COTESO
INDUSTRIAL SOLUTIONS

ANSI VALVE CATALOGUE

Your Partner in Industrial Solutions.

COTESO
INDUSTRIAL SOLUTIONS

Introduction

COTESO is a reputable company, active in the field of engineering, distribution and installation of products and systems for industrial applications. Our core business is concentrated on a dedicated and specialized line of products for the safe and effective transfer and storage of chemicals and hydrocarbons, covering engineered products such as valves, hose systems, gaskets, seals and seals related products. We design, supply and install these products worldwide. A global presence has been achieved by operating several individual offices around the world as well as through a dedicated network of agents and authorized distributors. As we have been developing our activities on a global scale, we are able to support our customers from offices close to their facilities. A close cooperation with leading manufacturers together with a well balanced portfolio of our own engineered and manufactured products results in a strong partner for complete industrial product line.

ANSI Valves

This catalogue intends to give you an good impression of our capabilities in respect of the valves we supply in accordance with the ANSI Standards. This catalogue represents the common valves for ANSI applications within our product lines, intends to present a first impression of our valves. We have an extensive and excellent track record of valves supplied to several industries. We are proud to confirm that all our engineered products meet the highest international quality standards and have been operating successfully in different terminals and industries around the world, to great satisfaction of our customers.

As this catalogue presents the standard range of ANSI valves, it does not show options such as motorized valves, low emission valves, special materials or any other special requirements you might have for these valves. If you have any specific requirements, please contact us, so we can address these requirements as well.

Quality Assurance

We do realize that products supplied by us need to meet the highest possible standards, in both reliability as well as durability. For this reason quality assurance is of vital importance and we are ensuring maximum quality not only by extensive quality assurance programs and procedures, but also by both internal and independent third party product inspections. We operate according to an audited and certified Quality Assurance system and are in possession of an ISO 9001 certificate which further illustrates our commitment to maintaining the highest quality standards possible.

LRQA CERTIFIED
ISO 9001 · ISO 14001
ISO 45001

UKAS MANAGEMENT SYSTEMS
0001

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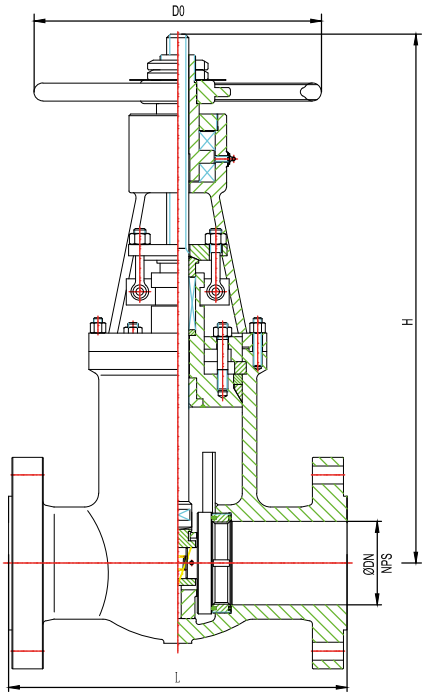
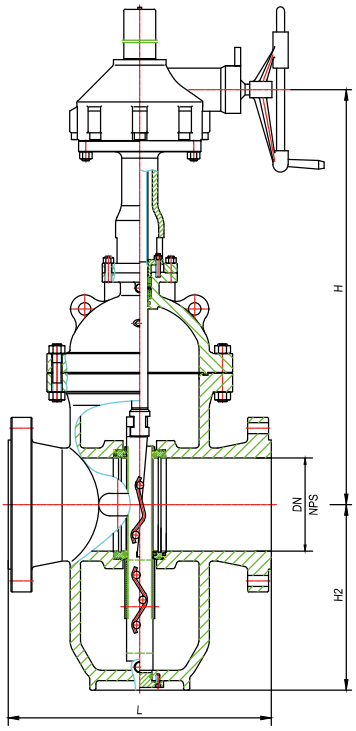
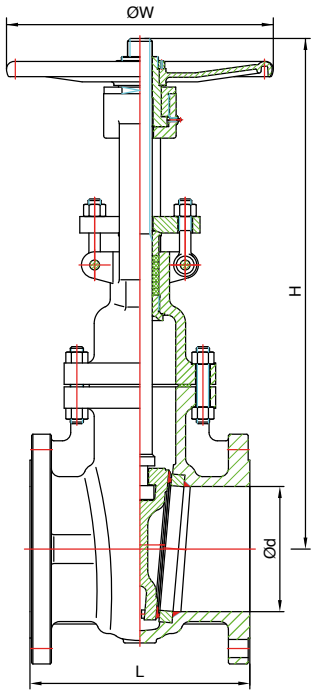
Gate valves carbon steel & stainless steel



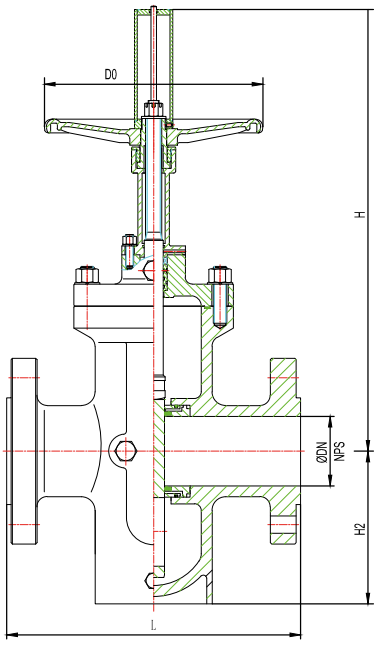
Parallel Slide Gate Valves
Series 29



Double Wedge
Expanding Series 32E



Wedge Gate Valve
Series 28 (API 600)
and Series 30 (API 6D)



Slab Gate - Through Conduit Valve
Series 32

Cast Steel Gate Valve

Standards

Design and Manufacture: Steel gate valve to API 600 or API 6D; corrosion resistant gate valve to API 603; Forged steel gate valve to API 602.
Inspection and Test: API 598, or API 6D.
End flange dimension: ASME B16.5 (NPS ≤ 24); ASME B16.47 series A and B, or MSS SP-44 (NPS > 24).
BW end dimension: ASME B16.25.
Socket-weld dimension: ASME B16.11.
Face to face and end to end: ASME B16.10.
Pressure-temperature ratings: ASME B16.34.

Body / Bonnet Gasket

Carbon steel or stainless steel + flexible graphite combined gasket is used for Class 150 gate valve; Stainless steel + flexible graphite spiral wound gasket is used for Class 300 gate valve; Stainless steel + flexible graphite spiral wound gasket is used for Class 600 gate valve and ring joint gasket is also optional for Class 600 gate valve; Ring Joint gasket is used for Class 900 gate valve; Pressurized seal design is used for Class 1500 ~ Class 2500 gate valve.

Stuffing box packing

Molded flexible graphite is used for packing materials. PTFE or combined packing materials can also be used if being requested by the customer. The internal surface of the stuffing box, contacting the packing is of excellent finish (Ra=0.8 μm). The stem surface, contacting the packing, is rolled and pressed after being precisely machined, so as to reach a high quality finish and ensure reliable tightness of the stem area.

Backseat Design

All our gate valves have the back seating design. In most cases the carbon steel gate valve is fitted with a renewable back seat. For stainless steel gate valves the back seat is machined directly in the bonnet or is machined after welding. When the gate valve is in a fully open position, the sealing of the back-seat is reliable. However, as per the requirement of API 600, it is not advisable to add or change the packing when the valve is pressure containing.

Stem Design

The stem is of integral forged design. The minimum diameter of the stem is per the standard requirement. The stem end that connects to the gate is in the shape of a “T”. The strength of the connecting area is bigger than that of the T threaded part of the stem. The strength test of that area conforms to API 591.

Body and Bonnet Connection

The body and bonnet of Class 150 - Class 900 gate valves are usually connected with studs and nuts. The body/ bonnet connection of Class 1500 - Class 2500 gate valves is usually of a pressure seal design.

Design of Disc

Gate valves with NPS ≥ 2 are with flexible wedge;
Gate valves with NPS < 2 are with solid wedge.

Actuation

Hand wheel or gearbox is usually used for gate valve actuation. Chain wheel and electric actuator can also be used for gate valve actuation if being requested.

Stem Nut

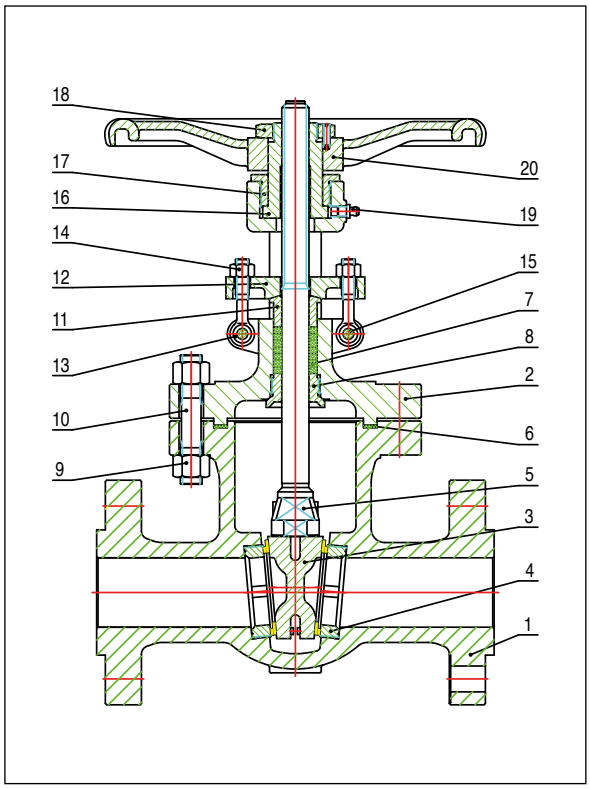
Usually, the stem nut is made of copper alloy. It can also be made of ASTM A439 D2, on request. For large sized gate valves (NPS 10 for Class 150, NPS 8 for Class 300, NPS 6 for Class 600, NPS 5 for Class 900), a rolling bearing is fitted at two sides of the stem nut in order to minimize the opening and closing torque of the gate valve.

Seat

For carbon steel gate valves the seat is usually forged steel. The sealing surface of the seat is spray welded with hard alloy specified by the customer. A renewable threaded seat is used for NPS ≤ 10 gate valves, and welded on seat can be also optional if being requested by the customer. A welded on seat is used for NPS > 10 carbon steel gate valves. For Stainless steel gate valves, an integral seat is usually adopted, or weld hard alloy integrally, on request. A threaded or welded on seat is optional for stainless steel gate valves.

Special Gate Valve

Besides the common gate valves we also produce cryogenic gate valves and bellow sealed gate valves.



No.	Part Name	No	Part Name	No	Part Name
1	Body	8	Backseat	15	Pin
2	Bonnet	9	Nut	16	Stem Nut
3	Wedge	10	Bolt	17	Retaining Nut
4	Seat	11	Gland	18	H.W. Lock Nut
5	Stem	12	Gland Flange	19	Nipple
6	Gasket	13	Gland Eyebolt	20	Hand wheel
7	Packing	14	Nut		

ANSI GATE VALVES

API 600 Trim material

Trim code	Seat ring surface	Wedge seat surface	Stem & backseat bushing
1	13Cr	13Cr	A182 F6a
2	18Cr-8Ni	18Cr-8Ni	A182 F304
3	25Cr-20Ni	25Cr-20Ni	A182 F310
4	Hard 13Cr	Hard 13Cr	A182 F6a
5	Stellite	Stellite	A182 F6a
6	13Cr	Cu-Ni Alloy	Monel
7	13Cr	Hard 13Cr	A182 F6a
8	Stellite	13Cr	A182 F6a
9	Cu-Ni Alloy	Cu-Ni Alloy	Monel
10	18Cr-8Ni-Mo	18Cr-8Ni-Mo	A182 F316
11	Cu-Ni Alloy	Cu-Ni Alloy	Monel
12	Stellite	18Cr-8Ni-Mo	A182 F316
13	19Cr-29Ni	19Cr-29Ni	20 Alloy

ASTM Material list of API 600 Rising Stem Cast Steel Gate Valves

Part Name	Carbon Steel to ASTM		Stainless Steel to ASTM				Alloy Steel to ASTM		
Body	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
Bonnet	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
Wedge	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
Seating Ring	A105N	A350LF2	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A182 F11	A182 F22	A182 F5
Stem	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
Gasket	Graphite+SS304, PTFE								
Stem Packing	Flexible Graphite								
Lantern Ring	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
Backseat Bushing	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
Nut	A194 2H	A194 4	A194 8				A194 7		
Bolt	A193 B7	A320 L7	A193 B8				A193 B16		
Gland	F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
Gland Flange	A216 WCB	A352 LCB	A351 CF8	A351 CF8	A351 CF8	A351 CF8	A217 WC6	217 WC9	A217 C5
Gland Eyebolt	A193 B7		A193 B8				A193 B16		
Gland Nut	A194 2H		A194 8				A194 7		
Pin	ANSI 1045		A182 F304				ANSI 1045		
Stem Nut	A439 D2/B14B 952A								
Retaining Nut	ANSI 1020								
Nipple	Copper Alloy								
H.W. Lock Nut	ANSI 1020								
Hand wheel	A197								

• Other types of construction available upon request.

Class ANSI 150
COTESO Series 30 (API 6D)

Construction features

Bolted bonnet

Flexible or solid wedge

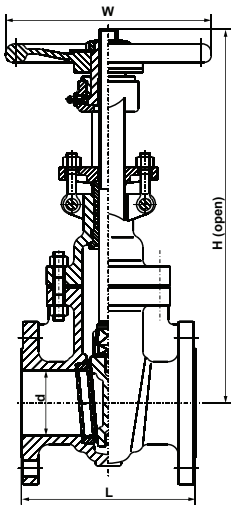
Renewable seat

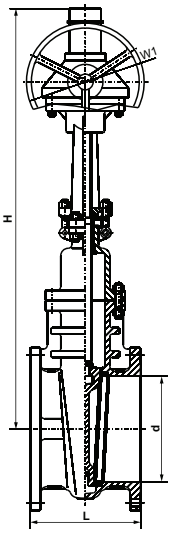
(threaded or welded seat ring)

8" Integral yoke with bonnet

10" Separate yoke bolted to bonnet

API 598 Pressure Test





Class	Size		Dimensions (mm)			
	inch	DN	L			d
			RF	RTJ	BW	
Class 150	2	50	178	191	216	51
	2 1/2	65	191	203	241	62
	3	80	203	216	283	74
	4	100	229	241	305	100
	6	150	267	279	403	150
	8	200	292	305	419	201
	10	250	330	343	457	252
	12	300	356	368	502	303
	14	350	381	394	572	334
	16	400	406	419	610	385
	18	450	432	445	660	436
	20	500	457	470	711	487
	24	600	508	521	813	589
	28	700	610	-	914	684
	30	750	610 (a)	-	914	735
	32	800	711	-	965	779
	36	900	711 (b)	-	1016	874

(a) Through-conduit valves shall be 26.00 in (660 mm)

(b) Through-conduit valves shall be 32.00 in (813 mm)

ANSI GATE VALVES

Class ANSI 300
COTESO Series 30 (API 6D)

Construction features

Bolted bonnet

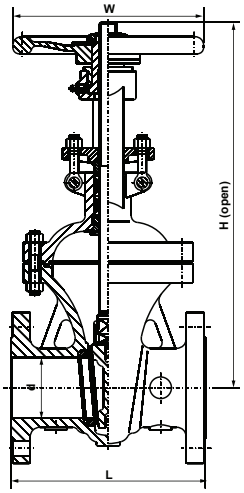
Flexible or solid wedge

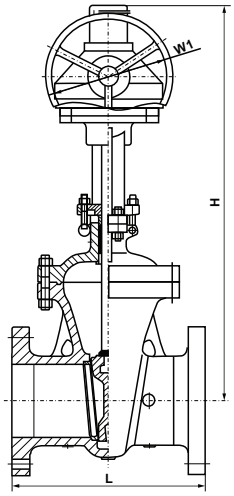
Renewable seat

(threaded or welded seat ring)

API 598 Pressure Test

Pressure rating: Class 300





Class	Size		Dimensions (mm)			
	inch	DN	L			d
			RF	RTJ	BW	
Class 300	2	50	216	232	216	49
	2 1/2	65	241	257	241	62
	3	80	283	298	283	74
	4	100	305	321	305	100
	6	150	403	419	403	150
	8	200	419	435	419	201
	10	250	457	473	457	252
	12	300	502	518	502	303
	14	350	762	778	762	334
	16	400	838	854	838	385
	18	450	914	930	914	436
	20	500	991	1010	991	487
	24	600	1143	1165	1143	589
	28	700	1346	1372	1346	684
	30	750	1397	1422	1397	735
	32	800	1524	1553	1524	779
	36	900	1727	1756	1727	874

Class ANSI 600 and 900
COTESO Series 30 (API 6D)

Construction features

Bolted bonnet

Flexible or solid wedge

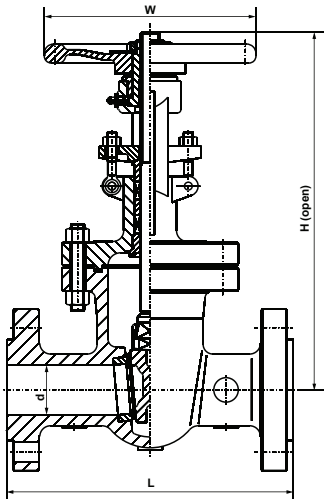
Renewable seat

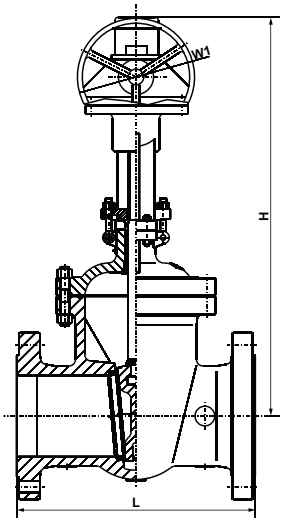
(threaded or welded seat ring)

API 598 Pressure Test

Pressure rating: Class 600

Pressure rating: Class 900





Class	Size		Dimensions (mm)			
	inch	DN	L			d
			RF	RTJ	BW	
Class 600	2	50	292	295	292	49
	2 1/2	65	330	333	330	62
	3	80	356	359	356	74
	4	100	432	435	432	100
	6	150	559	562	559	150
	8	200	660	664	660	201
	10	250	787	791	787	252
	12	300	838	841	838	303
	14	350	889	892	889	334
	16	400	991	994	991	385
	18	450	1092	1095	1092	436
	20	500	1194	1200	1194	487
	24	600	1397	1407	1397	589
Class 900	2	50	368	371	368	49
	2 1/2	65	419	422	419	62
	3	80	381	384	381	74
	4	100	457	460	457	100
	6	150	610	613	610	150
	8	200	737	740	737	201
	10	250	838	841	838	252
	12	300	965	968	965	303
	14	350	1029	1038	1029	322
	16	400	1130	1140	1130	373

ANSI GATE VALVES

Class ANSI 1500 and 2500
COTESO Series 30 (API 6D)

Construction features

Pressure seal

Flexible or solid wedge

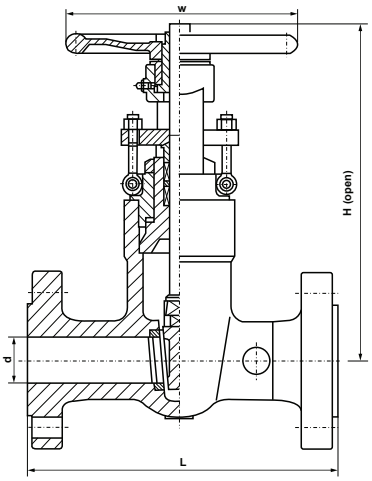
Renewable seat

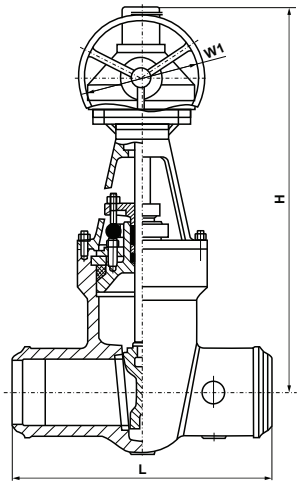
(threaded or welded seat ring)

API 598 Pressure Test

Pressure rating: Class 1500

Pressure rating: Class 2500





Class	Size		Dimensions (mm)			
	inch	DN	L			d
			RF	RTJ	BW	
Class 1500	2	50	368	371	368	49
	2 1/2	65	419	422	419	62
	3	80	470	473	470	74
	4	100	546	549	546	100
	6	150	705	711	705	144
	8	200	832	841	832	192
	10	250	991	1000	991	239
	12	300	1130	1146	1130	287
	14	350	1257	1276	1257	315
	16	400	1384	1407	1384	360
Class 2500	2	50	451	454	451	42
	2 1/2	65	508	514	508	52
	3	80	578	584	578	62
	4	100	673	683	673	87
	6	150	914	927	914	131
	8	200	1022	1038	1022	179
	10	250	1270	1292	1270	223
	12	300	1422	1445	1422	265

Forged Steel Gate Valve

Construction feature

Available in three bonnet designs. The first design is the Bolted Bonnet, with male-female joint, spiral wound gasket, made in F304L/graphite, ring joint gasket are also available on request. The second design is the Welded Bonnet, with a threaded and seal welded joint. The third design is the Pressure Seal Bonnet, with a threaded and pressure seal bonnet joint.

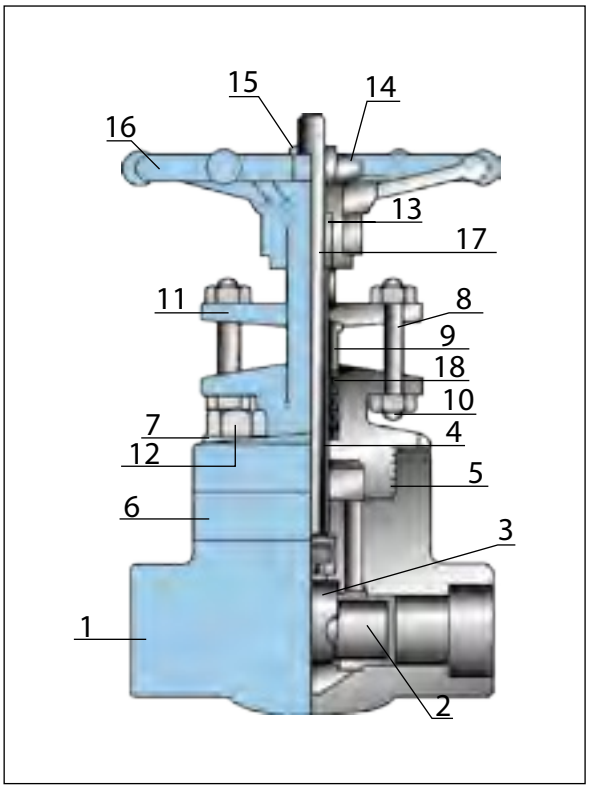
Construction

- Full port or conventional port;
- Outside screw and yoke (OS&Y);
- Two piece self-aligning packing gland;
- Bolted bonnet & spiral wound gasket seal bonnet;
- Bolted bonnet with spiral wound gasket, threaded and seal welded bonnet or threaded and pressure seal bonnet;
- Integral backseat;
- Socket weld ends to ASME B16.11;
- Screwed ends (NPT) to ASME B1.20.1;
- Flanged ends to ASME B16.5
- Butt-weld ends to ASME B16.25

ANSI FORGED STEEL GATE VALVES

Applicable standards

1. Design and manufacture in agreement with API 602, BS 5352, ASME B16.34;
2. Connection ends agree to
   1) Socket welded: ASME B16.11
   2) Screw ends: ASME B1.20.1
   3) Butt-welded: ASME B16.25
   4) Flanged ends: ASME B16.5
3. Test and inspection agree to:
   API 598
4. Structural features
   Bolted bonnet, outside screw and yoke;
   Welded bonnet, outside screw and yoke.
5. Materials conform to ASTM.
6. Main materials
   A105, LF2, F5, F11, F22, 304(L), 316(L), F347, F321, F51, Monel, Alloy Steel.

