DEWRANCE

tyco engineered products

Publication DEW 10/99

HIGH PERFORMANCE LINE VALVES FOR POWER GENERATION

tyco engineered products

DEWRANCE – A PIONEERING HISTORY IN STEAM

The DEWRANCE name owes its origin to John Dewrance, a pioneer of steam locomotive development.

He was responsible for the construction of George Stephenson's locomotive "The Rocket", assisting at the Rainhill trials in 1820. The success of "The Rocket" during these trials resulted in its use on the Liverpool & Manchester Railway.

The founders pioneer efforts in connection with the railways naturally influenced his engineering activities and a business was established in South London in 1844. John Dewrance & Co., was soon to become known as an innovative manufacturer of products for steam application.

Sir John Dewrance took over control of his father's business in 1879. Under his guidance, the pioneering work of his father continued. In 1882 he married Isabella Trevithick, granddaughter of Richard Trevithick, one of the leading early railway pioneers.

He became a director and Chairman of Babcock & Wilcox Ltd in 1899 a position he held until one year before his death in 1937. At this time, the company became a wholly owned subsidiary of Babcock & Wilcox eventually moving to Skelmersdale in 1965.

Today, Dewrance is a part of Tyco International Limited and operates in the Engineered Products Group of the company's Flow Control Division.

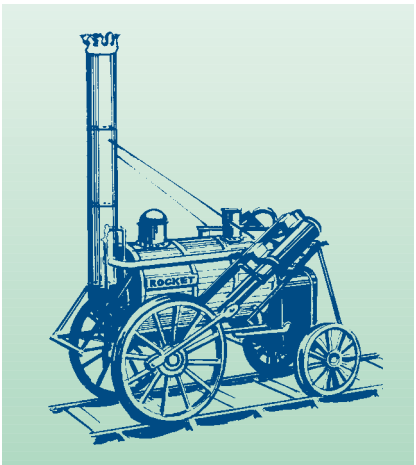
John Dewrance, founder of John Dewrance & Co.

DEWRANCE

Founded 1844

Dewrance is ideally positioned to fully meet the many and varied requirements of its customers.

Dewrance is best known, and enjoys a worldwide reputation, for its range of Parallel Slide Gate Valves. In addition, the company offers an unrivalled range of other high performance valves for power generation and associated industries.



George Stephenson's 'Rocket'.

A section of the valve engineering department at the Skelmersdale facility.

DEWRANCE CONTROLLING PRESSURE WORLDWIDE

The Dewrance business was acquired by Tyco International Ltd in 1998 from Dresser Industries.

From the Skelmersdale headquarters, Dewrance provides valve engineering, sales, contracts and administration to support a comprehensive range of line valves including parallel slide valves, check valves and special application products.

To keep abreast of customer requirements, Dewrance is committed to continual research and product development. The company is renowned for technical excellence and it's ability to provide flow solutions to match your application requirements.

A 30" Class 300 DEWRANCE Parallel Slide Valve being installed in a UK Power Station.

A section of the extensive valve component store at Skelmersdale.

Dewrance understand what productivity means to you the customer, and are fully aware of the dangers and costs associated with a shutdown. This is why the company provides a comprehensive valve repair, parts and service capability from the Tyco International valve service facility in Germany, complemented by the Skelmersdale operation where stocks of valve spares are available on a fast turnaround.

Being part of the world's largest valve company, with some of the leading international names in valve, actuator and controls manufacture, positions Dewrance to offer complete valve and control packages from a single source.

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CONTENTS

LLOYD'S REGISTER QUALITY ASSURANCE · ISO9001 · NATIONAL ACCREDITATION OF CERTIFICATION BODIES

MANUFACTURING TO INTERNATIONAL STANDARDS

Dewrance products are manufactured at one of Tyco Internationals' specialist valve manufacturing plants in Europe.

The facilities work closely with engineers at Skelmersdale to provide a total in-house capability for manufacture, testing and service of Dewrance products, the plants have full ISO 9001 accreditation and are regularly audited by major worldwide customers.

Valves are manufactured to international standards to fully meet the requirements of the contract specification.

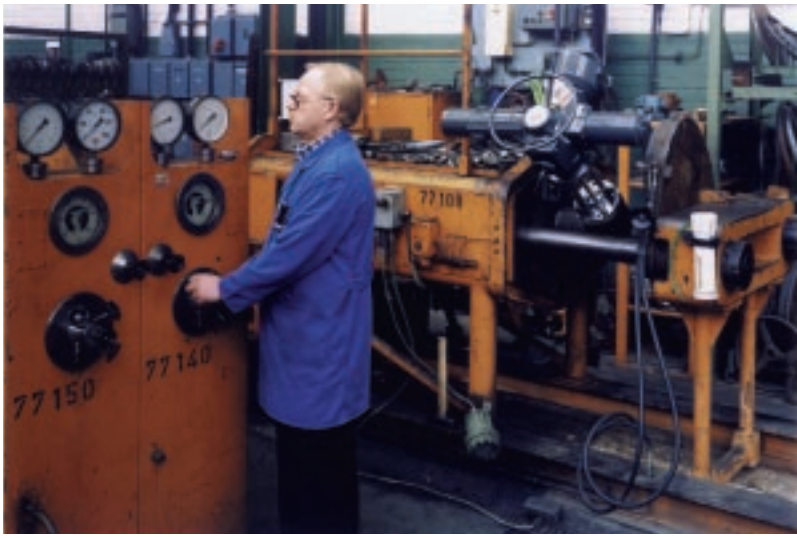
A broad range of materials are employed, all of which are stored with their individual certification in a fully controlled environment.

All valves are manufactured using top quality castings produced by companies who specialise in high integrity pressure retaining castings.

The plant has the most up to date valve testing facilities including hydraulic, water and steam test rigs, with full ASME Certification.

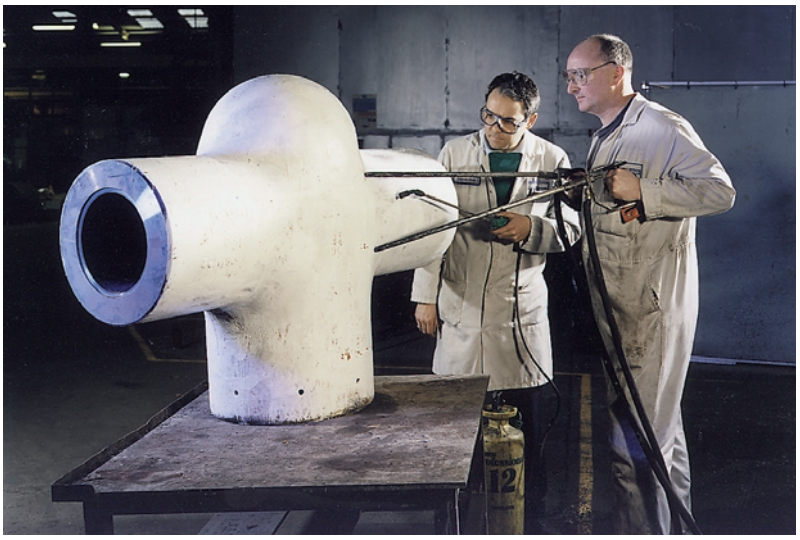
High pressure parallel slide valves in final assembly.

Despatch area where valves are prepared and packed for shipment to all parts of the world.

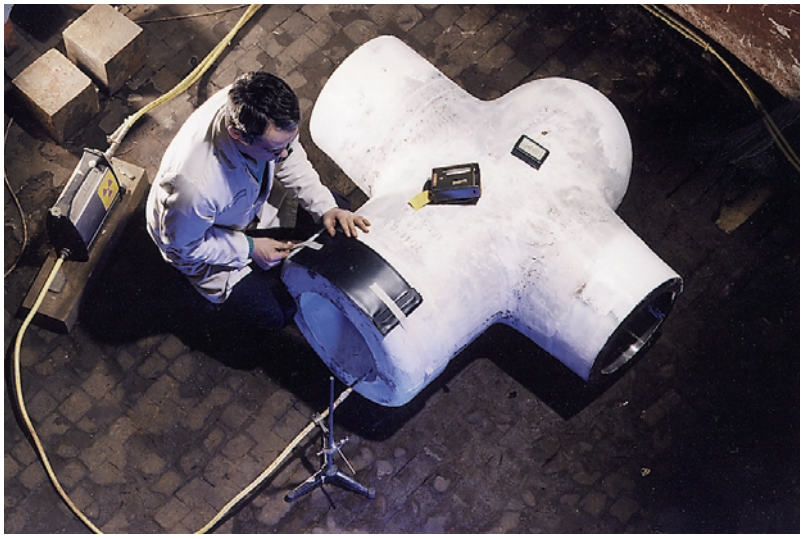


All valves are hydraulically tested up to pressures of 1164 barg.

State of the art machine tools play a major role in the quality and success of Dewrance products.



Magnetic particle inspection of valve body.



Radiographic and/or ultrasonic examination to ensure high integrity castings are provided.

DEWRANCE QUALITY POLICY

It is the policy of Dewrance to provide its customers with services and products which are safe, reliable, efficient and which fully satisfy our customers requirements and expectations.

Dewrance is committed to the communication and implementation of the policy by providing training, equipment, education and direction at all levels of the organisation. Dewrance will promote continuous improvement to the quality system, product and customer service by reviewing and evaluating the effectiveness of the policy on an ongoing basis.

LLOYD'S REGISTER QUALITY ASSURANCE · 1006051 · NATIONAL ACCREDITATION OF CERTIFICATION BODIES

CERTIFICATE OF APPROVAL

This is to certify that the Quality Management System of:

Dewrance Yarway Corporation
Skelmersdale, Lancashire, U.K.

has been approved by Lloyd's Register Quality Assurance to the following Quality Management System Standards:

EN ISO 9001:1994
ISO 9001:1994

The Quality Management System is applicable to:

Design and management of manufacture of Dewrance isolation, non-return check and control valves plus the supply of associated equipment for steam generating applications.

Approval
Certificate No: 961420

Original Approval: 27th May 1999

Current Certificate: 27th May 1999

Certificate Expiry: 31st May 2002

M Cottis

on behalf of LRQA (Coventry, U.K.)

NATIONAL ACCREDITATION OF CERTIFICATION BODIES
Registration Number 001

This approval is carried out in accordance with the LRQA assessment and certification procedures and monitored by LRQA.
The use of the UKAS Accreditation Mark indicates Accreditation in respect of those activities covered by the Accreditation Certificate Number 001
Macro rev 2

LLOYD'S REGISTER QUALITY ASSURANCE

QUALITY STANDARD AND NDE

Dewrance has rationalised the various international NDE standards and developed its own standard quality plans for each different level of inspection.

Applicable Dewrance Quality Levels

Valve Type	Body	Nominal Size	Valve Rating (Class)			
			150 – 600	900	1500	2500 & above
ASME B16.34	Forged	15mm – 100mm	S9	S9	S9	S9
Standard Class	**Cast**	**125mm & above**	**S9**	**S7**	**S7**	**S7**
ASME B16.34	Forged	15mm – 100mm	S8	S8	S8	S8
Special Class	**Cast**	**125mm & above**	**S8**	**S8**	**S8**	**S8**

Standard Levels of NDE Coverage

Standard Quality Plan	Visual Inspc.	Magnetic Particle Inspection	Ultrasonic Inspection		Equivalent Standard
S7	100%	B.W. Ends Change Sect.	B.W. Ends	–	ASME B16.34 Standard Class 900+
S8	100%	100%	B.W. Ends	Pressure Seal area & change of section*	ASME B16.34 Special Class
S9	100%	–	–	–	ESI 56/1 Lev. 6 ASME B16.34 Std. Class Forged up to 600 Class Cast

*As defined in Section 8 of ASME B16.34

Acceptance Standards

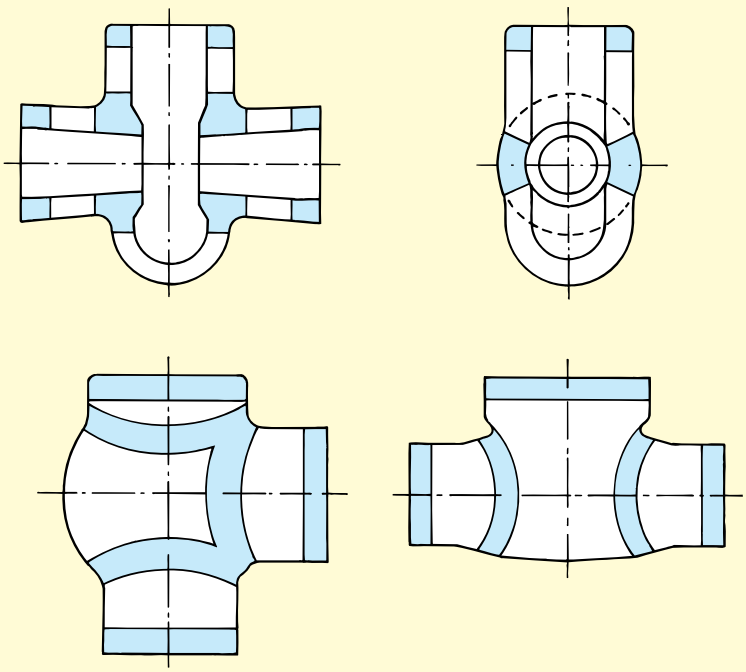
Ultrasonic Examination:
To ASME B16.34. Annex E.

Magnetic Particle:
To ASME B16.34 Annex C.

Visual Inspection MSS SP 55:

Radiography Radiographic examination is available as an optional extra, details available on request.

Typical Coverage Areas (other than 100%)



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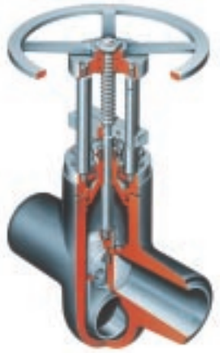
LINE VALVE PRODUCT RANGE

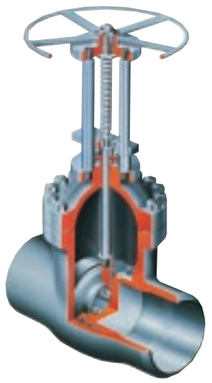


Parallel Slide Gate Valves

SIZES 5"-24" (125-600mm) in Carbon & Alloy Cast Steel.

Ratings ASME 1000-2850 Class or 160-500 Bar.

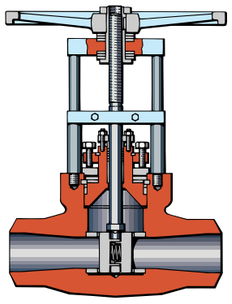
Butt weld connections only.



SIZES: 2½"-20" (65-500mm) in Carbon & Alloy Cast steel.

Ratings ASME 150-600 Class or 25-100 Bar.

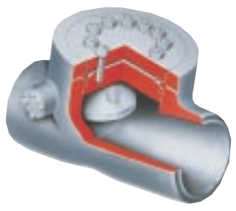
Flanged or Butt weld connections.



SIZES: 2"-4" (50-100mm) in Carbon & Alloy Forged steel.

Ratings ASME 1000-2850 Class or 160-500 Bar.

Butt weld connections only.



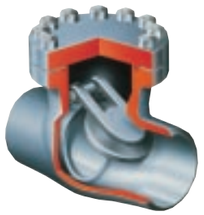
Tilting Disc Check Valves

SIZES: 2½"-24" (65-600mm) in Forged/Cast.
Carbon steel & Cast Alloy steel.

Ratings ASME 1000-2850 Class or 160-500 Bar

Butt weld connections only.

Note: 2½"-5" are swing check.

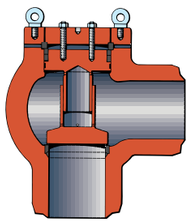


Swing Check

SIZES: 2½"-20" (65-500mm) in Carbon & Alloy Cast steel.

Ratings ASME 150-600 Class or 25-100 Bar.

Flanged orButt weld connections.

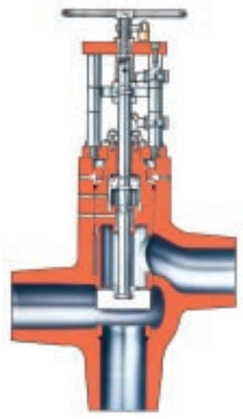


Lift Check

SIZES: 4"-16" (100-400mm) in Cast Carbon steel.

