

# Super-H

Pressure Balanced Taper Plug Valve



**Serck Audco Valves**

# Super-H

## Pressure Balanced Plug Valve

### Contents

Range and Index	page 3
Introduction	pages 4 - 5
Design Features	pages 6 - 8
A Major Advance	page 9
Quality Assurance and Pressure Testing	pages 10 - 11
Valve Data (see page 3, opposite for full details)	pages 12 - 30
Materials	pages 31 - 32
Super-H Torque	page 33
Sealants	pages 34 - 36
Accessories	page 37

# Range and Index

- Regular Pattern
- Short Pattern
- ◆ Venturi Pattern

Valves not shown in the table will be considered against specific requirements.

mm	15	20	25	40	50	80	100	150	200	250	300	350	400	450	500	600	650	750	900	Page	
inches	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	26	30	36	No.	
ANSI 150					●	●	●	●	●	●	●										
ANSI 150	■	■	■	■	■																
ANSI 150					■	■	■	■	■	■	■										
ANSI 150										◆	◆	◆	◆	◆	◆	◆			◆	◆	
ANSI 300								■	■	■	■										
ANSI 300				●	●	●	●														
ANSI 300								◆	◆	◆	◆	◆	◆	◆	◆	◆			◆	◆	
ANSI 600	■	■	■	■	■	■	■	■	■	■	■										
ANSI 600								◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	
ANSI 800	■	■	■	■	■																
ANSI 900	■	■	■	■	■	■	■	■	■	■	■										
ANSI 900											◆	◆	◆	◆	◆	◆					
ANSI 1500	■	■	■	■	■	■	■	■													
ANSI 1500								◆	◆	◆	◆	◆	◆	◆							
ANSI 2500	■	■	■	■	■	■	■	■	■	■	■										
API 2000					■	■	■														
API 3000					■	■	■														
API 5000					■	■	■														
inches	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	26	30	36		
mm	15	20	25	40	50	80	100	150	200	250	300	350	400	450	500	600	650	750	900		

Old Fig. No.	Super-H Fig. No.	Old Fig No.	Super-H Fig. No.
GG 23	HVG233	HW 94	HRW944
GG 33	HVG333	HW 153	HRWA33
HW 33	HSW333	HW 154	HRWA44
HW 63	HRW633	GG 153	HVGA33
HW 64	HRW644	HW 253	HRWB33
HG 63	HRG633	HW 254	HRWB44
GG 63	HVG633	HC 65	HRWC55
HW 89	HRW899	HC 95	HRWD55
HW 93	HRW933	HC 155	HRWE55

# Introduction - What is Super-H?

Super-H is the now well established successor to our Type 'H' high pressure steel plug valve. The Super-H combines the well-proven features of its predecessor with up-to-date thinking on maintenance elimination, seizure prevention and fire safety. The higher performance levels of the new valve over the old prompted a name to reflect that improvement - the Super-H Pressure Balanced Plug Valve.

## What are the benefits?

- Certainty of operation - freedom from seizure.
- Consistent torque which is stable over long periods.
- Freedom from regular maintenance.
- Assured sealing to atmosphere - even in an emergency, Super-H has a system for injecting stem packing compound.
- Certainty of sealing down the line - even with damaged metal seats, sealant injection will be effective.
- Fire tested performance.
- Increased overall reliability and safety, important on high integrity systems.

## How these benefits are achieved

- Pressure balance plug as standard.
- Super LoMu® treatment on plug and stem.
- Blowout-proof stem.
- Metal-to-Metal seats of large area that are fully protected when line fluid is flowing.
- Lapped taper surfaces for precise seat mating.
- Firesafe graphite stem seal.
- Externally actuated emergency stem packing system.
- External provision for plug sealant injection.
- Precise control of plug loading on assembly.
- Double D stem drive ensures wrench indicates open and closed positions.

## Super-H Abrasion Master

This range of valves is ideally suited to applications where the line media is abrasive. The internal surfaces of the valves such as the tapered seating and/or all other internal wetted parts are hard faced with a selection of alloys specially selected by Serck Audco Valves. The selection of materials and choice of surface treatments depend on the nature of the service. This, combined with the years of experience and customer feedback, give the valve its unique qualities. The result is superior technical performance and dramatically extended valve life at an affordable cost.

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

These valves are also available in full bore construction.

Please refer to Serck Audco Valves for further information.

# Standards

The requirements for steel valves for refinery use are defined in API 599. BS 5353 is based on API 599, and plug valves to these two standards are interchangeable in all respects if the appropriate pattern is selected and steel plugs are used. Steel pipeline valves are covered by API 6D for which there is no direct British equivalent. However, BS 5353 is a more stringent specification, so that valves complying with it will also meet API 6D. API 6D permits iron plugs; BS 5353 permits iron plugs only by agreement between purchaser and supplier. Therefore, it is British practice to manufacture the valves to BS 5353 except for the substitution of iron plugs. Super-H valves meet the requirements of BS5353, API 599, API 6D and ANSI B16.34. Valves made in materials to meet API 6A are also available.

<b>BS 2080</b>	Face-to-face, centre-to-face, end-to-end, and centre-to-end dimensions of flanged and butt welding end steel valves for the petroleum, petrochemical and allied industries.
<b>BS EN 12266-1</b>	Testing of valves. Part 1 Specification for production pressure testing requirements.
<b>BS 6755 Pt 2</b>	Testing of valves. Part 2 Specification for fire type-testing requirements.
<b>BS 5353</b>	Specification for steel plug valves.
<b>ANS B16.10</b>	Face-to-face and end-to-end dimensions of ferrous valves.
<b>ANSI B16.34</b>	Valves - flanged and butt welding end.
<b>API 6A</b>	Specification for wellhead equipment.
<b>API 6D</b>	Specification for pipeline valves.
<b>API 599</b>	Steel plug valves flanged or butt welding ends
<b>API 6FA</b>	Fire test for valves.
<b>NACE MR0175</b>	Sulphide stress cracking resistant metallic material for oilfield equipment.
<b>ISO 9001</b>	Quality Assurance approval standard.

# Patterns

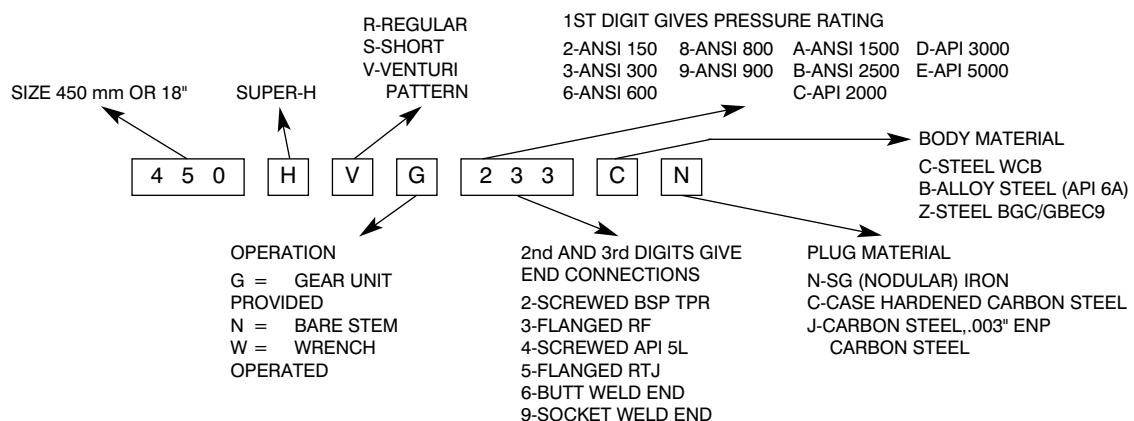
Super-H valves are available in Regular, Short or Venturi Pattern. These terms are defined in BS 5353, API 6D and API 599. The different patterns vary as regards end-to-end dimension and port area for a given size of valve.

Regular Pattern valves have the largest port area. Short Pattern valves have a reduced port area as a consequence of their compact face-to-face dimensions which are identical to those for wedge gate valves. Venturi Pattern valves have a reduced port area and a flow path approximating a venturi shape to aid pressure recovery. Face-to-face and end-to-end dimensions conform to ANSI B16.10 and BS 2080.

# Figure Numbering

A familiarity with our figure number 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 would begin with 'Super-H Pressure Balanced Valve', and would then go on to give size, pressure rating, flanging details etc.

We give an example below in order to illustrate a typical figure number, but if a fuller explanation is required please request Standards Sheet 0028-4001.

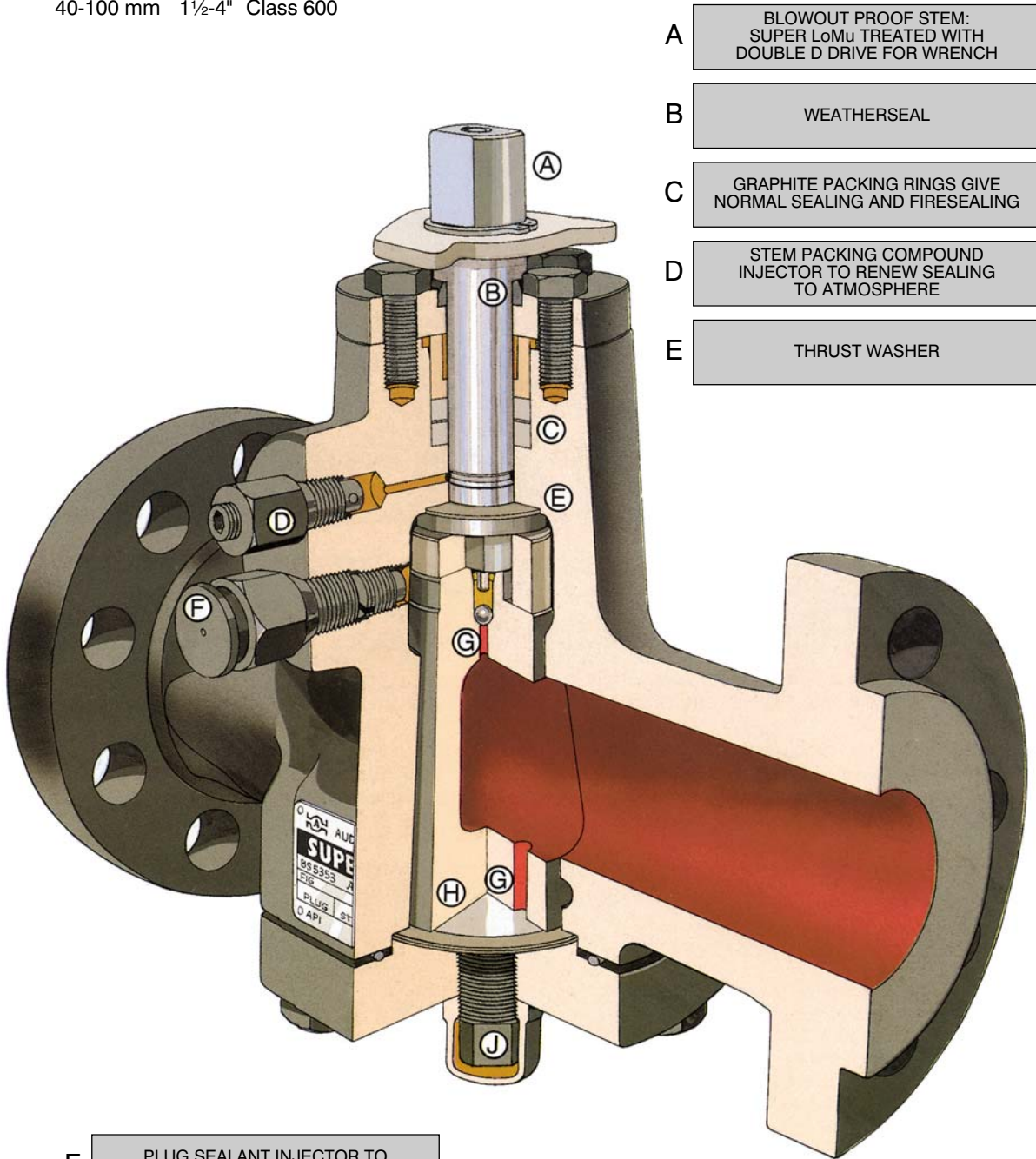


# Super-H Design Features

## Plain Stem Design

Plain stem design used for

50-100 mm 2-4" Class 150  
 40-100 mm 1½-4" Class 300  
 40-100 mm 1½-4" Class 600



- A BLOWOUT PROOF STEM:  
SUPER LoMu TREATED WITH  
DOUBLE D DRIVE FOR WRENCH
- B WEATHERSEAL
- C GRAPHITE PACKING RINGS GIVE  
NORMAL SEALING AND FIRESEALING
- D STEM PACKING COMPOUND  
INJECTOR TO RENEW SEALING  
TO ATMOSPHERE
- E THRUST WASHER

- F PLUG SEALANT INJECTOR TO  
RENEW SEALING TO DOWNSTREAM
- G PRESSURE BALANCE HOLES
- H PLUG WITH METAL-TO-METAL  
SEATING, SUPER LoMu TREATED
- J PLUG LOADING SCREW



# Super-H Design Features

## Threaded Stem Design

Threaded stem design used for

150-750 mm	6-30"	Class 150/300/600
40-500 mm	1½-20"	Class 900
40-450 mm	1½-18"	Class 1500
40-150 mm	1½-6"	Class 2500
50-100 mm	2-4"	API 3000 & 2000
50-150 mm	2-6"	API 5000

