



FLO-MAX

TWO PIECE FLOATING BALL



KPC CORPORATION
FLOW CONTROL DIVISION

Design Features

Floating Ball Valves, Class 150/300

Parallel Flat Stem Head— provides a positive indication of the ball position.

Adjustable KPC CHEVRON Stem Packing
KPC Flanged Ball Valves feature Chevron stem packing. One of the best stem seal designs available.

Lower Operating Torque— for ease of operation and reduced manual and automatic actuator cost.

Simple Stem Connection— for mounting various types of operators.

Combination Lock-Stop— in open and closed position.

PTFE Stem Bearing for Long Cycle Service.

Metal-to-Metal Firesafe Contact

Machining Accuracy and Ultra Smooth Surface Finish— assures long life and dependable operation over a wide range of pressures and temperatures. (Ball sphericity : $\pm 0008''$. Surface finish : 4 RMS)

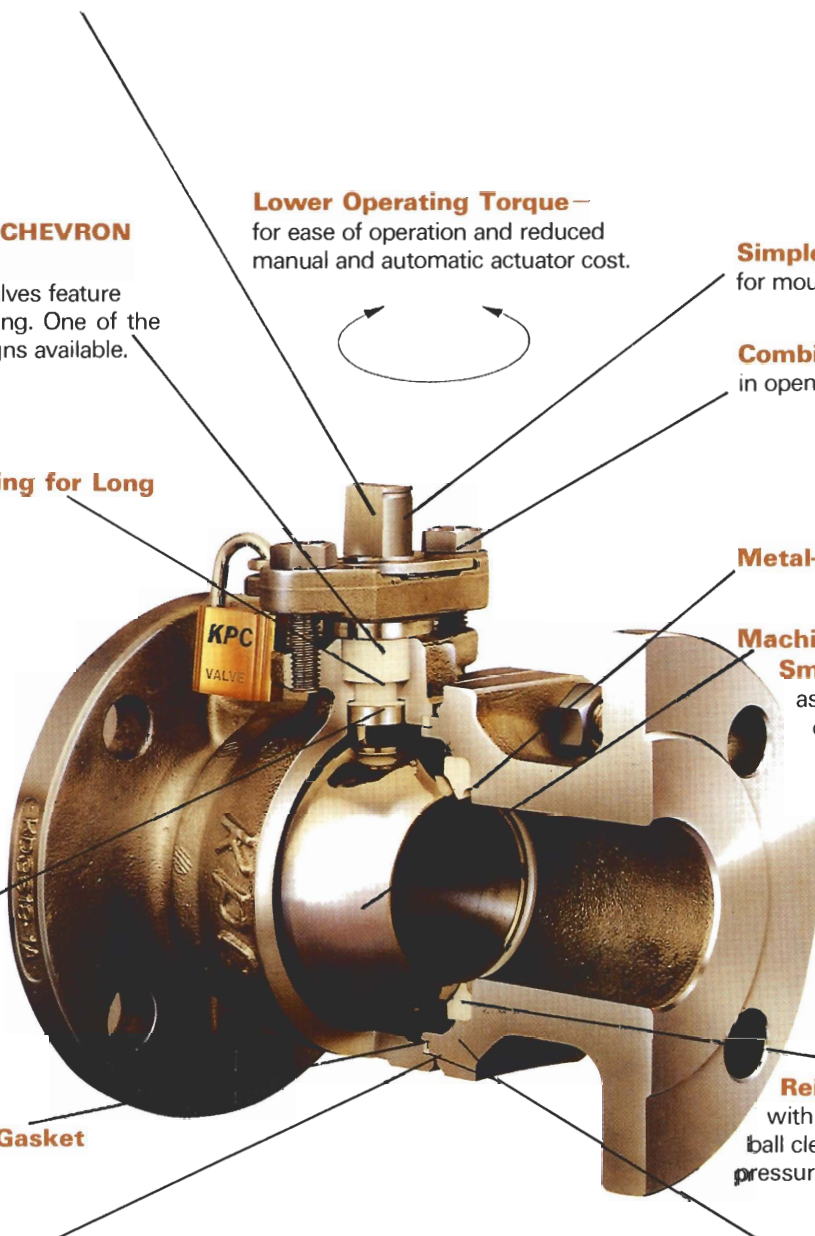
Fire-Safe, Blow-Out-Proof Stem

PTFE Body Seal Gasket

Reinforced PTFE Seat/Seal— with built-in spring action wipes the ball clean, insuring positive shut-off for pressure or vacuum service.

Metal-to-Metal Firesafe Contact

Split Body Construction with positive Alignment and Bolted Design— provides maximum protection against line stresses and thermal distortion. Also provides a metal-to-metal fire-safe seal.



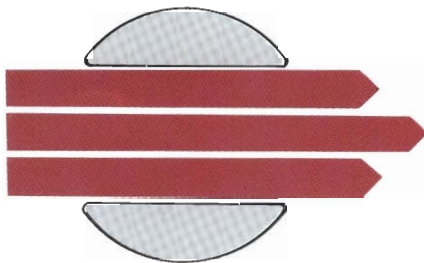
KPC FLO-MAX Ball Valves

Features and Benefits

KPC's FLO-MAX series ball valves are off-the-shelf standard valves that incorporate many special features. This series of valves is designed for both pressure and vacuum service.

The FLO-MAX valves have multiple fire safe guards : a secondary metal seat ; a blowout-proof stem ; and a static electric grounding device.

