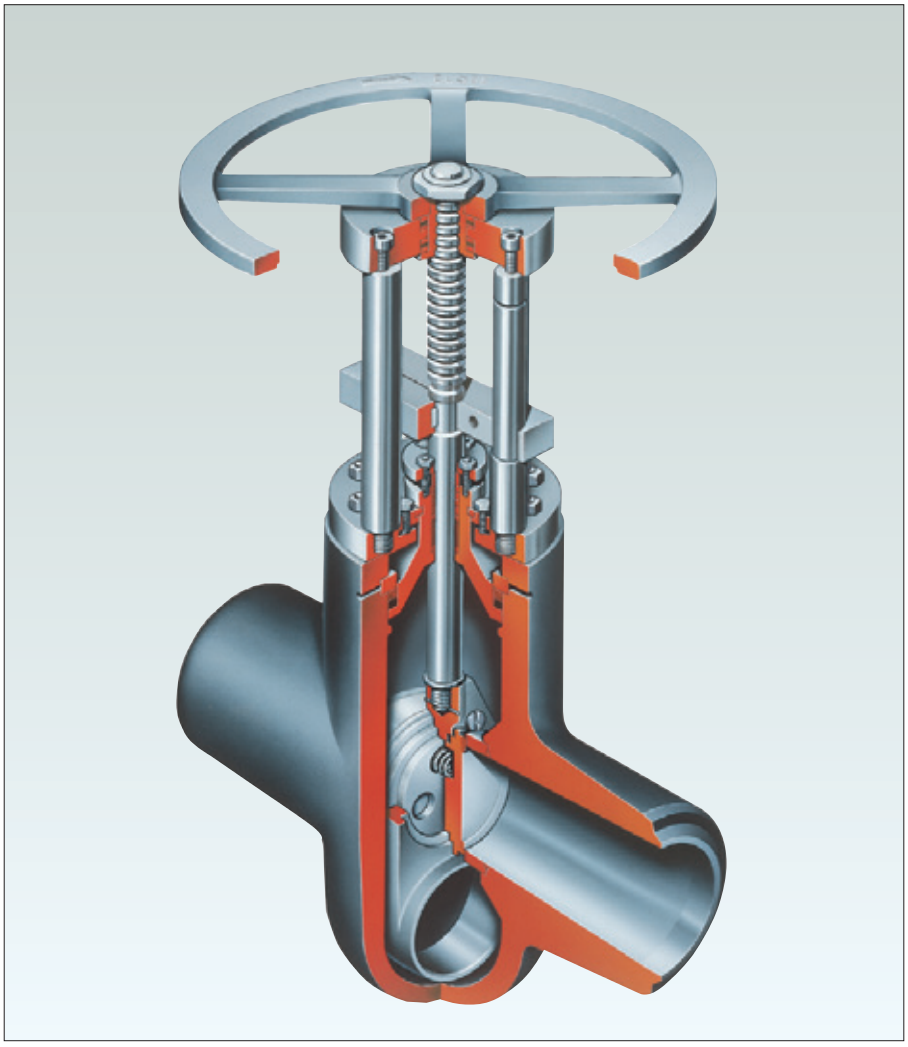
PENTAIR

DEWRANCE

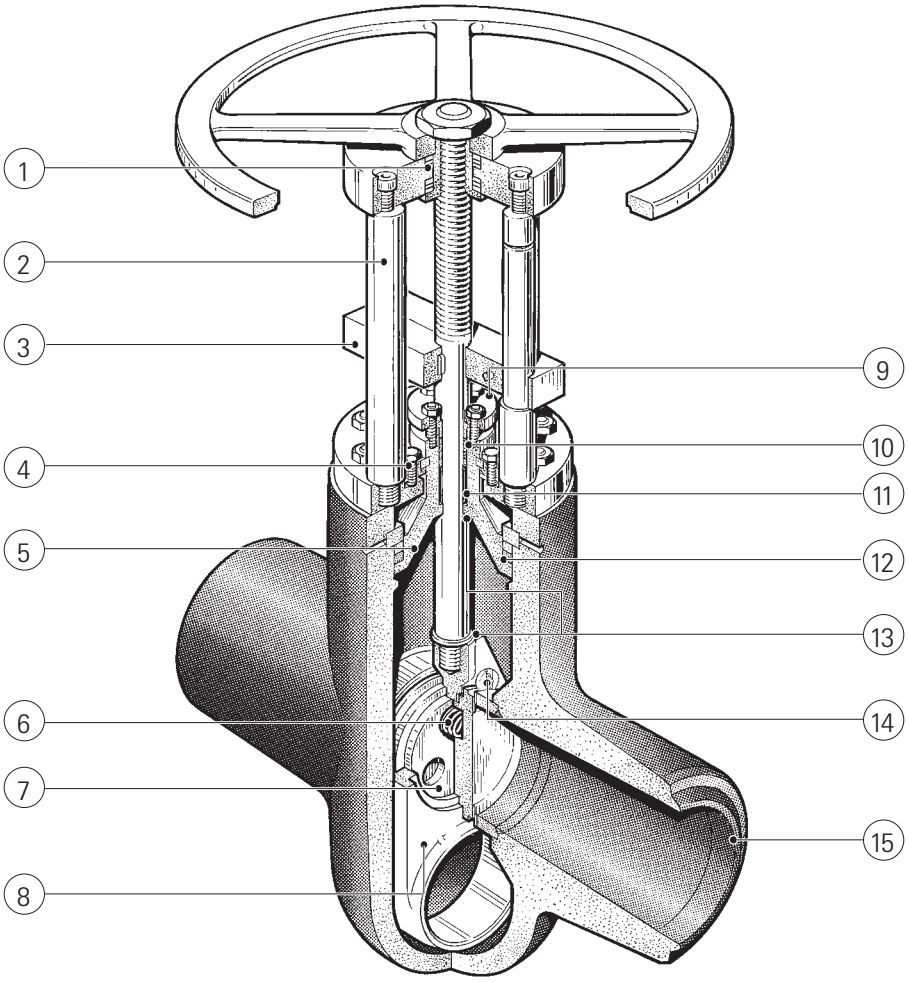
Features & Benefits

- Excellent Reliability
  - Eyelet Follower providing a smooth flow path & maximum performance
  - Self cleaning action between disk & seat
  - Welded-in seats hard-faced with Stellite® or Equivalent
  - Seat surface protection provides extended life
  - Low Cost Maintenance
  - Expanded graphite pressure seal & gland packing
  - Lower operating forces than wedge gate design
  - Interchangability of parts
  - Simplified seat refurbishment (only requires flat lapping, no critical angles to be matched to ensure sealing capability)
  - Longer seat life with eyelet follower, due to reduced erosion
- Improved Performance
  - Lower pressure drop characteristic than wedge gate valve
  - Minimised flow turbulence
  - Reduced actuator size/cost by 30% when compared to wedge gate
  - Higher allowable seat velocity
  - Improved sealing assisted by line pressure
  - Low operating torque, seals on position not torque
- Typical Applications
  - Main Steam Isolation
  - Boiler Feed Pump Isolation
  - H.P. Feed Heater Isolation & By-Pass
  - Blow Down Service
  - Blow Off Service
  - Gland Steam System Drains
  - Steam Turbine Inlet Isolation
  - Economizer Recirculation
  - Spray Water



Technical data

Sizes	: 5" – 24"
ASME	: B16.34 – 1996
Valve overall lengths to	: ASME B16.10 – 1992
Pressure Class	: 1000, 1690, 1715, 2260, 2500, 2850



Legenda

1 Anti-friction bearings are fitted for direct handwheel operation.
2 Four pillar design for rigidity and accessibility.
3 Stem stop clearly indicates valve position & prevents stem rotation.
4 Jacking screws to pre-load pressure seal.
5 Pressure seal closure improves as pressure increases.
6 Springs or spring to hold disc against seat face for initial sealing.
7 Hard faced Stellite®/ or equiv. discs and seats.
8 Combined eyelet/conduit and belt-eye/disc holder.
9 Two piece gland.
10 Specially designed stuffing box to suit expanded graphite packing.
11 Neck bushing for stem support.
12 Expanded graphite pressure seal ring.
13 Hard faced Stellite®/ or equiv. back seat.
14 Disc retainer.
15 Butt weld ends.

Note

Drain can be fitted as required
Please note valves up to and including 4" size are Forged, Carbon or Alloy Steel and are not fitted with an eyelet/conduit.

Valve Operation

When a Parallel Slide is opened or closed, the positioning of two flat spring loaded discs will either seal or open the pipeline passage.

Closure is achieved by positioning the discs between the seat faces in the valve body. The pressure differential across the disc forces the outlet disc against the outlet seat, creating a tight seal which is far superior to that of a wedge gate valve.

The two separate spring loaded discs mounted in the belteye/disc holder have sufficient loading and freedom of movement to allow accurate contact between the flat lapped faces over the range of expansion and contraction regardless of the valve orientation.

During valve closure the self wiping action of the discs ensures that debris is not trapped between the sealing faces.

Stem travel is limited by the back seat in open position and the stem stop in the closed position. The stem stop prevents stem rotation and acts as a position indicator.

Unlike a wedge gate valve it is line pressure and POSITION, not excessive mechanical force at the end of stroke that is required to make a seal.

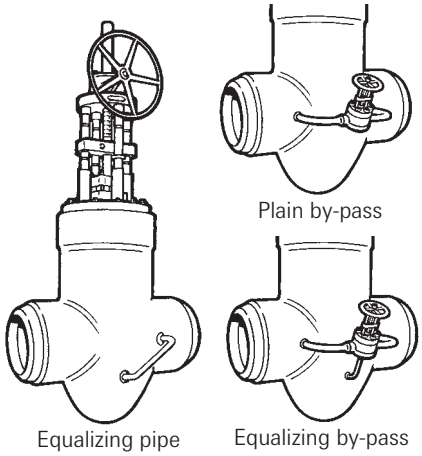
When the position indicator is in the closed position the valve is fully isolated.
DO NOT APPLY ANY ADDITIONAL FORCE.

Because the discs are free to slide between the seat faces it is virtually impossible to create an overstressed condition under normal operation.

Valves 5" size and greater have an eyelet/conduit as part of the belteye/disc holder. The advantages of this eyelet are.

1 It produces a smoother flow between the seat faces by effectively eliminating the body cavity and the turbulence which it causes.
2 It protects the seat faces from impingement of the line fluid or anything suspended in it.
3 It prevents debris in the fluid being thrown out of suspension into the valve body.

When the eyelet/conduit is positioned between the seats, the bottom of the disc faces are still in contact with seat faces. No body guides are required.



By-pass and Equalizing Devices

By-Pass valves are used to reduce the traversing differential pressure across the valve seat. This reduces the size of the operating gear, resulting in considerable savings. By-Passes also provide a convenient means for the initial warming through of pipe lines.

Equalizing devices are used to relieve the fluid trapped between the seat faces, and to provide an outlet for the fluid displaced by the valve stem traversing to the shut position. This situation is quite common in valves used on non compressible fluids such as feed systems etc., but it can also arise on steam valves due to the collection of condensate inside the valve body during shut down, and fluctuating ambient temperature conditions.

When a by-pass is used, it provides a means of fitting an equalizing connection from the main valve, through the by-pass and to the main line. This is a most convenient arrangement, as it does not make the main valve unidirectional.

When a by-pass is not required and external small bore pipe loop, connecting the inside of the valve body to one of the branches, can be used as an equalizing device. Alternatively a hole drilled through one of the seats can serve the same purpose. These devices are quite satisfactory but require correct orientation. To prevent water discharge during trip conditions the valve should be equalized towards the source of pressure.

