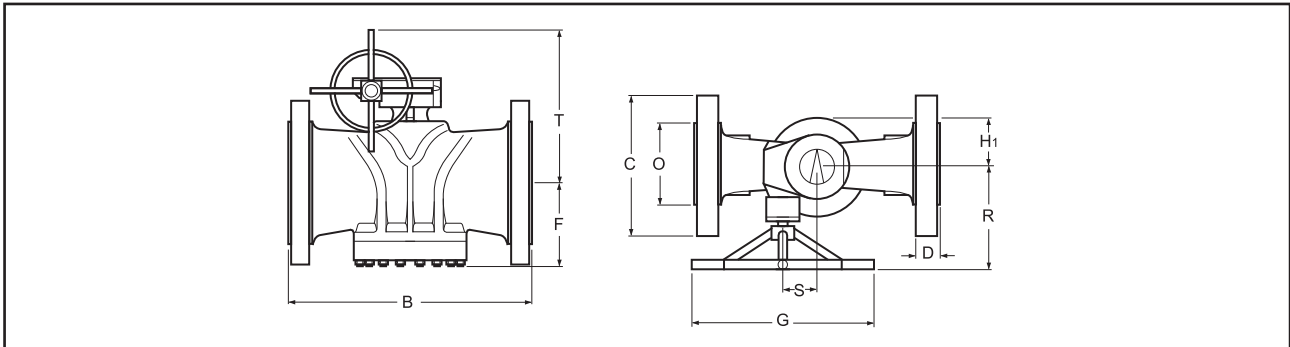
HRLA55
Flanged Class 1500RJ
100 & 150mm (4 & 6")

* For dimensions of screwed and socket weld end valves 15-50mm see Class 800 Regular Pattern

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .

Weights are approximate and for bare stem valve.

CLASS 1500 VENTURI PATTERN



| | | 150 (6") | 200 (8") | 250 (10") | 300 (12") | 350 (14") | 400 (16") | 450 (18") | 500 (20") | 600 (24") |
|----|----------------------------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| B | Face-to-face RF | 705 | 832 | 991 | 1130 | 1257 | 1384 | 1537 | 1664 | 1944 |
| B | Face-to-face RJ | 711 | 841.4 | 1000 | 1146.2 | 1276.4 | 1406.2 | 1559 | 1686 | 1972 |
| C | Flange diameter | 394 | 483 | 584.2 | 673.1 | 750 | 826 | 915 | 985 | 1169 |
| D | Total flange thickness RF | 88.9 | 98.4 | 114.4 | 130.4 | 139.8 | 152.5 | 168.4 | 184.2 | 216 |
| D | Total flange thickness RJ | 92 | 103.1 | 119.13 | 138.3 | 149.3 | 163.6 | 179.5 | 195.3 | 223.8 |
| F | CL to bottom of body/cap | 253.5 | 337 | 393 | 394 | 394 | 552 | 608 | 797 | 737 |
| G | Handwheel diameter | 700 | 700 | 700 | 700 | 700 | 800 | 800 | 800 | 800 |
| H1 | Body width from CL | 130 | 194 | 260 | 280 | 280 | 395 | 438 | 488 | 488 |
| O | Raised face diameter RF | 216 | 270 | 324 | 381 | 413 | 470 | 533 | 584 | 692 |
| O | Raised face diameter RJ | 247.7 | 317.5 | 371.4 | 438.2 | 489 | 546.1 | 612.7 | 673 | 794 |
| R | CL to face of handwheel | 421 | 536 | 619 | 619 | 619 | 609 | 609 | 703 | 703 |
| S | CL valve to CL operating spindle | 149 | 50.7 | 215 | 215 | 215 | 230 | 230 | 230 | 230 |
| T | CL to top of handwheel | 746.5 | 846 | 1026.5 | 1108.6 | 1173.7 | 1406.1 | 1495.5 | 1051 | 1121 |
| | Weight (approx) kg | 365 | 790 | 1420 | 1850 | 2610 | 3250 | Refer to SAV | Refer to SAV | Refer to SAV |

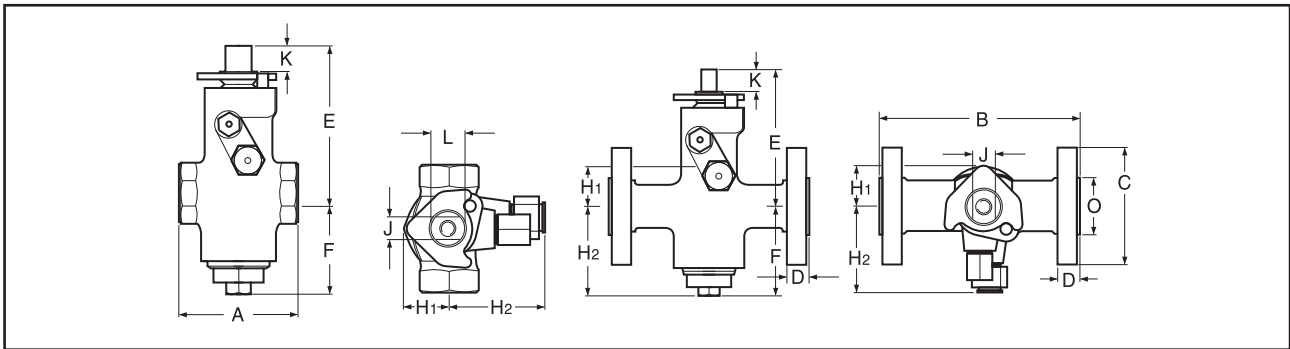
HVGA33
Flanged Class 1500RF
150-600mm (6-24")