KPC FLO-MAX Valves are available with a full bore and reduced bore.



MAXIMUM FLOW WITH FULL BORE

Standard Specifications

Flanged end, 2-pcs split body construction, Floating ball design, Full bore or reduced bore, Field serviceable, wrench/gear/actuator mounted.

Valve Class : 150 and 300

Test Pressure : As per API 6D Std.

— shell —

(Hydrostatic)

Class 150 : 425 psi (30 kg/cm²)

Class 300 : 1100 psi (77 kg/cm²)

— Seat —

(Air)

Class 150 : 80 psi (6 kgf/cm²)

Class 300 : 80 psi (6 kgf/cm²)

Face to Face Dimension : Per Api 6D Std.(refer to dimension tables)

End Connections : Flanged, conforming to ANSI B16.5

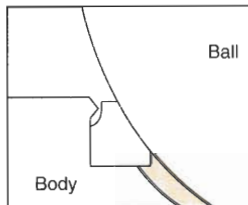
KPC ball valves comply with one or more of the following standard specifications as to pressure, temperature ratings and dimensions: ANSI, API, BS, DIN, MSS

Seat/Seal Design.

KPC unique ACTI-Seal Seat design uses a lip seal principle for efficient sealing at all pressures from zero to the maximum rated positive or negative pressure. This design seals with a minimum and nearly uniform torque requirement.

The seat seals are pre-loaded against the ball on assembly to provide shut off at low pressures. At higher pressures, the ball is forced against the seat and provides a positive seal to maximum rated pressures.

The generous lip section of the seat is added assurance of long and efficient seat life.



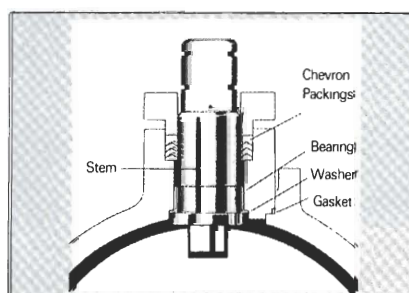
(Before fire)

Stem Seal and Bearing.

All ball valves incorporate a PTFE bearing to absorb any radial loading on the valve stem. A PTFE thrust bearing is also provided to reduce friction due to axial loading.

KPC CHEVRON packing utilizes multiple "V" Shaped PTFE rings ; tightening the gland nut spreads each ring and creates a multiple seal between the stem and body. The simple gland adjustment also allows compensation for operational wear. In addition, fluid pressure below the stem packing spreads the rings and improves the seal by increasing the stress on the rings-prohibiting leakage and minimizing maintenance.

BLOW-OUT PROOF STEM & SEAL FEATURES



Ball.

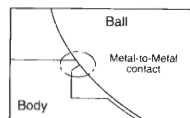
One of the most important components in any ball valve is the ball itself. The sphericity and surface finish of the ball are directly related to the life of the valve, its pressure holding capability and the operating torque. For these reasons, KPC

designed special production equipment to produce balls that have a sphericity of $\pm 0008''$ and a 4RMS surface finish.

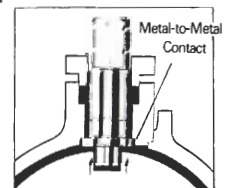


Fire-Safe API-607

One of the many requirements of today's industries is that ball valves must have a metal to metal seal in case the nonmetallic seal is destroyed by fire or other means.



(After fire)

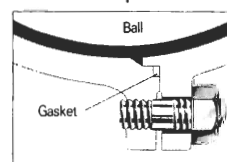


(After fire)

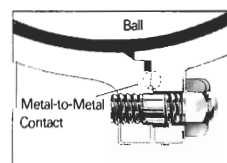
It provides assurance to the user handling flammable or hazardous fluids that should the non-metallic seal be destroyed, the KPC ball valve will stop the flow of material until a new seal is installed.

Positive Alignment and Bolted Design.

A split body construction with positive alignment and bolted design offers maximum protection against line



(Before fire)

