Large bore valves

Powergeneration / petrochemical industries

Medium & high-pressure valves
in accordance with ASME, EN, BS and API

Valve & Automation
Total Valve & Control Solutions®

HP VALVES

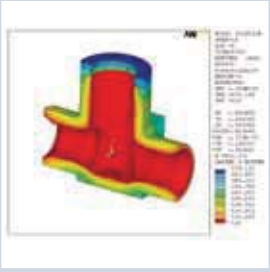
An introduction to Key Valve Technologies Ltd.

Key Valve Technologies Ltd. (KVT) was founded in 1998 in Seoul, Korea as a valve engineering company with the aim of engineering and manufacturing high-quality and innovative valves for heavy duty applications in power-generation. Its key staff members in R&D, engineering and management all have more than 15 years experience in power generation and valve engineering.

In 1996, Key Valve Technologies became a member of the 'high energy' alliance of manufacturers, led by HP Valves Oldenzaal B.V. from the Netherlands. The goal of our alliance is to build a comprehensive range of high-quality valves for contractors and OEM's in power generation, combining competitive pricing with a high level of support and service. This is achieved by disintermediation of sales channels and by establishing one project-oriented organization.

In 2008, HP Valves and KVT joined forces in order to expand their product portfolio and to increase service and capacity in the growing power-generation market. KVT became a subsidiary of HP Valves and supported by parent company Indutrade AB, listed on Nasdaq OMX Stockholm Mid Cap list, together both companies have strengthened their position as respected manufacturers of medium and high-pressure valves.

As a well-known and respected manufacturer, HP Valves B.V. is your focal point for this alliance, providing a complete range of valves and complementary services such as technical consultation, project coordination, expediting, documentation, inspection, logistical services and after sales/site services.



Design and R&D

With extensive experience within the power generation in general and valves for power generation applications in particular, KVT is setting the standard for high-quality innovative valve designs for high-energy applications. Working in close cooperation, the R&D and engineering departments are able to develop new valve designs effectively and quickly, or to customize standard products to suit customer requirements perfectly. Specialist software for CFD, fluidflow & network and FEA (linear, thermal and dynamics) support and validate the design process. For prototype testing, KVT has an in-house flow laboratory.

Quality

KVT is ISO9001 and PED approved by Bureau Veritas and has been successfully audited by major OEM's and contractors in power generation.

Production

By using specialized sub-contractors for machining, production is highly flexible and (cost-)effective. This enables KVT to focus on its core competence in design and engineering as well as on the critical manufacturing processes such as welding and PWHT, assembly and testing.

Capabilities

-Weld overlays

Various grades of weld-overlays can be applied in-house to adapt the products to your specific service conditions.

-Welding

Various welding procedures and qualifications to ASME and EN are available for seat welding, body welding and fitting accessories such as by-pass lines, pipe stubs and overpressure safety devices.

-NDE

Using specialized and qualified (level II/III) sub-contractors, various non-destructive examinations, such as radiographic and ultrasonic examination, are performed to both ASME/ASTM and EN standards. For MPE and LPE, KVT employs qualified (level II/III) personnel.

-Pneumatic and hydrostatic testing

Each and every valve is hydrostatically tested to the required standard. Upon request, various additional tests, such as pneumatic tightness testing or vacuum testing, can be conducted.

Technical benefits

Operating forces
Typically, operating forces for parallel slide gate valves are lower than for wedge gate valves. These reduced operating forces allow a reduction in size for gearboxes (if any) or actuators. For non-gear operated valves, two thrust bearings support the Al-bronze yoke sleeve.

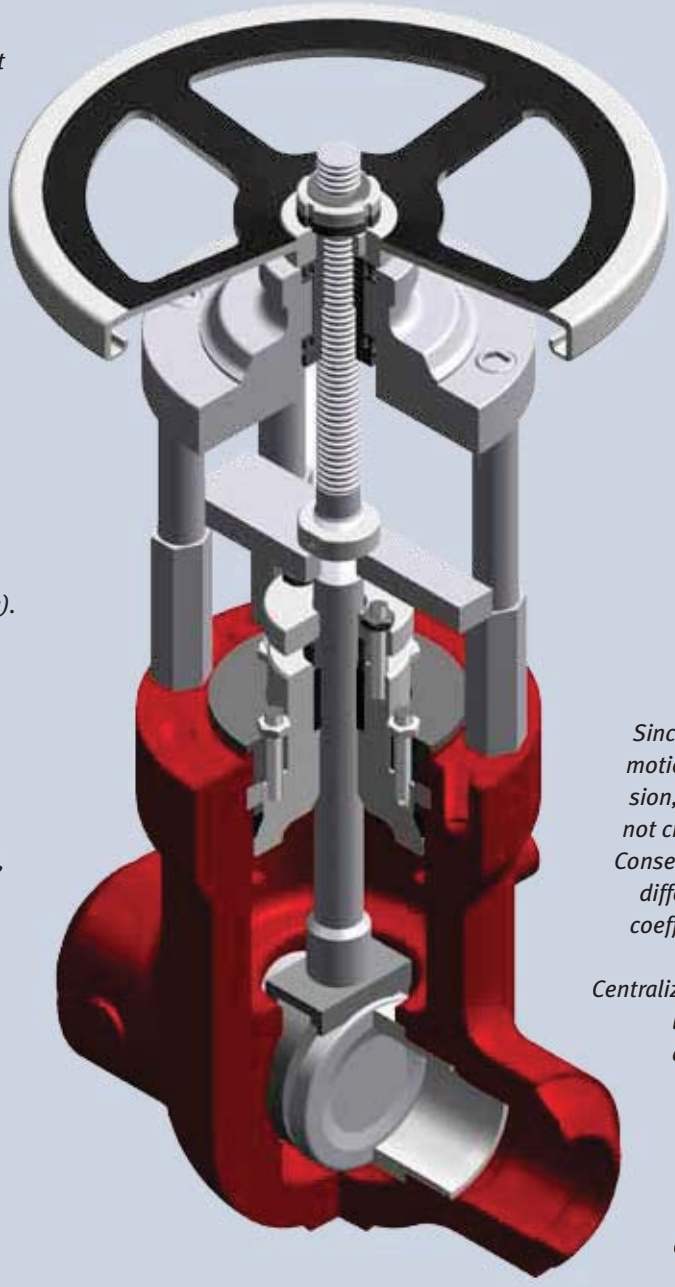
Stellited backseats
Stellited backseats provide a tight seal between valve stem and backseat in the fully open position.

Bonnet types
Valves in class 900 and higher, as well as valves operating at temperatures in excess of 450°C, are equipped with a pressure-sealed bonnet with high-density graphite gasket (with s.s. caps) for optimum sealing (the higher the pressure, the better the sealing).

Seats
All (wide and flat) seats are seal-welded inside the valve body.

Weld overlays
Different hardfacing on seats (stellite #6) and discs (stellite #12), with a hardness differential of ~ 5 HRc, minimizes galling and its cumulative effects on the sliding surfaces. This extends the service life of the valves.

Thermal binding
The design of the parallel slide gate valve eliminates the risk of sticking and thermal binding.



Intermediate positions
KVT's SPL parallel slide gate valves can be used for intermediate positions in any form of flow condition.

Spring Pack Loaded
The spring-loaded pack provides adequate sealing forces for independent discs and wide flat seats; ensuring better closure and longer service life.

Sealing
Since sealing is obtained by a sliding motion, rather than through compression, the exact position of the discs is not critical for the closing of the valve. Consequently, there is no problem with differences in the thermal expansion coefficients of the different materials.