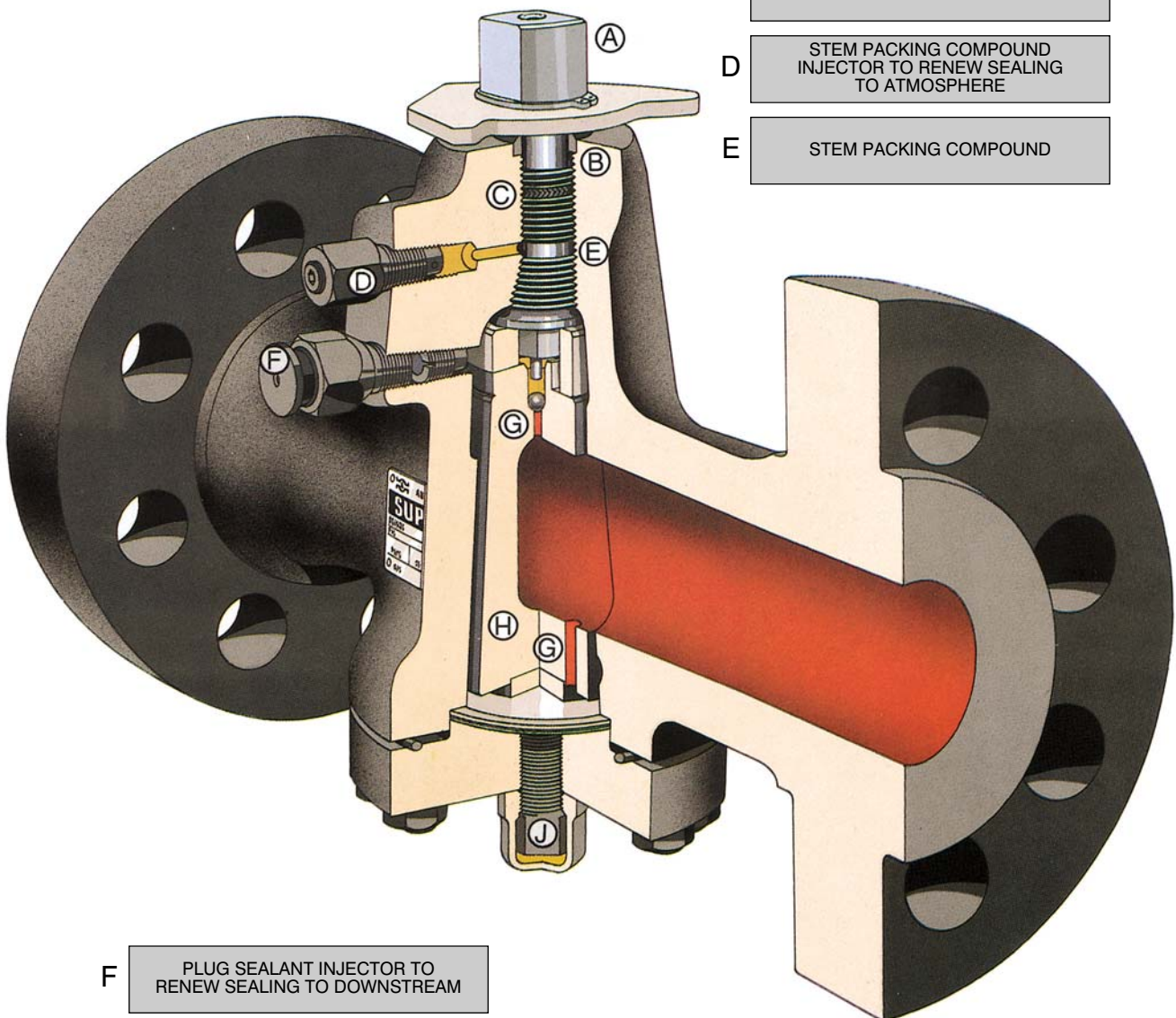
A BLOWOUT PROOF STEM:  
SUPER LoMu TREATED WITH  
DOUBLE D DRIVE FOR WRENCH

B WEATHERSEAL

C GRAPHITE FIRESEAL

D STEM PACKING COMPOUND  
INJECTOR TO RENEW SEALING  
TO ATMOSPHERE

E STEM PACKING COMPOUND



F PLUG SEALANT INJECTOR TO  
RENEW SEALING TO DOWNSTREAM

G PRESSURE BALANCE HOLES

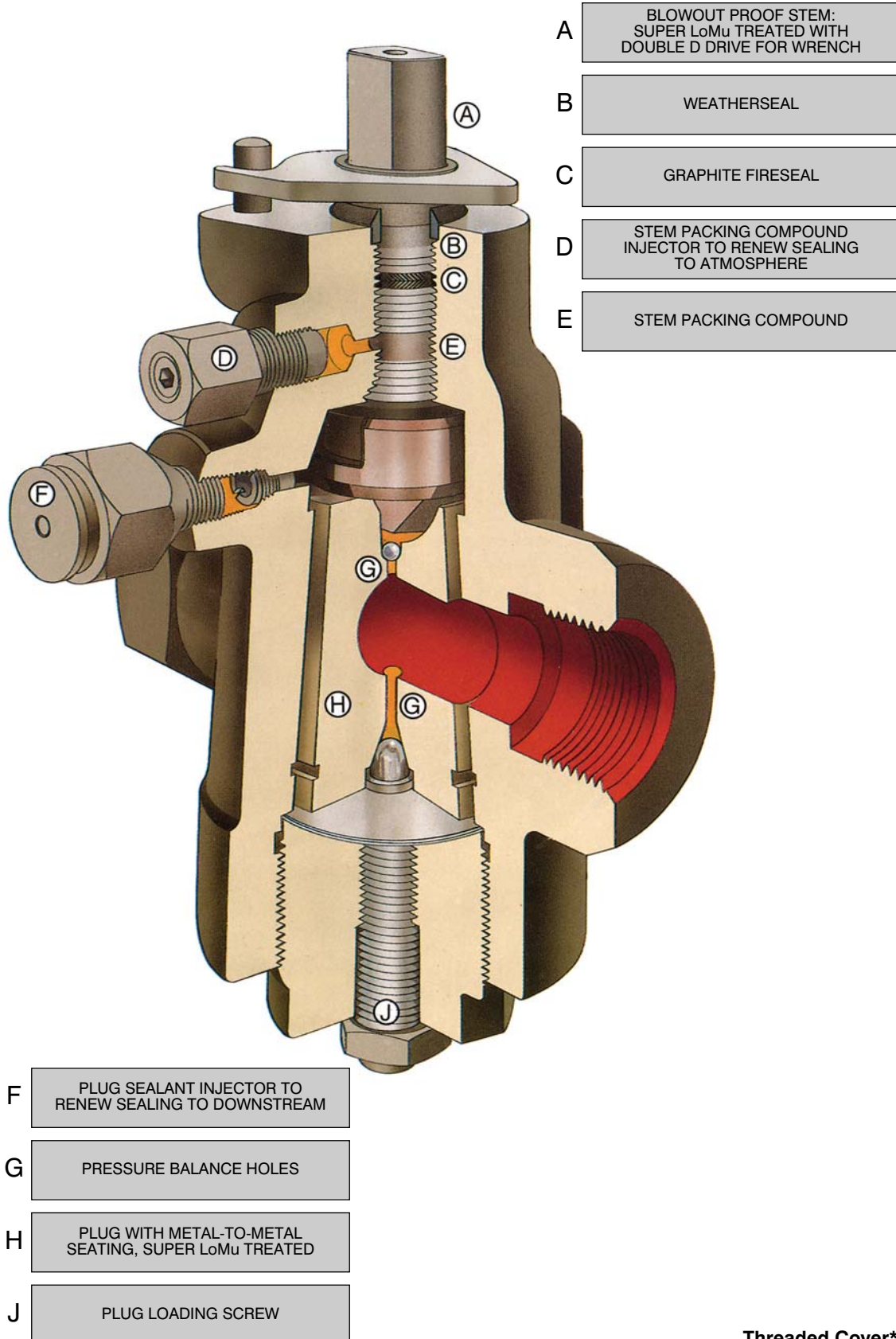
H PLUG WITH METAL-TO-METAL  
SEATING, SUPER LoMu TREATED

J PLUG LOADING SCREW

# Super-H Design Features

## Threaded Stem and Cover Design\*

This design is used for 15-25 mm ½-1" all pressure ratings



Threaded Cover\*



# A Major Advance

## Plug Balancing

All Super-H valves are protected against the possibility of seizure due to taper locking. Taper locking is caused by an imbalance of forces acting on the plug due to line pressure finding its way into the lower (wider) part of the plug chamber. As shown by the arrows in Fig. 1, the resultant force tends to push the plug upwards, 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 valves utilise the pressure of the plug sealant, acting on the upper face of the plug, to react against the upwards force. This reduces, but does not eliminate, the possibility of taper locking - and requires regular sealant injection to maintain valve freedom.

### Pressure Balancing

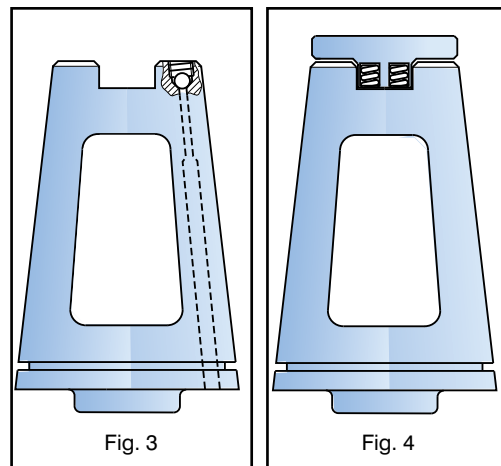
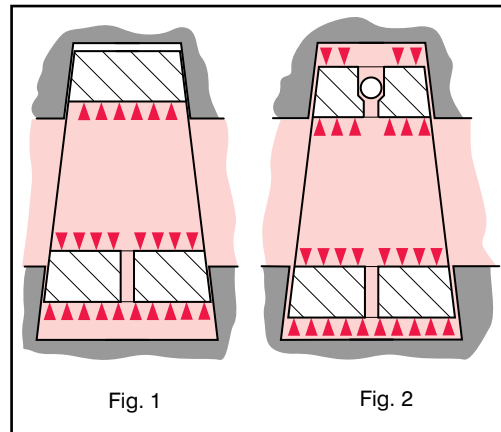
Standard Super-H valves incorporate pressure balanced plugs, as shown in Fig. 2. The drilling and check valve in the top section of the plug allow the line pressure itself to counteract the upwards force, preventing any possibility of taper locking - without the need for frequent sealant injection.

### 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, protected pressure balanced plugs (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, irrespective of valve orientation.



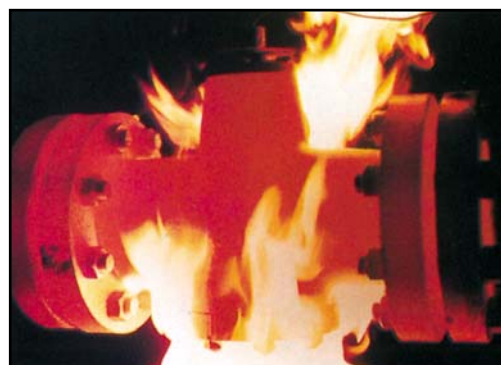
## Super LoMu

For over twenty years we have been treating the plugs of our valves with a PTFE based anti-friction agent which we call 'LoMu'. This effective treatment was further developed to provide greatly improved wear resistance. It ensures reduced friction, low consistent torque and resistance to seizure. This improved treatment, which we call 'Super LoMu', is still based on PTFE but has other components which account for its extreme durability. The photograph shows the difference after 20,000 cycles between LoMu, the previous best plug treatment, compared with the new Super LoMu treatment.



## Fire Tested

Before the advent of Super-H little work had been done to prove the fire resistance of metal-to-metal seating valves, since the national standards which existed all related to soft seated valves like ball valves. SAV have designed into Super-H certain features which improve the behaviour of the valve 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 sealing is metal-to-metal, the diaphragm seating is metal-to-metal or graphite and the stem has a graphite seal. Additionally, Super LoMu will ensure operability even after exposure to fire test conditions. Super-H will meet all published fire test standards worldwide, including BS 6755 Pt 2 and API 6FA.



# Super-H Quality Assurance

## Quality Assurance Programme

### 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.

### Product and Systems Approvals

API6D, API6A

QUASCO

British Gas ISO 9001

BP (including valves for services in which sulphide and chloride stress corrosion cracking is possible)

### Quality Assurance Manual

The entire manufacturing process follows procedures as laid down in the Company Quality Assurance Manual. Regular systems audits by our own QA Department and Customer Assessments ensure these procedures are regularly revised and updated. The manual complies with ISO 9001 and API specification Q1.

### Quality Assurance, Inspection and Testing

All suppliers are assessed to ensure they meet our standards. Goods Received Inspection maintain performance records and vendor ratings. All manufacturing and assembly processes are monitored, along with special processes such as Super LoMu treatment and case hardening.

The Customer Inspection Department handles all materials witnessed by the customer and their nominated inspection authority. All tests are substantiated by test certificates including pressure tests, NDT, physical and chemical certification.

### Quality and Super-H

With the Super-H project a breakthrough in product quality was achieved. From the initial design and development stages the Quality Department were involved to ensure that the Super-H range would be manufactured to a consistently high standard.

By using the latest numerically controlled machine tools (CNC machining centres) the machining accuracy on the Super-H product range is outstanding. Stringent control of the Super LoMu process ensures a uniformly high quality, low friction treatment on plugs and stems.

Final product testing ensures that every Super-H valve meets the required performance levels.

## Sour Services

Valves suitable for use on services in which hydrogen sulphide stress corrosion cracking is a hazard, are a frequent requirement. These services are defined as 'sour' services within the meaning of the NACE Standard MR0175 which is the internationally accepted authority for defining these services, and for specifying acceptable materials of construction which will be resistant to stress corrosion cracking.

We have many years of experience in producing valves to meet these requirements. A completely special valve is not required as the Super-H can be upgraded by changing minor components and carrying out additional checks (e.g. hardness, chemical composition) on the major components. Major components comply with the NACE specification as standard.

In this type of hazardous duty, material certification and traceability are of paramount importance. We have already installed the systems to operate this procedure as it is, for us, a normal part of our quality assurance programme for all steel valves, including Super-H, whether or not they are required for hazardous or severely demanding services.

# Pressure Testing

## Test Pressures

VALVE RATING	Maximum C.W.P.		BODY TEST (minimum)		SEAT TEST (minimum)	
	bar	lbf/in <sup>2</sup>	bar	lbf/in <sup>2</sup>	bar	lbf/in <sup>2</sup>
CLASS 150 PN 20	19.5	285	29.5	427.5	21.5	313.5
CLASS 300 PN 50	51	740	76.5	1110	56	814
CLASS 600 PN 100	102	1480	153.2	2220	112	1628
CLASS 800	138	2000	207	3000	152	2200
CLASS 900 PN 150	153	2220	230	3330	168	2442
CLASS 1500 PN 250	256	3705	383	5558	281	4076
CLASS 2500 PN 420	425	6170	638	9255	468	6787
API 2000	138	2000	276	4000	138	2000
API 3000	207	3000	414	6000	207	3000
API 5000	345	5000	690	10000	345	5000

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 ANSI 16.34 are those relevant to Carbon Steel ASTM A 216 Gr WCB.

There may not be exact equivalence between pressure in bar and in lbf/in<sup>2</sup> due to rounding (1 bar = 10<sup>5</sup> Pa).

Each relevant standard defines the minimum length of time for which each test pressure is to be maintained and also the testing operations sequence.

Duration of hydrostatic tests in minutes (minimum)					
VALVE SIZE		BS EN 12266-1		API 6D	
		SHELL TEST	SEAT TEST	SHELL TEST	SEAT TEST *
□ ≤40 mm	≤1½"	¼	¼	2	2
50 mm	2"	¼	¼	2	2
65-100 mm	2½ - 4"	1	½	2	2
150 mm and 200 mm	6" and 8"	1	½	5	5
250 mm	10"	3	1	5	5
300 mm and 450 mm	12 - 18"	3	1	15	5
□ 500 mm	≥20"	3	2	30	5

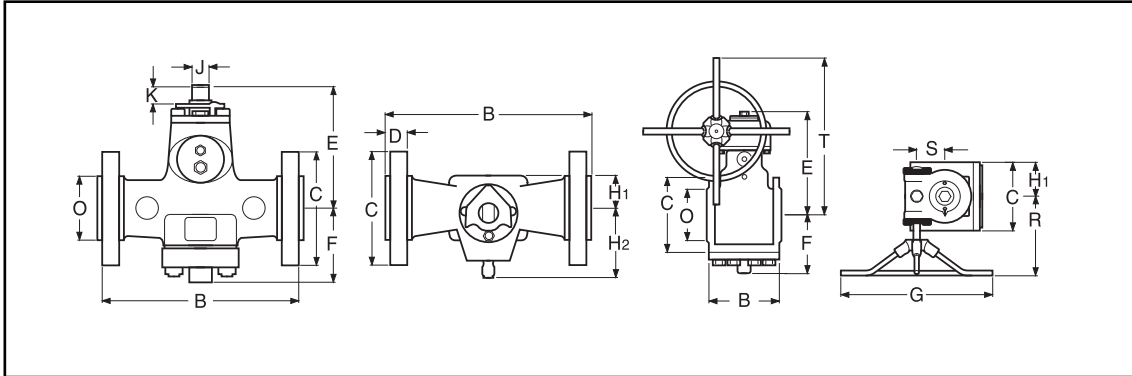
\*API 6D also requires a 5.5 bar (80 lbf/in<sup>2</sup>) air test on the seat for the same duration.