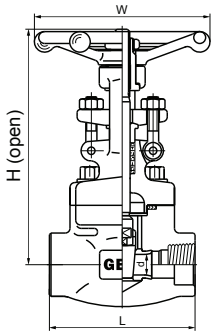


Main part materials list

No.	Part Name	A105/F6a	A105/F6aHFS	LF2/304	F11/F6aHF	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	A105	A105	LF2	F11	F304(L)	F316(L)	F51
2	Seat	410	410HF	304	410HF	304(L)	316(L)	F51
3	Wedge	F6a	F6a	F304	F6aHF	F304(L)	F316(L)	F51
4	Stem	410	410	304	410	304(L)	316(L)	F51
5	Gasket	304L+graphite	304L+graphite	304L+graphite	304L+graphite	304L+graphite	316L+graphite	316L+graphite
6	Bonnet	A105	A105	LF2	F11	F304(L)	F316(L)	F51
7	Bolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
8	Pin	410	410	410	410	304	304	304
9	Gland	410	410	304	410	304	316	F51
10	Gland eyebolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
11	Gland flange	A105	A105	LF2	F11	F304	F304	F304
12	Hex nut	2H	2H	2H	2H	8(M)	8(M)	8M
13	Stem nut	410	410	410	410	410	410	410
14	Locking nut	35	35	35	35	35	35	35
15	Nameplate	AL	AL	AL	AL	AL	AL	AL
16	Hand wheel	A197	A197	A197	A197	A197	A197	A197
17	Stem	410	410	304	410	304(L)	316(L)	F51
18	Packing	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite

- Other types of construction available upon request.
- Refer to the certified drawings for the final construction.

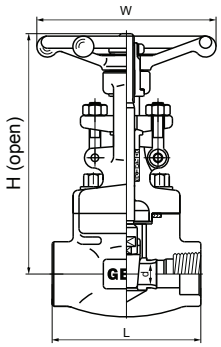
COTESO Series 33



CL800

Bolted bonnet, full port or reduced port outside screw and yoke (OS&Y)
Threaded, butt-welded or socket welded ends; design to API 602

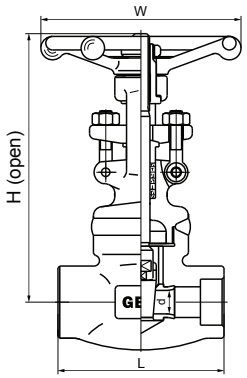
Specification	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face (mm)	L	79	92	111	120	120	140	178	180
Hand wheel diameter (mm)	W	100	100	125	160	160	180	200	220
Height (mm)	H	161	163	196	223	251	290	333	370
Flow port dimension (mm)	d	10.5	13.5	18	24	29	36.5	45	51
Weight (kg)		2.22	2.39	4.24	5.7	7.05	10.9	16.8	24



CL1500

Bolted bonnet, full port reduced port outside screw and yoke (OS&Y)
Threaded, butt-welded or socket welded ends; design to API 602

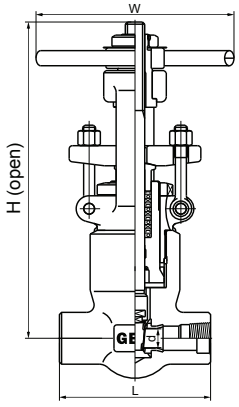
Specification	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face (mm)	L	111	111	120	120	140	178	180
Hand wheel diameter (mm)	W	125	125	160	160	180	200	220
Height (mm)	H	191	192	219	243	296	316	370
Flow port dimension (mm)	d	10.5	13.5	18	24	29	36.5	45
Weight (kg)		4.4	4.3	6	7.2	11.4	16	23



CL1500

Welded bonnet, full port or reduced port, outside screw and yoke (OS&Y)
Threaded, butt-welded or socket welded ends; design to API 602

Specification	R.P	Pressure pound level	1/2	3/4	1	1 1/2	2
Face to face (mm)	L	CL1500	110	150	150	210	235
Hand wheel diameter (mm)	W	CL1500	110	130	130	180	250
Height (mm)	H	CL1500	277	300	390	400	435
Flow port dimension (mm)	d	CL1500	14	17	22	35	37
Weight (kg)		CL1500	5.1	11	12.1	22	37



CL2500

Pressure seal, full port or reduced port, outside screw and yoke (OS&Y)
Threaded, butt-welded or socket welded ends; design to API 602

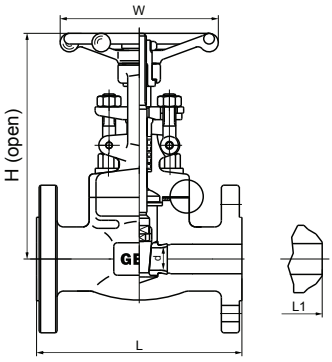
Specification	R.P	Pressure pound level	1/2	3/4	1	1 1/4	1 1/2	2
Face to face (mm)	L	CL2500	186	186	186	232	232	279
Hand wheel diameter (mm)*	W	CL2500	200	200	200	280	280	300
Height (mm)*	H	CL2500	325	325	327	467	468	540
Flow port dimension (mm)	d	CL2500	14	14	19	25	30	36.5
Weight (kg)*		CL2500	-	-	-	-	-	-

* Note: Hand wheel diameter and Height depend on manufacturer´s standard and may vary.

- Other types of construction available upon request.
- Refer to the certified drawings for the final construction.

ANSI FORGED STEEL FLANGED GATE VALVES

COTESO Series 33



(a) 216 for L1(BW)

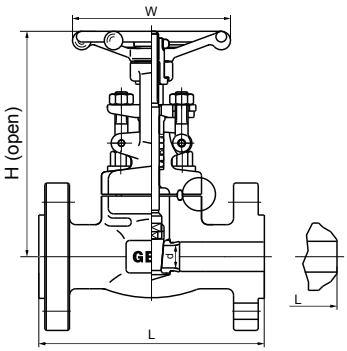
(b) 241 for L1(BW)

CL150-300-600

Bolted bonnet, outside screw and yoke (OS&Y)
Flanged RF or butt-welded ends; design to API 602

Specification				1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face (mm)	CL150		L(RF)	108	117	127	140	165	178 (a)	190 (b)
	CL300		L1(BW)	140	152	165	178	190	216	241
	CL600			165	190	216	229	241	292	330
Hand wheel diameter (mm)*			W	100	100	125	160	160	180	200
Height (mm)*	CL150		H	176	184	217	226	250	290	357
	CL300, CL600			161	163	196	226	250	290	357
Flow port dimension (mm)			d	10	13.5	18	24	29	36.5	45
Weight (kg)*	CL150	RF		3.4	3.98	6.12	7.2	10.4	15.5	24.5
		BW		2.8	3.3	5.4	7.1	8.2	12.5	20
	CL300	RF		3.77	4.89	7.23	9.6	12.65	18	26.2
		BW		3.5	4.4	6.8	8.1	9.2	15.4	22
	CL600	RF		4.2	5.8	8.8	12.1	15.6	19.5	32
		BW		4.5	5.1	8.2	10.5	12.4	20.1	28

* Note: Hand wheel diameter, height and weight depend on manufacturer´s standard and may vary.

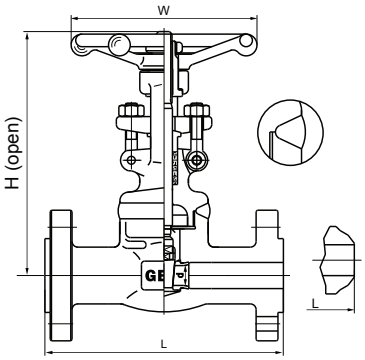


CL900-CL1500

Bolted bonnet, reduced, outside screw and yoke (OS&Y)
Flanged RF or butt-welded ends; design to API 602

Specification		1/2	3/4	1	1 1/4	1 1/2	2
Face to face (mm)	L(RF) L1(BW)	-	-	254	279	305	368
	L(RTJ)	-	-	254	279	305	371
Hand wheel diameter (mm)*	W	-	-	160	180	200	220
Height (mm)*	H	-	-	219	257	296	316
Flow port dimension (mm)	d	-	-	24	29	36.5	45
Weight (kg)*		-	-	15.6	16.2	22.6	28.2

* Note: Hand wheel diameter, height and weight depend on manufacturer´s standard and may vary.

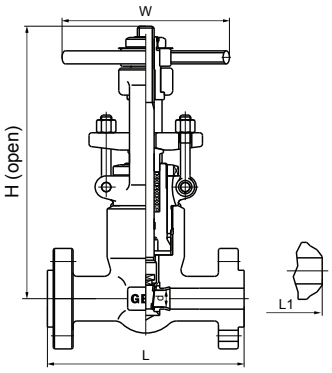


CL2500

Welded bonnet, reduced, outside screw and yoke (OS&Y)
Flanged RF or butt-welded ends; design to API 602

Specification		1/2	3/4	1	1 1/2	2
Face to face (mm)	L(RF) L1(BW)	264	273	308	384	451
	L(RTJ)	264	273	308	387	454
Hand wheel diameter (mm)*	W	125	160	160	200	240
Height (mm)*	H	207	240	258	355	370
Flow port dimension (mm)	d	13.5	13.5	19	30	36.5
Weight (kg)*		-	-	-	-	-

* Note: Hand wheel diameter, height and weight depend on manufacturer´s standard and may vary.



CL2500

Pressure seal gate valves, reduced, outside screw and yoke (OS&Y)
Flanged RF or butt-welded ends; design to ASME B16.34

Specification		1/2	3/4	1	1 1/2	2
Face to face (mm)	L(RF) L1(BW)	264	273	308	384	451
	L(RTJ)	264	273	308	387	451
Hand wheel diameter (mm)*	W	200	200	200	280	300
Height (mm)*	H	325	325	327	478	540
Flow port dimension (mm)	d	13.5	13.5	19	30	36.5
Weight (kg)*		4.6	6.8	7.6	15	21.9

* Note: Hand wheel diameter, height and weight depend on manufacturer´s standard and may vary.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Cast Steel Globe Valve

Standards

Design and Manufacture: Cast steel globe valve to BS 1873 and ASME B16.34; Forged steel globe valve to API 602.
Inspection and Test: API 598.
End flange dimension: ASME B16.5.
BW end dimension: ASME B16.25.
Socket-weld dimension: ASME B16.11.
Face to face and end to end: ASME B16.10.
Pressure-temperature ratings: ASME B16.34.

The basic features of a globe valve

Bolted Bonnet; Outside Screw and Yoke; Rising stem and rising hand wheel.

Body and Bonnet Connection

The body and bonnet of Class 150 - Class 900 globe valves are usually with studs and nuts. And the body and bonnet of Class 1500 - Class 2500 globe valves are usually of pressure seal design.

Gasket of Cover Flange

A stainless steel + flexible graphite spiral wound gasket is used for Class 300 and 600 globe valves, and ring joint gasket (RTJ) is also optional for Class 600. A ring joint gasket is used for Class 900 globe valve. A pressurized seal design is used for Class 1500 - Class 2500 globe valve.

Actuation

A hand wheel, impact hand wheel or gearbox is usually used for globe valve actuation. A chain wheel and electric actuator can also be used for globe valve actuation if being requested by the customers.

Packing Seal

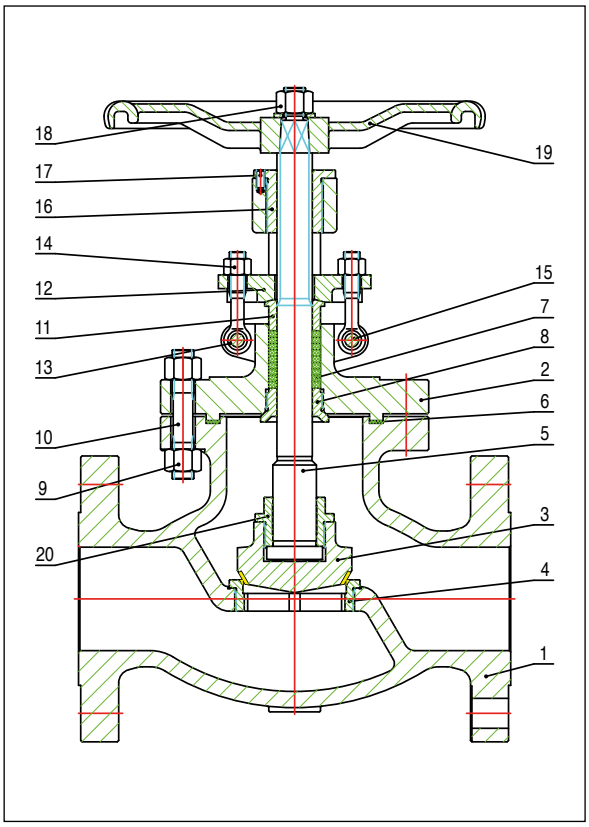
A molded flexible graphite is used for packing material. PTFE or combined packing material can also be used if being requested by the customer. The internal surface of the stuffing box, of which area is in contact with the packing, is of excellent finish (Ra 3.2 μm). The stem surface, contacting the packing, should be precisely machined, so as to reach the high finish and compactness required (Ra 0.8 μm) and to ensure the reliable tightness of the stem area.

Back seat Design

All our globe valves have the back seat design. In most cases, the carbon steel globe valve is fitted with a renewable back seat. For a stainless steel globe valve, the back seat is machined directly in the bonnet or is machined after welding. When the globe valve is in a fully open position, the sealing of the back-seat is reliable. However, as per the requirement of API, it is not advisable to add or change packing by means of back seating when the valve is under pressure.

Seat

For carbon steel globe valves the seat is usually forged steel. The sealing surface of the seat is spray welded with hard alloy specified by the customer. A renewable threaded seat is used for NPS ≤ 10 globe valves and welded on seat; it can also be optional if requested by the customer. Welded on seat is used for NPS ≥ 12 carbon steel globe valves. For stainless steel globe valves an integral seat is usually adopted, or to weld hard alloy directly integrally. Threaded or welded on seat is also optional for stainless steel globe valve if requested by the customer.



Stem Design

The stem is of integral forged design. The minimum diameter of the stem shall be in accordance. with the requirements of the applicable standard.

Stem Nut

Usually the stem nut is copper alloy. For large sized globe valves, a roller bearing is fitted at the two sides of stem nut in order to minimize the open and close torque of the globe valve.

Special Globe Valve

Besides the common globe valves we also produce cryogenic globe valves, bellow sealed globe valves, jacketed globe valves, etc.

No.	Part Name	No	Part Name	No	Part Name
1	Body	8	Backseat	15	Pin
2	Bonnet	9	Nut	16	Stem Nut
3	Disc	10	Bolt	17	Screw
4	Seat	11	Gland	18	Nut
5	Stem	12	Gland Flange	19	Hand wheel
6	Gasket	13	Gland Eyebolt	20	Disc Nut
7	Packing	14	Nut	-	-

ASTM Material list of Rising Stem Cast Steel Globe Valve

Part Name	Carbon Steel to ASTM		Stainless Steel to ASTM				Alloy Steel to ASTM		
Body	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
Bonnet	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
Disc	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
Seating Ring	A105N	A350LF2	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A182 F11	A182 F22	A182 F5
Gasket	Graphite+ SS304, PTFE								
Stem	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
Disc Nut	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
Backseat Bushing	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
Stem Packing	Flexible Graphite								
Lantern Ring	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
Thrust Washer	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
Nut	A194 2H	A194 4	A194 8				A194 7		
Bolt	A193 B7	A320 L7	A193 B8				A193 B16		
Anti-rotating Device	ANSI 1020		A182 F304				ANSI 1020		
Gland	A194 2H		A194 8				A194 2H		
Screw	F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
Gland Flange	A216 WCB	A352 LCB	A351 CF8	A351 CF8	A351 CF8	A351 CF8	A217 WC6	A217 WC9	A217 C5
Gland Eyebolt	A193 B7		A193 B8				A193 B16		
Gland Nut	A194 2H		A194 8				A194 7		
Pin	ANSI 1045		A182 F304				ANSI 1045		
Stem Nut	A439 D2/ B148 952A								
Bearing	-								
Retaining Nut	ANSI 1020								
Nipple	Copper Alloy								
Bevel gearbox	-								

- Other types of construction available upon request.
- Refer to the certified drawings for the final construction.

ANSI GLOBE VALVES

Class ANSI 150
COTESO Series 38
BS 1873

Construction features

Bolted bonnet

Flat or plug type disc

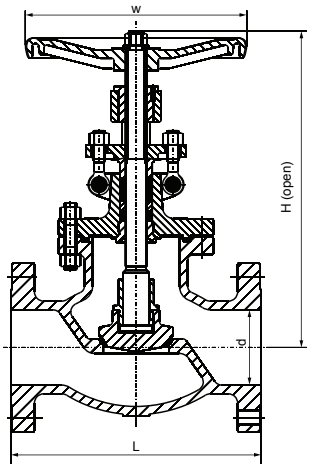
Renewable seat

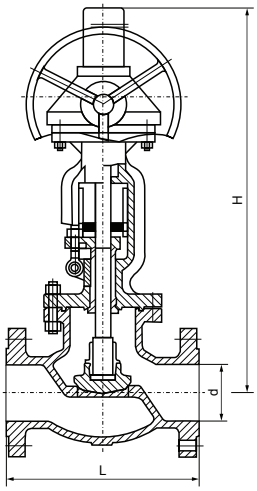
(Threaded or welded seat ring)

≥ 10" Thrust bearing design

API 598 Pressure Test

Pressure rating: Class 150





Class	Size		Dimensions (mm)			
	inch	DN	L			d
			RF	RTJ	BW	
Class 150	2	50	203	216	203	51
	2 1/2	65	216	229	216	64
	3	80	241	254	241	76
	4	100	292	305	292	102
	6	150	406	419	406	152
	8	200	495	508	495	203
	10	250	622	635	622	254
	12	300	698	711	698	305
	14	350	787	800	787	337
	16	400	914	927	914	387
	20	500	-	-	-	-
	24	600	-	-	-	-

- Other types of construction available upon request.
- Refer to the certified drawings for the final construction.

Class ANSI 300
COTESO Series 38
BS 1873

Construction features

Bolted bonnet

Flat or plug type disc

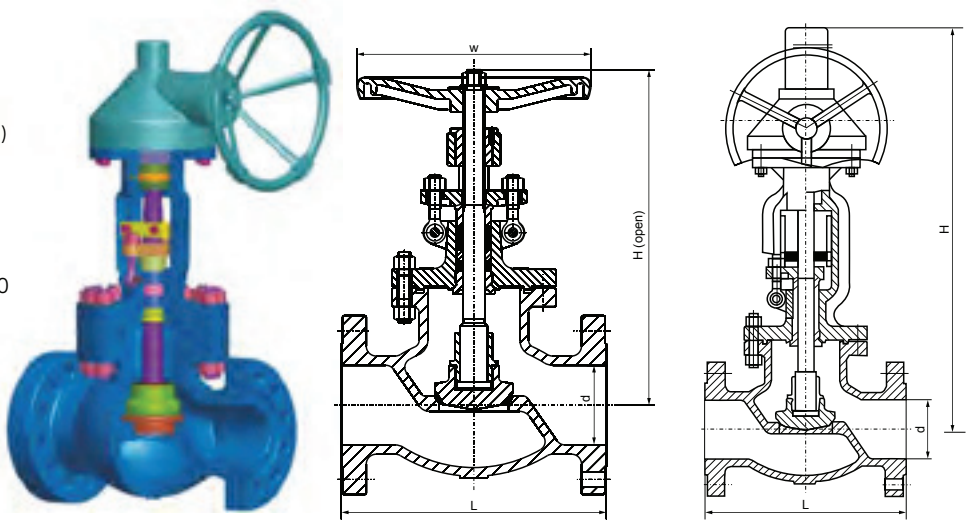
Renewable seat

(Threaded or welded seat ring)

≥ 10" Thrust bearing design

API 598 Pressure Test

Pressure rating: Class 300



Class	Size		Dimensions (mm)			
	inch	DN	L			d
			RF	RTJ	BW	
Class 300	2	50	267	283	267	51
	2 1/2	65	292	308	292	64
	3	80	318	333	318	76
	4	100	356	371	356	102
	6	150	444	460	444	152
	8	200	559	575	559	203
	10	250	622	638	622	254
	12	300	711	727	711	305
	14	350	-	-	-	-
	16	400	-	-	-	-
	18	450	-	-	-	-
	20	500	-	-	-	-

• Refer to the certified drawings for the final construction.

ANSI GLOBE VALVES

Class ANSI 600/900/1500
COTESO Series 39
BS 1873

Construction features

Pressure seal

Flat or plug type disc

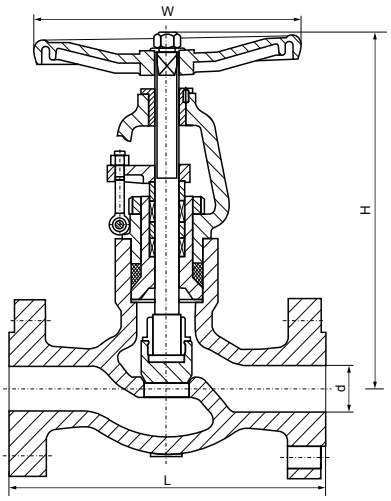
Renewable seat

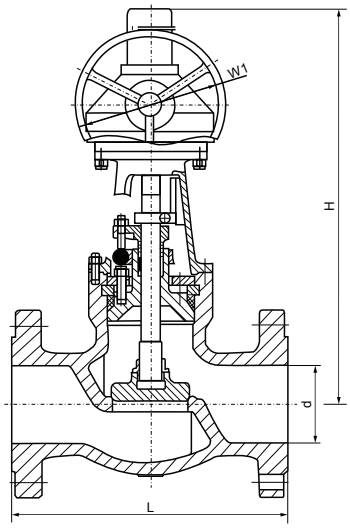
(Threaded or welded seat ring)

API 598 Pressure Test

Pressure rating: Class: 600 - 900

Pressure rating: Class 1500





Class	Size		Dimensions (mm)			
	inch	mm	L			d
			RF	RTJ	BW	
Class 600	2	50	292	295	292	51
	2 1/2	65	330	333	330	64
	3	80	356	359	356	76
	4	100	432	435	432	102
	5	-	-	-	-	-
	6	150	559	562	559	152
	8	200	660	664	660	200
Class 900	2	50	368	-	-	47
	2 1/2	65	419	-	-	57
	3	80	381	384	381	73
	4	100	457	460	457	98
	5	-	-	-	-	-
	6	150	610	613	610	146

Class	Size		Dimensions (mm)			
	inch	mm	L			d
			RF	RTJ	BW	
Class 1500	3	80	470	473	470	70
	4	100	546	549	546	92
	6	150	705	711	705	137
	8	200	832	841	832	178

• Refer to the certified drawings for the final construction.

Forged Steel Globe Valve

Construction features

Available in three bonnet designs.

The first design is the pressure seal bonnet, with male-female joint, spiral wound gasket, made in F304L/graphite, Ring joint gasket are also available on request.

The second design is the welded bonnet, with a threaded and seal welded joint.

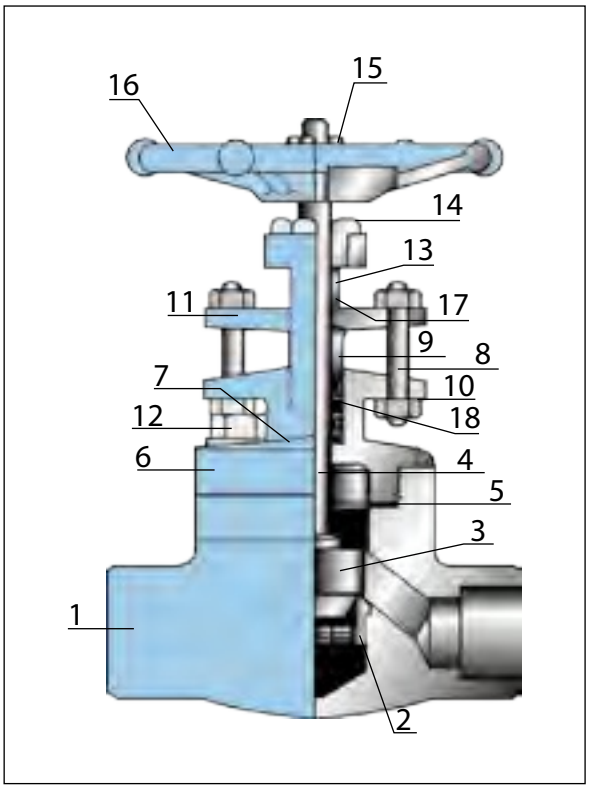
The third design is the pressure seal bonnet, with a threaded and pressure seal bonnet joint.

