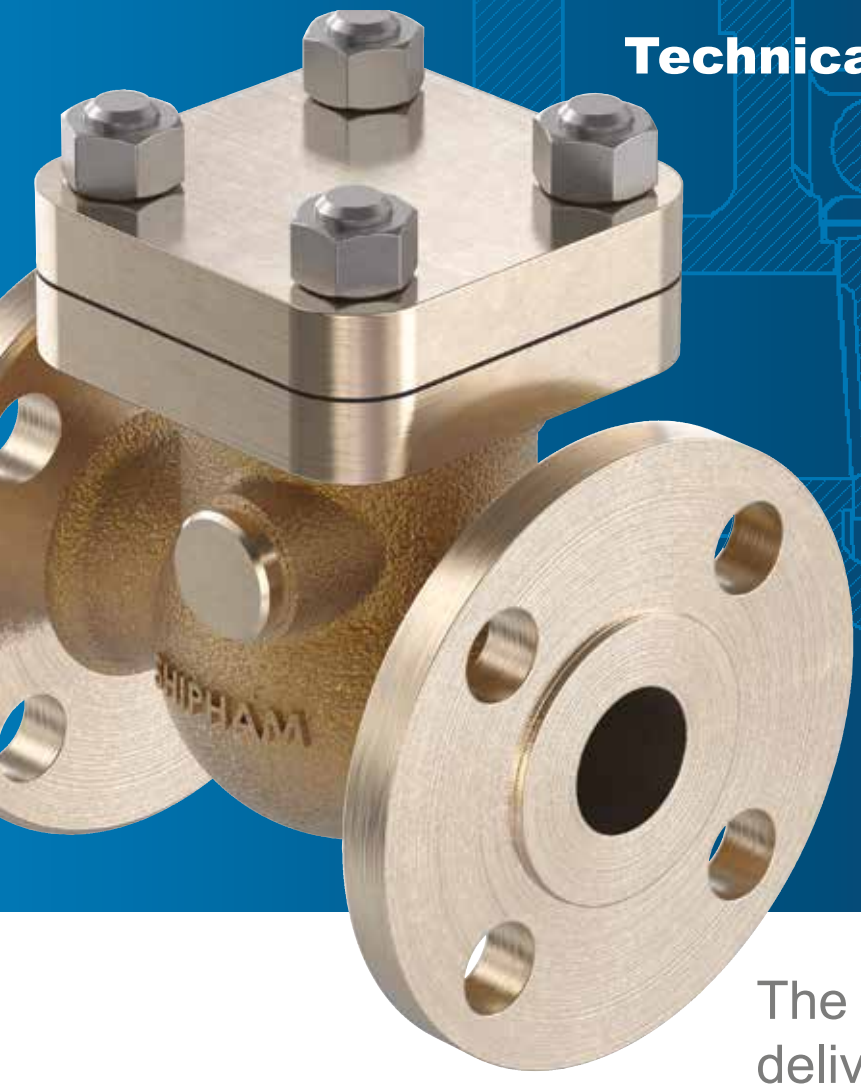
Swing Check Valve

Technical Product Information



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Contents

Headlines

Your Comprehensive Swing Check Valve Technical Manual

Shipham Valves has developed a high-quality Swing Check Valve range that reflects our technical expertise in valve design, product engineering and market knowledge. This range benefits from multiple design features which meet user expectations and reflect the wide range of applications these valves support.

Technical Information At Your Fingertips

This technical manual provides a comprehensive overview of our range, illustrated by detailed 3D models and cutaway imagery combined with in-depth product descriptions and technical information such as:

- User benefits
- Unique design features
- Technical specifications
- Valve components and construction
- Reference standards and certifications
- The varied applications supported by this range

User Requirements

The Swing Check Valve range restricts fluid flow to a single direction, prevents reverse fluid flow and delivers good flow rates.

Our unrivalled technical capabilities and expertise in product design, engineering and material selection provide a highly effective valve solution, manufactured to the highest standards. As a result, it will meet your application and exceed your expectations.

By choosing to work with Shipham Valves, we remove any concerns and provide total confidence that you have selected the right partner. This will help you navigate your way through the complex world of valve selection and project execution.

1 Introduction

Swing Check Valves are a durable, cost-effective way of preventing fluid from flowing backwards. They are effective on all services, at high and low pressures, and across a wide range of temperature applications.

The closure is achieved by the weight of the hinge and disc. It remains closed by back pressure while only letting line media through due to higher pressure differentiation upstream.

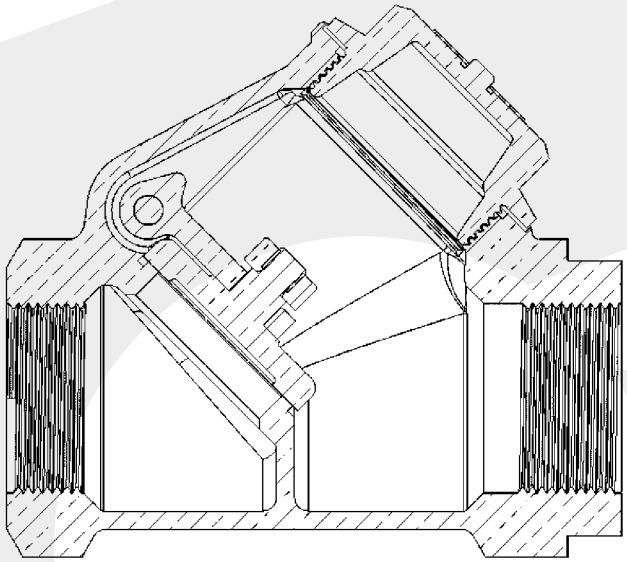


Image 1 - Swing check valve design (SC01)

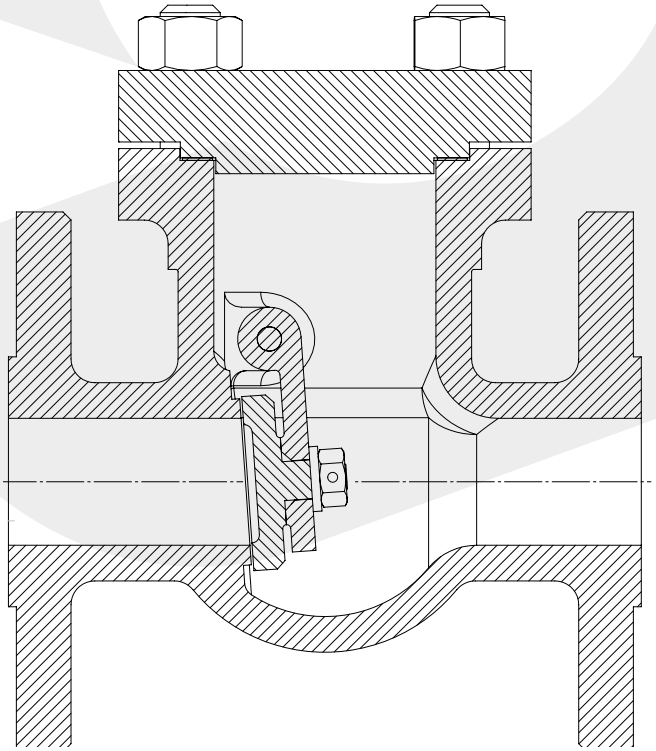


Image 2 - Swing check valve design (SC04)

