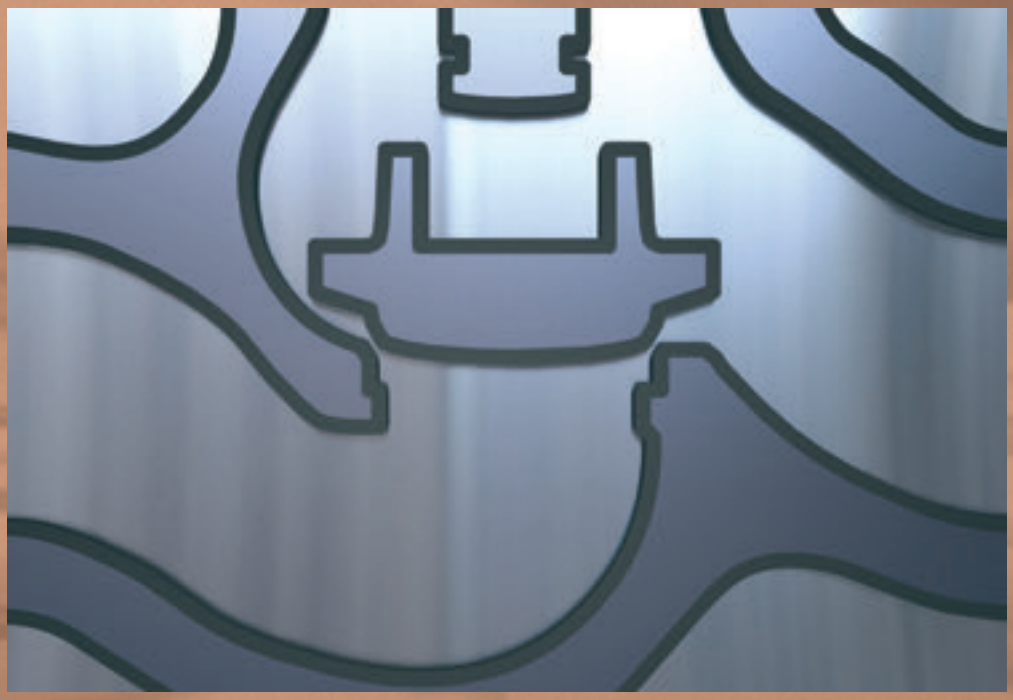
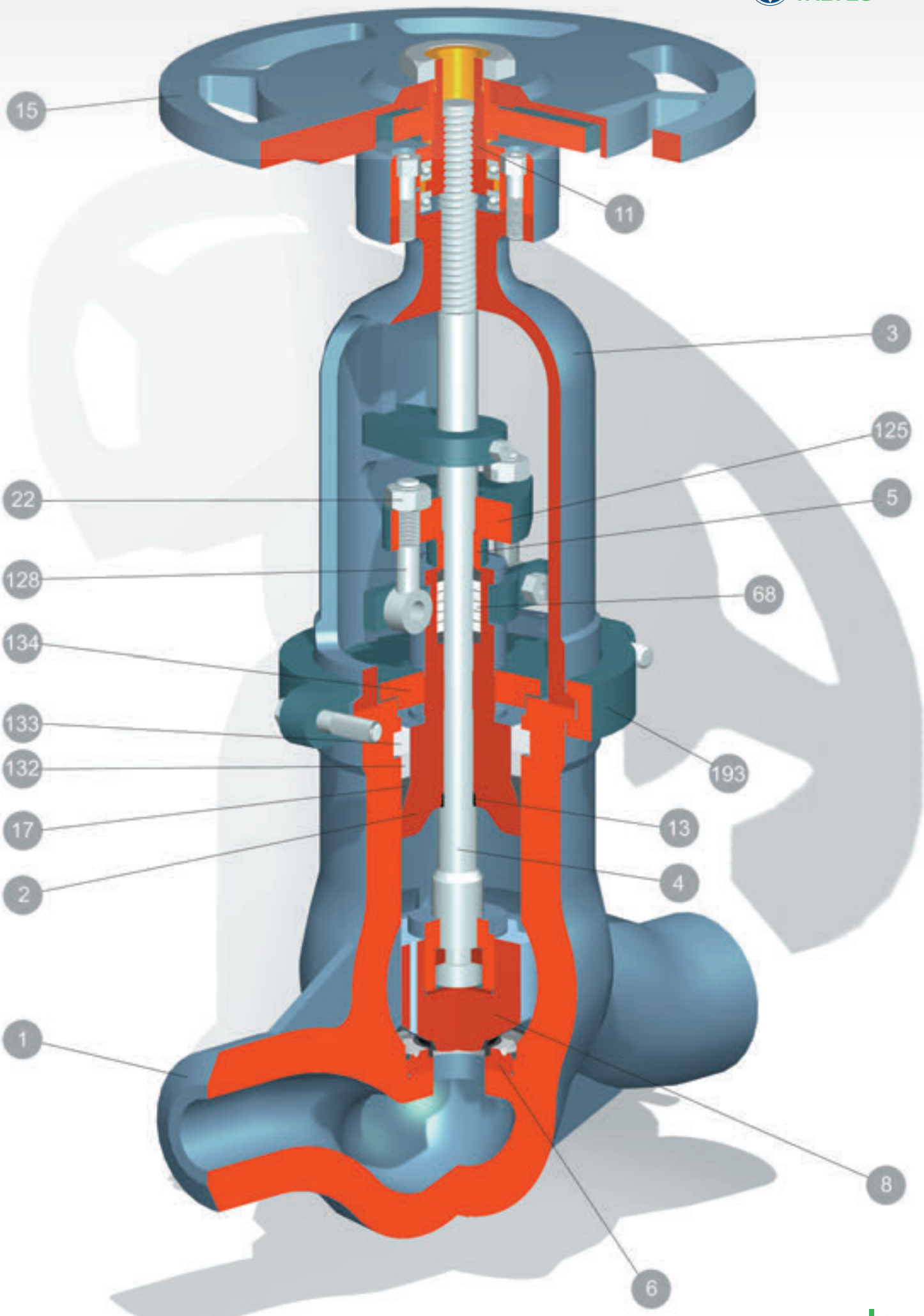
BABCOCK VALVES



Globe Valve

PRESSURE SEAL BONNET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1

BODY

Available both in cast and forged steel, it has been designed to meet all the requirements of ASME, API and BS..