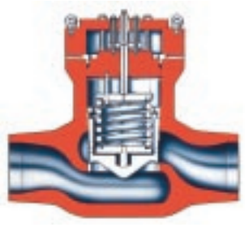
Ratings 100-400 Bar.

Butt weld connections only.

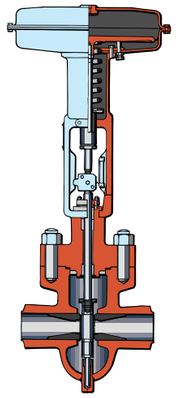


Feed Water Heater Isolation Systems

These valves are designed to bypass high pressure feed water around a group of heaters in the event of high water level in the shell caused by a defective tube, weld or drain system.They can be adjusted to operate between 3-20 seconds.



As an alternative, a spring load bypass valve can be supplied. This is the simplest form of bypass which relieves at a set pressure and is fail safe.The Dewrance design has the advantage of a pressure seal bonnet and external spring adjustment whilst the valve is still under pressure.



Leak off Equipment

These valves are designed to protect boiler feed pumps from over-heating at low rates of flow. At a predetermined minimum flow, the re-circulating valve opens automatically and re-closes at a predetermined greater flow.

Bled Steam Check Valves

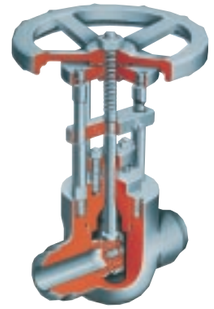
These valves are designed for installation in bled (extraction) steam lines between steam turbines and feed water heaters, but are equally applicable to reheater connections and bleed on pass-out lines in process plants.

Where power assistance is required, an Air to Open and Spring or Spring & Air to Close Pneumatic cylinder can easily be accommodated, whilst still maintaining the Automatic Gravity closing feature.

The valves are available in sizes 150mm to 1000mm for varying pressure and temperature applications.

Y-Pattern Globe Stop Valve

Designed to meet applications where the user requires a combined stop and check valve for Main Steam Isolation providing tight shut off with minimum pressure loss through the valve. Size range 6"-18" ASME Class 1000-2850 INT RATINGS, with WCB, WC6 and WC9 body materials. Butt Weld Ends as standard.

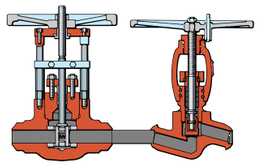


Parallel Slide Gate Valves

SIZES: ½" – 2" (15-50mm) in Carbon & Alloy steel.

Ratings ASME 1690-4500 Class or 500 Bar.

End connections Socket or Butt weld.

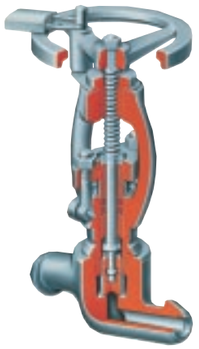


Tandem Vent & Drain Valve

SIZES: ¾"-2" (20-50mm)

Ratings ASME 1690-4500 Class.

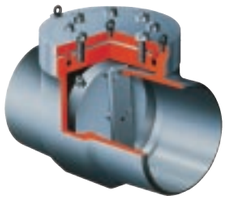
End connections Socket or Butt weld.



Globe Stop Valves

SIZES: ½"-2" (15-50mm)

Ratings ASME 1690-2500 Class.
End connections Socket or Butt weld.

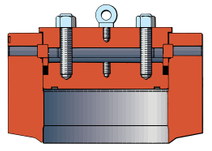


Reheater Isolation Device

Provides a time saving method of isolation for hydrostatic testing, wet or dry lay-up and chemical cleaning.

Available in Sizes 16"-36" (400-900mm) in Cast Carbon and Alloy steel.

Ratings ASME 500 Class (Cold Reheat) and 900 Class (Hot Reheat).



Pressure Seal Closures

Pressure Seal Closures provide ease of access to pressure vessels and pipelines for inspection purposes and can be fitted to existing installations.

Available in size up to 24" (600mm) in Forged Carbon and Alloy steels.

Ratings ASME 600-2850 Class.

A TOTAL VALVE CAPABILITY – FROM A SINGLE SOURCE

As part of Tyco Engineered Products Group, Dewrance is able to offer a comprehensive range of power industry valves. These include some of the industry's leading brands and include:

Sempell / Intervalve

Forged gate, globe and check valves

Large bore globe, stop and check valves

Low pressure wedge gate valves

Safety valves

Control valves

Anderson Greenwood, Crosby / Sapag

Safety and safety relief valves.

Yarway

Steam traps

Desuperheaters

Pump recirculation valves

Water level indicators

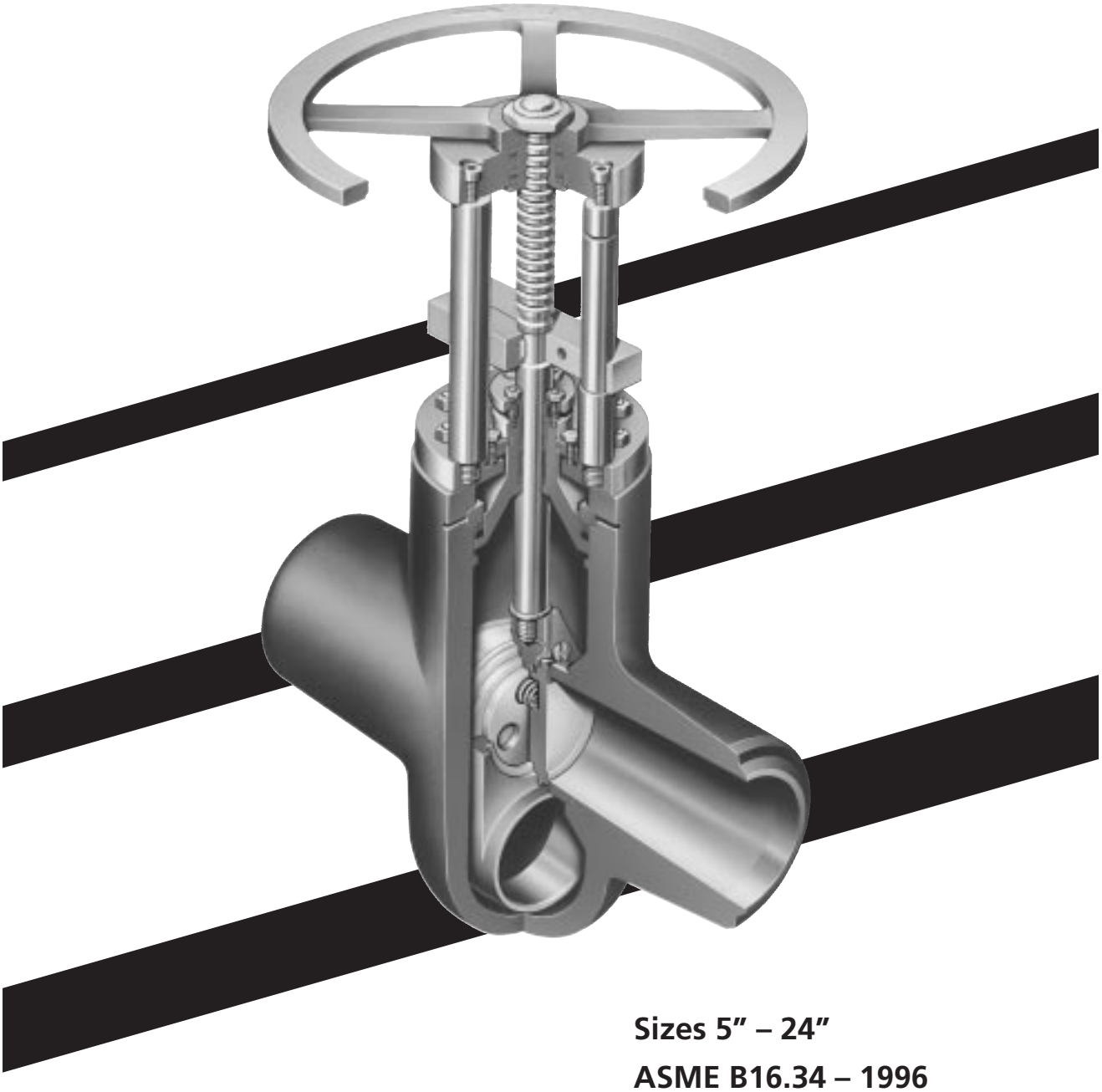
Hancock

Small gate, globe and check valves

This catalogue updates and incorporates the previous Dewrance catalogues Reference Numbers:

DE-1,	Parallel Slide Gate Valves 2–20" Class 1000–2850.
DE-2,	Reheater Isolating Device.
DE-3,	Parallel Slide Gate Valves 2–20" Class 300–600.
DE4,	High Pressure Steel Check Valves 2½–24" Class1000–2850.
DE-5,	Swing Check Valves 2–20" Class 150–600.
DE-6,	Forged Steel Parallel Slide Gate Valves 1–2" Class 1690–3525.
DE-7,	Forged Steel Parallel Slide Gate Valves 1–4" Class 4500.
DE-8,	Parallel Slide Gate Valves 2½–24" Class 150.
FWHIS/96,	Feed Water Heater Isolation System.
BSNR/96,	Bled Steam Check Valves.
DFS/A/H/89,	Forged Steel Globe, Screw down Non-Return & Check Valves ½–2" Class 1690–3525.

High pressure Cast Steel Parallel Slide Gate Valves



Sizes 5" – 24"

ASME B16.34 – 1996

Valve overall lengths to ASME B16.10 – 1992

Pressure Class: 1000, 1690, 1715, 2260, 2500, 2850

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High Pressure Cast Steel Parallel Slide Gate Valves

Sizes 5" – 24"

ASME B16.34 – 1996

Valve overall lengths to ASME B16.10 – 1992

Pressure Class: 1000, 1690, 1715, 2260, 2500, 2850

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

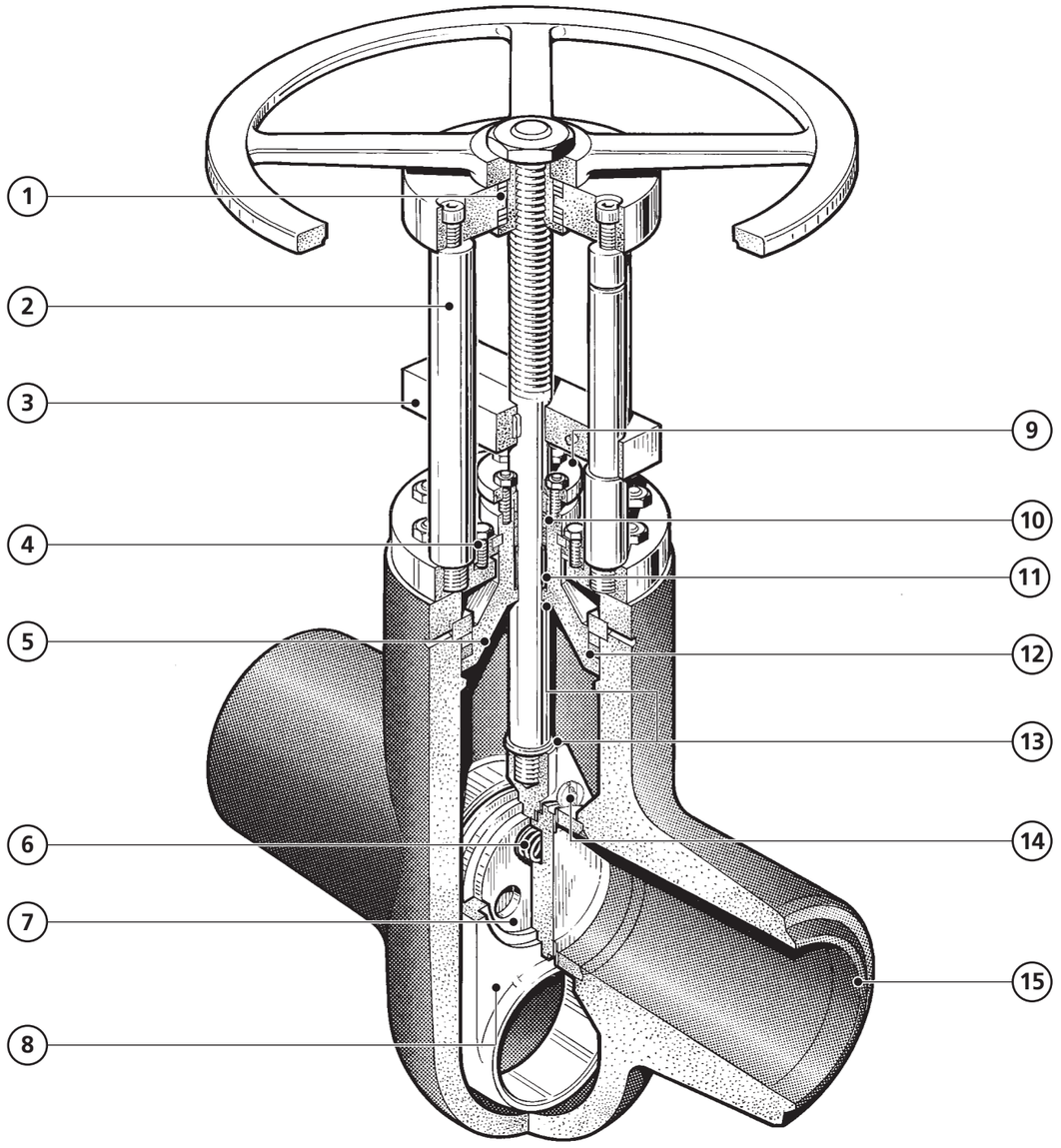
- Lower pressure drop characteristic than wedge gate valve
- Minimised flow turbulence
- Reduced actuator size/cost by 30% when compared to wedge gate
- Higher allowable seat velocity
- Improved sealing assisted by line pressure
- Low operating torque, seals on position not torque

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

High Pressure Cast Steel Parallel Slide Gate Valves

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.*



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.

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Operation of Parallel Slide Gate Valves

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

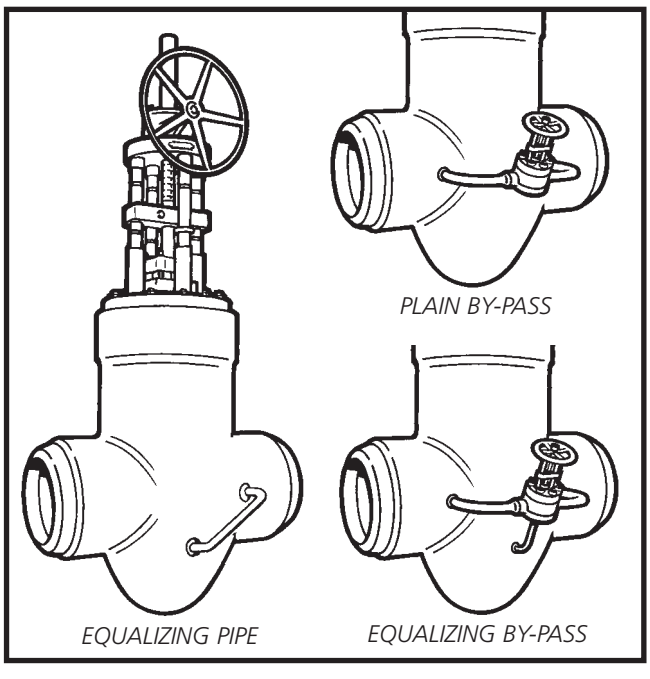
By-Pass valves are used to reduce the traversing differential pressure across the valve seat. This reduces the size of the operating gear, resulting in considerable savings. By-Passes also provide a convenient means for the initial warming through of pipe lines.

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.

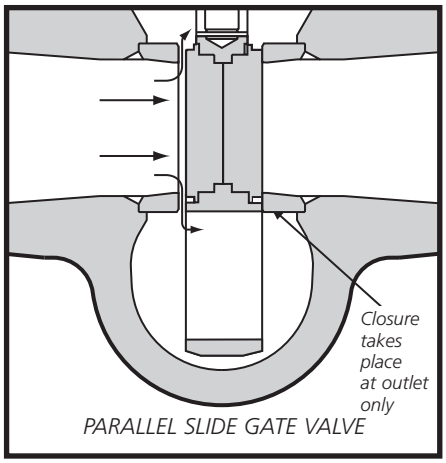
When a by-pass is used, it provides a means of fitting an equalizing connection from the main valve, through the by-pass and to the main line. This is a most convenient arrangement, as it does not make the main valve unidirectional.