HVGA55
Flanged Class 1500RJ
150-600mm (6-24")

HVGA66
Butt Weld End
150-600mm (6-24")

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

CLASS 2500 REGULAR PATTERN



| | 15 | 20 | 25 | 40 | |
|----|-----------------------------------|--------|--------|-------|-------|
| A | End-to-end screwed valves | 89 | 133 | 308 | -- |
| B | Face-to-face RF | 264 | 273 | 308 | 384 |
| B | Face-to-face RJ | 264 | 273 | 308 | 387 |
| C | Flange diameter | 133.5 | 139.7 | 160 | 203.5 |
| D | Total flange thickness RF | 36.6 | 38.2 | 41.4 | 50.9 |
| D | Total flange thickness RJ | 36.6 | 38.2 | 41.4 | 52.4 |
| E | CL to top of stem | 120 | 141 | 141 | -- |
| F | CL to bottom of body/cap | 76.5 | 97 | 97 | 189 |
| H1 | Body width from CL | 34 | 46.5 | 46.5 | -- |
| H2 | Body width from CL | 69.3 | 76.8 | 76.8 | -- |
| J | Stem across flats | 13 | 17 | 17 | -- |
| K | Depth of flats with stop plate | 19 | 24 | 24 | -- |
| K | Depth of flats without stop plate | 25 | 30 | 30 | -- |
| L | Stem diameter | 19 | 22.2 | 22.2 | -- |
| O | Raised face diameter RF | 35 | 42.9 | 50.8 | 73.2 |
| O | Raised face diameter RJ | 65 | 73.2 | 82.6 | 114.3 |
| U | CL to end of fitted wrench | 230 | 318 | 318 | 685 |
| | Weight | 2.5/13 | 6.8/18 | 17/22 | 47/73 |
| | Wrench number | B8 | B9 | B9 | B5S |

HRLB22
Screwed BSP Tpr
15-25mm (½-1")

HRLB33
Flanged Class 2500RF
15-40mm (½-3/4")

HRLB44
Screwed API
15-25mm (½-1")

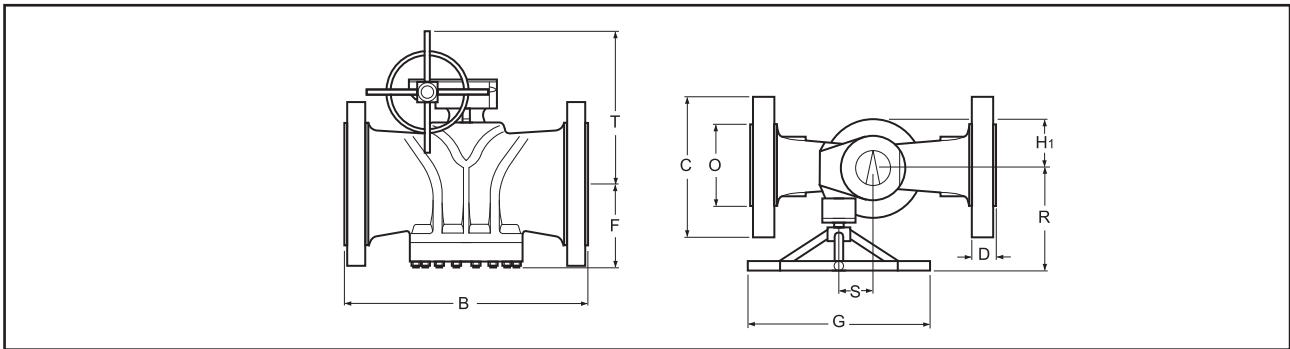
HRLB55
Flanged Class 2500RJ
15-40mm (½-3/4")

HRLB99
Socket Weld End
15-25mm (½-1")