The body-bonnet connection is made by a pressure seal gasket. Its pre-stress condition is achieved by means of bolts screwed to the bonnet flange.

Ends are normally butt-welding although they can be also flanged on request.

All bodies are provided with integrally cast bosses, located and sized in accordance with ASME B16.34, which allow the provision of drain connections, supplied on request.

2

BONNET

Usually constructed in the same materials as the body, being designed so that the wall thickness always exceeds the requirement of API 600.

A back seat (13) bush is fitted inside the bonnet lower cavity, to provide a closure when de valve is fully open. This permits the valve to be repacked while in service.

The bonnet has a deep stuffing box in which packing rings are placed.

Stuffing box is designed with sufficient space to allow lantern ring to be fitted.

3

YOKE

Separate rigid yoke is provided to withstand the thrust of the actuator. Large windows allow easy access and ventilation of the packing area. The yoke is connected to the body by a two pieces clamping ring (193) and four clamp bolts. This connection is very solid and enables easy maintenance at site.

The upper part of the yoke is suitably machined to house the yoke sleeve (11).

The yoke is usually made of cast carbon steel regardless the type of body material, unless otherwise required by the client.

4

STEM

Constructed in stainless steel, machined from solid bar stock. The single piece non rotating stem is connected to the disc (8) by a rounded head connection trough bearing ring (31A), and a stem retainer (29) and disc nut (18) assure the integrity of the kit.

A conical shoulder is also provided to ensure effective and tight seal backseat which allows the stuffing box to be replaced with the valve in service. The stem dimensions conform to API 600. Special care is taken in the machining of the stem, including the final polishing of the travelling area (contact with the stuffing box). This allows a low-friction surface and a superior corrosion resistance.

5 - 125

GLAND BUSHING AND FLANGE

They are supplied in two separate self aligning pieces, to ensure uniform pressure is effected during tightening of the packing.

The upper part of the gland, which comes in contact with the gland flange, is spherical in shape.

The gland flange is made of carbon steel but, upon request, other materials can be supplied.

22 - 128

GLAND BOLTS AND NUTS

The gland studs are of the eye-bolt type, which can be provided with live load systems, by means of belleville rings.

6

SEAT RING

Supplied in forged stainless steel, hardfaced with Stellite-6 (2 mm of minimun thickness). Seat ring is renewable, normally welded to the body.

Sealing contact surface is lapped for a perfect tight seal. Contolled hardness differentials are maintained between the disc and the seat ring, as required by API 600 Std.

11

YOKE SLEEVE

Designed to permit removal from the bonnet or yoke while the valve is in service.

The yoke bushing assembly is mounted in ball bearings. It is normally made of cast aluminium bronze, having high resistance to wear and high melting point. Other materials such as Ni-resist can be supplied on request.

13

BACK SEAT

The back seat can be supplied as a threaded stainless steel bush, welded to the bonnet or of integral type. It can be hardfaced with Stellite-6 or orther materials as required.

This seat allows the valve to be repacked under pressure.

15

HANDWHEEL

The handwheel is normally supplied of Hammer type, made of cast construction.

The handwheel is designed to allow easy operation of the valve. Other types of control are available and, in some cases, are indispensable for a good operation, for instance:

- Chain wheel.
- Gear operator.
- Geared hammer handwheel.
- Electric actuator.
- Electro-hydraulic actuator.
- Pneumatic actuator.

17

PRESSURE SEAL GASKET

The pressure seal gaskets are usually supplied of compressed graphite, bordered on the upper and lower edges with braided filaments of carbon fiber and inconel wire.

Gaskets can also be made in stainless steel.

68

PACKING

Packing is made of an adequate number of preformed rings.

For general applicatios high grade graphite material is supplied, using compressed rings in the center and braided anti-extrusion rings on top and bottom. Graphite is selected of an approved quality.

Other types of packing are also available for particular services.

132

SPACER RING

Made of a single piece covering the upper part of the pressure seal gasket. It is normally manufactured in the same material as the body.

133

GASKET RETAINER

It is made normally of the same material as the body, and constructed in four pieces, called segments. The segments are sized to minimize the gap among them.

The segmental ring supports all the forces transmitted from the bonnet through the pressure seal gasket and the spacer ring. It is calculated to withstand all the force without cracking.

134

BONNET RETAINER

Designed sufficiently resistant to withstand the forces transmitted by the bonnet screws (111).

The bonnet retainer is normally made of same material as the body, but it can be constructed in any other material on request. It is machined to match exactly with the body, what guarantees a pefect alignment of the unit.

193

YOKE CLAMP

The body-yoke connection is created by means of a bipartite clamping ring. The internal connection between the clamp, body and yoke is conical, assuring a perfect tightening.