Centralized inconel springs distribute the load uniformly across both seats, compensating for any expansion.

End connections
Although buttweld ends are most commonly used for these valves, various other ends connections, such as flanges and integrally machined clamp connectors, are also available.

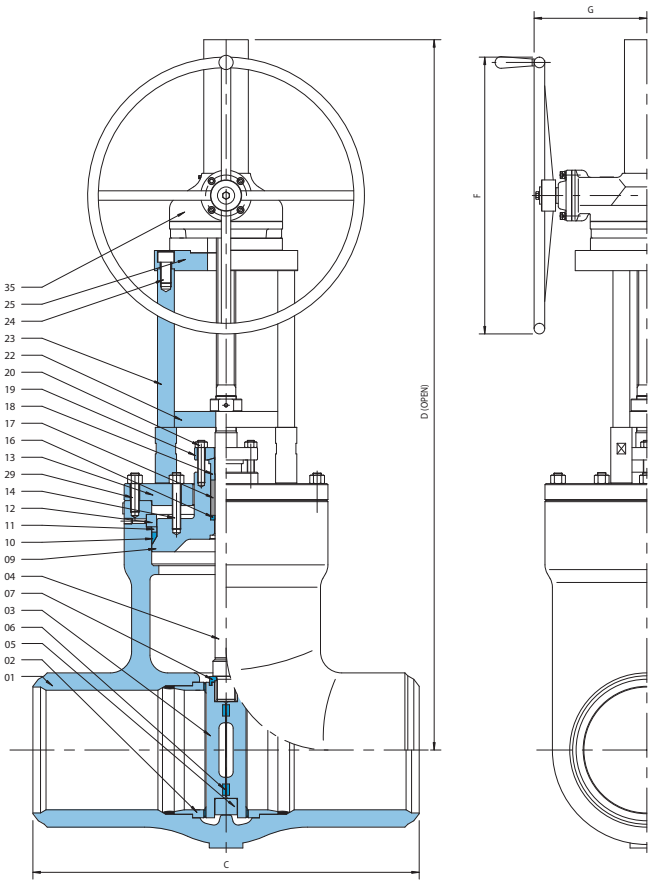
CAST STEEL GATE VALVES, PRESSURE SEAL BONNET – FIG KKP

MAKE KEY VALVE TECHNOLOGIES LTD.
ASME CLASS 600

HP VALVES

STANDARDS

DESIGN	ASME B16.34 - EN 12516 - (BS-EN 10434) - API 600
BUTTWELDING ENDS	ASME B16.25 - EN 12627 - DIN-EN 9692-1
FLANGED ENDS	RAISED FACE OR RING TYPE JOINT ACC. ASME B16.5 - EN 1759-1
END-TO-END / FACE-TO-FACE DIM	ASME B16.10 - EN 12982 / EN 558-2
PRESSURE TESTING	ASME B16.34 - EN 12266 - API 598



MATERIALS

01	BODY	(S)A216 WCB (SEE BELOW)
02	SEAT RING	A105 + STELLITE #12
03	PARALLEL DISC	A216 WCB + STELLITE #6
04	STEM	A276 410
05	DISC HOLDER	13CR
06	BELLEVILLE SPRINGS	INCONEL 718
07	DISC GUIDE	13CR
09	BONNET	(S)A216 WCB
10	GASKET	GRAPHITE/S.S
11	THRUST RING	13CR
12	SEGMENTAL RING	13CR
13	BONNET CLAMP	CARBON STEEL
14	BONNET BOLTING	A193-B7 / A194-2H
16	RING	13CR
17	STEM PACKING	GRAPHITE
18	GLAND	A276 410
19	GLAND FOLLOWER	A105
20	GLAND BOLTING	A193-B7 / A194-2H
22	POSITION INDICATOR	CARBON STEEL
23	YOKE BAR	CARBON STEEL
24	YOKE BOLT	A307-B
25	YOKE FLANGE	CARBON STEEL
29	CLAMP BOLTING	A193-B7 / A194-2H
35	GEARBOX	

FEATURES

DESIGN	CONSTRUCTION	PRESSURE SEAL BONNET AND INTEGRAL BACKSEAT
	OPTIONS	AUXILIARY CONNECTIONS AND/OR PROTECTION AGAINST FLUID THERMAL EXPANSION
	OPERATION	HANDWHEEL - GEARBOX (RECOMMENDED FOR ITEMS WITH *) - ELECTRIC OR PNEUMATIC ACTUATOR
	ACCESSORIES	LIMIT SWITCHES - LOCKING DEVICE - POSITION INDICATOR - STEM COVER (OTHERS ON REQUEST)
MATERIALS	BODY / BONNET	(S)A216 WCB - (S)A217 WC6 - (S)A217 WC9 - (S)A217 C12A (ALSO IN EN MATERIALS) (OTHERS ON REQUEST)

MAIN DIMENSIONS IN MM

CLASS	600				
NOM. SIZE	**C**	**D**	**F**	**G**	**KG**
3″ (80)	254	565	250	176	53
4″ (100)	305	780	350	186	92
6″ (150)	457	1140	450	224	210
8″ (200)	584	1400	500	237	380
10″ (250)	711	1182	* 500	237	648
12″ (300)	813	1264	* 500	237	710
14″ (350)	889	1542	* 500	237	938
16″ (400)	991	1730	* 630	258	1487
18″ (450)	1092	1776	* 710	279	1980
20″ (500)	1194	1834	* 710	279	2635
24″ (600)	1397	2105	* 800	356	3730

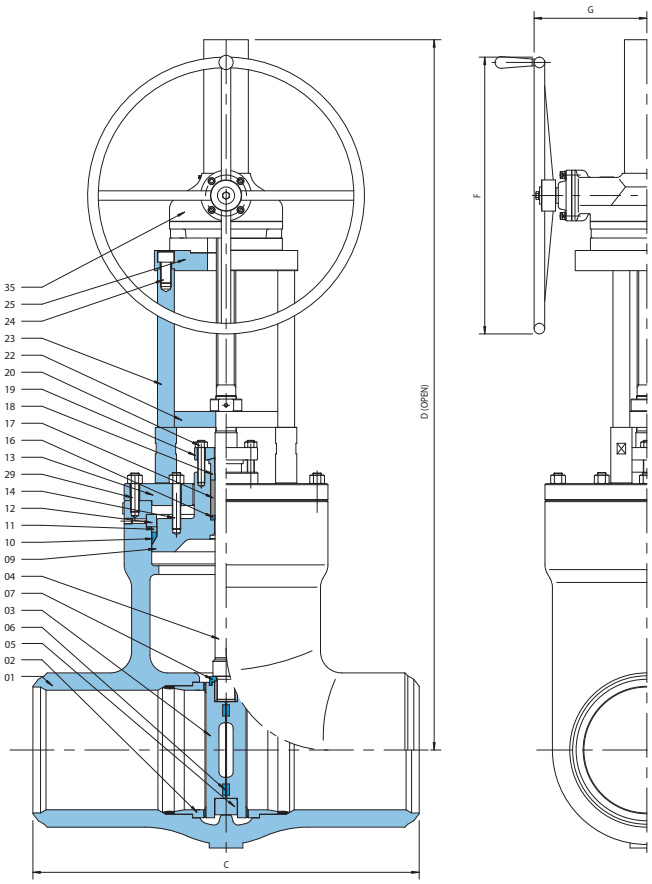
CAST STEEL GATE VALVES, PRESSURE SEAL BONNET – FIG KKP

MAKE KEY VALVE TECHNOLOGIES LTD.
ASME CLASS 900

HP VALVES

STANDARDS

DESIGN	ASME B16.34 - EN 12516 - (BS-EN 10434) - API 600
BUTTWELDING ENDS	ASME B16.25 - EN 12627 - DIN-EN 9692-1
FLANGED ENDS	RAISED FACE OR RING TYPE JOINT ACC. ASME B16.5 - EN 1759-1
END-TO-END / FACE-TO-FACE DIM	ASME B16.10 - EN 12982 / EN 558-2
PRESSURE TESTING	ASME B16.34 - EN 12266 - API 598