50mm & ABOVE ARE GEAR OPERATED

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

CLASS 2500 REGULAR PATTERN



| | | 50 | 80 | 100 | 150 | 200 | 250 | 300 | 350-400 |
|----|----------------------------------|-------|-------|-------|-------|-------|--------|--------------|---|
| B | Face-to-face RF | 451 | 578 | 673 | 914 | 1022 | 1270 | 1422 | The dimensions for these sizes are not defined by standards and will be agreed with customer on request |
| B | Face-to-face RJ | 454 | 584 | 683 | 927 | 1038 | 1292.2 | 1445 | |
| C | Flange diameter | 235 | 305 | 356 | 482.6 | 553 | 673.1 | 762 | |
| D | Total flange thickness RF | 57.2 | 72.9 | 82.6 | 114.4 | 133.4 | 171.5 | 190.6 | |
| D | Total flange thickness RJ | 58.7 | 76.02 | 87.3 | 120.7 | 141.3 | 182.6 | 201.7 | |
| F | CL to bottom of body/cap | 189 | 251.4 | 240.7 | 322 | 387 | 387 | 530 | |
| G | Hand wheel diameter | 600 | 600 | 600 | 800 | 700 | 700 | 700 | |
| H1 | Body width from CL | 115 | 145 | 143 | 178 | 225 | 225 | 280 | |
| O | Raised face diameter RF | 92 | 127 | 157.2 | 215.9 | 269.8 | 323.85 | 381 | |
| O | Raised face diameter RJ | 133.3 | 168.3 | 203.2 | 279.4 | 339.9 | 425.45 | 495.3 | |
| R | CL to face of handwheel | 350 | 352 | 352 | 530 | 639 | 639 | Refer to SAV | |
| S | CL valve to CL operating spindle | 105 | 148 | 148 | 138 | 215 | 215 | | |
| T | CL to top of handwheel | 531 | 576 | 634 | 705 | 900 | 900 | | |
| | Weight (approx) kg | 131 | 240 | 665 | 740 | 1150 | 1800 | | |

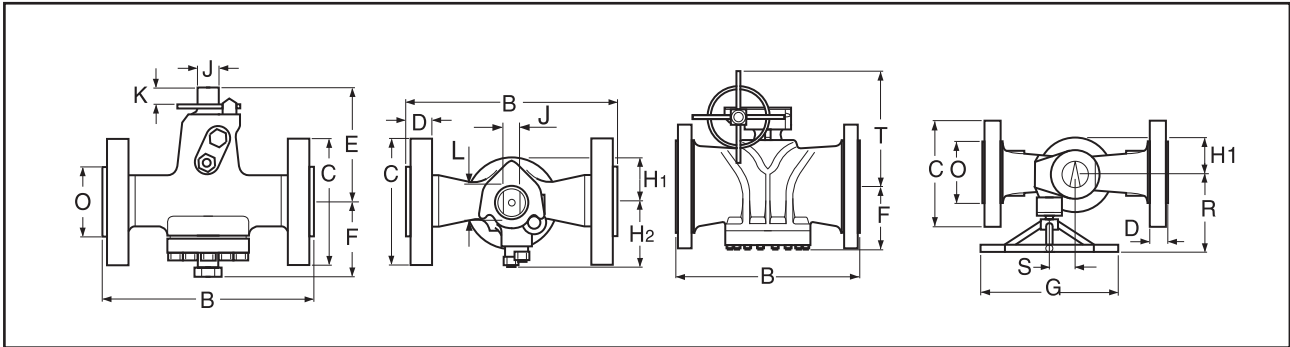
HRGB33
Flanged Class 2500RF
50-300mm (2-12")

HRGB55
Flanged Class 2500RJ
50-300mm (2-12")

HRGB66
Butt Weld End
50mm (2")

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

API 2000 & 3000



HRLC55

Flanged Class API 2000RJ
78-103mm (3 1/8 - 4 1/16")

HRGC55

Flanged Class API 2000RJ
103mm (4 1/16")

HRLD55

Flanged Class API 3000RJ
52-103mm (2 1/16 - 4 1/16")

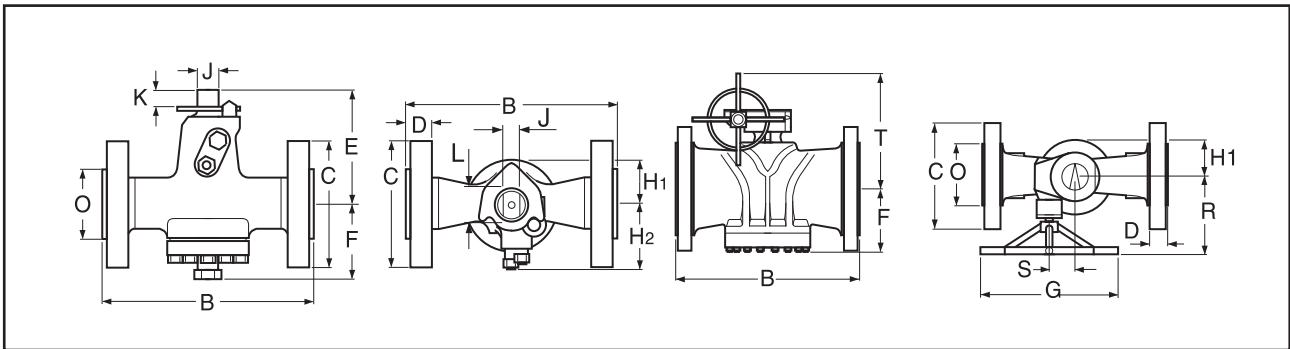
HRGD55

Flanged Class API 3000RJ
103mm (4 1/16")