These durations will be adhered to unless a different specification is required against a particular order.

Hydrostatic tests of long duration require that the valve be given special attention to facilitate pipeline testing. Plug sealant should be injected before the start of the test, after the test has finished and at any time during the test that there is a sign of leakage.

# Class 150 Short Pattern

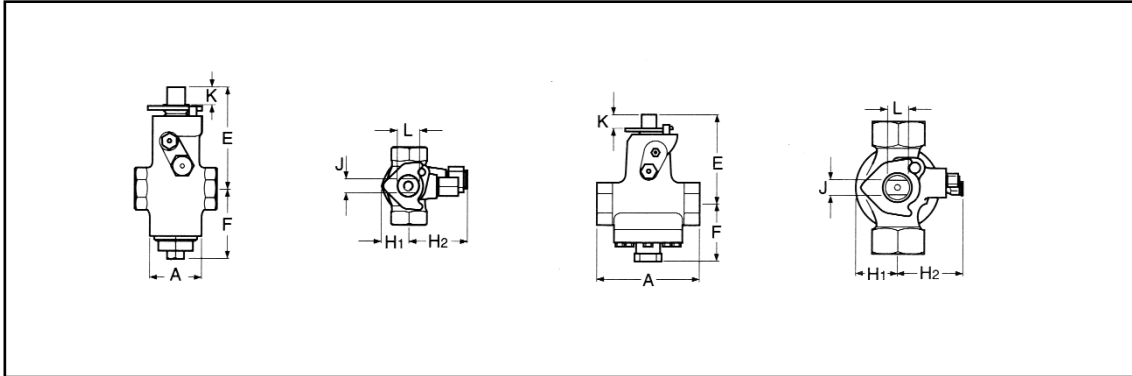
**HSW233CC** Flanged Class 150RF 50-150mm (2-6")  
**HSW233CN** Flanged Class 150RF 50-100mm (2-4")  
**HSG233CC** Flanged Class 150RF 200-300mm (8-12")



		50 (2")	80 (3")	100 (4")	150 (6")	200 (8")	250 (10")	300 (12")
<b>B</b>	Face-to-face RF	178 7	203 8	229 9	267 10.5	292 11.5	330 13	356 14
<b>C</b>	Flange diameter	152 6	191 7.5	229 9	279 11	343 13.5	406 16	483 19
<b>D</b>	Total flange thickness RF	19.1 0.75	23.8 0.94	23.8 0.94	25.4 1	28.6 1.12	30.2 1.19	31.8 1.25
<b>E</b>	CL to top of stem	178 7	219 8.63	235 9.25	220 8.66	370 14.6	550 21.6	480 18.2
<b>F</b>	CL to bottom of body / cap	118 4.63	161 6.34	179 7.05	209 8.23	264 10.4	311 12.2	359 14.1
<b>G</b>	Handwheel diameter	- -	- -	- -	- -	560 21.2	578 22.8	660 25
<b>H1</b>	Body width from CL	56 2.2	85 3.35	93 3.66	102 4	145 5.70	145 5.70	195 7.70
<b>H2</b>	Body width from CL	95 3.74	106 4.17	133 5.24	130 5.12	- -	- -	- -
<b>J</b>	Stem across flats	19 0.75	25.3 1	25.3 1	28.5 1.12	- -	- -	- -
<b>K</b>	Depth of flats with stop plate	25 0.98	26 1.02	26 1.02	34 1.34	- -	- -	- -
<b>K</b>	Depth of flats without stop plate	32 1.26	34 1.34	34 1.34	42 1.65	- -	- -	- -
<b>L</b>	Stem diameter	27 1.06	35 1.38	35 1.38	41 1.61	- -	- -	- -
<b>O</b>	Raised face diameter RF	92.1 3.63	127 5	157 6.19	216 8.5	270 10.6	324 12.8	381 15
<b>R</b>	CL to face of handwheel	- -	- -	- -	- -	243 9.6	324 12.8	335 13.2
<b>S</b>	CL valve to CL operating spindle	- -	- -	- -	- -	86 3.39	133 5.24	138 5.43
<b>T</b>	CL to top of handwheel	- -	- -	- -	- -	601 23.6	660 25.9	751 29.6
<b>U</b>	CL to end of fitted wrench	495 19.5	685 27	685 27	913 35.9	- -	- -	- -
	Weight (approx)	19 42	33 73	52 115	80 176	158 348	245 540	350 772
	Wrench Number	B4	B5S	B5S	B7	-	-	-

# Class 150 Regular Pattern

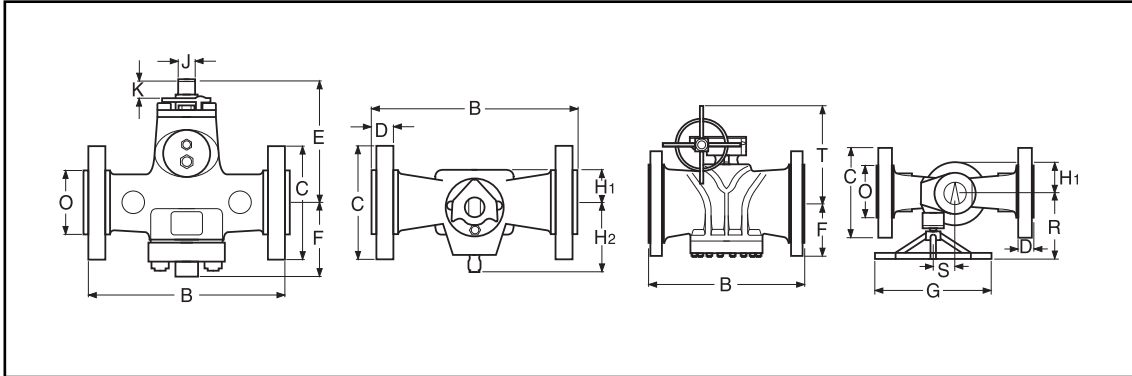
**HRW222CC** Screwed BSP Tpr      15-50mm (½-2")  
**HRW244CC** Screwed API            15-50mm (½-2")  
**HRW299CC** Socket Weld End      15-50mm (½-2")



		<b>15</b> <b>(½")</b>	<b>20</b> <b>(¾")</b>	<b>25</b> <b>(1")</b>	<b>40</b> <b>(1½")</b>	<b>50</b> <b>(2")</b>
<b>A</b>	End-to-end screwed / SWE	89 3.5	133 5.24	133 5.24	229 9	229 9
<b>E</b>	CL to top of stem / injector	104 4.09	127 5	127 5	174 6.85	174 6.85
<b>F</b>	CL to bottom of body / cap	76 3	97 3.82	97 3.82	126 4.96	126 4.96
<b>H1</b>	Body width from CL	31 1.22	36 1.42	36 1.42	63 2.48	63 2.48
<b>H2</b>	Body width from CL	68 2.68	76 3	76 3	106 4.17	106 4.17
<b>J</b>	Stem across flats	13 0.51	17 0.67	17 0.67	25.3 1	25.3 1
<b>K</b>	Depth of flats with stop plate	19 0.75	24 0.94	24 0.94	26 1.02	26 1.02
<b>K</b>	Depth of flats without stop plate	24 0.94	29 1.14	29 1.14	34 1.34	34 1.34
<b>L</b>	Stem diameter	19 0.75	22.2 0.87	22.2 0.87	35 1.38	35 1.38
<b>U</b>	CL to end of fitted wrench	230 9.06	318 12.5	318 12.5	685 27	685 27
<b>Z</b>	ID socket weld end	21.7 0.86	27.1 1.07	33.8 1.33	48.6 1.91	61.1 2.41
<b>ZA</b>	Depth of socket	9.53 0.38	12.7 0.5	12.7 0.5	13 0.51	16 0.63
	Weight (approx)    kg lb	2.5 6	6.8 15	6.8 15	22 49	24.5 54

# Class 150 Regular Pattern

**HRW233CC** Flanged Class 150RF 50-150mm (2-6")  
**HRW233CN** Flanged Class 150RF 50-100mm (2-4")  
**HRG233CC** Flanged Class 150RF 150-300mm (6-12")



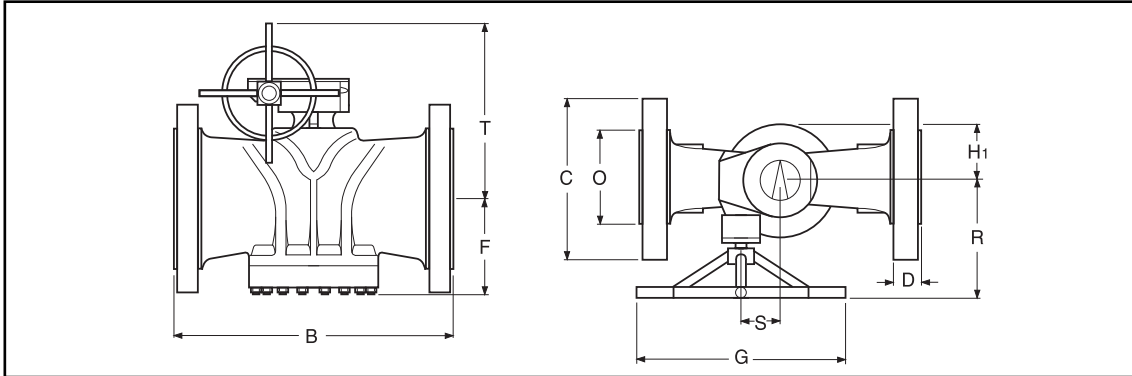
		50 (2")	80 (3")	100 (4")	150 (6")	200 (8")	250 (10")	300 (12")
<b>B</b>	Face-to-face RF	203 8	241 9.5	305 12	394 15.5	457 18	533 21	610 24
<b>C</b>	Flange diameter	152 6	191 7.5	229 9	279 11	343 13.5	406 16	483 19
<b>D</b>	Total flange thickness RF	19.1 0.75	23.8 0.94	23.8 0.94	25.4 1	28.6 1.12	30.2 1.19	31.8 1.25
<b>E</b>	CL to top of stem	178 7	219 8.63	235 9.25				
<b>F</b>	CL to bottom of body / cap	118 4.63	161 6.34	179 7.05				
<b>G</b>	Handwheel diameter	- -	- -	- -				
<b>H1</b>	Body width from CL	56 2.2	85 3.35	93 3.66				
<b>H2</b>	Body width from CL	95 3.74	106 4.17	133 5.24		- -	- -	- -
<b>J</b>	Stem across flats	19 0.75	25.3 1	25.3 1	28.5 1.12	- -	- -	- -
<b>K</b>	Depth of flats with stop plate	25 0.98	26 1.02	26 1.02	34 1.34	- -	- -	- -
<b>K</b>	Depth of flats without stop plate	32 1.26	34 1.34	34 1.34	42 1.65	- -	- -	- -
<b>L</b>	Stem diameter	27 1.06	35 1.38	35 1.38	41 1.61	- -	- -	- -
<b>O</b>	Raised face diameter RF	92.1 3.63	127 5	157 6.19	216 8.5	270 10.6	324 12.8	381 15
<b>R</b>	CL to face of handwheel	- -	- -	- -	- -			
<b>S</b>	CL valve to CL operating spindle	- -	- -	- -	- -			
<b>T</b>	CL to top of handwheel	- -	- -	- -	- -			
<b>U</b>	CL to end of fitted wrench	495 19.5	685 27	685 27	913 35.9	- -	- -	- -
	Weight (approx)	kg 48	38 84	60 132	92 202	182 400	282 620	403 887
	Wrench Number	B4	B5S	B5S	B7	-	-	-



# Class 150 Venturi Pattern

HVG233CC Flanged Class 150RF 250-900mm (10-36")

HVG233CG Flanged Class 150RF 250-900mm (10-36")

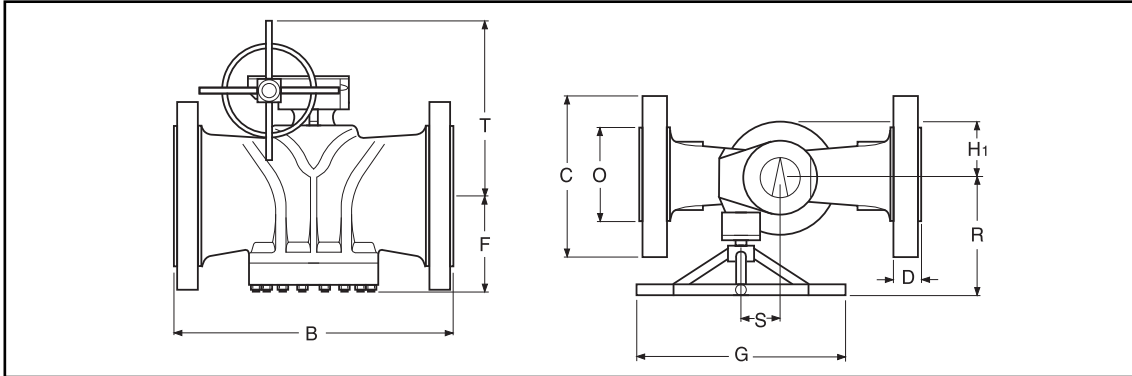


		250 (10")	300 (12")	350 (14")	400 (16")	450 (18")	500 (20")	600 (24")	750 (30")	900 (36")
<b>B</b>	Face-to-face RF	533 21	610 24	686 27	762 30	864 34	914 36	1067 42	1295 51	1600 63
<b>C</b>	Flange diameter	406 16	483 19	533 21	597 23.5	635 25	698 27.5	813 32	984* 38.75*	1168* 46*
<b>D</b>	Total flange thickness RF	30.2 1.19	31.8 1.25	34.9 1.38	36.5 1.44	39.7 1.56	42.9 1.69	47.6 1.87	74.7* 2.94*	90.4* 3.56*
<b>F</b>	CL to bottom of body / cap	351 13.8	392 15.4	375 14.8	392 15.4	416 16.4	467 18.4	516 20.3	Refer to SAV for dimensions	Refer to SAV for dimensions
<b>G</b>	Handwheel diameter	660 26	787 31	814 32	814 32	560 22	508 20	508 20		
<b>H1</b>	Body width from CL	173 6.8	222 8.75	284 11.2	265 10.4	295 11.6	318 12.5	376 14.8		
<b>O</b>	Raised face diameter RF	324 12.8	381 15	413 16.3	470 18.5	533 21	584 23	692 27.3	857 33.75	- -
<b>R</b>	CL to face of handwheel	268 10.6	437 17.2	415 16.3	365 14.4	445 17.5	435 17.1	435 17.1	Refer to SAV for dimensions	Refer to SAV for dimensions
<b>S</b>	CL valve to CL operating spindle	137 5.4	195 7.68	137 5.4	137 5.4	53.5 2.1	60 2.4	60 2.4		
<b>T</b>	CL to top of handwheel	738 29.1	837 33	845 33.3	825 32.5	765 30.1	785 30.8	800 31.5		
	Weight (approx)	kg 771	475 1047	670 1477	785 1731	885 1951	966 2130	1856 4092		

\* Flange diameter and thickness comply with MSS SP-44.