MATERIALS

01	BODY	(S)A216 WCB (SEE BELOW)
02	SEAT RING	A105 + STELLITE #12
03	PARALLEL DISC	A216 WCB + STELLITE #6
04	STEM	A276 410
05	DISC HOLDER	13CR
06	BELLEVILLE SPRINGS	INCONEL 718
07	DISC GUIDE	13CR
09	BONNET	(S)A216 WCB
10	GASKET	GRAPHITE/S.S
11	THRUST RING	13CR
12	SEGMENTAL RING	13CR
13	BONNET CLAMP	CARBON STEEL
14	BONNET BOLTING	A193-B7 / A194-2H
16	RING	13CR
17	STEM PACKING	GRAPHITE
18	GLAND	A276 410
19	GLAND FOLLOWER	A105
20	GLAND BOLTING	A193-B7 / A194-2H
22	POSITION INDICATOR	CARBON STEEL
23	YOKE BAR	CARBON STEEL
24	YOKE BOLT	A307-B
25	YOKE FLANGE	CARBON STEEL
29	CLAMP BOLTING	A193-B7 / A194-2H
35	GEARBOX	

FEATURES

DESIGN	CONSTRUCTION	PRESSURE SEAL BONNET AND INTEGRAL BACKSEAT
	OPTIONS	AUXILIARY CONNECTIONS AND/OR PROTECTION AGAINST FLUID THERMAL EXPANSION
	OPERATION	HANDWHEEL - GEARBOX (RECOMMENDED FOR ITEMS WITH *) - ELECTRIC OR PNEUMATIC ACTUATOR
	ACCESSORIES	LIMIT SWITCHES - LOCKING DEVICE - POSITION INDICATOR - STEM COVER (OTHERS ON REQUEST)
MATERIALS	BODY / BONNET	(S)A216 WCB - (S)A217 WC6 - (S)A217 WC9 - (S)A217 C12A (ALSO IN EN MATERIALS) (OTHERS ON REQUEST)

MAIN DIMENSIONS IN MM

CLASS	900				
NOM. SIZE	**C**	**D**	**F**	**G**	**KG**
3″ (80)	305	650	350	186	80
4″ (100)	356	810	400	224	140
6″ (150)	508	1080	500	237	282
8″ (200)	660	1260	500	237	410
10″ (250)	787	1205	* 500	237	694
12″ (300)	914	1330	* 630	258	1027
14″ (350)	991	1500	* 630	258	1213
16″ (400)	1092	1625	* 710	279	1510
18″ (450)	1219	1725	* 800	356	1750
20″ (500)	1321	1840	* 800	356	2380
24″ (600)	1549	2310	* 900	381	3650

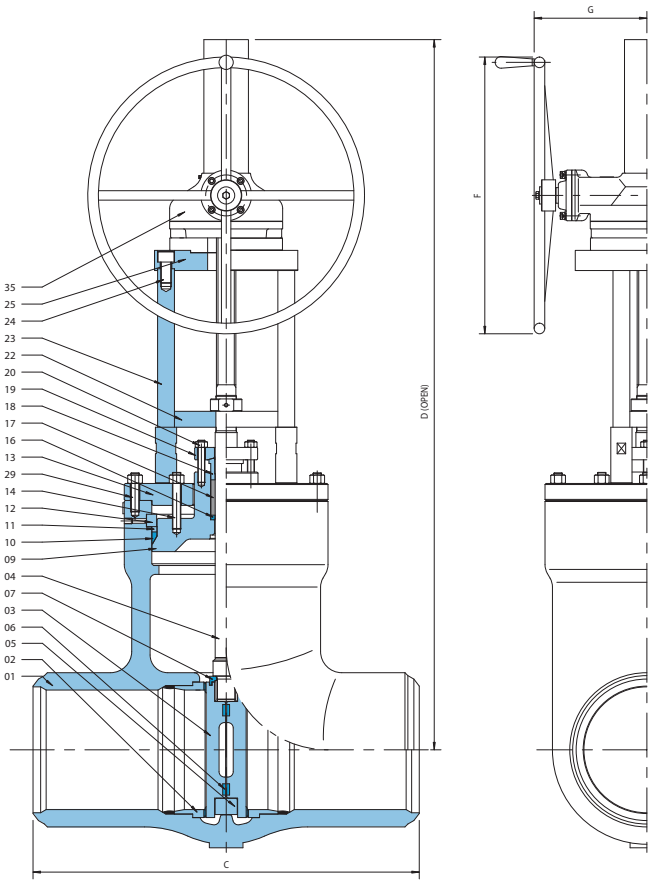
CAST STEEL GATE VALVES, PRESSURE SEAL BONNET – FIG KKP

MAKE KEY VALVE TECHNOLOGIES LTD.
ASME CLASS 1500

HP VALVES

STANDARDS

DESIGN	ASME B16.34 - EN 12516 - (BS-EN 10434) - API 600
BUTTWELDING ENDS	ASME B16.25 - EN 12627 - DIN-EN 9692-1
FLANGED ENDS	RAISED FACE OR RING TYPE JOINT ACC. ASME B16.5 - EN 1759-1
END-TO-END / FACE-TO-FACE DIM	ASME B16.10 - EN 12982 / EN 558-2
PRESSURE TESTING	ASME B16.34 - EN 12266 - API 598



MATERIALS

01	BODY	(S)A216 WCB (SEE BELOW)
02	SEAT RING	A105 + STELLITE #12
03	PARALLEL DISC	A216 WCB + STELLITE #6
04	STEM	A276 410
05	DISC HOLDER	13CR
06	BELLEVILLE SPRINGS	INCONEL 718
07	DISC GUIDE	13CR
09	BONNET	(S)A216 WCB
10	GASKET	GRAPHITE/S.S
11	THRUST RING	13CR
12	SEGMENTAL RING	13CR
13	BONNET CLAMP	CARBON STEEL
14	BONNET BOLTING	A193-B7 / A194-2H
16	RING	13CR
17	STEM PACKING	GRAPHITE
18	GLAND	A276 410
19	GLAND FOLLOWER	A105
20	GLAND BOLTING	A193-B7 / A194-2H
22	POSITION INDICATOR	CARBON STEEL
23	YOKE BAR	CARBON STEEL
24	YOKE BOLT	A307-B
25	YOKE FLANGE	CARBON STEEL
29	CLAMP BOLTING	A193-B7 / A194-2H
35	GEARBOX	

FEATURES

DESIGN	CONSTRUCTION	PRESSURE SEAL BONNET AND INTEGRAL BACKSEAT
	OPTIONS	AUXILIARY CONNECTIONS AND/OR PROTECTION AGAINST FLUID THERMAL EXPANSION
	OPERATION	HANDWHEEL - GEARBOX (RECOMMENDED FOR ITEMS WITH *) - ELECTRIC OR PNEUMATIC ACTUATOR
	ACCESSORIES	LIMIT SWITCHES - LOCKING DEVICE - POSITION INDICATOR - STEM COVER (OTHERS ON REQUEST)
MATERIALS	BODY / BONNET	(S)A216 WCB - (S)A217 WC6 - (S)A217 WC9 - (S)A217 C12A (ALSO IN EN MATERIALS) (OTHERS ON REQUEST)