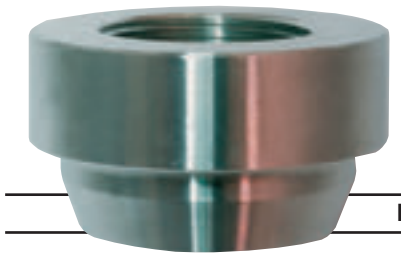
8

DISC

Constructed in forged stainless steel.

Disc is of swivel type, allowed to turn round freely upon the stem. Normally is of loose, Plug type, though can also of Ball, Needle and Parabolic shapes (equal percentage). Contact face is overlayed with Stellite-6 (2 mm of minimun thickness).

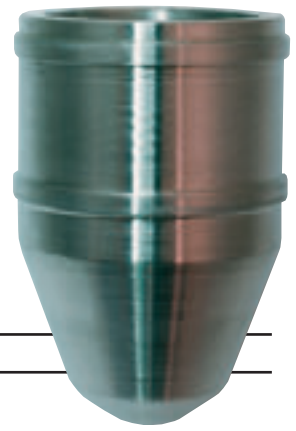
The stem-disc combination can be adapted to Stop-Check function.



PLUG TYPE DISC

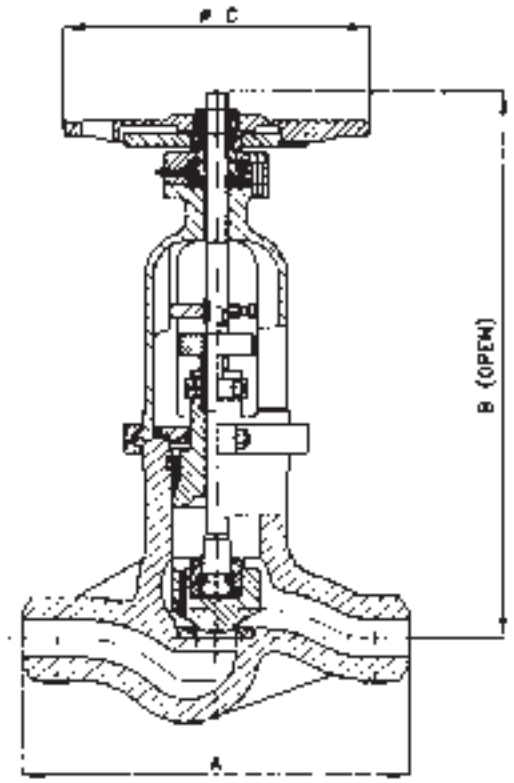
BALL TYPE DISC

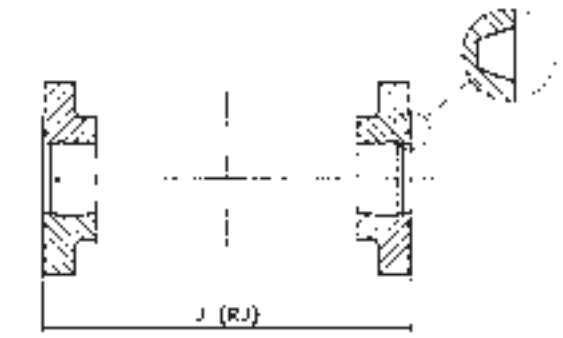
NEEDLE TYPE DISC

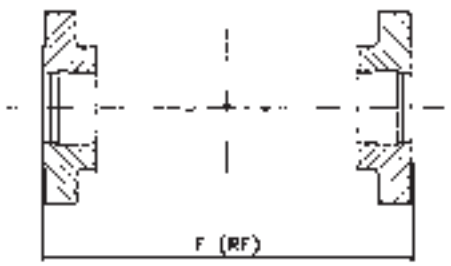


PARABOLIC TYPE DISC

Pressure Seal Bonnet
GLOBE VALVE







Notes:
- The valve weight is for Butt Welding ends.
- Dimensions in mm, and weights in kg.
- Dimensions not shown for class 4500 will be given acc. to customer requirements.

ASME CLASS 600													
SIZE	2”	2 1/2”	3”	4”	6”	8”	10”	12”	14”	16”	18”	20”	24”
A	177,8	215,9	254	304,8	457,2	548,2	711,2	812,8	889	990,5	1092,2	1193,8	1397
F (RF)	292,1	330,2	355,6	431,8	558,8	660,4	787,4	838,2	889	990,5	092,2	1193,8	1397
J (RJ)	295,3	333,2	358,6	434,8	561,8	663,4	790,4	841,2	892,2	993,8	1095,4	1200,2	1406,6
B	425	584,2	558,8	660,4	1067	1194	1270	1270	1930	2108	2286	2489	2591
ØC	305	305	355	355	405	510	610	610	610	610	610	760	915
OPERATION	HANDWHEEL				IMPACTOR			GEAR					
WEIGHT	25	30	42,5	82	192	304	494	689	1182	1640	2118	2593	3262
CV	44	75	125	225	550	975	1550	2275	2800	3700	4700	5825	8575

ASME CLASS 900													
SIZE	2”	2 1/2”	3”	4”	6”	8”	10”	12”	14”	16”			
A	368,3	419	381	457,2	609,6	736,6	838,2	965,2	1028,7	1092			
F (RF)	368,3	419	381	457,2	609,6	736,6	838,2	965,2	1028,7	-			
J (RJ)	371,5	422	384	460,2	612,6	739,6	841,2	968,2	1038,3	-			
B	415	507	507	656	1310	1402	1650	1710	1800	1910			
ØC	381	381	381	457	750	900	900	900	900	900			
WEIGHT	35	42	42	95	276	415	613	803	1436	1850			
OPERATION	HANDWHEEL			IMPACTOR	GEAR								
CV	44	75	100	225	500	900	1425	2050	2525	3350			