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.

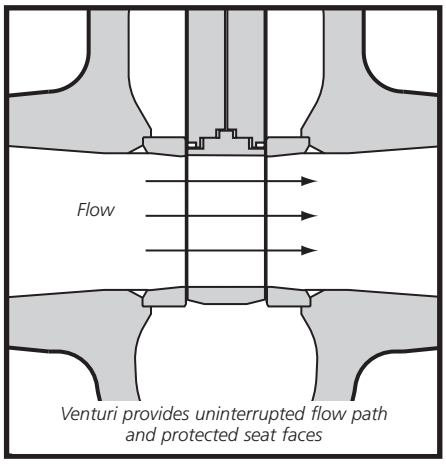
For bi-directional flow conditions only equalizing by-pass valves are recommended for water and a plain by-pass for steam.



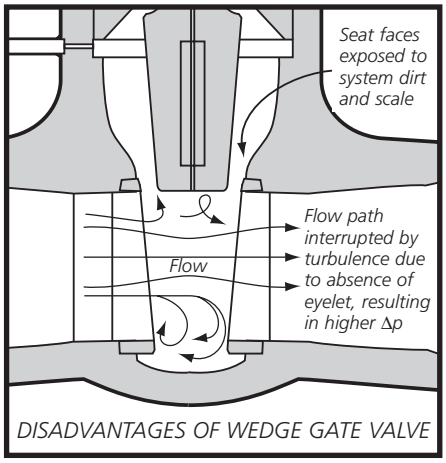
Advantages of Venturi Parallel Slide Valves



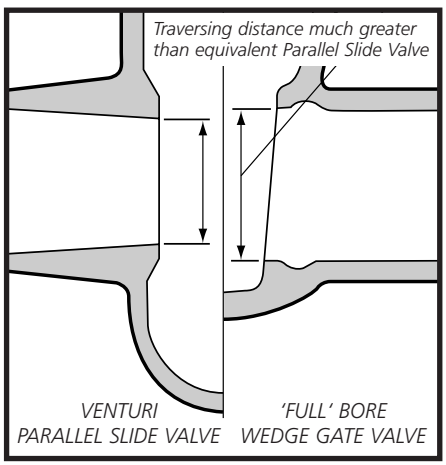
PARALLEL SLIDE GATE VALVE



Venturi provides uninterrupted flow path and protected seat faces



DISADVANTAGES OF WEDGE GATE VALVE



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.

DEWRANCE
tyco engineered products

Pressure/Temperature Ratings (Parallel Slide Valves)

Imperial 150 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. ˚F (for intermediate ratings use linear interpolation)																
					-20˚ to 100˚	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
P21	E	A216	44	Std.	285	260	230	200	170	140	125	110	95	80	65	–	–	–	–	–	–	–
P22		WCB	45	**Spec.**	**290**	**290**	**290**	**290**	**290**	**275**	**270**	**265**	**240**	**200**	**130**	–	–	–	–	–	–	–

Metric 150 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in Bar at Temp. ˚C (for intermediate ratings use linear interpolation)																
					-30˚ to 38˚	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
P21	E	A216	44	Std.	19.6	19.3	17.7	15.8	14.0	12.1	10.2	8.4	7.4	6.5	5.6	4.6	–	–	–	–	–	–
P22		WCB	45	**Spec.**	**20.0**	**20.0**	**20.0**	**20.0**	**20.0**	**20.0**	**19.3**	**18.5**	**18.0**	**16.4**	**14.0**	**9.7**	–	–	–	–	–	–

Imperial 300 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. ˚F (for intermediate ratings use linear interpolation)																
					-20˚ to 100˚	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
P31	E	A216	46	Std.	740	675	655	635	600	550	535	535	505	410	270	–	–	–	–	–	–	–
		WCB		**Spec.**	**750**	**750**	**750**	**750**	**750**	**715**	**700**	**695**	**630**	**515**	**335**	–	–	–	–	–	–	–
	J	A217		Std.	750	750	720	695	665	605	590	570	530	510	485	450	320	268	215	180	145	120
P32		WC6	47	**Spec.**	**750**	**750**	**750**	**750**	**750**	**750**	**750**	**735**	**730**	**720**	**680**	**585**	**400**	**335**	**270**	**225**	**180**	**150**
	L	A217		Std.	750	750	730	705	665	605	590	570	530	510	485	450	375	318	260	218	175	143
		WC9		**Spec.**	**750**	**750**	**740**	**725**	**720**	**720**	**715**	**710**	**690**	**675**	**645**	**600**	**470**	**398**	**325**	**273**	**220**	**178**

Metric 300 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in Bar at Temp. ˚C (for intermediate ratings use linear interpolation)																
					-30˚ to 38˚	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
P31	E	A216	46	Std.	51.0	50.0	46.4	45.1	43.9	41.8	38.9	36.9	36.6	34.6	28.7	20.2	–	–	–	–	–	–
		WCB		**Spec.**	**51.7**	**51.7**	**51.7**	**51.7**	**51.7**	**51.7**	**50.0**	**48.2**	**47.3**	**43.1**	**36.0**	**25.1**	–	–	–	–	–	–
	J	A217		Std.	51.7	51.7	51.5	49.6	48.1	46.2	42.9	40.3	38.9	36.5	35.2	33.7	31.7	25.3	18.2	12.7	8.8	6.0
P32		WC6	47	**Spec.**	**51.7**	**51.7**	**51.7**	**51.7**	**51.7**	**51.7**	**51.7**	**51.5**	**50.6**	**50.3**	**49.7**	**47.3**	**42.0**	**32.2**	**22.7**	**15.9**	**11.0**	**7.5**
	L	A217		Std.	51.7	51.7	51.5	50.3	48.7	46.3	42.9	40.3	38.9	36.5	35.2	33.7	31.7	27.7	21.6	15.3	10.5	6.9
		WC9		**Spec.**	**51.7**	**51.7**	**51.6**	**51.0**	**50.1**	**49.7**	**49.6**	**49.2**	**48.8**	**47.5**	**46.6**	**44.8**	**42.2**	**35.6**	**27.0**	**19.2**	**13.2**	**8.5**

Imperial 600 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. ˚F (for intermediate ratings use linear interpolation)																
					-20˚ to 100˚	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
P51	E	A216	48	Std.	1480	1350	1315	1270	1200	1095	1075	1065	1010	825	535	–	–	–	–	–	–	–
		WCB		**Spec.**	**1500**	**1500**	**1500**	**1500**	**1500**	**1425**	**1400**	**1390**	**1260**	**1030**	**670**	–	–	–	–	–	–	–
	J	A217		Std.	1500	1500	1445	1385	1330	1210	1175	1135	1065	1015	975	900	640	535	430	360	290	240
P52		WC6	49	**Spec.**	**1500**	**1500**	**1500**	**1500**	**1500**	**1500**	**1500**	**1465**	**1460**	**1440**	**1355**	**1175**	**795**	**668**	**540**	**450**	**360**	**300**
	L	A217		Std.	1500	1500	1455	1410	1330	1210	1175	1135	1065	1015	975	900	755	638	520	435	350	285
		WC9		**Spec.**	**1500**	**1500**	**1485**	**1450**	**1440**	**1440**	**1430**	**1425**	**1380**	**1345**	**1285**	**1200**	**945**	**798**	**650**	**543**	**435**	**355**

Metric 600 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in Bar at Temp. ˚C (for intermediate ratings use linear interpolation)																
					-30˚ to 38˚	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
P51	E	A216	48	Std.	102.0	100.0	92.8	90.6	87.8	83.6	77.5	74.0	72.9	69.1	57.6	40.1	–	–	–	–	–	–
		WCB		**Spec.**	**103.4**	**103.4**	**103.4**	**103.4**	**103.4**	**103.4**	**99.7**	**96.4**	**94.6**	**86.2**	**72.0**	**50.2**	–	–	–	–	–	–
	J	A217		Std.	103.4	103.4	103.0	99.5	95.8	92.4	85.7	80.4	77.6	73.3	70.2	67.7	63.4	50.6	36.3	25.4	17.7	12.0
P52		WC6	49	**Spec.**	**103.4**	**103.4**	**103.4**	**103.4**	**103.4**	**103.4**	**103.4**	**102.8**	**101.0**	**100.6**	**99.4**	**94.4**	**84.2**	**64.2**	**45.3**	**31.8**	**22.0**	**15.1**
	L	A217		Std.	103.4	103.4	103.0	100.3	97.5	92.7	85.7	80.4	77.6	73.3	70.2	67.7	63.4	55.7	43.3	30.7	21.1	13.8
		WC9		**Spec.**	**103.4**	**103.4**	**103.3**	**102.3**	**100.2**	**99.4**	**99.3**	**98.5**	**97.8**	**95.1**	**92.9**	**89.3**	**84.3**	**71.5**	**54.2**	**38.3**	**26.2**	**17.2**

Note 'a' – Permissible but not recommended for prolonged usage above 800˚F (425˚C).

Pressure/Temperature Ratings (Parallel Slide Valves)

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

Prod. No.	ASTM Body Material				Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. ˚F (for intermediate ratings use linear interpolation)																
	Forged		Cast				-20˚ to 100˚	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
P67	D	A105	E	A216 WCB	20	Std.	2468	2250	2188	2112	1995	1823	1789	1778	1678	1373	894	–	–	–	–	–	–	–
						Spec.	**2500**	**2500**	**2500**	**2500**	**2500**	**2378**	**2333**	**2312**	**2100**	**1716**	**1116**	–	–	–	–	–	–	–
			J	A217 WC6	21	Std.	2500	2500	2406	2311	2217	2017	1961	1894	1773	1694	1623	1499	1062	892	722	600	478	400
						Spec.	**2500**	**2500**	**2500**	**2500**	**2500**	**2500**	**2500**	**2444**	**2428**	**2400**	**2256**	**1956**	**1328**	**1114**	**900**	**750**	**600**	**500**
	K	A182 F22	L	A217 WC9		Std.	2500	2500	2428	2351	2217	2017	1961	1894	1773	1694	1623	1499	1256	1062	868	725	583	475
						Spec.	**2500**	**2500**	**2472**	**2416**	**2400**	**2400**	**2384**	**2372**	**2300**	**2244**	**2144**	**2000**	**1572**	**1328**	**1084**	**906**	**728**	**592**

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

Prod. No.	ASTM Body Material				Page No.	ASME Code B16.34	Pressure in Bar at Temp. ˚C (for intermediate ratings use linear interpolation)																	
	Forged		Cast				-30˚ to 38˚	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
P67	D	A105	E	A216 WCB	20	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	–	–	–	–	–	–
						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**	–	–	–	–	–	–
			J	A217 WC6	21	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
						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**
	K	A182 F22	L	A217 WC9		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
						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. No.	ASTM Body Material				Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. ˚F (for intermediate ratings use linear interpolation)																	
	Forged		Cast				-20˚ to 100˚	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
P73	D	A105	E	A216 WCB	22	Std.	4173	3803	3696	3571	3374	3082	3025	3002	2839	2320	1509	–	–	–	–	–	–	–
						Spec.	**4225**	**4225**	**4225**	**4225**	**4225**	**4016**	**3938**	**3909**	**3549**	**2896**	**1882**	–	–	–	–	–	–	–
			J	A217 WC6	23 36	Std.	4225	4225	4067	3904	3746	3408	3313	3199	2996	2861	2744	2530	1796	1507	1217	1014	811	676
						Spec.	**4225**	**4225**	**4225**	**4225**	**4225**	**4225**	**4225**	**4130**	**4106**	**4056**	**3814**	**3307**	**2247**	**1884**	**1521**	**1268**	**1014**	**845**
	K	A182 F22	L	A217 WC9	38	Std.	4225	4225	4102	3977	3746	3408	3313	3199	2996	2861	2744	2530	2124	1797	1469	1227	985	802
						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. No.	ASTM Body Material				Page No.	ASME Code B16.34	Pressure in Bar at Temp. ˚C (for intermediate ratings use linear interpolation)																	
	Forged		Cast				-30˚ to 38˚	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
P73	D	A105	E	A216 WCB	22	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	–	–	–	–	–	–
						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**	–	–	–	–	–	–
			J	A217 WC6	23 36	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
						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**
	K	A182 F22	L	A217 WC9	38	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
						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. No.	ASTM Body Material		Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. ˚F (for intermediate ratings use linear interpolation)																	
	Cast				-20˚ to 100˚	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
P8A	E	A216 WCB	24	Std.	4235	3859	3751	3624	3424	3127	3070	3047	2881	2355	1531	–	–	–	–	–	–	–
				Spec.	**4288**	**4288**	**4288**	**4288**	**4288**	**4076**	**3996**	**3967**	**3602**	**2939**	**1910**	–	–	–	–	–	–	–
	J	A217 WC6	25	Std.	4288	4288	4127	3962	3801	3458	3362	3246	3041	2903	2784	2568	1823	1529	1235	1029	823	686
				Spec.	**4288**	**4288**	**4288**	**4288**	**4288**	**4288**	**4288**	**4191**	**4166**	**4116**	**3871**	**3356**	**2280**	**1912**	**1544**	**1286**	**1029**	**858**
	L	A217 WC9		Std.	4288	4288	4162	4035	3801	3458	3362	3246	3041	2903	2784	2568	2156	1823	1491	1245	1000	814
				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. No.	ASTM Body Material		Page No.	ASME Code B16.34	Pressure in Bar at Temp. ˚C (for intermediate ratings use linear interpolation)																	
	Cast				-30˚ to 38˚	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
P8A	E	A216 WCB	24	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	–	–	–	–	–	–
				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**	–	–	–	–	–	–
	J	A217 WC6	25	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
				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**
	L	A21 WC9		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
				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**

Note 'a' – Permissible but not recommended for prolonged usage above 800˚F (425˚C).

Pressure/Temperature Ratings (Parallel Slide Valves)

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

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. °F (for intermediate ratings use linear interpolation)																
					-20° to 100°	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
P83	E	A216 WCB	26	Std.	5578	5085	4944	4774	4511	4122	4045	4014	3797	3101	2016	–	–	–	–	–	–	–
				Spec.	**5650**	**5650**	**5650**	**5650**	**5650**	**5370**	**5266**	**5226**	**4746**	**3873**	**2517**	–	–	–	–	–	–	–
	J	A217 WC6	27	Std.	5650	5650	5438	5221	5008	4556	4433	4276	4005	3824	3670	3385	2401	2014	1627	1356	1085	904
				Spec.	**5650**	**5650**	**5650**	**5650**	**5650**	**5650**	**5650**	**5523**	**5488**	**5424**	**5103**	**4425**	**3002**	**2518**	**2034**	**1695**	**1356**	**1130**
	L	A217 WC9		Std.	5650	5650	5487	5316	5008	4556	4433	4276	4005	3824	3670	3385	2843	2403	1962	1639	1316	1072
				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 Material Cast		Page No.	ASME Code B16.34	Pressure in Bar at Temp. °C (for intermediate ratings use linear interpolation)																
					-30° to 38°	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
P83	E	A216 WCB	26	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	–	–	–	–	–	–
				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**	–	–	–	–	–	–
	J	A217 WC6	27	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
				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**
	L	A217 WC9		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
				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 Material Cast		Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. °F (for intermediate ratings use linear interpolation)																
					-20° to 100°	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
P91	E	A216 WCB	28	Std.	6170	5625	5470	5280	4990	4560	4475	4440	4200	3430	2230	–	–	–	–	–	–	–
				Spec.	**6250**	**6250**	**6250**	**6250**	**6250**	**5940**	**5825**	**5780**	**5250**	**4285**	**2785**	–	–	–	–	–	–	–
	J	A217 WC6	29	Std.	6250	6250	6015	5775	5540	5040	4905	4730	4430	4230	4060	3745	2655	2228	1800	1500	1200	1000
				Spec.	**6250**	**6250**	**6250**	**6250**	**6250**	**6250**	**6250**	**6110**	**6070**	**6000**	**5645**	**4895**	**3320**	**2785**	**2250**	**1875**	**1500**	**1250**
	L	A217 WC9		Std.	6250	6250	6070	5880	5540	5040	4905	4730	4430	4230	4060	3745	3145	2658	2170	1813	1455	1185
				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 Material Cast		Page No.	ASME Code B16.34	Pressure in Bar at Temp. °C (for intermediate ratings use linear interpolation)																
					-30° to 38°	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
P91	E	A216 WCB	28	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	–	–	–	–	–	–
				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**	–	–	–	–	–	–
	J	A217 WC6	29	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
				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**
	L	A217 WC9		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
				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 Material Forged		Cast		Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. °F (for intermediate ratings use linear interpolation)																	
							-20° to 100°	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
P95	D	A105	E	A216 WCB	30	Std.	7035	6412	6236	6019	5688	5199	5102	5061	4788	3910	2542	–	–	–	–	–	–	–
						Spec.	**7125**	**7125**	**7125**	**7125**	**7125**	**6771**	**6641**	**6589**	**5985**	**4885**	**3175**	–	–	–	–	–	–	–
			J	A217 WC6	31	Std.	7125	7125	6858	6584	6314	5745	5591	5392	5050	4822	4628	4269	3028	2540	2052	1710	1368	1140
					37	**Spec.**	**7125**	**7125**	**7125**	**7125**	**7125**	**7125**	**7125**	**6965**	**6921**	**6840**	**6435**	**5579**	**3786**	**3175**	**2565**	**2138**	**1710**	**1425**
	K	A182 F22	L	A217 WC9	39	Std.	7125	7125	6920	6703	6314	5745	5591	5392	5050	4822	4628	4269	3586	3030	2475	2067	1660	1351
						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 Material Forged		Cast		Page No.	ASME Code B16.34	Pressure in Bar at Temp. °C (for intermediate ratings use linear interpolation)																	
							-30° to 38°	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
P95	D	A105	E	A216 WCB	30	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	–	–	–	–	–	–
						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**	–	–	–	–	–	–
			J	A217 WC6	31	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
					37	**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**
	K	A182 F22	L	A217 WC9	39	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
						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**

Note 'a' – Permissible but not recommended for prolonged usage above 800°F (425°C).