# Class 300 Regular Pattern

HRG333CC Flanged Class 300RF 150-300mm (6-12")

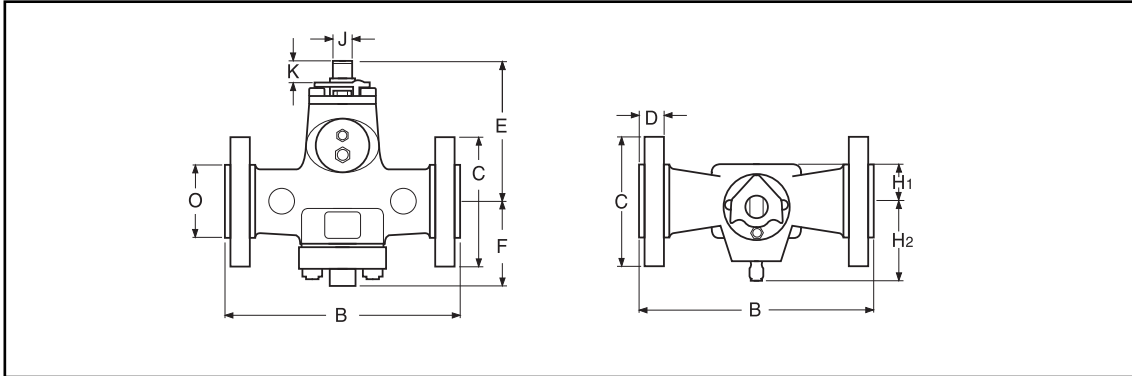


		150 (6")	200 (8")	250 (10")	300 (12")	
<b>B</b>	Face-to-face RF	403	502	568	711	
		15.9	19.8	22.4	28	
<b>C</b>	Flange diameter	318	381	445	521	
		12.5	15	17.5	20.5	
<b>D</b>	Total flange thickness RF	36.5	41.3	47.6	50.8	
		1.44	1.63	1.88	2	
<b>F</b>	CL to bottom of body / cap	222	302	351	360	
		8.9	11.9	13.8	14.2	
<b>G</b>	Handwheel diameter	559	559	660	508	
		22	22	26	20	
<b>H1</b>	Body width from CL	137	162	173	206	
		5.4	6.4	6.8	8.1	
<b>O</b>	Raised face diameter RF	216	270	324	381	
		8.5	10.6	12.8	15	
<b>R</b>	CL to face of handwheel	244	244	268	358	
		9.6	9.6	10.6	14.1	
<b>S</b>	CL valve to CL operating spindle	111	111	137	60	
		4.4	4.4	5.4	2.4	
<b>T</b>	CL to top of handwheel	578	624	738	651	
		22.8	24.6	29.1	25.6	
	Weight (approx)	kg	178	276	356	508
		lb	392	609	784	1120

# Class 300 Short Pattern

**HSW333CC** Flanged Class 300RF 40-100mm (1½-4")

**HSW333CN** Flanged Class 300RF 40-100mm (1½-4")

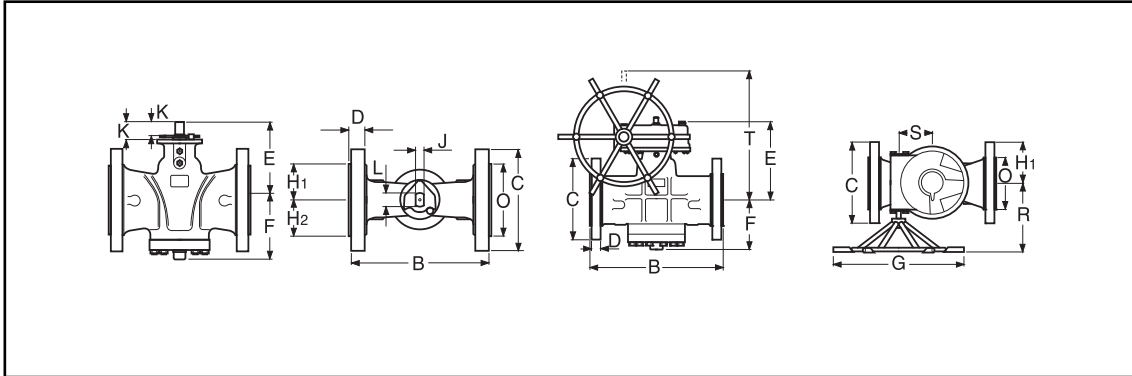


		<b>40</b> <b>(1½")</b>	<b>50</b> <b>(2")</b>	<b>80</b> <b>(3")</b>	<b>100</b> <b>(4")</b>
<b>B</b>	Face-to-face RF	191 7.5	216 8.5	283 11.1	305 12
<b>C</b>	Flange diameter	156 6.13	165 6.5	210 8.25	254 10
<b>D</b>	Total flange thickness RF	20.6 0.81	22.2 0.88	28.6 1.13	31.8 1.25
<b>E</b>	CL to top of stem	169 6.65	178 7	219 8.63	235 9.25
<b>F</b>	CL to bottom of body / cap	106 4.17	118 4.63	143 5.63	165 6.5
<b>H1</b>	Body width from CL	52 2.05	56 2.2	85 3.35	93 3.66
<b>H2</b>	Body width from CL	104 4.09	105 4.13	116 4.57	133 5.24
<b>J</b>	Stem across flats	19 0.75	19 0.75	25.3 1	25.3 1
<b>K</b>	Depth of flats with stop plate	25 0.98	25 0.98	26 1.02	26 1.02
<b>K</b>	Depth of flats without stop plate	32 1.26	32 1.26	34 1.34	34 1.34
<b>L</b>	Stem diameter	22 0.87	27 1.06	35 1.38	35 1.38
<b>O</b>	Raised face diameter RF	73 2.88	92.1 3.63	127 5	157 6.19
<b>U</b>	CL to end of fitted wrench	495 19.5	495 19.5	685 27	685 27
	Weight (approx)	16 35	21 46	38 84	60 132
		kg	lb		
	Wrench Number	B4	B4	B5S	B5S

# Class 300 Venturi Pattern

**HWV333CC** Flanged Class 300RF 150mm (6")

**HVG333CC** Flanged Class 300RF 150-300mm (6-12")

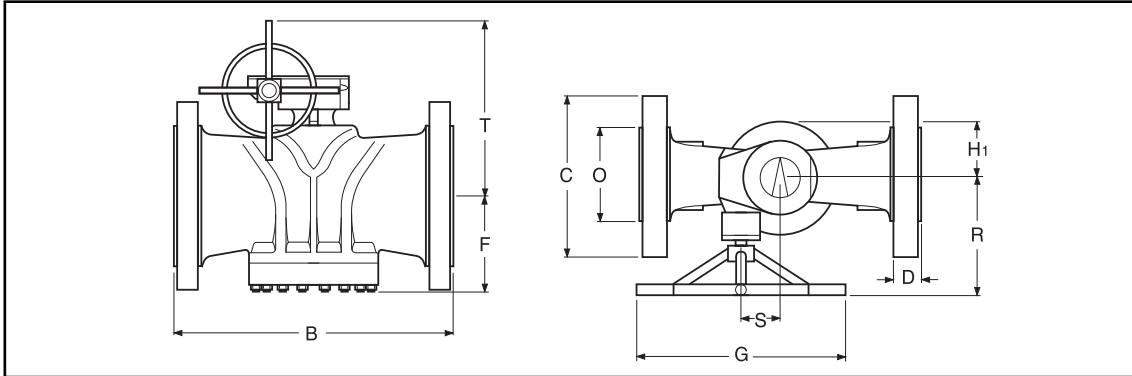


		150 (6")	150 (6")	200 (8")	250 (10")	300 (12")
<b>B</b>	Face-to-face RF	403 15.9	403 15.9	419 16.5	457 18	502 19.8
<b>C</b>	Flange diameter	318 12.5	318 12.5	381 15	445 17.5	521 20.5
<b>D</b>	Total flange thickness RF	36.5 1.44	36.5 1.44	41.3 1.63	47.6 1.88	50.8 2
<b>E</b>	CL to top of stem	362 14.3	- -	- -	- -	- -
<b>F</b>	CL to bottom of body / cap	187 7.36	187 7.36	248 9.76	300 11.8	392 15.4
<b>G</b>	Handwheel diameter	- -	578 22.8	578 22.8	578 22.8	787 31
<b>H1</b>	Body width from CL	102 4.02	102 4.02	127 5.0	190.5 7.5	222 8.75
<b>H2</b>	Body width from CL	102 4.02	- -	- -	- -	- -
<b>J</b>	Stem across flats	28.5 1.12	- -	- -	- -	- -
<b>K</b>	Depth of flats with stop plate	42 1.65	- -	- -	- -	- -
<b>K</b>	Depth of flats without stop plate	34 1.34	- -	- -	- -	- -
<b>L</b>	Stem diameter	41 1.61	- -	- -	- -	- -
<b>O</b>	Raised face diameter RF	216 8.5	216 8.5	270 10.6	324 12.8	381 15
<b>R</b>	CL to face of handwheel	- -	308 12.1	308 12.1	308 12.1	437 17.2
<b>S</b>	CL valve to CL operating spindle	- -	104 4.09	105 4.13	105 4.13	195 7.68
<b>T</b>	CL to top of handwheel	- -	509 20	579 22.8	614 24.2	837 33
<b>U</b>	CL to end of fitted wrench	913 35.9	- -	- -	- -	- -
	Weight (approx)	101 223	121 267	192 423	281 619	508 1120
	Wrench Number	B7	-	-	-	-

# Class 300 Venturi Pattern

HVG333CC Flanged Class 300RF 350-900mm (14-36")

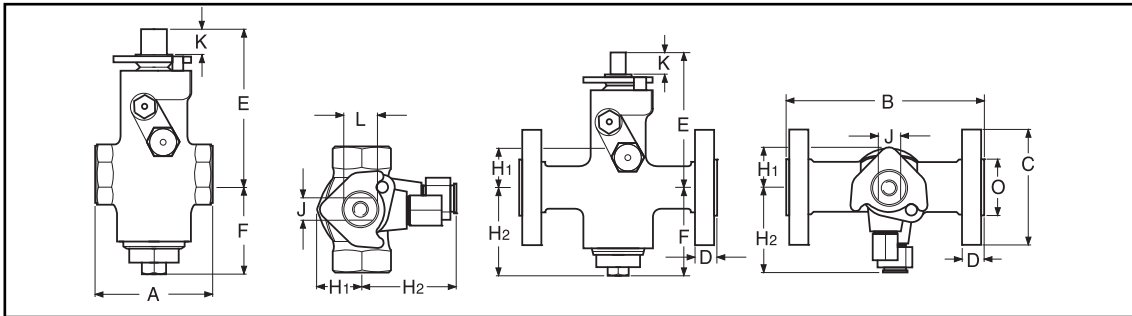
HVG333CG Flanged Class 300RF 400-900mm (16-36")



		350 (14")	400 (16")	450 (18")	500 (20")	600 (24")	750 (30")	900 (36")
<b>B</b>	Face-to-face RF	762	838	914	991	1143	1397	1727
		30	33	36	39	45	55	68
<b>C</b>	Flange diameter	584	648	711	775	914	1092	1270
		23	25.5	28	30.5	36	43	50
<b>D</b>	Total flange thickness RF	54	57.2	60.3	63.5	69.9	92	104.6
		2.13	2.25	2.38	2.5	2.75	3.62	4.12
<b>F</b>	CL to bottom of body / cap	378	392	416	470	525	Refer to SAV for dimensions	Refer to SAV for dimensions
		14.9	15.4	16.4	18.5	20.7		
<b>G</b>	Handwheel diameter	660	560	560	814	814	Refer to SAV for dimensions	Refer to SAV for dimensions
		26	22	22	32	32		
<b>H1</b>	Body width from CL	283	263	279	321	376	Refer to SAV for dimensions	Refer to SAV for dimensions
		11.1	10.4	11	12.6	14.8		
<b>O</b>	Raised face diameter RF	413	470	533	584	692	857	1022.4
		16.3	18.5	21	23	27.3		
<b>R</b>	CL to face of handwheel	465	445	445	500	500	Refer to SAV for dimensions	Refer to SAV for dimensions
		18.3	17.5	17.5	19.7	19.7		
<b>S</b>	CL valve to CL operating spindle	60	53.5	53.5	53.5	53.5	Refer to SAV for dimensions	Refer to SAV for dimensions
		2.4	2.1	2.1	2.1	2.1		
<b>T</b>	CL to top of handwheel	755	720	765	940	970	Refer to SAV for dimensions	Refer to SAV for dimensions
		29.7	28.3	30.1	37	38.2		
Weight (approx)	kg	796	902	1097	1576	2060		
	lb	1755	1989	2418	3474	4530		

# Class 600 Regular Pattern

<b>HRW622CC</b> Screwed BSP Tpr	15-50mm (½-2")	<b>HRW655CC</b> Flanged Class 600RJ	15-50mm (½-2")
<b>HRW622CN</b> Screwed BSP Tpr	40 & 50mm (1½ & 2")	<b>HRW655CN</b> Flanged Class 600RJ	40 & 50mm (1½ & 2")
<b>HRW633CC</b> Flanged Class 600RF	15-50mm (½-2")	<b>HRW666CC</b> Butt Weld End	50mm (2")
<b>HRW633CN</b> Flanged Class 600RF	40 & 50mm (1½ & 2")	<b>HRW666CN</b> Butt Weld End	50mm (2")
<b>HRW644CC</b> Screwed API	15-50mm (½-2")	<b>HRW699CC</b> Socket Weld End	15-50mm (½-2")
<b>HRW644CN</b> Screwed API	40 & 50mm (1½ & 2")	<b>HRW699CN</b> Socket Weld End	40 & 50mm (1½ & 2")