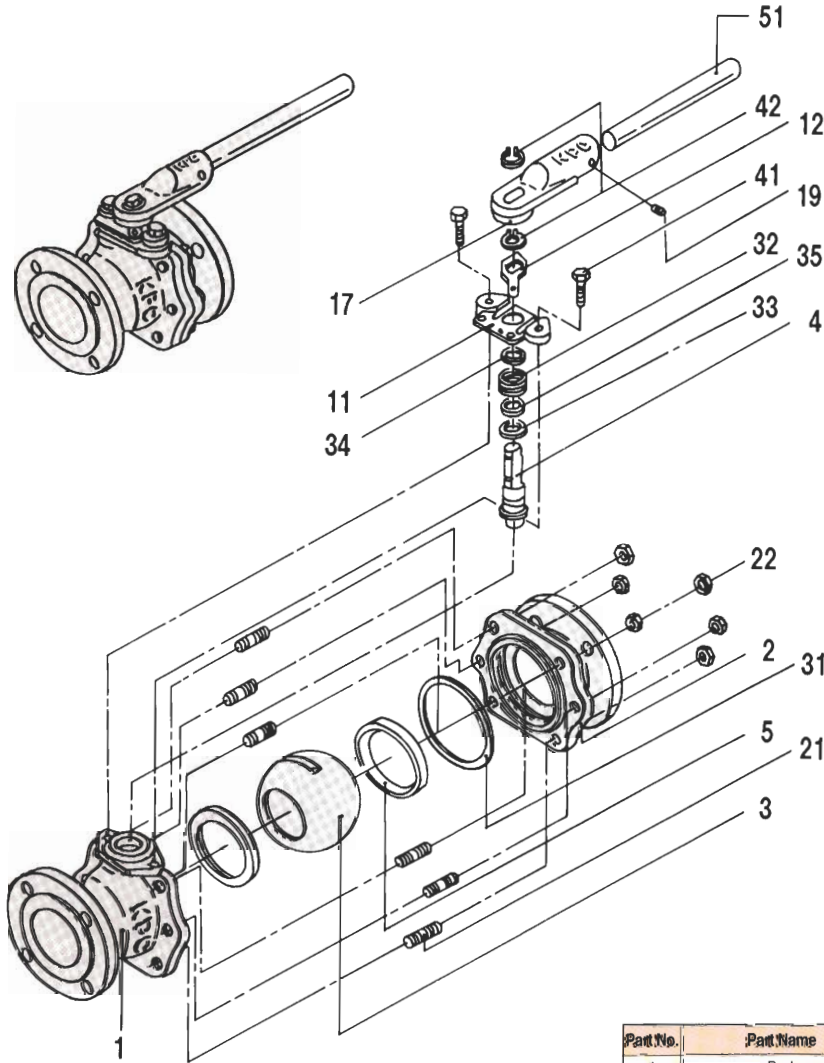


(After fire)

stresses and thermal distortion and provides a metal to metal firesafe seal.

KPC Ball Valves, Floating Ball Design

Construction and Material



• Illustration shows in wrench operated type (1/2" upto 6")

• Gear unit can be provided for 6" and larger.

" STANDARD "

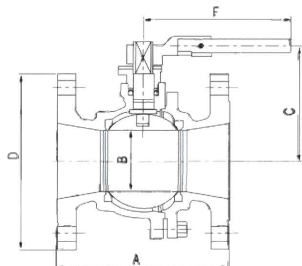
Part No.	Part Name	Qty	Carbon Steel	Stainless Steel
1	Body	1	A216 Gr. WCB	A351 Gr. CF-8/8M
2	Body cap	1	A216 Gr. WCB	A351 Gr. CF-8/8M
3	Ball	1	A276 Type 316 A351 Gr. CF8M	A276 Type 316 A351 Gr. CF8M
4	Stem	1	A276 Type 316	A276 Type 316
5	Seats	2	Reinforced PTFE	Reinforced PTFE
11	Gland flange	1	A351 Gr. CF-8	A351 Gr. CF-8
12	Stopper	1	304	A276 Type 304
17	Handle	1	SS304	→
21	Body bolt	-	A193 Gr. B7	A193 Gr. B8
22	Body nut	-	A194 Gr. 2H	A194 Gr. 8
31	Gasket	1	PTFE	→
32	Gland packing	1	PTFE	→
33	Back seat	1	Reinforced PTFE	→
34	Wear ring (Gland)	1	Reinforced PTFE	→
35	Wear ring (Stem)	1	Reinforced PTFE	→
41	Gland bolt	2	A193 Gr. B7	A193 Gr. 8
42	Snap ring	2	CS + ENP	A276 Type 304
51	Bar	1	KPC Standard	→

KPC Ball Valve Dimensions

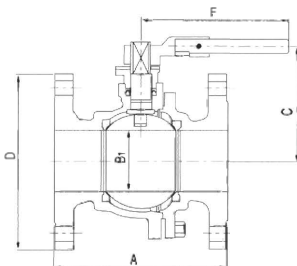
FLO-MAX CLASS 150 & 300

ANSI 150 Lb. and 300 Lb.
Flanged end Full bore and Reduced bore

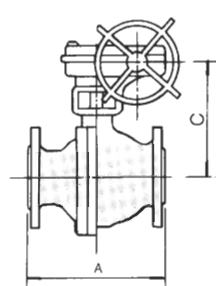
- Bore dimension : ANSI B16.34
- Face to Face : ANSI B16.10



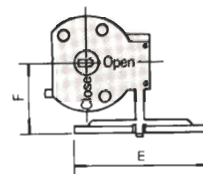
Size 1/2" to 8"



Size 1/2" to 6"



Size 6" and larger
Gear Operated



Enclosed Gear
Operator

ANSI CLASS 150(Full Bore)

SIZE	A	B1	C	D	E	F	WT(LBS)
1/2	4.25	0.50	2.51	3.50	-	5.11	4.85
3/4	4.62	0.75	2.51	3.88	-	5.11	6.39
1	5.00	1.00	3.09	4.25	-	6.29	8.82
1 1/2	6.50	1.50	4.01	5.00	-	9.05	16.53
2	7.00	2.00	4.37	6.00	-	9.05	23.14
3	8.00	3.00	5.90	7.50	-	15.74	46.19
4	9.00	4.00	6.92	9.00	-	18.11	83.77
6	15.50	6.00	10.03	11.00	-	43.00	165.34
8	18.00	8.00	12.99	13.50	15.74	9.44	308.64
10	21.00	10.00	16.14	16.00	21.65	16.53	529.11

ANSI CLASS 150(Reduced Bore)