1.1 Valve Design Series

- SC01 – Screwed Bonnet
- SC04 – Bolted Bonnet

SC01 - Screwed Bonnet

SC04 - Bolted Bonnet

1.2 Reference Standards

Valve Design
API 594 - Check Valves, Flanged, Lug, Wafer and Buttweld
ASME B16.34 - Valves - Flanged, Threaded and Buttweld
ASME B16.24 – Cast Copper Alloy Pipe Flanges, Flanged Fittings and Valves

Face to Face
ASME B16.10 (Flanged) - Valves Flanged, Threaded and Buttweld
Manufacturer's Standard (Threaded)

End Connections
ASME B1.20.1 (Threaded Ends)
ASME B16.11 (Socket Weld Ends)
ASME B16.18 (Capillary Ends)
ASME B16.5 – Pipe Flanges and Flanged Fittings or (Flange Ends)

Pressure Testing
API 598 - Valve Inspection and Testing
ASME B16.34 - Valves - Flanged, Threaded and Buttweld

Shut Off Class
API 598 - Valve Inspection and Testing
ISO 5208 Rate E - Pressure Testing of Metallic Valves

Fire Testing
Firesafe by design (when using Graphite seals)
Inherently firesafe when metal seated

Fugitive Emissions
N/A

Accreditations
PED 2014 / 68 / EU
PE(S)R

2 Applications

The Swing Check Valve performs effectively with large, predicted media flow. As the pressure reaches zero within the Swing Check Valve, the valve fully closes to prevent backflow.

It is widely used in water-related applications including water supply, wastewater pumps, slurry transport and fire protection systems.

Diverse Industry-Specific Applications

Moreover, it serves various industry-specific needs, providing a cost-effective valve solution for applications such as:

- Chemical and processing industries
- Fire protection
- Food and beverage
- Gas supply and transmission
- Marine
- Mining
- Oil and gas
- Onshore and offshore
- Petrochemical
- Petroleum
- Pharmaceuticals
- Power plants and generation
- Sewage systems
- Wastewater treatment plants

Supporting applications such as:

- Air
- Blackwater
- Fuel
- Irrigation applications
- Low-risk applications
- Natural gas cleaning, distribution and compression
- Potable water
- Slurry and pulp water applications
- Water and pumping
- Wastewater treatment

The Swing Check Valve range offers a robust valve solution that prevents reverse flow. It can be installed either vertically or horizontally and is easy to maintain. Its assembly ensures that the hinge and disc are protected from flow, so slurry and other media are less likely to attach to the assembly.

For these reasons, it's an ideal valve choice for several industries.

3 Design Features

3.1 Automatic Operation

- The automatic operation closes the valve as the pressure decreases. When closed, the Swing Check Valve prevents any potential backflow from the line media. Typically, the pressure drop and turbulence within this valve are very low.
- The robust design allows the Swing Check Valve to be used in almost all applications as a one-way valve at temperatures between -46°C and +425°C.

3.2 Installation and Maintenance

- Swing Check Valves can be installed within piping, in almost any mounting position. They can work in most orientations and in all applications.
- The accessible bonnet allows the Swing Check Valve to be easily maintained throughout the product's life.
- Flexibility - can be installed horizontally and vertically.

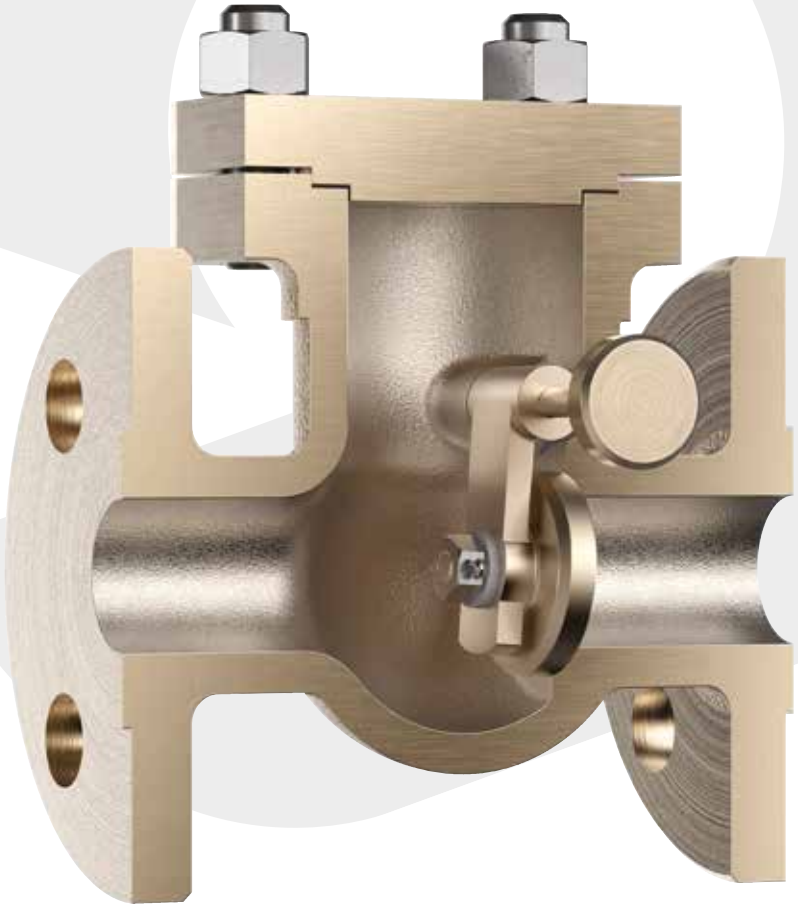


Image 3 - Swing check valve (SC04) cutaway with bolted bonnet - 3D exploded view

Shipham Valves' Swing Check Valve with Screwed Bonnet (SC01) - 3D Exploded View

Image 4 - Swing check valve with screwed bonnet - 3D exploded view (SC01)

Shipham Valves 24” Swing Check Valve in Hastelloy®

This 24” Swing Check Valve, constructed from specialist Hastelloy® material, was recently deployed to meet the firewater service application for a newly constructed Floating Production Storage and Offloading (FPSO) vessel project.