| | | API 2000 | | | API 3000 | | | |
|-----------|-----------------------------------|----------------|-----------------------------|----------------------------|-----------------|----------------|-----------------------------|----------------------------|
| | | 78 (3"1/8") | 103 (4"1/16") (Lever) | 103 (4"1/16") (Gear) | 52 (2"1/16") | 78 (3"1/8") | 103 (4"1/16") (Lever) | 103 (4"1/16") (Gear) |
| B | Face-to-face RJ | 359 | 435 | 435 | 372 | 384 | 460 | 460 |
| C | Flange diameter | 210 | 273 | 273 | 216 | 241 | 295 | 295 |
| D | Total flange thickness RF | 39.7 | 46 | 46 | 46 | 46 | 52.4 | 52.4 |
| E | CL to top of stem | 232 | 237 | 237 | 190 | 232 | 282 | 282 |
| F | CL to bottom of body/cap | 167 | 203 | 203 | 132 | 180 | 203 | 203 |
| G | Hand wheel diameter | - | - | 600 | - | - | - | 600 |
| H1 | Body width from CL | 89 | 107 | 107 | 73 | 101 | 107 | 107 |
| H2 | Body width from CL | 100 | 112 | 112 | 89 | 100 | 112 | 112 |
| J | Stem across flats | 28.5 | 32.4 | - | 25.3 | 28.5 | 32.4 | - |
| K | Depth of flats with stop plate | 35 | 36 | - | 26 | 34 | 34 | - |
| K | Depth of flats without stop plate | 42 | 42 | - | 34 | 42 | 42 | - |
| L | Stem diameter | 41 | 41 | - | 35 | 41 | 41 | - |
| O | Raised face diameter RJ | 146 | 175 | 175 | 124 | 156 | 181 | 181 |
| R | CL to face of handwheel | - | - | 365 | - | - | - | 351 |
| S | CL Valve to CL Operating Spindle | - | - | 128 | - | - | - | 105 |
| T | CL Valve to Top of Hand wheel | - | - | 545 | - | - | - | 545 |
| U | CL to end of fitted wrench | 933 | 933 | - | 684 | 933 | 933 | - |
| | Weight (approx) kg | 46 | 85 | 110 | 38 | 85 | 125 | 150 |
| | Wrench number | B7 | B7S | - | B5S | B7 | B7S | - |

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.

API 5000



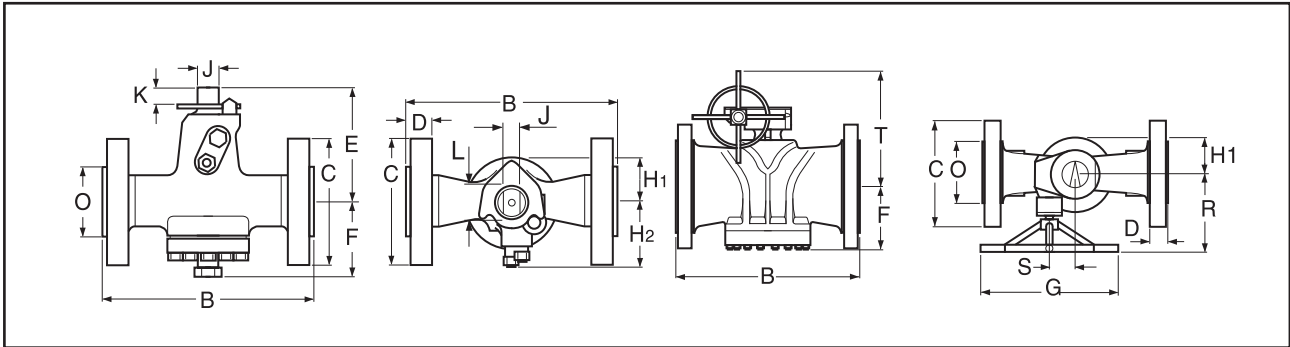
HRLE55
Flanged Class API 5000RJ
52-103mm (2 1/16" - 4 1/16")

HRGE55
Flanged Class API 5000RJ
103mm (4 1/16")

| | | API 5000 | | | |
|-----------|-----------------------------------|-----------------|----------------|--------------------------|-------------------------|
| | | 52 (2"1/16") | 78 (3"1/8") | 103 (4"1/16") (Lever) | 103 (4"1/16") (Gear) |
| B | Face-to-face RJ | 371 | 473 | 549 | 549 |
| C | Flange diameter | 215 | 267 | 311 | 311 |
| D | Total flange thickness RF | 46,1 | 55.6 | 61.9 | 61.9 |
| E | CL to top of stem | * | 232 | 228 | - |
| F | CL to bottom of body/cap | * | 180 | 235 | 235 |
| G | Hand wheel diameter | - | - | - | 600 |
| H1 | Body width from CL | * | 101 | 123 | 123 |
| H2 | Body width from CL | * | 100 | 112 | 112 |
| J | Stem across flats | * | 28.5 | 32.4 | - |
| K | Depth of flats with stop plate | * | 34 | 34 | - |
| K | Depth of flats without stop plate | * | 42 | 42 | - |
| L | Stem diameter | * | 41 | 41 | - |
| O | Raised face diameter RJ | 124 | 168 | 194 | 194 |
| R | CL to face of handwheel | - | - | - | 365 |
| S | CL Valve to CL Operating Spindle | - | - | - | 128 |
| T | CL Valve to Top of Hand wheel | - | - | - | 558 |
| U | CL to end of fitted wrench | * | 933 | 933 | - |
| | Weight (approx) kg | * | 86 | 130 | 170 |
| | Wrench number | * | B7 | B7S | - |