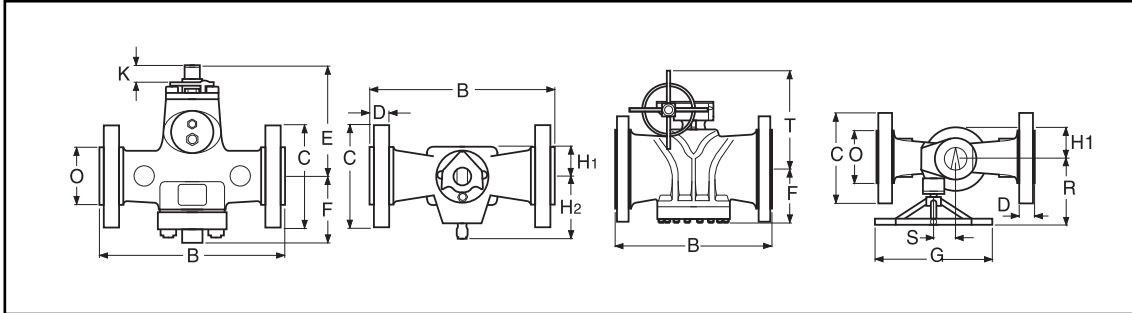


		15 (½")	20 (¾")	25 (1")	40 (1½")	40 (1½")	50 (2")	50 (2")	
<b>A</b>	End-to-end screwed & SWE	89 3.5	133 5.24	133 5.24	229 9	- -	229 9	- -	
<b>B</b>	End-to-end butt weld valves	- -	- -	- -	- -	- -	292 11.5	- -	
<b>B</b>	Face-to-face RF	165 6.5	190 7.48	216 8.5	- -	241 9.5	- -	292 11.5	
<b>B</b>	Face-to-face RJ	164 6.46	190 7.48	216 8.5	- -	241 9.5	- -	295 11.6	
<b>C</b>	Flange diameter	95.3 3.75	117 4.63	124 4.88	- -	156 6.13	- -	165 6.5	
<b>D</b>	Total flange thickness RF	20.6 0.81	22.3 0.88	23.9 0.94	- -	28.6 1.13	- -	31.8 1.25	
<b>D</b>	Total flange thickness RJ	19.9 0.78	22.3 0.88	23.9 0.94	- -	28.6 1.13	- -	33.3 1.31	
<b>E</b>	CL to top of stem	104 4.09	127 5	127 5	176 6.93	169 6.65	176 6.93	157 6.2	
<b>F</b>	CL to bottom of body / cap	76 3	97 3.82	97 3.82	116 4.57	106 4.17	116 4.57	106 4.2	
<b>H1</b>	Body width from CL	31 1.22	41.5 1.63	41.5 1.63	56 2.2	52 2.04	56 2.2	65 2.6	
<b>H2</b>	Body width from CL	68 2.68	76 3	76 3	105 4.13	104 4.09	105 4.13	90 3.5	
<b>J</b>	Stem across flats	13 0.51	17 0.67	17 0.67	19 0.75	19 0.75	19 0.75	19 0.75	
<b>K</b>	Depth of flats with stop plate	19 0.75	24 0.94	24 0.94	25 0.98	25 0.98	25 0.98	25 0.98	
<b>K</b>	Depth of flats without stop plate	24 0.94	29 1.14	29 1.14	32 1.26	32 1.26	32 1.26	32 1.26	
<b>L</b>	Stem diameter	19 0.75	22.2 0.87	22.2 0.87	27 1.06	27 1.06	27 1.06	27 1.06	
<b>O</b>	Raised face diameter RF	34.9 1.37	42.9 1.69	50.8 2	- -	73 2.87	92 3.62	92 3.62	
<b>O</b>	Raised face diameter RJ	92.1 2.01	127 2.52	157 2.76	216 -	270 3.56	324 4.25	381 4.25	
<b>U</b>	CL to end of fitted wrench	261 10.3	261 10.3	261 10.3	495 19.5	495 19.5	495 19.5	495 19.5	
<b>Z</b>	ID of socket SWE	21.7 0.86	27.1 1.07	33.8 1.33	48.6 1.92	61.1 2.41	- -	- -	
<b>ZA</b>	Depth of socket SWE	9.53 0.38	12.7 0.5	12.7 0.5	12.7 0.5	15.9 0.63	- -	- -	
	Weight (approx)	kg lb	2.5 / 5.3 6 / 12	6.8 / 9.0 15 / 20	6.8 / 10 15 / 22	22 49	19.5 43	21 / 24.5 46 / 54	21.3 47
	Wrench Number		B8	B9	B9	B4	B4	B4	B4



# Class 600 Regular Pattern

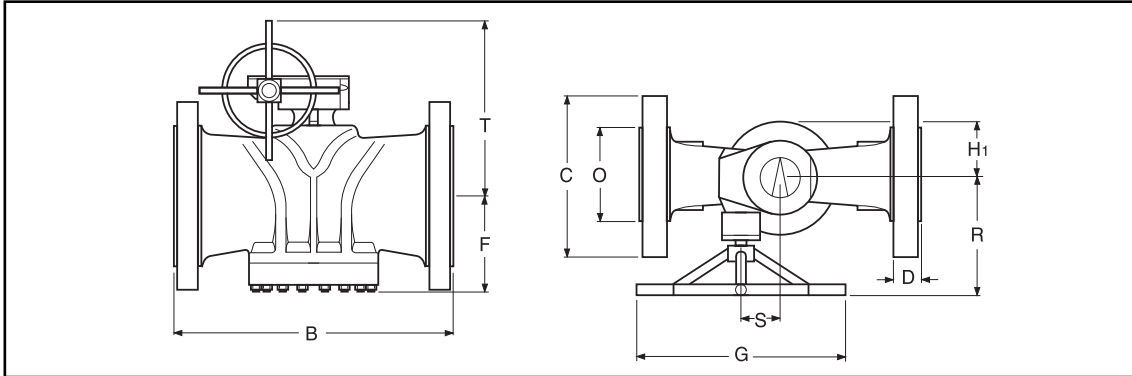
<b>HRW633CC</b> Flanged Class 600RF	80 & 100mm (3 & 4")	<b>HRW666CN</b> Butt Weld End	80 & 100mm (3 & 4")
<b>HRW633CN</b> Flanged Class 600RF	80 & 100mm (3 & 4")	<b>HRG633CC</b> Flanged Class 600RF	150-300mm (6-12")
<b>HRW655CC</b> Flanged Class 600RJ	80 & 100mm (3 & 4")	<b>HRG655CC</b> Flanged Class 600RJ	150-300mm (6-12")
<b>HRW655CN</b> Flanged Class 600RJ	80 & 100mm (3 & 4")	<b>HRG666CN</b> Butt Weld End	150-300mm (6-12")
<b>HRW666CC</b> Butt Weld End	80 & 100mm (3 & 4")		



		<b>80 (3")</b>	<b>100 (4")</b>	<b>150 (6")</b>	<b>200 (8")</b>	<b>250 (10")</b>	<b>300 (12")</b>
<b>B</b>	End-to-end butt weld valves	356 14	432 17	559 22	660 26	787 31	838 33
<b>B</b>	Face-to-face RF	356 14	432 17	559 22	660 26	787 31	838 33
<b>B</b>	Face-to-face RJ	359 14.1	435 17.1	562 22.1	664 26.1	791 31.1	841 33.1
<b>C</b>	Flange diameter	210 8.25	273 10.75	356 14	419 16.5	508 20	559 22
<b>D</b>	Total flange thickness RF	38.2 1.50	44.5 1.75	54.0 2.13	62.0 2.44	70.0 2.76	73 2.88
<b>D</b>	Total flange thickness RJ	39.7 1.56	46.0 1.81	55.6 2.19	63.6 2.5	71.4 2.81	74.6 2.94
<b>E</b>	CL to top of stem	217 8.54	232 9.13	- -	- -	- -	- -
<b>F</b>	CL to bottom of body / cap	143 5.63	165 6.5	248 9.75	298 11.8	313 12.3	375 14.8
<b>G</b>	Handwheel diameter	- -	- -	578 22.8	788 31	788 31	559 22
<b>H1</b>	Body width from CL	85 3.35	93 3.66	146 5.75	193 7.6	210 8.25	216 8.5
<b>H2</b>	Body width from CL	116 4.57	133 5.24	- -	- -	- -	- -
<b>J</b>	Stem across flats	25.3 1	25.3 1	- -	- -	- -	- -
<b>K</b>	Depth of flats with stop plate	26 1.02	26 1.02	- -	- -	- -	- -
<b>K</b>	Depth of flats without stop plate	34 1.34	34 1.34	- -	- -	- -	- -
<b>L</b>	Stem diameter	35 1.38	35 1.38	- -	- -	- -	- -
<b>O</b>	Raised face diameter RF	127 5	157 6.18	216 8.5	270 10.6	324 12.8	381 15
<b>O</b>	Raised face diameter RJ	146 5.75	175 6.89	241 9.49	302 11.9	356 14	413 16.3
<b>R</b>	CL to face of handwheel	- -	- -	324 12.8	437 17.2	437 17.2	390 15.4
<b>S</b>	CL valve to CL operating spindle	- -	- -	133 5.25	195 7.68	195 7.68	53.6 2.1
<b>T</b>	CL to top of handwheel	- -	- -	568 22.4	745 29.3	775 30.5	704 27.7
<b>U</b>	CL to end of fitted wrench	685 27	915 36	- -	- -	- -	- -
	Weight (approx) kg lb	41 / 46 90 / 101	51 / 85 112 / 187	168 / 254 370 / 560	284 / 406 626 / 896	412 / 584 910 / 1290	488 / 620 1076 / 1367

# Class 600 Venturi Pattern

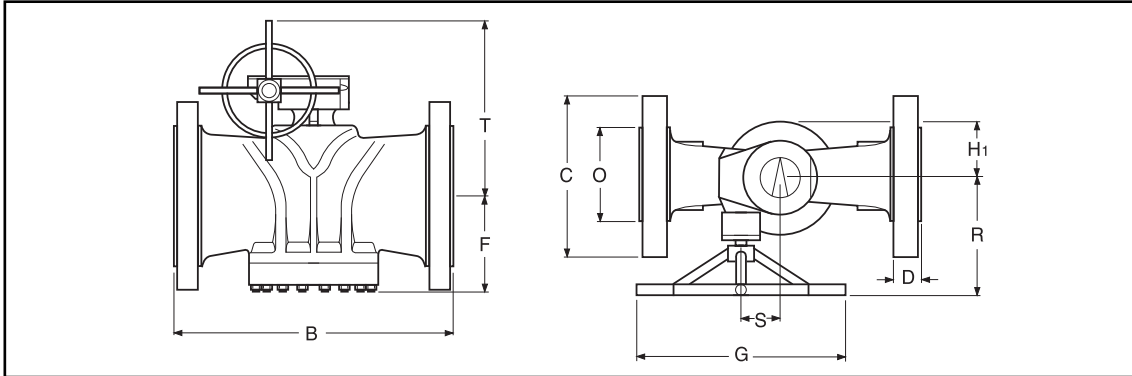
**HVG633CC** Flanged Class 600RF 150-300mm (6-12")  
**HVG655CC** Flanged Class 600RJ 150-300mm (6-12")  
**HVG666CC** Butt Weld End 150-300mm (6-12")



		<b>150 (6")</b>	<b>200 (8")</b>	<b>250 (10")</b>	<b>300 (12")</b>
<b>B</b>	End-to-end butt weld valves	559	660	787	838
		22	26	31	33
<b>B</b>	Face-to-face RF	559	660	787	838
		22	26	31	33
<b>B</b>	Face-to-face RJ	562	664	791	841
		22.1	26.1	31.1	33.1
<b>C</b>	Flange diameter	356	419	508	559
		14	16.5	20	22
<b>D</b>	Total flange thickness RF	54	62	70	73
		2.13	2.44	2.75	2.88
<b>D</b>	Total flange thickness RJ	55.6	63.6	71.4	74.6
		2.19	2.5	2.81	2.94
<b>F</b>	CL to bottom of body / cap	187	247	306	335
		7.36	9.72	12.0	13.2
<b>G</b>	Handwheel diameter	578	578	788	788
		22.8	22.8	31	31
<b>H1</b>	Body width from CL	117	127	208	222
		4.6	5	8.19	8.74
<b>O</b>	Raised face diameter RF	216	270	324	381
		8.5	10.6	12.8	15
<b>O</b>	Raised face diameter RJ	241	306	355	413
		9.5	12	14	16.3
<b>R</b>	CL to face of handwheel	308	308	437	437
		12.1	12.1	17.2	17.2
<b>S</b>	CL valve to CL operating spindle	104	104	195	195
		4.09	4.09	7.7	7.7
<b>T</b>	CL to top of handwheel	515	580	742	773
		20.3	22.8	29.2	30.4
	Weight (approx)	150	304	437	435 / 616
		330	670	965	958 / 1358
	kg				
	lb				

# Class 600 Venturi Pattern

<b>HVG633CC</b>	Flanged Class 600RF	350-900mm (14-36")	<b>HVG655CN</b>	Flanged Class 600RJ	400-600mm (16-24")
<b>HVG633CN</b>	Flanged Class 600RF	400-900mm (16-36")	<b>HVG666CC</b>	Butt Weld End	350-500mm (14-20")
<b>HVG655CC</b>	Flanged Class 600RJ	350-900mm (14-36")	<b>HVG666CN</b>	Butt Weld End	400-600mm (16-24")

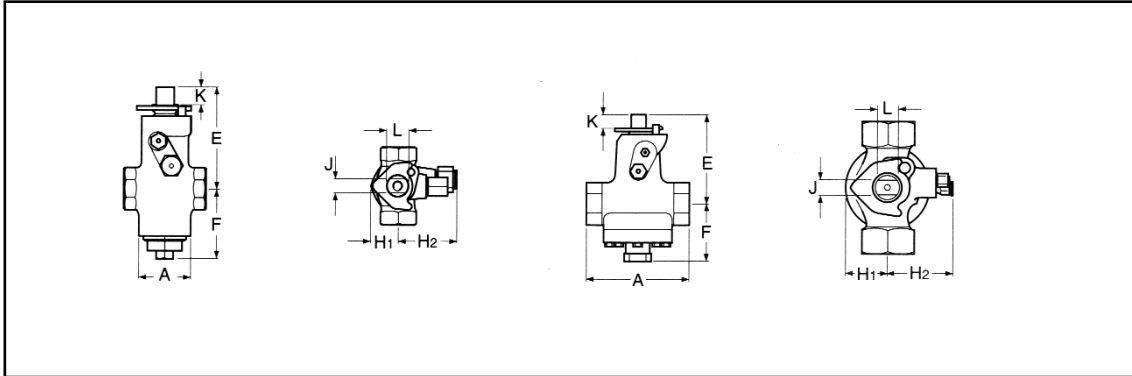


		350 (14")	400 (16")	450 (18")	500 (20")	600 (24")	650 (26")	750 (30")	900 (36")
<b>B</b>	End-to-end butt weld valves	889 35	991 39	1092 43	1194 47	1397 55	1448 57	1651 65	2083 82
<b>B</b>	Face-to-face RF	889 35	991 39	1092 43	1194 47	1397 55	1448 57	1651 65	2083 82
<b>B</b>	Face-to-face RJ	892 35.1	994 39.1	1095 43.1	1200 47.2	1407 55.4	1460 57.5	1664 65.5	2098 82.6
<b>C</b>	Flange diameter	603 23.8	686 27	743 29.3	813 32	940 37	1016 40	1130 44.5	1314.5 51.75
<b>D</b>	Total flange thickness RF	76.2 3	82.5 3.25	89.0 3.5	95.4 3.75	108 4.25	114.3 4.5	120.6 4.75	130.3 5.13
<b>D</b>	Total flange thickness RJ	77.8 3.06	84.1 3.31	90.5 3.56	98.5 3.88	112.7 4.44	120.8 4.75	127 5	138.2 5.44
<b>F</b>	CL to bottom of body / cap	375 14.8	429 16.9	464 18.3	477 18.8	496 19.5	496 19.5	Refer to SAV for dimensions	Refer to SAV for dimensions
<b>G</b>	Handwheel diameter	814 32	814 32	814 32	814 32	660 26	660 26		
<b>H1</b>	Body width from CL	246 9.69	268 10.6	296 11.7	381 15	432 17	432 17		
<b>O</b>	Raised face diameter RF	413 16.3	470 18.5	533 21	584 23	692 27.2	749 29.5	857 33.75	1022.4 40.25
<b>O</b>	Raised face diameter RJ	457 18	508 20	575 22.6	635 25	749 29.5	810 31.9	917 36.1	1092.2 43
<b>R</b>	CL to face of handwheel	500 19.7	500 19.7	500 19.7	530 20.9	585 23	585 23	Refer to SAV for dimensions	Refer to SAV for dimensions
<b>S</b>	CL valve to CL operating spindle	53.5 2.1	53.5 2.1	53.5 2.1	97 3.8	237 9.3	237 9.3		
<b>T</b>	CL to top of handwheel	825 32.5	845 33.3	900 35.4	945 37.2	870 34.3	870 34.3		
	Weight (approx)	kg 1905	1168 2575	1653 3644	1850 4079	2161 4764			