4 Product Range

4.1 SC01

Swing Check Valve - Screwed Bonnet

Image 5 - Swing check valve with screwed bonnet

4.2 Series Availability

This range is available in sizes from 1/2” up to 24” with further size options.

These tables below highlight the product range for Shipham Valves’ Swing Check Valves. Further sizes are available upon customer request.

Size	1/2”			3/4”			1”			1 1/2”			2”			3”		
Class	Cl 150	Cl 300	PN 32	Cl 150	Cl 300	PN 32	Cl 150	Cl 300	PN 32	Cl 150	Cl 300	PN 32	Cl 150	Cl 300	PN 32	Cl 150	Cl 300	PN 32
Screwed Bonnet (SC01)	●		●	●		●	●		●	●		●	●		●	●		●

Table 1 - Swing check valve range series size availability (1/2” - 3”)

5 Valve Dimensions

5.1 Envelope Dimensions

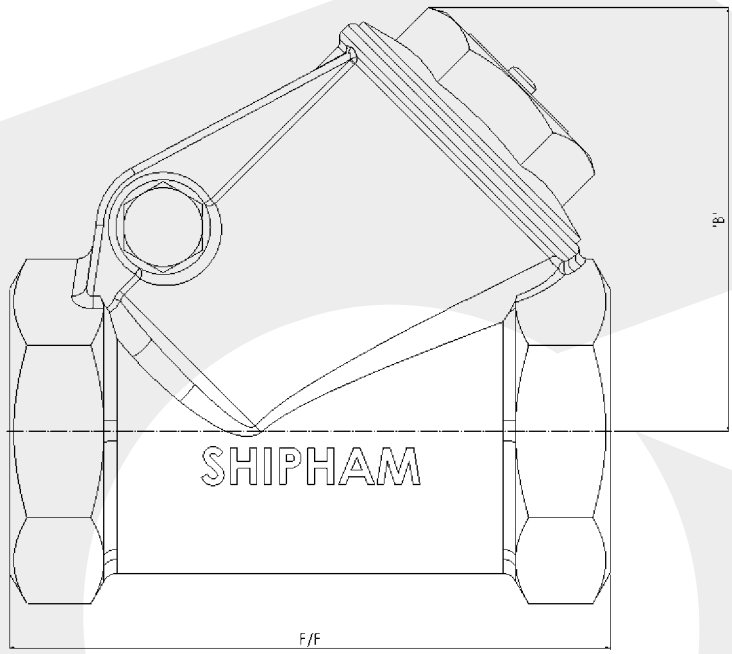


Image 6 - GA drawing swing check valve screwed bonnet (SC01)

Class 150				
Valve size (inch)	A (mm)	B (mm)	F/F (mm)	Weight (KG)
1/2"	36	52.3	71.4	0.7
3/4"	36	52.3	71.4	0.8
1"	41	62.9	87.3	1.2
1 1/2"	52.5	77.6	120.6	1.7
2"	70	103.2	149.2	3.6
3"	108	167	228.6	10.7

Table 2 - Valve (SC01) envelope dimensions and series weights (Class 150)

Class 300				
Valve size (inch)	A (mm)	B (mm)	F/F (mm)	Weight (KG)
1/2"	34.9	57	75	0.8
3/4"	41.3	64	84	1
1"	50.8	77	103.2	1.8
1 1/2"	66.7	103	120	4
2"	77.8	126	149.2	5.7
3"	N/A	N/A	N/A	N/A

Table 3 - Valve (SC01) envelope dimensions and series weights (Class 300)

24" Swing Check Valve body in Hastelloy

6 Part Identification

Part Identification - Screwed Bonnet (SC01)

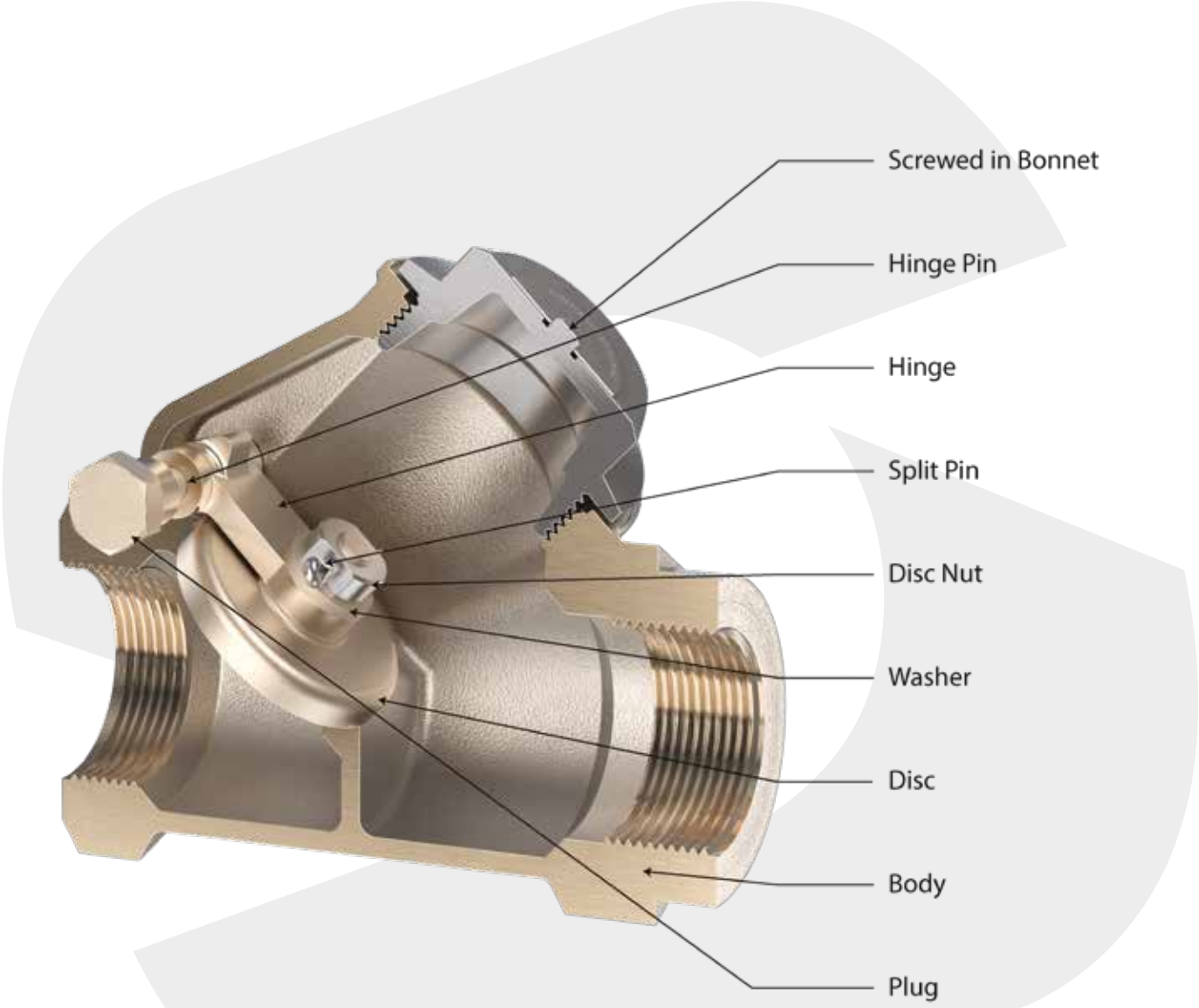


Image 7 - Sectional view of swing check valve (SC01)