SIZE	A	B	C	D	E	F	WT(LBS)
2	7.00	1.50	4.01	6.00	-	9.05	16.20
3	8.00	2.00	5.12	7.50	-	15.74	32.40
4	9.00	3.00	5.91	9.00	-	15.74	50.26
6	15.50	4.00	8.46	11.00	-	27.55	90.94
8	18.00	6.00	10.04	13.50	-	43.30	154.32
10	21.00	8.00	12.99	16.00	15.74	9.44	264.55
12	24.00	10.00	16.14	19.00	21.65	16.53	440.92

ANSI CLASS 300(Full Bore)

SIZE	A	B1	C	D	E	F	WT(LBS)
1/2	5.50	0.50	2.51	3.75	-	5.11	5.51
3/4	6.00	0.75	2.51	4.62	-	5.11	8.15
1	6.50	1.00	3.09	4.88	-	6.29	12.12
1 1/2	7.50	1.50	4.01	6.12	-	9.05	25.35
2	8.50	2.00	5.00	6.50	-	9.05	33.06
3	11.12	3.00	5.90	8.25	-	15.74	66.13
4	12.00	4.00	7.09	10.00	-	27.55	109.12
6	15.88	6.00	10.28	12.50	-	43.30	220.46
8	19.75	8.00	16.46	15.00	15.74	9.44	374.78
10	22.38	10.00	20.08	17.50	21.65	16.53	760.59

ANSI CLASS 300(Reduced Bore)

SIZE	A	B	C	D	E	F	WT(LBS)
2	8.50	1.50	4.61	6.50	-	9.05	23.14
3	11.12	2.00	5.91	8.25	-	15.74	46.29
4	12.00	3.00	5.91	10.00	-	15.74	65.47
6	15.88	4.00	8.54	12.50	-	27.55	121.25
8	19.75	6.00	10.28	15.00	-	43.30	187.39
10	22.38	8.00	16.46	17.50	15.74	9.44	380.30
12	25.50	10.00	20.08	20.50	21.65	16.53	584.23

HOW TO SPECIFY KPC BALL VALVES

① ① - ② ② ③ - ④ ⑤ ⑥ - ⑦ ⑧ - ⑨ ⑨
F M - 0 1 1 - C S 2 - R 1 - G A

(FLO-MAX BALL VALVE, 1", ANSI 150#, FULL BORE, CARBON STEEL BODY, STAINLESS STEEL TRIM, GLASS REINFORCED PTFE SEAT, RAISED FACE, WRENCH HANDLE, FIRE SAFE, ANTISTATIC)

① VALVE MODEL	
CD	DESCRIPTION
FM	FLO-MAX
3T	3PC TRUNNION SIDE ENTRY
T2	TWIN SEAL 2PC TRUNNION
WT	WEDGE SEAL TOP ENTRY
WS	WEDGE SEAL SIDE ENTRY
TT	TOP ENTRY TRUNNION
2F	2PC FLOATING
3F	3PC FLOATING
SP	SPECIAL

② SIZE			
CD	SIZE	CD	SIZE
0A	1/4"	10	10"
0B	1/2"	12	12"
0C	3/4"	14	14"
01	1"	16	16"
1A	1 1/4"	18	18"
1B	1 1/2"	20	20"
02	2"	24	24"
2B	2 1/2"	26	26"
03	3"	28	28"
04	4"	30	30"
05	5"	32	32"
06	6"	36	36"
08	8"	42	42"

③ ANSI CLASS & PORT	
CD	CLASS
1	150# FB
2	150# RB
3	300# FB
4	300# RB
5	600# FB
6	600# RB
7	900# FB
8	900# RB
9	1500# FB
0	1500# RB
A	2500# FB
B	2500# RB

④ BODY & TRIM MAT'L	
CD	DESCRIPTION
C	C/ STEEL
S	S/ STEEL
A	ALLOY 20
H	HASTELLOY
D	DUPLEX SS.
M	MONEL
T	TITANIUM
X	SPECIAL

⑥ SEAT MATERIAL	
CD	DESCRIPTION
1	VIRGIN PTFE
2	GLASS RPTFE
3	CARBON RPTFE
4	UHMWPE
5	PEEK
6	METAL SEAT
7	LAMINATED METAL SEAT
8	CARBON GRAPHITE
9	CERAMIC
0	NYLON
X	SPECIAL

⑦ END CONFIGURATION	
CD	DESCRIPTION
F	FLAT FACE
R	RAISED FACE
J	RING TYPE JOINT
B	BUTT WELD
S	SOCKET WELD
C	SCREWED
X	SPECIAL

⑧ ACTUATOR	
CD	DESCRIPTION
0	BARE STEM
1	WRENCH HANDLE
2	ENCLOSED GEAR
3	PNEUMATIC OR ELECTRIC
4	OVAL HANDLE
X	SPECIAL

⑨ OPTIONAL FEATURES	
CD	DESCRIPTION
S	STANDARD
G	GRAFOIL PACKING/GASKET (API-607/6FA FIRE SAFE)
L	DOUBLE LIVE LOADED RTFE CHEVRON PACKING
E	EXTENDED STEM
C	CHLORINE SERVICE CLEANING(CL2 CLEANING)
N	NACE CERTIFIED TRIM
V	VENTED BALL
A	ANTISTATIC STEM
X	SPECIAL

* This is limited list of the available options, contact the factory for specific requirements and availability.