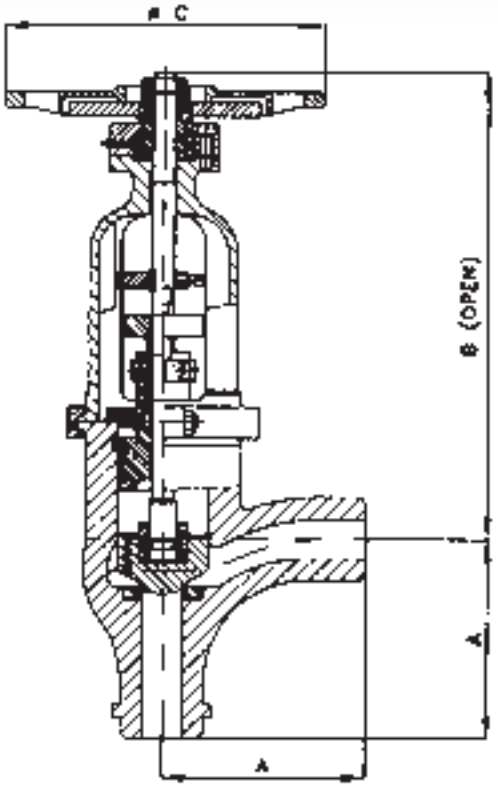
ASME CLASS 1500													
SIZE	2”	2 1/2”	3”	4”	6”	8”	10”	12”	14”				
A	368,3	469,9	469,9	546	704,8	831,8	990,6	1130,3	1257,3				
F (RF)	368,3	469,9	469,9	546	704,8	831,8	990,6	1130,3	1257,3				
J (RJ)	371,5	472,9	472,9	549	711,1	841,1	1000,2	1146	1276,3				
B	450	507	507	820	1310	1680	1775	1825	1875				
ØC	381	457	457	457	750	900	900	900	900				
OPERATION	IMPACTOR				GEAR								
WEIGHT	78	90	90	152	460	750	1027	1177	1681				
CV	44	75	100	175	425	750	1225	1750	2125				

ASME CLASS 2500													
SIZE	2”	2 1/2”	3”	4”	6”	8”	10”	12”					
A	450,9	508	577,8	673,1	914,4	1022,3	1270	1422,4					
F (RF)	450,9	508	577,8	673,1	914,4	1022,3	1270	1422,4					
J (RJ)	454,1	514	584	683	927	1038	1292	1444					
B	710	824	824	810	1270	1369	1549	1600					
ØC	381	457	457	457	900	900	900	900					
WEIGHT	158	192	192	262	880	925	1400	1545					
OPERATION	IMPACTOR				GEAR								
CV	26	50	75	125	300	525	850	1200					

ASME CLASS 4500													
SIZE	2”	2 1/2”	3”	4”	6”	8”	10”	12”					
A		514,3											
F (RF)		-											
J (RJ)		-											
B		845											
ØC		457											
WEIGHT		450											
OPERATION	IMPACTOR												
CV		38											

Pressure Seal Bonnet

ANGLE GLOBE VALVE

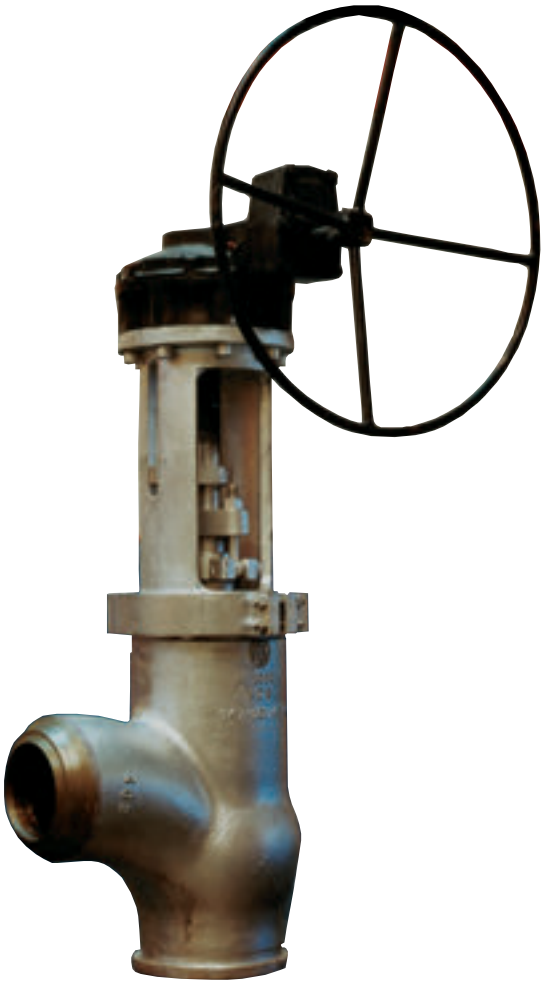


Dimensions are in mm, and weight in kg.

ASME CLASS 1500										
SIZE	2”	2 1/2”	3”	4”	6”	8”	10”	12”	14”	16”
A	184	210	235	273	353	416	495	565	629	660
B	495	561	600	930	1375	1460	1750	2025	2225	2950
ØC	381	381	457	650	650	650	1000	1000	1200	1200
WEIGHT	82	95	95	160	483	790	1080	1236	1765	2285
OPERATION	IMPACTOR						GEAR			
C.V.	70	151	207	284	886	1399	2680	3180	4387	5090

ASME CLASS 2500										
SIZE	2”	2 1/2”	3”	4”	6”	8”	10”	12”	14”	16”
A	226	254	289	337	457	511	635	711	787	830
B	645	688	673	800	1244	1540	1870	2135	2350	3080
ØC	457	457	457	457	650	762	1000	1200	1200	1250
WEIGHT	166	202	202	275	924	1640	3020	3780	4320	6380
OPERATION	IMPACTOR						GEAR			
C.V.	66	94	135	160	584	1007	1592	2829	3415	3718

BPE´s angle pressure seal valves are used for many different aplications where stop or regulating of fluid is required under high pressure and/or temperature conditions.