Shipham Valves' Swing Check Valve with Bolted Bonnet (SC04) - 3D Exploded View

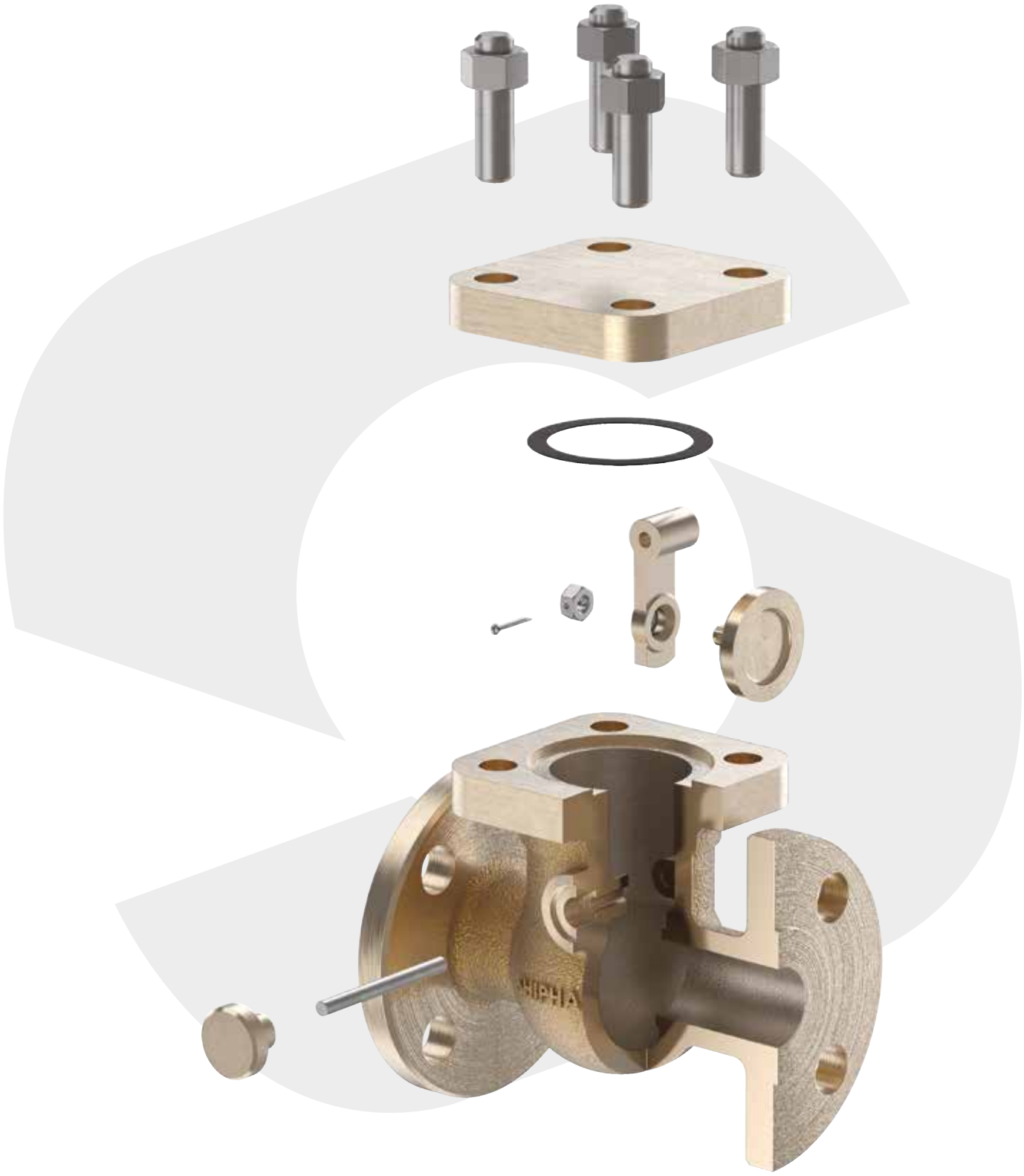


Image 8 - Swing check valve with bolted bonnet - 3D exploded view (SC04)

7 Product Range

7.1 SC04

Swing Check Valve - Bolted Bonnet

7.2 Body Configurations

The Swing Check Valve design is available in the two main body configurations shown previously in section (1.1 Valve Design Series).

Image 9 - Bolted bonnet with flat face (left) and raised face (right)

7.3 Series Availability

This range is available in sizes from 1/2” up to 24” with further size options.

These tables below highlight the product range for Shipham Valves’ Swing Check Valves. Further sizes are available upon customer request.

Size	1/2”			3/4”			1”			1 1/2”			2”			3”		
Class	Cl 150	Cl 300	PN 32	Cl 150	Cl 300	PN 32	Cl 150	Cl 300	PN 32	Cl 150	Cl 300	PN 32	Cl 150	Cl 300	PN 32	Cl 150	Cl 300	PN 32
Bolted Bonnet (SC04)													●	●		●	●	

Table 4 - Swing check valve range series size availability (1/2” - 3”)

Size	4”			6”			8”			10”			12”			14”		
Class	Cl 150	Cl 300	PN 32	Cl 150	Cl 300	PN 32	Cl 150	Cl 300	PN 32	Cl 150	Cl 300	PN 32	Cl 150	Cl 300	PN 32	Cl 150	Cl 300	PN 32
Bolted Bonnet (SC04)	●	●		●	●		●	●		●	●		●	●		●	●	

Table 5 - Swing check valve range series size availability (4” - 14”)

Size	16”			18”			20”			24”		
Class	Cl 150	Cl 300	PN 32	Cl 150	Cl 300	PN 32	Cl 150	Cl 300	PN 32	Cl 150	Cl 300	PN 32
Bolted Bonnet (SC04)	●	●		●	●		●	●		●	●	

Table 6 - Swing check valve range series size availability (16” - 24”)