Construction is as follows

- Full port or conventional port
- Outside screw and yoke (OS&Y)
- Two piece self-aligning packing gland
- Bolted bonnet with spiral wound gasket, threaded and seal welded bonnet or threaded and pressure seal bonnet;
- Integral backseat
- Socket weld ends to ASME B16.11
- Screwed ends (NPT) to ASME B1.20.1
- Discs are plug type and upon request throttle type and needle type.

Applicable standards

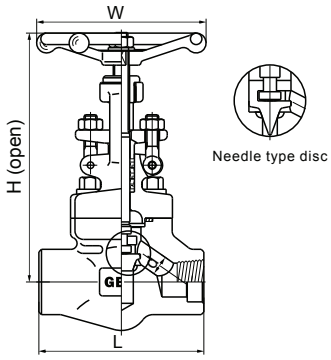
1. Design and manufacture conform to BS5352, MSS SP-118, API 602
2. Connection ends conform to
   1) Socket welded ends conform to ASME B16.11
   2) Screwed ends NPT to ASME B1.20.1
   3) Butt-welded ends conform to ASME B16.25
   4) Flanged ends conform to ASME B16.5
3. Test and inspection conform to API 598
4. Structure features
   Bolted bonnet, outside screw and yoke;
   Welded bonnet, outside screw and yoke.
5. Materials conform to ASTM.
6. A105, LF2, F5, F11, F22, 304(L), 316(L), F347, F321, F51, other materials upon request



Main part materials list

No.	Part name	A105/F6a	A105/F6aHFS	LF2/304	F11/F6aHF	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	A105	A105+HF	LF2	F11+HF	F304(L)	F316(L)	F51
3	Disc	F6a	F6a	F304	F6aHF	F304(L)	F316(L)	F51
4	Stem	410	410	304	410	304(L)	316(L)	F51
5	Gasket	304+ graphite	304+ graphite	304+ graphite	304+ graphite	304+ graphite	304+ graphite	304+ graphite
6	Bonnet	A105	A105	LF2	F11	F304(L)	F316(L)	F51
7	Bolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
8	Pin	410	410	410	410	304	304	304
9	Gland	410	410	304	410	304	316	F51
10	Gland eyebolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
11	Gland flange	A105	A105	LF2	F11	F304	F304	F304
12	Hex nut	2H	2H	2H	2H	8(M)	8(M)	8M
13	Stem nut	410	410	410	410	410	410	410
14	Locking nut	35	35	35	35	35	35	35
15	Nameplate	AL	AL	AL	AL	AL	AL	AL
16	Hand wheel	A197	A197	A197	A197	A197	A197	A197
18	Packing	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite

COTESO Series 40

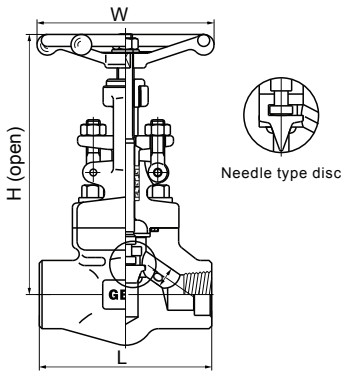


CL800

Bolted bonnet, full port or reduced port outside screw and yoke (OS&Y) THD., SW or BW ends, design standard: API 602

Specification	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face (mm)	L	79	92	111	120	152	172	200
Hand wheel diameter (mm)*	W	100	100	125	160	160	180	200
Height (mm)*	H	164	164	203	224	260	300	355
Flow port dimension (mm)	d	9	13	17.5	23	30	35	46
Weight (kg)*		2.28	2.37	4.3	5.75	7.8	12.5	17.5

* Note: Hand wheel diameter, height and weight depend on manufacturer´s standard and may vary.

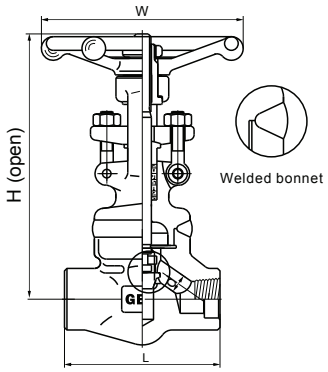


CL1500

Bolted bonnet, reduced port or full port outside screw and yoke (OS&Y) THD., BW or SW ends, design standard: API 602

Specification	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face (mm)	L	111	111	120	152	172	200	220
Hand wheel diameter (mm)*	W	125	125	160	160	180	200	240
Height (mm)*	H	207	207	240	258	330	355	370
Flow port dimension (mm)	d	12	15	20	28	32	40	45
Weight (kg)*		3.7	3.6	6.8	7.6	11.6	15	21.9

* Note: Hand wheel diameter, height and weight depend on manufacturer´s standard and may vary.

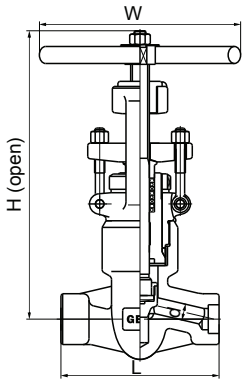


CL2500

Welded bonnet (RJ), reduced port, outside screw and yoke (OS&Y) SW ends, design standard: ASME B 16⊠34

Specification	F.P	1/2	3/4	1	1 1/2	2
Face to face (mm)	L	150	150	210	235	235
Hand wheel diameter (mm)*	W	130	130	250	300	300
Height (mm)*	H	293	300	390	435	435
Flow port dimension (mm)	d	11	14	19	28	35
Weight (kg)*		10	10.3	22.4	38	38

* Note: Hand wheel diameter, height and weight depend on manufacturer´s standard and may vary.



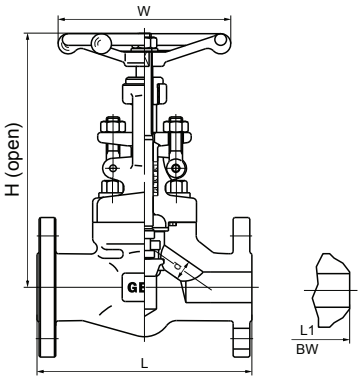
CL2500

Pressure seal bonnet, reduced port, outside screw and yoke (OS&Y) SW ends, design standard: ASME B 16⊠34

Specification	F.P	1/2	3/4	1	1 1/4	1 1/2	2
Face to face (mm)	L	186	186	186	232	232	279
Hand wheel diameter (mm)*	W	200	200	200	280	280	300
Height (mm)*	H	375	378	380	490	490	540
Flow port dimension (mm)	d	11	14	19	25	28	35
Weight (kg)*		12.3	11.6	10.8	26.0	28.4	60

* Note: Hand wheel diameter, height and weight depend on manufacturer´s standard and may vary.

COTESO Series 40

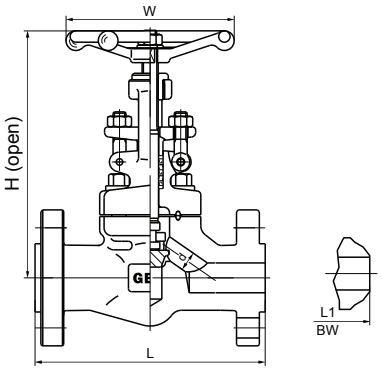


CL150-300-600

Bolted bonnet, outside screw and yoke (OS&Y)
Flange-welded or butt-welded ends; design to API 602

Specification				1/2	3/4	1	1 1/4	1 1/2	2
Face to face (mm)	CL150		L(RF)	108	117	127	140	165	203
	CL300		L1(BW)	152	178	203	216	229	267
	CL600			165	190	216	229	241	292
Hand wheel diameter (mm)*			W	100	100	125	160	160	180
Height (mm)*	CL150/CL300		H	180	184	217	224	260	300
	CL600			164	164	203	224	260	300
Flow port dimension (mm)			d	9	13	17.5	23	30	35
Weight (kg)*	CL150	R F		3.45	4.00	6.19	9.6	10.5	17
		BW		2.3	3.6	7.8	8.2	12.0	15.0
	CL300	R F		3.8	5.1	7.2	12	13.5	19.7
		BW		2.8	4.0	8.5	9.2	12.6	16.8
	CL600	R F		5.6	7.8	12.5	17	23.5	38.8
		BW		3.4	4.7	9.2	10.5	13.3	18.9

* Note: Hand wheel diameter, height and weight depend on manufacturer´s standard and may vary.

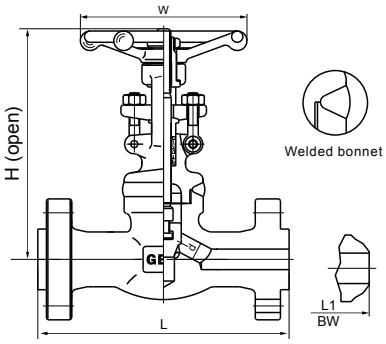


CL900-CL1500

Bolted bonnet, reduced port, outside screw and yoke (OS&Y)
Flanged or BW ends, design standard: API 602

Specification	F.P	1/2	3/4	1	1 1/4	1 1/2	2
Face to face (mm)	L(RF), L1(BW)	216	229	254	279	305	368
	L(RTJ)	216	229	254	279	305	371
Hand wheel diameter (mm)*	W	125	125	160	160	180	200
Height (mm)*	H	207	207	230	160	300	355
Flow port dimension (mm)	d	12	15	20	28	32	40
Weight (kg)*		11	13.2	17.4	19	24.5	31

* Note: Hand wheel diameter, height and weight depend on manufacturer´s standard and may vary.

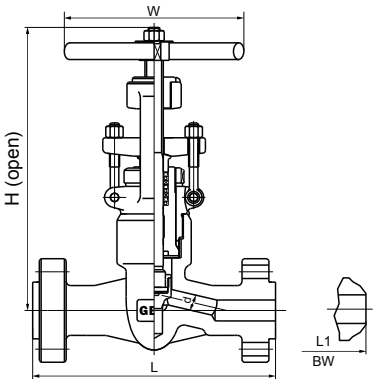


CL2500

Welded bonnet, reduced port, outside screw and yoke (OS&Y)
Flanged or BW ends, design standard: ASME B 16⊠34

Specification	F.P	1/2	3/4	1	1 1/2	2
Face to face (mm)	L(RF), L1(BW)	264	273	308	384	451
	L(RTJ)	264	273	308	387	454
Hand wheel diameter (mm)*	W	125	160	200	250	240
Height (mm)*	H	207	240	258	355	300
Flow port dimension (mm)	d	11	14	19	28	35
Weight (kg)*		19.5	21.5	42	65	95

* Note: Hand wheel diameter, height and weight depend on manufacturer´s standard and may vary.



CL2500

Pressure seal bonnet, reduced port, outside screw and yoke (OS&Y)
Flanged or BW ends, design standard: ASME B 16⊠34

Specification	F.P	1/2	3/4	1	1 1/4	1 1/2	2
Face to face (mm)	L(RF), L1(BW)	264	273	308	349	384	451
	L(RTJ)	264	273	308	349	387	454
Hand wheel diameter (mm)*	W	200	200	280	280	280	300
Height (mm)*	H	320	320	320	440	440	490
Flow port dimension (mm)	d	11	14	19	25	28	35
Weight (kg)*		21.5	24.7	30.4	48.1	58.1	130

* Note: Hand wheel diameter, height and weight depend on manufacturer´s standard and may vary.

Cast Steel Swing Check Valve

Applicable Standards

Design and Manufacture: Steel check valve to BS1868, ASME B16.34 and API 6D.
Forged steel check valve: API 602.
Inspection and test: API 598 or API 6D.
End flange dimension; ASME B16.5 (NPS ≤ 24).
ASME B16.47 series A and B, or MSS SP-44 (NPS > 24).
BW end dimension: ASME B16.25.
Socket-weld dimension: ASME B16.11.
Face to face and end to end: ASME B16.10
Pressure-temperature ratings: ASME B16.34.
Wall thickness dimension: API 600 and BS1868.

Seat

For carbon steel check valves, the seat is usually forged steel. The sealing surface of the seat is spray welded with hard alloy specified by the customer. A renewable threaded seat is used for NPS ≤ 10" check valves, and welded on seat can be also optional, if being requested by the customer. A welded on seat is used for NPS ≥ 12" carbon steel check valves. For stainless steel check valves, an integral seat is usually adopted, or weld hard alloy directly integrally. A threaded or welded on seat is also optional for stainless steel check valves, if being requested by the customer.

The features of a swing check valve

Bolted Bonnet;
Swing type disc;
Metallic seating surfaces.

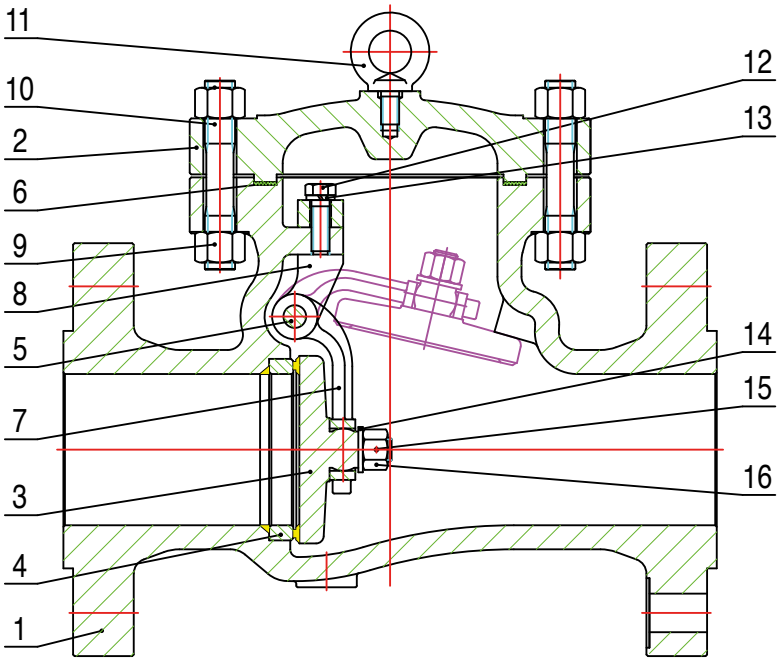
Body-To-Bonnet Joint

Stainless steel + flexible graphite spiralwound gasket is used for Class 150, Class 300 and Class 600 check valves; ring joint gasket for Class 900 and 1500, optional for Class 600. Pressure seal design for Class 2500. On request for Class 900 and Class 1500.

Body and Bonnet Connection

The body and bonnet of Class 150 - Class 900 check valves are usually connected with studs and nuts. And the body and bonnet of Class 1500 - Class 2500 check valves are usually of pressure seal design.

ANSI SWING CHECK VALVES



No.	Part Name	No	Part Name	No	Part Name
1	Body	7	Hinge	13	Spring Washer
2	Bonnet	8	Yoke	14	Gasket
3	Disc	9	Nut	15	Splitpin
4	Seat	10	Bolt	16	Nut
5	Pin	11	Lifting Bolt	-	-
6	Gasket	12	Bolt	-	-

API 600 Trim material

Trim code	Seat ring surface	Wedge seat surface	Hinge Pin
1	13Cr	13Cr	A182 F6a
2	18Cr-8Ni	18Cr-8Ni	A182 F304
3	25Cr-20Ni	25Cr-20Ni	A182 F310
4	Hard 13Cr	Hard 13Cr	A182 F6a
5	Stellite	Stellite	A182 F6a
6	13Cr	Cu-Ni Alloy	Monel
7	13Cr	Hard 13Cr	A182 F6a
8	Stellite	13Cr	A182 F6a
9	Cu-Ni Alloy	Cu-Ni Alloy	Monel
10	18Cr-8Ni-Mo	18Cr-8Ni-Mo	A182 F316
11	Cu-Ni Alloy	Cu-Ni Alloy	Monel
12	Stellite	18Cr-8Ni-Mo	A182 F316
13	19Cr-29Ni	19Cr-29Ni	20 Alloy

ASTM Material list of BS1868 and API 6D Swing Check Valves

Part Name	Carbon Steel to ASTM		Stainless Steel to ASTM				Alloy Steel to ASTM		
Body	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
Cover	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
Seat Ring	A105N	A352 LF2	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A182 F11	A182 F22	A182 F5
Disc	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
Hinge	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
Yoke	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
Gasket	Graphite+SS304 PTFE								
Disc Washer	A182 F6a	A182 F6a	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
Disc Nut	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
Pin	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
Nut	A194 2H	A194 4	A194 8M				A194 7		
Bolt	A193 B7	A320 L7	A193 B8M				A193 B16		
Screw	193 B7	A320 L7	A182 F304	A182 F316	A182 F304L	A182 F316L	A193 B16		
Lifting Lug	A194 2H								

ANSI SWING CHECK VALVES

Class ANSI 150 and 300
COTESO Series 48
COTESO Series 53
AP6D

Construction features

Bolted cover

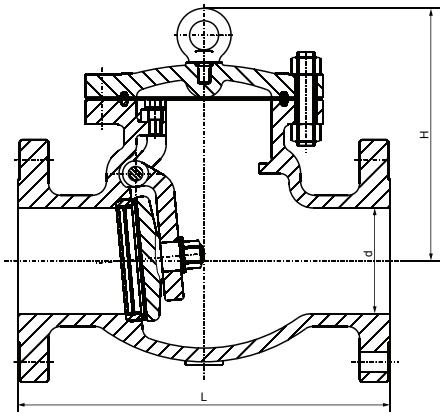
Renewable seat

(Threaded or welded seat ring)

API 598 Pressure Test

Pressure rating:

Class 150, Class 300



Size		Class 150						Class 300					
inch	DN	L (mm)			d (mm)	H (mm)*	Weight (kg)*	L (mm)			d (mm)	H (mm)*	Weight (kg)*
		RF	RTJ	BW				RF	RTJ	BW			
2	50	203	216	203	49	132	15	267	283	267	49	144	20
2 1/2	65	216	229	216	62	147	20	292	308	292	62	169	35
3	80	241	254	241	74	176	27	318	333	318	74	210	40
4	100	292	305	292	100	198	45	356	371	356	100	260	61
6	150	356	368	356	150	320	69	445	460	445	150	326	130
8	200	495	508	495	201	380	131	533	549	533	201	380	190
10	250	622	635	622	252	440	219	622	638	622	252	440	296
12	300	699	711	699	303	480	321	711	727	711	303	520	450
14	350	787	800	787	334	530	380	838	854	838	334	540	640
16	400	864	876	864	385	580	560	864	879	864	385	588	850
18	450	978	991	978	436	618	630	978	994	978	436	670	1030
20	500	978	991	978	487	657	770	1016	1035	1016	487	720	1330
24	600	1295	1308	1295	589	760	960	1346	1368	1346	589	850	1950
26	650	1295	-	1295	633	840	1250	1346	1372	1346	633	920	2300
28	700	1448	-	1448	684	920	1580	1499	1524	1499	684	1150	2600
30	750	1524	-	1524	735	980	1950	1594	1619	1594	735	1260	3200
36	900	1956	-	1956	874	1092	3200	2083	-	2083	874	1540	4300

* Note: Tables H and Weight depend on manufacturer´s standard and may vary.

Class ANSI 600 - 2500
COTESO Series 48 and 49
COTESO Series 53 and 53P
API 6D

Construction features

Bolted cover and pressure seal

Renewable seat

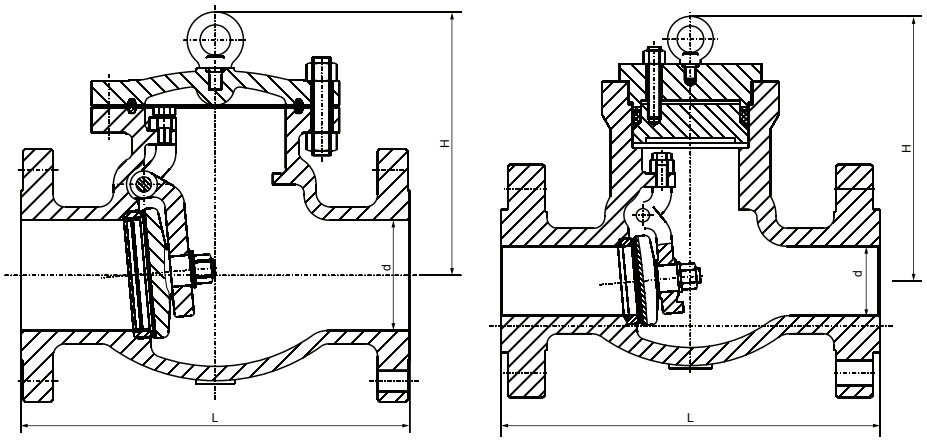
(Threaded or welded seat ring)

API 598 Pressure Test

Pressure rating:

Class: 600 - 900

Class: 1500 - 2500



Size		Class 600						Class 900					
inch	DN	L (mm)			d (mm)	H (mm)*	Weight (kg)*	L (mm)			d (mm)	H (mm)*	Weight (kg)*
		RF	RTJ	BW				RF	RTJ	BW			
2	50	292	295	292	49	170	28	368	371	368	49	200	48
2 1/2	65	330	333	330	62	178	40	419	422	419	62	220	75
3	80	356	359	356	74	246	68	381	384	381	74	280	95
4	100	432	435	432	100	290	117	457	460	457	100	320	135
6	150	559	562	559	150	360	192	610	613	610	150	400	264
8	200	660	664	660	201	430	340	737	740	737	201	480	424
10	250	787	791	787	252	502	515	838	841	838	252	560	730
12	300	838	841	838	303	554	750	965	968	965	303	632	1070
14	350	889	892	889	334	595	890	1029	1038	1029	322	680	1180
16	400	991	994	991	385	680	1303	1130	1140	1130	373	780	1790
18	450	1092	1095	1092	436	778	1800	1219	1232	1219	423	880	2500
20	500	1194	1200	1194	487	970	2150	1321	1334	1321	471	1050	3080
24	600	1397	1407	1397	589	1100	3200	1549	1568	1549	570	1200	4600

* Note: Tables H and Weight depend on manufacturer´s standard and may vary.

Size		Class 1500						Class 2500					
inch	DN	L (mm)			d (mm)	H (mm)*	Weight (kg)*	L (mm)			d (mm)	H (mm)*	Weight (kg)*
		RF	RTJ	BW				RF	RTJ	BW			
2	50	368	371	368	49	210	48	451	454	451	42	230	68
2 1/2	65	419	422	419	62	240	75	508	514	508	52	260	100
3	80	470	473	470	74	303	120	578	584	578	62	330	165
4	100	546	549	546	100	340	180	673	683	673	87	370	260
6	150	705	711	705	144	430	385	914	927	914	131	460	580
8	200	832	841	832	192	500	634	1022	1038	1022	179	530	970
10	250	991	1000	991	239	590	1140	1270	1292	1270	223	620	1700
12	300	1130	1146	1130	287	660	1650	1422	1445	1422	265	690	2600
14	350	1257	1276	1257	315	710	2000	-	-	-	-	-	-
16	400	1384	1407	1384	360	820	2700	-	-	-	-	-	-

* Note: Tables H and Weight depend on manufacturer´s standard and may vary.