Venturi Follower-Eye Feature

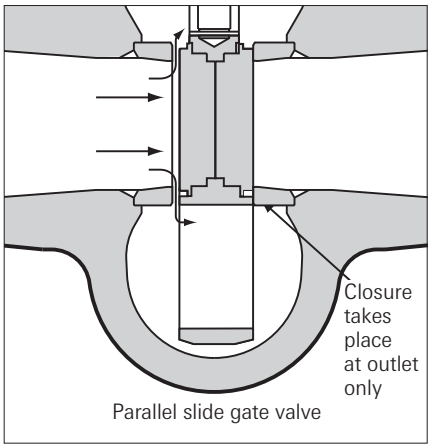
The advantages of the "follower-eye" are clearly shown in the sketch opposite, page which compares the Venturi Parallel Slide design with a full bore Wedge Gate Valve.

- Parallel Slide Gate Valves use system pressure and position to provide positive isolation.
- Seal is established on outlet seat face only.
- Springs are fitted between disks to provide initial searing force only, and do not maintain the sealing force.
- No additional torque required to achieve a positive seal once discs are in position.
- Wedge gates require additional force to make the seal between the tapered seat surfaces.
- Wedge Gate Valves require larger operating forces.
- Parallel Slide Valves can cope with movements due to expansion/contraction without the need for additional manual intervention.

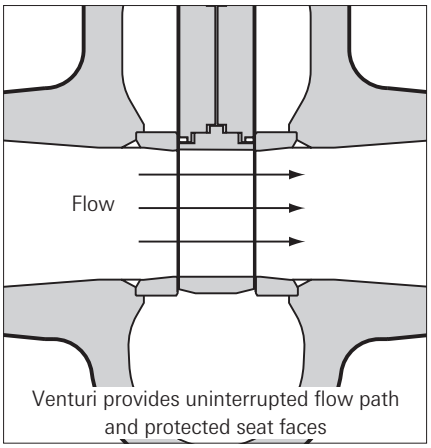
- Wiping action of discs over seats during closing, removes debris therefore helps prevent premature wear.
- Follower-Eye on Venturi design Parallel Slide Valve provides:
  - Smooth flow path between seats.
  - Protects seat faces from direct impingement of system debris.
  - Enables a physically smaller & lighter valve to meet pressure drop equivalent of L/D=13.

- Non-wiping action of wedge gate traps debris between wedge and seat faces, thus preventing sealing and promoting leakage and localised erosion.
- Benefits of Follower-Eye are impossible to apply to Wedge Gate design resulting in:
  - Turbulent flow path between seat faces.
  - Seat faces exposed to system debris and erosion
  - Physically larger seat bore and valve required to meet equivalent Dewrance venturi P.S.V. pressure drop figure.

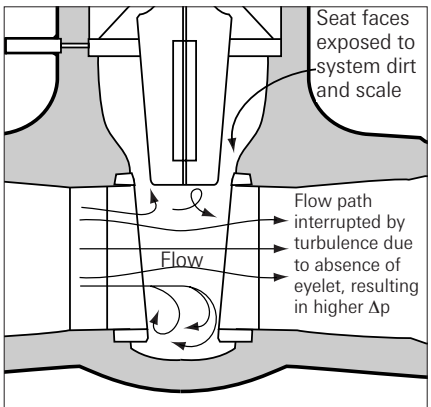
- Full bore wedge Gate valves seat dimension is usually based on 90% of end bore to achieve acceptable pressure drop characteristic.
- 90% seat bore to end bore ratio is NOT a requirement of ASME B16.34 as per interpretation 1-36.



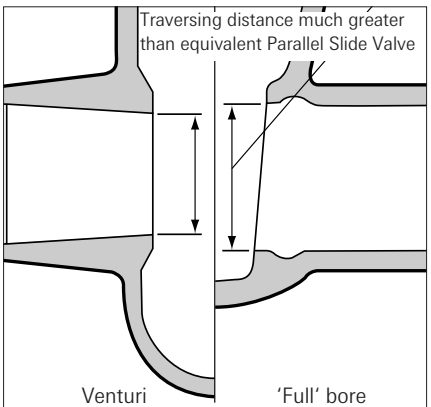
Parallel slide gate valve



Venturi provides uninterrupted flow path and protected seat faces



Disadvantages of wedge gate valve



Imperial 1000 int. Class (ASME B16.34 1996)

Prod.	ASTM Body Mat.		ASME code	-20° to	Pressure in lbf/sq. in. at Temp. °F (for intermediate ratings use linear interpolation)																
No.	Forged	Cast	B16.34	100°	200	300	400	500	600	650	700	750	800	850*	900	950	975	1000	1025	1050	1075
P67	D A105	E A216	Std.	2468	2250	2188	2112	1995	1823	1789	1778	1678	1373	894	–	–	–	–	–	–	–
P67	D A105	E WCB	Spec.	2500	2500	2500	2500	2500	2378	2333	2312	2100	1716	1116	–	–	–	–	–	–	–
P67		J A217	Std.	2500	2500	2406	2311	2217	2017	1961	1894	1773	1694	1623	1499	1062	892	722	600	478	400
P67		J WC6	Spec.	2500	2500	2500	2500	2500	2500	2500	2444	2428	2400	2256	1956	1328	1114	900	750	600	500
P67	K A182	L A217	Std.	2500	2500	2428	2351	2217	2017	1961	1894	1773	1694	1623	1499	1256	1062	868	725	583	475
P67	K F22	L WC9	Spec.	2500	2500	2472	2416	2400	2400	2384	2372	2300	2244	2144	2000	1572	1328	1084	906	728	592

Metric 600 Class (ASME B16.34 1996)

Prod.	ASTM Body Mat.		ASME code	-30° to	Pressure in Bar at Temp. °C (for intermediate ratings use linear interpolation)																
No.	Forged	Cast	B16.34	38°	50	100	150	200	250	300	350	375	400	425	450*	475	500	525	550	575	600
P67	D A105	E A216	Std.	170.1	166.8	154.6	150.8	146.0	139.0	129.0	123.2	121.6	114.9	95.9	66.9	–	–	–	–	–	–
P67	D A105	E WCB	Spec.	172.4	172.4	172.4	172.4	172.4	172.4	166.3	160.5	157.3	143.7	119.9	83.6	–	–	–	–	–	–
P67		J A217	Std.	172.4	172.4	171.6	165.7	159.9	154.0	142.9	134.1	129.4	122.0	117.1	112.7	105.6	84.1	60.5	42.4	29.3	20.3
P67		J WC6	Spec.	172.4	172.4	172.4	172.4	172.4	172.4	172.4	171.4	168.4	167.3	165.6	157.1	140.2	107.2	75.6	53.0	36.7	25.2
P67	K A182	L A217	Std.	172.4	172.4	171.8	167.3	162.5	154.5	142.9	134.1	129.4	122.0	117.1	112.7	105.6	92.6	72.1	51.2	35.1	23.0
P67	K F22	L WC9	Spec.	172.4	172.4	172.1	170.3	166.9	165.7	165.5	164.2	162.8	158.4	155.0	148.9	140.5	119.0	90.2	64.0	43.8	28.6

Imperial 1690 int. Class (ASME B16.34 1996)

Prod.	ASTM Body Mat.		ASME code	-20° to	Pressure in lbf/sq. in. at Temp. °F (for intermediate ratings use linear interpolation)																
No.	Forged	Cast	B16.34	100°	200	300	400	500	600	650	700	750	800	850*	900	950	975	1000	1025	1050	1075
P73	D A105	E A216	Std.	4173	3803	3696	3571	3374	3082	3025	3002	2839	2320	1509	–	–	–	–	–	–	–
P73	D A105	E WCB	Spec.	4225	4225	4225	4225	4225	4016	3938	3909	3549	2896	1882	–	–	–	–	–	–	–
P73		J A217	Std.	4225	4225	4067	3904	3746	3408	3313	3199	2996	2861	2744	2530	1796	1507	1217	1014	811	676
P73		J WC6	Spec.	4225	4225	4225	4225	4225	4225	4225	4130	4106	4056	3814	3307	2247	1884	1521	1268	1014	845
P73	K A182	L A217	Std.	4225	4225	4102	3977	3746	3408	3313	3199	2996	2861	2744	2530	2124	1797	1469	1227	985	802
P73	K F22	L WC9	Spec.	4225	4225	4175	4079	4056	4056	4033	4006	3887	3791	3622	3380	2654	2245	1836	1534	1233	1003

Metric 1690 int. Class (ASME B16.34 1996)

Prod.	ASTM Body Mat.		ASME code	-30° to	Pressure in Bar at Temp. °C (for intermediate ratings use linear interpolation)																
No.	Forged	Cast	B16.34	38°	50	100	150	200	250	300	350	375	400	425	450*	475	500	525	550	575	600
P73	D A105	E A216	Std.	287.6	282.1	261.3	254.7	246.9	235.1	218.1	208.2	205.4	194.3	162.1	113.0	–	–	–	–	–	–
P73	D A105	E WCB	Spec.	291.3	291.3	291.3	291.3	291.3	291.3	280.9	271.0	266.0	242.9	202.4	140.9	–	–	–	–	–	–
P73		J A217	Std.	291.3	291.3	290.0	280.2	270.1	260.2	241.5	226.6	218.6	206.2	197.8	190.5	178.3	142.1	102.3	71.6	49.6	34.1
P73		J WC6	Spec.	291.3	291.3	291.3	291.3	291.3	291.3	291.3	289.7	284.5	282.9	279.9	265.7	237.1	181.2	127.9	89.5	62.0	42.6
P73	K A182	L A217	Std.	291.3	291.3	290.3	282.6	274.9	261.1	241.5	226.6	218.6	206.2	197.8	190.5	178.3	156.5	122.1	86.6	59.4	38.9
P73	K F22	L WC9	Spec.	291.3	291.3	290.9	287.7	281.8	279.9	279.7	277.6	275.1	267.7	261.8	251.6	237.4	201.0	152.5	108.3	74.2	48.5

Imperial 1715 int. Class (ASME B16.34 1996)

Prod.	ASTM Body Mat.		ASME code	-20° to	Pressure in lbf/sq. in. at Temp. °F (for intermediate ratings use linear interpolation)																
No.	Cast		B16.34	100°	200	300	400	500	600	650	700	750	800	850*	900	950	975	1000	1025	1050	1075
P8A	E	A216	Std.	4235	3859	3751	3624	3424	3127	3070	3047	2881	2355	1531	–	–	–	–	–	–	–
P8A	E	WCB	Spec.	4288	4288	4288	4288	4288	4076	3996	3967	3602	2939	1910	–	–	–	–	–	–	–
P8A	J	A217	Std.	4288	4288	4127	3962	3801	3458	3362	3246	3041	2903	2784	2568	1823	1529	1235	1029	823	686
P8A	J	WC6	Spec.	4288	4288	4288	4288	4288	4288	4288	4191	4166	4116	3871	3356	2280	1912	1544	1286	1029	858
P8A	L	A217	Std.	4288	4288	4162	4035	3801	3458	3362	3246	3041	2903	2784	2568	2156	1823	1491	1245	1000	814
P8A	L	WC9	Spec.	4288	4288	4237	4139	4116	4116	4093	4066	3945	3847	3675	3430	2694	2278	1863	1557	1251	1017

Metric 1715 int. Class (ASME B16.34 1996)

Prod.	ASTM Body Mat.		ASME code	-30° to	Pressure in Bar at Temp. °C (for intermediate ratings use linear interpolation)																
No.	Cast		B16.34	38°	50	100	150	200	250	300	350	375	400	425	450*	475	500	525	550	575	600
P8A	E	A216	Std.	291.9	286.3	265.2	258.4	250.5	238.6	221.3	211.3	208.5	197.2	164.5	114.7	–	–	–	–	–	–
P8A	E	WCB	Spec.	295.6	295.6	295.6	295.6	295.6	295.6	285.1	275.0	270.0	246.5	205.4	143.0	–	–	–	–	–	–
P8A	J	A217	Std.	295.6	295.6	294.3	284.3	274.1	264.1	245.1	229.9	221.8	209.3	200.7	193.3	180.9	144.2	103.8	72.6	50.3	34.6
P8A	J	WC6	Spec.	295.6	295.6	295.6	295.6	295.6	295.6	295.6	294.0	288.7	287.1	284.0	269.6	240.6	183.9	129.8	90.8	62.9	43.2
P8A	L	A217	Std.	295.6	295.6	294.6	286.8	278.9	265.0	245.1	229.9	221.8	209.3	200.7	193.3	180.9	158.9	123.9	87.9	60.2	39.4
P8A	L	WC9	Spec.	295.6	295.6	295.2	292.0	285.9	284.1	283.8	281.7	279.1	271.7	265.6	255.3	240.9	204.0	154.8	109.9	75.3	49.2

* Permissible but not recommended for prolonged usage above 800°F (425°C).