# Class 800 Regular Pattern

**HRW822CC** Screwed BSP Tpr 15-50mm (1/2-2")  
**HRW822CN** Screwed BSP Tpr 40 & 50mm (1 1/2-2")  
**HRW844CC** Screwed API 15-50mm (1/2-2")

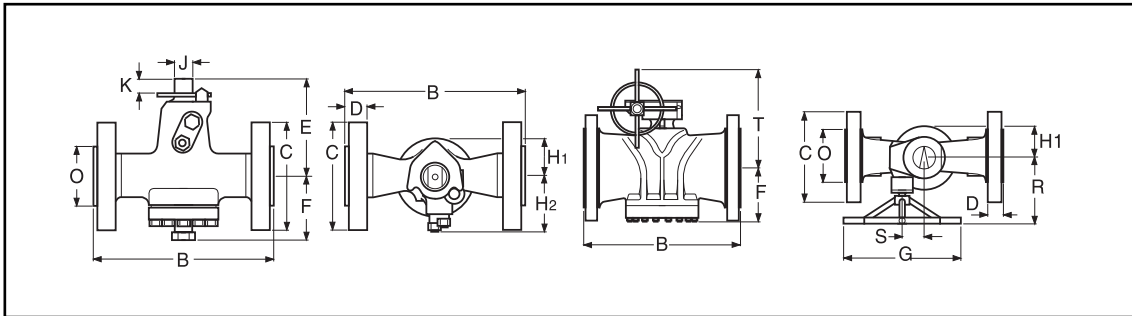
**HRW844CN** Screwed API 40 & 50mm (1 1/2-2")  
**HRW899CC** Socket Weld End 15-50mm (1/2-2")  
**HRW899CN** Socket Weld End 40 & 50mm (1 1/2-2")



		15 (1/2")	20 (3/4")	25 (1")	40 (1 1/2")	50 (2")
<b>A</b>	End-to-end screwed / SWE	89 3.5	133 5.24	133 5.24	229 9	229 9
<b>E</b>	CL to top of stem / injector	104 4.09	127 5	127 5	174 6.85	174 6.85
<b>F</b>	CL to bottom of body / cap	76 3	97 3.82	97 3.82	126 4.96	126 4.96
<b>H1</b>	Body width from CL	31 1.22	41.5 1.42	41.5 1.42	63 2.48	63 2.48
<b>H2</b>	Body width from CL	68 2.68	76 3	76 3	106 4.17	106 4.17
<b>J</b>	Stem across flats	13 0.51	17 0.67	17 0.67	25.3 1	25.3 1
<b>K</b>	Depth of flats with stop plate	19 0.75	24 0.94	24 0.94	26 1.02	26 1.02
<b>K</b>	Depth of flats without stop plate	24 0.94	29 1.14	29 1.14	34 1.34	34 1.34
<b>L</b>	Stem diameter	19 0.75	22.2 0.87	22.2 0.87	35 1.38	35 1.38
<b>U</b>	CL to end of fitted wrench	261 10.3	261 10.3	261 10.3	685 27	685 27
<b>Z</b>	ID socket weld end	21.7 0.86	27.1 1.07	33.8 1.33	48.6 1.91	61.1 2.41
<b>ZA</b>	Depth of socket	9.53 0.38	12.7 0.5	12.7 0.5	13 0.51	16 0.63
	Weight (approx) kg lb	2.5 6	6.8 15	6.8 15	22 49	24.5 54

# Class 900 Regular Pattern

<b>HRW922CC</b> Screwed BSP Tpr *	15-50mm (1/2-2")	<b>HRW955CC</b> Flanged Class 900RJ	80-100mm (3 & 4")
<b>HRW922CN</b> Screwed BSP Tpr *	40 & 50mm (1 1/2 & 2")	<b>HRW955CN</b> Flanged Class 900RJ	80-100mm (3 & 4")
<b>HRW933CC</b> Flanged Class 900RF	80 & 100mm (3 & 4")	<b>HRW999CC</b> Socket Weld End *	15-50mm (1/2-2")
<b>HRW933CN</b> Flanged Class 900RF	80 & 100mm (3 & 4")	<b>HRW999CN</b> Socket Weld End *	40 & 50mm (1 1/2 & 2")
<b>HRW944CC</b> Screwed API *	15-50mm (1/2-2")	<b>HRG933CC</b> Flanged Class 900RF	150-300mm (6-12")
<b>HRW944CN</b> Screwed API *	40 & 50mm (1 1/2 & 2")	<b>HRG955CC</b> Flanged Class 900RJ	150-300mm (6-12")



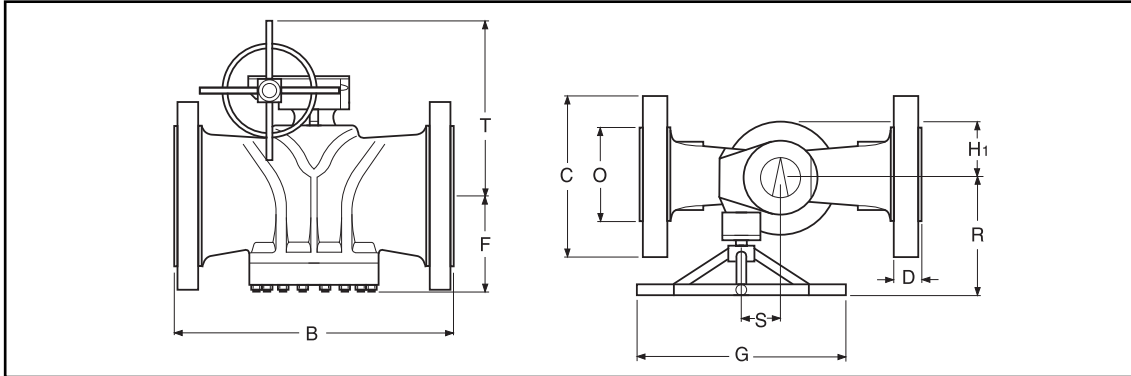
		15-50 (1/2-2")	80 (3")	100 (4")	150 (6")	200 (8")	250 (10")	300 (12")
<b>B</b>	Face-to-face RF	*	381 15	457 18	610 24	737 29	838 33	965 38
<b>B</b>	Face-to-face RJ		384 15.1	460 18.1	613 24.1	740 29.1	841 33.1	968 38.1
<b>C</b>	Flange diameter		241 9.5	292 11.5	381 15	470 18.5	546 21.5	610 24
<b>D</b>	Total flange thickness RF		44.5 1.75	50.8 2	61.9 2.44	69.9 2.75	76.2 3	86 3.39
<b>D</b>	Total flange thickness RJ		46 1.81	52.4 2.06	63.5 2.5	71.4 2.81	77.8 3.06	87.3 3.44
<b>E</b>	CL to top of stem		217 8.54	232 9.13	- -	- -	- -	- -
<b>F</b>	CL to bottom of body / cap		156 6.14	170 6.69	273 10.7	316 12.4	395 15.6	* -
<b>G</b>	Handwheel diameter		- -	- -	578 22.8	787 31	787 31	* -
<b>H1</b>	Body width from CL		93 3.66	105 4.13	111 4.37	251 9.88	102 4.02	* -
<b>H2</b>	Body width from CL		119 4.69	133 5.24	- -	279 11	- -	* -
<b>J</b>	Stem across flats		28.5 1.12	28.5 1.12	- -	- -	- -	- -
<b>K</b>	Depth of flats with stop plate		34 1.34	34 1.34	- -	- -	- -	- -
<b>K</b>	Depth of flats without stop plate		42 1.65	42 1.65	- -	- -	- -	- -
<b>L</b>	Stem diameter		41 1.61	41 1.61	- -	- -	- -	- -
<b>O</b>	Raised face diameter RF		127 5	157 6.19	216 8.5	270 10.6	324 12.8	381 15
<b>O</b>	Raised face diameter RJ		156 6.13	181 7.13	241 9.5	419 16.5	362 14.3	419 16.5
<b>R</b>	CL to face of handwheel		- -	- -	595 23.4	452 17.8	437 17.2	* -
<b>S</b>	CL valve to CL operating spindle		- -	- -	105 4.13	227 8.94	227 8.94	* -
<b>T</b>	CL to top of handwheel		- -	- -	595 23.4	256 29.8	775 30.5	* -
<b>U</b>	CL to end of fitted wrench		913 35.9	913 35.9	- -	- -	- -	- -
	Weight (approx) kg lb		114 250	125 276	264 581	591 1300	662 1456	* -
	Wrench Number		B7	B7	-	-	-	-

\* See 'Class 800 Regular Pattern' for dimensions (screwed ends)

\* Refer to Serck Audco Valves \* For Class 900 flanged valves use Class 1500 valves

# Class 900 Venturi Pattern

**HVG933CC** Flanged Class 900RF 300-600mm (12-24")  
**HVG933CN** Flanged Class 900RF 400-600mm (16-24")  
**HVG955CC** Flanged Class 900RJ 300-600mm (12-24")  
**HVG955CN** Flanged Class 900RJ 400-600mm (16-24")

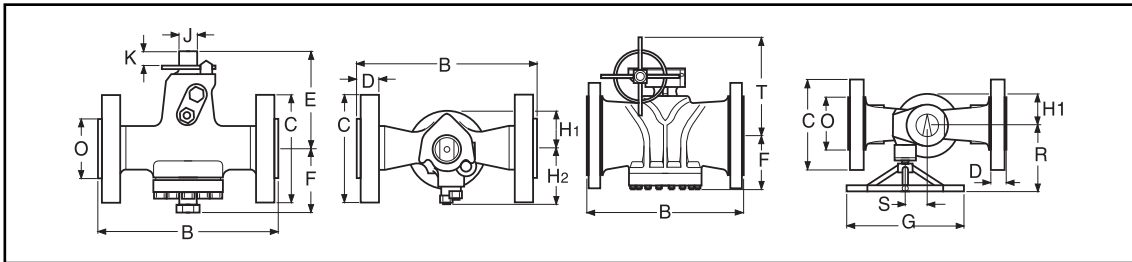


		<b>300 (12")</b>	<b>350 (14")</b>	<b>400 (16")</b>	<b>450 (18")</b>	<b>500 (20")</b>	<b>600 (24")</b>
<b>B</b>	Face-to-face RF	965 38	1029 40.5	1130 44.5	1219 48	1321 52	1549 61
<b>B</b>	Face-to-face RJ	968 38.1	1038 40.9	1140 44.9	1232 48.5	1334 52.5	1568 61.7
<b>C</b>	Flange diameter	610 24	641 25.2	705 27.8	787 31	857 33.8	1041 41
<b>D</b>	Total flange thickness RF	85.8 3.38	92.1 3.63	95.3 3.75	108 4.25	114.4 4.5	146.1 5.75
<b>D</b>	Total flange thickness RJ	87.3 3.44	96.8 3.81	100 3.94	114.3 4.5	120.7 4.75	155.6 6.13
<b>O</b>	Raised face diameter RF	381 15	413 16.26	470 18.5	533 21	584 23	692 27.2
<b>O</b>	Raised face diameter RJ	419 16.5	466.7 18.4	523.9 20.63	593.7 23.4	647.7 25.5	771.5 30.4



# Class 1500 Regular Pattern

<b>HRWA22CC</b> Screwed BSP Tpr *	15-50mm (½-2")	<b>HRWA55CC</b> Flanged Class 1500RJ	15-80mm (½-3")
<b>HRWA22CN</b> Screwed BSP Tpr *	40 & 50mm (1½ & 2")	<b>HRWA55CN</b> Flanged Class 1500RJ	15-80mm (½-3")
<b>HRWA33CC</b> Flanged Class 1500RF	15-80mm (½-3")	<b>HRWA66CC</b> Butt Weld End	50mm (2")
<b>HRWA33CN</b> Flanged Class 1500RF	40-80mm (1½ & 3")	<b>HRWA66CN</b> Butt Weld End	50mm (2")
<b>HRWA44CC</b> Screwed API *	15-50mm (½-2")	<b>HRWA99CC</b> Socket Weld End *	15-50mm (½-2")
<b>HRWA44CN</b> Screwed API *	40 & 50mm (1½ & 2")	<b>HRWA99CN</b> Socket Weld End *	40 & 50mm (1½ & 2")
<b>HRGA33CC</b> Flanged Class 1500RF	100 & 150mm (4 & 6")	<b>HRGA55CC</b> Flanged Class 1500RJ	100 & 150mm (4 & 6")
<b>HRGA33CN</b> Flanged Class 1500RF	100mm (4")	<b>HRGA55CN</b> Flanged Class 1500RJ	100mm (4")



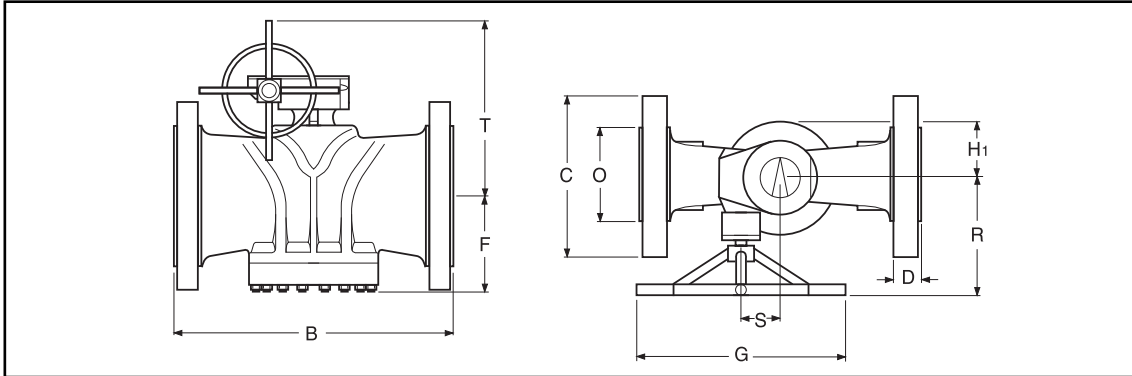
		15 (½")	20 (¾")	25 (1")	40 (1½")	50 (2")	80 (3")	100 (4")	150 (6")
<b>B</b>	Face-to-face RF	216 8.5	229 9	254 10	305 12	368 14.5	470 18.5	546 21.5	705 27.8
<b>B</b>	Face-to-face RJ	216 8.5	229 9	254 10	305 12	372 14.6	473 18.6	549 21.6	711 28
<b>C</b>	Flange diameter	121 4.76	130 5.12	149 5.87	178 7	216 8.5	267 10.5	311 12.2	394 15.5
<b>D</b>	Total flange thickness RF	28.6 1.13	31.8 1.25	35 1.38	38 1.5	44.5 1.75	54 2.13	60.3 2.38	89.1 3.5
<b>D</b>	Total flange thickness RJ	28.6 1.13	31.8 1.25	35 1.38	38 1.5	46 1.81	55.6 2.19	61.9 2.44	92.1 3.63
<b>E</b>	CL to top of stem	104 4.09	127 5	127 5	164 6.46	174 6.85	212 8.35	-	-
<b>F</b>	CL to bottom of body / cap	76 3	97 3.82	97 3.82	116 4.57	126 4.96	163 6.42	186 7.32	-
<b>G</b>	Handwheel diameter	-	-	-	-	-	-	560 22	-
<b>H1</b>	Body width from CL	31 1.22	36 1.42	36 1.42	60 2.36	63 2.48	93 3.66	102 4.02	Refer to SAV for dimen- sions
<b>H2</b>	Body width from CL	68 2.68	76 3	76 3	104 4.09	106 4.17	119 4.69	133 5.24	
<b>J</b>	Stem across flats	13 0.51	17 0.67	17 0.67	25.3 1	25.3 1	28.5 1.12	-	
<b>K</b>	Depth of flats with stop plate	19 0.75	24 0.94	24 0.94	26 1.02	26 1.02	34 1.34	-	-
<b>K</b>	Depth of flats without stop plate	24 0.94	29 1.14	29 1.14	34 1.34	34 1.34	42 1.65	-	-
<b>L</b>	Stem diameter	19 0.75	22.2 0.87	22.2 0.87	35 1.38	35 1.38	41 1.61	-	-
<b>O</b>	Raised face diameter RF	35 1.38	43 1.7	51 2	73 2.87	92 3.62	127 5	157 6.18	216 8.5
<b>O</b>	Raised face diameter RJ	60.3 2.37	66.7 2.63	71.4 2.81	92 3.62	124 4.88	168 6.61	194 7.64	248 9.76
<b>R</b>	CL to face of handwheel	-	-	-	-	-	-	243 9.5	Refer to SAV for dimen- sions
<b>S</b>	CL valve to CL operating spindle	-	-	-	-	-	-	111 4.37	
<b>T</b>	CL to top of handwheel	-	-	-	-	-	-	508 20	
<b>U</b>	CL to end of fitted wrench	261 10.3	261 10.3	261 10.3	685 27	685 27	913 35.9	-	-
	Weight (approx)	kg 10	8.5 19	13.5 30	16 35	68 150	118 260	161 355	-
	Wrench Number	B8	B9	B9	B5S	B5S	B7	-	-