Pressure/Temperature Ratings (Parallel Slide Valves)

Imperial 4500 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material				Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. °F (for intermediate ratings use linear interpolation)																
	Forged		Cast				-20° to 100°	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
PX7	K	A182 F22	L	A217 WC9	40	Std.	11250	11250	10925	10585	9965	9070	8825	8515	7970	7610	7305	6740	5665	4788	3910	3268	2625	2135
						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. No.	ASTM Body Material				Page No.	ASME Code B16.34	Pressure in Bar at Temp. °C (for intermediate ratings use linear interpolation)																
	Forged		Cast				-30° to 38°	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
PX7	K	A182 F22	L	A217 WC9	40	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
						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**

Note 'a' – Permissible but not recommended for prolonged usage above 800°F (425°C).

Valves for Special Applications

In any power installation there are always special product requirements, which invariably do not feature in standard product publications. Dewrance has many years experience in supplying customers needs through flexible and innovative design.

Main steam stop and check valve assembly with X20 cuff.

Dewrance have many years experience in supplying valves in Modified 9% Chrome material to ASTM A217 C12A.

A comprehensive worldwide installation list can be provided on request.

Dewrance use a local foundry which specialises in this material for UK turbine makers.

Cast Steel Parallel Slide Gate Valves

Sizes 5”–24”

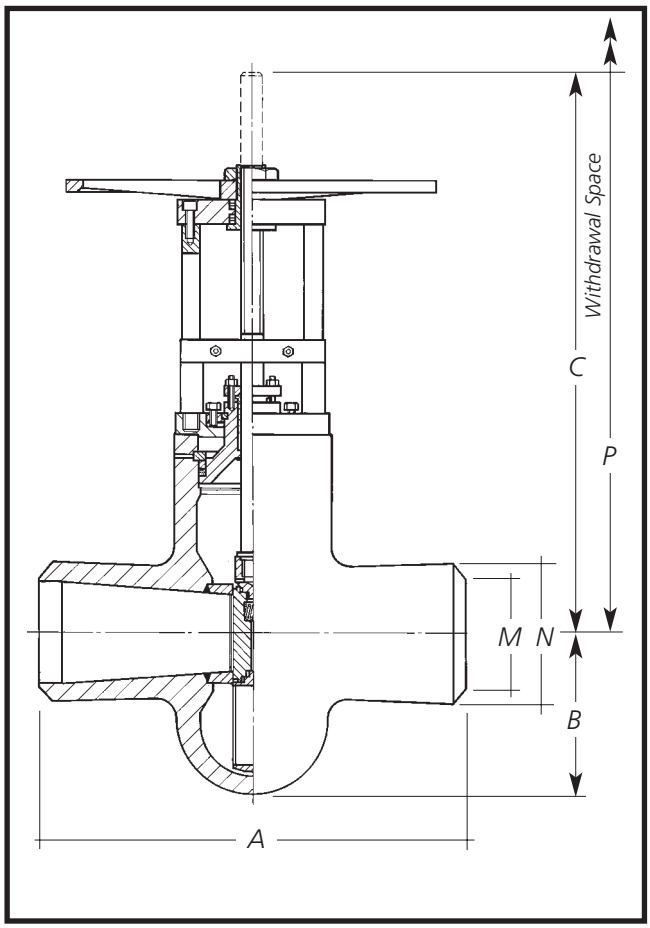
ASME B16.34 1000 Class

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		
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630		
Handwheel	Cast Iron/Steel		
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite		
Pressure Seal Ring	Expanded Graphite		

Hydrostatic shell & seat leak test pressures

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



Dimensions

* Per ASME B16.10 1992 † 18”, 20” & 24” Nominal sizes not shown in ASME B16.10

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

Product No. P67
‘P’ Design, Butt Weld Ends

DEWRANCE
tyco engineered products

Cast Steel Parallel Slide Gate Valves

Sizes 5”–24”

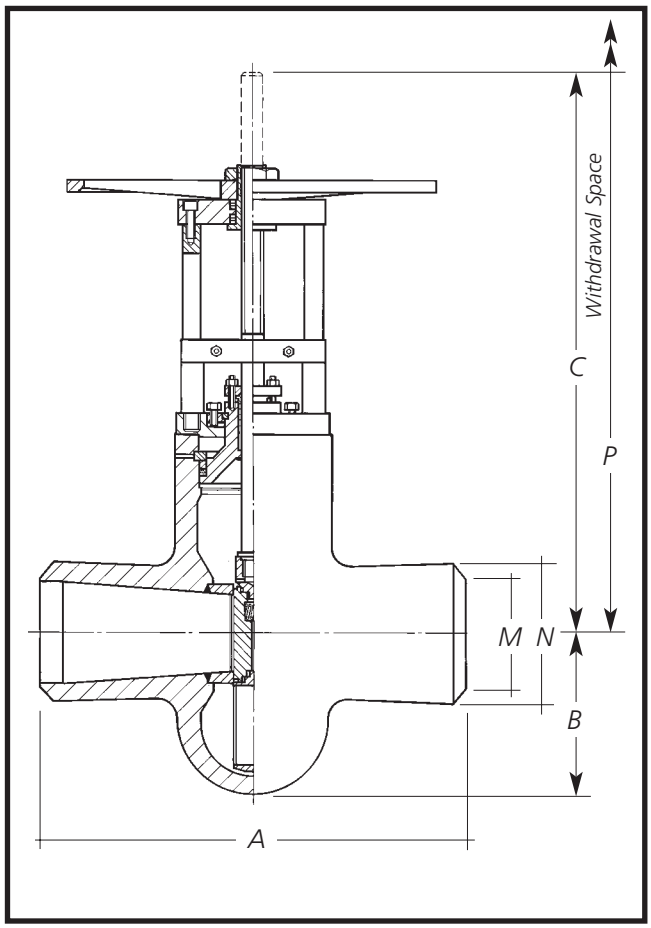
ASME B16.34 1000 Class

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		
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630		
Handwheel	Cast Iron / Steel		
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite		
Pressure Seal Ring	Expanded Graphite		

Hydrostatic shell & seat leak test pressures

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



Dimensions

* Per ASME B16.10 1992 † 18”, 20” & 24” Nominal sizes not shown in ASME B16.10

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

Product No. P67
‘R’ Design, Butt Weld Ends

DEWRANCE
tyco engineered products

Cast Steel Parallel Slide Gate Valves

Sizes 5"–24"

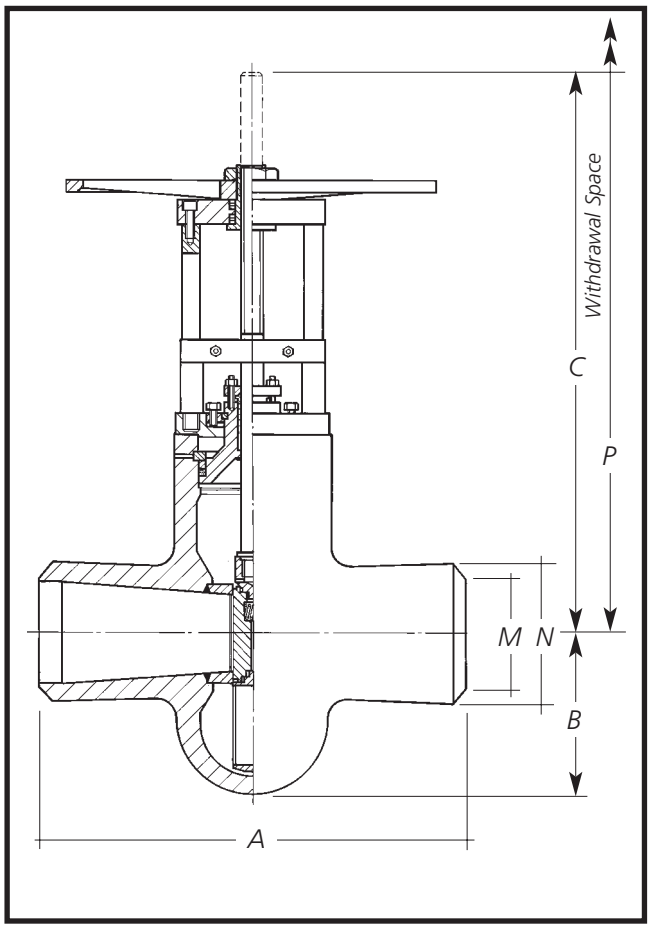
ASME B16.34 1690 Class

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		
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630		
Handwheel	Cast Iron/Steel		
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite		
Pressure Seal Ring	Expanded Graphite		

Hydrostatic shell & seat leak test pressures

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



Dimensions

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

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

Product No. P73
'P' Design, Butt Weld Ends

DEWRANCE
tyco engineered products

Cast Steel Parallel Slide Gate Valves

Sizes 5”–24”

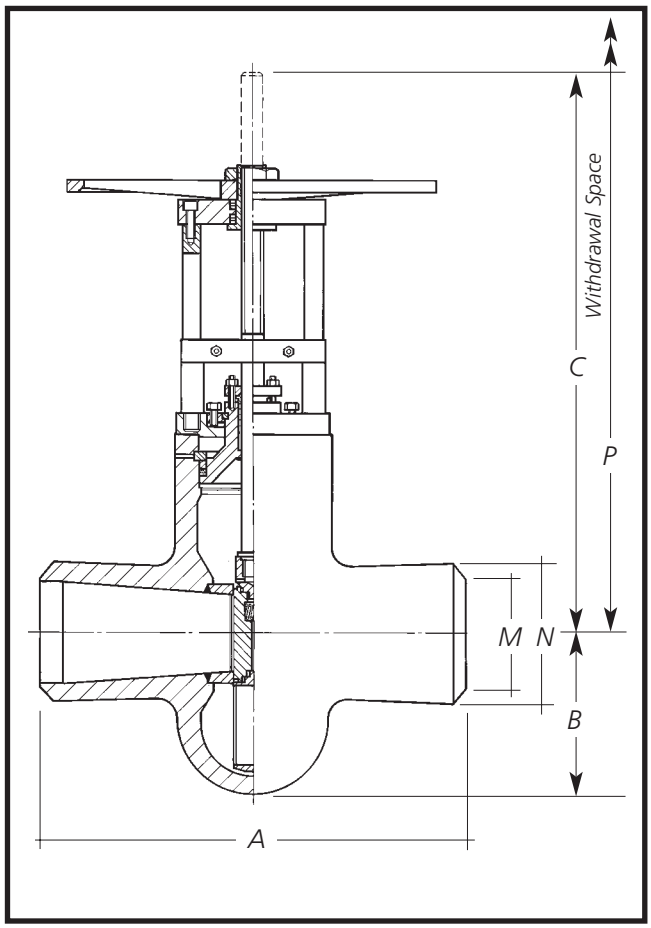
ASME B16.34 1690 Class

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		
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630		
Handwheel	Cast Iron / Steel		
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite		
Pressure Seal Ring	Expanded Graphite		

Hydrostatic shell & seat leak test pressures

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



Dimensions

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

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

Product No. P73
‘R’ Design, Butt Weld Ends

DEWRANCE
tyco engineered products

Cast Steel Parallel Slide Gate Valves

Sizes 5"–24"

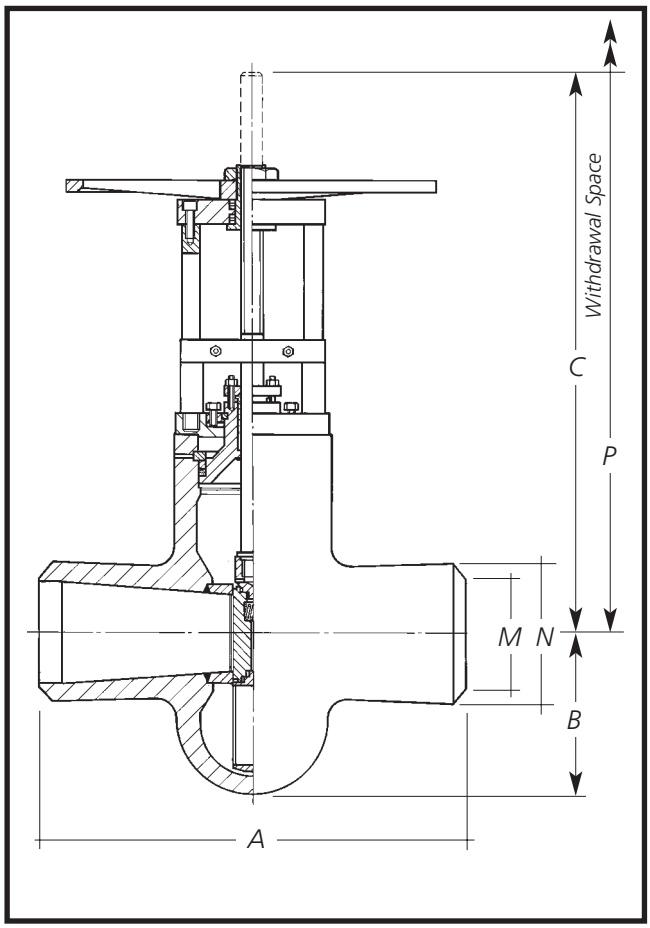
ASME B16.34 1715 Class

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		
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630		
Handwheel	Cast Iron/Steel		
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite		
Pressure Seal Ring	Expanded Graphite		