ANSI LIFT CHECK VALVES, PISTON TYPE

Class ANSI 150/300/600/900
COTESO Series 54
BS 1868

Construction feature

Bolted cover and pressure seal

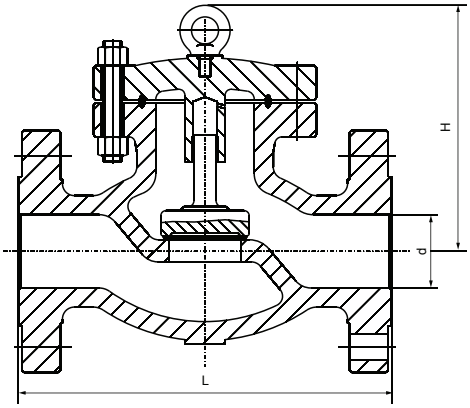
Renewable seat

(Threaded or welded seat ring)

API 598 Pressure Test

Pressure ratings: Class: 150 - 300

Class: 600 - 900



Size		Class 150						Class 300					
inch	DN	L (mm)			d (mm)	H (mm)*	Weight (kg)*	L (mm)			d (mm)	H (mm)*	Weight (kg)*
		RF	RTJ	BW				RF	RTJ	BW			
1/2	15	108	119	108	15	76	3	140	151	140	15	78	5
3/4	20	117	130	117	20	76	4	152	165	152	20	82	6
1	25	127	140	127	25	98	5	216	229	216	25	102	8
1 1/4	32	140	152	140	32	102	7	229	241	229	32	106	11
1 1/2	40	165	178	165	38	115	8	241	254	241	38	118	13
2	50	203	216	203	51	140	15	267	283	267	51	140	26
2 1/2	65	216	229	216	64	162	22	292	308	292	64	164	33
3	80	241	254	241	76	168	28	318	333	318	76	178	50
4	100	292	305	292	102	194	42	356	371	356	102	195	86
6	150	356	368	356	152	226	75	444	460	444	152	245	180
8	200	495	508	495	203	250	118	533	575	559	203	280	220
10	250	622	635	622	254	275	194	622	638	622	254	336	310
12	300	698	711	698	305	332	320	711	727	711	305	380	510

* Note: Tables H and Weight depend on manufacturer´s standard and may vary.

Size		Class 600						Class 900					
inch	DN	L (mm)			d (mm)	H (mm)*	Weight (kg)*	L (mm)			d (mm)	H (mm)*	Weight (kg)*
		RF	RTJ	BW				RF	RTJ	BW			
2	50	292	295	292	51	152	32	-	-	-	-	180	50
2 1/2	65	330	333	330	64	167	45	-	-	-	-	200	65
3	80	356	359	356	76	178	68	381	384	381	73	235	88
4	100	432	435	432	102	215	98	457	460	457	98	270	140
6	150	559	562	559	152	279	230	610	613	610	146	350	300
8	200	660	664	660	200	328	300	737	740	737	190	400	390

* Note: Tables H and Weight depend on manufacturer´s standard and may vary.

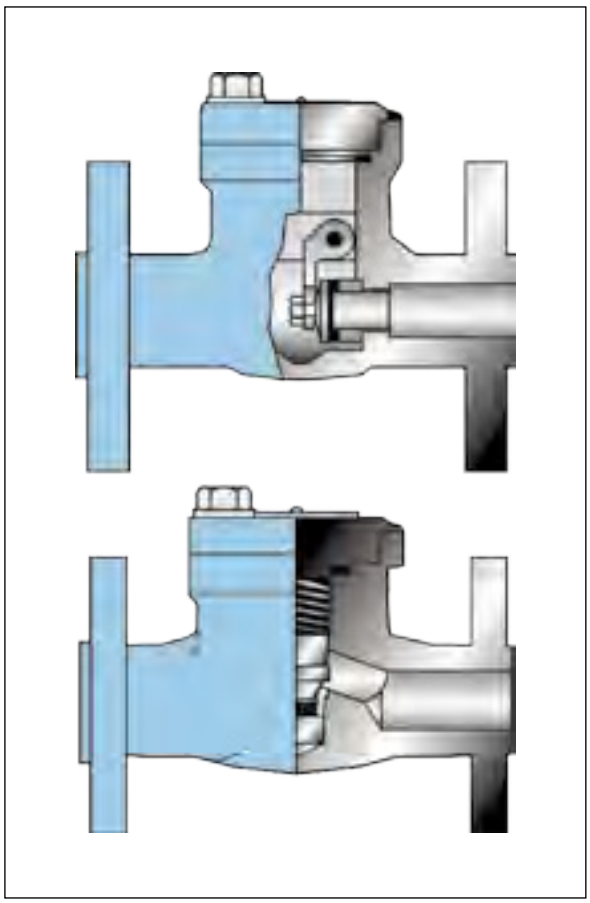
Forged Steel Check Valve

Forged steel check valves

Available in three bonnet designs. The first design is the Bolted Bonnet, with male-female joint, spiral wound gasket, made in F304L/graphite, Ring joint gasket are also available upon request. The second design is the welded bonnet, with a threaded and seal welded joint. The third design is the pressure seal bonnet, with a threaded and pressure seal bonnet joint. The check valves are also available in three different design configurations. These are piston check, ball check, and swing checks.

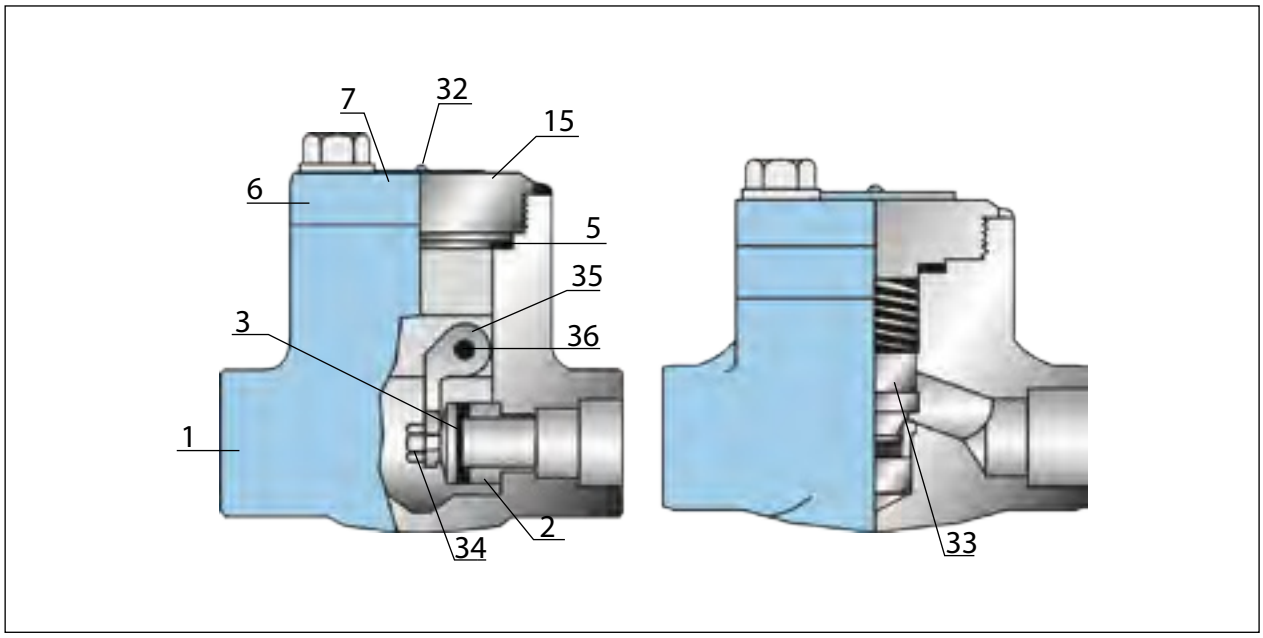
Construction is as follows

- Full port or conventional port
- Lift type check valves
- Ball type check valves
- Swing type check valves
- Bolted bonnet with spiralwound gasket, threaded and seal welded bonnet or threaded and pressure seal bonnet
- Socket weld ends to ASME B16.11
- Screwed ends (NPT) to ASME B1.20.1



Applicable standards

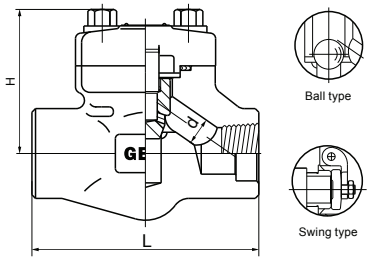
1. Design and manufacture conform
   BS 5352 MSS SP-118 and API 602
2. Connection ends conform to
   1) Scoket welded ends conform to ASME B16.11
   2) Screw ends conform to ASME B1.20.1
   3) Butt-welded ends conform to ASME B16.25
   4) Flanged ends conform to ASME B16.5
3. Test and inspection conform to API 598
4. Structure features
   Bolted bonnet and pressure seal
5. Materials conform to ASTM.
6. Main materials
   A105 LF2 F5 F11 F22 304(L)
   316(L) F347 F321 F51
   Monel Alloy Steel.



Main part materials list

No.	Part name	A105/F6a	A105/F6aHFS	LF2/304	F11/F6aHF	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	A105	A105	LF2	F11	F304(L)	F316(L)	F51
2	Seat ring	410	410HF	304	410HF	304(L)	316(L)	F51
3	Disc	F6a	F6a	F304	F6aHF	F304(L)	F316(L)	F51
5	Gasket	304+Graphite	304+Graphite	304+Graphite	304+Graphite	304+Graphite	316+Graphite	316+Graphite
6	Bonnet	A105	A105	LF2	F11	F304(L)	F316(L)	F51
7	Bolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
15	Nameplate	AL	AL	AL	AL	AL	AL	AL
32	Revit	AL	AL	AL	AL	AL	AL	AL
33	Steel ball	430	430	304	STL	316(L)	316(L)	STL
34	Disc nut	2H	2H	8	8	8(M)	8(M)	8M
35	Hinge	410	410	304	410	316(L)	316(L)	F51
36	Pin	410	410	304	410	304(L)	316(L)	F51

COTESO Series 56



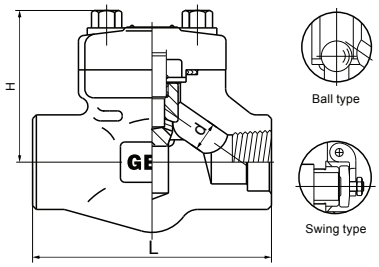
Spring-load acc. to client's requirement

CL800

BB, Full Bore or Red. Bore, THD or BW or SW ends, Design Standard: API 602

Specification	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
	F.P	-	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face (mm)	L	Lift	79	92	111	120	152	172	200
		Swing	79	92	111	120	120	140	178
Height (mm)	H*	Lift	61	61	78	84	84	118	132
		Swing	61	61	78	84	84	120	133
Flow port dimension (mm)	d	Lift	9	13	17.5	23	30	35	46
		Swing	10.5	13.5	18	24	29	36.5	45
Weight (kg)*		Lift	1.5	1.7	3.3	4.2	4.2	10.5	12.5
		Swing	1.5	1.7	3.3	4.2	4.2	8.5	10.9

* Note: Dimension H and Weight depend on manufacturer´s standard and may vary.



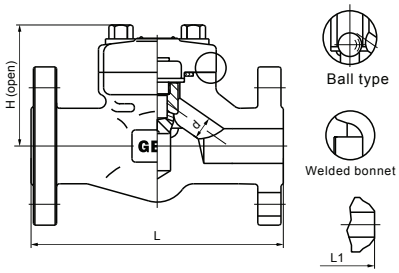
Spring-load acc. to client's requirement

1500

BB, Full Bore or Red. Bore, THD or BW or SW ends, Design Standard: API 602

Specification	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
	F.P	-	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face (mm)	L	Lift	92	111	111	120	152	172	200
		Swing	92	111	111	120	120	140	178
Height (mm)	H*	Lift	61	78	78	84	103	118	132
		Swing	61	78	78	84	101	120	133
Flow port dimension (mm)	d	Lift	7	12	15	20	28	32	40
		Swing	8	10.5	13.5	18	24	29	45
Weight (kg)*		Lift	1.5	3.4	3.3	4.2	6.3	10.5	12.5
		Swing	1.5	3.4	3.3	4.2	5.0	8.5	10.9

* Note: Dimension H and Weight depend on manufacturer´s standard and may vary.

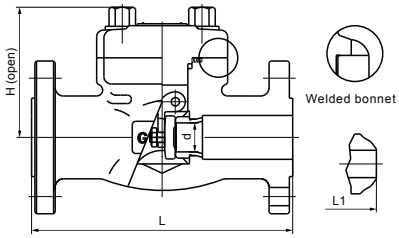


CL150-300-600

BB, Red. Bore, Flanged or BW ends, Design Standard: API 602

Specification			R.P	1/2	3/4	1	1 1/4	1 1/2	2
Face to face (mm)	CL150		L(RF) L1(BW)	108	117	127	140	165	203
	CL300			152	178	203	216	229	267
	CL600			165	190	216	229	241	292
Height (mm)	CL150		H*	77	81	93	95	103	118
	CL300/600			61	78	84	101	120	133
Flow port dimension (mm)			d	10	13	17.5	23	30	35
Weight (kg)*	CL150	RF		3.6	4.6	8.5	9.2	12.5	14.8
		BW		3.0	3.6	7.6	8.5	11.3	13.6
	CL300	RF		3.7	4.8	8.8	9.6	13.7	17.8
		BW		3.2	4.3	8.0	8.6	12.7	16.2
	CL600	RF		4.0	5.8	9.5	10.4	15.6	24.5
		BW		3.4	5.1	8.8	9.2	14.8	22.5

* Note: Dimension H and Weight depend on manufacturer´s standard and may vary.



CL150-300-600

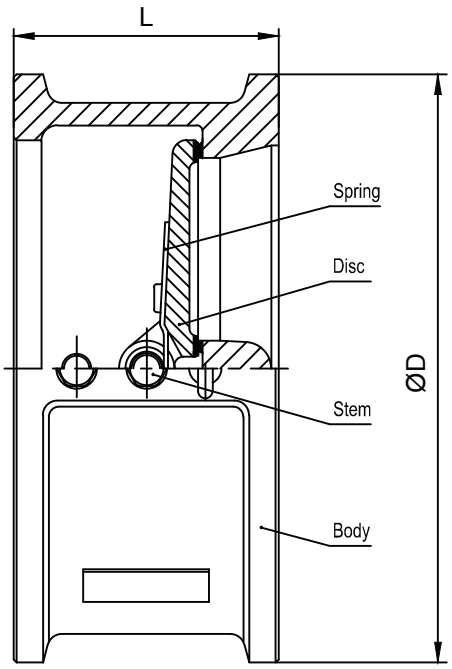
BB, Red. Bore, Flanged or BW ends, Design Standard: API 602

Specification			R.P	1/2	3/4	1	1 1/4	1 1/2	2
Face to face (mm)	CL150		L(RF) L1(BW)	108	117	127	140	165	203
	CL300			153	178	203	216	229	267
	CL600			165	190	216	229	241	292
Height (mm)	CL150		H*	77	81	93	95	103	118
	CL300/600			61	78	84	101	120	133
Flow port dimension (mm)			d	10.5	13.5	18	24	29	36.5
Weight (kg)*	CL150	RF		3.6	4.6	8.5	9.2	12.5	14.8
		BW		3.0	3.6	7.6	8.5	11.3	13.6
	CL300	RF		3.7	4.8	8.8	9.6	13.7	17.8
		BW		3.2	4.3	8.0	8.6	12.7	16.2
	CL600	RF		4.0	5.8	9.5	10.4	15.6	24.5
		BW		3.4	5.1	8.8	9.2	14.8	22.5

* Note: Dimension H and Weight depend on manufacturer´s standard and may vary.

- Other types of construction available upon request.
- Refer to the certified drawings for the final construction.

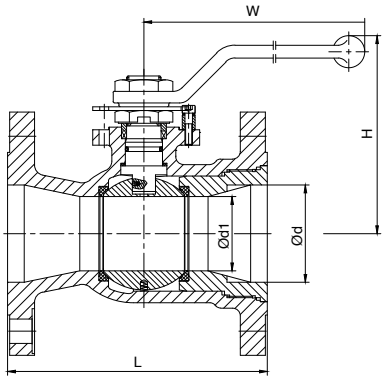
COTESO Series 51 and 55
API 6D



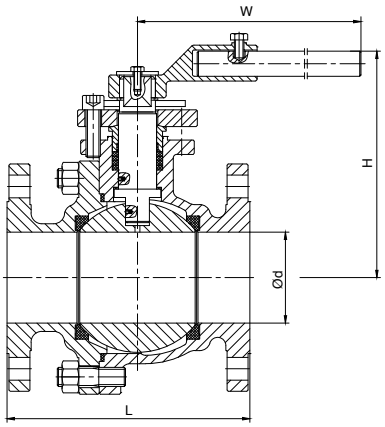
Size	Dimensions (mm)														
inch	Class 150			Class 300			Class 600			Class 900			Class 1500		
	L	D	Wt (kg)*	L	D	Wt (kg)*	L	D	Wt (kg)*	L	D	Wt (kg)*	L	D	Wt (kg)*
2	60	103	2	60	110	3	60	110	4	70	140	8	70	140	8
3	73	135	4	73	147	6	73	147	8	83	165	14	83	172	19
4	73	173	6	73	179	8	79	191	11	102	204	20	102	207	26
6	98	220	13	98	249	18	137	264	26	159	286	42	159	280	68
8	127	277	25	127	305	31	165	318	55	206	356	84	206	350	130
10	146	337	39	146	359	51	213	398	95	241	432	145	248	433	210
12	181	407	54	181	420	77	229	455	140	292	495	220	305	518	384
14	184	448	80	222	483	117	273	490	223	356	518	350	356	576	550
16	191	512	117	232	537	190	305	562	360	384	572	470	384	639	635
18	203	547	138	264	594	200	362	610	395	451	635	605	-	-	-
20	219	604	163	292	652	265	368	680	518	451	695	820	-	-	-
24	222	715	331	318	772	410	438	786	836	495	835	1050	-	-	-

* Note: Table Wt depends on manufacturer´s standard and may vary.

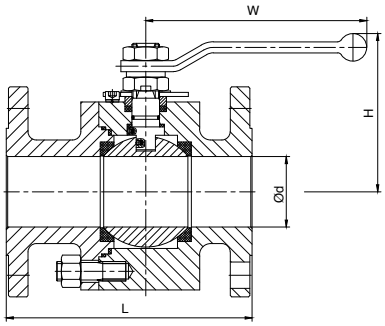
• For detailed dimensions and configurations, please ask us for our detailed drawing arrangements.



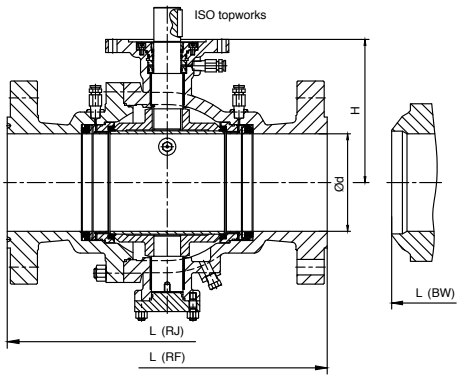
1-PC Floating cast
Serie 57



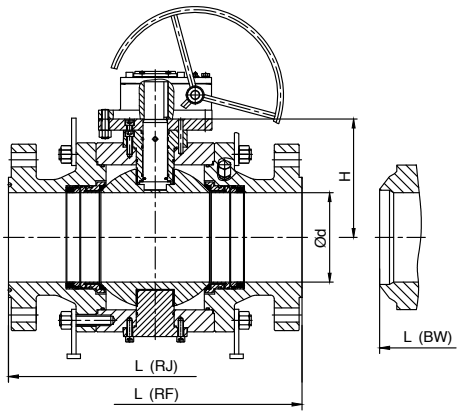
2-PC floating cast
Series 58 and 59



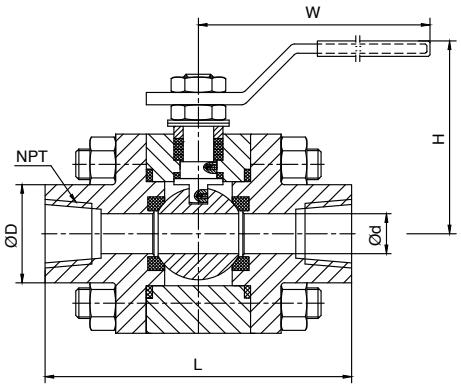
2-PC floating forged
Series 58 and 59



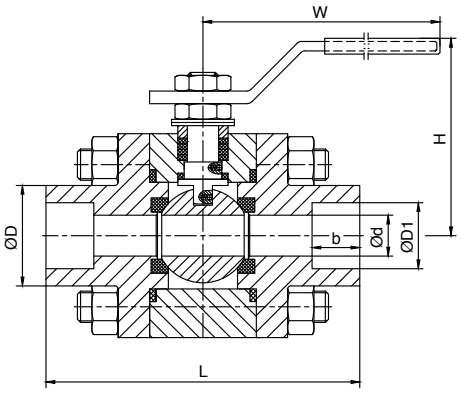
2-PC trunnion cast
Series 68F and 69



3-PC trunnion forged
Series 70 and 71

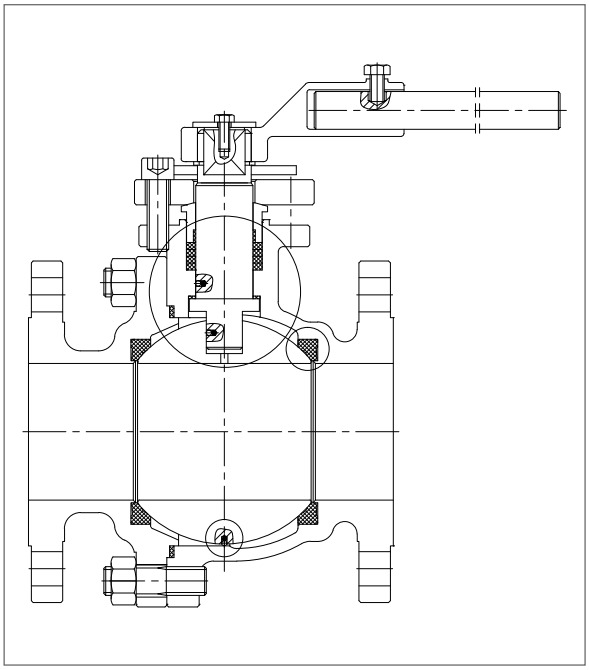


Small size floating NPT
Series 60



Small size floating SW
Series 60

Floating Ball Valve

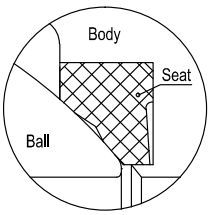


Standards

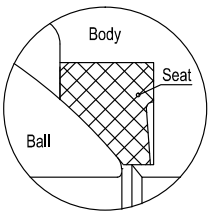
Design and Manufacture: API 6D, BS 5351,
ASME B16.34, API 608, MSS-SP-72
Face to Face Dimension: ASME B16.10
Flange Connection Dimension: ASME B16.5
BW Connection Dimension: ASME B16.25
Test and Inspection: API 598 or API 6D
Fire-safe Design: API 607/6FA
Anti-static Design & anti Blow-out Stem

Application

Floating ball valves are suitable for various kinds of pipelines of Class 150 to Class 1500, and depending on requirements soft or metallic seats can be fitted for 100% bubble tight shut off and quick operation at 90°, for which the operation types include manual, worm gear and pneumatic or electric actuators.



At lower medium pressure

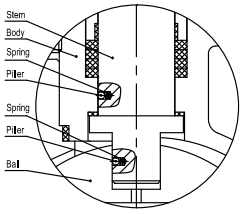


At higher medium pressure

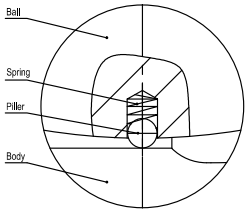
Reliable seat seal

The design of the elastic sealing ring has been adopted for floating ball valves. This seat design features a bigger sealing pressure ratio between the ring surface and the ball when medium pressure gets lower, where the contacting area is smaller. Thus, a reliable seal is ensured. When the medium pressure gets higher, the contacting area between seat ring and ball becomes bigger as the sealing ring transforms elastically to absorb the bigger force pushed by the medium without any damage.

Anti-static feature



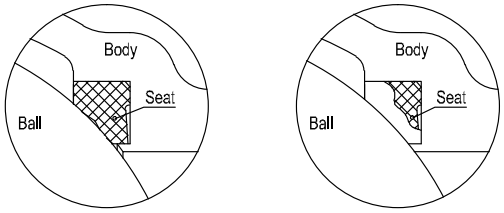
Anti-Static design
for ball valve ≥ 32mm



Anti-Static design
for ball valve ≤ 25mm

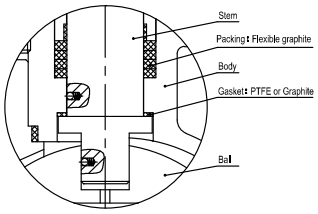
Fire safe design

With the valve heated in case of a fire, the non-metal parts such as seat sealing ring of PTFE, stem back seat gasket, gland packing and the sealing gasket between body and bonnet might disintegrate or be damaged due to high temperatures. Auxiliary metal to metal seal is provided to effectively prevent both internal and external leakage of the valve. As required by customers our floating ball valves meet the requirements of API 607, API 6FA, BS 6755.