MAIN DIMENSIONS IN MM

CLASS	1500					
NOM. SIZE	**C**	**D**	**F**	**G**	**Cv**	**KG**
3″ (80)	305	650	350	175	500	80
4″ (100)	406	810	400	200	880	142
6″ (150)	559	1095	500	247	1675	350
8″ (200)	711	1052	* 500	264	3080	540
10″ (250)	864	1260	* 630	289	4840	963
12″ (300)	991	1320	* 630	353	7065	1182
14″ (350)	1067	1395	* 710	353	8310	1410
16″ (400)	1194	1660	* 800	415	11280	2230
18″ (450)	1346	1705	* 900	425	14465	2915
20″ (500)	1473	1890	* 900	460	17580	4040
24″ (600)	1676	2020	* 1000	500	25000	6375

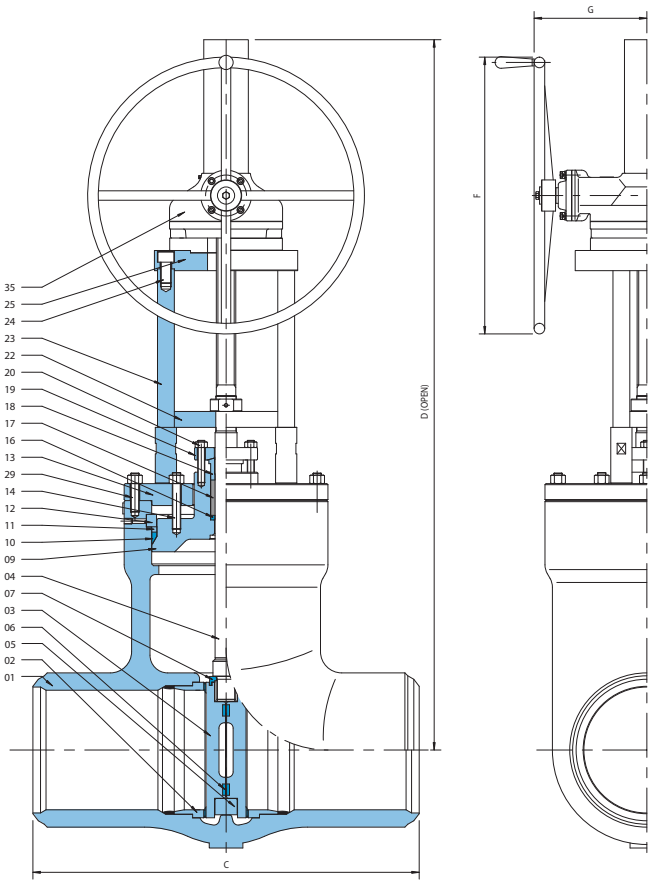
CAST STEEL GATE VALVES, PRESSURE SEAL BONNET – FIG KKP

MAKE KEY VALVE TECHNOLOGIES LTD.
ASME CLASS 2500

HP VALVES

STANDARDS

DESIGN	ASME B16.34 - EN 12516 - (BS-EN 10434) - API 600
BUTTWELDING ENDS	ASME B16.25 - EN 12627 - DIN-EN 9692-1
FLANGED ENDS	RAISED FACE OR RING TYPE JOINT ACC. ASME B16.5 - EN 1759-1
END-TO-END / FACE-TO-FACE DIM	ASME B16.10 - EN 12982 / EN 558-2
PRESSURE TESTING	ASME B16.34 - EN 12266 - API 598



MATERIALS

01	BODY	(S)A216 WCB (SEE BELOW)
02	SEAT RING	A105 + STELLITE #12
03	PARALLEL DISC	A216 WCB + STELLITE #6
04	STEM	A276 410
05	DISC HOLDER	13CR
06	BELLEVILLE SPRINGS	INCONEL 718
07	DISC GUIDE	13CR
09	BONNET	(S)A216 WCB
10	GASKET	GRAPHITE/S.S
11	THRUST RING	13CR
12	SEGMENTAL RING	13CR
13	BONNET CLAMP	CARBON STEEL
14	BONNET BOLTING	A193-B7 / A194-2H
16	RING	13CR
17	STEM PACKING	GRAPHITE
18	GLAND	A276 410
19	GLAND FOLLOWER	A105
20	GLAND BOLTING	A193-B7 / A194-2H
22	POSITION INDICATOR	CARBON STEEL
23	YOKE BAR	CARBON STEEL
24	YOKE BOLT	A307-B
25	YOKE FLANGE	CARBON STEEL
29	CLAMP BOLTING	A193-B7 / A194-2H
35	GEARBOX	

FEATURES

DESIGN	CONSTRUCTION	PRESSURE SEAL BONNET AND INTEGRAL BACKSEAT
	OPTIONS	AUXILIARY CONNECTIONS AND/OR PROTECTION AGAINST FLUID THERMAL EXPANSION
	OPERATION	HANDWHEEL - GEARBOX (RECOMMENDED FOR ITEMS WITH *) - ELECTRIC OR PNEUMATIC ACTUATOR
	ACCESSORIES	LIMIT SWITCHES - LOCKING DEVICE - POSITION INDICATOR - STEM COVER (OTHERS ON REQUEST)
MATERIALS	BODY / BONNET	(S)A216 WCB - (S)A217 WC6 - (S)A217 WC9 - (S)A217 C12A (ALSO IN EN MATERIALS) (OTHERS ON REQUEST)

MAIN DIMENSIONS IN MM

CLASS	2500					
NOM. SIZE	**C**	**D**	**F**	**G**	**Cv**	**KG**
3″ (80)	368	620	400	224	300	110
4″ (100)	457	775	450	224	510	160
6″ (150)	610	1055	500	237	1140	446
8″ (200)	762	975	* 630	258	2065	615
10″ (250)	914	1145	* 710	279	3315	1050
12″ (300)	1041	1330	* 800	356	4980	1650
14″ (350)	1181	1395	* 800	356	5810	1910
16″ (400)	1245	1490	* 900	381	7100	2915
18″ (450)	1397	1660	* 900	381	9525	3880
20″ (500)	1473	1800	* 1000	444	10500	5250