8 Valve Dimensions

8.1 Envelope Dimensions

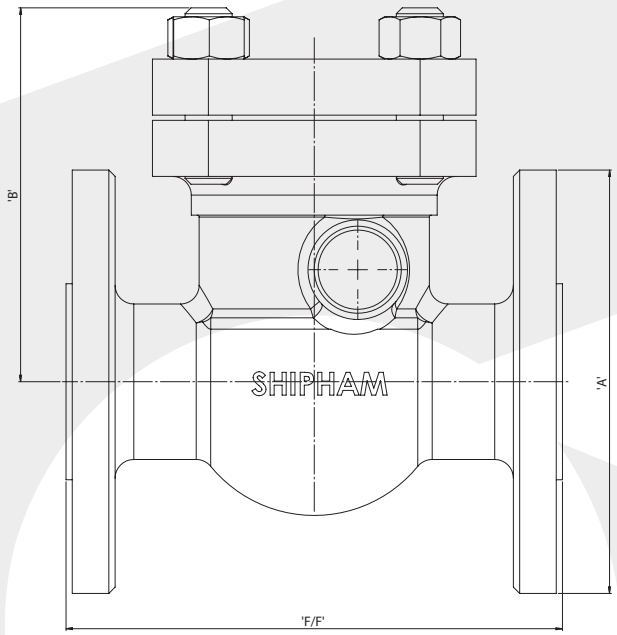


Image 10 - GA drawing swing check valve bolted bonnet (SC04)

Class 150				
Valve size (inch)	A (mm)	B (mm)	F/F (mm)	Weight (KG)
1"	108	100	127	4.8
1 1/2"	127	100	165	10
2"	152.4	131	203.2	12.5
2 1/2"	177.8	138	216	18
3"	190.5	158	241.3	21
4"	228.6	182	292.1	35
6"	279.4	222.8	356	57
8"	342.9	275	495.3	108
10"	406.4	368.2	622.1	220
12"	482.6	418	698	313
14"	533.4	460	787.4	400
16"	596.9	560	863.6	550
18"	635	568.8	978	650
20"	698.5	636	978	750
24"	815	687	1295	1800

Table 7 - Valve (SC04) envelope dimensions and series weights (Class 150)

Class 300				
Valve size (inch)	A (mm)	B (mm)	F/F (mm)	Weight (KG)
1"	123.8	104.7	215.9	7.3
1 1/2"	N/A	N/A	N/A	N/A
2"	165	131	267	17
2" 1/2"	N/A	N/A	N/A	N/A
3"	209.6	233.7	317.5	40
4"	254	236.5	355	78
6"	320	312.3	444	126
8"	380	371.8	533	280
10"	445	419	622	315
12"	N/A	N/A	N/A	N/A
14"	N/A	N/A	N/A	N/A
16"	650	540	864	775
18"	N/A	N/A	N/A	N/A
20"	774.7	674	1016	N/A
24"	915	646	1346	2277

Table 8 - Valve (SC04) envelope dimensions and series weights (Class 300)

Distance inspection checks during the machining of a 24" Swing check valve body

9 Part Identification

9 Part Identification - Bolted Bonnet (SC04)

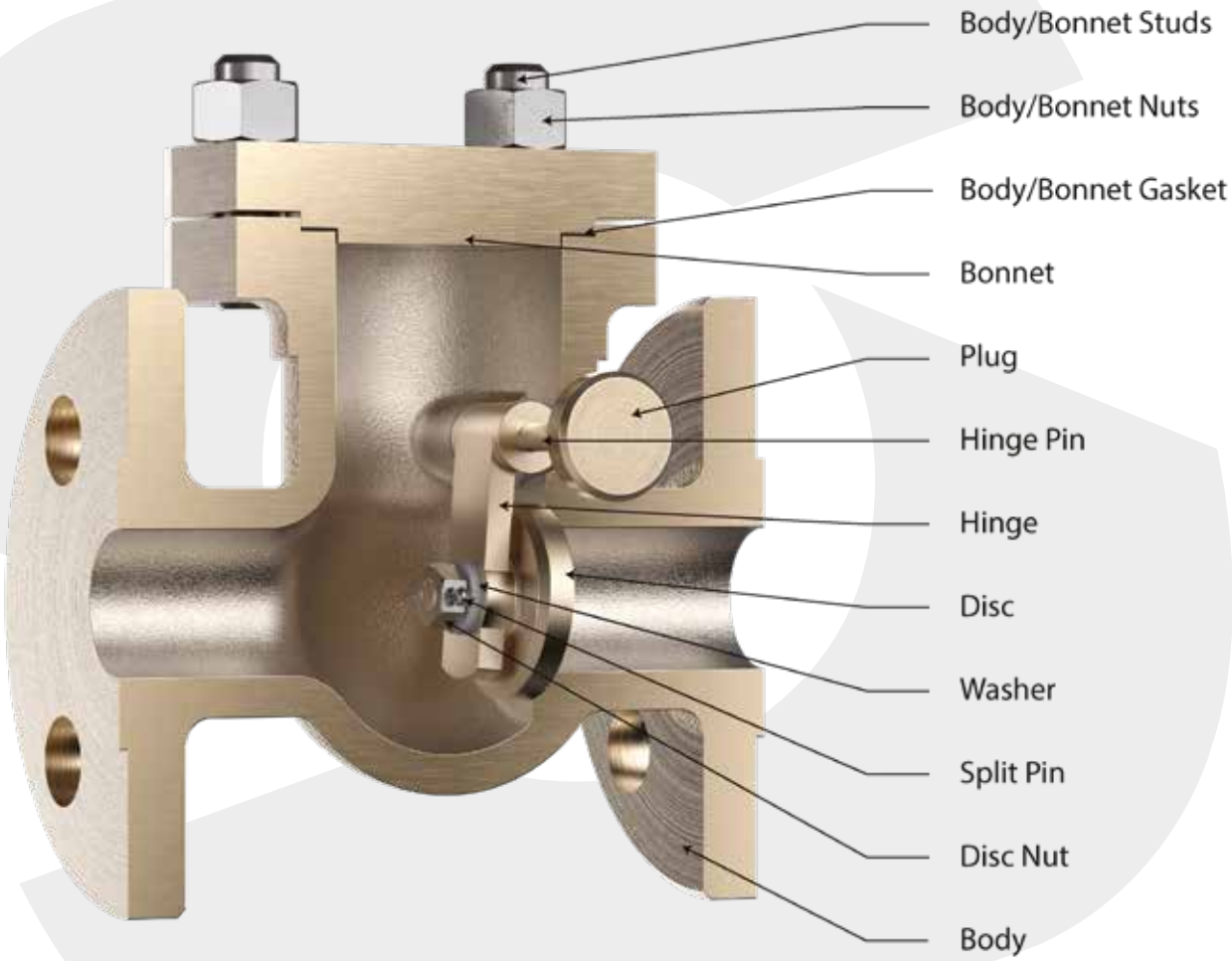


Image 11 - Sectional view of swing check valve (SC04)

10 Benefits

Swing Check Valves fulfil a safety function protecting infrastructure, equipment, products and people. They deliver a robust, cost-effective method of preventing fluid from flowing backwards.