Imperial 2260 int. Class (ASME B16.34 1996)

Prod. No.	ASTM Body Mat. Cast	ASME code B16.34	-20° to 100°	Pressure in lbf/sq. in. at Temp. °F (for intermediate ratings use linear interpolation) 200	300	400	500	600	650	700	750	800	850*	900	950	975	1000	1025	1050	1075
P83	E A216	Std.	5578	5085	4944	4774	4511	4122	4045	4014	3797	3101	2016	–	–	–	–	–	–	–
P83	E WCB	Spec.	5650	5650	5650	5650	5650	5370	5266	5226	4746	3873	2517	–	–	–	–	–	–	–
P83	J A217	Std.	5650	5650	5438	5221	5008	4556	4433	4276	4005	3824	3670	3385	2401	2014	1627	1356	1085	904
P83	J WC6	Spec.	5650	5650	5650	5650	5650	5650	5650	5523	5488	5424	5103	4425	3002	2518	2034	1695	1356	1130
P83	L A217	Std.	5650	5650	5487	5316	5008	4556	4433	4276	4005	3824	3670	3385	2843	2403	1962	1639	1316	1072
P83	L WC9	Spec.	5650	5650	5586	5455	5424	5424	5393	5360	5198	5067	4841	4520	3552	3003	2455	2050	1646	1340

Metric 2260 int. Class (ASME B16.34 1996)

Prod. No.	ASTM Body Mat. Cast	ASME code B16.34	-30° to 38°	Pressure in Bar at Temp. °C (for intermediate ratings use linear interpolation) 50	100	150	200	250	300	350	375	400	425	450*	475	500	525	550	575	600
P83	E A216	Std.	384.5	377.1	349.4	340.7	330.1	314.3	291.7	278.4	274.7	259.9	216.7	151.0	–	–	–	–	–	–
P83	E WCB	Spec.	389.6	389.6	389.6	389.6	389.6	389.6	375.7	362.4	355.7	324.8	270.7	188.5	–	–	–	–	–	–
P83	J A217	Std.	389.6	389.6	387.8	374.6	361.1	348.0	322.9	303.1	292.2	275.7	264.4	254.7	238.5	189.9	136.7	95.7	66.3	45.6
P83	J WC6	Spec.	389.6	389.6	389.6	389.6	389.6	389.6	389.6	387.5	380.5	378.2	374.2	355.4	317.2	242.3	170.9	119.7	82.9	57.0
P83	L A217	Std.	389.6	389.6	388.2	378.1	367.5	349.1	322.9	303.1	292.2	275.7	264.4	254.7	238.5	209.5	163.2	115.7	79.3	51.9
P83	L WC9	Spec.	389.6	389.6	389.0	385.0	376.9	374.4	374.0	371.3	368.0	358.0	349.9	336.3	317.4	268.9	204.0	144.7	99.2	64.9

Imperial 2500 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Mat. Cast	ASME code B16.34	-20° to 100°	Pressure in lbf/sq. in. at Temp. °F (for intermediate ratings use linear interpolation) 200	300	400	500	600	650	700	750	800	850*	900	950	975	1000	1025	1050	1075
P91	E A216	Std.	6170	5625	5470	5280	4990	4560	4475	4440	4200	3430	2230	–	–	–	–	–	–	–
P91	E WCB	Spec.	6250	6250	6250	6250	6250	5940	5825	5780	5250	4285	2785	–	–	–	–	–	–	–
P91	J A217	Std.	6250	6250	6015	5775	5540	5040	4905	4730	4430	4230	4060	3745	2655	2228	1800	1500	1200	1000
P91	J WC6	Spec.	6250	6250	6250	6250	6250	6250	6250	6110	6070	6000	5645	4895	3320	2785	2250	1875	1500	1250
P91	L A217	Std.	6250	6250	6070	5880	5540	5040	4905	4730	4430	4230	4060	3745	3145	2658	2170	1813	1455	1185
P91	L WC9	Spec.	6250	6250	6180	6035	6000	6000	5965	5930	5750	5605	5355	5000	3930	3323	2715	2268	1820	1483

Metric 2500 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Mat. Cast	ASME code B16.34	-30° to 38°	Pressure in Bar at Temp. °C (for intermediate ratings use linear interpolation) 50	100	150	200	250	300	350	375	400	425	450*	475	500	525	550	575	608
P91	E A216	Std.	425.3	417.1	386.5	376.9	365.1	347.6	322.7	308.0	303.8	287.5	239.7	167.0	–	–	–	–	–	–
P91	E WCB	Spec.	430.9	430.9	430.9	430.9	430.9	430.9	415.5	400.9	393.4	359.3	299.4	208.6	–	–	–	–	–	–
P91	J A217	Std.	430.9	430.9	429.0	414.4	399.5	384.9	357.1	335.3	323.2	304.9	292.5	281.8	263.9	210.1	151.2	105.9	73.4	50.4
P91	J WC6	Spec.	430.9	430.9	430.9	430.9	430.9	430.9	430.9	428.6	420.9	418.3	414.0	393.1	350.9	268.0	189.1	132.4	91.7	63.1
P91	L A217	Std.	430.9	430.9	429.4	418.2	406.5	386.2	357.1	335.3	323.2	304.9	292.5	281.8	263.9	231.7	180.5	127.9	87.7	57.4
P91	L WC9	Spec.	430.9	430.9	430.3	425.9	416.9	414.1	413.7	410.7	407.1	369.0	387.1	372.0	351.1	297.5	225.7	160.0	109.7	71.8

Imperial 2850 int. Class (ASME B16.34 1996)

Prod. No.	ASTM Body Mat. Forged	Cast	ASME code B16.34	-20° to 100°	Pressure in lbf/sq. in. at Temp. °F (for intermediate ratings use linear interpolation) 200	300	400	500	600	650	700	750	800	850*	900	950	975	1000	1025	1050	1075
P95	D A105	E A216	Std.	7035	6412	6236	6019	5688	5199	5102	5061	4788	3910	2542	–	–	–	–	–	–	–
P95	D A105	E WCB	Spec.	7125	7125	7125	7125	7125	6771	6641	6589	5985	4885	3175	–	–	–	–	–	–	–
P95		J A217	Std.	7125	7125	6858	6584	6314	5745	5591	5392	5050	4822	4628	4269	3028	2540	2052	1710	1368	1140
P95		J WC6	Spec.	7125	7125	7125	7125	7125	7125	7125	6965	6921	6840	6435	5579	3786	3175	2565	2138	1710	1425
P95	K A182	L A217	Std.	7125	7125	6920	6703	6314	5745	5591	5392	5050	4822	4628	4269	3586	3030	2475	2067	1660	1351
P95	K F22	L WC9	Spec.	7125	7125	7045	6880	6840	6840	6800	6760	6555	6391	6106	5700	4480	3787	3095	2585	2076	1690

Metric 2850 int. Class (ASME B16.34 1996)

Prod. No.	ASTM Body Mat. Forged	Cast	ASME code B16.34	-30° to 38°	Pressure in Bar at Temp. °C (for intermediate ratings use linear interpolation) 50	100	150	200	250	300	350	375	400	425	450*	475	500	525	550	575	600
P95	D A105	E A216	Std.	484.8	475.6	440.6	429.6	416.2	396.3	367.9	351.1	346.3	327.7	273.2	190.3	–	–	–	–	–	–
P95	D A105	E WCB	Spec.	491.3	491.3	491.3	491.3	491.3	491.3	473.7	457.0	448.5	409.6	341.4	237.8	–	–	–	–	–	–
P95		J A217	Std.	491.3	491.3	489.0	472.4	455.5	438.7	407.1	382.2	368.5	347.5	333.4	321.2	300.8	239.6	172.4	120.7	83.6	57.5
P95		J WC6	Spec.	491.3	491.3	491.3	491.3	491.3	491.3	491.3	488.6	479.8	476.9	471.9	448.2	400.0	305.5	215.6	150.9	104.5	71.9
P95	K A182	L A217	Std.	491.3	491.3	489.6	476.8	463.4	440.2	407.1	382.2	368.5	347.5	333.4	321.2	300.8	264.2	205.9	145.9	100.0	65.4
P95	K F22	L WC9	Spec.	491.3	491.3	490.6	485.5	475.3	472.1	471.6	468.2	464.1	451.5	441.3	424.1	400.3	339.1	257.3	182.5	125.0	81.8

* Permissible but not recommended for prolonged usage above 800°F (425°C).

Imperial 4500 Class (ASME B16.34 1996)

Prod.	ASTM Body Mat.		ASME code	-20° to	Pressure in lbf/sq. in. at Temp. °F (for intermediate ratings use linear interpolation)																
No.	Forged	Cast	B16.34	100°	200	300	400	500	600	650	700	750	800	850*	900	950	975	1000	1025	1050	1075
PX7	K A182	L A217	Std.	11250	11250	10925	10585	9965	9070	8825	8515	7970	7610	7305	6740	5665	4788	3910	3268	2625	2135
PX7	K F22	L WC9	Spec.	11250	11250	11120	10865	10800	10800	10735	10670	10350	10095	9645	9000	7070	5978	4885	4083	3280	2668

Metric 4500 Class (ASME B16.34 1996)

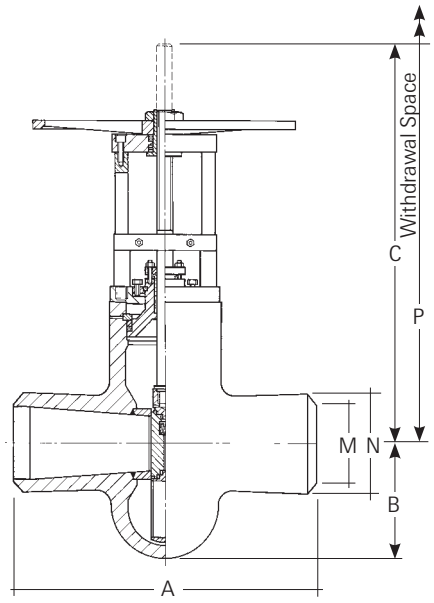
Prod.	ASTM Body Mat.		ASME code	-30° to	Pressure in Bar at Temp. °C (for intermediate ratings use linear interpolation)																
No.	Forged	Cast	B16.34	38°	50	100	150	200	250	300	350	375	400	425	450*	475	500	525	550	575	600
PX7	K A182	L A217	Std.	775.7	775.7	773.0	752.8	731.7	694.8	642.6	603.3	581.8	548.5	526.2	507.0	474.8	417.3	325.2	230.6	158.0	103.2
PX7	K F22	L WC9	Spec.	775.7	775.7	774.6	766.3	750.5	745.4	744.6	739.1	732.6	712.9	697.1	670.0	632.1	535.4	406.1	288.1	197.4	128.9

* Permissible but not recommended for prolonged usage above 800°F (425°C).