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

# Class 1500 Venturi Pattern

**HVGA33CC** Flanged Class 1500RF 150-450mm (6-18")  
**HVGA33CN** Flanged Class 1500RF 400-450mm (16-18")  
**HVGA55CC** Flanged Class 1500RJ 150-450mm (6-18")

**HVGA55CN** Flanged Class 1500RJ 400-450mm (16-18")  
**HVGA66CC** Butt Weld End 150-450mm (6-18")  
**HVGA66CN** Butt Weld End 400-450mm (16-18")

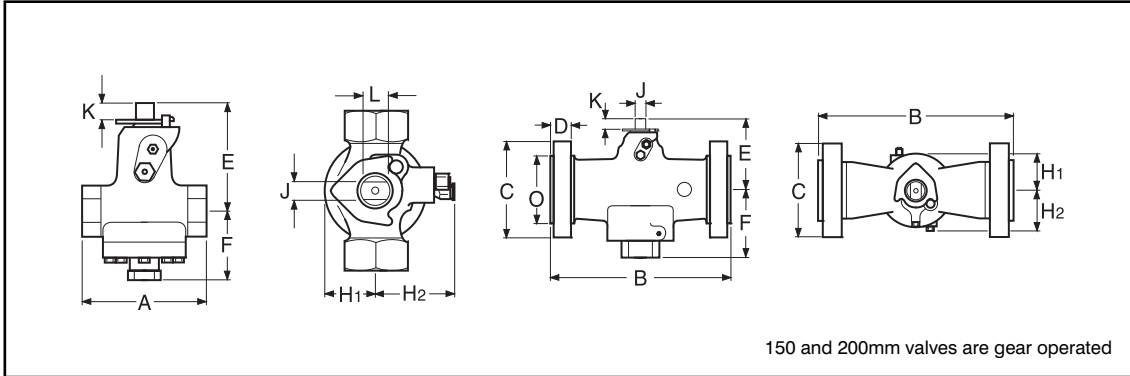


		150 (6")	200 (8")	250 (10")	300 (12")	350 (14")	400 (16")	450 (18")	
<b>B</b>	Face-to-face RF	705 27.8	832 32.8	991 39	1130 44.5	1257 49.5	1384 54.5	1537 60.5	
<b>B</b>	Face-to-face RJ	711 28	841 33.1	1000 39.4	1146 45.1	1276 50.2	1407 55.4	1559 61.4	
<b>C</b>	Flange diameter	394 15.5	483 19	584 23	673 26.5	749 29.5	826 32.5	914 36	
<b>D</b>	Total flange thickness RF	89.1 3.5	98.4 3.87	114.3 4.5	130.2 4.5	139.8 5.13	152.5 5.5	168 6.63	
<b>D</b>	Total flange thickness RJ	92.1 3.63	103 4.06	119.1 4.69	135.1 5.32	144.3 5.68	163.6 6.44	179.4 7.07	
<b>F</b>	CL to bottom of body / cap	211 8.3	272 10.7	Refer to Serck Audco Valves for dimensions					
<b>G</b>	Handwheel diameter	813 32	813 32						
<b>H1</b>	Body width from CL	121 4.75	172 6.8						
<b>O</b>	Raised face diameter RF	216 8.5	270 10.6						
<b>O</b>	Raised face diameter RJ	248 9.76	318 12.5	372 14.6	438 17.2	489 19.2	546 21.5	613 24.1	
<b>R</b>	CL to face of handwheel	365 14.4	500 19.7	Refer to Serck Audco Valves for dimensions					
<b>S</b>	CL valve to CL operating spindle	13.7 5.4	60 2.4						
<b>T</b>	CL to top of handwheel	653 25.7	720 28.3						
	Weight (approx) kg lb	257 567	521 1149						

# Class 2500 Regular Pattern

**HRWB22CC** Screwed BSP Tpr 15-50mm (½-2")  
**HRWB33CC** Flanged Class 2500RF 15-100mm (½-4")  
**HRWB44CC** Screwed API 15-50mm (½-2")  
**HRWB55CC** Flanged Class 2500RJ 15-100mm (½-4")

**HRWB66CC** Butt Weld End 50mm (2")  
**HRWB99CC** Socket Weld End 15-50mm (½-2")  
**HRGB33CC** Flanged Class 2500RF 150 & 200mm (6 & 8")  
**HRGB55CC** Flanged Class 2500RJ 150 & 200mm (6 & 8")



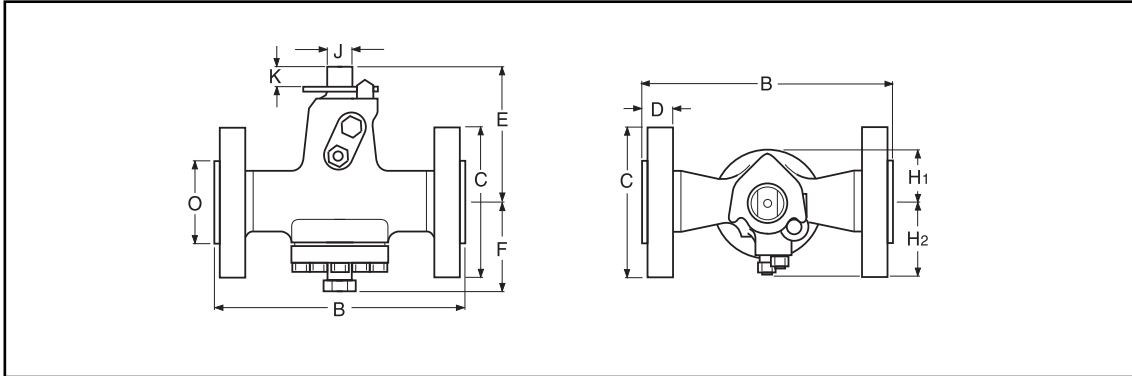
		15 (½")	20 (¾")	25 (1")	40 (1½")	50 (2")	80 (3")	100 (4")	150 (6")	200 (8")	250 (10")	300 (12")				
<b>A</b>	End-to-end screwed valves	89 3.5	133 5.24	133 5.24	229 9.02	229 9.02	- -	- -	- -	- -	- -	- -				
<b>B</b>	Face-to-face RF	264 10.4	273 10.7	308 12.1	384 15.12	451 17.8	578 22.8	673 26.5	914 36	1022 40.2	1270 50	1422 56				
<b>B</b>	Face-to-face RJ	264 10.4	273 10.7	308 12.1	387 15.24	454 17.9	584 23	683 26.9	927 36.5	1038 40.9	1292 50.9	1445 56.9				
<b>C</b>	Flange diameter	133 5.24	140 5.5	159 6.26	203 8	235 9.25	305 12	356 14	483 19	552 21.8	673 26.5	762 30				
<b>D</b>	Total flange thickness RF	36.6 1.44	38.1 1.5	41.3 1.63	50.7 2	57.2 2.25	73.0 2.87	82.6 3.25	114.4 4.5	133.4 5.25	171.5 6.75	190 7.5				
<b>D</b>	Total flange thickness RJ	36.6 1.44	38.1 1.5	41.3 1.63	52.3 2.06	58.7 2.31	76.2 3	87.3 3.44	120.6 4.75	141.2 5.56	182.6 7.19	201 7.9				
<b>E</b>	CL to top of stem	104 2.2	127 3.35	127 3.66	250	250	307	253	Refer to Serck Audco Valves for dimensions							
<b>F</b>	CL to bottom of body / cap	76 3	97 3.82	97 3.82	171 6.73	171 6.73	213 8.39	233 9.17								
<b>H1</b>	Body width from CL	31 1.22	41.5 1.63	41.5 1.63	119 4.69	119 4.69	165 6.5	165 6.5								
<b>H2</b>	Body width from CL	68 2.68	76 3	76 3	119 4.69	119 4.69	165 6.5	165 6.5								
<b>J</b>	Stem across flats	13 0.51	17 0.67	17 0.67	25.4 1.00	25.4 1.00	28.5 1.12	28.5 1.12								
<b>K</b>	Depth of flats with stop plate	19 0.75	24 0.94	24 0.94	25 0.98	25 0.98	34 1.34	34 1.34								
<b>K</b>	Depth of flats without stop plate	24 0.94	29 1.14	29 1.14	32 1.26	32 1.26	42 1.65	42 1.65								
<b>L</b>	Stem diameter	19 0.75	22.2 0.87	22.2 0.87	35 1.38	35 1.38	41 1.61	41 1.61								
<b>O</b>	Raised face diameter RF	35 1.38	43 1.69	51 2.01	64 2.52	92.1 3.63	127 5	157 6.18					216 8.5	270 10.6	324 12.8	381 15
<b>O</b>	Raised face diameter RJ	65.1 2.56	73 2.87	82.6 3.25	101.6 4	133 5.24	168 6.61	203 8					279 11	340 13.4	425 16.8	495 19.5
<b>U</b>	CL to end of fitted wrench	230 9.06	318 12.5	318 12.5	685 27	685 27	913 35.9	913 35.9	-	-	-	-				
	Weight (approx)	kg 2.5/13	6.8/18	17/22	37/63	37/74	155	230	-	-	-	-				
		lb 5.5/29	15/40	37/49	82/138	82/163	342	507	-	-	-	-				
	Wrench Number	B8	B9	B9	B5S	B5S	B7	B7	-	-	-	-				

# API 2000, 3000, 5000

**HRWC55BC** Flanged Class API 2000RJ 50-100mm (2-4")

**HRWD55BC** Flanged Class API 3000RJ 50-100mm (2-4")

**HRWE55BC** Flanged Class API 5000RJ 50-100mm (2-4")



		API 2000			API 3000			API 5000		
		52 (2 <sup>1</sup> / <sub>16</sub> "	78 (3 <sup>1</sup> / <sub>8</sub> "	103 (4 <sup>1</sup> / <sub>16</sub> "	52 (2 <sup>1</sup> / <sub>16</sub> "	78 (3 <sup>1</sup> / <sub>8</sub> "	103 (4 <sup>1</sup> / <sub>16</sub> "	52 (2 <sup>1</sup> / <sub>16</sub> "	78 (3 <sup>1</sup> / <sub>8</sub> "	103 (4 <sup>1</sup> / <sub>16</sub> "
<b>B</b>	Face-to-face RJ	295 11.6	359 14.1	435 17.1	372 14.6	384 15.1	460 18.1	372 14.6	473 18.6	549 21.6
<b>C</b>	Flange diameter	165 6.5	210 8.25	273 10.7	216 8.5	241 9.5	292 11.5	216 8.5	267 10.5	311 12.2
<b>D</b>	Total flange thickness RF	33.3 1.31	39.7 1.56	46 1.81	46 1.81	46 1.81	52.4 2.06	46 1.81	55.6 2.19	61.9 2.44
<b>E</b>	CL to top of stem	176 6.93	217 8.54	232 9.13	174 6.85	217 8.54	232 9.13	174 6.85	212 8.35	228 8.98
<b>F</b>	CL to bottom of body / cap	116 4.57	143 5.63	165 6.5	126 4.96	156 6.14	170 6.69	126 4.96	163 6.42	191 7.52
<b>H1</b>	Body width from CL	56 2.2	85 3.35	93 3.66	63 2.48	93 3.66	105 4.13	63 2.48	93 3.66	102 4.02
<b>H2</b>	Body width from CL	105 4.13	116 4.57	133 5.24	106 4.17	119 4.69	133 5.24	106 4.17	119 4.69	133 5.24
<b>J</b>	Stem across flats	19 0.75	25.3 1	25.3 1	25.3 1	28.5 1.12	28.5 1.12	25.3 1	28.5 1.12	28.5 1.12
<b>K</b>	Depth of flats with stop plate	25 0.98	26 1.02	26 1.02	26 1.02	34 1.34	34 1.34	26 1.02	34 1.34	34 1.34
<b>K</b>	Depth of flats without stop plate	32 1.26	34 1.34	34 1.34	34 1.34	42 1.65	42 1.65	34 1.34	42 1.65	42 1.65
<b>L</b>	Stem diameter	27 1.06	35 1.38	35 1.38	35 1.38	41 1.61	41 1.61	35 1.38	41 1.61	41 1.61
<b>O</b>	Raised face diameter RJ	108 4.25	146 5.75	175 6.89	124 4.88	156 6.13	181 7.13	124 4.88	168 6.61	194 7.64
<b>U</b>	CL to end of fitted wrench	495 19.5	685 27	685 27	685 27	913 35.9	913 35.9	685 27	913 35.9	913 35.9
	Weight (approx)	kg 54	46 101	85 187	38 84	85 187	125 276	38 84	86 190	129 284

# Materials

## Body Materials

	SAV Specification	Used for	Comparable Specifications	Form
CARBON STEEL	ASTM A216 Gr. WCB & WCC, Max. C 0.25%, Max. hardness Rc. 22	Bodies all types except ½ - 1" screwed end	BS 1504-161 Grade 480	CASTING
	ASTM A105 but Max. hardness Rc. 22 Max. C 0.25%	Bodies screwed end ½ - 1" sizes	BS 1503-164-490	FORGING

Alternative materials available include:

ASTM A216 Gr. WCB and BG/GBE/C9 (British Gas Corporation specification - casting)

ASTM A352 Gr. LCB (carbon steel low temperature - casting)

ASTM A352 Gr. LCC maximum carbon content 0.23% (carbon manganese steel low temperature - casting)

ASTM A350 Gr. LF2 (carbon manganese steel low temperature - forging)

API 6A used for bodies to API.6A, i.e. API 2000, API 3000 and API 5000 valves page 30

ASTM A217 Gr. WC1/WC6 (carbon/alloy steel - casting)

ASTM A351 Gr. CF8M/CF8/CF3M (stainless steel - casting)