Automatic Operation and Convenience

The Swing Check Valve operates automatically with the flow lifting the disc and the reverse flow closing the valve. Swing Check Valve can remain in a pipeline system when routine maintenance and cleaning are required.

Benefits

The Swing Check Valve range is available in two main body configurations and delivers high flow rates.

User benefits include:

Performance
- Effective flow control
- Restricts flow to a single direction and prevents backflow
- Automatic operation by fluid flow
- Uni-directional
- High performance across diverse applications such as liquids, gases and steam
- Delivers proven performance in harsh conditions
- Soft-seated option for gaseous services
- Easy maintenance

Design
- Designed fully in accordance with API 594
- Robust design meets a range of applications
- Flexibility - horizontal and vertical installation
- Compact design – cost reduction and space-saving
- The screwed bonnet option provides easy access to internal components for easy maintenance
- Bolted bonnet design ensures joint integrity

Alternative Design Options

Our Swing Check Valve is normally supplied with metal-to-metal seating, but a soft-seated feature is also available for further control and seating performance.

Sizes and Specialist Materials of Construction

Our range can be manufactured in a variety of specialist materials including Nickel Aluminium Bronze, Bronze, Duplex Stainless Steel, Super Duplex Stainless Steel, Hastelloy®, Monel®, Titanium, Inconel® and Zirconium in sizes ranging from 1/2” - 24”, with additional sizes available upon customer request.

11 Valve Flow Coefficient

The theoretical flow capabilities of the Swing Check Valve range are illustrated below.

These details are based on the assumption that the valve is fully open and the pressure drop will be negligible.

Valve Size	Valve Type	Class 150		Class 300	
NPS (in)	Screwed Bonnet (SC01) / Bolted Bonnet (SC04)	Cv	Kv	Cv	Kv
1/2”	SC01	6	5	6	5
3/4”	SC01	13	11	13	11
1”	SC01	24	21	24	21
1”	SC04	34	29	34	29
1 1/2”	SC01	56	48	56	48
1 1/2”	SC04	79	69	79	69
2”	SC01	103	89	103	89
2”	SC04	145	125	145	125
2 1/2”	SC04	232	200	232	200
3”	SC01	241	208	241	208
3”	SC04	340	294	340	294
4”	SC04	621	537	621	537
6”	SC04	1452	1254	1452	1254
8”	SC04	2648	2288	2648	2288
10”	SC04	4220	3646	4220	3646
12”	SC04	6173	5333	6173	5333
14”	SC04	7590	6558	7590	6558
16”	SC04	10176	8792	10176	8792
18”	SC04	13155	11366	12758	11023
20”	SC04	16531	14282	16083	13896
24”	SC04	24487	21157	23939	20683

*Cv – Valve flow coefficient (imperial unit) - The number of US Gallons per minute (gpm) of water at 60°F that can flow through a valve with a pressure drop across it of 1psi

*Kv - Valve flow coefficient (metric unit) - The number of cubic metres per hour (m3/h) of water at 16°C that can flow through a valve with a pressure drop across it of 1bar

Table 9 - Theoretical Cv and Kv valves for Swing Check Valve (Class 150-300)

12 Materials of Construction

Standard Materials of Construction	Components						
	Body	Cover	Seat (if Renewable)	Disc	Arm	Hinge Pin	Bolting
Nickel Aluminium Bronze	Nickel Aluminium Bronze ASTM B148 C95800	Nickel Aluminium Bronze ASTM B148 C95800	Nickel Aluminium Bronze ASTM B271 C95800	Nickel Aluminium Bronze ASTM B148 C95800	Monel® K500 ASTM B865 N05500	Monel® K500 ASTM B865 N05500	Nickel Aluminium Bronze ASTM B150 C63000 HR50
Monel®	Monel® ASTM A494 M 35-1	Monel® ASTM A494 M 35-1	Monel® ASTM A494 M 35-1	Monel® ASTM A494 M 35-1	Monel® K500 ASTM B865 N05500	Monel® K500 ASTM B865 N05500	Monel® ASTM B164 N04400
Duplex	Duplex ASTM A995 CD3MN	Duplex ASTM A995 CD3MN	Duplex ASM A995 CD3MN	Duplex ASTM A995 CD3MN	Super Duplex ASTM A479 S32760	Super Duplex ASTM A479 S32760	Super Duplex ASTM A276 Cond. S
Super Duplex	Super Duplex ASTM A995 CD3MWCuN	Super Duplex ASTM A995 CD3MWCuN	Super Duplex ASTM A995 CD3MWCuN	Super Duplex ASTM A995 CD3MWCuN	Super Duplex ASTM A479 S32760	Super Duplex ASTM A479 S32760	Super Duplex ASTM A276 Cond. S
Titanium	Titanium ASTM B367 Gr. C-2	Titanium ASTM B367 Gr. C-2	Titanium ASTM B367 Gr. C-5	Titanium ASTM B367 Gr. C-2	Titanium ASTM B381 F-5	Titanium ASTM B381 F-5	ASTM A193 B8 Cl.2 / ASTM A194 Gr. 8
Inconel® 625	Inconel® 625 ASTM A494 CW6MC	Inconel® 625 ASTM A494 CW6MC	Inconel® 625 ASTM A494 CW6MC	Inconel® 625 ASTM A494 CW6MC	Inconel® 718 ASTM B637 Gr. 718	Inconel® 718 ASTM B637 Gr. 718	TBC
6Mo	6Mo ASTM A351 CK3MCuN	6Mo ASTM A351 CK3MCuN	6Mo ASTM A351 CK3MCuN	6Mo ASTM A351 CK3MCuN	Inconel® 718 ASTM B637 Gr. 718	Inconel® 718 ASTM B637 Gr. 718	TBC
Stainless Steel	Stainless Steel ASTM A351 CF8M	Stainless Steel ASTM A351 CF8M	Stainless Steel ASTM A351 CF8M	Stainless Steel ASTM A351 CF8M	17-4pH ASTM A564 630 1150D	17-4pH ASTM A564 630 1150D	ASTM A193 B8M Cl2 / ASTM A194 Gr. 8M
Hastelloy®	Hastelloy® ASTM A494 CW12MW	Hastelloy® ASTM A494 CW12MW	Hastelloy® ASTM A494 CW12MW	Hastelloy® ASTM A494 CW12MW	Inconel® 718 ASTM B637 Gr. 718	Inconel® 718 ASTM B637 Gr. 718	Hastelloy® ASTM F467/F468