Sizes 5"–24" ASME B16.34 1000 Class

Main component materials

Description	Carbon Steel	Alloy Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC6	A217 Gr. WC9
Bonnet	A105	A182 F11	A182 F22
Cover	A516 Gr. 60	A387 Gr. 11	A387 Gr. 11
Stem	AISI 431	A565-XM32	A565-XM32
Gland	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Handwheel	Cast Iron/Steel	Cast Iron/Steel	Cast Iron/Steel
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite	Expanded Graphite	Expanded Graphite
Pressure Seal Ring	Expanded Graphite	Expanded Graphite	Expanded Graphite



Hydrostatic shell & seat leak test pressures

Press. Class	Material ASTM A-216 WCB Shell	Seat	ASTM A-217 WC6 Shell	Seat	ASTM A-217 WC9 Shell	Seat
1000	3750 psi	2750 psi	3750 psi	2750 psi	3750 psi	2750 psi
1000	259 bar	190 bar	259 bar	190 bar	259 bar	190 bar

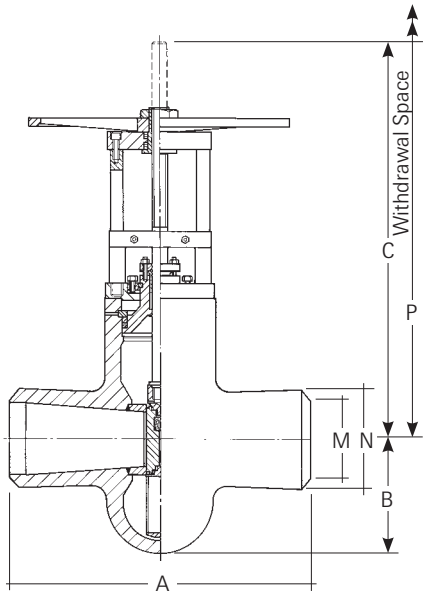
Dimensions

'P' Design (Lower ΔP) Size	A*	B	C	M	N	P	Weight	Cv	K Factor	Product Numbers Carbon Steel WCB	Alloy Steel WC6	Alloy Steel WC9
5 in	17	7.75	31.1	4.72	5.71	44	214 lb	1605	0.172	P67ES125P	P67JS125P	P67LS125P
125 mm	432	196	789	120	145	1118	97 kg					
6 in	20	9	36.38	5.63	6.81	51	352 lb	2240	0.179	P67ES150P	P67JS150P	P67LS150P
150 mm	508	228	924	143	173	1296	160 kg					
8 in	26	11.56	44.21	7.44	8.78	63	629 lb	3848	0.185	P67ES200P	P67JS200P	P67LS200P
200 mm	660	293	1123	189	223	1601	286 kg					
10 in	31	14.93	52.72	9.25	10.94	76	1265 lb	7355	0.121	P67ES250P	P67JS250P	P67LS250P
250 mm	787	379	1339	235	278	1931	575 kg					
12 in	36	17.25	59.88	11.10	12.99	87	1900 lb	9881	0.139	P67ES300P	P67JS300P	P67LS300P
300 mm	914	437	1521	282	330	2210	864 kg					
14 in	39	18.37	63.7	12.2	14.25	93	2213 lb	11126	0.160	P67ES350P	P67JS350P	P67LS350P
350 mm	991	466	1618	310	362	2363	1006 kg					
16 in	43	20.75	68.98	13.98	16.26	101	2992 lb	14474	0.163	P67ES400P	P67JS400P	P67LS400P
400 mm	1092	526	1752	355	413	2566	1360 kg					
18† in	48	23.12	78.35	15.59	18.31	115	4158 lb	18282	0.158	P67ES450P	P67JS450P	P67LS450P
450† mm	1219	586	1990	396	465	2921	1890 kg					
20† in	52	25.43	88.39	17.32	20.31	129	5890 lb	22709	0.156	P67ES500P	P67JS500P	P67LS500P
500† mm	1321	646	2245	440	516	3277	2677 kg					
24† in	61	30.31	101.77	20.79	24.37	150	9030 lb	33258	0.151	P67ES600P	P67JS600P	P67LS600P
600† mm	1549	770	2585	528	619	3810	4104 kg					

Notes

* Per ASME B16.10 1992

† 18", 20" & 24" Nominal sizes not shown in ASME B16.10



Sizes 5"–24" ASME B16.34 1000 Class

Main component materials

Description	Carbon Steel	Alloy Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC6	A217 Gr. WC9
Bonnet	A105	A182 F11	A182 F22
Cover	A516 Gr. 60	A387 Gr. 11	A387 Gr. 11
Stem	AISI 431	A565-XM32	A565-XM32
Gland	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Handwheel	Cast Iron/Steel	Cast Iron/Steel	Cast Iron/Steel
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite	Expanded Graphite	Expanded Graphite
Pressure Seal Ring	Expanded Graphite	Expanded Graphite	Expanded Graphite

Hydrostatic shell & seat leak test pressures

	Material					
Press. Class	ASTM A-216 WCB		ASTM A-217 WC6		ASTM A-217 WC9	
	Shell	Seat	Shell	Seat	Shell	Seat
1000	3750 psi	2750 psi	3750 psi	2750 psi	3750 psi	2750 psi
1000	259 bar	190 bar	259 bar	190 bar	259 bar	190 bar

Dimensions

'R' Design (Lower ΔP)										Product Numbers		
Size	A*	B	C	M	N	P	Weight	Cv	K Factor	Carbon Steel WCB	Alloy Steel WC6	Alloy Steel WC9
5 in	17	6.65	24.72	4.72	5.71	36	145 lb	956	0.485	P67ES125R	P67JS125R	P67LS125R
125 mm	432	169	628	120	145	915	66 kg					
6 in	0	7.75	31.1	5.63	6.81	44	233 lb	1410	0.452	P67ES150R	P67JS150R	P67LS150R
150 mm	508	196	789	143	173	1118	106 kg					
8 in	26	9	36.38	7.44	8.78	51	416 lb	1802	0.844	P67ES200R	P67JS200R	P67LS200R
200 mm	660	228	924	189	223	1296	189 kg					
10 in	31	11.56	44.21	9.25	10.94	63	704 lb	3181	0.647	P67ES250R	P67JS250R	P67LS250R
250 mm	787	293	1123	235	278	1601	320 kg					
12 in	36	14.94	52.72	11.10	12.99	76	1373 lb	6394	0.332	P67ES300R	P67JS300R	P67LS300R
300 mm	914	379	1339	282	330	1931	623 kg					
14 in	39	17.25	59.88	12.2	14.25	87	1985 lb	9161	0.236	P67ES350R	P67JS350R	P67LS350R
350 mm	991	437	1521	310	362	2210	901 kg					
16 in	43	18.36	63.7	13.98	16.26	93	2317 lb	9808	0.355	P67ES400R	P67JS400R	P67LS400R
400 mm	1092	466	1618	355	413	2363	1051 kg					
18† in	48	20.75	68.98	15.59	18.31	101	3166 lb	12887	0.318	P67ES450R	P67JS450R	P67LS450R
450† mm	1219	526	1752	396	465	2566	1436 kg					
20† in	52	23.12	78.35	17.32	20.31	115	4323 lb	16376	0.300	P67ES500R	P67JS500R	P67LS500R
500† mm	1321	586	1990	440	516	2921	1961 kg					
24† in	61	25.44	88.39	20.79	24.37	129	6424 lb	18634	0.481	P67ES600R	P67JS600R	P67LS600R
600† mm	1549	646	2245	528	619	3277	2914 kg					

Notes

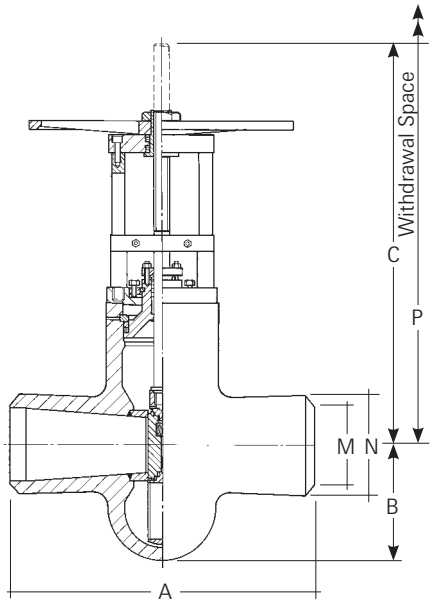
* Per ASME B16.10 1992

† 18", 20" & 24" Nominal sizes not shown in ASME B16.10

Sizes 5"–24" ASME B16.34 1690 Class

Main component materials

Description	Carbon Steel	Alloy Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC6	A217 Gr. WC9
Bonnet	A105	A182 F11	A182 F22
Cover	A516 Gr. 60	A387 Gr. 11	A387 Gr. 11
Stem	AISI 431	A565-XM32	A565-XM32
Gland	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Handwheel	Cast Iron/Steel	Cast Iron/Steel	Cast Iron/Steel
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite	Expanded Graphite	Expanded Graphite
Pressure Seal Ring	Expanded Graphite	Expanded Graphite	Expanded Graphite



Hydrostatic shell & seat leak test pressures

Press. Class	Material ASTM A-216 WCB Shell	Seat	ASTM A-217 WC6 Shell	Seat	ASTM A-217 WC9 Shell	Seat
1690	6350 psi	4650 psi	6350 psi	4650 psi	6350 psi	4650 psi
1690	438 bar	321 bar	438 bar	321 bar	438 bar	321 bar

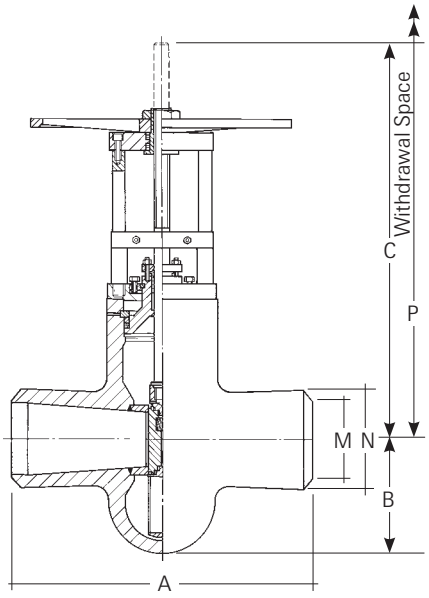
Dimensions

'P' Design (Lower ΔP) Size	A*	B	C	M	N	P	Weight	Cv	K Factor	Product Numbers Carbon Steel WCB	Alloy Steel WC6	Alloy Steel WC9
5 in	19	7.25	30.20	4.25	5.71	42	255 lb	1104	0.239	P73ES125P	P73JS125P	P73LS125P
125 mm	483	184	767	108	145	1066	116 kg					
6 in	22	8.81	31.46	5.12	6.81	46	425 lb	2371	0.194	P73ES150P	P73JS150P	P73LS150P
150 mm	559	223	799	130	173	1168	193 kg					
8 in	28	11.25	43.43	6.69	8.78	62	893 lb	3103	0.186	P73ES200P	P73JS200P	P73LS200P
200 mm	711	286	1103	170	223	1575	405 kg					
10 in	34	13.68	50.71	8.35	10.94	74	1533 lb	4873	0.183	P73ES250P	P73JS250P	P73LS250P
250 mm	864	347	1288	212	278	1880	696 kg					
12 in	39	16.25	58.15	10.04	12.99	84	2508 lb	7084	0.181	P73ES300P	P73JS300P	P73LS300P
300 mm	991	413	1477	255	330	2134	1138 kg					
14 in	42	17.93	64.00	11.02	14.25	93	3166 lb	8755	0.172	P73ES350P	P73JS350P	P73LS350P
350 mm	1066	455	1626	280	362	2362	1436 kg					
16 in	47	20.56	68.15	12.64	16.26	100	4380 lb	11760	0.165	P73ES400P	P73JS400P	P73LS400P
400 mm	1194	522	1731	321	413	2540	1987 kg					
18 in	53	22.75	77.28	14.09	18.31	114	6039 lb	14748	0.162	P73ES450P	P73JS450P	P73LS450P
450 mm	1346	577	1963	358	465	2896	2740 kg					
20 in	58	25.12	82.83	15.63	20.31	122	8263 lb	18319	0.159	P73ES500P	P73JS500P	P73LS500P
500 mm	1473	637	2104	397	516	3099	3748 kg					
24† in	66	30	100.28	18.78	24.37	148	13362 lb	27048	0.152	P73ES600P	P73JS600P	P73LS600P
600† mm	1676	761	2547	477	619	3759	6061 kg					