Hydrostatic shell & seat leak test pressures

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



Dimensions

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

'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	255lb	1104	0.239	P8AES125T	P8AJS125T	P8ALS125T
125	**mm**	**483**	**184**	**767**	**108**	**145**	**1066**	**116kg**					
6	in	22	8.81	31.46	5.12	6.81	46	425lb	2371	0.194	P8AES150T	P8AJS150T	P8ALS150T
150	**mm**	**559**	**223**	**799**	**130**	**173**	**1168**	**193kg**					
8	in	28	11.25	43.43	6.69	8.78	62	893lb	3103	0.186	P8AES200T	P8AJS200T	P8ALS200T
200	**mm**	**711**	**286**	**1103**	**170**	**223**	**1575**	**405kg**					
10	in	34	13.68	50.71	8.35	10.94	74	1533lb	4873	0.183	P8AES250T	P8AJS250T	P8ALS250T
250	**mm**	**864**	**347**	**1288**	**212**	**278**	**1880**	**696kg**					
12	in	39	16.25	58.15	10.04	12.99	84	2508lb	7084	0.181	P8AES300T	P8AJS300T	P8ALS300T
300	**mm**	**991**	**413**	**1477**	**255**	**330**	**2134**	**1138kg**					
14	in	42	17.93	64	11.02	14.25	93	3166lb	8755	0.172	P8AES350T	P8AJS350T	P8ALS350T
350	**mm**	**1066**	**455**	**1626**	**280**	**362**	**2362**	**1436kg**					
16	in	47	20.56	68.15	12.64	16.26	100	4380lb	11760	0.165	P8AES400T	P8AJS400T	P8ALS400T
400	**mm**	**1194**	**522**	**1731**	**321**	**413**	**2540**	**1987kg**					
18	in	53	22.75	77.28	14.09	18.31	114	6039lb	14748	0.162	P8AES450T	P8AJS450T	P8ALS450T
450	**mm**	**1346**	**577**	**1963**	**358**	**465**	**2896**	**2740kg**					
20	in	58	25.12	82.83	15.63	20.31	122	8263lb	18319	0.159	P8AES500T	P8AJS500T	P8ALS500T
500	**mm**	**1473**	**637**	**2104**	**397**	**516**	**3099**	**3748kg**					
24†	in	66	30	100.28	18.78	24.37	148	13362lb	27048	0.152	P8AES600T	P8AJS600T	P8ALS600T
600†	**mm**	**1676**	**761**	**2547**	**477**	**619**	**3759**	**6061kg**					

Product No. P8A
'T' Design, Butt Weld Ends

DEWRANCE
tyco engineered products

Cast Steel Parallel Slide Gate Valves

Sizes 5”–24”

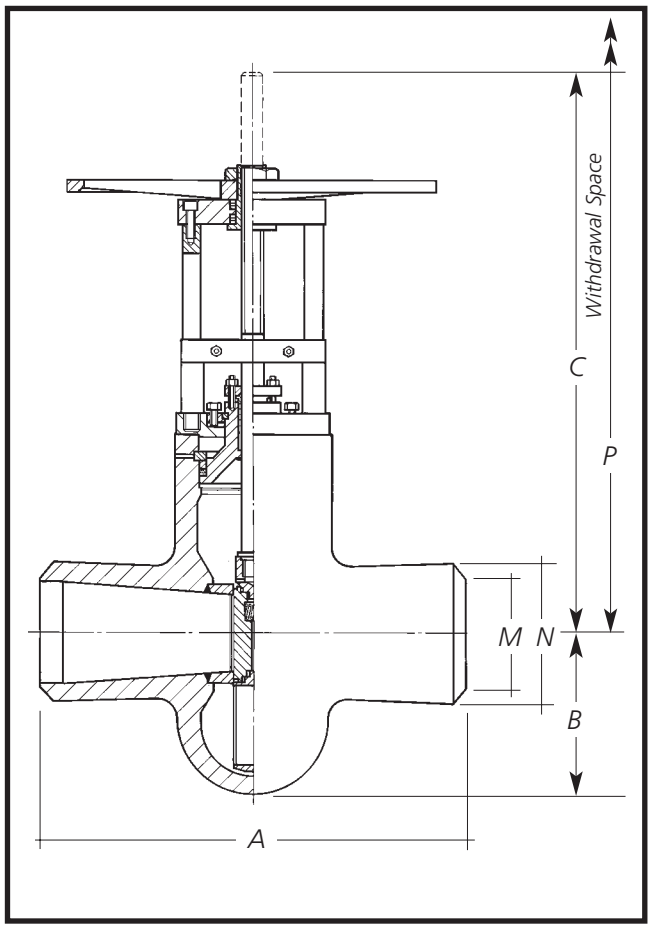
ASME B16.34 1715 Class

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		
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630		
Handwheel	Cast Iron / Steel		
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite		
Pressure Seal Ring	Expanded Graphite		

Hydrostatic shell & seat leak test pressures

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



Dimensions

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

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

Product No. P8A
‘S’ Design, Butt Weld Ends

DEWRANCE
tyco engineered products

Cast Steel Parallel Slide Gate Valves

Sizes 5"–24"

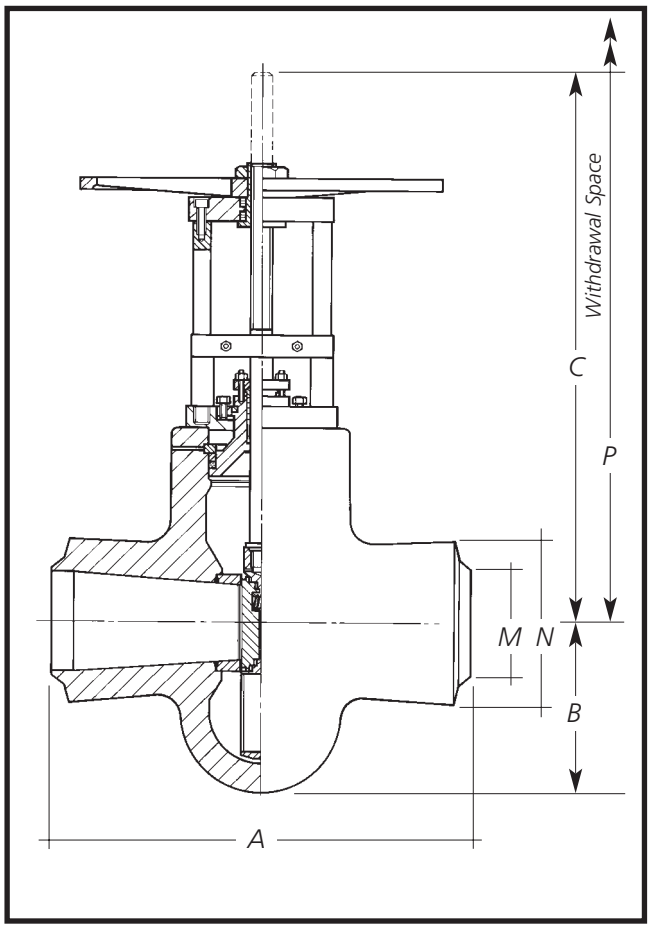
ASME B16.34 2260 Class

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		
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630		
Handwheel	Cast Iron/Steel		
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite		
Pressure Seal Ring	Expanded Graphite		

Hydrostatic shell & seat leak test pressures

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



Dimensions

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

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

Product No. P83
'P' Design, Butt Weld Ends

DEWRANCE
tyco engineered products

Cast Steel Parallel Slide Gate Valves

Sizes 5”–24”

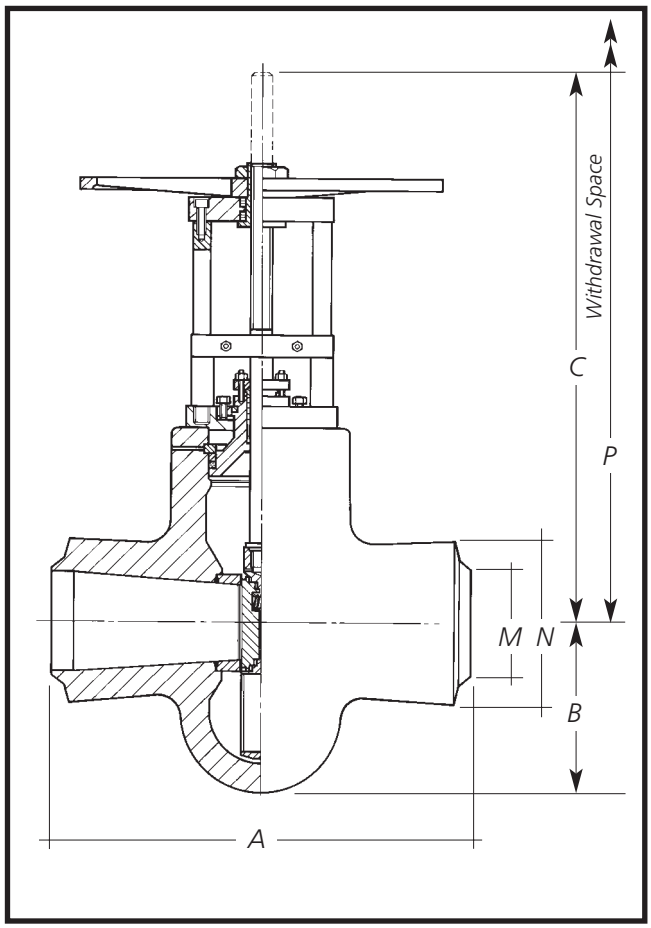
ASME B16.34 2260 Class

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		
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630		
Handwheel	Cast Iron / Steel		
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite		
Pressure Seal Ring	Expanded Graphite		

Hydrostatic shell & seat leak test pressures

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



Dimensions

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

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

Product No. P83
‘R’ Design, Butt Weld Ends

DEWRANCE
tyco engineered products

Cast Steel Parallel Slide Gate Valves

Sizes 5"–24"

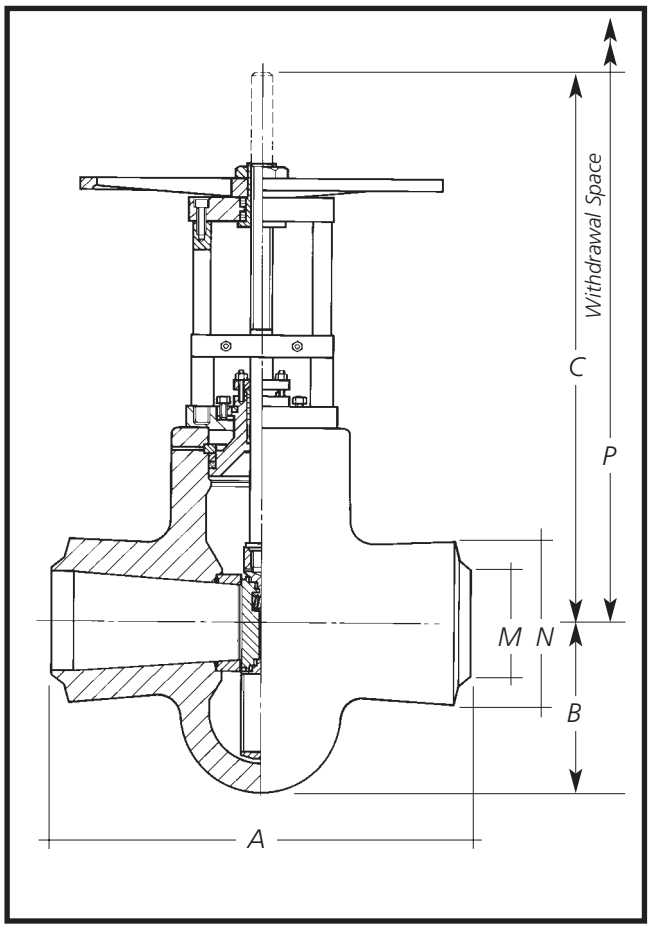
ASME B16.34 2500 Class

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		
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630		
Handwheel	Cast Iron/Steel		
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite		
Pressure Seal Ring	Expanded Graphite		

Hydrostatic shell & seat leak test pressures

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



Dimensions

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

'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	359lb	1168	0.145	P91ES125T	P91JS125T	P91LS125T
125	**mm**	**533**	**197**	**770**	**98**	**145**	**1092**	**163kg**					
6	in	24	9.12	31.42	4.65	6.81	49	568lb	1692	0.146	P91ES150T	P91JS150T	P91LS150T
150	**mm**	**610**	**232**	**798**	**118**	**173**	**1168**	**258kg**					
8	in	30	11.25	42.95	6.14	8.78	62	1036lb	2566	0.193	P91ES200T	P91JS200T	P91LS200T
200	**mm**	**762**	**285**	**1091**	**156**	**223**	**1575**	**470kg**					
10	in	36	13.75	50.12	7.64	10.94	72	1835lb	4091	0.182	P91ES250T	P91JS250T	P91LS250T
250	**mm**	**914**	**349**	**1273**	**194**	**278**	**1829**	**833kg**					
12	in	41	16.43	57.52	9.17	12.99	84	2926lb	5926	0.180	P91ES300T	P91JS300T	P91LS300T
300	**mm**	**1041**	**417**	**1461**	**233**	**330**	**2134**	**1327kg**					
14	in	44	17.87	58.70	10.08	14.25	87	3819lb	7121	0.182	P91ES350T	P91JS350T	P91LS350T
350	**mm**	**1117**	**453**	**1491**	**256**	**362**	**2210**	**1732kg**					
16	in	49	20.62	67.36	11.54	16.26	100	5696lb	9803	0.165	P91ES400T	P91JS400T	P91LS400T
400	**mm**	**1245**	**523**	**1711**	**293**	**413**	**2540**	**2584kg**					
18	in	55	23.31	79.25	12.91	18.31	117	8725lb	13132	0.144	P91ES450T	P91JS450T	P91LS450T
450	**mm**	**1397**	**592**	**2013**	**328**	**465**	**2972**	**3958kg**					
20	in	60	25.06	81.85	14.25	20.31	122	10243lb	15039	0.163	P91ES500T	P91JS500T	P91LS500T
500	**mm**	**1524**	**636**	**2079**	**362**	**516**	**3099**	**4646kg**					
24†	in	68	29.93	95.67	17.13	24.37	143	16034lb	22143	0.157	P91ES600T	P91JS600T	P91LS600T
600†	**mm**	**1727**	**760**	**2430**	**435**	**619**	**3632**	**7273kg**					

Product No. P91
'T' Design, Butt Weld Ends

DEWRANCE
tyco engineered products

Cast Steel Parallel Slide Gate Valves

Sizes 5”–24”

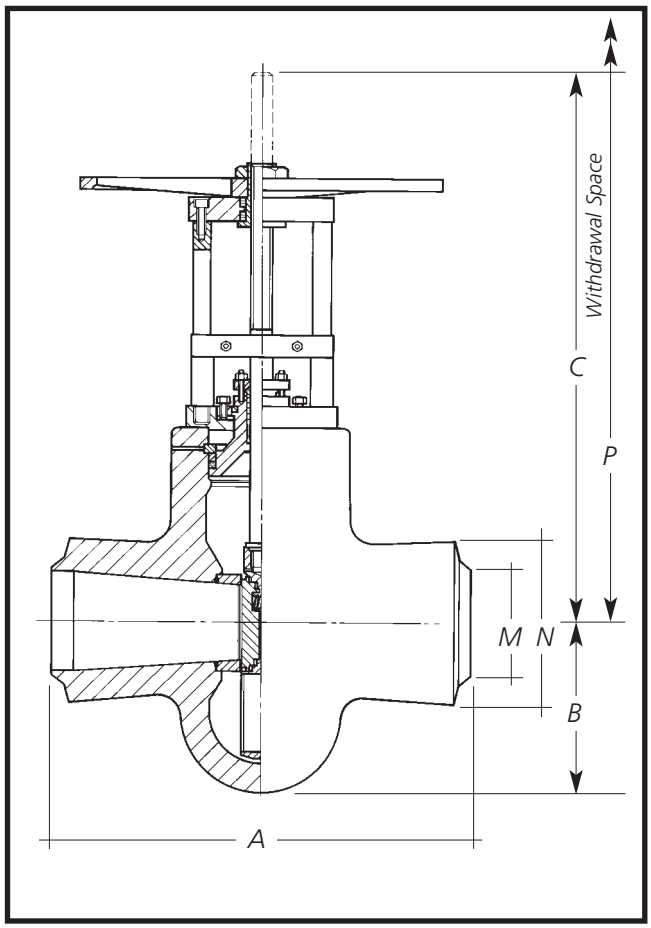
ASME B16.34 2500 Class

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		
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630		
Handwheel	Cast Iron / Steel		
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite		
Pressure Seal Ring	Expanded Graphite		

Hydrostatic shell & seat leak test pressures

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



Dimensions

* Per ASME B16.10 1992 † 20” & 24” Nominal sizes not shown in ASME B16.10

‘S’ Design (Higher ΔP)

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

Product No. P91
‘S’ Design, Butt Weld Ends

DEWRANCE
tyco engineered products

Cast Steel Parallel Slide Gate Valves

Sizes 5"–24"