Table 10 - Available materials of construction

13 Pressure Temperature Ratings

The Pressure Temperature Ratings of the body materials are in accordance with the SPT Curves available as per the list below:

Body Material	Pressure Temperature Rating (SPT)
Nickel Aluminium Bronze ASTM B148 C95800	SPT01
Monel® 400 ASTM A494 M 35-1	SPT08
Duplex ASTM A995 Gr. CD3MN	SPT10
Super Duplex ASTM A995 CD3MNWCuN	SPT10
Titanium ASTM B367 Gr. C-2	SPT02
Inconel® 625 ASTM A494 CW6MC	TBC
6Mo (Super Austenitic) ASTM A351 CK3MCuN	TBC
Stainless Steel ASTM A351 CF8M	TBC
Hastelloy® ASTM A494 CW-12MW	SPT09

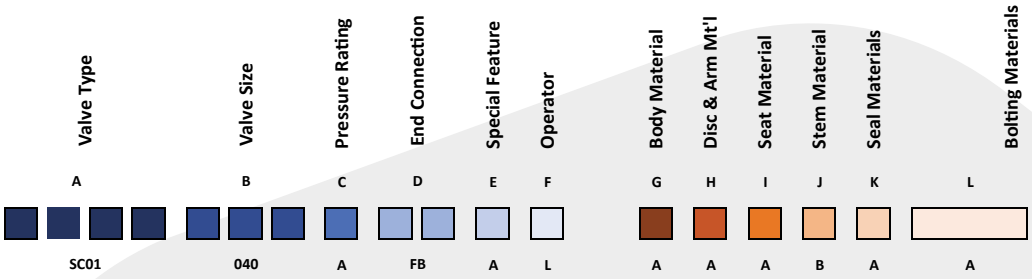
Table 11 - Body material pressure temperature rating(s)

As the world's preferred partner, delivering expert corrosion-resistant valve solutions, we manufacture valves in a wide range of materials. These materials may or may not have pressure temperature ratings available for them. Materials such as ASTM B148 C95800 do not have pressure temperature ratings listed in ASME B16.34. These materials have had their bespoke pressure temperature ratings developed and refined over the years and are in line with standard developments.

Shipham Valves have developed a range of Shipham Valves Pressure Temperature (SPT) ratings. These pressure temperature ratings have been developed in line with industry best practices incorporating the requirements and limitations of the chemical and mechanical restrictions imposed by standards such as NACE and NORSOK, which standard pressure temperature ratings from ASME B16.34 do not account for.

14 Product Coding

Swing Check Valve Product Information



A - Valve Type	
SC01	- Union Bonnet, Screwed (up to 3")
SC04	- Bolted Bonnet, Flanged

B - Valve Size					
005	-	1/2"	080	-	8"
007	-	3/4"	100	-	10"
010	-	1"	120	-	12"
015	-	1.1/2"	140	-	14"
020	-	2"	160	-	16"
025	-	2.1/2"	180	-	18"
030	-	3"	200	-	20"
040	-	4"	240	-	24"
060	-	6"			

C - Pressure Class	
A	- ASME Cl 150
B	- ASME Cl 300
Q	- PN16
S	- PN32
T	- PN40

D - End Connection	
BA	- ASME B1.20.1 NPT End
CA	- ASME B16.11 Socket Weld End
CE	- ASME B16.18 C Capillary End
FA	- ASME B16.5 Cl 150 RF
FB	- ASME B16.5 Cl 150 FF
FD	- ASME B16.5 Cl 300 RF
FE	- ASME B16.5 Cl 300 FF

E - Special Feature	
A	- None
R	- Renewable Seat
V	- Drain/Vent

F - Operator	
A	- Not Applicable
D	- Spring Damper Unit

In the case of a component being manufactured from bar in place of the casting e.g. a ball, the bar equivalent material specification is supplied.

G - Body Material	
A	- ASTM B148 C95800 (NI AL BRZ)
B	- ASTM A494 M 35-1 (MONEL® 400)
C	- ASTM B61 C92200 (BRONZE)
D	- ASTM B62 C83600 (BRONZE)
E	- ASTM A995 CD3MN (DUPLEX)
F	- ASTM A995 CD3MWCuN (SUPER DUPLEX)
H	- ASTM B367 Gr. C-2 (TITANIUM)
K	- ASTM A494 CW6MC (INCONEL® 625)
L	- ASTM A351 CK3MCuN (6Mo)
M	- ASTM A494 N12MV (HASTELLOY® B)
N	- ASTM A494 CW12MW (HASTELLOY® C)

H -Disc & Arm Material	
A	- ASTM B148 C95800 (NI AL BRZ)
B	- ASTM A494 M 35-1 (MONEL® 400)
C	- ASTM B61 C92200 (BRONZE)
D	- ASTM B62 C83600 (BRONZE)
E	- ASTM A995 CD3MN (DUPLEX)
G	- ASTM A995 CD3MWCuN (SUPER DUPLEX)
K	- ASTM B367 Gr. C-2 (TITANIUM)
N	- ASTM A494 CW6MC (INCONEL® 625)
O	- ASTM A351 CK3MCuN (6Mo)
Q	- ASTM A494 N12MV (HASTELLOY® B)
R	- ASTM A494 CW12MW (HASTELLOY® C)

I - Seat Material	
A	- ASTM B148 C95800 (NI AL BRZ)
B	- ASTM A494 M 35-1 (MONEL® 400)
D	- ASTM B61 C92200 (BRONZE)
E	- ASTM B62 C83600 (BRONZE)
F	- ASTM A995 CD3MN (DUPLEX)
H	- ASTM A995 CD3MWCuN (SUPER DUPLEX)
L	- ASTM B367 Gr. C-2 (TITANIUM)
O	- ASTM A494 CW6MC (INCONEL® 625)
P	- ASTM A351 CK3MCuN (6Mo)
R	- ASTM A494 N12MV (HASTELLOY® B)
S	- ASTM A494 CW12MW (HASTELLOY® C)

J - Hinge Pin Material	
A	- ASTM B150 C63200 TQ 50 (NI AL BRZ)
B	- ASTM B865 N05500 (MONEL® K-500)
C	- API 6A CRA N07718 (INCONEL® 718)
D	- ASTM B381 Gr. F-5 (TITANIUM)
F	- ASTM B564 N06625 (INCONEL® 625)
J	- ASTM B564 N10276 (HASTELLOY®)
L	- ASTM A276 S32760 (SUPER DUPLEX)