Notes

* Per ASME B16.10 1992

† 24" Nominal sizes not shown in ASME B16.10



Sizes 5"–24" ASME B16.34 1690 Class

Main component materials

Description	Carbon Steel	Alloy Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC6	A217 Gr. WC9
Bonnet	A105	A182 F11	A182 F22
Cover	A516 Gr. 60	A387 Gr. 11	A387 Gr. 11
Stem	AISI 431	A565-XM32	A565-XM32
Gland	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Handwheel	Cast Iron/Steel	Cast Iron/Steel	Cast Iron/Steel
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite	Expanded Graphite	Expanded Graphite
Pressure Seal Ring	Expanded Graphite	Expanded Graphite	Expanded Graphite

Hydrostatic shell & seat leak test pressures

	Material					
Press. Class	ASTM A-216 WCB		ASTM A-217 WC6		ASTM A-217 WC9	
	Shell	Seat	Shell	Seat	Shell	Seat
1690	6350 psi	4650 psi	6350 psi	4650 psi	6350 psi	4650 psi
1690	438 bar	321 bar	438 bar	321 bar	438 bar	321 bar

Dimensions

'R' Design (Lower ΔP)										Product Numbers		
Size	A*	B	C	M	N	P	Weight	Cv	K Factor	Carbon Steel WCB	Alloy Steel WC6	Alloy Steel WC9
5 in	19	5.94	23.87	4.25	5.71	34	216 lb	573	0.886	P73ES125R	P73JS125R	P73LS125R
125 mm	483	150	606	108	145	864	98 kg					
6 in	22	7.25	30.20	5.12	6.81	42	282 lb	1246	0.702	P73ES150R	P73JS150R	P73LS150R
150 mm	559	184	767	130	173	1066	128 kg					
8 in	28	8.81	31.46	6.69	8.78	46	500 lb	1427	0.880	P73ES200R	P73JS200R	P73LS200R
200 mm	711	223	799	170	223	1168	227 kg					
10 in	34	11.25	43.43	8.35	10.94	62	1023 lb	2545	0.671	P73ES250R	P73JS250R	P73LS250R
250 mm	864	286	1103	212	278	1575	464 kg					
12 in	39	13.69	50.71	10.04	12.99	74	1679 lb	4064	0.550	P73ES300R	P73JS300R	P73LS300R
300 mm	991	347	1288	255	330	1880	762 kg					
14 in	42	16.25	58.15	11.02	14.25	84	2625 lb	6419	0.320	P73ES350R	P73JS350R	P73LS350R
350 mm	1066	413	1477	280	362	2134	1191 kg					
16 in	47	17.94	64	12.64	16.26	93	3364 lb	7572	0.398	P73ES400R	P73JS400R	P73LS400R
400 mm	1194	455	1626	321	413	2362	1526 kg					
18 in	53	20.56	68.15	14.09	18.31	100	5880 lb	10428	0.324	P73ES450R	P73JS450R	P73LS450R
450 mm	1346	522	1731	358	465	2540	2667 kg					
20 in	58	22.75	77.28	15.63	20.31	114	6340 lb	13056	0.313	P73ES500R	P73JS500R	P73LS500R
500 mm	1473	577	1963	397	516	2896	2876 kg					
24† in	66	25.12	82.83	18.78	24.37	122	8980 lb	14839	0.505	P73ES600R	P73JS600R	P73LS600R
600† mm	1676	637	2104	477	619	3099	4074 kg					

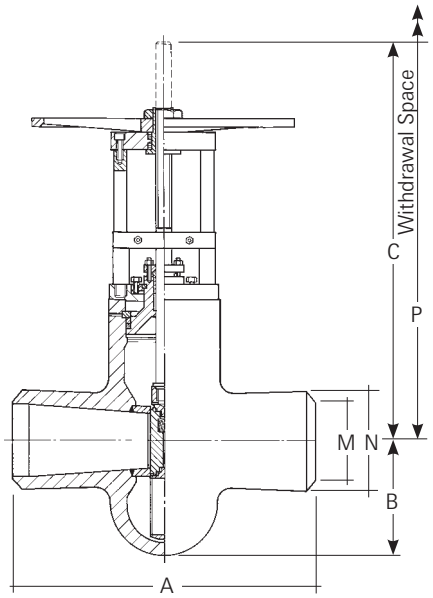
Notes

* Per ASME B16.10 1992
† 24" Nominal sizes not shown in ASME B16.10

Sizes 5"–24" ASME B16.34 1715 Class

Main component materials

Description	Carbon Steel	Alloy Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC6	A217 Gr. WC9
Bonnet	A105	A182 F11	A182 F22
Cover	A516 Gr. 60	A387 Gr. 11	A387 Gr. 11
Stem	AISI 431	A565-XM32	A565-XM32
Gland	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Handwheel	Cast Iron/Steel	Cast Iron/Steel	Cast Iron/Steel
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite	Expanded Graphite	Expanded Graphite
Pressure Seal Ring	Expanded Graphite	Expanded Graphite	Expanded Graphite



Hydrostatic shell & seat leak test pressures

Press. Class	Material ASTM A-216 WCB Shell	Seat	ASTM A-217 WC6 Shell	Seat	ASTM A-217 WC9 Shell	Seat
1715	6450 psi	4725 psi	6450 psi	4725 psi	6450 psi	4725 psi
1715	444 bar	326 bar	444 bar	326 bar	444 bar	326 bar

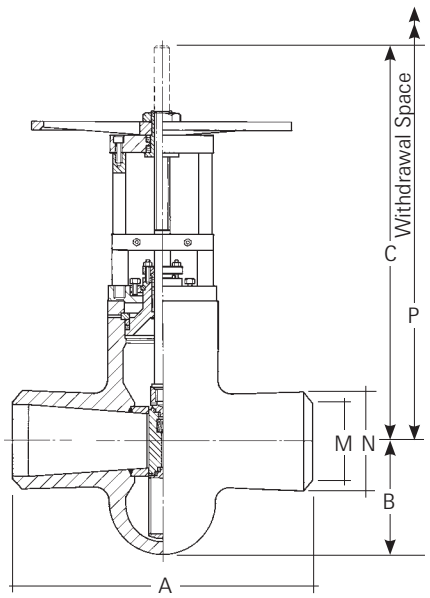
Dimensions

'T' Design (Lower ΔP) Size	A*	B	C	M	N	P	Weight	Cv	K Factor	Product Numbers Carbon Steel WCB	Alloy Steel WC6	Alloy Steel WC9
5 in	19	7.25	30.20	4.25	5.71	42	255 lb	1104	0.239	P8AES125T	P8AJS125T	P8ALS125T
125 mm	483	184	767	108	145	1066	116 kg					
6 in	22	8.81	31.46	5.12	6.81	46	425 lb	2371	0.194	P8AES150T	P8AJS150T	P8ALS150T
150 mm	559	223	799	130	173	1168	193 kg					
8 in	28	11.25	43.43	6.69	8.78	62	893 lb	3103	0.186	P8AES200T	P8AJS200T	P8ALS200T
200 mm	711	286	1103	170	223	1575	405 kg					
10 in	34	13.68	50.71	8.35	10.94	74	1533 lb	4873	0.183	P8AES250T	P8AJS250T	P8ALS250T
250 mm	864	347	1288	212	278	1880	696 kg					
12 in	39	16.25	58.15	10.04	12.99	84	2508 lb	7084	0.181	P8AES300T	P8AJS300T	P8ALS300T
300 mm	991	413	1477	255	330	2134	1138 kg					
14 in	42	17.93	64	11.02	14.25	93	3166 lb	8755	0.172	P8AES350T	P8AJS350T	P8ALS350T
350 mm	1066	455	1626	280	362	2362	1436 kg					
16 in	47	20.56	68.15	12.64	16.26	100	4380 lb	11760	0.165	P8AES400T	P8AJS400T	P8ALS400T
400 mm	1194	522	1731	321	413	2540	1987 kg					
18 in	53	22.75	77.28	14.09	18.31	114	6039 lb	14748	0.162	P8AES450T	P8AJS450T	P8ALS450T
450 mm	1346	577	1963	358	465	2896	2740 kg					
20 in	58	25.12	82.83	15.63	20.31	122	8263 lb	18319	0.159	P8AES500T	P8AJS500T	P8ALS500T
500 mm	1473	637	2104	397	516	3099	3748 kg					
24† in	66	30	100.28	18.78	24.37	148	13362 lb	27048	0.152	P8AES600T	P8AJS600T	P8ALS600T
600† mm	1676	761	2547	477	619	3759	6061 kg					

Notes

* Per ASME B16.10 1992

† 24" Nominal sizes not shown in ASME B16.10



Sizes 5"–24" ASME B16.34 1715 Class

Main component materials

Description	Carbon Steel	Alloy Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC6	A217 Gr. WC9
Bonnet	A105	A182 F11	A182 F22
Cover	A516 Gr. 60	A387 Gr. 11	A387 Gr. 11
Stem	AISI 431	A565-XM32	A565-XM32
Gland	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Handwheel	Cast Iron/Steel	Cast Iron/Steel	Cast Iron/Steel
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite	Expanded Graphite	Expanded Graphite
Pressure Seal Ring	Expanded Graphite	Expanded Graphite	Expanded Graphite

Hydrostatic shell & seat leak test pressures

	Material					
Press. Class	ASTM A-216 WCB		ASTM A-217 WC6		ASTM A-217 WC9	
	Shell	Seat	Shell	Seat	Shell	Seat
1715	6450 psi	4725 psi	6450 psi	4725 psi	6450 psi	4725 psi
1715	444 bar	326 bar	444 bar	326 bar	444 bar	326 bar

Dimensions

'S' Design (Lower ΔP)										Product Numbers		
Size	A*	B	C	M	N	P	Weight	Cv	K Factor	Carbon Steel WCB	Alloy Steel WC6	Alloy Steel WC9
5 in	19	5.94	23.87	4.25	5.71	34	216 lb	573	0.886	P8AES125S	P8AJS125S	P8ALS125S
125 mm	483	150	606	108	145	864	98 kg					
6 in	22	7.25	30.20	5.12	6.81	42	282 lb	1246	0.702	P8AES150S	P8AJS150S	P8ALS150S
150 mm	559	184	767	130	173	1066	128 kg					
8 in	28	8.81	31.46	6.69	8.78	46	500 lb	1427	0.880	P8AES200S	P8AJS200S	P8ALS200S
200 mm	711	223	799	170	223	1168	227 kg					
10 in	34	11.25	43.43	8.35	10.94	62	1023 lb	2545	0.671	P8AES250S	P8AJS250S	P8ALS250S
250 mm	864	286	1103	212	278	1575	464 kg					
12 in	39	13.69	50.71	10.04	12.99	74	1679 lb	4064	0.550	P8AES300S	P8AJS300S	P8ALS300S
300 mm	991	347	1288	255	330	1880	762 kg					
14 in	42	16.25	58.15	11.02	14.25	84	2625 lb	6419	0.320	P8AES350S	P8AJS350S	P8ALS350S
350 mm	1066	413	1477	280	362	2134	1191 kg					
16 in	47	17.94	64	12.64	16.26	93	3364 lb	7572	0.398	P8AES400S	P8AJS400S	P8ALS400S
400 mm	1194	455	1626	321	413	2362	1526 kg					
18 in	53	20.56	68.15	14.09	18.31	100	5880 lb	10428	0.324	P8AES450S	P8AJS450S	P8ALS450S
450 mm	1346	522	1731	358	465	2540	2667 kg					
20 in	58	22.75	77.28	15.63	20.31	114	6340 lb	13056	0.313	P8AES500S	P8AJS500S	P8ALS500S
500 mm	1473	577	1963	397	516	2896	2876 kg					
24† in	66	25.12	82.83	18.78	24.37	122	8980 lb	14839	0.505	P8AES600S	P8AJS600S	P8ALS600S
600† mm	1676	637	2104	477	619	3099	4074 kg					