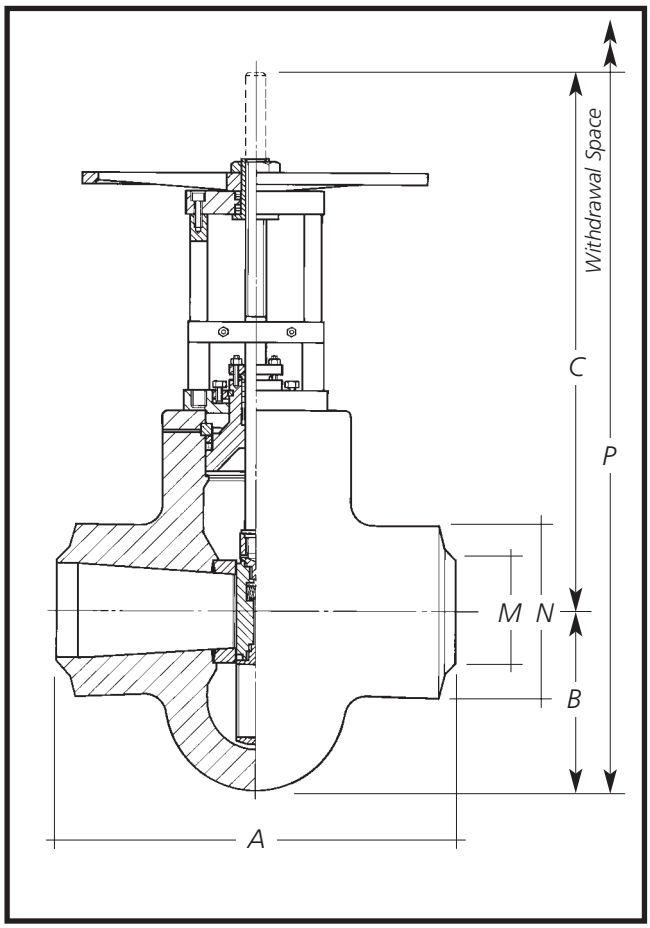
ASME B16.34 2850 Class

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		
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630		
Handwheel	Cast Iron/Steel		
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite		
Pressure Seal Ring	Expanded Graphite		

Hydrostatic shell & seat leak test pressures

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



Dimensions

* Per ASME B16.10 1992 † 20" & 24" Nominal sizes not shown in ASME B16.10

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

Product No. P95
'P' Design, Butt Weld Ends

DEWRANCE
tyco engineered products

Cast Steel Parallel Slide Gate Valves

Sizes 5”–24”

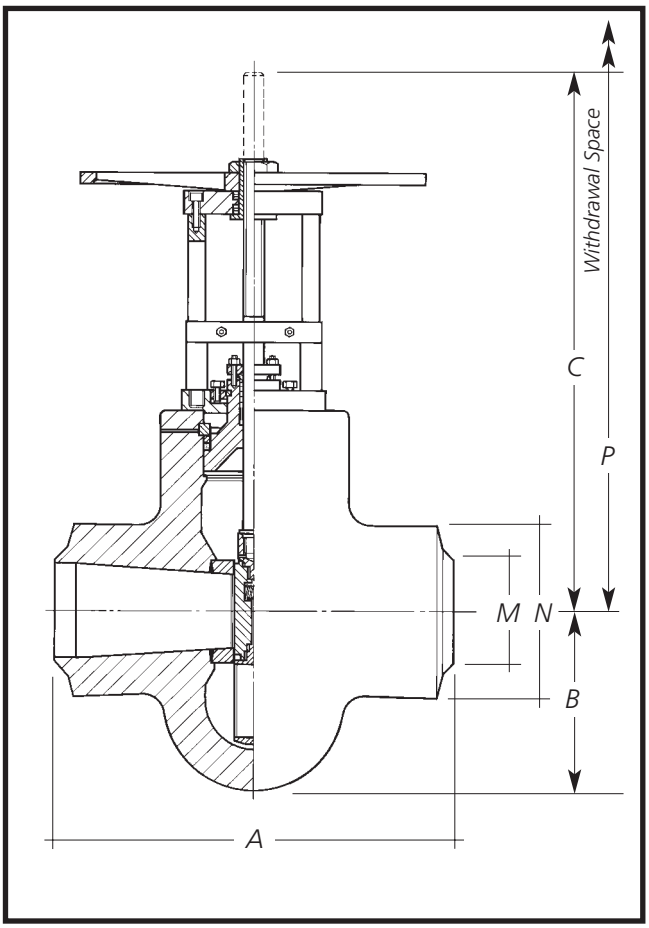
ASME B16.34 2850 Class

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		
Seats	A105	A182 F22	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630		
Handwheel	Cast Iron / Steel		
Disc	A105	A182 F22	A182 F22
Gland Packing	Expanded Graphite		
Pressure Seal Ring	Expanded Graphite		

Hydrostatic shell & seat leak test pressures

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



Dimensions

* Per ASME B16.10 1992 † 20’ & 24” Nominal sizes not shown in ASME B16.10

‘R’ Design (Higher ΔP)

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

Product No. P95
‘R’ Design, Butt Weld Ends

DEWRANCE
tyco engineered products

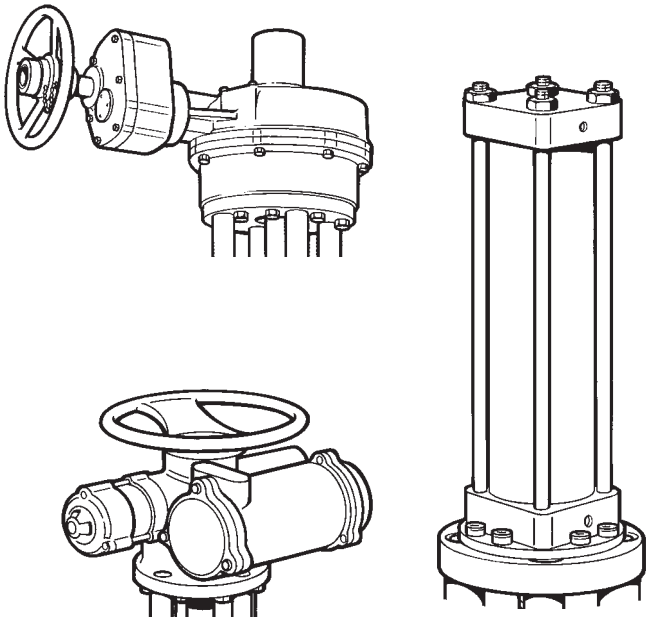
Parallel Slide Gate Valve Accessories

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.

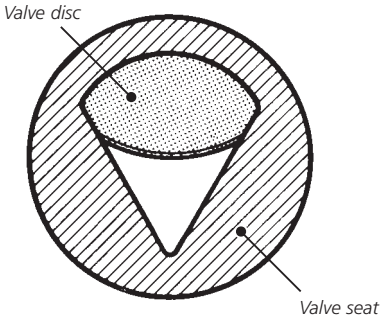
Power operators – All Dewrance Parallel Slide Gate Valves may be adapted for motor operators, pneumatic or hydraulic cylinders. The low torque requirements and the position seating of the Dewrance Valve provides economic power operator sizing. When ordering, the following information should be supplied:

- 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.



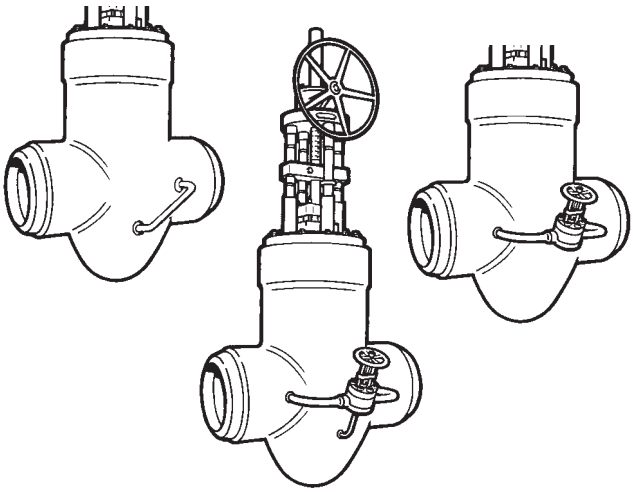
View through outlet of Vee-port Seated Valve

By-Pass Valves….

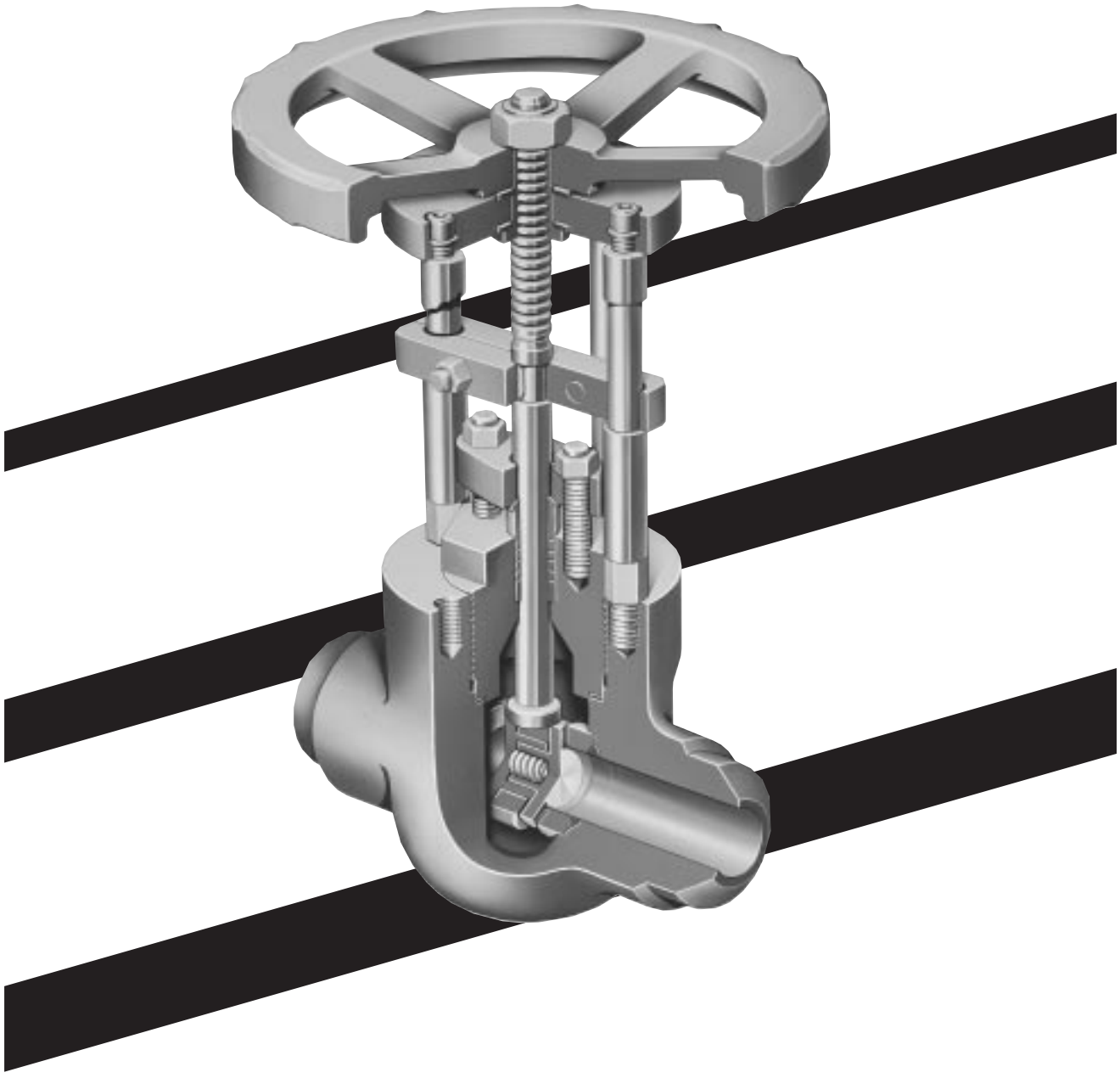
Dewrance Parallel Slide Gate Valves can be fitted with By-Pass Valves when specified by the customer. Dewrance By-Pass Valves have a parallel slide gate design with a pressure seal bonnet, a forged body, butt-weld ends, can be motor operated and are in accordance with MSS-SP-45.

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.



High pressure Forged Steel Parallel Slide Gate Valves



DEWRANCE
tyco engineered products

Sizes ¾" – 4"

ASME B16.34 – 1996

Pressure Class: 1690, 2850, 4500

High Pressure Forged Steel Parallel Slide Gate Valves

Sizes ¾" – 4"

ASME B16.34 – 1996

Pressure Class: 1690, 2850, 4500

Features & Benefits

Excellent Reliability

- Self cleaning action between disk & seat
- Welded-in seats, hard-faced with Stellite® or Equivalent

Low Cost Maintenance

- Expanded graphite pressure seal / gasket & 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)

Improved Performance

- Lower pressure drop characteristic than wedge gate valve
- Reduced actuator size/cost by 30% when compared to wedge gate
- Improved sealing assisted by line pressure
- Low operating torque, seals on position not torque

Typical Applications

Class 4500

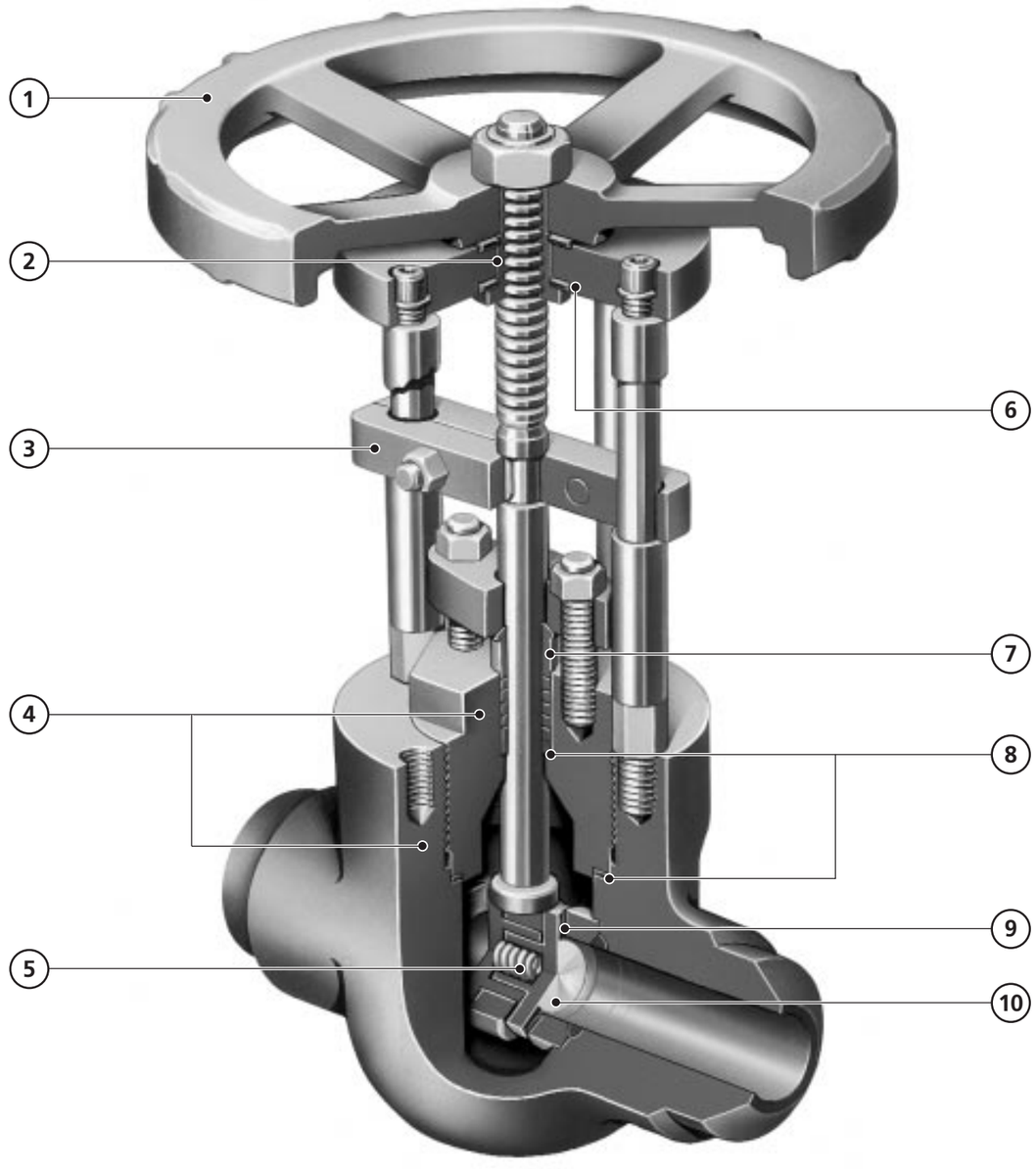
- Drain Service
- Vent Service
- Main Steam Isolation
- Gland Steam System Drains
- Steam Turbine Drain Systems