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
Weights are approximate and for bare stem valve.
(*) Please refer to SAV

API 10000



HRGF55

Flanged Class API 10000RJ
46-179mm (1 13/16 - 7 1/16")

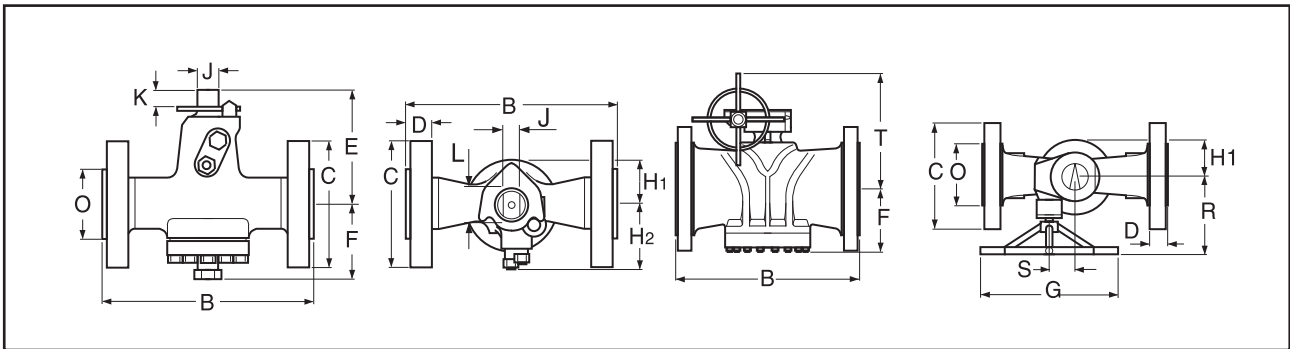
| | | API 10000 | | | | | |
|----|-----------------------------------|------------------|-----------------|-----------------|------------------|------------------|------------------|
| | | 46 (1"13/16") | 52 (2"1/16") | 78 (3"1/16") | 103 (4"1/16") | 130 (5" 1/8") | 179 (7"1/16") |
| B | Face-to-face RJ | 464 | 521 | 619 | 670 | 737 | 889 |
| C | Flange diameter | 185 | 200 | 270 | 315 | 360 | 480 |
| D | Total flange thickness RF | 42.1 | 44.1 | 58.4 | 70.3 | 79.4 | 103,2 |
| E | CL to top of stem | - | - | - | - | - | - |
| F | CL to bottom of body/cap | 277 | 277 | 312 | 342 | 391 | * |
| G | Hand wheel diameter | 600 | 600 | 600 | 700 | 700 | * |
| H1 | Body width from CL | 138 | 138 | 160 | 203 | 218 | * |
| H2 | Body width from CL | 154 | 154 | 190 | 224 | 260 | * |
| J | Stem across flats | - | - | - | - | - | - |
| K | Depth of flats with stop plate | - | - | - | - | - | - |
| K | Depth of flats without stop plate | - | - | - | - | - | - |
| L | Stem diameter | - | - | - | - | - | - |
| O | Raised face diameter RJ | 105 | 111 | 152 | 185 | 221 | 302 |
| R | CL to face of handwheel | 480 | 480 | 510 | 545 | 640 | * |
| S | CL Valve to CL Operating Spindle | 63 | 63 | 28.5 | 51 | 215 | * |
| T | CL Valve to Top of Hand wheel | 605 | 605 | 677 | 752 | 980 | * |
| U | CL to end of fitted wrench | - | - | - | - | - | - |
| | Weight (approx) kg | 240 | 252 | 370 | 630 | 1050 | * |
| | Wrench number | - | - | - | - | - | - |

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .

Weights are approximate and for bare stem valve.

(*) Please refer to SAV

API 15000



HRGG55
 Flanged Class API 15000RJ
 46-179mm (1 13/16 - 7 1/16")

| | | API 150000 | | | | | |
|-----------|-----------------------------------|------------------|-----------------|-----------------|------------------|------------------|------------------|
| | | 46 (1"13/16") | 52 (2"1/16") | 78 (3"1/16") | 103 (4"1/16") | 130 (5" 1/8") | 179 (7"1/16") |
| B | Face-to-face RJ | 457 | 483 | 598 | 737 | 889 | * |
| C | Flange diameter | 210 | 220 | 290 | 360 | 420 | 505 |
| D | Total flange thickness RF | 45,3 | 50,8 | 61,3 | 78,6 | 98,5 | 119,1 |
| E | CL to top of stem | - | - | - | - | - | - |
| F | CL to bottom of body/cap | * | * | * | 405 | * | * |
| G | Hand wheel diameter | * | * | * | 750 | * | * |
| H1 | Body width from CL | * | * | * | 304 | * | * |
| H2 | Body width from CL | * | * | * | 290 | * | * |
| J | Stem across flats | - | - | - | - | - | - |
| K | Depth of flats with stop plate | - | - | - | - | - | - |
| K | Depth of flats without stop plate | - | - | - | - | - | - |
| L | Stem diameter | - | - | - | - | - | - |
| O | Raised face diameter RJ | 106 | 114 | 154 | 194 | 225 | 305 |
| R | CL to face of handwheel | * | * | * | 700 | * | * |
| S | CL Valve to CL Operating Spindle | * | * | * | 425 | * | * |
| T | CL Valve to Top of Hand wheel | * | * | * | 995 | * | * |
| U | CL to end of fitted wrench | - | - | - | - | - | - |
| | Weight (approx) kg | * | * | * | 1450 | * | * |
| | Wrench number | - | - | - | - | - | - |