SHELL (EXTERNAL) MATERIAL SELECTION

Material Designation	C	S	A	H	D	M	T
Description	Carbon Steel	Stainless Steel	Alloy 20	Hastelloy	Duplex S/S	Monel	Titanium
Body (Flanged ends)	ASTM A216-WCB	ASTM A351-CF8M	ASTM A351-CN7M	ASTM A494-CW12MW	ASTM A743-80A ASTM A240	ASTM A494-M35-1	ASTM B367-Gr 2
Cap	ASTM A216-WCB	ASTM A351-CF8M	ASTM A351-CN7M	ASTM A494-CW12MW	ASTM A743-80A ASTM A240	ASTM A494-M35-1	ASTM B367-Gr 2

TRIM (INTERNAL) MATERIAL SELECTION

Material Designation	S	A	H	D	M	T
Description	Stainless Steel	Alloy 20	Hastelloy	Duplex S/S	Monel	Titanium
BALL	ASTM A351-CF8M or ASTM A479-316	ASTM A351-CN7M or ASTM B473-CB-3	ASTM A494-CW12MW or ASTM B574-C276	ASTM A743-80A- CD4MCU	ASTM A494-M35-1 or ASTM B164-K500	ASTM B367-Gr 2 or ASTM B348-Gr 4-5
Stem	ASTM A479-316	ASTM B473-CB-3	ASTM B574-C276	ASTM A240-S32550	ASTM B164-K500	ASTM B348-Gr 4-5

SEAT & SEALS MATERIAL SELECTION

Material Designation	1	2	3	4	5
Material	Virgin PTFE	Glass Reinforced PTFE	Carbon Reinforced PTFE	UHMWPE	Peek
Material Designation	6	7	8	9	X
Material	Metal 1.(Fig 4)	Metal 2.(Fig 5)	Carbon Graphite	Ceramic	Special

SEAT PERFORMANCE DATA

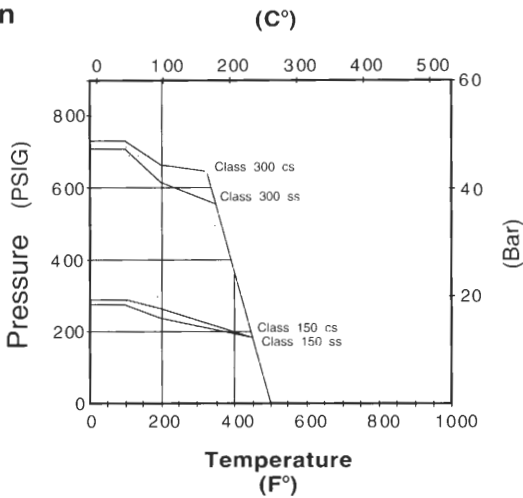
(TFE)

General application seat material, exhibiting lowest operating torque and excellent resistance to chemical attack.

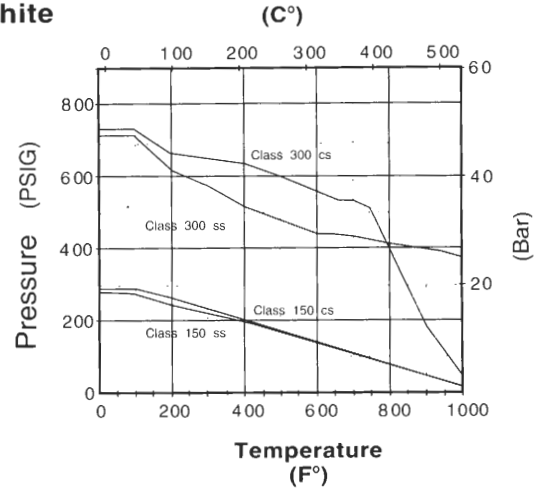
(RTFE)

Most commonly specified seat material, and used as the basis for published torque valves. Maintains the excellent chemical resistance of unfilled teflon (TFE) with increased resistance to wear and abrasion resulting in longer life.

Reinforced Teflon



Carbon-Graphite

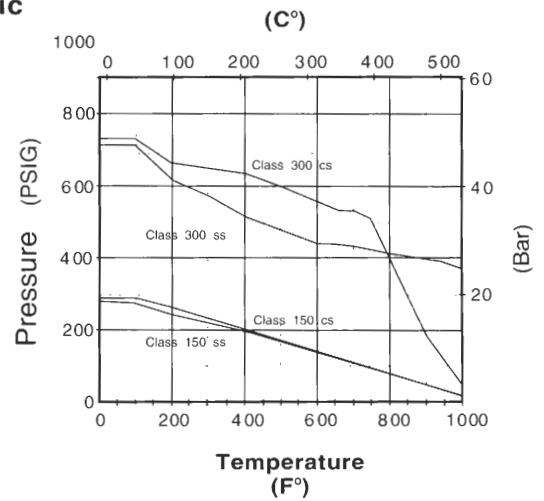


(Ceramic)

Working in conjunction with a ceramic ball, this seat out performs all other materials in throttling and abrasive applications. It possesses excellent chemical resistance. Cost is very high, and unless experience dictates its use, other alternatives should be evaluated first.

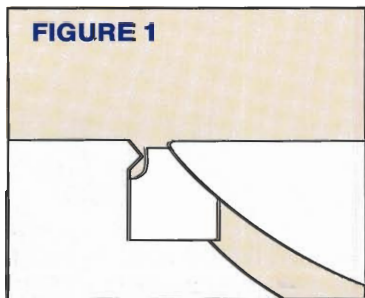
This seat like all hard seat materials does not necessarily provide "bubble tight" shut-off. Most test standards have allowable leakage rates or list "classes" of shut-off for this type of seat. Be aware of the system design requirements when specifying this or any rigid seat.