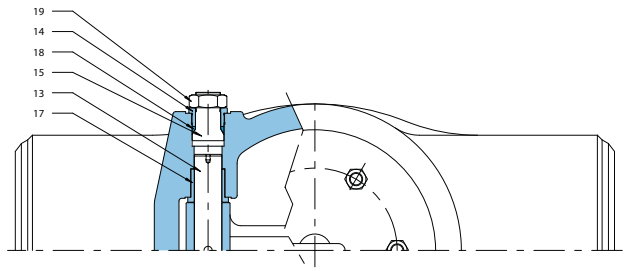
CAST STEEL CHECK VALVES, PRESSURE SEAL BONNET – FIG KCP

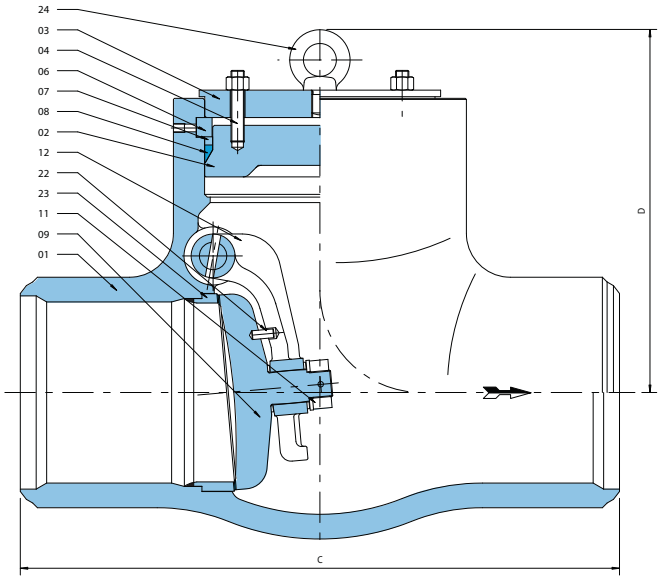
MAKE KEY VALVE TECHNOLOGIES LTD.
ASME CLASS 1500

HP VALVES

STANDARDS

DESIGN	ASME B16.34 - EN 12516 - (BS 1868) - API 6D
BUTTWELDING ENDS	ASME B16.25 - EN 12627 - DIN-EN 9692-1
FLANGED ENDS	RAISED FACE OR RING TYPE JOINT ACC. ASME B16.5 - EN 1759-1
END-TO-END / FACE-TO-FACE DIM	ASME B16.10 - EN 12982 / EN 558-2
PRESSURE TESTING	ASME B16.34 - EN 12266 - API 598





MATERIALS

01	BODY	(S)A216 WCB (SEE BELOW)
02	BONNET	(S)A216 WCB
03	COVER	A105
04	BONNET BOLTING	A193-B7 / A194-2H
06	SEGMENTAL RING	13CR
07	THRUST RING	13CR
08	GASKET	GRAPHITE/S.S.
09	DISC	A216 WCB + STELLITE
11	DISC NUT	A276 410
12	HINGE	A216 WCB
13	HINGE PIN	A276 410
14	RETAINER	A276 410
15	BONNET	A105
17	HINGE PIN BEARING	13CR + STELLITE
18	HINGE PIN GASKET	GRAPHITE
19	NUT	A194 2H
22	PIN	A276 410
23	SEAT RING	A105 + STELLITE
24	LIFT EYE BOLT	CARBON STEEL

FEATURES

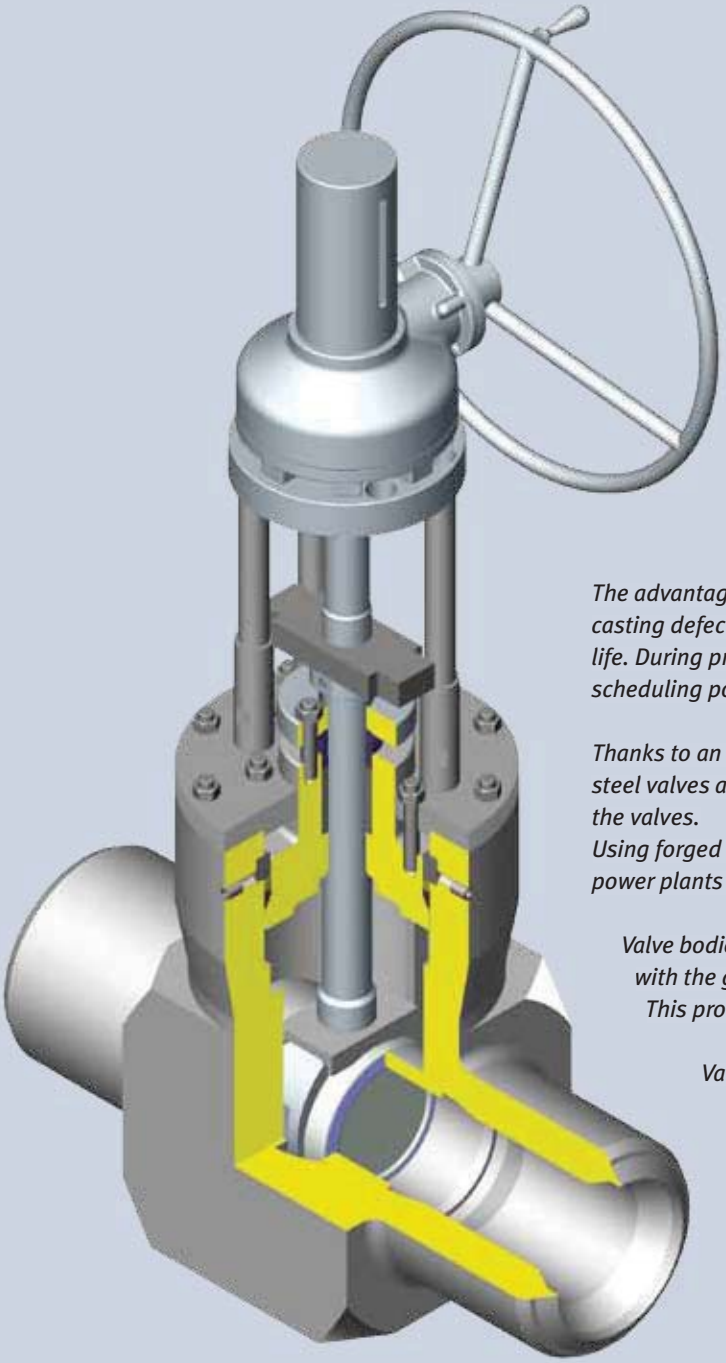
DESIGN	CONSTRUCTION	SWING CHECK VALVE WITH PRESSURE SEAL BONNET
	ALTERNATIVES	TILTING DISC OR SPRING ASSISTED PISTON TYPE CHECK VALVES
	OPTIONS	AUXILIARY CONNECTIONS
	ACCESSORIES	WEIGHT AND DASHPOT (OTHERS ON REQUEST)
MATERIALS	BODY / BONNET	(S)A216 WCB - (S)A217 WC6 - (S)A217 WC9 - (S)A217 C12A (ALSO IN EN MATERIALS) (OTHERS ON REQUEST)

MAIN DIMENSIONS IN MM

CLASS	1500			
NOM. SIZE	**C**	**D**	**Cv**	**KG**
3" (80)	305	220	240	64
4" (100)	406	270	410	156
6" (150)	559	352	910	360
8" (200)	711	378	1520	560
10" (250)	864	452	2650	740
12" (300)	991	522	3300	920
14" (350)	1067	550	4260	1040
16" (400)	1194	640	5920	1280
18" (450)	1537	710	7040	1880
20" (500)	1664	778	8820	2310
24" (600)	1943	820	10500	3080

Forged steel valves

u/i 36" (DN900) / 4500lbs (PN640)



The advantage of using forgings instead of castings is the elimination of casting defects, which results in a longer guaranteed trouble-free service life. During production, the quality of the material also makes accurate scheduling possible.

Thanks to an ultrasonic examination of the body and bonnet, all forged steel valves are rated 'special class', widening the range of applications for the valves.
Using forged steel valve bodies, for applications in super-critical cool fired power plants F92 material can be offered as well.

Valve bodies in sizes up to and including 14" are single-piece free forgings with the grain structure perfectly following the outside shape. This provides optimum strength and transmission of stress.

Valve bodies in sizes exceeding 14" are produced using 2 or more free forged body parts. Of course, welding and PWHT is conducted in accordance with ASME and/or EN-standards. All full penetration welds are examined radiographically 100 percent.

All seat-welding and subsequent post-weld heat treatment is performed in accordance with ASME and EN-standards. To ensure proper functioning and closure, pressure testing and functional testing are conducted on each and every valve.