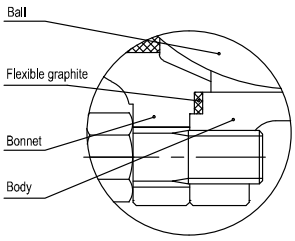


Before fire After fire

Fire safe design of seat



Fire safe design of stem

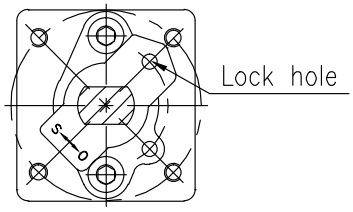


Fire safe design of valve
Body and bonnet flanges

Mounting pad provided

Our valves are being supplied with a ISO mounting pad and locking device features.

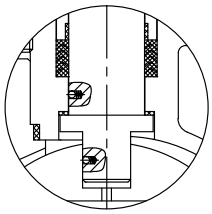
Mounting pad provided



ISO topworks

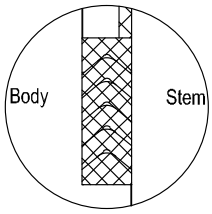
Reliable stem seal

The stem which is internally assembled provides a back seat and blow out proof safety.

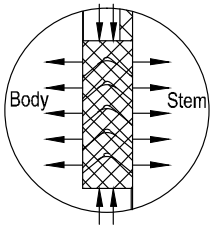


Blow-out proof stem

A V type packing structure has been employed to effectively transform the compressive force of the gland flange and the medium pressure into the sealing force against the stem.



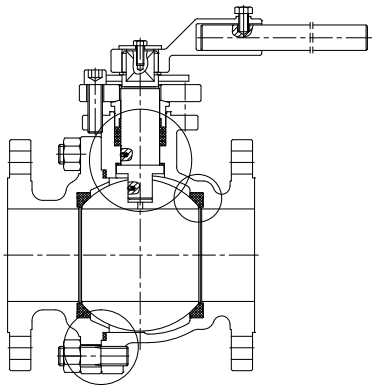
Packing before being compressed

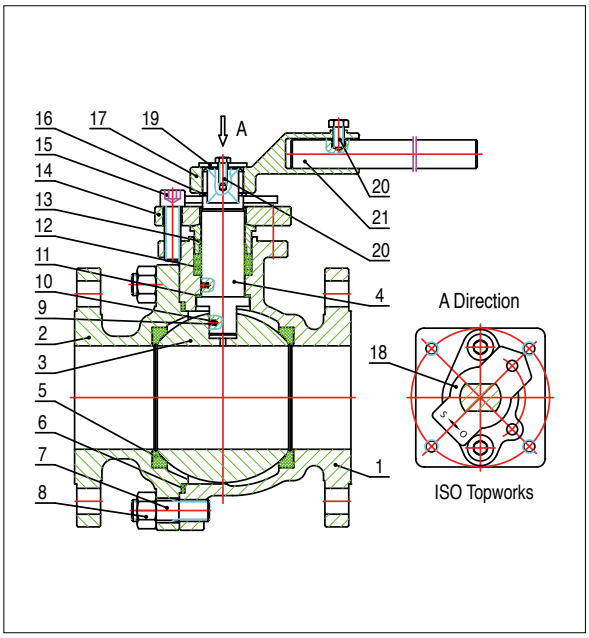


Packing after being compressed

Wrong operation prevention

To prevent the ball valve from wrong operation, the keylock with 90° open and close positioning pad has been provided, which can be locked as required. At the stem head, where the lever is fixed, a flat is designed so that the valve opens with the lever parallel to the piping and with the lever right-angled to the piping the valve is closed. This way it is ensured that the indicator of the open and close position, can never be incorrect.





ASTM Material list of floating ball valves

No.	Part Name	Carbon steel to ASTM	Stainless steel to ASTM
1	Body	A216 WCB, A352 LCB	A351 CF3(8), CF3M(8M)
2	Bonnet	A216 WCB, A352 LCB	A351 CF3(8), CF3M(8M)
3	Ball	A182 F6a, F304	A182 F304(L), F316(L)
4	Stem	A182 F6a, F304	A182 F304(L), F316(L)
5	Seat	(R) PTFE, PPL, PEEK, DELRIN, TFM 1600 (1700)	
6	Gasket	PTFE (Flexible), Graphite+304	
7	Bolt	A193 B7(M), L7(M)	A193 B8(M)
8	Nut	A194 2H(M), 4(M)	A194 8(M)
9	Piller	A276 304, 316	A276 304(L), 316(L)
10	Spring	A276 304, 316	A276 304(L), 316(L)
11	Gasket	PTFE, Graphite+304, 304	
12	Packing	PTFE, (Flexible) Graphite+304	
13	Gland	A182 F6a, F304	A182 F304(L), F316(L)
14	Gland Flange	A216 WCB, A352 LCB	A351 CF3(8), CF3M(8M)
15	Screw	A193 B7(M), L7(M)	A193 B8(M)
16	Thrust Washer	AISI 1566	
17	Connector	A216 WCB, A352 LCB	A351 CF3(8), CF3M(8M)
18	Limiting Stopper	Carbon Steel	
19	Gasket	Carbon Steel	
20	Bolt	Carbon Steel	
21	Handle	Carbon Steel	

• Other materials available upon request.

Class ANSI 150

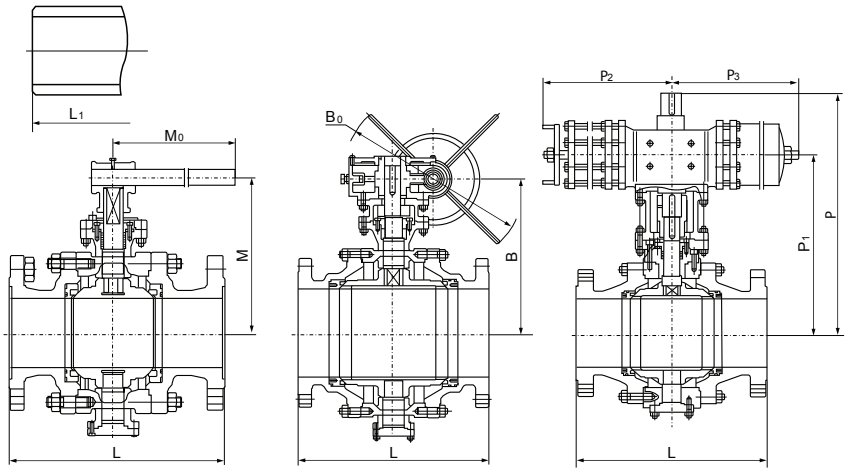
COTESO Series 58 (2-pc floating, full bore)
COTESO Series 68F (2-pc trunnion, full bore)
COTESO Series 59 (API 6D, 2-pc floating, full bore)
COTESO Series 69 (API 6D, 2-pc trunnion, full bore)
COTESO Series 71 (API 6D, 3-pc trunnion, full bore)

Construction features

Closed joint and no leakage at middle flange. Anti-static and blow-out proof stem. Fire-safe design Split body Locking device ISO5211 mounting pad

API 598 Pressure Test

Pressure rating: Class 150



BS5351 dimensions

Pressure	Size		Flange	Butt weld	Hand operated		Worm gear		Pneumatically or hydraulically driven				Electrically actuated*			Weight (kg)*	
			Dimensions (mm)														
	inch	mm	L	L_1	M	M_0	B	B_0	P	P_1	P_2	P_3	H	H_1	H_0	RF	BW
Class 150	1/2	15	108	-	59	130	-	-	200	122	326	136	-	-	-	2.3	2
	3/4	20	117	-	63	130	-	-	204	126	326	136	-	-	-	3	2.5
	1	25	127	-	75	160	-	-	257	162	347	181	-	-	-	4.5	3.8
	1 1/4	32	140	-	95	230	-	-	245	169	420	181	-	-	-	5.2	4.3
	1 1/2	40	165	190	95	230	-	-	264	169	420	181	-	-	-	7	5.8
	2	50	203	216	107	230	-	-	340	209	426	257	472	377	190	15	12
	2 1/2	65	222	273	142	400	-	-	370	239	426	257	486	391	190	20	17
	3	80	241	310	152	400	-	-	389	258	490	257	579	484	190	25	21
	4	100	305	350	178	650	-	-	594	337	523	287	595	500	190	40	36
	6	150	394	457	272	1050	292	400	646	437	378	378	739	589	400	97	93
	8	200	457	521	342	1410	398	600	781	537	530	530	799	649	400	160	154

* Note: Actuators and weight dimensions are manufacturer´s design.

Class ANSI 300

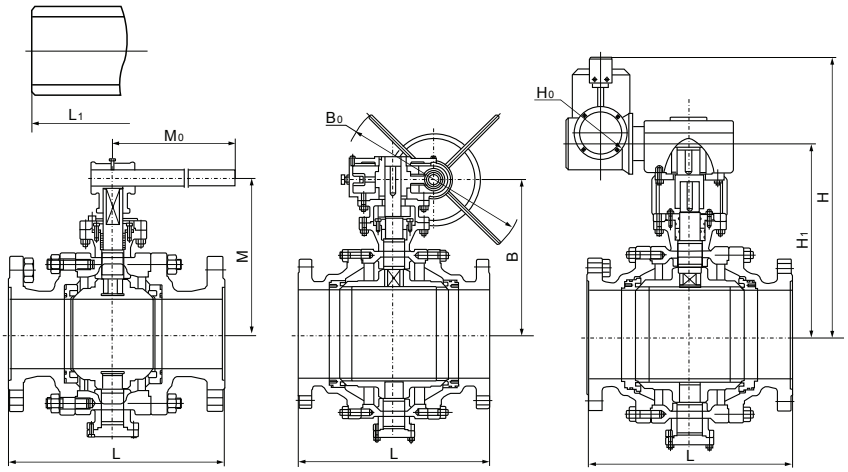
COTESO Series 58(2-pc floating, full bore)
COTESO Series 68F(2-pc trunnion, full bore)
COTESO Series 59(API 6D, 2-pc floating, full bore)
COTESO Series 69(API 6D, 2-pc trunnion, full bore)
COTESO Series 71(API 6D, 3-pc trunnion, full bore)

Construction features

Closed joint and no leakage at middle flange. Anti-static and blow-out proof stem. Fire-safe design; Split body. Locking device ISO5211 mounting pad

API 598 Pressure Test

Pressure rating: Class 300



BS5351 dimensions

Pressure	Size		Flange	Butt weld	Hand operated		Worm gear		Pneumatically or hydraulically driven				Electrically actuated*			Weight (kg)*	
			Dimensions (mm)														
	inch	mm	L	L_1	M	M_0	B	B_0	P	P_1	P_2	P_3	H	H_1	H_0	RF	BW
Class 300	1/2	15	140	-	59	130	-	-	200	122	326	136	-	-	-	2.5	2.1
	3/4	20	152	-	63	130	-	-	204	126	326	136	-	-	-	3.5	3
	1	25	165	-	75	160	-	-	257	162	347	181	-	-	-	5.5	4.8
	1 1/4	32	178	-	95	230	-	-	245	169	420	181	-	-	-	7.6	5.9
	1 1/2	40	190	190	95	230	-	-	264	169	420	181	-	-	-	10.5	8.7
	2	50	216	216	107	230	-	-	340	209	426	257	472	377	190	20	17
	2 1/2	65	241	241	142	400	-	-	379	248	426	257	486	391	190	25	22
	3	80	283	283	152	400	-	-	452	295	490	257	579	484	190	31	28
	4	100	305	305	178	650	-	-	594	375	523	287	595	500	190	52	48
	6	150	403	403	272	1050	292	400	744	500	378	378	739	589	400	118	105
	8	200	502	502	342	1410	398	600	920	615	530	530	799	649	400	-	-

* Note: Actuators and weight dimensions are manufacturer´s design.

- Other ball valve types such as one piece body, reduced bore are available upon request.
- Refer to the certified drawings for the final construction.

Class ANSI 600

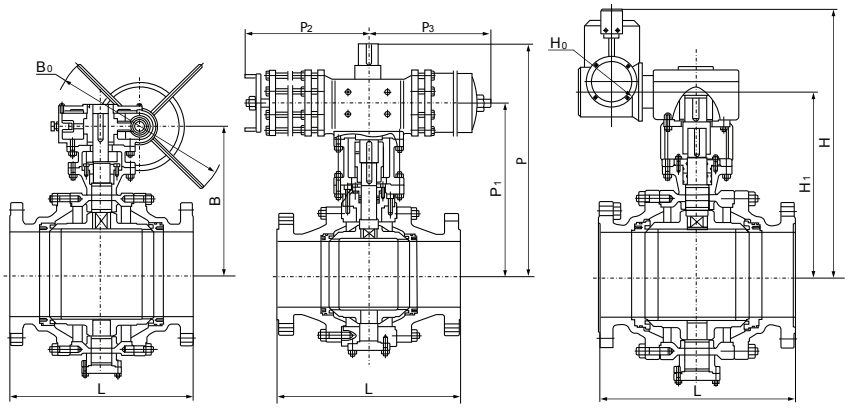
COTESO Series 58 (2-pc floating, full bore)
COTESO Series 68F (2-pc trunnion, full bore)
COTESO Series 59 (API 6D, 2-pc floating, full bore)
COTESO Series 69 (API 6D, 2-pc trunnion, full bore)
COTESO Series 71 (API 6D, 3-pc trunnion, full bore)

Construction features

Closed joint and no leakage at middle flange. Anti-static and blow-out proof stem. Fire-safe design Split body. Locking device; ISO5211 mounting pad

API 598 Pressure Test

Pressure rating: Class 600



BS5351 dimensions

Pressure	Size		Flange	Butt weld	Hand operated		Worm gear		Pneumatically or hydraulically driven				Electrically actuated*			Weight (kg)*	
	Dimensions (mm)																
	inch	mm	L	L_1	M	M_0	B	B_0	P	P_1	P_2	P_3	H	H_1	H_0	RF	BW
Class 600	1/2	15	165	165	59	160	-	-	200	122	326	136	-	-	-	7.5	6
	3/4	20	190	190	63	160	-	-	204	126	326	136	-	-	-	10.5	8.7
	1	25	216	216	75	230	-	-	257	162	347	181	-	-	-	14.5	11
	1 1/4	32	229	178	95	230	-	-	245	169	420	181	-	-	-	16.1	13.1
	1 1/2	40	241	241	95	400	-	-	264	169	420	181	-	-	-	18.5	14.7
	2	50	292	292	167	400	-	-	340	209	426	257	472	377	400	38	31
	2 1/2	65	330	330	180	650	-	-	379	248	426	257	599	449	400	56	49
	3	80	356	356	198	650	292	400	452	295	490	257	599	449	400	66	58
	4	100	432	432	198	1050	398	600	594	375	378	378	632	472	400	76	68
	6	150	559	559	-	-	400	800	650	425	378	378	650	430	400	-	-
	8	200	660	660	-	-	430	800	680	485	530	530	710	490	400	-	-

* Note: Actuators and weight dimensions are manufacturer´s design.

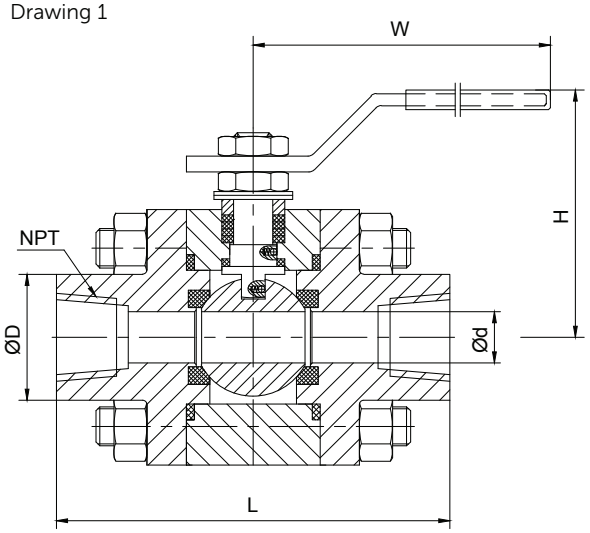
- Other ball valve types such as one piece body, reduced bore are available upon request.
- Refer to the certified drawings for the final construction.

Floating Ball valves, small sizes, female threaded and socket weld forged carbon steel.

(see drawing 1 (thd) and 2 (sw))

COTESO Series 60

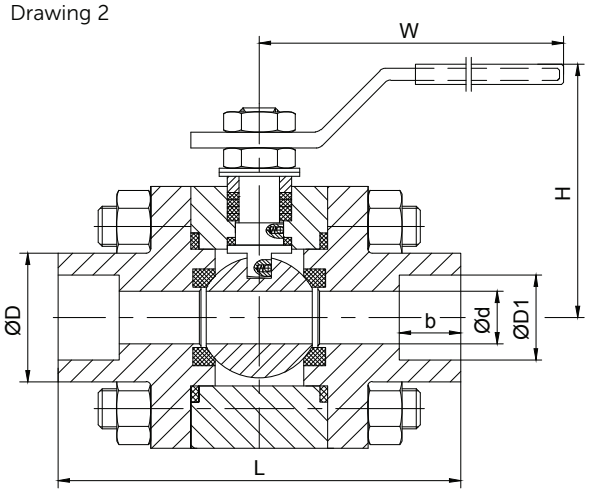
Drawing 1



Class	Size	Dimensions (mm)*				
	inch	L	d	D	H	W
600 800	1/2	72	14	32	60	125
	3/4	86	19	37	73	140
	1	100	25	46	75	150
	1 1/4	120	32	56	80	180
	1 1/2	130	38	64	125	250
	2	140	51	86	162	350
900 1500	1/2	130	14	36	90	180
	3/4	140	19	42	95	200
	1	150	25	50	106	220
	1 1/4	180	32	58	115	250
	1 1/2	200	38	70	125	250
	2	250	51	86	150	350

* Note: Face to Face dimension according to manufacturer's standard.

Drawing 2



Class	Size	Dimensions (mm)*						
	inch	L	d	D	H	W	D_1	b
600 800	1/2	72	14	32	60	125	22	10
	3/4	86	19	37	73	140	27.3	13
	1	100	25	46	75	150	34	13
	1 1/4	120	32	56	80	180	42.8	13
	1 1/2	130	38	64	125	250	48.9	13
	2	140	51	86	162	350	61.4	16
900 1500	1/2	130	14	36	90	180	22	10
	3/4	140	19	42	95	200	27.3	13
	1	150	25	50	106	220	34	13
	1 1/4	180	32	58	115	250	42.8	13
	1 1/2	200	38	70	125	250	48.9	13
	2	250	51	86	150	350	61.4	16

* Note: Face to Face dimension according to manufacturer's standard.

- For detailed dimensions and configurations please ask us for our detailed drawings.

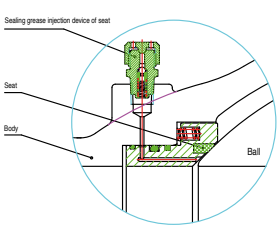
Trunnion Ball Valve

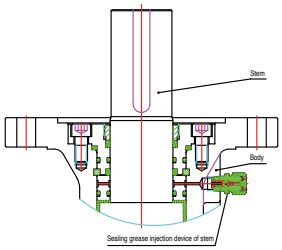
Construction features

Design and Manufacture: API 6D, BS 5351,
ASME B16.34, API 608, MSS-SP-72
Face to Face Dimension: ASME B16.10
End flange dimension: ASME B16.5 (NPS ≤ 24) ASME B16.47 series A and B, or MSS SP-44(NPS > 24)
BW Connection Dimension: ASME B16.25
Test and Inspection: API 598 or API 6D
Fire-safe design: API 607/6FA
Anti-static design & anti Blow-out Stem

Construction features

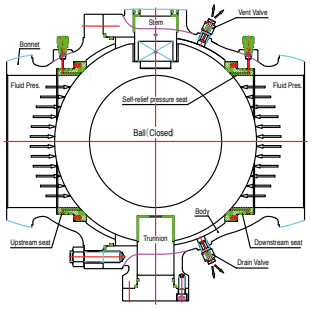
According to customers' requirement, the trunnion ball valves are provided with devices for urgent grease injection, which are on both the stem and seat for the trunnion ball valves of DN > 150mm (NPS6) and in the body cavity for the valve of DN < 125mm, when the stem O-ring is damaged due to an accident.

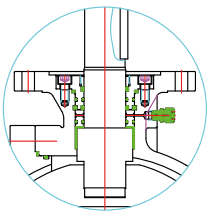




Construction features

Each seat of the ball valve can separately cut off the medium at both inlet and outlet of the valve to realize double-block functions. When the ball valve is closed, body cavity and two of the body ends can be blocked with each other even if both the inlet and outlet are under pressure, when the medium left in the body cavity might be bleeding through the relief valve.

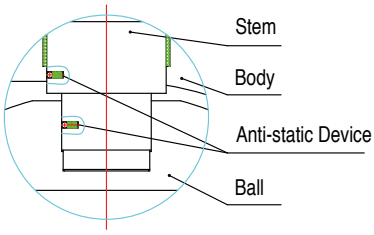




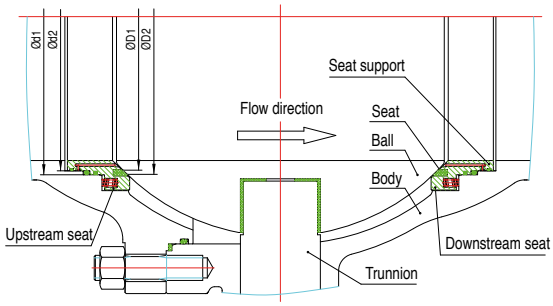
Construction features

Blow-out proof structure is provided for the stem, which is positioned by the up-end cap and screw, being guaranteed not to be blown-out by the medium even for abnormal risen pressure in the cavity.

Anti-static design

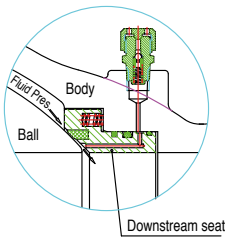


The Bi-sealing design structure



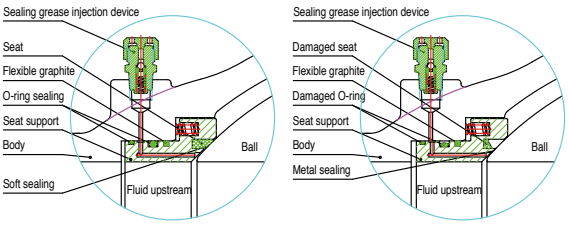
Body cavity relief

As the liquid medium left in the body cavity gasifies due to increased temperature, the pressure in the body cavity becomes abnormally higher, in which case the medium itself in the cavity would propel the seat and self-relieves the pressure to ensure the safety of valve.



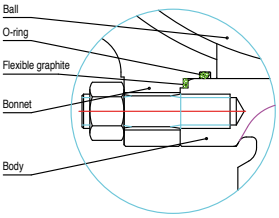
Fire safe design

With the valve heated in a fire the non-metal material parts such as seat sealing ring of PTFE, O-ring for the stem and/or sealing gasket for body and bonnet might be damaged due to high temperatures. Our special design of auxiliary metal to metal or the graphite seal is provided to effectively prevent both internal and external leakage of the valve. Our fire safe design for the trunnion ball valve meets the requirements of API 607, API 6Fa, BS 6755.