DESIGN FEATURES

- **Allows installation in any position.**
- **Positive shut-off.**
- **Disc guiding.** For 8” diameter and larger sizes, bodies are provided with three guides at 120º to guide the disc and ensure a good seal between the seating surfaces.
- **Stellited disc, seat and backseat.**
- **Welded or integral seat and/or backseat construction.**
- **Streamlined body flow areas.** Interior contouring gives minimum resistance to flow and lowest achievable pressure drop, eliminating wear producing turbulence.
- **Stem guide collar to prevent stem rotation** and serve as indicator for open and close position.
- **Pressure seal design with clamp, easy to disassemble.**

AVAILABLE OPTIONS

- Stop-check type.
- Impactor handwheel or impactogear operator for large sizes and/or high pressure ratings.
- Different types of operation.
- Larger sizes on request.
- Full range or body/bonnet materials.
- Full range of trim and packing materials.
- Plug, ball or conical-needle type disc for regulating service.
- Flanged or butt-weld ends. Meet design of ANSI B16.34, ANSI B16.5, API 600, BS and DIN.

Pressure Seal Bonnet

Y-GLOBE VALVE

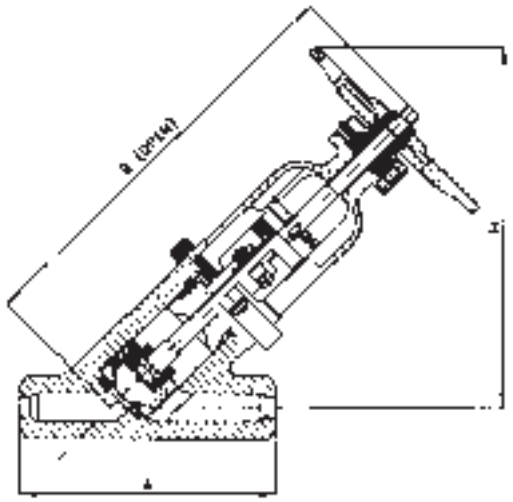
BPE´s Y-body (flite flow) pressure seal globe valves are designed with the most advanced tecnologies obtained from direct experience in boilers fabrication.

Among the diferent functions of this type of valve, most relevant aplication is as **feed water stop valve**, used to protect the water piping between the economizer and the feed water heaters during the hydrostatic boiler test.

These valves are also applicable wherever large volumes are to be handled at high pressure and/or high temperatures, handling steam and water at aceptable velocities and pressure drops.

DESIGN FEATURES

- Low pressure drop, aproximately 70% less than vertical T-body valves. This makes possible to have globe valve reliability without compromising on the ideal pipe size, since pressure loss in Y-body globe design is comparable to that of venturi gate valve. Expressed another way, pressure drop in Y-body globe valves is only 40 to 50 pipe diameters.



- **Excellent resistance to thermal changes.**
- **Quick and easy repair in the line.**

  When you remove the bonnet, the entire seat is completely visible, being no divergent seat angles. Seat is in a single plane facing as you look into the valve. In-line repairs can be made and no special tools are needed. Minor damage can be corrected by ordinary lapping equipment. Major damage can be repaired by portable boring tools. Even a completely destroyed seat can be replaced by a new lay of hardfacing material, welded and machined without taking the valve out of the line. The pressure seal area can be refinished by honing in a few minutes and does not require any special lapping equipment.
- **Seat integrally stellited** for maximun resistance to wear and erosion under high velocity flow conditions and freedom from distortion due to extreme temperature changes.

  This harfaced alloy applied directly on the valve body eliminates commonly used seal-welded seat ring, provides positive support for seat face, minimizes possiblility of seat damage due to changes in line pressure and thermal differentials.
- **Disc fully guided** with both seatings and guiding surfaces fully stellited.
- **Renewable disc guide bushing**, hardfaced, provides continuous guiding of disc from closed to open position, eliminating large side thrust on the steam and packing.

Dimensions are in mm, and weight in kg.

ASME CLASS 1500									
SIZE	2 1/2"	3"	4"	6"	8"	10"	12"	14"	16"
A	454	470	546	704,8	831,8	990,6	1130,3	1257,3	1409
B	532	532	858	1375	1480	1984	2200	2567	3250
ØC	381	381	457	650	900	1000	1000	1200	1200
H	510	510	709	1200	1023	1652	1780	2136	2650
WEIGHT	153	153	258	782	1275	1828	2560	3900	4590
OPERATION	IMPACTOR			GEAR					
C.V.	151	207	284	886	1399	2680	3130	4387	5090

ASME CLASS 2500									
SIZE	2 1/2"	3"	4"	6"	8"	10"	12"	14"	16"
A	508	508	673	914,4	1022,3	1270	1422,4	1574	1778
B	844	844	863	1327	1660	1930	2320	2780	3370
ØC	457	457	457	750	770	1000	1200	1200	1200
H	759	770	795	1085	1320	1770	1840	2110	2760
WEIGHT	336	336	458	1496	1618	2600	2703	4250	4800
OPERATION	IMPACTOR			GEAR					
C.V.	94	135	160	584	1007	1592	2829	3415	3718

- **Drop-tight shut-off.** Tapered disc fits tapered seat, adjusting itself to minor irregularities.
- Pressure seal design with clamp, easy to disassemble.
- Narrow tapered cone seat faces are lesslikely to trap foreign matter with resultng damage to surfaces.
- Stem guide collar to prevent rotation and serve as indicator for open and closed position.
- Impactogear operator with heavy weight construction turning on ball bearings permiting one man to develop high torque. BPE´s designed impactor handwheels give from 3 to over 12 times the force of an ordinary handwheel to close large valves.
- Combined radial and thrust bearings transmit heavy opening and closing loads.