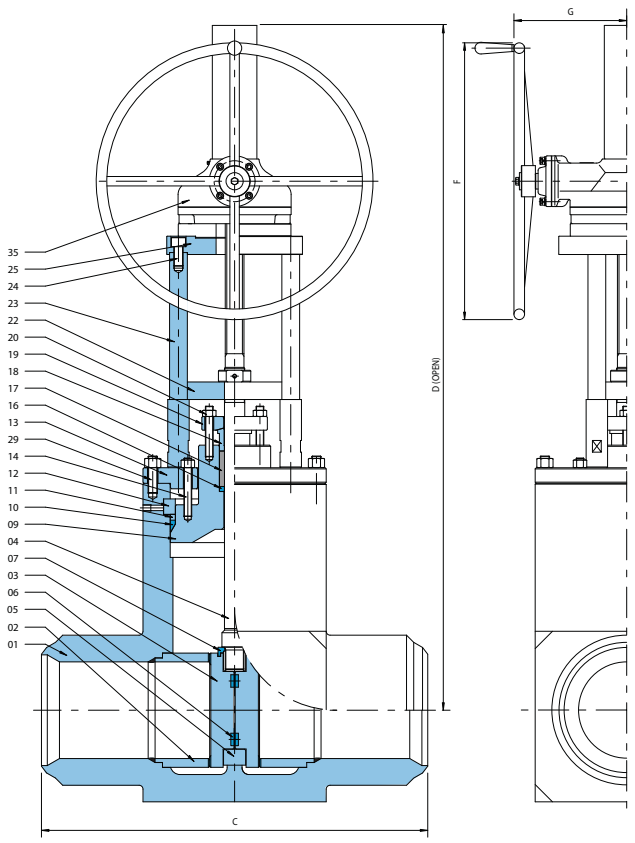
FORGED STEEL GATE VALVES, PRESSURE SEAL BONNET – FIG KJP

MAKE KEY VALVE TECHNOLOGIES LTD.
ASME CLASS 1500 / 2500 (3500 & 4500 ALSO AVAILABLE)
EN RATING PN250 - PN500 (B760)

HP VALVES

STANDARDS

DESIGN	ASME B16.34 - EN 12516 - (BS-EN 10434) - API 600
BUTTWELDING ENDS	ASME B16.25 - EN 12627 - DIN-EN 9692-1
END-TO-END / FACE-TO-FACE DIM	ASME B16.10 - EN 12982 / EN 558-2
PRESSURE TESTING	ASME B16.34 - EN 12266 - API 598



MATERIALS

01	BODY	(S)A105N (SEE BELOW)
02	SEAT RING	A105 + STELLITE #12
03	PARALLEL DISC	A105 + STELLITE #6
04	STEM	A276 410
05	DISC HOLDER	13CR
06	BELLEVILLE SPRINGS	INCONEL 718
07	DISC GUIDE	13CR
09	BONNET	(S)A105N
10	GASKET	GRAPHITE/S.S
11	THRUST RING	13CR
12	SEGMENTAL RING	13CR
13	BONNET CLAMP	CARBON STEEL
14	BONNET BOLTING	A193-B7 / A194-2H
16	RING	13CR
17	STEM PACKING	GRAPHITE
18	GLAND	A276 410
19	GLAND FOLLOWER	A105
20	GLAND BOLTING	A193-B7 / A194-2H
22	POSITION INDICATOR	CARBON STEEL
23	YOKE BAR	CARBON STEEL
24	YOKE BOLT	A307-B
25	YOKE FLANGE	CARBON STEEL
29	CLAMP BOLTING	A193-B7 / A194-2H
35	GEARBOX	

FEATURES

DESIGN	CONSTRUCTION	PRESSURE SEAL BONNET AND INTEGRAL BACKSEAT
	OPTIONS	AUXILIARY CONNECTIONS AND/OR PROTECTION AGAINST FLUID THERMAL EXPANSION
	OPERATION	HANDWHEEL - GEARBOX (RECOMMENDED FOR ITEMS WITH *) - ELECTRIC OR PNEUMATIC ACTUATOR
	ACCESSORIES	LIMIT SWITCHES - LOCKING DEVICE - POSITION INDICATOR - STEM COVER (OTHERS ON REQUEST)
MATERIALS	BODY / BONNET	(S)A105N - (S)A182-F11 - (S)A182-F22 - (S)A182-F91 - (S)A182-F92 (OTHERS ON REQUEST)
	EN MATERIALS	1.0460 - 13CrMo4.5 - 11CrMo9.10 - 1.4903 - 1.4901

MAIN DIMENSIONS IN MM

CLASS	1500						2500					
NOM. SIZE	C	D	F	G	Cv	KG	C	D	F	G	Cv	KG
6″ (150)	559	940	500	247	1675	350	610	925	* 500	247	1140	396
8″ (200)	711	1150	* 500	264	3080	520	762	1050	* 630	264	2065	680
10″ (250)	864	1325	* 630	289	4840	890	914	1260	* 710	289	3315	945
12″ (300)	991	1600	* 630	353	7065	1180	1041	1530	* 800	353	4980	1510
14″ (350)	1067	1670	* 710	353	8310	1380	1118	1591	* 800	353	5810	1880
16″ (400)	1194	1876	* 800	415	11280	2180	1245	1490	* 900	415	7100	2210
18″ (450)	1346	2086	* 900	415	14465	2840	1397	1971	* 900	415	9525	2640
20″ (500)	1473	2276	* 900	460	17580	3680	1473	2281	* 1000	460	10500	3880
24″ (600)	1676	2450	* 1000	500	25000	5110						

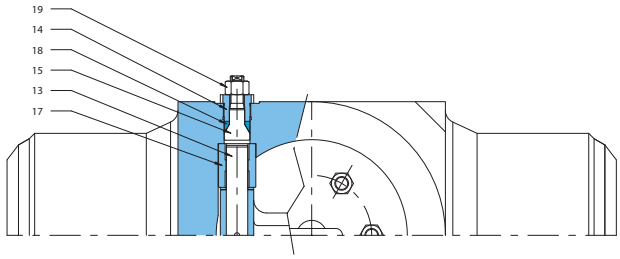
FORGED STEEL CHECK VALVES, PRESSURE SEAL BONNET – FIG KPP

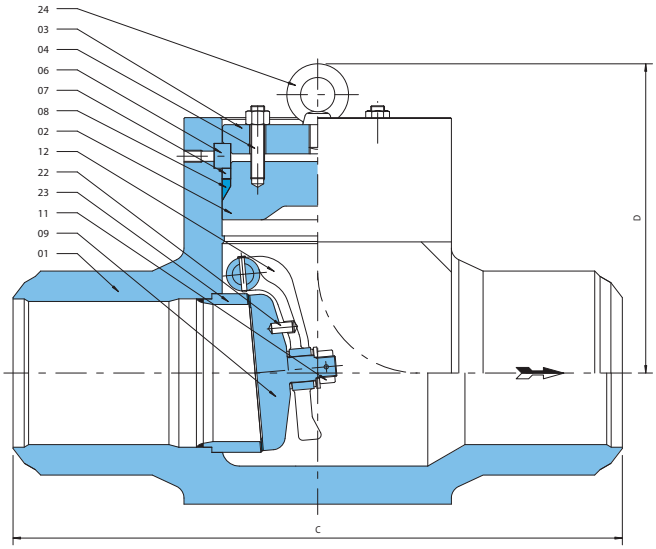
MAKE KEY VALVE TECHNOLOGIES LTD.
ASME CLASS 1500 / 2500 (3500 & 4500 ALSO AVAILABLE)
EN CLASS PN250 - PN500 (B760)