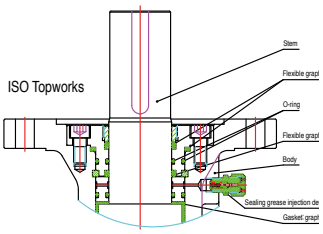


Before fire After fire

Fire safe design of seat



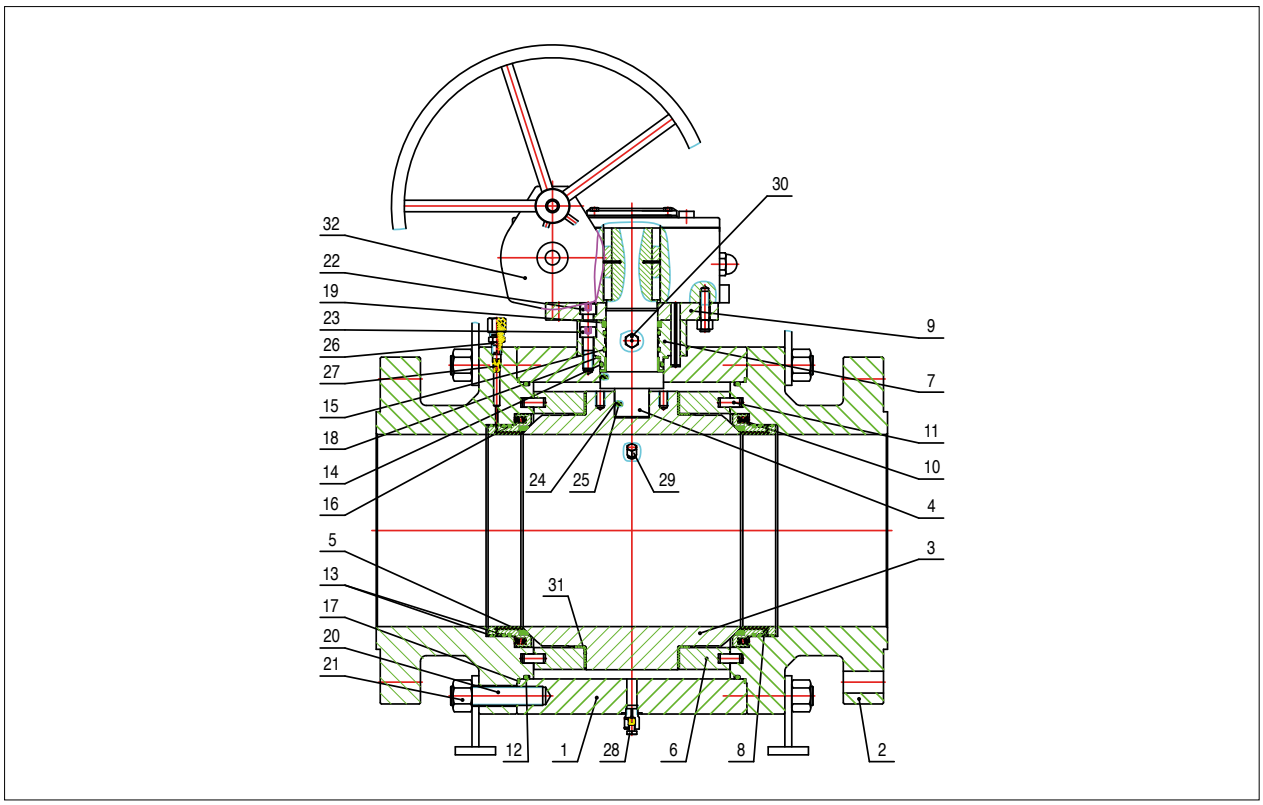
Fire safe design of valve Body and bonnet flanges



Fire safe design of stem

Mounting pad provided acc. to ISO

An ISO mounting pad for fixing the actuators (such as worm gear, pneumatic, electric, hydraulic, and pneumatic & hydraulic actuators) is incorporated.



ASTM Material list of forged steel trunnion mounted ball valves

No.	Part Name	Carbon steel to ASTM	Stainless steel to ASTM
1	Body	A105(N), A350 LF2	A182 F304 (L), F316(L), F51
2	Bonnet	A105(N), A350 LF2	A182 F304 (L), F316(L), F51
3	Ball	A105(N)+ENP, LF2+ENP, F6a	A182 F304 (L), F316(L), F51
4	Stem	A105(N)+ENP, LF2+ENP, F6a	A182 F304 (L), F316(L), F51,17-4PH
5	Seat	(R) PTFE, NYLON, PPL, PEEK, TFM 1600 (1700)	
6	Support Plate	A105(N)+ENP, LF2+ENP	A182 F304 (L), F316(L), F51
7	Cover	A105(N), A350 LF2	A182 F304 (L), F316(L), F51
8	Seat Support	A105(N)+ENP, LF2+ENP, F6a	A182 F304 (L), F316(L), F51
9	Connection Plate	A105(N), A350 LF2	A105, A182 F304 (L), F316(L), F51
10	Spring	17-7PH, Inconel X-750	
11	Pin	4140+ENP, 410, 17-4PH	
12	O-ring	Viton series, NBR	
13	O-ring	Viton series, NBR	
14	O-ring	Viton series, NBR	
15	O-ring	Viton series, NBR	
16	Fire safe gasket	Flexible Graphite+304	
17	Fire safe gasket	Flexible Graphite+304	
18	Fire safe gasket	Flexible Graphite+304	
19	Fire safe gasket	Flexible Graphite+304	
20	Bolt	A193 B7(M), L7(M)	A193 B8(M)
21	Nut	A194 2H(M), 4(M)	A194 8(M)
22	Screw	A193 B7(M), L7(M)	A193 B8(M)
23	Screw	A193 B7(M), L7(M)	A193 B8(M)
24	Piller	A276 304, 316	A276 304 (L), 316(L)
25	Spring	A276 304, 316	A276 304 (L), 316(L)
26	Grease Injector	Component	
27	Check Valve	Component	
28	Drain Valve	Component	
29	Vent Valve	Component	
30	Grease Injector	Component	
31	Bearing	Stainless Steel+PTFE	
32	Worm Gear	Component	

- Other executions and valve types, such as 2 pce body and reduced bore are available upon request.
- Refer to the certified drawings for the final construction.

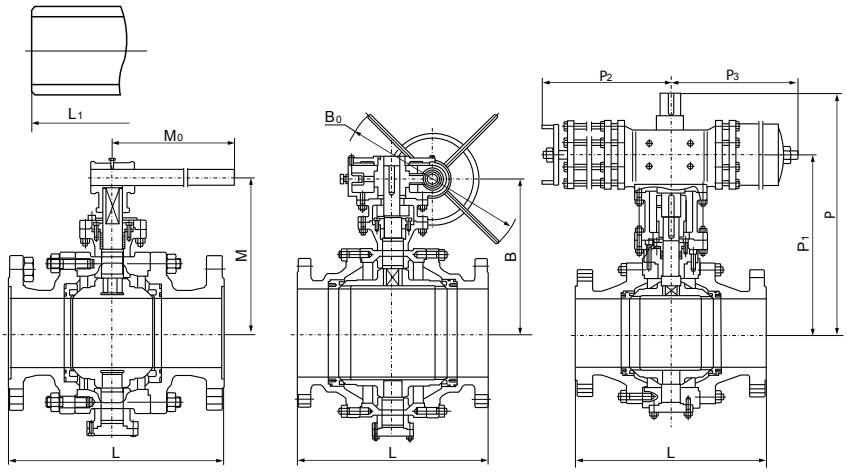
COTESO Series 71
API 6D dimensions

Construction features

Closed joint and no leakage
at middle flange; Anti-static
and blow-out proof stem;
Fire-safe design; Split body;
Locking device; Self-relieving seat;
Emergency sealing device;
ISO5211 mounting pad

Construction feature

Pressure rating: Class 150



Pressure	Size		Flange	Butt weld	Hand operated		Worm gear		Pneumatically or hydraulically driven				Electrically actuated*			Weight (kg)*	
	Dimensions (mm)																
	inch	mm	L	L_1	M	M_0	B	B_0	P	P_1	P_2	P_3	H	H_1	H_0	RF	BW
Class 150	2	50	178	216	107	230	-	-	270	174	89	181	-	-	-	12	11
	2 1/2	65	191	241	125	400	-	-	380	248	148	257	-	-	-	16	15
	3	80	203	283	152	400	-	-	390	258	148	257	-	-	-	22	21
	4	100	229	305	178	650	-	-	480	322	287	287	-	-	-	35	34
	6	150	394	457	330	1050	-	-	665	457	378	378	554	337	200	74	72
	8	200	457	521	-	-	400	600	805	595	378	378	600	382	200	205	201
	10	250	533	559	-	-	495	600	840	630	378	378	652	435	200	322	310
	12	300	610	635	-	-	580	800	975	728	530	530	761	480	280	460	447
	14	350	686	762	-	-	625	800	1130	883	530	530	771	520	280	576	536
	16	400	762	838	-	-	670	800	1460	1154	680	680	831	580	280	864	814
	18	450	864	914	-	-	698	800	1530	1224	680	680	921	670	305	1280	1210
	20	500	914	991	-	-	840	800	1560	1294	680	680	943	770	305	1600	1500
	24	600	1067	1143	-	-	1050	800	1145	915	1455	1455	1123	850	305	3540	3000
	28	700	1245	1346	-	-	1100	800	1160	930	1455	1455	1218	945	400	4500	3710
	32	800	1372	1524	-	-	1150	800	1460	1100	1665	1665	1328	1055	400	5940	4870
	36	900	1524	1727	-	-	1230	800	1540	1180	1665	1665	1696	1130	460	7540	6010

* Note: Actuators and weight dimensions are manufacturer´s design.

- Upon request other executions and valve types are available, such as 2 pce body, full and reduced bore.
- Refer to the certified drawings for the final construction.

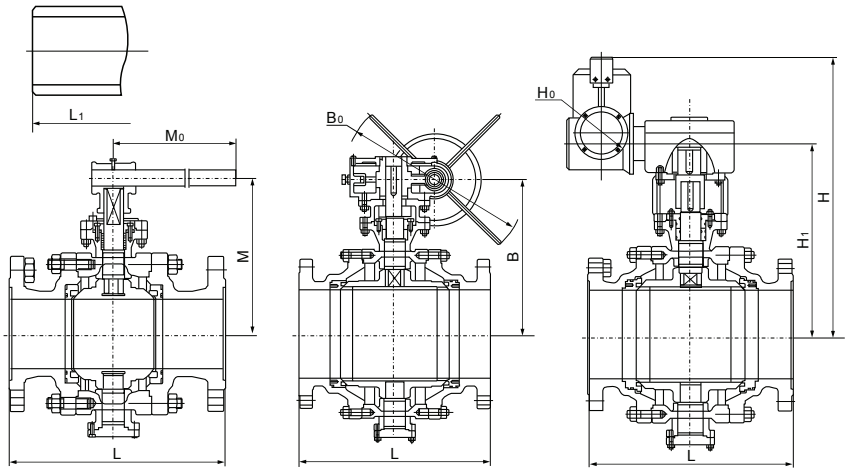
COTESO Series 71
API 6D dimensions

Construction features

Closed joint and no leakage at middle flange; Anti-static and blow-out proof stem; Fire-safe design; Split body; Locking device; Self-relieving seat; Emergency sealing device; ISO5211 mounting pad.

API 598 Pressure Test

Pressure rating: Class 300



Pressure	Size		Flange	Butt weld	Hand operated		Worm gear		Pneumatically or hydraulically driven				Electrically actuated*			Weight (kg)*	
	Dimensions (mm)																
	inch	mm	L	L_1	M	M_0	B	B_0	P	P_1	P_2	P_3	H	H_1	H_0	RF	BW
Class 300	2	50	216	216	107	230	-	-	270	210	148	181	-	-	-	15	11
	2 1/2	65	241	241	125	400	-	-	380	250	148	257	-	-	-	24	18
	3	80	283	283	152	400	-	-	390	295	287	287	-	-	-	30	22
	4	100	305	305	178	650	-	-	455	325	287	287	-	-	-	55	45
	6	150	403	457	330	1050	-	-	595	390	378	378	554	337	200	118	98
	8	200	502	521	-	-	400	600	595	530	378	378	600	382	200	255	225
	10	250	568	559	-	-	495	600	736	700	530	530	652	435	200	370	330
	12	300	648	635	-	-	580	800	945	750	530	530	761	480	280	533	493
	14	350	762	762	-	-	625	800	995	885	680	680	771	520	280	640	600
	16	400	838	838	-	-	670	800	1280	975	680	680	831	580	280	1030	930
	18	450	914	914	-	-	698	800	1480	1080	680	680	921	670	305	1540	1400
	20	500	991	991	-	-	840	800	1555	1155	1455	1455	943	770	305	2100	1900
	24	600	1143	1143	-	-	1050	800	1380	930	1455	1455	1123	850	305	3430	2860
	28	700	1346	1346	-	-	1100	800	1430	980	1665	1665	1218	945	400	4960	4140
	32	800	1524	1524	-	-	1150	800	1750	1150	1665	1665	1328	1055	400	6760	5640
	36	900	1727	1727	-	-	1230	800	1540	1180	1960	1960	1696	1130	460	9640	8040

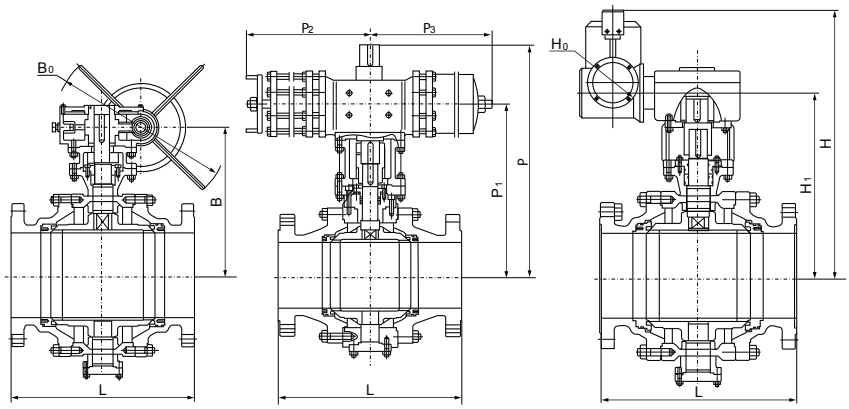
* Note: Actuators and weight dimensions are manufacturer´s design.

- Upon request other executions and valve types are available, such as 2 pce body, full and reduced bore.
- Refer to the certified drawings for the final construction.

COTESO Series 71
API 6D dimensions

Construction features

Closed joint and no leakage
at middle flange; Anti-static
and blow-out proof stem;
Fire-safe design; Split body;
Locking device; Self-relieving seat;
Emergency sealing device;
ISO5211 mounting pad



API 598 Pressure Test

Pressure rating: Class 600

Pressure	Size		Flange	Butt weld	Hand operated		Worm gear		Pneumatically or hydraulically driven				Electrically actuated*			Weight (kg)*	
	Dimensions (mm)																
	inch	mm	L	L₁	M	M₀	B	B₀	P	P₁	P₂	P₃	H	H₁	H₀	RF	BW
Class 600	2	50	292	292	110	230	-	-	270	210	150	257	-	-	-	35	29
	2 1/2	65	330	330	155	400	-	-	-	-	-	-	-	-	-	38	31
	3	80	356	356	200	400	-	-	520	295	287	287	-	-	-	55	45
	4	100	432	432	-	-	235	600	640	325	287	287	-	-	-	102	78
	6	150	559	559	-	-	300	800	730	390	378	378	554	337	200	232	182
	8	200	660	660	-	-	375	800	840	530	378	378	600	382	200	390	310
	10	250	787	787	-	-	445	800	1015	700	530	530	652	480	200	710	590
	12	300	838	838	-	-	515	800	1120	750	530	530	761	520	280	960	790
	14	350	889	889	-	-	550	800	1225	885	680	680	771	594	280	1700	1490
	16	400	991	991	-	-	615	800	1480	1080	680	680	831	632	280	1970	1720
	18	450	1092	1092	-	-	750	800	-	-	-	-	921	670	305	2180	1830
	20	500	1194	1194	-	-	810	800	1480	1080	680	680	943	770	305	3250	2770
	24	600	1397	1397	-	-	1050	800	1365	915	1665	1665	1123	850	305	4880	4030
	28	700	1549	1549	-	-	1100	800	1430	980	1665	1665	1218	945	460	6700	5610
	32	800	1778	1778	-	-	1180	800	-	-	-	-	1328	1055	460	8470	7060
	36	900	2083	2083	-	-	1275	800	-	-	-	-	1815	1130	600	12080	10070

* Note: Actuators and weight dimensions are manufacturer´s design.

- Upon request other executions and valve types are available, such as 2 pce body, full and reduced bore.
- Refer to the certified drawings for the final construction.

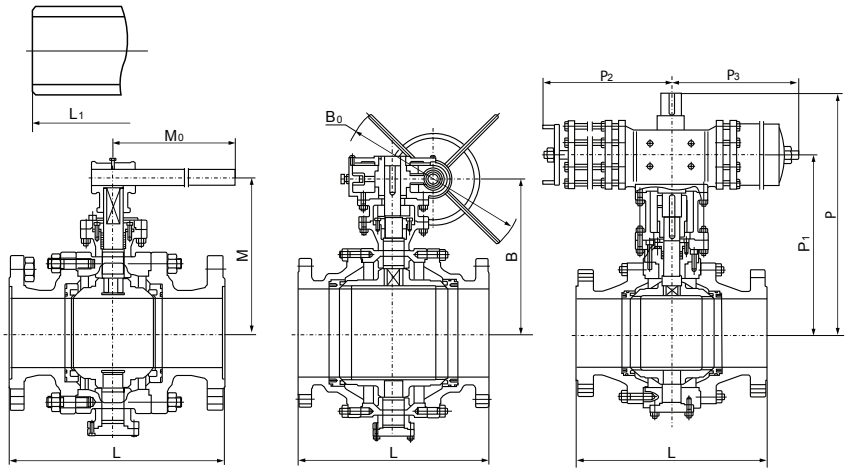
COTESO Series 71
API 6D dimensions

Construction features

Closed joint and no leakage at middle flange; Anti-static and blow-out proof stem; Fire-safe design; Split body; Locking device; Self-relieving seat; Emergency sealing device; ISO5211 mounting pad

API 598 Pressure Test

Pressure rating: Class 900



Pressure	Size		Flange	Butt weld	Hand operated		Worm gear		Pneumatically or hydraulically driven				Electrically actuated*			Weight (kg)*	
	Dimensions (mm)																
	inch	mm	L	L1	M	M0	B	B0	P	P1	P2	P3	H	H1	H0	RF	BW
Class 900	2	50	368	368	110	650	-	-	270	210	150	257	-	-	-	50	40
	2 1/2	65	419	419	155	650	-	-	-	-	-	-	-	-	-	75	60
	3	80	381	381	200	650	-	-	520	295	287	287	-	-	-	92	70
	4	100	457	457	-	-	235	600	640	480	287	287	-	-	-	146	109
	6	150	610	610	-	-	300	800	730	520	378	378	600	382	200	339	264
	8	200	737	737	-	-	375	800	840	595	530	530	652	480	200	640	540
	10	250	838	838	-	-	445	800	1015	770	530	530	761	520	280	960	800
	12	300	965	965	-	-	515	800	1120	810	680	680	771	594	280	1330	1110
	14	350	1029	1029	-	-	550	800	1225	1005	1445	1445	831	632	280	1640	1370
	16	400	1130	1130	-	-	615	800	1375	1155	1445	1445	921	670	305	2240	1910
	18	450	1219	1219	-	-	750	800	-	-	-	-	943	770	305	2770	2310
	20	500	1321	1321	-	-	810	800	1490	1210	1665	1665	1123	850	305	3740	3120
	24	600	1549	1549	-	-	1050	800	1615	1335	1665	1665	1218	945	400	5560	4640
	36	900	2286	-	-	-	1315	800	-	-	-	-	1855	1170	600	15700	13090

* Note: Actuators and weight dimensions are manufacturer´s design.

- Upon request other executions and valve types are available, such as 2 pce body, full and reduced bore.
- Refer to the certified drawings for the final construction.

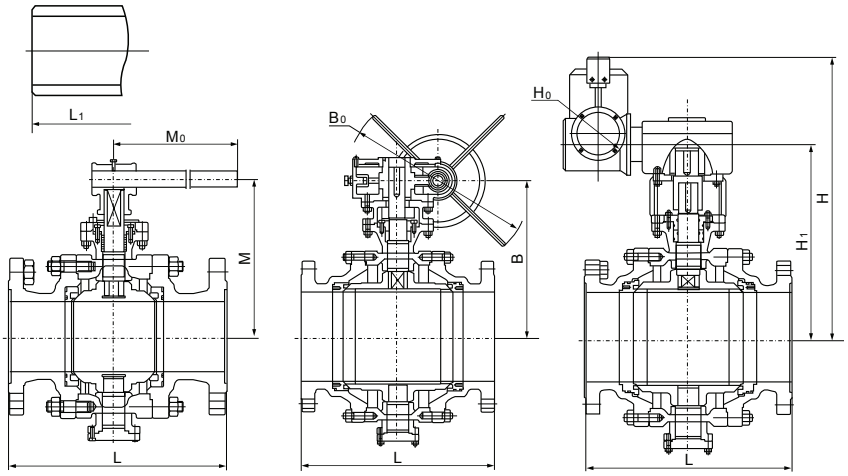
COTESO Series 71
API 6D dimensions

Construction features

Closed joint and no leakage at middle flange; Anti-static and blow-out proof stem; Fire-safe design; Split body; Locking device; Self-relieving seat; Emergency sealing device; ISO5211 mounting pad

API 598 Pressure Test

Pressure rating: Class 1500



Pressure	Size		Flange	Butt weld	Hand operated		Worm gear		Pneumatically or hydraulically driven				Electrically actuated*			Weight (kg)*	
	Dimensions (mm)																
	inch	mm	L	L_1	M	M_0	B	B_0	P	P_1	P_2	P_3	H	H_1	H_0	RF	BW
Class 1500	2	50	368	368	220	650	-	-	520	295	287	287	-	-	-	50	40
	21/2	65	419	419	240	650	-	-	-	-	-	-	-	-	-	75	60
	3	80	470	470	260	650	-	-	730	520	378	378	-	-	-	117	82
	4	100	546	546	-	-	300	600	845	595	530	530	600	382	200	216	150
	6	150	705	705	-	-	365	800	1015	770	530	530	761	520	280	532	414
	8	200	832	832	-	-	395	800	1120	815	680	680	771	594	280	870	677
	10	250	991	991	-	-	505	800	1225	1005	1445	1445	831	632	280	1467	1132
	12	300	1130	1130	-	-	575	800	1375	1155	1445	1445	921	670	305	2270	1777
	14	350	1257	1257	-	-	675	800	1490	1210	1665	1665	943	770	305	3240	2590
	16	400	1384	1384	-	-	765	800	1615	1335	1665	1665	1123	850	305	4645	3780
	18	450	1537	-	-	-	870	800	1760	1410	1960	1960	1218	945	400	6035	4810
	20	500	1664	-	-	-	895	800	1760	1410	1960	1960	1328	1055	400	8077	6555

* Note: Actuators and weight dimensions are manufacturer´s design.

- Upon request other executions and valve types are available, such as 2 pce body, full and reduced bore.
- Refer to the certified drawings for the final construction.

High Performance Butterfly Valve

Sealing principle of "b" eccentric HPBV

Zero Offset:

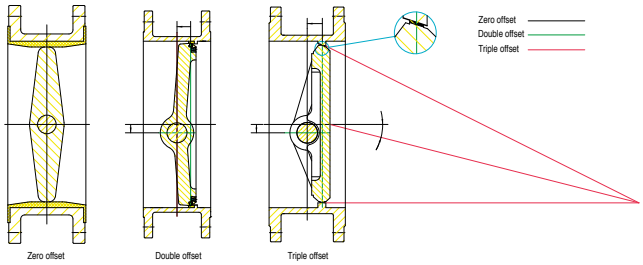
Concentric valve (zero offset). Disc rotates around the center axis. Sealing is achieved by the disc deforming the soft seal, resulting in full friction through the full operating cycle.

Double Offset:

To allow displacement of the seat, the shaft is offset from the center line of the disc seat and body seal (offset one), and the center line of the bore (offset two). This creates a cam action during operation to lift the seat out of the seal resulting in friction during the first 10 degrees of opening and final 10 degrees of closing.
The double-offset disc design allows the disc to move off the seat, reducing break-away torque and seat wear.

Triple Offset:

The third offset is the geometry design of the sealing components, not the shaft position. The sealing components are each machined into an offset conical profile resulting in a right angled cone. This ensures friction free movement throughout its operating cycle. Contact is only made at the final point of closure with the 90° angle acting as a mechanical stop; resulting in no over travel of the disc seat.