AVAILABLE OPTIONS

- Stop-check type.
- Larger size on request.
- Flanged or butt-weld ends.
- Full range of body/bonnet materials.
- Full range of trim and packing materials.
- Manual, electric and geared hammer blow handwheel with and without air wrench.
- Meet design of ANSI B16.34, ANSI 16.5, API 600, BS and DIN.

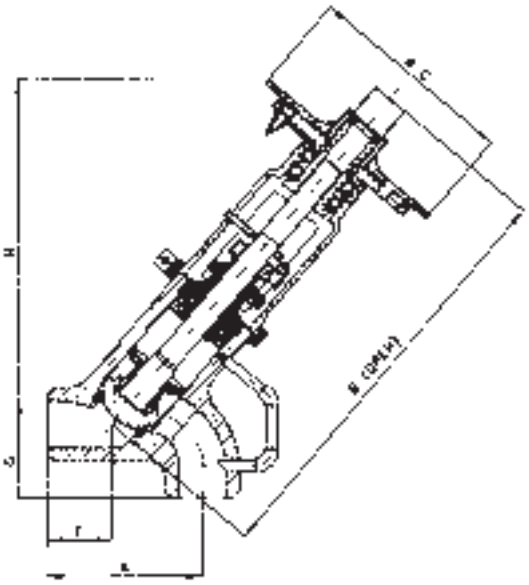
Pressure Seal Bonnet

Y-ANGLE STOP-CHECK

BPE´s elbow-down stop-check pressure seal valves are used at the **discharge of circulating pumps** on controlled circulation boilers.

Located at the inlet of the vertical discharge line, the valve has the functions of both the check valve and the stop valve.

This design includes all advantages of Y-body stop-check valves, but besides the stop function, the elbow outlet allows direct connection to the vertical line.



Dimensions are in mm, and weight in kg.

ASME CLASS	1500				
SIZE	8”	10”	12”	14”	16”
A	521	660	717	862	914
B	1520	1875	2200	2650	3250
ØC	660	1000	1000	1200	1200
H	1250	1650	1780	2000	2650
WEIGHT	1500	2800	3100	4200	5900
OPERATION	GEAR				
CV	1399	2680	3180	4387	5090

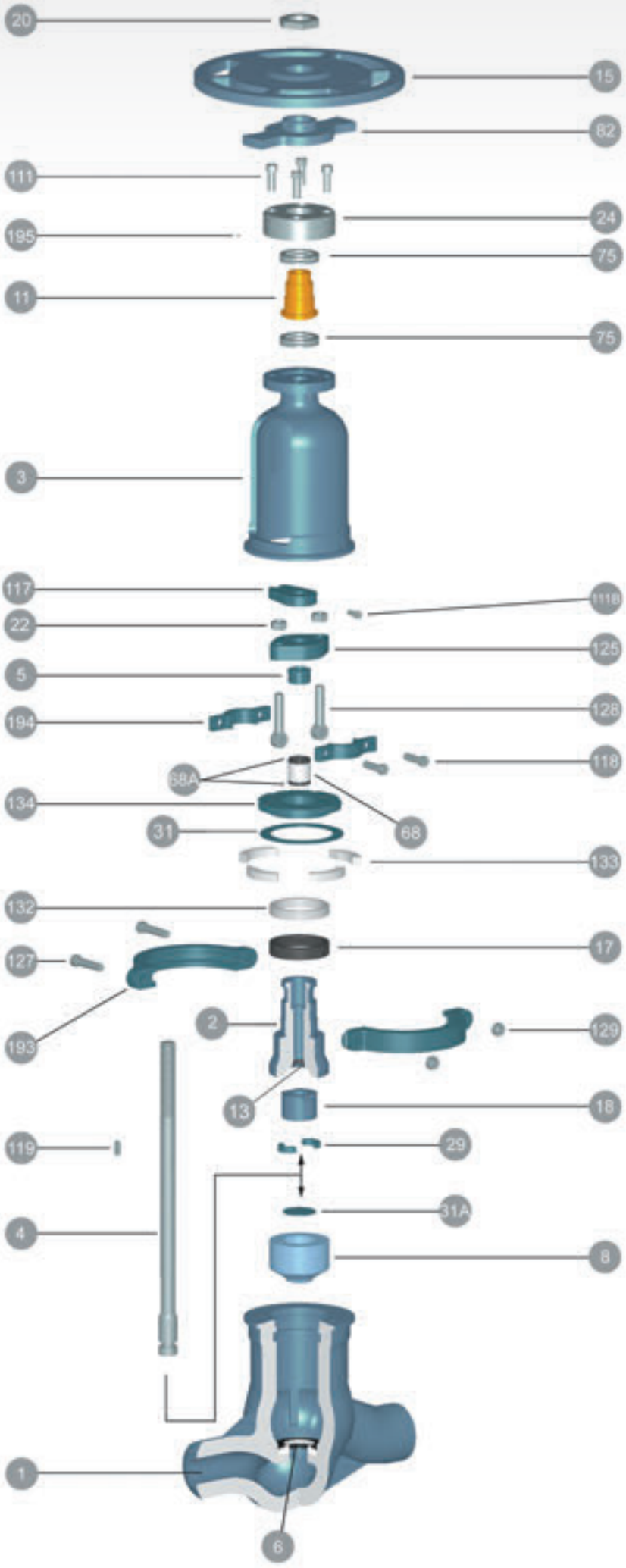
Other dimensions (F.G...) and data for different valve diameters and pressure rating to be provided upon request (table shows dimensions most commonly required valves).