Notes: Dimensions in these tables are for standard valves and are subject to change . For layout purposes please request a drawing .
 Weights are approximate and for bare stem valve.
 (*) Please refer to SAV

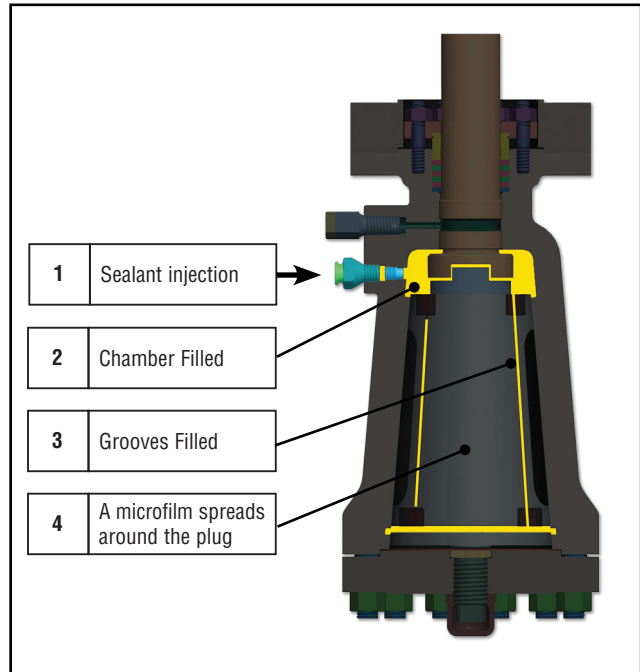
Sealants

Serck Audco Super-H valves are designed in a way that no spares will be required, the only minimal maintenance can be quickly done in-line and with the valve under pressure through sealant injection. Also, in comparison to other plug valve designs, the Super-H can guarantee zero leakage seal and smooth operation with minimal sealant injection frequency.

Serck Audco Sealants are high viscosity fluids, specially produced to seal and lubricate plug valves. Only Serck Audco sealants should be used in Serck Audco valves unless authorised by us. The use of a sealant or commercial greases not recommended by us can impair the functioning of the valve and in the worst case seize it completely.

Sealant is injected into the Super-H to ensure valve tight shut-off and maintain low torque. Audco sealants have excellent lubricating properties and great film strength. They supplement Super LoMu treatment to reduce friction between the seating surfaces and provide a very effective seal, even at higher line pressures.

Sealants should be selected based on service media and operating temperature. The tables below summarise our general sealant recommendations. Sealant should be carefully selected since the use of the correct Serck Audco Sealant will minimize injection frequency. The tables are self explanatory, however, if in doubt regarding sealant selection, Serck Audco can suggest a suitable sealant against service details.



Multi-Purpose Sealants

Serck Audco Valves research pays careful attention to the development of multi-purpose sealants to simplify plant maintenance where many services are encountered. As a result, we are able to offer three sealants which cover a very wide variety of services and have replaced many of the older Serck Audco sealants. A single multi-purpose Serck Audco sealant can often be used throughout an entire plant, often handling a variety of fluids. This simplifies maintenance and reduces the number of sealants which need to be kept.

| Sealant | Form | Colour | Temp Range °C (°F) | | Recommended for | Do not use on |
|---------|-------------------------------------|--------|----------------------------------|-------------------------------------|--|---|
| | | | Min | Max | | |
| 733 | K Sticks Cartridges Bulk | Cream | -20 (-5) | 250 (480) | Most Hydrocarbon services, Butane, propane, gasoline, kerosene, oils, fuel oils, most hydrocarbon solvents. Sweet and sour natural and manufactured gas with water organic condensates, LPG systems, glycols | Strong alkali and high aromatic and chlorinated solvents |
| 735 | K Sticks Hard grade Bulk only | Black | -46 (-41) | 325 (620) | Premium Multipurpose Sealant suitable for a range of fluids including hydrocarbon, water, amines and methanol Suitable for high / low temperature applications | Neat petroleum products Strong mineral acids Chlorinated and aromatic acids |
| 731 | K Sticks Cartridges Bulk | Cream | -15 (0) -20 (-5) -25 (-13) | 230 (450) 230 (450) 230 (450) | Most chemical plant services, compressed air, water, aqueous solutions, dilute acids, all alkaline solutions tars and bitumens | Strong acid solutions, hydrocarbons, chlorinated and aromatic solvents |