Ceramic

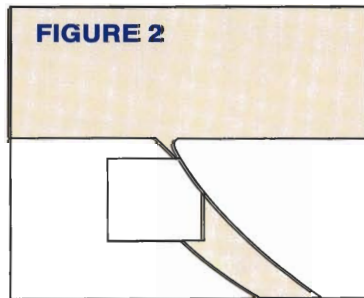


(Carbon Graphite)

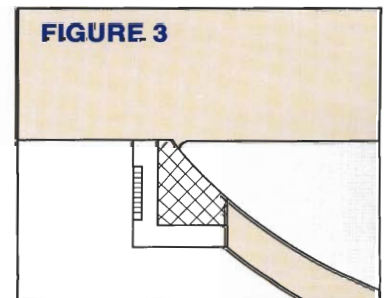
Designed for high temperature applications. Maximum service temperature is limited to 750°F in oxidizing applications. This seat like all hard seat materials does not necessarily provide "bubble tight" shut-off. Most test standards have allowable leakage rates or list "classes" of shut-off for this type of seat. Be aware of the system design requirements when specifying this or any hard seat.



SOFT SEAT



HARD SEAT



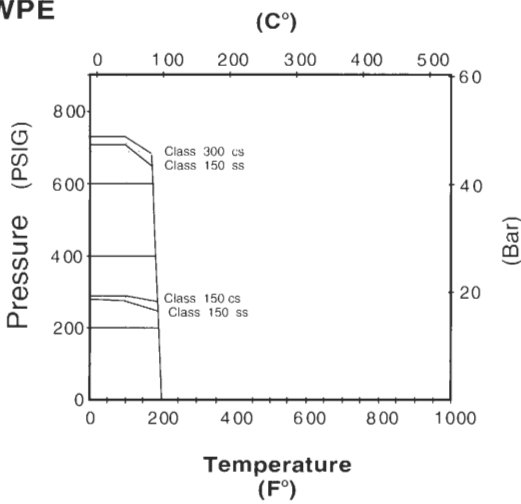
SEAT PERFORMANCE DATA

(UHMWPE)

Ultra High Molecular Weight Polyethylene offers good abrasion resistance making it suitable for use in high solids or slurry applications. These seats are completely confined by a metallic seatholder enhancing their performance in abrasive services. This seat is frequently specified in services where fluorine off-gasing in even the slightest amounts is objectionable. Examples of these services are such as food, tobacco processing, and nuclear services.

UHMWPE should be used with caution in the presence of solvents, and the operating torque can be expected to be 30% higher than that of the teflon based seat materials.

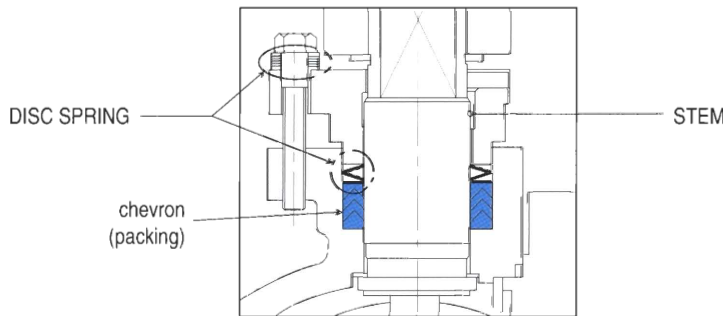
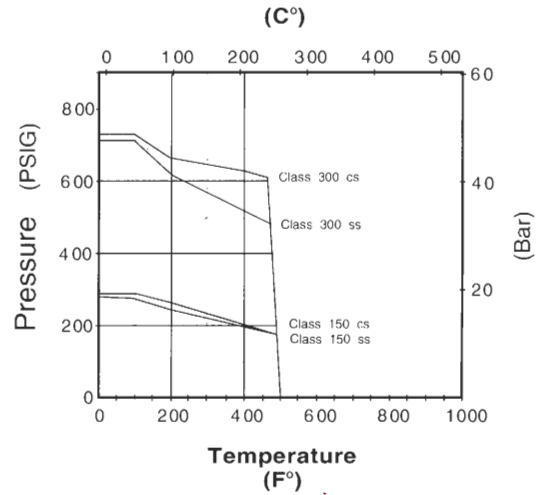
UHMWPE



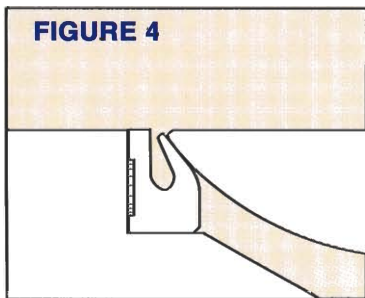
(PEEK)

PEEK(PolyEtherEtherKetone) offers a high strength alternative to RTFE, resistant to creep and cold flow. This seat offers good abrasion resistance. Higher in cost, this material offers similar chemical resistance to TFE but should be checked on application. Operating torque tend to be 40% higher than RTFE.