ASME CLASS	2500				
SIZE	8”	10”	12”	14”	16”
A	635	790	855	950	1020
B	1660	1930	2320	2780	3370
ØC	770	1000	1200	1200	1250
H	1320	1770	1840	2110	2760
WEIGHT	1800	3010	3350	4550	6550
OPERATION	GEAR				
CV	1007	1592	2829	3415	3718

DESING FEATURES

- **Low pressure drop.**
- **Excellent resistance to thermal changes.**
- **Quick and easy repair in the line.**
- **Equalizer increases disc lift.**

  The equalizer is an external pressure-balancing pipe. It connects the relatively high pressure zone above the disc with the lower pressure area in the valve outlet. This reduces the pressure above the disc causing the higher pressure below the disc to raise the disc to full lift. The equalizer also helps to reduce pressure drop and prevents wear producing disc vibration.
- **Seat integrally stellited.**
- **Disc fully guided.**
- **Renewable disc guide bushing.**
- **Drop-tight shut-off.**
- **Pressure seal desing with clamp**, easy to disassemble.
- **Narrow tapered cone seat faces.**
- **Stem guide collar to prevent stem rotation** and serve as indicator for open and close position.
- **Impactogear operator with heavy weight construction** turning on ball bearings permitting one man to develop high torque. BPE´s designed impactor handwheels give from 3 to over 12 times the force of an ordinary handwheel to close large valves.
- **A portable air wrench operating** from 90 psi plant compressed air supply turns the valve stem. Impactor wrench connection is equipped with safety wrench guard.
- **Combined radial and thrust berings** transmit heavy opening and closing loads.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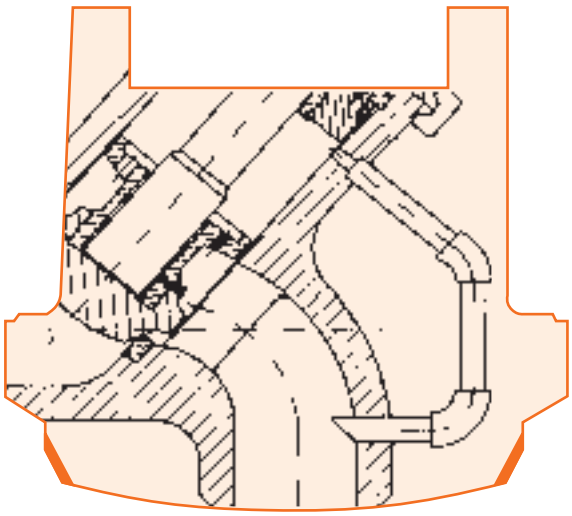
Standard Materials

	PART.	Denomination	CARBON STEEL	ALLOY STEEL	STAINLESS STEEL
	1	BODY	ASTM A 216 WCB	ASTM A 217 WC9	ASTM A 351 CF8M
	2	BONNET	ASTM A 105	ASTM A 182 F22	ASTM A 182 F316
	3	YOKE	ASTM A 216 WCB	ASTM A 216 WCB	ASTM A 216 WCB
✹	4	STEM	ASTM A 182 F6A	ASTM A 182 F6A	ASTM A 182 F316
	5	GLAND	ASTM A 182 F6A	ASTM A 182 F6A	ASTM A 182 F316
✹	6	SEAT RING	ASTM A105+STELLITE	ASTM A182F22+STELLITE	ASTM A182F316+STELLITE
✹	8	DISC	ASTM A216WCB+STELLITE	ASTM A217WC9+STELLITE	ASTM A351CF8M+STELLITE
	11	YOKE SLEEVE	ALUMINIUM-BRONZE	ALUMINIUM-BRONZE	ALUMINIUM-BRONZE
✹	13	BACK SEAT	ASTM A105+STELLITE	ASTM A182F22+STELLITE	ASTM A182F316+STELLITE
	15	HANDWHEEL	CARBON STEEL	CARBON STEEL	CARBON STEEL
	17	PRESSURE SEAL GASKET	COMPRESSED & BRAIDED GRAPHITE	COMPRESSED & BRAIDED GRAPHITE	COMPRESSED & BRAIDED GRAPHITE
✹	18	DISC NUT	ASTM A 182 F6A	ASTM A 182 F6A	ASTM A 182 F316
	20	SLEEVE NUT	CARBON STEEL	CARBON STEEL	CARBON STEEL
	22	GLAND NUT	ASTM A 194 2H	ASTM A 194 2H	ASTM A 194 2H
	24	YOKE FLANGE	CARBON STEEL	CARBON STEEL	CARBON STEEL
	29	STEM RETAINER	ASTM A 182 F6A	ASTM A 182 F6A	ASTM A 182 F316
	31	BEARING RING	ASTM A 515 Gr70	ASTM A 515 Gr70	ASTM A 515 Gr 70
	31A	DISC BEARING RING	ASTM A 182 F6A	ASTM A 182 F6A	ASTM A 182 F316
	68	INTERMEDIATE PACKING	GRAPHITE	GRAPHITE	GRAPHITE
	68A	END PACKING	BRAIDED GRAPHITE	BRAIDED GRAPHITE	BRAIDED GRAPHITE
	75	BEARING	COMMERCIAL	COMMERCIAL	COMMERCIAL
	82	IMPACTOR	CARBON STEEL	CARBON STEEL	CARBON STEEL
	111	YOKE FLANGE CAP SCREW	AISI 4140	AISI 4140	AISI 4140
	111B	LOCKING SCREW	AISI 4140	AISI 4140	AISI 4140
	117	STEM CLAMP	ASTM A 515 Gr 70	ASTM A 515 Gr 70	ASTM A 515 Gr 70
	118	GLAND RETAINER CAP SCREW	AISI 4140	AISI 4140	AISI 4140
	119	KEY	COMMERCIAL	COMMERCIAL	COMMERCIAL
	125	GLAND FLANGE	ASTM A 515 Gr 70	ASTM A 515 Gr 70	ASTM A 515 Gr 70
	127	YOKE CLAMP STUD	ASTM A 193 B7	ASTM A 193 B7	ASTM A 193 B7
	128	GLAND BOLT	ASTM A 193 B7	ASTM A 193 B7	ASTM A 193 B7
	129	YOKE CLAMP NUT	ASTM A 194 2H	ASTM A 194 2H	ASTM A 194 2H
	132	SPACER RING	ASTM A 105	ASTM A 182 F22	ASTM A 182 F316
	133	GASKET RETAINER	ASTM A 105	ASTM A 182 F22	ASTM A 182 F316
	134	BONNET RETAINER	ASTM A 515 Gr 70	ASTM A 515 Gr 70	ASTM A 515 Gr 70
	193	YOKE CLAMP	ASTM A 515 Gr 70	ASTM A 515 Gr 70	ASTM A 515 Gr 70
	194	GLAND RETAINER	ASTM A 515 Gr 70	ASTM A 515 Gr 70	ASTM A 515 Gr 70
	195	GREASE FITTING	COMMERCIAL	COMMERCIAL	COMMERCIAL