Class 1690, 2850

- 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
- Attemperator Spray
- Steam Blow and Start Up

High Pressure Forged Steel Parallel Slide Gate Valves

1. *Cast iron handwheel*
2. *Aluminium bronze yolk sleeve, stainless steel spindle with double acme thread for smooth quick operation*
3. *Positive stop also serves as open/shut indicator*
4. *Forged steel body and bonnet*
5. *Nimonic alloy disc spring*
6. *Anti-friction washers reduce wear in moving parts. (On 4500 Class – Thrust bearings for ease of operation)*
7. *Aluminium bronze gland bush self-aligning for straight line thrust against packing*
8. *Expanded graphite gland packing and gasket*
9. *Stellite® seat facings with sufficient material to allow repeated lapping*
10. *Stellite® deposited discs ensure positive isolation*



DEWRANCE
tyco engineered products

Forged Steel Parallel Slide Gate Valves

Sizes ¾"–2"

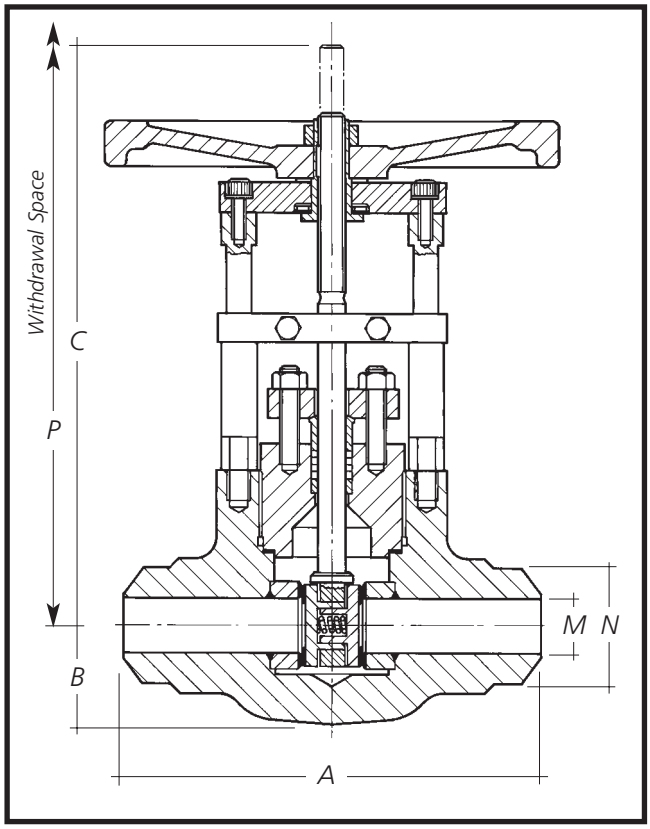
ASME B16.34 1690 Class

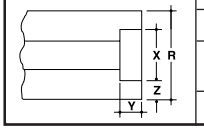
Main component materials

Description	Carbon Steel	Alloy Steel
Body	A105	A182 F22
Bonnet	A105	A182 F22
Stem	A565-XM32	A565-XM32
Gland	Aluminium Bronze ASTM B150 630	
Seats	A105	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630	
Handwheel	A126, Class A	A126, Class A
Disc	A182-347	A182-347
Gland Packing	Expanded Graphite	
Bonnet Seal Gasket	Expanded Graphite	

Hydrostatic shell & seat leak test pressures

Press. Class		Material			
		ASTM A-105		ASTM A-182-F22	
		Shell	Seat	Shell	Seat
1690	psi	6350	4650	6350	4650
	bar	438	321	438	321





Socket Weld Ends	Valve Size	¾"	1"	1¼"	1½"	2"
	X Socket Dia.	1.07"	1.33"	1.68"	1.92"	2.41"
	Y Depth of Socket	0.5"	0.5"	0.5"	0.5"	0.62"
	Z Wall Thickness	0.63"	0.5"	0.62"	0.5"	0.73"

Dimensions - BUTT WELD END

* Per ASME B16.10

Size		A*	B	C	M	N	P	Weight	Product Numbers Carbon Steel A105	Product Numbers Alloy Steel F22
¾	in	9.13	1.61	10.9	0.61	1.05	13.9	31lb	P73DS020R	P73KS020R
20	**mm**	**232**	**41**	**278**	**15.6**	**26.7**	**353**	**14kg**		
1	in	9.13	1.61	10.9	0.81	1.32	13.9	31lb	P73DS025R	P73KS025R
25	**mm**	**232**	**41**	**278**	**20.7**	**33.4**	**353**	**14kg**		
1¼	in	9.13	2.17	13.9	1.16	1.66	17.24	54lb	P73DS032R	P73KS032R
32	**mm**	**232**	**55**	**353**	**29.5**	**42.2**	**438**	**24.5kg**		
1½	in	9.13	2.17	13.9	1.34	1.90	17.24	54lb	P73DS040R	P73KS040R
40	**mm**	**232**	**55**	**353**	**34.0**	**48.3**	**438**	**24.5kg**		
2	in	9.13	2.17	13.9	1.7	2.37	17.24	54lb	P73DS050R	P73KS050R
50	**mm**	**232**	**55**	**353**	**42.8**	**60.3**	**438**	**24.5kg**		

Dimensions - SOCKET WELD END

Size		A*	B	C	R	P	Weight	A105	F22
¾	in	9.13	1.61	10.9	2.32	13.9	31lb	P73DS020S	P73KS020S
20	**mm**	**232**	**41**	**278**	**59**	**353**	**14kg**		
1	in	9.13	1.61	10.9	2.32	13.9	31lb	P73DS025S	P73KS025S
25	**mm**	**232**	**41**	**278**	**59**	**353**	**14kg**		
1¼	in	9.13	2.17	13.9	2.91	17.24	54lb	P73DS032S	P73KS032S
32	**mm**	**232**	**55**	**353**	**74**	**438**	**24.5kg**		
1½	in	9.13	2.17	13.9	2.91	17.24	54lb	P73DS040S	P73KS040S
40	**mm**	**232**	**55**	**353**	**74**	**438**	**24.5kg**		
2	in	9.13	2.17	13.9	3.86	17.24	54lb	P73DS050S	P73KS050S
50	**mm**	**232**	**55**	**353**	**98**	**438**	**24.5kg**		

Product No. P73
'R & S' Design, Butt Weld & Socket Weld Ends

DEWRANCE
tyco engineered products

Forged Steel Parallel Slide Gate Valves

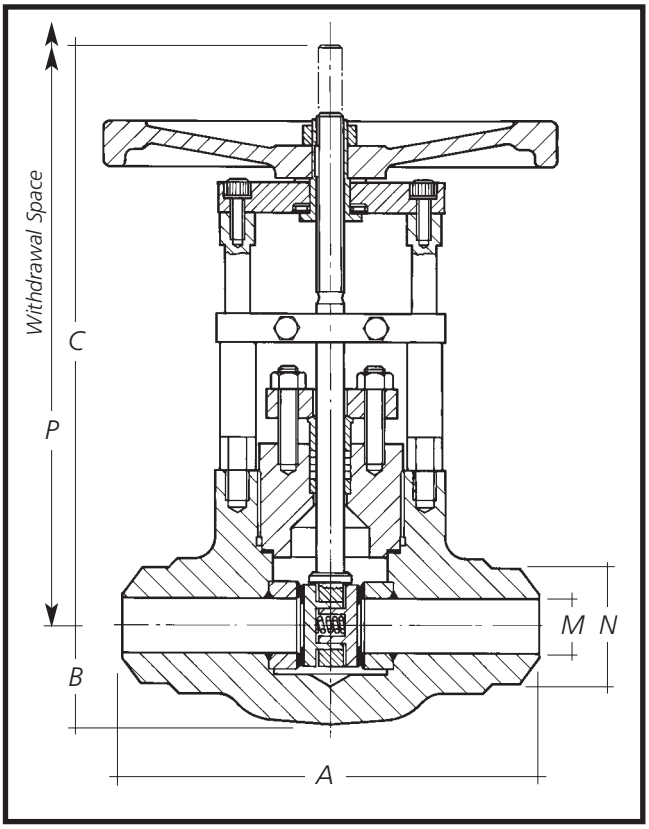
Sizes ¾"–2"
ASME B16.34 2850 Class

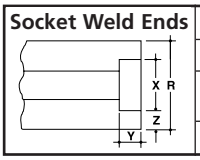
Main component materials

Description	Carbon Steel	Alloy Steel
Body	A105	A182 F22
Bonnet	A105	A182 F22
Stem	A565-XM32	A565-XM32
Gland	Aluminium Bronze ASTM B150 C63000	
Seats	A105	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 C63000	
Handwheel	A126, Class A	A126, Class A
Disc	A182-347	A182-347
Gland Packing	Expanded Graphite	
Bonnet Seal Gasket	Expanded Graphite	

Hydrostatic shell & seat leak test pressures

Press. Class		Material			
		ASTM A-105		ASTM A-182-F22	
		Shell	Seat	Shell	Seat
2850	psi	10700	7900	10700	7900
	bar	737	541	737	541





Valve Size	¾"	1"	1¼"	1½"	2"
X Socket Dia.	1.07"	1.33"	1.68"	1.92"	2.41"
Y Depth of Socket	0.5"	0.5"	0.5"	0.5"	0.62"
Z Wall Thickness	0.63"	0.5"	0.62"	0.5"	0.73"

Dimensions - BUTT WELD END

* Per ASME B16.10

Size		A*	B	C	M	N	P	Weight	Product Numbers Carbon Steel A105	Product Numbers Alloy Steel F22
¾	in	9.13	1.61	10.9	0.44	1.05	13.9	31lb	P95DS020R	P95KS020R
20	mm	232	41	278	11.05	26.7	353	14kg		
1	in	9.13	1.61	10.9	0.60	1.32	13.9	31lb	P95DS025R	P95KS025R
25	mm	232	41	278	15.2	33.4	353	14kg		
1¼	in	9.13	1.61	10.9	0.90	1.66	13.9	31lb	P95DS032R	P95KS032R
32	mm	232	41	278	22.8	42.2	353	14kg		
1½	in	9.13	2.17	13.9	1.10	1.90	17.24	54lb	P95DS040R	P95KS040R
40	mm	232	55	353	28	48.3	438	24.5kg		
2	in	9.13	2.17	13.9	1.5	2.37	17.24	54lb	P95DS050R	P95KS050R
50	mm	232	55	353	38.1	60.3	438	24.5kg		

Dimensions - SOCKET WELD END

Size		A*	B	C	R	P	Weight	A105	F22
¾	in	9.13	1.61	10.9	2.32	13.9	31lb	P95DS020S	P95KS020S
20	mm	232	41	278	59	353	14kg		
1	in	9.13	1.61	10.9	2.32	13.9	31lb	P95DS025S	P95KS025S
25	mm	232	41	278	59	353	14kg		
1¼	in	9.13	1.61	10.9	2.91	13.9	31lb	P95DS032S	P95KS032S
32	mm	232	41	278	74	353	14kg		
1½	in	9.13	2.17	13.9	2.91	17.24	54lb	P95DS040S	P95KS040S
40	mm	232	55	353	74	438	24.5kg		
2	in	9.13	2.17	13.9	3.86	17.24	54lb	P95DS050S	P95KS050S
50	mm	232	55	353	98	438	24.5kg		

Product No. P95
'R & S' Design, Butt Weld & Socket Weld Ends

DEWRANCE
tyco engineered products

Forged Steel Parallel Slide Gate Valves

Sizes 2”–4”

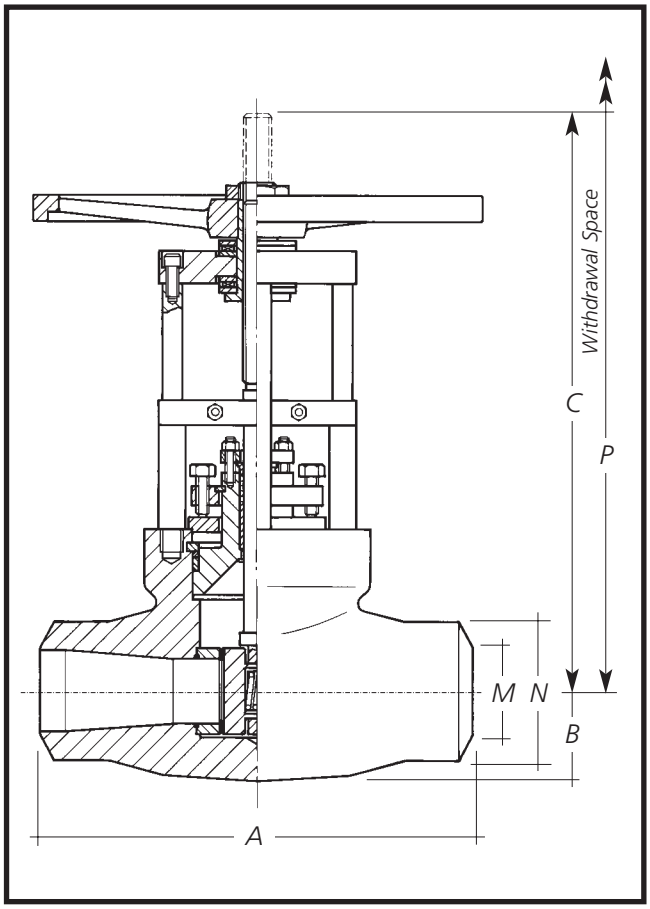
ASME B16.34 1690 Class

Main component materials

Description	Carbon Steel	Alloy Steel
Body	A105	A182 F22
Bonnet	A105	A182 F22
Cover	A516 Gr. 60	A387 Gr. 11
Stem	AISI 431	A565-XM32
Gland	Aluminium Bronze ASTM B150 C63000	
Seats	A105	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630	
Handwheel	A126, Class A	A126, Class A
Disc	BS 970 420S29	AISI 347
Gland Packing	Expanded Graphite	
Pressure Seal ring	Expanded Graphite	

Hydrostatic shell & seat leak test pressures

Press. Class		Material			
		ASTM A-105		ASTM A-182-F22	
		Shell	Seat	Shell	Seat
1690	**psi**	6350	4650	6350	4650
	bar	438	321	438	321



Dimensions

* Per ASME B16.10

Size		A*	B	C	M	N	P	Weight	Cv	K Factor	Product Numbers	
											Carbon Steel	Alloy Steel
											A105	F22
2	in	8.5	1.93	13.58	1.42	2.48	18	90lb	140	0.187	P73DS050P	P73KS050P
50	**mm**	**216**	**49**	**345**	**36**	**63**	**457**	**41kg**				
2½	in	10	2.24	13.58	1.65	2.99	18	115lb	151	0.293	P73DS065P	P73KS065P
65	**mm**	**254**	**57**	**345**	**42**	**76**	**457**	**53kg**				
3	in	12	2.6	16.93	2.17	3.58	28	141lb	327	0.204	P73DS080P	P73KS080P
80	**mm**	**305**	**66**	**430**	**55**	**91**	**711**	**64kg**				
4	in	16	3.11	22.05	2.99	4.61	28	247lb	549	0.239	P73DS100P	P73KS100P
100	**mm**	**406**	**79**	**560**	**76**	**117**	**711**	**112kg**				

Product No. P73
‘P’ Design, Butt Weld Ends

DEWRANCE
tyco engineered products

Forged Steel Parallel Slide Gate Valves

Sizes 2”–4”