HP VALVES

STANDARDS

DESIGN	ASME B16.34 - EN 12516 - (BS 1868) - API 6D
BUTTWELDING ENDS	ASME B16.25 - EN 12627 - DIN-EN 9692-1
END-TO-END / FACE-TO-FACE DIM	ASME B16.10 - EN 12982 / EN 558-2
PRESSURE TESTING	ASME B16.34 - EN 12266 - API 598





MATERIALS

01	BODY	(S)A105N (SEE BELOW)
02	BONNET	(S)A105N
03	COVER	A105
04	BONNET BOLTING	A193-B7 / A194-2H
06	SEGMENTAL RING	13CR
07	THRUST RING	13CR
08	GASKET	GRAPHITE/S.S.
09	DISC	A105 + STELLITE
11	DISC NUT	A276 410
12	HINGE	A216 WCB
13	HINGE PIN	A276 410
14	RETAINER	A276 410
15	BONNET	A105
17	HINGE PIN BEARING	13CR + STELLITE
18	HINGE PIN GASKET	GRAPHITE
19	NUT	A194 2H
22	PIN	A276 410
23	SEAT RING	A105 + STELLITE
24	LIFT EYE BOLT	CARBON STEEL

FEATURES

DESIGN	CONSTRUCTION	SWING CHECK VALVE WITH PRESSURE SEAL BONNET
	ALTERNATIVES	TILTING DISC OR SPRING ASSISTED PISTON TYPE CHECK VALVES
	OPTIONS	AUXILIARY CONNECTIONS
	ACCESSORIES	WEIGHT AND DASHPOT (OTHERS ON REQUEST)
MATERIALS	BODY / BONNET	(S)A105N - (S)A182-F11 - (S)A182-F22 - (S)A182-F91 - (S)A182-F92 (OTHERS ON REQUEST)
	EN MATERIALS	1.0460 - 13CrMo4.5 - 10CrMo9.10 - 1.4903 - 1.4901

MAIN DIMENSIONS IN MM

CLASS	1500				2500			
NOM. SIZE	**C**	**D**	**Cv**	**KG**	**C**	**D**	**Cv**	**KG**
6″ (150)	559	352	820	228	610	332	620	280
8″ (200)	711	378	1350	360	762	342	1080	430
10″ (250)	864	454	2400	560	914	398	1720	610
12″ (300)	991	522	3300	960	1041	444	2410	1040
14″ (350)	1067	576	4080	1220	1118	495	2900	1480
16″ (400)	1194	648	5320	1480	1219	580	3760	1720
18″ (450)	1537	706	6740	1810	1346	692	4500	2220
20″ (500)	1664	778	8420	2310	1448	750	5700	2680
24″ (600	1943	820	10500	2940				

Accessories and Pressure equalizing

Special trims for throttling and intermediate positions

Parallel Slide Gate Control Valves
Linear Characteristic

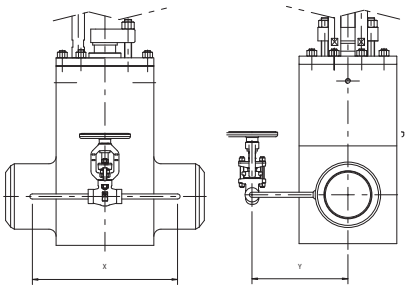
Parallel Slide Gate Control Valves
EQ% Characteristic

Parallel Slide Gate Control Valves
Pressure Let-Down

Bypasses MSS SP 45 Series A

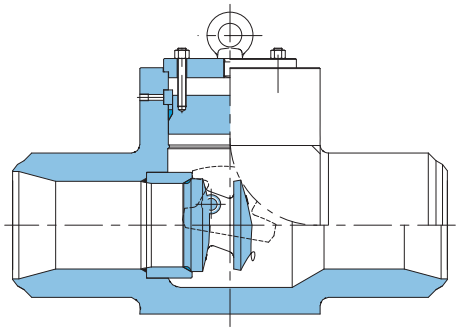
Bypasses are used in steam service for warming up before the main line is opened and for balancing pressure where the lines are of limited volume. Bypasses are attached at the side of the main valve with the stem of vboth valves parallel, pointing vertically upward.

Bypass sizes according MSS SP - 45, Series A



Class	Main Valve (NPS)	X		Y		Bypass Size (NPS)
		mm	inch	mm	inch	
1500	8	305	12,01	400	15,75	3/4
	10	335	13,19	420	16,54	1
	12	370	14,57	520	20,47	1
	14	390	15,35	570	22,44	1
	16	445	17,52	650	25,59	1
	18	500	19,69	670	26,38	1
	20	560	22,05	700	27,56	1
2500	6	290	11,42	420	16,54	3/4
	8	350	13,78	430	16,93	3/4
	10	390	15,35	510	20,08	1
	12	450	17,72	600	23,62	1
	14	450	17,72	700	27,56	1
	16	500	19,69	750	29,53	1
	18	550	21,65	800	31,50	1

Other products available include tilting disc check valves



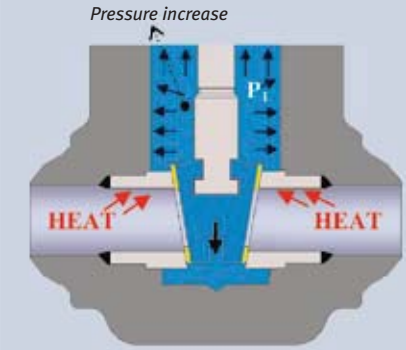
Pressure equalizing

Under certain process conditions, the force required to 'unseat' the discs may increase due to the following phenomena

OVER PRESSURIZATION

Over pressurization may result when liquid, entrapped in the center cavity of valves, is heated up.

- *The trapped fluid expands and the increase in pressure may make the valve inoperable.*
- *Over pressurization may occur in both pressure seal and bolted bonnet type valves and is not restricted to certain valve sizes.*

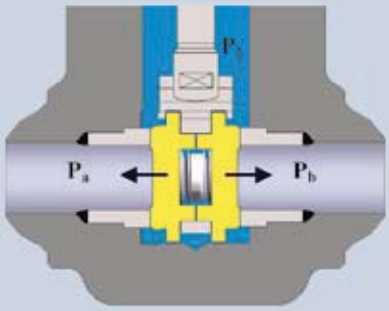


Over-Pressurization

P1 = Pressure of trapped liquid between seats

PRESSURE LOCKING

When P1 is significantly larger than Pa or Pb, pressure locking occurs. The potential for pressure locking is somewhat greater in parallel slide gate valves (double disc gate) due to the effective area on which the entrapped pressure acts.



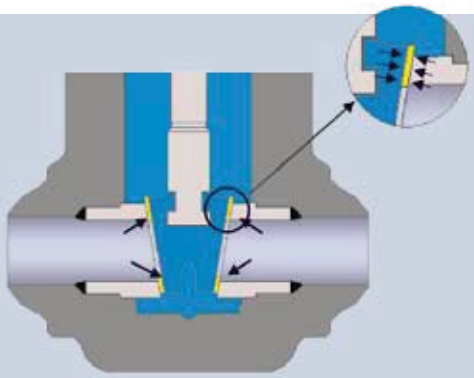
Pressure Locking

P1 = Pressure of trapped liquid between seats
Pa or Pb = Line Pressure

THERMAL BINDING

Thermal binding may occur in high temperature wedge type gate valves between the wedge and seats due to temperature differential between inlet and outlet of the valve, when the valve was closed hot and the system cools down.