Specialised Sealants

Even though our multipurpose sealants can cover most applications, we can still supply our range of specialised sealants for those customers that prefer to use them.

| Sealant | Form | Colour | Temp Range °C (°F) | | Recommended for | Do not use on |
|---------|---|----------------|------------------------|------------------------|--|--|
| | | | Min | Max | | |
| 985M | K Sticks Cartridges Soft grade Bulk only | Light Brown | -10 (12) | 150 (300) | Sweet and sour natural and manufactured gas with water/organic condensates Preferred at elevated temperatures | As 733 |
| 201 | K Sticks Cartridges Bulk | White | -7 (-20) | 200 (390) | Domestic water services, foodstuffs and pharmaceuticals | As 731 |
| 147 | K Sticks Cartridges Bulk | White | -10 (14) | 70 (160) | Nitrating acids, sulphuric acid and other oxidising elements | Hydrocarbon chlorinated and aromatic solvents |
| 734 | K Sticks Cartridges Bulk | Cream | 0 (32) | 170 (340) | Water, high pressure, hot water and steam | As 731 |
| 591 | K Sticks Cartridges Bulk | Cream | 0 (32) | 300 (570) | Petroleum based heat transfer oils. Hot fuel oil to 120°C | As 733 |
| 608 | K Sticks Cartridges Bulk | Off White | 0 (32) | 340 (650) | Hot hydrocarbon gases and vapours including high temperature cracking and reforming Strong acids and alkalis to 150°C | Aromatic and chlorinated solvents Liquid hydrocarbons and nitrating acids |
| 733LT | K Sticks Cartridges Bulk | Brown | -30 (-20) -46 (-50) | 150 (300) 100 (200) | As for 733, but particularly useful at lower temperatures and winter conditions | As for 733 |
| 574 | Cartridges Soft grade Bulk only | Beige | -50 (-58) | 50 (120) | Ammonia and brine | As 731 |
| 2977 | K Sticks Cartridges Soft grade Bulk only | Black | -40 (-40) | 325 (620) | As for 735, also oil and water mixtures where water content is above 50% in the mixture | As 735 |

Sealant Injection Equipment

To ensure sealant injection is a quick and easy operation, all Super-H pressure balanced plug valves are fitted with giant button head sealant injector positioned as a side feed in the body. All injection equipment is fitted with flexible hoses giving a hook-on connection to the sealant injector on the valve, enabling a safe set up for the injection operation in just few seconds.

The sealant injection equipment is specialized high pressure equipment and no other injection tools shall be used unless with our express recommendation

400-D Sealant Gun

Hand operated hydraulic gun, fitted with a pressure gauge. Suitable for small number of valves or valves in remote locations, this gun is designed to take Size 'K' sealant sticks.

Effortless to operate, the 400D gives positive indication of when a valve has been fully charged.

The 400D replaces the now obsolete ALG4 gun. Cartridges for use with ALG4 gun are still available



Pneumatic Pump

Trolley mounted, pneumatically operated large capacity injector pump. Suitable for large numbers or sizes of valves, the pump is designed to take five Quarter sealant cans. The pump will run when connected to an air supply that could be a compressed air system or an air bottle.

Automatic Sealant Injection System

Sealant Injection is generally an infrequent operation, so in most cases standard sealant injection equipment is the most effective option to maintain plug valves. However, for remote locations where sealant injection would be difficult or for specific applications where the media is extremely severe or the valve is cycled with very high frequency, SAV has developed a versatile Automatic Sealant Injection System that can inject sealant at user specified frequency.

Sealants Packaging

Sealant is packed in different forms to enable its use with the different available injection equipment.

| Sealants Packaging | K Sticks – Box of 12 | Cartridges – Box of 12 | 5 Quarter Can |
|--------------------|----------------------|------------------------|----------------------|
| For Use on | 400D Sealant Gun | ALG4 Gun (superseded) | 10-90 Pneumatic Pump |
| Stick Size (mm) | 35ø x 240 | 50ø x 220 | 192ø x 203 |
| Box Size (mm) | 150 x 180 x 280 | 165 x 205 x 245 | n/a |
| Box Weight (Kg) | 4 | 5.2 | 5 |

Weights will vary from those shown over a range of approximately 20-30% according to grade of sealant. Sealant can also be purchased in bulk large containers of 18Kg, 80Kg and 180 Kg

Serck Audco Stem Packing Compound

Serck Audco Stem Packing Compound is a special graphite based material prepared in stick form for easily sealing the stems of our Super-H valves. At any time and even with the valve under full pressure the stem packing can be re-injected to restore original stem tightness.

Stem packing is not sealant and must under no circumstances be used in the valve sealant system. Also, valve sealants are not suitable for sealing stems. Stem packing compound is supplied packed in boxes as follows:

| Stick Size | A | B | D |
|--------------------------------|----------|-----------|-----------|
| Suitable for valves in sizes | ½" – 1" | 1 ½" – 2" | ≥3" |
| Number of Sticks per Container | 40 | 24 | 24 |
| Box Size (mm) | 70ø x 60 | 70ø x 60 | 70ø x 150 |
| Box Weight (Gr) | 100 | 100 | 330 |

The Products of Success

Super-H Pressure Balanced Plug Valve



A high pressure plug valve, achieving exceptional reliability on both leak tightness and operability. The valve ensures long-term line and atmospheric sealing, minimizes routine maintenance, and is fire tested to API6FA.