K- Seal Material	
A	- Graphite / No Elastomer
B	- Graphite / Nitrile Elastomer
C	- Graphite / Type 3 FKM Elastomer
D	- Graphite / Type 2 FKM Elastomer
E	- Graphite / 25/90 FKM Elastomer
K	- Non-Asb. Fibre / No Elastomer
L	- Non-Asb. Fibre / Nitrile Elastomer
M	- Non-Asb. Fibre / Type 3 FKM Elastomer
N	- Non-Asb. Fibre / Type 2 FKM Elastomer
O	- Non-Asb. Fibre / 25/90 FKM Elastomer
P	- PTFE / No Elastomer
Q	- PTFE / Nitrile Elastomer
R	- PTFE / Type 3 FKM Elastomer
S	- PTFE / Type 2 FKM Elastomer
T	- PTFE / 25/90 FKM Elastomer

L- Bolting Material	
A	- ASTM B150 C63000 HR50 (NI AL BRZ)
B	- ASTM B164 N04400 (MONEL® 400)
E	- ASTM A193 B7/ A194 2H SCF2 (C.STEEL)
F	- ASTM A193 B7M/ A194 2HM SCF2(C.STEEL)
G	- ASTM A193 B8 CL.2 / A194 8 (S.STEEL)
H	- ASTM A193 B8 CL.2 / A194 8 SCF2 (S.STEEL)
K	- ASTM A193 B8M CL.2 / A194 8M (S.STEEL)
L	- ASTM A193 B8M CL.2 / A194 8M SCF2 (S.STEEL)
M	- ASTM A320 L7 / A194 Gr. 7 SCF2 (C.STEEL)
N	- ASTM A320 L7M / A194 Gr. 7M SCF2 (C.STEEL)
P	- ASTM A276 S32760 Cond. S (SUPER DUPLEX)

Finish Identifier	Extent		Code	Colour		Quality Identifier	Level Number	Percentage Modifier	Level Modifier	
M	N		O	P		Q	R	S	T	-
F						Q				-
F	N		N	N		Q	0	S	S	-

N - Extent		
A	-	ACTUATOR
N	-	NOT APPLICABLE
O	-	OPERATOR ONLY
V	-	VALVE ASSEMBLY

O -Code		
B	-	BS 4800
C	-	CUSTOM
F	-	FED STANDARD
N	-	NOT APPLICABLE
R	-	RAL

P- Colour		
BS4800		
A	-	14-E-53 - Green (SC011)
B	-	04-D-45 - Russet
C	-	04-E-53 - Poppy Red SC010)
D	-	06-C-39 - Saddle Brown
E	-	06-E-51 - Mandarin Orange
F	-	08-C-35 - Butterscotch
G	-	22-D-45 - Deep Purple
H	-	20-E-51 - Cornflower Blue
I	-	00-E-53 - Black
J	-	08-E-55 - Orange & 04-D-45 Russet
K	-	10-E-53 - Canary Yellow
L	-	18-E-53 - Cobalt Blue
CUSTOM		
A	-	TBC
FED STD		
A	-	TBC
RAL		
A	-	RAL 3000 - Flame Red (SC002)
B	-	RAL 3001 - Signal Red (SC005)
C	-	RAL 3002 - Carmine Red
D	-	RAL 9003 - Signal White (SC006)
E	-	RAL 1028 - Melon Yellow
F	-	RAL 7042 - Traffic Grey
G	-	RAL 6002 - Leaf Green
H	-	RAL 9017 - Traffic Black (SC004)
I	-	RAL 7022 - Umbra Grey
J	-	RAL 7035 - Light Grey
K	-	RAL 2011 - Deep Orange
L	-	RAL 5011 - Steel Blue
M	-	RAL 5013 - Cobalt Blue (SC001)
O	-	RAL 7038 - Exxon Mobil Grey
P	-	RAL 9002 - Grey White
N- NOT APPLICABLE		

R - Level Number		
0	-	QSL 0
1	-	QSL 1
2	-	QSL 2
3	-	QSL 3
See 4-07-15 for details of QSL's		

S -Percentage Modifier		
S	-	STD 10% MIN OF 2
A	-	25% PER LINE ITEM
B	-	50% PER LINE ITEM
C	-	100% PER LINE ITEM

T - Level Modifier		
B	-	3.2 CERT (BV BODY)
C	-	IMPACT TESTED (-196°C)
D	-	3.2 CERT (DNV BODY)
L	-	3.2 CERT (LLOYDS BODY)
S	-	STANDARD NO REQ
Z	-	SPECIAL

15 Technical Optional Extras

Our added-valve services include a wide range of technical options and cover everything your organisation needs, from optional design features that meet various bespoke applications to comprehensive testing services and coating options.

We provide effective technical solutions for valves installed in challenging environments, hard-to-reach locations or areas with limited access.

Technical Optional Extras

Design features:
- Soft-seating option

Testing:
- Extended test durations
- Fugitive emissions testing
- Disc strength test
- Functional testing

External coating
- Painting

For further details on the complete range of Shipham Valves' technical optional extra solutions, please contact the team today at valvesales@shiphamvalves.com or +44 (0)1482 323163.

16 Commercial Optional Extras

Tailored Valve Solutions That Meet Your Requirements

We also offer a selection of added-value services to complement the high-quality valves we manufacture.

These optional commercial extras cover everything your organisation needs from comprehensive testing to witness inspection services, documentation and tagging. This ensures we deliver a tailored valve solution that meets your requirements.

Commercial Optional Extras

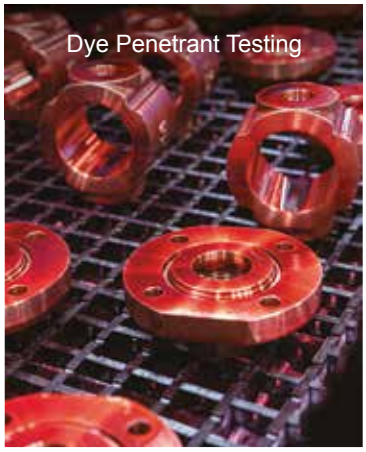
Items	Cost
Certificate of Origin and Invoice Attested by Local Chamber of Commerce	TBC
EX1 Export Documentation	TBC
Project Documentation Pack (English language only) This contains GA Drawings, maintenance and operating instructions along with relevant procedures in PDF file format only (ITP and relevant procedures) One copy supplied six weeks after order placement Any other documentation required will be subject to additional costs	Costs will be provided as part of the overall costed proposal
Witness Inspection (Charged at a day rate to P.O quantity)	Costs will be provided as part of the overall costed proposal
Tagging (Optional) If tagging is required, please provide full details in-order for us to process the order	TBC

For further details on the complete range of Shipham Valves' commercial optional extra solutions, please contact the team today at valvesales@shiphamvalves.com or +44 (0)1482 323163.

Testing and Quality Verification

Verifies product quality by performing dimensional inspections

Verification of metal and alloy chemical composition



Testing exterior/interior surfaces for defects, cracks and conformity to ASME VIII