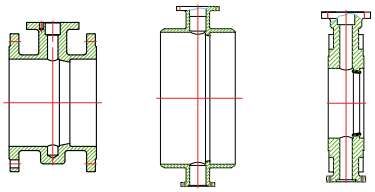
Benefits of a Double / Triple Offset Butterfly Valve

1. The 'cam action' and 'right angled conical sealing' design ensures that the metal sealing components are never in contact until its final degree of closing, resulting in repeatable sealing and a vastly extended valve life
2. Low torques result in low cost of automation.
3. Cavities do not exist between sealing components in comparison to some conventional, concentric valves, therefore eliminating the ingress of particles.
4. Metal to metal sealing is allowing for higher pressure and temperature applications whilst still providing bubble-tight shut off.
5. Ideal for use in controlling or throttling applications.
6. Torque seated resulting in bi-directional, non-pressure aided frictionless seating.

ANSI HIGH PERFORMANCE BUTTERFLY VALVES

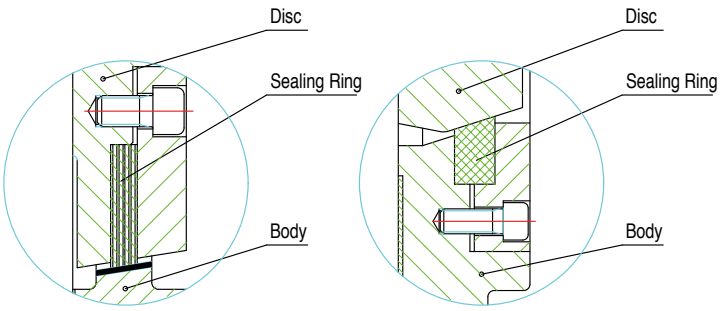
Butterfly valves are used to open and close (seal type) or adjust the medium flow in pipes in the fields of foodstuff, drinks, chemical, industrial water treatment, high-rise constructions, water supply and drainage etc, They are mainly structured as following:

1. Simple structure, small sizes, light weight and low installation dimensions. According to the types of body connection, they are basically classified to wafer-type, lug-type, flanged and butt-welded.



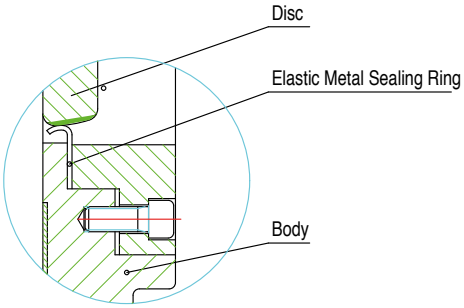
Flanged Connection | Butt-welded Connection | Wafer Connection

2. Multilayer Hard Seal Structure (See fig. below) Multilayer hard seal structure is applicable for double and triple eccentric butterfly valves, pressure rating ≤ Class 600. Triple eccentric butterfly valve can maintain bidireccional leak-tightness. The multilayer sealing ring is composition of stainless steel and nonmetal material. The nonmetal material can be flexible graphite, PTFE or non asbestos material etc. according to the actual working conditions.



Multilayer Hard Seal Structure

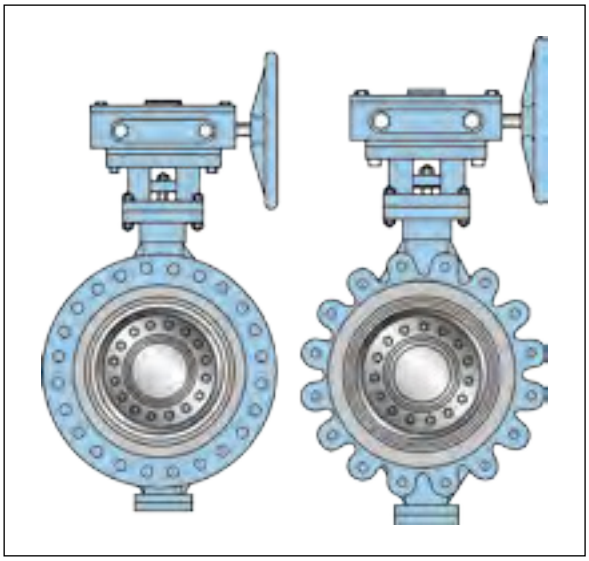
3. Elastic ring hard seal structure (see fig. below) is of the structure of J-type metal sealing ring. It is applicable for double eccentric butterfly valves with a pressure rating ≤ Class 300. Provided with fireproof structure to adapt to conditions with great temperature changes it is an outstanding seal, guaranteeing a long service life and minimal maintenance.



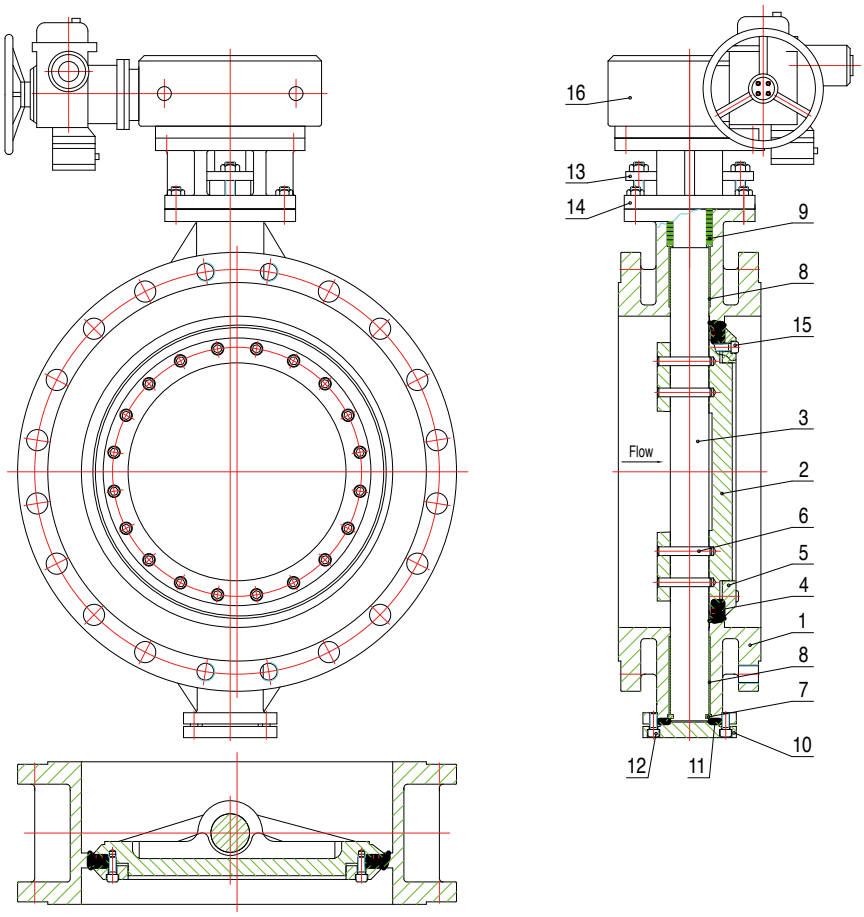
Elastic Ring Hard Seal Structure

4. Low flow resistance in open position.

5. Low torque, easy and quick operation.



The Triple Offset Geometry

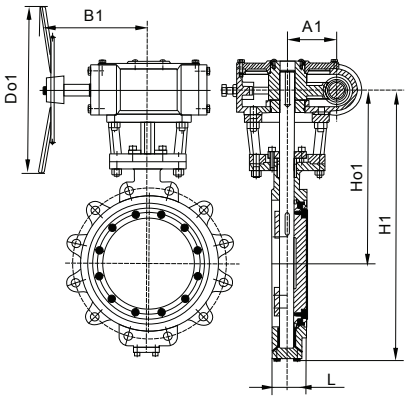


ASTM Material list of Triple Eccentric Seal Butterfly Valves

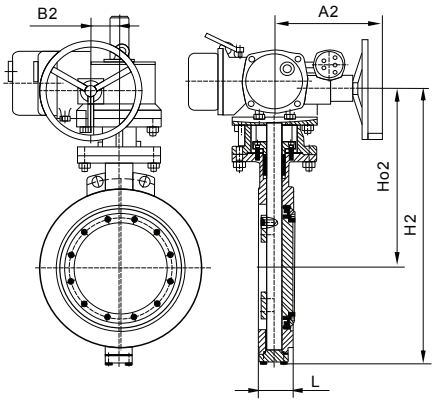
No.	Part Name	Carbon Steel to ASTM	Stainless Steel to ASTM
1	Body	A216 WCB, A352 LCB	A351 CF3(8), CF3M(8M)
2	Disc	A216 WCB, A352 LCB	A351 CF3(8), CF3M(8M)
3	Stem	A182 F6a, F304	A182 F304(L), F316(L), F51, 17-4PH
4	Sealing Ring	Graphite+304	
5	Retainer Flange	A105, LF2, F6a	A182 F304(L), F316(L)
6	Pin	A276 410, 420	A276 304(L), 316(L), 17-4PH
7	Anti-blow out ring	A182 F6a, F304	A182 F304(L), F316(L), 17-4PH
8	Bearing	PTFE+Bronze, Bronze	
9	Packing	PTFE, (Flexible) Graphite+304	
10	Cover	A105, LF2, F6a	A182 F304(L), F316(L)
11	Gasket	PTFE, (Flexible) Graphite+304	
12	Screw	A193 B7(M), L7(M)	A193 B8(M)
13	Gland Flange	A216 WCB, A352 LCB	A351 CF3(8), CF3M(8M)
14	Yoke	A216 WCB, A352 LCB	A216 WCB, A351 CF3(8), CF3M(8M)
15	Screw	A193 B7(M), L7(M)	A193 B8(M)
16	Actuator	Component	

- Other types of HPBV executions available upon request.
- Refer to the certified drawings for the final construction.

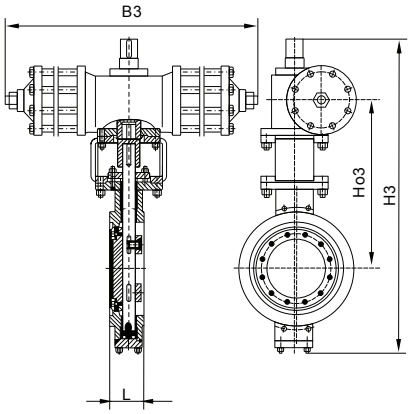
COTESO Series 85, 88 and 98
API 609



Worm Gear Driven
Lug Butterfly Valve



Electric Operated
Wafer Butterfly Valve



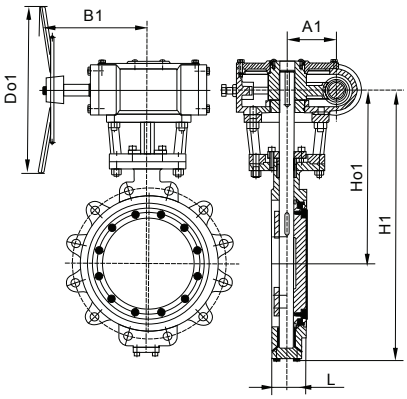
Hydraulic Operated
Wafer Butterfly Valve

CLASS 150		Dimensions (mm)													
inch	L	Pneumatically or hydraulically driven			Worm gear					Electrically actuated*				Weight (kg)*	
		H3	Ho3	B3	H1	Ho1	B1	A1	Do1	H2	Ho2	B2	A2	Wafer	Lug
3"	49	-	-	-	320	185	140	63	160	513	263	178	180	9	9
4"	54	-	-	-	342	195	140	63	160	535	282	178	180	11	14
6"	57	-	-	-	415	243	140	63	300	602	322	178	180	17	20
8"	64	690	323	275	510	263	150	84	400	745	296	235	370	25	31
10"	71	750	355	275	567	295	150	84	400	805	325	235	370	40	49
12"	81	955	475	378	665	342	200	108	600	883	365	235	370	61	79
14"	92	1032	513	378	739	385	200	108	600	965	408	235	370	82	107
16"	102	1182	598	530	825	430	240	152	600	1033	443	235	370	123	150
18"	114	1265	635	530	910	469	240	152	800	1120	485	235	370	150	182
20"	127	1335	667	530	990	500	300	168	800	1186	518	235	370	204	253
24"	154	1642	830	680	1210	618	320	192	800	1380	625	235	370	300	398

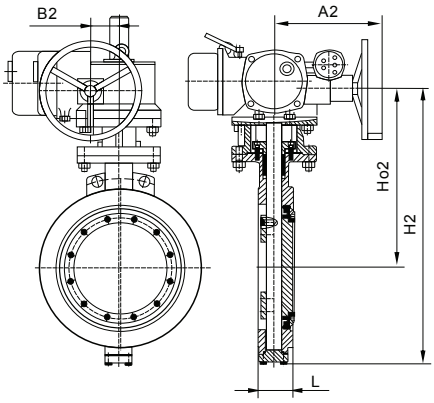
* Note: Actuators and weight dimensions are manufacturer´s design.

- Other types of HPBV are available upon request.
- Refer to the certified drawings for the final construction.

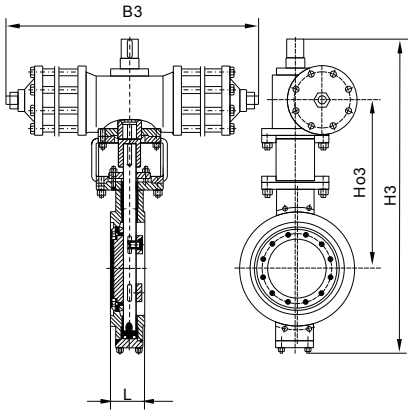
COTESO Series 85, 88 and 98
API 609



Worm Gear Driven
Lug Butterfly Valve



Electric Operated
Wafer Butterfly Valve



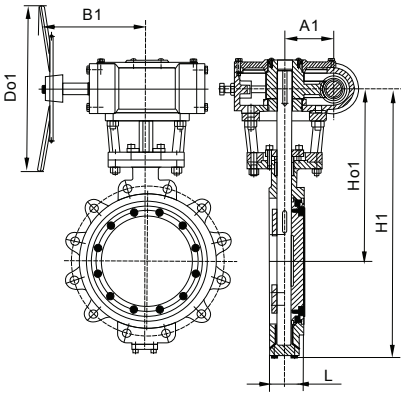
Hydraulic Operated
Wafer Butterfly Valve

CLASS 300		Dimensions (mm)													
inch	L	Pneumatically or hydraulically driven			Worm gear					Electrically actuated*				Weight (kg)*	
		H3	Ho3	B3	H1	Ho1	B1	A1	Do1	H2	Ho2	B2	A2	Wafer	Lug
3"	49	-	-	-	320	185	140	63	160	513	263	178	180	13.5	15.5
4'	54	-	-	-	342	195	140	63	160	535	282	178	180	18	21
6"	59	-	-	-	415	243	140	63	300	602	322	178	180	28	34
8"	73	750	368	275	510	263	150	84	400	745	296	235	370	49	60
10"	83	909	442	278	567	295	150	84	400	805	325	235	370	68	88
12"	92	1075	535	530	665	342	200	108	600	883	365	235	370	109	117
14"	117	1158	575	530	739	385	200	108	600	965	408	235	370	186	207
16"	133	1230	610	530	825	430	240	152	600	1033	443	235	370	264	308
18"	149	1462	736	680	910	469	240	152	800	1120	485	235	370	297	408
20"	159	1328	765	680	990	500	300	168	800	1186	518	235	370	363	468
24"	181	-	-	-	1210	618	320	192	800	1380	625	235	370	454	748

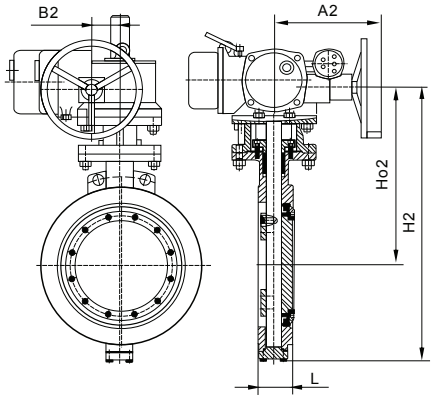
* Note: Actuators and weight dimensions are manufacturer´s design.

- Other types of HPBV are available upon request.
- Refer to the certified drawings for the final construction.

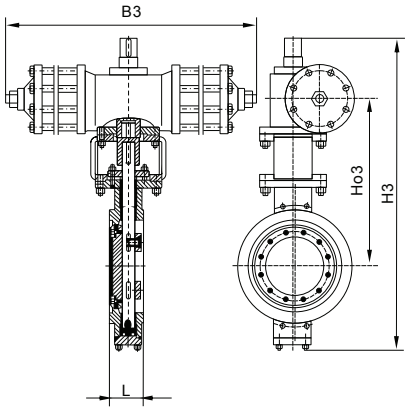
COTESO Series 85, 88 and 98
API 609



Worm Gear Driven
Lug Butterfly Valve



Electric Operated
Wafer Butterfly Valve



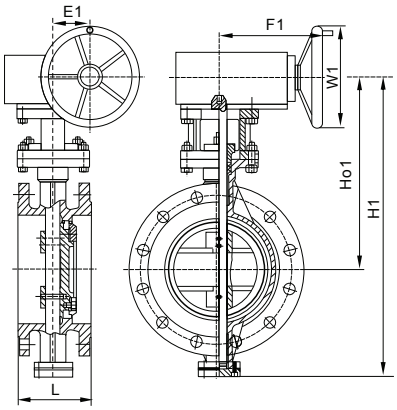
Hydraulic Operated
Wafer Butterfly Valve

CLASS 600		Dimensions (mm)													
inch	L	Pneumatically or hydraulically driven			Worm gear					Electrically actuated*				Weight (kg)*	
		H3	Ho3	B3	H1	Ho1	B1	A1	Do1	H2	Ho2	B2	A2	Wafer	Lug
6"	78	-	-	-	415	243	140	63	300	602	322	178	180	45	56
8"	102	750	368	275	510	263	150	84	400	745	296	235	370	70	94
10"	117	909	442	378	567	295	150	84	400	805	325	235	370	103	141
12"	140	1075	535	530	665	342	200	108	600	883	365	235	370	149	201
14"	155	1158	572	530	739	385	200	108	600	965	408	235	370	243	333
16"	178	1230	610	530	825	430	240	152	600	1033	443	235	370	318	401
18"	200	-	-	-	910	469	240	152	800	1120	485	235	370	431	575
20"	216	-	-	-	990	500	300	168	800	1186	518	235	370	472	708
24"	232	-	-	-	1210	618	320	192	800	1380	625	235	370	826	1061

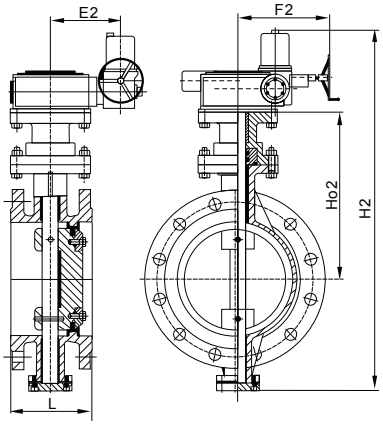
* Note: Actuators and weight dimensions are manufacturer´s design.

- Other types of HPBV are available upon request.
- Refer to the certified drawings for the final construction.

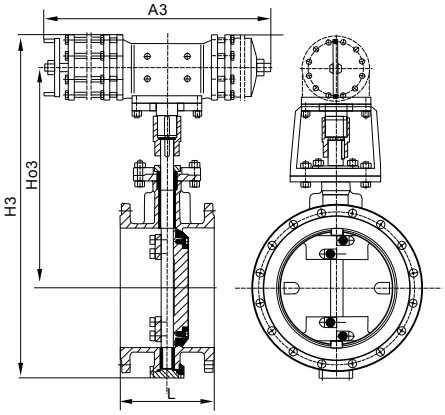
COTESO Series 85, 88 and 98
API 609



Worm Gear Driven
Flanged Butterfly Valve



Electric Operated
Flanged Butterfly Valve



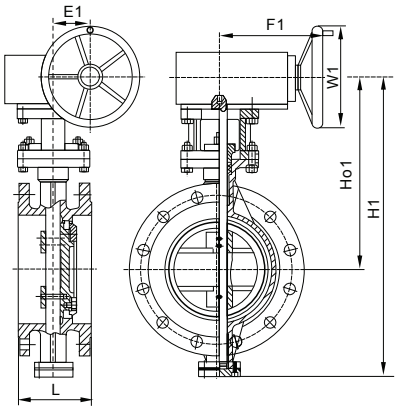
Hydraulic Operated
Flanged Butterfly Valve

CLASS 150		Dimensions (mm)												
inch	L	Worm gear					Electrically actuated*				Pneumatically or hydraulically driven			Weight (kg)*
		H1	Ho1	E1	F1	W1	H2	Ho2	E2	F2	H3	Ho3	A3	Worm gear
3"	114	472	350	50	203	203	513	263	180	178	-	-	-	15.4
4"	127	520	386	60	191	203	535	282	180	178	-	-	-	23
5"	140	580	395	60	215	250	563	293	180	178	-	-	-	29
6"	140	653	475	67	289	305	602	322	180	178	-	-	-	33
8"	152	773	565	67	308	460	745	296	370	235	690	323	275	50
10"	165	880	640	86	346	460	805	325	370	235	750	355	275	73
12"	178	989	711	111	403	610	883	365	370	235	955	475	378	108
14"	190	1044	760	60	601	356	965	408	370	235	1032	513	378	143
16"	216	1142	826	60	605	457	1033	443	370	235	1182	598	530	186
18"	222	1228	887	60	652	610	1120	485	370	235	1265	635	530	234
20"	229	1337	959	60	805	762	1186	518	370	235	1335	667	530	277
24"	267	1554	1109	103	763	762	1380	625	370	235	1642	830	680	408
28"	292	1456	956	245	400	315	1587	745	515	245	1711	859	680	653
30"	318	1541	991	310	460	400	1650	777	515	245	1782	910	680	816
32"	318	1611	1036	310	460	400	1717	810	515	245	1856	942	680	914
36"	330	1743	1103	410	480	400	1870	875	540	360	1920	975	680	1157
40"	410	1868	1173	410	480	400	2030	965	540	360	-	-	-	1610
48"	470	2145	1320	520	640	400	2188	1100	540	660	-	-	-	2359

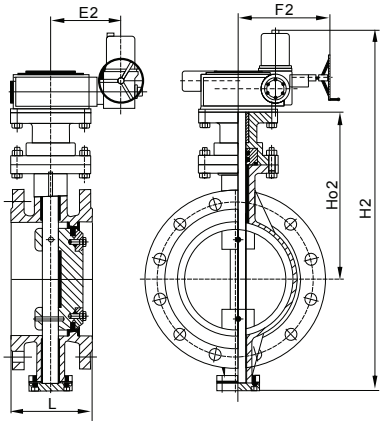
* Note: Actuators and weight dimensions are manufacturer´s design.

- Other types of HPBV are available upon request.
- Refer to the certified drawings for the final construction.