Materials: Carbon Steel, Alloy Steel, Duplex Stainless Steel and Special Materials

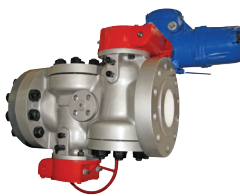
Sizes: 15 to 1050mm

Pressures: Up to 690 bars (10000 psi) Maximum Cold Working Pressure

Temperatures: -46°C to +325°C

Ratings: ANSI 150-2500, API 2000, 3000, 5000 and 10000

Double Isolation Plug Valve (DIPV)



DIPV gives all the advantages of our pressure balanced plug valve but also provides a double block and bleed system with true double isolation and two independent obturators in an extremely compact form.

In the DIPV, the plugs are mounted in inverse orientation to obtain the maximum port area

Materials: Carbon Steel, Alloy Steel, Duplex Stainless Steel and Special Materials

Sizes: 15 to 600mm

Pressures: Up to 690 bars (10000 psi) Maximum Cold Working Pressure

Temperatures: -46°C to +325°C

Ratings: ANSI 150-2500, API 2000, 3000, 5000 and 10000

Twin Isolation Plug Valve (TIPV)



TIPV gives all the advantages of our pressure balanced plug valve but also provides a double block and bleed system with true double isolation and two independent obturators in an extremely compact form.

In the TIPV, the plugs are mounted in same orientation to facilitate installation on particular plant layouts

Materials: Carbon Steel, Alloy Steel, Duplex Stainless Steel and Special Materials

Sizes: 15 to 600mm

Pressures: Up to 690 bars (10000 psi) Maximum Cold Working Pressure

Temperatures: -46°C to +325°C

Ratings: ANSI 150-2500, API 2000, 3000, 5000 and 10000

Full Bore Plug Valve (FBPV)



Based on the Super-H valve design, the FBPV is designed for extremely abrasive applications where valves are required to be piggable, and turbulence or obstruction to the flow path is not allowed.

Materials: Carbon Steel, Alloy Steel, Duplex Stainless Steel and Special Materials

Sizes: 15 to 600mm

Pressures: Up to 690 bars (10000 psi) Maximum Cold Working Pressure

Temperatures: -46°C to +325°C

Ratings: ANSI 150-2500, API 2000, 3000, 5000 and 10000

Steam Jacketed Plug Valve



For all applications where the media needs to be maintained at elevated temperatures and metal to metal seats are required, such as molten sulphur, the SAV steam jacketed plug valve provides the best solution. Also suitable for high pressures, it will be supplied with oversized flanges for full jacket option.

Materials: Carbon Steel and Special Materials if required

Sizes: 50x25x50 to 300x250x300mm (higher sizes upon request)

Pressures: Up to 690 bars (10000 psi) Maximum Cold Working Pressure

Temperatures: -46°C to +325°C

Ratings: ANSI 150-2500, API 2000, 3000, 5000 and 10000



Serck Audco Valves
a division of **Flowserve GB Ltd**
Burrell Road, Haywards Heath
West Sussex RH16 1TL
United Kingdom
Telephone: +44 (0)1444 314560
Telefax: +44 (0)1444 314561
Email: savukinfo@flowserve.com

FCD SRENTB0004-04 A4 Printed in the U.S.A. 02/17

To find your local Flowserve representative

or for more information about Flowserve Corporation,
visit www.flowserve.com or call USA 1 800 225 6989

Flowserve Corporation has established industry leadership in the design and manufacture of its products. When properly selected, this Flowserve product is designed to perform its intended function safely during its useful life. However, the purchaser or user of Flowserve products should be aware that Flowserve products might be used in numerous applications under a wide variety of industrial service conditions. Although Flowserve can (and often does) provide general guidelines, it cannot provide specific data and warnings for all possible applications. The purchaser/user must therefore assume the ultimate responsibility for the proper sizing and selection, installation, operation, and maintenance of Flowserve products. The purchaser/user should read and understand the Installation Operation Maintenance (IOM) instructions included with the product, and train its employees and contractors in the safe use of Flowserve products in connection with the specific application.

While the information and specifications contained in this literature are believed to be accurate, they are supplied for informative purposes only and should not be considered certified or as a guarantee of satisfactory results by reliance thereon. Nothing contained herein is to be construed as a warranty or guarantee, express or implied, regarding any matter with respect to this product. Because Flowserve is continually improving and upgrading its product design, the specifications, dimensions and information contained herein are subject to change without notice. Should any question arise concerning these provisions, the purchaser/user should contact Flowserve Corporation at any one of its worldwide operations or offices.

© 2013 Flowserve Corporation, Irving, Texas, USA. Flowserve is a registered trademark of Flowserve Corporation.