Notes

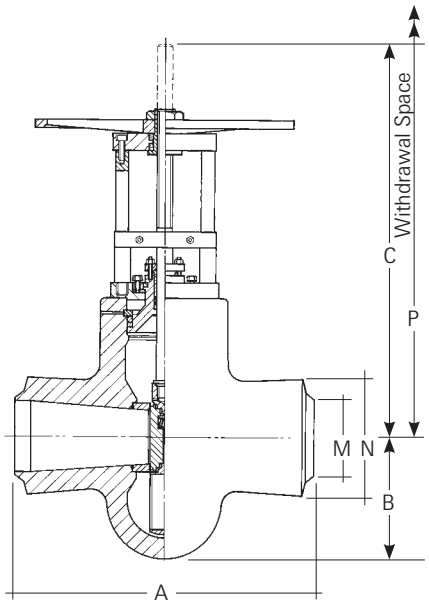
* Per ASME B16.10 1992

† 24" Nominal sizes not shown in ASME B16.10

Sizes 5"–24" ASME B16.34 2260 Class

Main component materials

Description	Carbon Steel	Alloy Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC6	A217 Gr. WC9
Bonnet	A105	A182 F11	A182 F22
Cover	A516 Gr. 60	A387 Gr. 11	A387 Gr. 11
Stem	AISI 431	A565-XM32	A565-XM32
Gland	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Handwheel	Cast Iron/Steel	Cast Iron/Steel	Cast Iron/Steel
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite	Expanded Graphite	Expanded Graphite
Pressure Seal Ring	Expanded Graphite	Expanded Graphite	Expanded Graphite



Hydrostatic shell & seat leak test pressures

Press. Class	Material ASTM A-216 WCB Shell	Seat	ASTM A-217 WC6 Shell	Seat	ASTM A-217 WC9 Shell	Seat
2260	8475 psi	6225 psi	8475 psi	6225 psi	8475 psi	6225 psi
2260	585 bar	429 bar	585 bar	429 bar	585 bar	429 bar

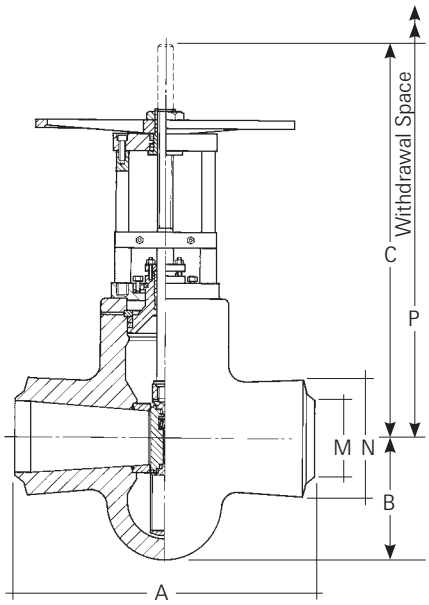
Dimensions

'P' Design (Lower ΔP) Size	A*	B	C	M	N	P	Weight	Cv	K Factor	Product Numbers Carbon Steel WCB	Alloy Steel WC6	Alloy Steel WC9
5 in	21	7.75	30.31	3.86	5.71	43	359 lb	1168	0.145	P83ES125P	P83JS125P	P83LS125P
125 mm	533	197	770	98	145	1092	163 kg					
6 in	24	9.12	31.42	4.65	6.81	46	568 lb	1692	0.146	P83ES150P	P83JS150P	P83LS150P
150 mm	610	232	798	118	173	1168	258 kg					
8 in	30	11.25	42.95	6.14	8.78	62	1036 lb	2566	0.193	P83ES200P	P83JS200P	P83LS200P
200 mm	762	285	1091	156	223	1575	470 kg					
10 in	36	13.75	50.12	7.64	10.94	72	1835 lb	4091	0.182	P83ES250P	P83JS250P	P83LS250P
250 mm	914	349	1273	194	278	1829	833 kg					
12 in	41	16.43	57.52	9.17	12.99	84	2926 lb	5926	0.180	P83ES300P	P83JS300P	P83LS300P
300 mm	1041	417	1461	233	330	2134	1327 kg					
14 in	44	17.87	58.70	10.08	14.25	87	3819 lb	7121	0.182	P83ES350P	P83JS350P	P83LS350P
350 mm	1117	453	1491	256	362	2210	1732 kg					
16 in	49	20.62	67.36	11.54	16.26	100	5696 lb	9803	0.165	P83ES400P	P83JS400P	P83LS400P
400 mm	1245	523	1711	293	413	2540	2584 kg					
18 in	55	23.31	79.25	12.91	18.31	117	8725 lb	13132	0.144	P83ES450P	P83JS450P	P83LS450P
450 mm	1397	592	2013	328	465	2972	3958 kg					
20 in	60	25.06	81.85	14.25	20.31	122	10243 lb	15039	0.163	P83ES500P	P83JS500P	P83LS500P
500 mm	1524	636	2079	362	516	3099	4646 kg					
24† in	68	29.93	95.67	17.13	24.37	143	16034 lb	22143	0.157	P83ES600P	P83JS600P	P83LS600P
600† mm	1727	760	2430	435	619	3632	7273 kg					

Notes

* Per ASME B16.10 1992

† 24" Nominal sizes not shown in ASME B16.10



Sizes 5"–24" ASME B16.34 2260 Class

Main component materials

Description	Carbon Steel	Alloy Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC6	A217 Gr. WC9
Bonnet	A105	A182 F11	A182 F22
Cover	A516 Gr. 60	A387 Gr. 11	A387 Gr. 11
Stem	AISI 431	A565-XM32	A565-XM32
Gland	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Handwheel	Cast Iron/Steel	Cast Iron/Steel	Cast Iron/Steel
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite	Expanded Graphite	Expanded Graphite
Pressure Seal Ring	Expanded Graphite	Expanded Graphite	Expanded Graphite

Hydrostatic shell & seat leak test pressures

Press. Class	Material ASTM A-216 WCB Shell	Seat	ASTM A-217 WC6 Shell	Seat	ASTM A-217 WC9 Shell	Seat
2260	8475 psi	6225 psi	8475 psi	6225 psi	8475 psi	6225 psi
2260	585 bar	429 bar	585 bar	429 bar	585 bar	429 bar

Dimensions

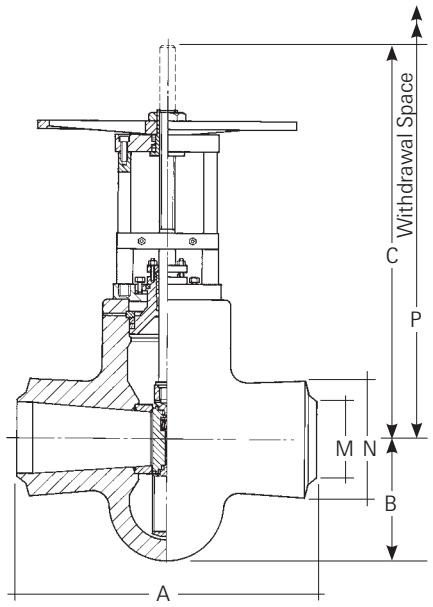
'R' Design (Lower ΔP) Size	A*	B	C	M	N	P	Weight	Cv	K Factor	Product Numbers Carbon Steel WCB	Alloy Steel WC6	Alloy Steel WC9
5 in	21	6.25	23.94	3.86	5.71	35	255 lb	641	0.483	P83ES125R	P83JS125R	P83LS125R
125 mm	533	159	608	98	145	889	116 kg					
6 in	24	7.75	30.31	4.65	6.81	43	392 lb	1066	0.368	P83ES150R	P83JS150R	P83LS150R
150 mm	610	197	770	118	173	1092	178 kg					
8 in	30	9.12	31.42	6.14	8.78	46	660 lb	1435	0.617	P83ES200R	P83JS200R	P83LS200R
200 mm	762	232	798	156	223	1168	300 kg					
10 in	36	11.25	42.95	7.64	10.94	62	1180 lb	2206	0.626	P83ES250R	P83JS250R	P83LS250R
250 mm	914	285	1091	194	278	1575	535 kg					
12 in	41	13.75	50.12	9.17	12.99	72	2000 lb	3556	0.500	P83ES300R	P83JS300R	P83LS300R
300 mm	1041	349	1273	233	330	1829	907 kg					
14 in	44	16.44	57.52	10.08	14.25	84	3050 lb	5519	0.303	P83ES350R	P83JS350R	P83LS350R
350 mm	1117	417	1461	256	362	2134	1384 kg					
16 in	49	17.87	58.70	11.54	16.26	87	4165 lb	6392	0.388	P83ES400R	P83JS400R	P83LS400R
400 mm	1245	453	1491	293	413	2210	1889 kg					
18 in	55	20.56	67.36	12.91	18.31	100	6100 lb	8994	0.307	P83ES450R	P83JS450R	P83LS450R
450 mm	1397	523	1711	328	465	2540	2767 kg					
20 in	60	23.31	79.25	14.25	20.31	117	9200 lb	12217	0.247	P83ES500R	P83JS500R	P83LS500R
500 mm	1524	592	2013	362	516	2972	4173 kg					
24† in	68	25.04	81.85	17.13	24.37	122	11100 lb	12651	0.481	P83ES600R	P83JS600R	P83LS600R
600† mm	1727	636	2079	435	619	3099	5035 kg					

Notes

* Per ASME B16.10 1992

† 24" Nominal sizes not shown in ASME B16.10

Sizes 5"–24" ASME B16.34 2500 Class



Main component materials

Description	Carbon Steel	Alloy Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC6	A217 Gr. WC9
Bonnet	A105	A182 F11	A182 F22
Cover	A516 Gr. 60	A387 Gr. 11	A387 Gr. 11
Stem	AISI 431	A565-XM32	A565-XM32
Gland	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Handwheel	Cast Iron/Steel	Cast Iron/Steel	Cast Iron/Steel
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite	Expanded Graphite	Expanded Graphite
Pressure Seal Ring	Expanded Graphite	Expanded Graphite	Expanded Graphite

Hydrostatic shell & seat leak test pressures

Press. Class	Material ASTM A-216 WCB Shell	Seat	ASTM A-217 WC6 Shell	Seat	ASTM A-217 WC9 Shell	Seat
2500	9375 psi	6875 psi	9375 psi	6875 psi	9375 psi	6875 psi
2500	647 bar	475 bar	647 bar	475 bar	647 bar	475 bar