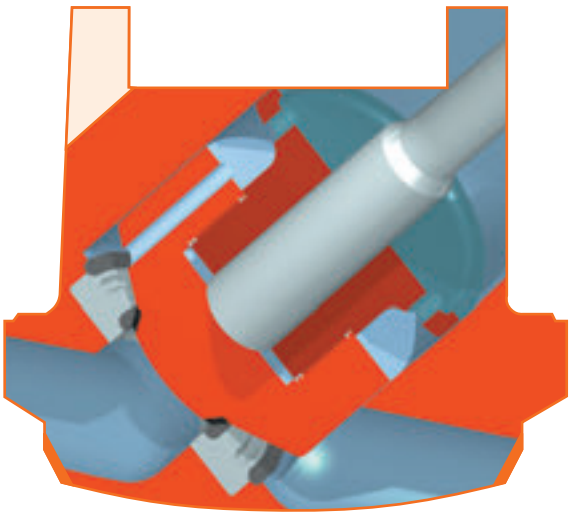
Other materials are available on request.

✹ The trim materials are:
- Stem
- Seat ring seating surfaces
- Disc seating surfaces
- Back seat seating surface or back seat
- Disc nut

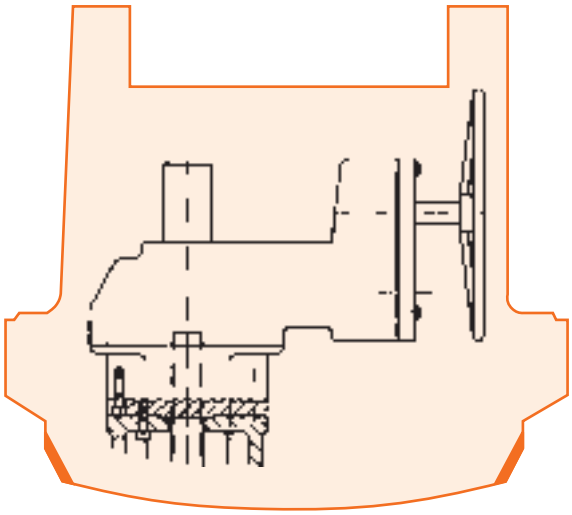
Main Accessories and Equipment



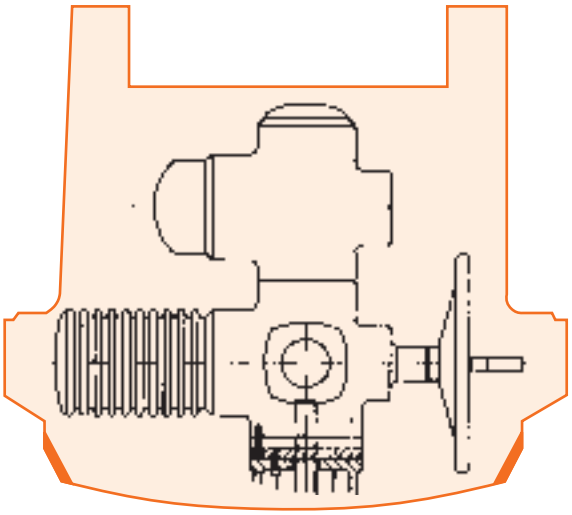
Equalizer



Stop-Check



Bevel Gear



Electric Actuator

For others accesories and equipment see technical catalogue

BABCOCK VALVES, S.L.
P.E. Abra Industrial, Parcela 1.5.6
48530 Ortuella – Bizkaia (SPAIN)
Phone: + 34 94 4536423
Fax: + 34 94 4535739
Email ID: info@babcockvalves.com
www.babcockvalves.com