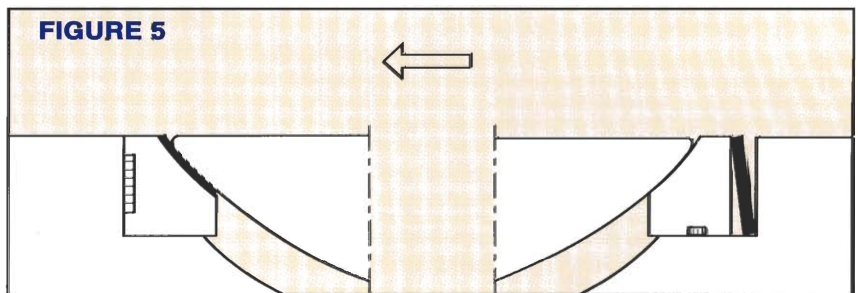
PEEK



DOUBLE LIVE LOADED STEM & CHEVRON PACKING (OPTION : L)



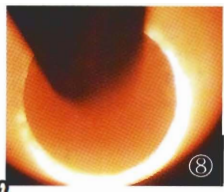
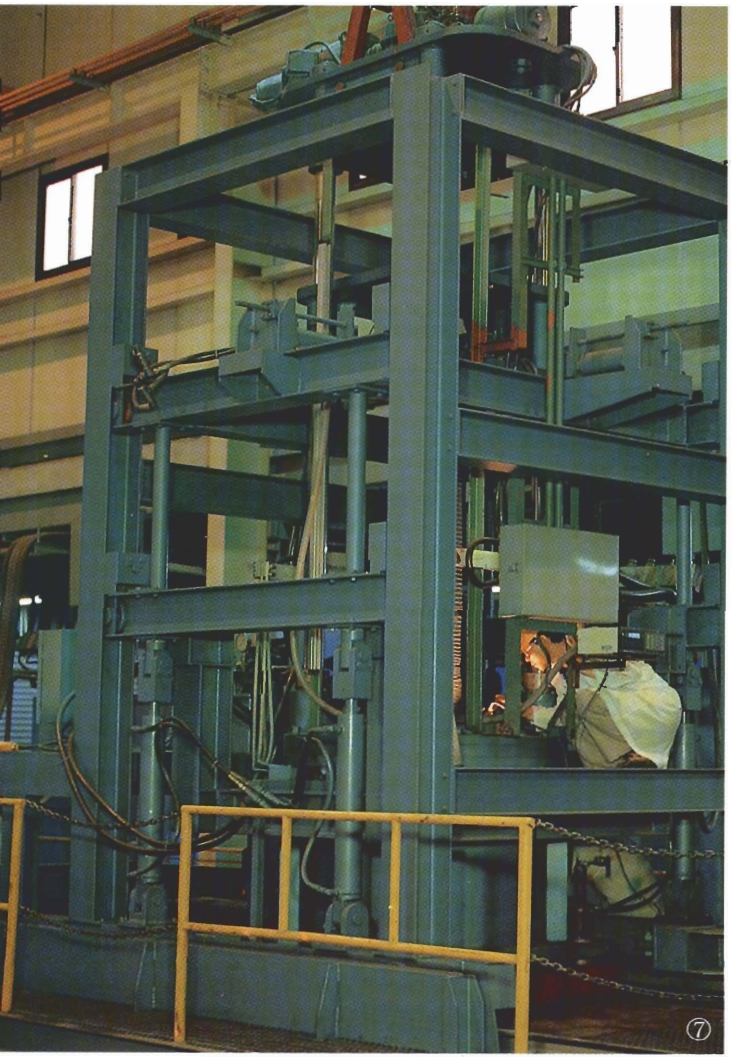
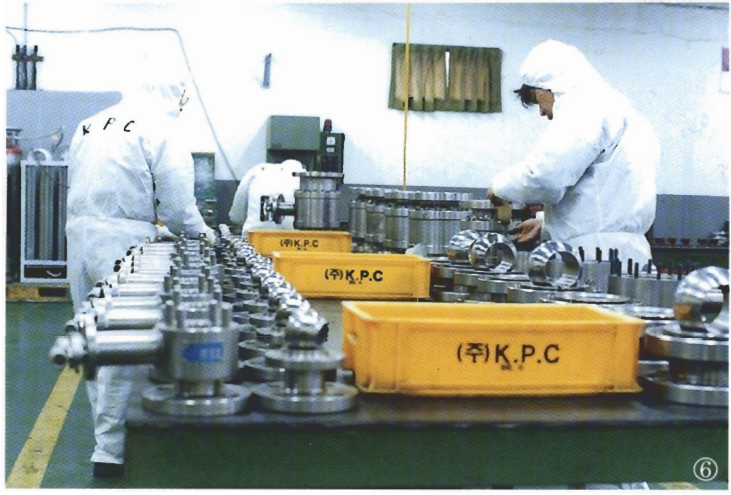
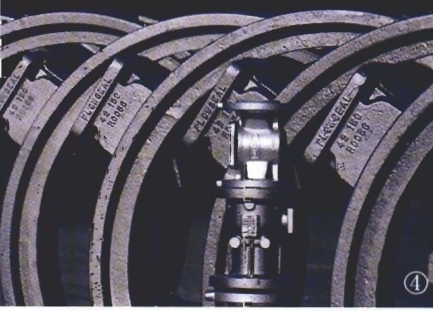
METAL SEAT 1