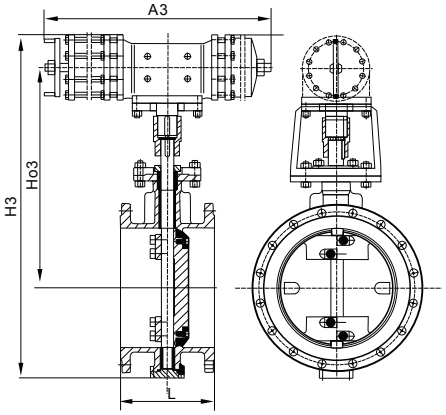
COTESO Series 85, 88 and 98
API 609



Worm Gear Driven
Flanged Butterfly Valve



Electric Operated
Flanged Butterfly Valve



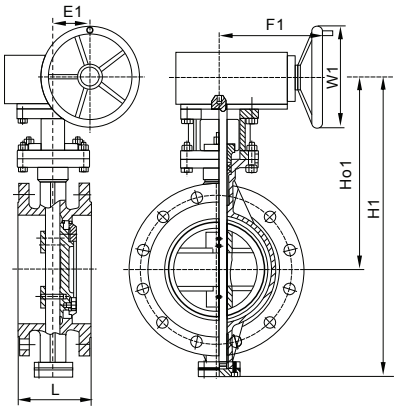
Hydraulic Operated
Flanged Butterfly Valve

CLASS 300		Dimensions (mm)												
inch	L	Worm gear					Electrically actuated*				Pneumatically or hydraulically driven			Weight (kg)*
		H1	Ho1	E1	F1	W1	H2	Ho2	E2	F2	H3	Ho3	A3	Worm gear
2"	108	365	237	35	169	152	407	237	180	178	-	-	-	19
3"	114	378	253	73	229	152	530	253	180	178	-	-	-	29
4"	127	421	274	73	229	305	552	274	180	178	-	-	-	39
6"	140	543	351	108	254	305	610	351	180	178	-	-	-	54
8"	152	628	392	108	254	305	755	392	370	235	750	368	275	84
10"	165	855	480	133	305	610	816	480	370	235	909	442	378	118
12"	178	812	515	133	305	610	912	515	370	235	1075	535	530	170
14"	190	885	555	194	356	610	980	555	370	235	1158	572	530	231
16"	216	951	590	194	356	356	1057	590	370	235	1230	610	530	299
18"	222	1106	636	194	356	356	1140	636	370	235	1462	736	680	390
20"	229	1308	685	194	356	356	1243	685	515	245	1328	765	680	499
24"	267	1445	934	165	686	686	1420	934	817	351	-	-	-	726
28"	292	1495	1039	165	686	686	1812	1039	817	351	-	-	-	1360
30"	318	1535	1060	165	686	686	1906	1060	817	351	-	-	-	1429
32"	318	1575	1120	165	686	686	2021	1120	817	351	-	-	-	1757
36"	330	1605	1190	165	686	686	2327	1190	973	440	-	-	-	2223
40"	410	1755	1234	165	686	686	2451	1234	973	440	-	-	-	2531
42"	410	2100	1385	429	805	903	2515	1385	973	440	-	-	-	2781
48"	470	2303	1570	399	965	903	2697	1570	973	440	-	-	-	3602

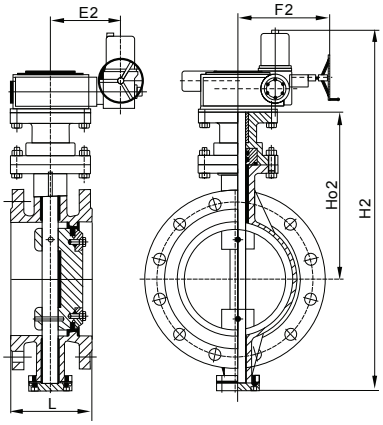
* Note: Actuators and weight dimensions are manufacturer´s design.

- Other types of HPBV are available upon request.
- Refer to the certified drawings for the final construction.

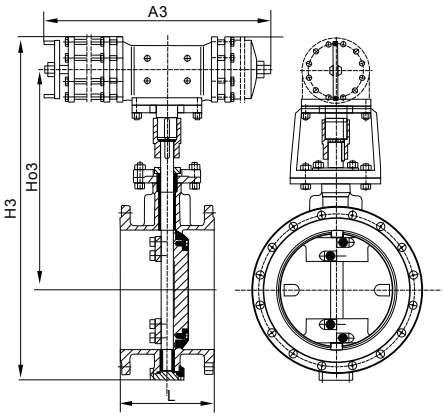
COTESO Series 85, 88 and 98
API 609



Worm Gear Driven
Flanged Butterfly Valve



Electric Operated
Flanged Butterfly Valve



Hydraulic Operated
Flanged Butterfly Valve

CLASS 600		Dimensions (mm)												
inch	L	Worm gear					Electrically actuated*				Pneumatically or hydraulically driven			Weight (kg)*
		H1	Ho1	E1	F1	W1	H2	Ho2	E2	F2	H3	Ho3	A3	Worm gear
3"	180	541	414	63	140	250	606	295	180	178	-	-	-	82
4"	190	607	447	63	140	250	650	358	180	178	-	-	-	125
5"	200	680	395	108	200	250	695	371	180	178	-	-	-	165
6"	210	686	490	152	240	315	743	387	180	178	-	-	-	191
8"	230	757	536	168	300	315	1055	417	370	235	-	-	-	247
10"	250	867	641	192	320	315	1172	465	370	235	-	-	-	413
12"	270	1034	727	237	368	400	1392	546	515	245	-	-	-	576
14"	290	1087	757	237	368	400	1475	579	515	245	-	-	-	664
16"	310	1216	825	237	368	400	1557	643	540	360	-	-	-	971
18"	330	1240	840	269	559	400	1625	673	540	360	-	-	-	1119
20"	350	1330	978	350	645	400	1679	701	540	360	-	-	-	1639
24"	390	1583	1070	350	645	400	1834	775	540	360	-	-	-	2082

* Note: Actuators and weight dimensions are manufacturer´s design.

- Other types of HPBV are available upon request.
- Refer to the certified drawings for the final construction.

Valve Body Materials

Material Group	Common Name	Forging Spec	Casting Spec. Equivalent	DIN	Application
Carbon Steel	CS	A105N	A216-WCB	C22.8 DIN 17243	General non-corrosive service from -20ºF (-29ºC) to 800ºF (427ºC)
Low Temperature Carbon Steel	LTCS	A350-LF2	A352-LC1	TSTE 355 DIN 18103	General non-corrosive service from -50ºF (-46ºC) to 650ºF (340ºC), LF2 to 800ºF (427ºC)
			A352-LCB		
			A352-LCC		
Low Temperature Alloy Steel	Nickel Steel	A350-LF3	A352-LC3	10Ni14	-150ºF (-101ºC) to 650ºF (340ºC)
Low Alloy Steel	Moly Steel	A182-F1	A217-WC1	15Mo3	Up to 875ºF (468ºC)
	Alloy Steel Chrome Moly	A182-F11 cl2	A217-WC6	13CrMo44	Up to 1100ºF (593ºC)
		A182-F22 cl3	A217-WC9	10CrMo910	Up to 1100ºF (593ºC), HP steam
		A182-F5a	A217-C5	12CrMo195	High temp. refinery service
		A182-F9	A217-C12	X 12 CrMo 9 1	High temp. erosive refinery service
		A182-F91	A217-C12A	X 10 CrMoVNb 9 1	High pressure steam
Stainless Steel	Austentic S.Steel 300 series S.Steel	A182-F304	A351-CF8	DIN X5CrNi 18 9	0.04% min. carbon for temp. >1000ºF (538ºC)
		A182-F304L	A351-CF3	X 2 CrNi 19 11	Up to 800ºF (427ºC)
		A182-F304H	A351-CF10	n/a	-
		A182-F316	A351-CF8M	DIN X5CrNiMo 18 10	0.04% min. carbon for temp. >1000ºF (538ºC)
		A182-F316L	A351-CF3M	X 5 CrNiMo 17 12 2	Up to 800ºF (427ºC)
		A182-F316H	A351-CF10M	n/a	-
		A182-F316 Ti	-	X 6 CrNiMoTi 17 12 2	Special grade
		A182-F321	-	X 6 CrNiTi 18 10	0.04%min. carbon (grade F321H) and heat treat at 2000ºF (1100ºC) for service temps. >1000ºF (538ºC)
		A182-F321H	-	n/a	
		A182-F347	A351-CF8C	DIN 8556	0.04%min. carbon (grade F347H) and heat treat at 200ºF (1100ºC) for service temps. >1000ºF (538ºC)
		A182-F347H	-	n/a	
		A182-F317L	A351-CG3M*	X2CrNiMo18-16-4	-
	Alloy 20	A182-F20*	A351-CN7M**	DIN 1.4500	Service to 600ºF (316ºC)*
	Duplex 2205	A182-F51	A351-CD3MN	X2CrNiMoN22-5-3	Service to 600ºF (316ºC) - The original S31803 UNS designation has been supplemented by S32205 which has higher minimum N,CR, and Mo
		-	A890-J92205*	DIN 10088-1 (95)	
	Super Duplex 2507	A182-F53	A351-CD4MCu*	X2CrNiMoN27-7-4	Service to 600ºF (316ºC)
			A890 5A*	DIN 10088-1 (95)	
	Super Duplex F55	A182-F55	A995-CD3MWCuN	-	Service to 600ºF (316ºC)
	Super Austenitic 6Mo	A182-F44	A351-CK3MCuN	X1CrNiMoCuN20-18-7	Service to 600ºF (316ºC)
				DIN 10088-1 (95)	
Nickel-Iron Alloy	Incoloy 800	B564-N08800	-	X10NiCrAlTi32-20	Service to 1000ºF (538ºC)
	Incoloy 825	B564-N08825*	A494-CU5MCuC*	DIN 17744	Service to 600ºF (316ºC) for N02200, 1200ºF (648ºC) for N02201
Nickel	Nickel	B160-N02200 (bar)	A494-CZ-100*	NW2200	-
Nickel-Copper	Monel 400	B564-N04400	A494-M35-1	DIN 17730	-
	Monel 500	B564-N05500*	-	-	-
Nickel-Alloy	904L	904L*	n/a	Z2 NCDU 25-20	-
Nickel Superalloys	Inconel 600	B564-N06600	A494-CY40*	DIN 17742	-
	Inconel 625	B564-N06625	A494-CW-6MC*	-	-
	Hastelloy C-276	B564-N10276	A494-CW-2M*	NiMo 16 Cr 15 W	-
Titanium	Titanium	B381-Gr2	B367-C2*	Ti 2	Special grade

* Now discontinued in ANSI B16.34 - 2009.

** Cast CN7M only rated to 150ºC, however 'New Alloy 20' grade CN3MCu is available which is to be rated to at least 316ºC.

Major Valve Material Groups

FORGED	CAST
CARBON STEEL	
ASTM A105N	ASTM A216 WCB/WCC
ASTM A350 LF2	ASTM A352 LCB/LCC
ALLOY STEEL	
ASTM A350 LF3	ASTM A352 LC3
ASTM A182 F5a	ASTM A217 C5
ASTM A182 F9	ASTM A217 C12
ASTM A182 F11	ASTM A217 WC6
ASTM A182 F22	ASTM A217 WC9
ASTM A182 F91	ASTM A217 C12A
AUSTENITIC STAINLESS STEEL	
ASTM A182 F304/F304L	ASTM A351 CF8/CF3
ASTM A182 F316/F316L	ASTM A351 CF8M/CF3M
ASTM A182 F321	-
ASTM A182 F347	ASTM A351 CF8C
ASTM A182 F44 (6MO)	ASTM CK3MCuN
ASTM A182 F20* (ALLOY 2 0)	A351 CN7M
FERRITIC-AUSTENITIC STAINLESS STEEL	
ASTM A182 F51 - UNS S31803 (DUPLEX S.S.)	A890 GR.4A*/ A351 C D3MN
ASTM A182 F53 - UNS S32750 (SUPER DUPLEX S.S.)	A890 GR.5A*/ A351 C E8MN
ASTM A182 F55 - UNS S32760 (SUPER DUPLEX S.S.)	A995 CD3MWCuN/6A
NICKEL ALLOY	
INCONEL 825 - UNS N08825 ASTM B564 - N08825	A484 CU5MCuC*
INCONEL 600 - UNS N06600 ASTM B564 - N06600	A494 CY40*
INCONEL 625 - UNS N06625 ASTM B564 - N06625	A494 CW6MC*
MONEL 400 - UNS N04400 ASTM B564 - N04400	A494 M35-1
TITANIUM	
ASTM B381 GR.F2	ASTM B367 GR.C2
ASTM B381 GR.F3	ASTM B367 GR.C3

* No longer referenced in ANSI B16.34 - 2009.

Valve Trim Materials

APV TRIM CONFIGURATIONS						
API Trim No	Nonimal Trim	Trim code	Stem	Disc/Wedge	Seat	Min. Hardness (Brinell)
1	F6	F6	410 (13Cr)	F6 (13Cr)	410 (13Cr)	250
2	304	304	304 (18Cr-8Ni)	304 (18Cr-8Ni)	304 (18Cr-8Ni)	not specified
3	310	310	(25Cr-20Ni)	310 (25Cr-20Ni)	310 (25Cr-20Ni)	not specified
4	Hard 410	F6-H	410 (13Cr)	F6 (13Cr)	F6 (13Cr)	275
5	410 Full Hard faced	F6-HF	410 (13Cr)	F6+St Gr6 (CoCr Alloy)	410+St Gr6 (CoCr Alloy)	350
5A	410 Full Hard faced	F6-HF	410 (13Cr)	F6+Hardf. NiCr Alloy	410+Hardf. NiCr Alloy	350
6	410 and Ni-Cu	F6-HFS	410 (13Cr)	F6 (13Cr)	Monel 400 ® (NiCu Alloy)	250/175
7	410 and Full Hard	410	410 (13Cr)	F6 (13Cr)	F6 (13Cr) (750 HB)	250/750
8	410 and Hard faced	F6-HFS	410 (13Cr)	F6 (13Cr)	410+St Gr6 (CoCr Alloy)	250/350
8A	410 and Hard faced	F6-HFS	410 (13Cr)	F6 (13Cr)	410+Hardf. NiCr Alloy	250/350
9	Monel	Monel	Monel® (NiCu Alloy)	Monel® (NiCu Alloy)	Monel 400 ® (NiCu Alloy)	not specified
10	316	316	316 (18Cr-Ni-Mo)	316 (18Cr-8Ni-Mo)	316 (18Cr-8Ni-Mo)	not specified
11	Monel and Hard faced	Monel-HFS	Monel® (NiCu Alloy)	Monel® (NiCu Alloy)	Monel 400 ® St Gr6	350
11A	Monel and Hard faced	Monel-HFS	Monel® (NiCu Alloy)	Monel® (NiCu Alloy)	Monel 400 ® Hardf. NiCrA	350
12	316 and Hard faced	316-HFS	316 (18Cr-Ni-Mo)	316 (18Cr-8Ni-Mo)	316+St Gr6	350
12A	316 and Hard faced	316-HFS	316 (18Cr-Ni-Mo)	316 (18Cr-8Ni-Mo)	316 Hardf. NiCr Alloy	350
13	Alloy 20	Alloy 20	Alloy 20 (19Cr-29Ni)	Alloy 20 (19Cr-29Ni)	Alloy 20 (19Cr-29Ni)	not specified
14	Alloy 20 & Hard faced	Alloy 20-HFS	Alloy 20 (19Cr-29Ni)	Alloy 20 (19Cr-29Ni)	Alloy 20 St Gr6	350
14A	Alloy 20 & Hard faced	Alloy 20-HFS	Alloy 20 (19Cr-29Ni)	Alloy 20 (19Cr-29Ni)	Alloy 20 hardf. NiCr Alloy	350
15	304 Full Hard faced	304-HF	304 (18Cr-8Ni-Mo)	304+St Gr6	304+St Gr6	350
16	316 Full Hard faced	316-HF	316 HF (18Cr-8Ni-Mo)	316+St Gr6	316+St Gr6	350
17	347 Full Hard faced	347-HF	347 HF (18Cr-10Ni-Cb)	347+St Gr6	347+St Gr6	350
18	Alloy 20 Full Hard faced	Alloy-HF	Alloy 20 (19Cr-29Ni)	Alloy 20+St Gr6	Alloy 20+St Gr6	350
n/a	Alloy 625	Alloy 625	Alloy 625	Alloy 625	Alloy 625	-

TRIM MATERIAL EQUIVALENT GRADES					
TRIM	UNS	TYPE	Grade (forged)	ASTM wrought	DIN
F6	UNS S41000	13Cr	ASTM A182 F6a	A276-410	DIN X12Cr13
304	UNS S30400	18-8 Cr-Ni	ASTM A182 F304	A276-304	DIN X5CrNi 18 10
316	UNS S31600	18-8 Cr-Ni (18-10-2)	ASTM A182 F316	A276-316	DIN X5CrNiMo 18 10
321	UNS S32100	18 Cr-10 Ni-Ti	ASTM A182 F321	A276-321	DIN X6CrNiTi 18 10
347	UNS S34700	18 Cr-10 Ni-Cb	ASTM A182 F347	A276-347	DIN X6CrNiNb18 10
MONEL®	UNS N04400	67Ni-30Cu	ASTM B564-N04400	B164-N04400	BDIN 17743
ALLOY 20	UNS N08020	28Ni-19Cr-Cu-Mo	ASTM A182-F20*	ASTM B473	DIN 14500
ALLOY 625	UNS N06625	60Ni-22Cr-9Mo-3.5Cb	ASTM B564-N06625	ASTM B564-N06625	DIN 17361
C276	UNS N10276	54Ni-15Cr-16Mo	ASTM B564-N10276	ASTM B574-N10276	DIN NiMo 16 Cr 15 W
17/4PH	UNS S17400	0Cr17Ni4Cu4Nb	ASTM A705 UNS S17400	ASTM A564 UNS S17400	X5CrNiCuNb17-4-4
St. Gr6**	UNS R30006	Co Cr-A	AMS 5894	Stellite(R) Gr6	

* No longer referenced in ANSI B16.34 - 2009.

** Hard facing weld overlay.

PIPE SCHEDULES

Pipe schedules and wall thicknesses in inch/mm and weights

ASME B 36.10 PIPE SCHEDULES													
Nominal pipe size	O.D. (outer diameter)	Standard		Extra strong		Double extra strong		Schedule		Schedule		Schedule	
		STD		XS		XXS		10		20		30	
inches	mm	Wall	Wt	Wall	Wt	Wall	Wt	Wall	Wt	Wall	Wt	Wall	Wt
1/8"	10.3	1.7	0.357	2.4	0.470	-	-	-	-	-	-	-	-
1/4"	13.7	2.2	0.625	3.0	0.804	-	-	-	-	-	-	-	-
3/8"	17.1	2.3	0.848	3.2	1.10	-	-	-	-	-	-	-	-
1/2"	21.3	2.8	1.26	3.7	1.62	7.5	2.54	-	-	-	-	-	-
3/4"	26.7	2.9	1.68	3.9	2.19	7.8	3.63	-	-	-	-	-	-
1"	33.4	3.4	2.50	4.5	3.23	9.1	5.45	-	-	-	-	-	-
1.1/4"	42.2	3.6	3.38	4.9	4.46	9.7	7.75	-	-	-	-	-	-
1.1/2"	48.3	3.7	4.05	5.1	5.40	10.2	9.54	-	-	-	-	-	-
2"	60.3	3.9	5.43	5.5	7.47	11.1	13.4	-	-	-	-	-	-
2.1/2"	73	5.2	8.62	7.0	11.4	14	20.4	-	-	-	-	-	-
3"	88.9	5.5	11.3	7.6	15.3	15.2	27.7	-	-	-	-	-	-
3.1/2"	101.6	5.7	13.6	8.1	18.6	16.2	34	-	-	-	-	-	-
4"	114.3	6	16.1	8.6	22.3	17.1	41.1	-	-	-	-	-	-
5"	141.3	6.6	21.8	9.5	30.9	19	57.4	-	-	-	-	-	-
6"	168.3	7.1	28.2	11.0	42.5	21.9	79.1	-	-	-	-	-	-
8"	219.1	8.2	42.5	12.7	64.6	22.2	108	-	-	6.4	33.3	7	36.7
10"	273	9.3	60.2	12.7	81.5	25.4	155	-	-	6.4	41.7	7.8	50.9
12"	323.9	9.5	73.8	12.7	97.4	25.4	187	-	-	6.4	49.7	8.4	65.1
14"	355.6	9.5	81.2	12.7	107	-	-	6.4	54.6	7.9	68.1	9.5	81.2
16"	406.4	9.5	93.1	12.7	123	-	-	6.4	62.6	7.9	77.9	9.5	93.1
18"	457.2	9.5	105	12.7	139	-	-	6.4	70.5	7.9	87.8	11.1	122
20"	508	9.5	117	12.7	155	-	-	6.4	78.5	9.5	117	12.7	155
22"	558.8	9.5	129	12.7	171	-	-	6.4	86.4	9.5	129	12.7	171
24"	609.6	9.5	141	12.7	187	-	-	6.4	94.7	9.5	141	14.3	210
26"	660.4	9.5	153	12.7	203	-	-	7.9	128	12.7	203	-	-
28"	711.2	9.5	165	12.7	219	-	-	7.9	138	12.7	219	15.9	272
30"	762	9.5	176	12.7	234	-	-	7.9	147	12.7	234	15.9	292
32"	812.8	9.5	188	12.7	250	-	-	7.9	157	12.7	250	15.9	312
34"	863.6	9.5	200	12.7	266	-	-	7.9	167	12.7	266	15.9	332
36"	914.4	9.5	212	12.7	282	-	-	7.9	177	12.7	282	15.9	351

Wall = Wall thickness in millimeters

Wt = Weights in kilogram per meter

Pipe schedules and wall thicknesses in inch/mm and weights

ASME B 36.10 PIPE SCHEDULES															
Nominal pipe size	O.D.	Standard		Extra strong		Double extra strong		Schedule		Schedule		Schedule		Schedule	
		40		60		80		100		120		140		160	
inches	mm	Wall	Wt	Wall	Wt	Wall	Wt	Wall	Wt	Wall	Wt	Wall	Wt	Wall	Wt
1/8"	10.3	1.7	0.357	-	-	2.4	0.470	-	-	-	-	-	-	-	-
1/4"	13.7	2.2	0.625	-	-	3.0	0.804	-	-	-	-	-	-	-	-
3/8"	17.1	2.3	0.848	-	-	3.2	1.10	-	-	-	-	-	-	-	-
1/2"	21.3	2.8	1.26	-	-	3.7	1.62	-	-	-	-	-	-	4.8	1.9
3/4"	26.7	2.9	1.68	-	-	3.9	2.19	-	-	-	-	-	-	5.6	2.89
1"	33.4	3.4	2.50	-	-	4.5	3.23	-	-	-	-	-	-	6.4	4.23
1.1/4"	42.2	3.6	3.38	-	-	4.9	4.46	-	-	-	-	-	-	6.4	5.6
1.1/2"	48.3	3.7	4.05	-	-	5.1	5.40	-	-	-	-	-	-	7.1	7.23
2"	60.3	3.9	5.43	-	-	5.5	7.47	-	-	-	-	-	-	8.7	11.1
2.1/2"	73	5.2	8.62	-	-	7.0	11.4	-	-	-	-	-	-	9.5	14.9
3"	88.9	5.5	11.3	-	-	7.6	15.3	-	-	-	-	-	-	11.1	21.3
3.1/2"	101.6	5.7	13.6	-	-	8.1	18.6	-	-	-	-	-	-	-	-
4"	114.3	6	16.1	-	-	8.6	22.3	-	-	11.1	28.3	-	-	13.5	33.5
5"	141.3	6.6	21.8	-	-	9.5	30.9	-	-	12.7	40.2	-	-	15.9	49.0
6"	168.3	7.1	28.2	-	-	11.0	42.5	-	-	14.3	54.2	-	-	18.3	67.5
8"	219.1	8.2	42.5	10.3	53.1	12.7	64.6	15.1	75.8	18.3	90.7	20.6	101	23.0	112
10"	273	9.3	60.2	12.7	81.5	15.1	95.8	18.3	115	21.4	133	25.4	156	28.6	172
12"	323.9	10.3	79.7	14.3	109	17.4	132	21.4	160	25.4	187	28.6	208	33.3	239
14"	355.6	11.1	94.3	15.1	126	19.0	158	23.8	195	27.8	224	31.8	253	35.7	281
16"	406.4	12.7	123	16.7	160	21.4	203	26.2	245	30.9	286	36.5	333	40.5	365
18"	457.2	14.3	156	19	206	23.8	254	29.4	310	34.9	363	39.7	408	45.2	459
20"	508	15.1	183	20.6	248	26.2	311	32.5	381	38.1	441	44.4	508	50.0	564
22"	558.8	-	-	22.2	294	28.6	373	34.9	451	41.3	526	47.6	600	54.0	671
24"	609.6	17.4	255	24.6	355	30.9	441	38.9	547	46.0	639	52.4	719	59.5	807
26"	660.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28"	711.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30"	762	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32"	812.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34"	863.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36"	914.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Wall = Wall thickness in millimeters

Wt = Weights in kilogram per meter

COTESO Group

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Quality assurance

We do realize that products supplied by us do need to meet the highest possible standards, in both reliability as well as durability. For this reason quality assurance is of vital importance, and we are ensuring maximum quality not only by proper quality assurance programs and procedures, but also by both internal and independent third party product inspections. We operate according an audited and certified Quality Assurance system and are in possession of an ISO 9001, 14001 and 45001 Certificate by LRQA (Lloyd´s Register) which further underwrites our commitment to upholding the highest quality standards possible!

LRQA CERTIFIED
ISO 9001 · ISO 14001
ISO 45001

UKAS MANAGEMENT SYSTEMS
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