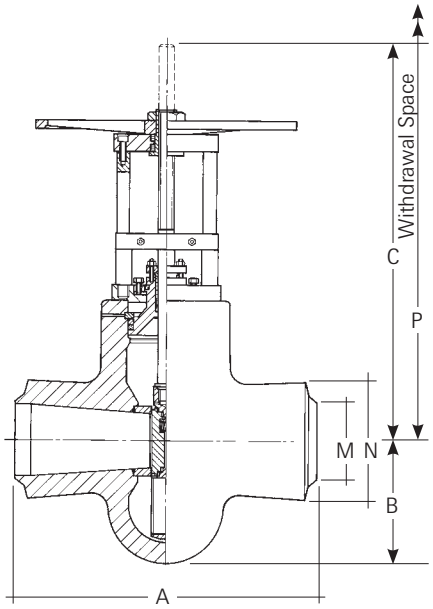
Dimensions

'T' Design (Lower ΔP) Size		A*	B	C	M	N	P	Weight	Cv	K Factor	Product Numbers Carbon Steel WCB	Alloy Steel WC6	Alloy Steel WC9
5	in	21	7.75	30.31	3.86	5.71	43	359 lb	1168	0.145	P91ES125T	P91JS125T	P91LS125T
125	mm	533	197	770	98	145	1092	163 kg					
6	in	24	9.12	31.42	4.65	6.81	49	568 lb	1692	0.146	P91ES150T	P91JS150T	P91LS150T
150	mm	610	232	798	118	173	1168	258 kg					
8	in	30	11.25	42.95	6.14	8.78	62	1036 lb	2566	0.193	P91ES200T	P91JS200T	P91LS200T
200	mm	762	285	1091	156	223	1575	470 kg					
10	in	36	13.75	50.12	7.64	10.94	72	1835 lb	4091	0.182	P91ES250T	P91JS250T	P91LS250T
250	mm	914	349	1273	194	278	1829	833 kg					
12	in	41	16.43	57.52	9.17	12.99	84	2926 lb	5926	0.180	P91ES300T	P91JS300T	P91LS300T
300	mm	1041	417	1461	233	330	2134	1327 kg					
14	in	44	17.87	58.70	10.08	14.25	87	3819 lb	7121	0.182	P91ES350T	P91JS350T	P91LS350T
350	mm	1117	453	1491	256	362	2210	1732 kg					
16	in	49	20.62	67.36	11.54	16.26	100	5696 lb	9803	0.165	P91ES400T	P91JS400T	P91LS400T
400	mm	1245	523	1711	293	413	2540	2584 kg					
18	in	55	23.31	79.25	12.91	18.31	117	8725 lb	13132	0.144	P91ES450T	P91JS450T	P91LS450T
450	mm	1397	592	2013	328	465	2972	3958 kg					
20	in	60	25.06	81.85	14.25	20.31	122	10243 lb	15039	0.163	P91ES500T	P91JS500T	P91LS500T
500	mm	1524	636	2079	362	516	3099	4646 kg					
24†	in	68	29.93	95.67	17.13	24.37	143	16034 lb	22143	0.157	P91ES600T	P91JS600T	P91LS600T
600†	mm	1727	760	2430	435	619	3632	7273 kg					

Notes

* Per ASME B16.10 1992

† 24" Nominal sizes not shown in ASME B16.10



Sizes 5"–24" ASME B16.34 2500 Class

Main component materials

Description	Carbon Steel	Alloy Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC6	A217 Gr. WC9
Bonnet	A105	A182 F11	A182 F22
Cover	A516 Gr. 60	A387 Gr. 11	A387 Gr. 11
Stem	AISI 431	A565-XM32	A565-XM32
Gland	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Handwheel	Cast Iron/Steel	Cast Iron/Steel	Cast Iron/Steel
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite	Expanded Graphite	Expanded Graphite
Pressure Seal Ring	Expanded Graphite	Expanded Graphite	Expanded Graphite

Hydrostatic shell & seat leak test pressures

	Material					
Press. Class	ASTM A-216 WCB		ASTM A-217 WC6		ASTM A-217 WC9	
	Shell	Seat	Shell	Seat	Shell	Seat
2500	9375 psi	6875 psi	9375 psi	6875 psi	9375 psi	6875 psi
2500	647 bar	475 bar	647 bar	475 bar	647 bar	475 bar

Dimensions

'S' Design (Lower ΔP)											Product Numbers		
Size		A*	B	C	M	N	P	Weight	Cv	K Factor	Carbon Steel WCB	Alloy Steel WC6	Alloy Steel WC9
5	in	21	6.57	23.94	3.82	5.71	35	255 lb	640	0.464	P91ES125S	P91JS125S	P91LS125S
125	mm	533	167	608	97	145	889	116 kg					
6	in	24	8.18	30.31	4.53	6.81	43	392 lb	1078	0.324	P91ES150S	P91JS150S	P91LS150S
150	mm	610	208	770	115	173	1092	178 kg					
8	in	30	10.43	36.73	5.91	8.78	54	926 lb	1931	0.292	P91ES200S	P91JS200S	P91LS200S
200	mm	762	265	933	150	223	1372	420 kg					
10	in	36	12.83	44	7.36	10.94	64	1705 lb	3100	0.273	P91ES250S	P91JS250S	P91LS250S
250	mm	914	326	1118	187	278	1626	773 kg					
12	in	41	15.43	51.34	8.74	12.99	75	2761 lb	4785	0.228	P91ES300S	P91JS300S	P91LS300S
300	mm	1041	392	1304	222	330	1905	1252 kg					
14	in	44	16.42	57.52	9.61	14.25	84	3050 lb	5771	0.229	P91ES350S	P91JS350S	P91LS350S
350	mm	1117	417	1461	244	362	2134	1383 kg					
16	in	49	19.57	64.57	10.98	16.26	95	5515 lb	8137	0.196	P91ES400S	P91JS400S	P91LS400S
400	mm	1245	497	1640	279	413	2413	2501 kg					
18	in	55	20.59	67.36	12.36	18.31	100	6100 lb	9395	0.236	P91ES450S	P91JS450S	P91LS450S
450	mm	1397	523	1711	314	465	2540	2767 kg					
20†	in	60	23.31	79.25	13.74	20.31	117	9200 lb	12638	0.199	P91ES500S	P91JS500S	P91LS500S
500†	mm	1524	592	2013	349	516	2972	4172 kg					
24†	in	68	28	89.57	16.50	24.37	133	15679 lb	17121	0.226	P91ES600S	P91JS600S	P91LS600S
600†	mm	1727	713	2275	419	619	3378	7111 kg					

Notes

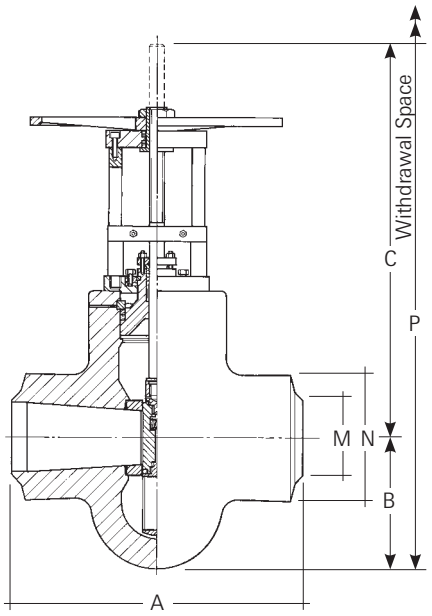
* Per ASME B16.10 1992

† 20" & 24" Nominal sizes not shown in ASME B16.10

Sizes 5"–24" ASME B16.34 2850 Class

Main component materials

Description	Carbon Steel	Alloy Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC6	A217 Gr. WC9
Bonnet	A105	A182 F11	A182 F22
Cover	A516 Gr. 60	A387 Gr. 11	A387 Gr. 11
Stem	AISI 431	A565-XM32	A565-XM32
Gland	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Handwheel	Cast Iron/Steel	Cast Iron/Steel	Cast Iron/Steel
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite	Expanded Graphite	Expanded Graphite
Pressure Seal Ring	Expanded Graphite	Expanded Graphite	Expanded Graphite



Hydrostatic shell & seat leak test pressures

Press. Class	Material ASTM A-216 WCB Shell	Seat	ASTM A-217 WC6 Shell	Seat	ASTM A-217 WC9 Shell	Seat
2850	10700 psi	7900 psi	10700 psi	7900 psi	10700 psi	7900 psi
2850	737 bar	541 bar	737 bar	541 bar	737 bar	541 bar

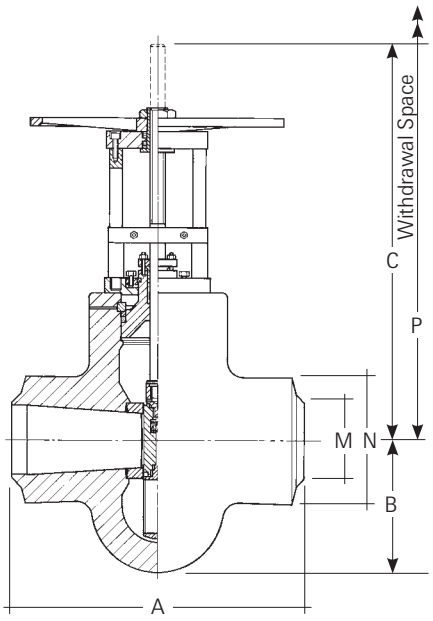
Dimensions

'P' Design (Lower ΔP) Size	A*	B	C	M	N	P	Weight	Cv	K Factor	Product Numbers Carbon Steel WCB	Alloy Steel WC6	Alloy Steel WC9
5 in	21	6.62	23.94	3.46	5.71	35	295 lb	683	0.274	P95ES125P	P95JS125P	P95LS125P
125 mm	533	169	608	88	145	889	134 kg					
6 in	24	8.18	30.31	4.17	6.81	43	528 lb	1135	0.210	P95ES150P	P95JS150P	P95LS150P
150 mm	610	208	770	106	173	1092	240 kg					
8 in	30	10.75	36.73	5.51	8.78	54	1058 lb	2020	0.202	P95ES200P	P95JS200P	P95LS200P
200 mm	762	273	933	140	223	1372	480 kg					
10 in	36	13.18	44	6.89	10.94	64	1907 lb	3231	0.193	P95ES250P	P95JS250P	P95LS250P
250 mm	914	334	1118	175	278	1626	865 kg					
12 in	41	15.93	51.34	8.23	12.99	75	3133 lb	4956	0.167	P95ES300P	P95JS300P	P95LS300P
300 mm	1041	404	1304	209	330	1905	1421 kg					
14 in	44	17.43	57.52	9.06	14.25	84	4160 lb	5988	0.168	P95ES350P	P95JS350P	P95LS350P
350 mm	1117	442	1461	230	362	2134	1887 kg					
16 in	49	20.25	64.57	10.39	16.26	95	6345 lb	8390	0.148	P95ES400P	P95JS400P	P95LS400P
400 mm	1245	514	1640	264	413	2413	2878 kg					
18 in	55	21.81	67.36	11.61	18.31	100	8160 lb	9804	0.169	P95ES450P	P95JS450P	P95LS450P
450 mm	1397	554	1711	295	465	2540	3701 kg					
20† in	60	24.68	79.25	12.83	20.31	117	12300 lb	13201	0.139	P95ES500P	P95JS500P	P95LS500P
500† mm	1524	627	2013	326	516	2972	5580 kg					
24† in	68	28.68	89.57	15.47	24.37	133	17668 lb	17889	0.160	P95ES600P	P95JS600P	P95LS600P
600† mm	1727	728	2275	393	619	3378	8014 kg					

Notes

* Per ASME B16.10 1992

† 20" & 24" Nominal sizes not shown in ASME B16.10



Sizes 5"–24" ASME B16.34 2850 Class

Main component materials

Description	Carbon Steel	Alloy Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC6	A217 Gr. WC9
Bonnet	A105	A182 F11	A182 F22
Cover	A516 Gr. 60	A387 Gr. 11	A387 Gr. 11
Stem	AISI 431	A565-XM32	A565-XM32
Gland	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630	Aluminium Bronze ASTM B150 630
Handwheel	Cast Iron/Steel	Cast Iron/Steel	Cast Iron/Steel
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite	Expanded Graphite	Expanded Graphite
Pressure Seal Ring	Expanded Graphite	Expanded Graphite	Expanded Graphite

Hydrostatic shell & seat leak test pressures

	Material					
Press. Class	ASTM A-216 WCB		ASTM A-217 WC6		ASTM A-217 WC9	
	Shell	Seat	Shell	Seat	Shell	Seat
2850	10700 psi	7900 psi	10700 psi	7900 psi	10700 psi	7900 psi
2850	737 bar	541 bar	737 bar	541 bar	737 bar	541 bar