Duplex stainless steels

## Plug Materials

	SAV Specification	Used for	Comparable Specifications	Form
CARBON STEEL	ASTM A105 or ASTM A216 Gr. WCB	2" and above Case Hardened/ NACE all sizes electroless nickel 0.003"	BS 1503-164-490 BS 1504-161	FORGING/ CASTING
	Gr. 070 M20	BS 970 Case Hardened NACE ENP 0.003"	ASTM A29 BAR	WROUGHT
SG IRON	BS 2789 Gr. 420/12	1½ - 36" Class 600	ASTM A395	CASTING

Alternative materials available include:

ASTM A352 Gr. LCB (carbon steel low temperature)

ASTM A352 Gr. LCC maximum carbon content 0.23% (carbon manganese steel low temperature)

ASTM A350 Gr. LF2 (carbon manganese steel low temperature)

ASTM A351 Gr. CF8M (18/10/2 austenitic stainless steel)

ASTM A747 Gr. CB7 CU1 (17-4 PH stainless steel)

ASTM A705 Type 630 (17-4 PH stainless steel)

ASTM A564 Type 630 (17-4 PH stainless steel)

Duplex stainless steels

# Materials

## Stem Materials

	SAV Specification	Used for	Comparable Specifications	
ALLOY STEEL	BS 970 Gr. 709M40 (1% Cr. ½% Mo) Max. Hardness Rc. 22	All classes ½ - 4" Some larger sizes		AISI 4140
CARBON STEEL	ASTM A105 Max. Hardness Rc. 22	Most valves 6" and above all Classes	BS 1503-164-490	
STAINLESS STEEL	ASTM A705/564 Type 630 17-4 PH	Corrosive services or low temperatures		

Alternative material available:  
BS 3076 NA18 (K500 Monel) - Nickel Copper Aluminium Alloy

## Cover Materials

	SAV Specification	Used for	Comparable Specifications	Form
CARBON STEEL	ASTM A105	½" - 1½"	BS 1503-164-490	FORGING
	ASTM A516 Gr. 70 Max. Hardness Rc. 22	1½" and above all Classes	BS 1501-151 Gr. 430	PLATE
ALLOY STEEL	BS 970 Gr. 709 M40	Some large valves		AISI 140 FORGING

Alternative materials available:  
ASTM 516 Gr. 70 Charpy Tested  
BS 1501 Gr. 316 S11/13 (stainless steel) - Comparable to ASTM A240 Gr. 316  
Duplex stainless steels

## Bolting Materials

	SAV Specification	Used for	Comparable Specifications
ALLOY STEEL STUDS	ASTM A193 Gr. B7	All Classes 1½" and larger	
CARBON STEEL NUTS	ASTM A194 Gr. 2H	All Classes 1½" and larger	

Alternative materials available:  
 ASTM A193 Gr. B7M  
 ASTM A194 Gr. 2HM  
 ASTM A320 Gr. L7M  
 ASTM A320 Gr. L7 (low temperature) - STUDS  
 ASTM A194 Gr. L4 (L7/S4 supplement, low temperature) - NUTS  
 BS 3076 NA18 (K Monel) - Nickel Copper Aluminium Alloy - STUDS  
 BS 3076 NA13 (400 Monel) - Nickel Copper Alloy - NUTS

# Super-H Torque

The pressure balance and Super-LoMu features ensure that a Super-H valve always turns with the lowest possible turning effort compatible with tight shut-off and service conditions.

Figures given in the table are for normal maximum turning efforts at the valve stem. These can occur on full differential pressure, operating from closed to open. The maximum turning effort can occur either at the initial break, or at the port break (about 35 degrees from closed, where the port first breaks into the line). Whether port or initial break torque is the higher figure depends on the particular valve design and service conditions.

The figures quoted are based on actual test data. These conditions have been specifically chosen to give a good approximation to a normally expected operating maximum. When sizing an actuator, a safety factor of at least 30% should be added to the quoted figures to allow for variations in working conditions. We would advise that any actuator sizing be checked with Serck Audco Valves.

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 valve torque including the operating regime of the valve and the extent of any erosive or corrosive damage.

Be very careful when selecting an actuator with a switch valve mechanism.

## Torque (Nm)

Size	Class 150			Class 300			Class 600		CL800	Class 900			Class 1500		CL2500
	Short	Regular	Venturi	Short	Regular	Venturi	Regular	Venturi	Regular	Regular	Venturi	Regular	Venturi	Regular	
15 (½")							47		54	54		54			
20 (¾")							61		67	69		74			
25 (1")							81		94	96		101		244	
40 (1½")				81			149		210	157		162		515	
50 (2")	67	67		94			189		210	212		216		691	
80 (3")	162	162		230			366			474		542		976	
100 (4")	237	237		338			677			705		745		2400	
150 (6")	296	570			610	423	1080	677		1490		2400	1090	6640	
200 (8")	949	1360			1220	610	2030	1080		2710			3250	*	
250 (10")	1360	1650			1900	1220	2580	2030		4730			*	*	
300 (12")	1900	2510			2200	2440	4070	2980		*	4390		*		
350 (14")			1900			3120		4070			*		*		
400 (16")			2510			3800		5420			5400		*		
450 (18")			2710			4610		6620			*		*		
500 (20")			2850			5420		9450			8100				
600 (24")			3660			6750		12150			*				
650 (26")								*							
750 (30")			*			*		*							
900 (36")			*			*		*							

\* Refer to Serck Audco Valves.

To convert above figures to lbf ft multiply by a factor of 0.738.

# Sealants (methods of injection)

Audco sealants are formulated specially for use in Audco valves and no other types of sealant should be used, nor should Audco valve sealants be used for any purpose other than injecting into valves without our express recommendation.

## Injection by Sealant Gun

Since January 1989 Super-H pressure balanced plug valves have been fitted with a taper threaded sealant injector positioned in the centre of the stem or as a side feed in the body.

## Sealant Guns

Sealant guns are fitted with flexible hoses giving a hook-on connection to the combination sealant injector on the valve.



### **Type 400-D**

Hand operated hydraulic gun, fitted with a pressure gauge. This gun is designed to take Size 'K' sealant sticks. Effortless to operate and gives positive indication of when valve has been fully charged. Further information available on request.

### **Type ALG 4**

This gun is designed to take pre-packed cartridges of soft grade sealant which screw into the body of the gun and which can be removed either when empty or when a change of sealant is necessary.

## Pneumatic Sealant Injection Equipment

For compressed air actuated valves a pneumatic dispenser can be supplied.

It has a 3 lbs capacity sealant reservoir and a pumping element suitable for use on valves operating at line pressures up to 5,000 lb/in<sup>2</sup>. A predetermined quantity of sealant is fed into the valve at each operation. Further information available on request.



# Sealants (multi-purpose and specialised)

## Multi-Purpose Sealants

In recent years the Serck Audco Valves research laboratories have paid great attention to the development of multi-purpose sealants to simplify plant maintenance where many services are encountered. As a result of this research, we are able to offer two sealants which, between them, cover a very wide variety of services and have replaced many of the older Audco sealants. A single multi-purpose Audco sealant can often be used throughout an entire plant, even though that plant handles a variety of fluids. This simplifies maintenance and reduces the number of sealants which need to be stocked.

## Lubricating and Sealing Properties

In addition to being suitable for a wide range of services, these 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 at higher line pressures.

## Suitability Tests

The table below summarises our general sealant recommendations. Further details for specific services are contained in the Chemical Resistance Section of our catalogue.

Where there is any doubt as to the suitability of a particular sealant for a given service, tests should be carried out in a new clean valve. Experience shows this is the only satisfactory way to conduct such tests. Laboratory tests carried out by immersing a stick of sealant in a beaker of the line fluid have proved most misleading. Where samples of fluids can be supplied, together with details of temperatures and pressure rating involved, we can carry out tests in our own laboratories and give recommendations based upon the results.

## Temperature Range

The temperature range of each sealant is given in these tables but the sealant performance within the given temperature range may vary with the particular fluid being handled.

## Multi-Purpose Sealants

Sealant	Form	Colour	Temp. Range °C (°F)		Recommended for	Do not use on
			Min.	Max.		
731	H & K Sticks Cartridges Bulk S.S. Bulk	Cream	-15 (0) -20 (-5) -25 (-13) -30 (-22)	230 (450) 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.
733	H & K Sticks Cartridges Bulk	Cream	0 (32) -10 (12) -15 (0)	250 (480) 250 (480) 250 (480)	Butane, propane, gasoline, kerosene, oils, fuel oils, most hydrocarbon solvents. Sweet and sour natural and manufactured gas with water organic condensates, LPG systems, glycols, aqueous solutions.	Strong alkali and high aromatic and chlorinated solvents.
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

## Specialised Sealants

A range of specialised sealants is also available for other applications - please contact Serck Audco for recommendations.

# Sealants (packaging, storage and handling)

## Packaging of Stick Sealants

Sealant is supplied in sticks of suitable diameter and length, packed either singly or in boxes, as given in the following table. Weights will vary from those shown over a range of approximately 20-30% according to grade of sealant.

Stick Sizes	H	K
Stick diameter (mm)	35	35
Stick length (mm)	150	240
Number of sticks in box	1*	1*
Weight of box (gms)	Single - 170 Box of 12 - 2270	Single - 230 Box of 12 - 2760

\* **Note:** Size 'H' and 'K' sticks are packed singly in cylindrical containers or in boxes of 12.

### Gun Sealants

Type ALG4 - Pre-packed cartridge of soft grade sealant.

Type CL500 - 'K' Stick.

Type ALG3 - 'H' Stick.

Sealant can be purchased in bulk in larger containers. Bulk supplies available are:

Type of Container	Can	Can	Pail	Drum	Drum
Net Weight	3 kg	5 kg	18 kg	80 kg	180 kg

## Packaging of Soft Grade Sealants

Soft grade sealants cannot be formed into sticks for screw application.

Most sealants are available in cartridges for direct insertion into Sealant Gun Type ALG4.

Bulk supplies of soft grade sealants are available in the same size containers as given in the table at the top of this page for bulk stick grade sealants. When soft grade sealants are required they should be ordered as such, e.g. 731 Soft Grade.

## Audco Stem Packing Compound

This is a material prepared in stick form for packing the stems of Type 'H' and Super 'H' valves. Stem packing 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 in cylindrical containers as follows:

Stick Size	A	B	D
Number of Sticks in Container	40	24	24

## Storage and Handling of Sealants

Sealants should be stored in clean, dry conditions away from heat and flame and strong oxidising agents. Keep containers closed and store sealants in their original containers until required for use.

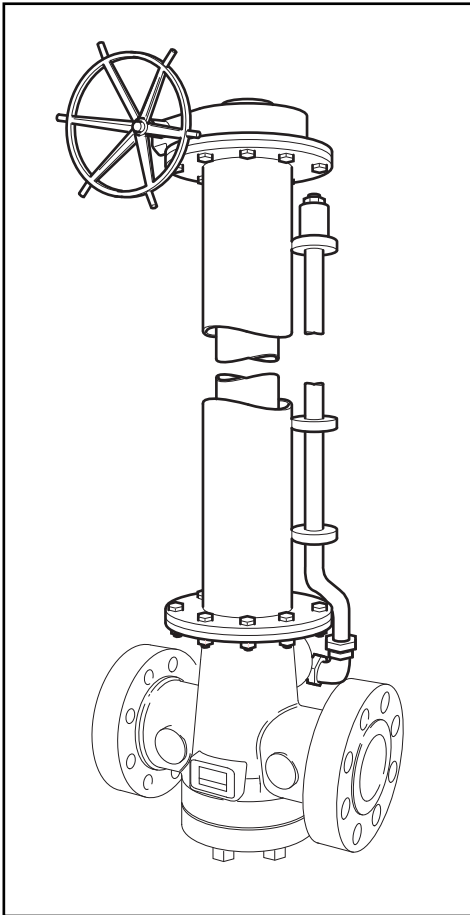
All of our sealants have flash points above 150°C but some will burn if subjected to sufficiently fierce flames. If any sealant is incinerated avoid breathing the fumes.

Normal hygiene procedures should be followed e.g. avoid prolonged skin contact, wash hands thoroughly after use, etc.

Specific data sheets for each sealant are available on request.

# Accessories

## Extension Columns



Valves for above ground operation are available with elevated gear unit mounting and vertical handwheel as shown. Available in a range of spindle lengths. Extension columns in other configurations are available on request. Please contact Serck Audco Valves for more information.

## Locking Devices

A simple range of locking and interlocking devices is available for most wrench operated flanged valves. They enable the wrench to be locked in either the OPEN or SHUT position or, if desired, in both positions.

Please specify which is required when ordering.

Locking devices to prevent unauthorised operation of a valve can be fitted to most Audco valves. Similar provisions can be made for gear operated valves.

# The Products of Success

## **SUPER-H PRESSURE BALANCED PLUG VALVE**

*This high pressure plug valve achieves an exceptional standard of reliability and has the major advantage of total freedom from seizure. In addition, the valve ensures long-term line and atmospheric sealing, eliminates routine maintenance, and gives assured performance under firetest conditions.*

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

- *Sizes: 15 to 600mm.*
- *Pressures: Up to Class 2500.*
- *Temperatures: -40°C to +250°C.*
- *Ratings: ANSI 150-1500, API 2000, 3000 and 5000.*

## **STANDARD TYPE PLUG VALVE**

*This plug valve is widely used throughout industry, particularly in chemical processing where there are corrosive materials. It is leak tight, rugged and reliable, with low resistance to flow but high resistance to corrosion and erosion.*

*These valves are maintained externally by injecting sealants during normal working so there is no need for plant shut-downs.*

- *Sizes: 15 to 300mm.*
- *Pressures: Up to 50 bar.*
- *Temperatures: -40°C to +250°C.*
- *Materials and Ratings: Cast Iron ANSI 125, Carbon Steel ANSI 150 and 300.*

## **SLIMSEAL GENERAL PURPOSE BUTTERFLY VALVE**

*Multiple material options mean that most industrial fluids can be handled safely. Both flangeless and lugged wafer style bodies are available. Seat and disk materials according to fluid.*

- *Materials: Cast Iron, SG Iron, Aluminium Bronze, Carbon Steel.*
- *Sizes: 50 to 600mm.*
- *Pressure: Up to 16 bar. Temperatures: Up to 120°C.*

## **BODYLINE SLEEVED PLUG VALVES**

*A compact, virtually maintenance-free range using a PTFE sleeve to provide first rate sealing with the minimum of attention.*

*Suitable for hazardous and difficult fluids under a wide range of operating conditions. The 'FIS Bodyline' models have a unique emergency second seal, and a range of body materials. A firetested version is also available.*

- *Materials: SG Iron, Carbon Steel, Stainless Steel.*
- *Sizes: 15 to 300mm.*
- *Pressure: Up to 50 bar.*
- *Temperatures: -40°C to +210°C.*
- *Ratings: ANSI 150 and 300.*

# Serck Audco - setting the pace in valve technology

Serck Audco has a reputation for quality and reliability. This long established reputation is maintained by modern design and manufacturing techniques. Today, the company, a member of the Flowserve Flow Control group, is one of the world's leading manufacturers and suppliers of valves and valve technology.

Serck Audco products are supplied and serviced around the globe, in industries as diverse as oil and gas, food and chemical processing.

Other products available:

- Butterfly valves
- Taper plug valves
- PTFE sleeved plug valves
- Process ball valves
- Pipelines ball valves
- Actuators

Copies of relevant literature available on request.



**Serck Audco Valves Ltd.**  
Burrell Road, Haywards Heath,  
West Sussex RH16 1TL  
T: +44 (0)1444 314560  
F: +44 (0)1444 314561

**FLOWERVE**<sup>®</sup>

Flow Control Division