METAL SEAT 2

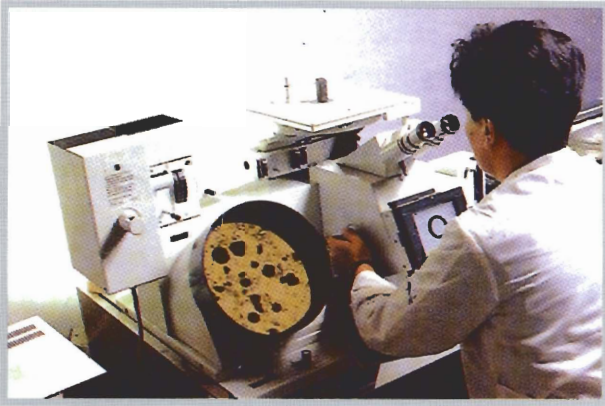
“KPC” NAME OF QUALITY METAL PRODUCTS

- ① KPC PRODUCES HIGH QUALITY SPECIALTY CASTINGS.
(UP-GRADED NACE TOP ENTRY BALL VALVE BODY)
- ② PRESSURE ANGLE CONTROL VALVE HASTELLOY C BODY CASTING
- ③ LARGE FLO-MAX TITANIUM BALL VALVE(10" 300#) FORGED BY KPC VACUUM MELT DIVISION.
- ④ KPC PRODUCES PRESSURE BOUNDRY CASTINGS FOR NUMEROUS VALVE COMPANIES.
- ⑤ HIGH ALLOY BILLET FORGING BY KPC VACUUM MELT DIVISION.
- ⑥ TITANIUM FLO-MAX BALL VALVES ARE ASSEMBLED UNDER CLEAN CONDITIONS.
- ⑦ ⑧ KPC METALURGIST EXAMINES MOLTEN POOL ON VACUUM ARC REMELTING FURNACE TO PRODUCE ULTRA CLEAN CASTINGS.





Quality is the responsibility of each and every KPC employee.



QUALITY, ABOVE ALL ELSE...

Quality assurance

The process begins with the translation of your specifications and requirements into a written, detailed quality plan. This plan controls materials, processes, testing, and inspection.



Quality control

Quality control is KPC's guarantee the final product meets your every specification. Using the most modern equipment available and the strictest of techniques, quality control engineers perform chemistry and trace element checks, mechanical tests, NDE, and other quality control measures.

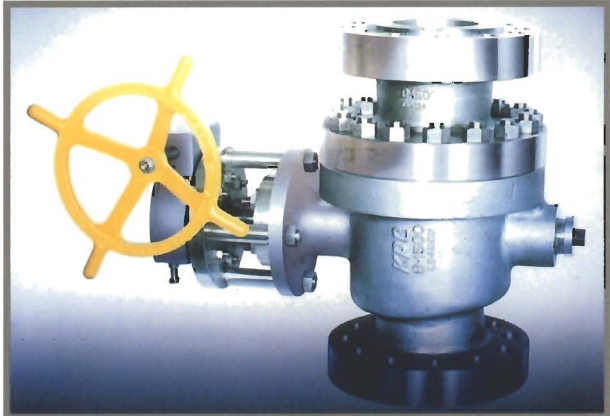
CERTIFICATES



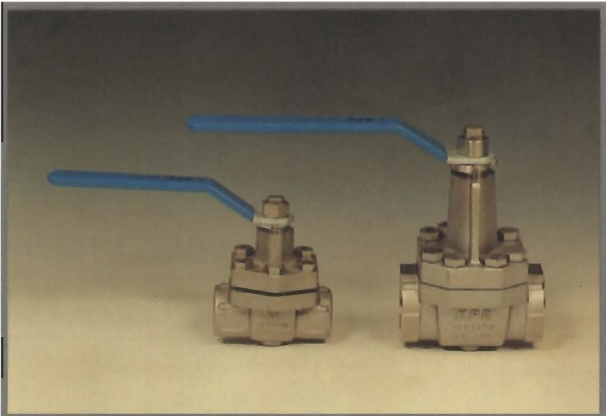
OTHER KPC® CONTROL UNITS



KPC 3 PIECE TRUNNION VALVE FOR OFF SHORE SERVICE. (42" 900 ANSI - 60,000 LBS)



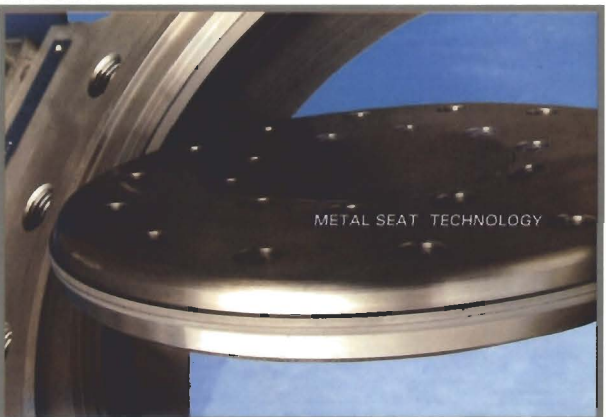
WEDGE SEAL BALL VALVE FOR HIGH TEMPERATURE AND PRESSURE SERVICE.



TOP ENTRY WEDGE SEAL BALL VALVE,- HIGH TEMPERATURE CORROSIVE SERVICE. - 1/2" UP TO 12", CLASS 150 UP TO 900 ANSI.



METAL SEATED LINE AND TANK BOTTOM ANGLE VALVES SIZE 1" UP TO 30" AND CLASS 150 UP TO 1500 ANSI.



TRIPLE ECCENTRIC METAL SEAT BUTTERFLY VALVE.



TITANIUM TANK BOTTOM ANGLE VALVES OPERATING ON HIGH TEMPERATURE PTA REACTOR.

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