Dimensions

'R' Design (Lower ΔP)										Product Numbers		
Size	A*	B	C	M	N	P	Weight	Cv	K Factor	Carbon Steel WCB	Alloy Steel WC6	Alloy Steel WC9
6 in	24	6.62	23.94	4.17	6.81	35	332 lb	606	0.736	P95ES150R	P95JS150R	P95LS150R
150 mm	610	169	608	106	173	889	151 kg					
8 in	30	8.19	30.31	5.51	8.78	43	630 lb	954	0.905	P95ES200R	P95JS200R	P95LS200R
200 mm	762	208	770	140	223	1092	286 kg					
10 in	36	10.75	36.73	6.89	10.94	54	1220 lb	1741	0.665	P95ES250R	P95JS250R	P95LS250R
250 mm	914	273	933	175	278	1372	554 kg					
12 in	41	13.19	44	8.23	12.99	64	2100 lb	2844	0.507	P95ES300R	P95JS300R	P95LS300R
300 mm	1041	334	1118	209	330	1626	953 kg					
14 in	44	15.94	51.34	9.06	14.25	75	3270 lb	4655	0.278	P95ES350R	P95JS350R	P95LS350R
350 mm	1117	404	1304	230	362	1905	1484 kg					
16 in	49	17.44	57.52	10.39	16.26	84	4440 lb	5402	0.357	P95ES400R	P95JS400R	P95LS400R
400 mm	1245	442	1461	264	413	2134	2014 kg					
18 in	55	20.25	64.57	11.61	18.31	95	6780 lb	7814	0.266	P95ES450R	P95JS450R	P95LS450R
450 mm	1397	514	1640	295	465	2413	3076 kg					
20† in	60	21.81	67.36	12.83	20.31	100	8610 lb	9093	0.293	P95ES500R	P95JS500R	P95LS500R
500† mm	1524	554	1711	326	516	2540	3906 kg					
24† in	68	24.69	79.25	15.47	24.37	117	13280 lb	11272	0.403	P95ES600R	P95JS600R	P95LS600R
600† mm	1727	627	2013	393	619	2972	6024 kg					

Notes

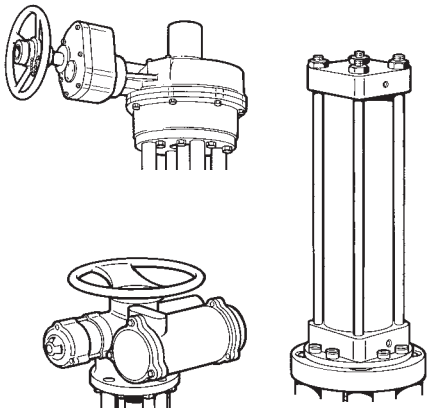
* Per ASME B16.10 1992

† 20" & 24" Nominal sizes not shown in ASME B16.10

Operators

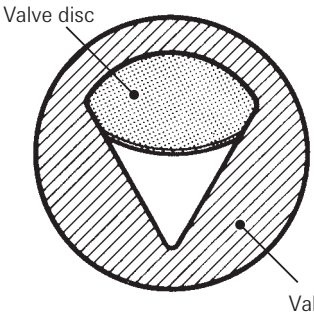
Dewrance Parallel Slide Gate Valves can be equipped with gear operators – when handwheel rim torque exceeds 50 lbs. push and 50 lbs. pull. Bevel gear; bevel and spur gear; and spur gear operators are available.
Power operators – All Dewrance Parallel Slide Gate Valves may be adapted for motor operators, pneumatic or hydraulic cylinders. The low torque requirements and the position seating of the Dewrance Valve provides economic power operator sizing. When ordering, the following information should be supplied:

- Operating pressure/temperature
- Differential pressure
- System fluid
- Operation time
- Control voltage
- System power supply
- Required enclosure type
- Additional electrical features



Parallel Slide Valves for Regulating Duty

If a valve is required for flow regulation duties Dewrance can supply a parallel slide valve fitted with a "vee-ported" seat, and special pattern discs. The upstream seat is drilled to provide a pressure equalizing feature and the valve becomes unidirectional.

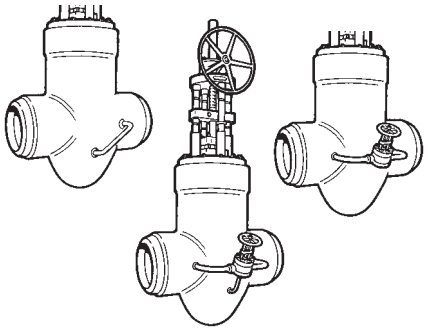


View through outlet of Vee-port Seated Valve

By-Pass Valves

Dewrance Parallel Slide Gate Valves can be fitted with By-Pass Valves when specified by the customer. Dewrance By-Pass Valves have a parallel slide gate design with a pressure seal bonnet, a forged body, butt-weld ends, can be motor operated and are in accordance with MSS-SP-45.
By-pass, equalizing by-pass, equalizing pipe and drain arrangements are available to suit customer design installation. Application requests should include the following additional information:

- Unidirectional or bidirectional flow
- Main valve installation position
- Piping variations or restriction unique to your design.



ASTM specification Ferrous

Type	Forgings						Castings				Studs		
Main use	Bonnets, Covers, Seats Discs						Valve Bodies				Covers, Glands		
ASTM Spec	A105	A182	A276	A182	BS970	A182	A216	A217	A217	ASTM A743	A193	A193	A193
(UNS)		F22	420	F347	316S31	F91	WCB	WC6	WC9	GR.C12A	GR.B7	GR.B16	GR.B6
Carbon %	0.75 max	0.15 max	0.15 min	0.08 max	0.07	0.08/0.12	0.30 max	0.20 max	0.05/0.18	0.12	0.37/0.49	0.36/0.47	0.15 max
Silicon %	1.5 max	0.5 max	1.0 max	1.0 max	1.0	0.2/0.5	0.6 max	0.6 max	0.6 max	0.2/0.5	0.15/0.35	0.15/0.35	1.0 max
Mang.%	–	0.3/0.6	1.0 max	2.0 max	2.0	0.3/0.6	1.0 max	0.5/0.8	0.40/0.70	0.3/0.6	0.65/1.1	0.45/0.70	1.0 max
Chrom.%	–	2.0/2.5	12.0/14.0	17.0/20.0	16.5/18.5	8.0/9.5	*0.5 max	1.0/1.5	2.0/2.75	8.0/9.5	0.75/1.2	0.80/1.15	11.5/13.5
Molybd.%		0.87/1.13	–	–	2.0/2.5	0.85/1.05	*0.20max	0.45/0.65	0.90/1.2	0.85/1.05	0.15/0.25	0.50/0.65	–
Nickel %	–	–	–	9.0/13.0	10.5/13.5	0.4 max	*0.5 max	*0.5 max	*0.50 max	0.4	–	–	–
Copper	–	–	–	–		–	*0.3 max	0.5 max	*0.50 max	–	–	–	–
Sulphur	0.08 max	0.04 max	0.03 max	0.03 max	0.03	0.01 max	0.045 max	0.045 max	0.045 max	0.018	0.04 max	0.040 max	0.03 max
Phosp. %	0.08 max	0.04 max	0.04 max	0.045max	0.045	0.02max	0.04 max	0.04 max	0.04 max	0.02	0.035 max	0.035 max	0.04 max
Niobium %	–	–	–	–		–	–	–	–		–	–	–
Vanadium	75/85	–	–	–		–	0.03	–	–		–	0.25/0.35	–
Almumin.%	2.0 max	–	–	–		–	–	–	–		–	0.015 max	–
Iron %	BAL	BAL	BAL	BAL	BAL	BAL	BAL	BAL	BAL	BAL	BAL	BAL	BAL
U.T.S.ksi min	70	60		75	74	85	70	70	70	85	125	125	110
Yield ksi min	36	30		30	30	60	36	40	40	60	105	105	85

* Residual elements total 1.0% max

Ferrous

Type	Plate	Bar				Nuts		
Main use	Covers	Stems		Pillars		Covers, Glands		
ASTM Spes	ASTM A516	A276	ASTM A565–	A108	A193	A194	A194	A194
(UNS)	GR 70	S43100	XM32	G10200	GR.B7	GR.2H	GR.4	GR.B8
Carbon %	0.18/0.31	0.2 max	0.08/0.15	0.18/0.23.	0.37/0.49	0.40min	0.4/0.5	–0.08 max
Silicon %	0.13/0.45	1.0 max	0.35 max	–	0.15/0.35	0.4 max	0.15/0.35	1.0 max
Mang.%	0.6/1.2	1.0 max	0.5/0.9	0.3/0.6	0.65/1.1	1.0 max	0.7/0.9	2.0 max
Chrom.%	–	15/17	11/12.5	–	0.75/1.20	–	–	18.0/20.0
Molybd. %	–		1.5/2.0	–	0.15/0.25	–	0.20/0.30	–
Nickel %	–	1.25/2.50	2.0/3.0	–		–	–	8.0/10.5
Copper	–	–	–	–	–	–	–	–
Sulphur	0.035 max	0.03 max	0.025 max	0.05 max	0.04 max	0.05 max	0.04 max	0.03 max
Phosp. %	0.035 max	0.04 max	0.025 max	0.04 max	0.35 max	0.04 max	0.035 max	0.045 max
Niobium %	–	–	–	–	–	–	–	–
Vanadium	–	–	0.25/0.40	–	–	–	–	–
Almumin.%	–	–	–	–	–	–	–	–
Iron %	BAL	BAL	BAL	BAL	BAL	BAL	BAL	BAL
U.T.S.ksi min	55		115		100			
Yield ksi min	30		75		75			

Non Ferrous

Type	Non Ferrous
Main use	Sleeve Gland
ASTM Spec	B150
(UNS)	C63000
Almumin.%	9.0–11.0
Silicon %	0.25 max
Mang.%	1.5 max
Tin. %	0.2 max
Zinc %	0.3 max
Nickel %	4.0–5.5
Copper	BAL
Iron %	2.0–4.0
Phosp.%	–
Niobium %	–
Vanadium	–
Lead %	–
U.T.S.ksi min	94
Yield KIS MIN	46

Pressure class

21/22	–	150 Class
31/32	–	300 Class
51/52	–	600 Class
67	–	1000 Class
73	–	1690 Class
8A	–	1715 Class
83	–	2260 Class
91	–	2500 Class
95	–	2850 Class
X7	–	4500 Class

End Connection

Even number	–	Flanged
Odd number	–	Butt weld

Body material

D ASTM A105
E ASTM A216 Gr WCB
J ASTM A217 Gr WC6
K ASTM A182 Gr F22
L ASTM A217 Gr WC9
R ASTM A217 Gr C12A

Valve type

A Automatic bypass valves
B Bled steam check valve
C
E Leak off valve
F Tilting disc check valve/Swing check valve
G
K
L Automatic non-return valves
M Stop valves
N Screw down non-return valves
P Parallel slide valves
R Reheater Isolators
T
U Special products
W Feed heater isolators
Y Feed water heater divertor
Z Miscellaneous

Valve operation on speciality

A Bevel gear op. from below
B Bevel gear op. from above
C Chain Wheel
D Hydraulic actuator
E Direct mtd. Limitorque
F Sleeve coupling
G Bevel gear local operation
H Local handwheel operation
L Locking device
M Adaptor plate
N Pneumatic actuator
P Spur gear op. from below
Q Spur gear op. from above
R Direct mounted Rotork
T Universal joint
U Undrilled or block ends with handwheel
V Special
W Power assisted
Y Direct mtd. Auma actuator
Z No external operator

Nominal end size (mm)

Minor design change

N Non return
T/P Standard flow
S/R Venturi

Minor product variation

By-pass operation

A Bevels op. from below
B Bevels op. from above
C Chain wheel
D No by-pass
E Direct mtd. Limitorque actuator
F Sleeve coupling
G Local op. through bevel gear
H Local handwheel
L Locking device
N
P Spur gear op. from below
Q Spur gear op. from above
R Direct mtd. Rotork actuator
Y Direct mtd. Auma actuator

Ancillary valve arrangement

B One by-pass
C One equalizing by-pass
D One by-pass & one equalizing by-pass
F No by-pass
G Equalizing pipe
H Vee port seat
J One by-pass & one by-pass drain valve
K One drain valve
L One equalizing pipe & one drain valve
M Vee port seat & equalizing pipe