- *It may make the valve inoperable.*
- *While wedge type gate valves are susceptible to thermal binding, parallel slide valves are not.*



Thermal Binding

If the evaluation of process and piping-layout demonstrates these potential risks, the solution for over-pressurization and pressure locking is to provide pressure relief from the body cavity.
This can be done in several ways.

- *Figures A en B make the valve uni-directional.*
- *The equalizing valve in Figure C should always be open.*
- *Figures D and E require piping for the auxiliary connection to exhaust safely.*

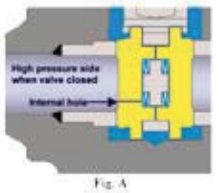


Fig. A

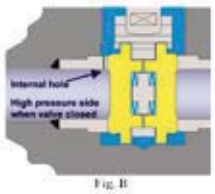


Fig. B

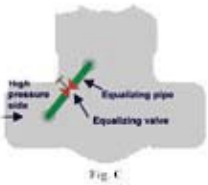


Fig. C

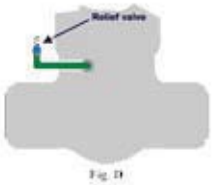


Fig. D

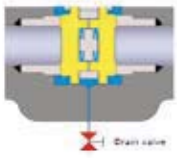


Fig. E

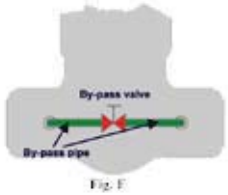


Fig. F

A bypass line (with valve) will allow both sides of the disc(s) to warm up and minimizes the risk of thermal binding. Parallel slide gate valves, however, are not susceptible to thermal binding thanks to the parallel disc design and therefore do not need this provision.

Combined effects of over pressurization, pressure locking and thermal binding can be prevented by one of the options G though J.
Please contact us for a more specific recommendation on any of the above mentioned phenomena.

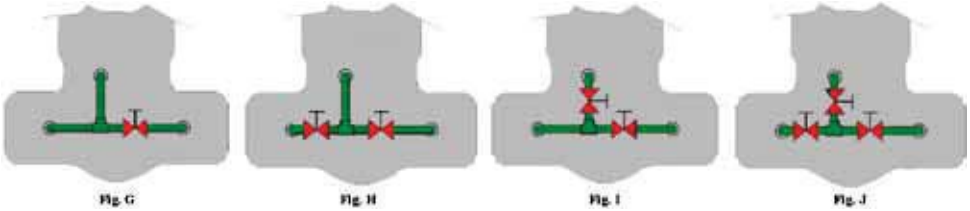


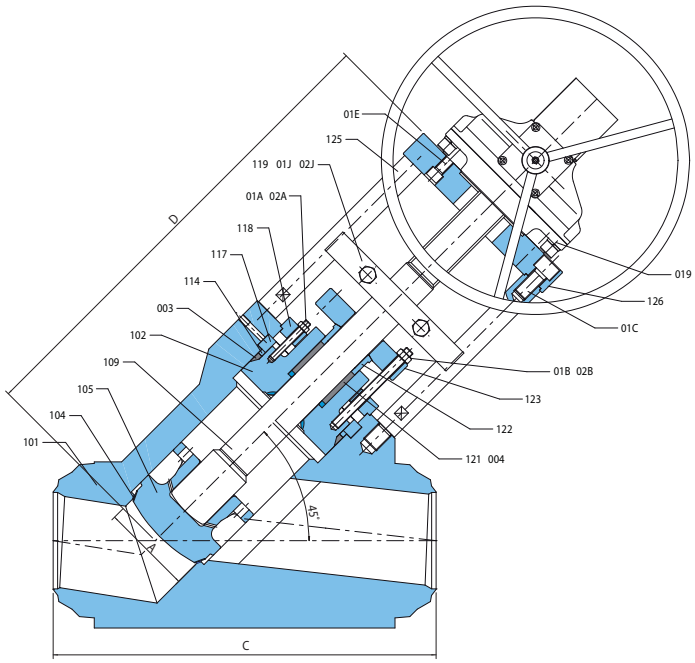
Fig. G Fig. H Fig. I Fig. J

FORGED STOP-CHECK SDNR VALVES, PRESSURE SEAL BONNET – FIG KYP

MAKE	KEY VALVE TECHNOLOGIES LTD.
ASME CLASS	1500 / 2500 (4500)
EN RATING	PN160 - PN500 (B760)

STANDARDS

DESIGN	ASME B16.34 - EN 12516 - (BS 1873)
BUTTWELDING ENDS	ASME B16.25 - EN 12627 - DIN-EN 9692-1
END-TO-END DIMENSIONS	ASME B16.10 - EN 12982 / EN 558-2 - MANUFACTURERS STANDARD
PRESSURE TESTING	ASME B16.34 - EN 12266 - API 598



MATERIALS

101	BODY	(S)A105N (SEE BELOW)
102	BONNET	(S)A105N
104	SEAT	STELLITE
105	DISC	A105 - STELLITE #6
109	STEM	A276-410
114	GASKET RING	13Cr SS
117	RETAINER	13Cr SS
118	BONNET CLAMP	13Cr SS
119	STOPPER	CARBON STEEL
121	PACKING RING	A476-410
122	GLAND	A276-410
123	GLAND FLANGE	CARBON STEEL
125	YOKE BAR	CARBON STEEL
126	YOKE FLANGE	CARBON STEEL
003	GASKET	GRAPHITE
004	PACKING	GRAPHITE
006	NAMEPLATE	STAINLESS STEEL
019	GEARBOX	MAKE : SAMBO
01A	BONNET BOLT	A193-B7
02A	BONNET NUT	A194-2H
01B	GLAND BOLT	A193-B7
02B	GLAND NUT	A194-2H
01C	H.S.H. BOLT	A307-B
01E	ACTUATOR BOLT	A307-B
01J	CLAMP BOLT	CARBON STEEL
02J	CLAMP NUT	CARBON STEEL

FEATURES

DESIGN	CONSTRUCTION	PRESSURE SEAL BONNET AND INTEGRAL BACKSEAT
	OPTIONS	AUXILIARY CONNECTIONS
	OPERATION	GEARBOX WITH HANDWHEEL - ELECTRIC OR PNEUMATIC ACTUATOR
	ACCESSORIES	LIMIT SWITCHES - LOCKING DEVICE (OTHERS ON REQUEST)
MATERIALS	BODY / BONNET	(S)A105N - (S)A182-F22 - (S)A182-F91 - (S)A182-F92 (OTHERS ON REQUEST)
	EN MATERIALS	1.0460 - 13CrMo4.5 - 10CrMo9.10 - 1.4903 - 1.4901

MAIN DIMENSIONS IN MM

CLASS	1500					2500				
NOM. SIZE	**A**	**C**	**D**	**Cv**	**WEIGHT KG**	**A**	**C**	**D**	**Cv**	**WEIGHT KG**
6″ (150)	125	559	750	630	420	105	610	760	450	490
8″ (200)	165	711	760	1100	690	140	762	780	790	820
10″ (250)	205	864	960	1690	1070	175	914	1010	1230	1180
12″ (300)	240	991	1100	2320	1750	210	1041	1140	1780	2220
14″ (265)	265	1067	1310	2820	1800	230	1118	1380	2130	2260
16″ (305)	300	1194	1520	3740	2620	265	1245	1600	2820	3250
18″ (340)	335	1346	1720	4650	3800	295	1397	1840	3500	4240

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