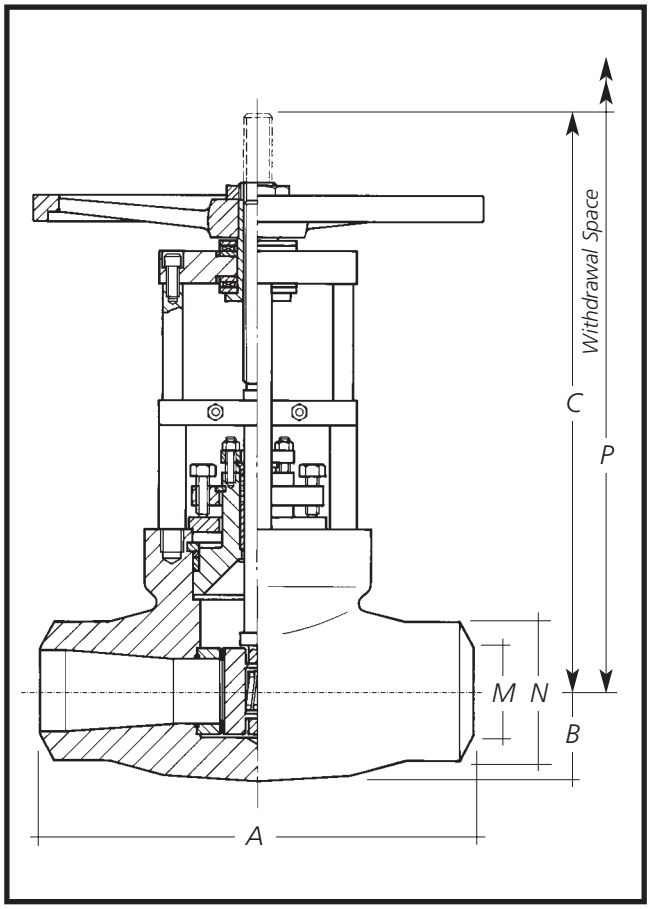
ASME B16.34 2850 Class

Main component materials

Description	Carbon Steel	Alloy Steel
Body	A105	A182 F22
Bonnet	A105	A182 F22
Cover	A516 Gr. 60	A387 Gr. 11
Stem	AISI 431	A565-XM32
Gland	Aluminium Bronze ASTM B150 630	
Seats	A105	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630	
Handwheel	A126, Class A	A126, Class A
Disc	BS970 420529	AISI 347
Gland Packing	Expanded Graphite	
Pressure Seal Ring	Expanded Graphite	

Hydrostatic shell & seat leak test pressures

Press. Class		Material			
		ASTM A-105		ASTM A-182-F22	
		Shell	Seat	Shell	Seat
2850	psi	10700	7900	10700	7900
	bar	737	541	737	541



Dimensions

* Per ASME B16.10

Size		A*	B	C	M	N	P	Weight	Cv	K Factor	Product Numbers	
											Carbon Steel	Alloy Steel
											A105	F22
2	in	11	1.93	13.31	1.14	2.48	18	99lb	91	0.182	P95DS050P	P95KS050P
50	mm	279	49	338	29	63	457	45kg				
2½	in	13	2.24	13.31	1.38	2.99	18	121lb	105	0.295	P95DS065P	P95KS065P
65	mm	330	57	338	35	76	457	55kg				
3	in	14.5	2.6	16.61	1.65	3.58	21	150lb	194	0.177	P95DS080P	P95KS080P
80	mm	368	66	422	42	91	533	68kg				
4	in	18	3.11	19.88	2.13	4.61	25	254lb	323	0.176	P95DS100P	P95KS100P
100	mm	457	79	505	54	117	635	115kg				

Product No. P95
‘P’ Design, Butt Weld Ends

DEWRANCE
tyco engineered products

Forged Steel Parallel Slide Gate Valves

Sizes 1"–4"

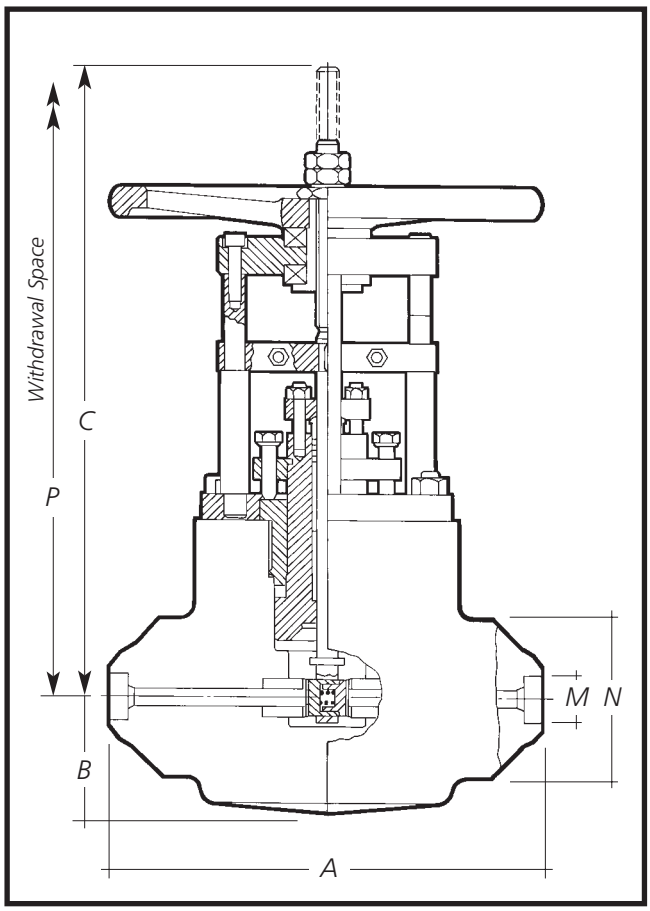
ASME B16.34 4500 Class

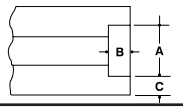
Hydrostatic shell & seat leak test pressures

		Material	
Press. Class		ASTM A-182-F22	
		Shell	Seat
4500	psi	16875	12375
	bar	1164	854

Main component materials

Description	Alloy Steel
Body	A182 F22
Bonnet	A182 F22
Cover	A387 Gr. 11
Stem	A565-XM32
Gland	Aluminium Bronze ASTM B150 630
Seats	A182 F22
Yoke Sleeve	Aluminium Bronze ASTM B150 630
Handwheel	A126, Class A
Disc	A182 F22
Gland Packing	Expanded Graphite
Pressure Seal Ring	Expanded Graphite



Socket Weld Ends	Valve Size	1"	1½"	2"
	A Socket Dia.	1.33"	1.92"	2.41"
	B Depth of Socket	½"	½"	½"
	C Wall Thickness	1.5"	1.205"	0.96"

Dimensions

* Per ASME B16.10

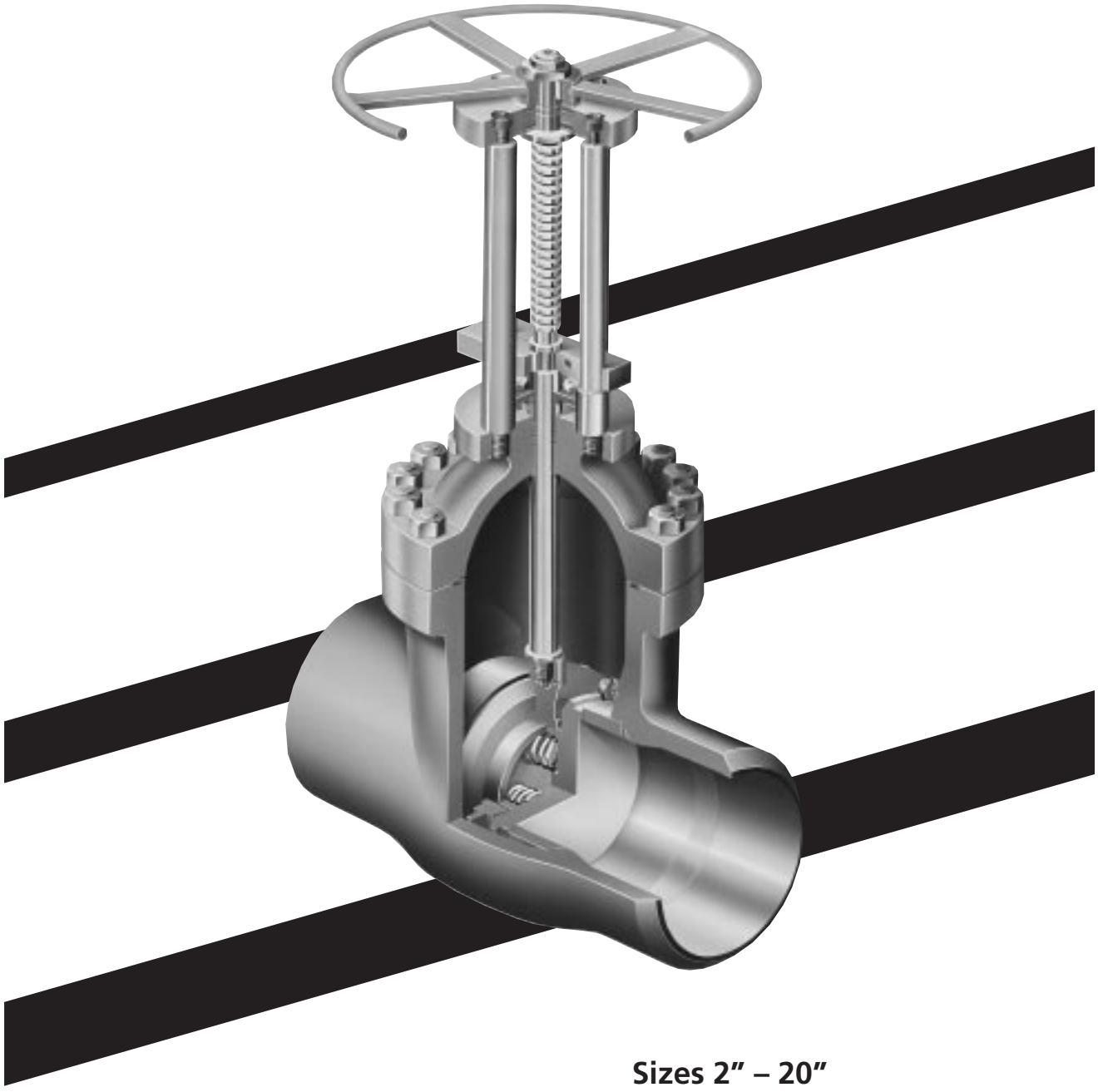
									Product Numbers	
									BUTT WELD	SOCKET WELD
									Alloy Steel	Alloy Steel
Size		A*	B	C	M	N	P	Weight	F22	F22
1	in	12	3.27	16.14	0.51	4.21	20.91	148lb	PX7KS025P	PX7KS025S
25	mm	305	83	410	13	107	531	67kg		
1½	in	12	3.27	17.1	0.79	4.21	22.05	148lb	PX7KS040P	PX7KS040S
40	mm	305	83	434	20	107	560	67kg		
2	in	12	3.27	17.1	1.25	4.21	22.05	148lb	PX7KS050P	PX7KS050S
50	mm	305	83	434	31.8	107	560	67kg		
2½	in	18	5.5	26.97	1.78	6.26	35.16	496lb	PX7KS065P	PX7KS065S
65	mm	457	141	685	45.2	159	893	225kg		
3	in	18	5.5	26.97	2.31	6.26	35.16	496lb	PX7KS080P	PX7KS080S
80	mm	457	141	685	58.7	159	893	225kg		
4	in	18	5.5	26.97	3.16	6.26	35.16	496lb	PX7KS100P	PX7KS100S
100	mm	457	141	685	80.2	159	893	225kg		

6in / 150mm valve available on request

Product No. PX7
'P & S' Design, Butt Weld & Socket Weld Ends

DEWRANCE
tyco engineered products

Low pressure Cast Steel Parallel Slide Gate Valves



Sizes 2" – 20"

ASME B16.34 – 1996

Valve overall lengths to ASME B16.10 – 1992

Pressure Class: 150, 300, 600

DEWRANCE
tyco engineered products

Low Pressure Cast Steel Parallel Slide Gate Valves

Sizes 2" – 20"

ASME B16.34 – 1996

Valve overall lengths to ASME B16.10 – 1992

Pressure Class: 150, 300, 600

Features & Benefits

Excellent Reliability

- Self cleaning action between disk & seat
- Welded-in seats hard-faced with Stellite® or Equivalent

Low Cost Maintenance

- 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)

Improved Performance

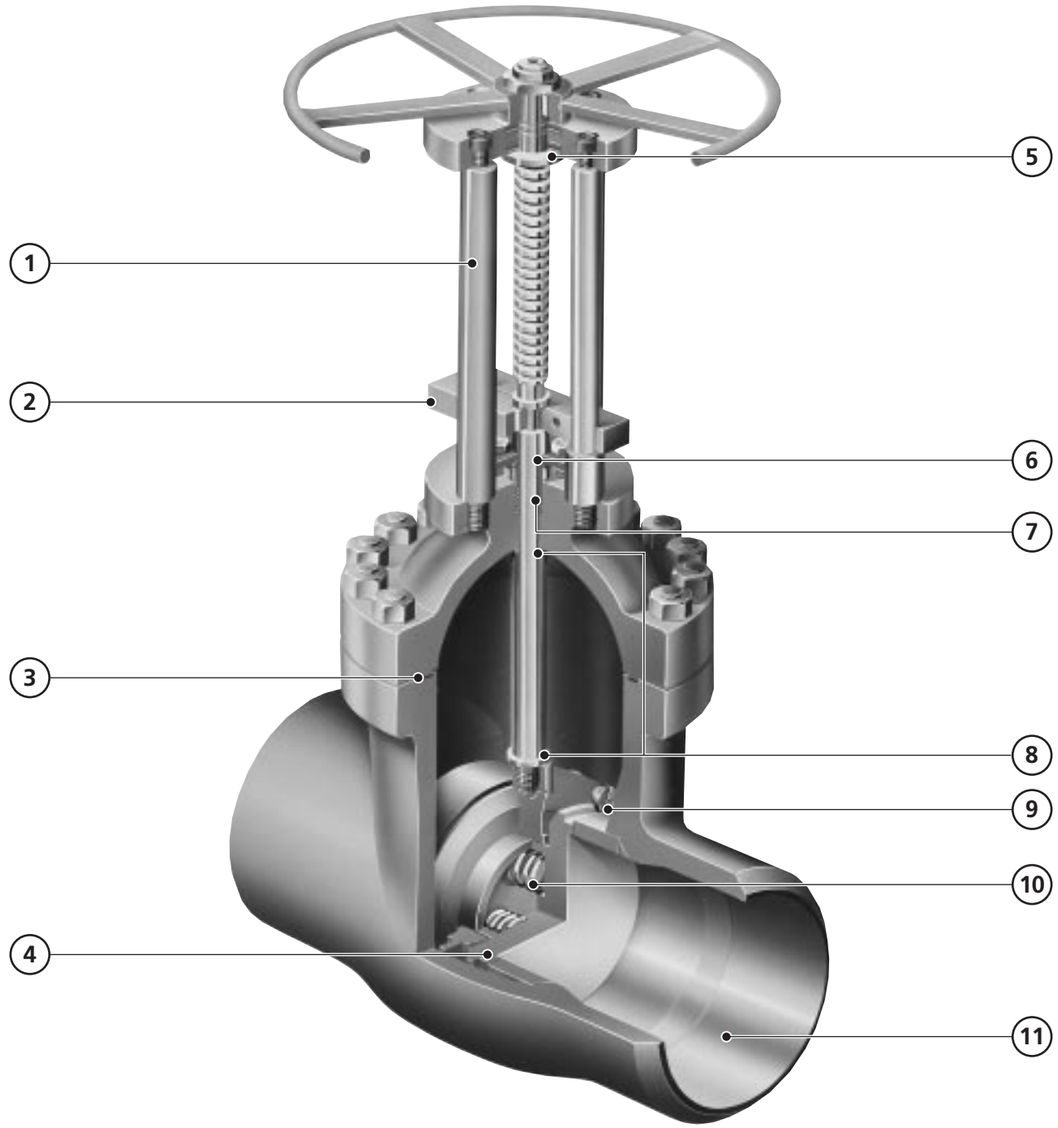
- Lower pressure drop characteristic than wedge gate valve
- Reduced actuator size/cost by 30% when compared to wedge gate
- Improved sealing assisted by line pressure
- Low operating torque, seals on position not torque

Typical Applications

- L.P. Steam Isolation
- Boiler Feed Pump Isolation
- L.P. Feed Heater Isolation & By-Pass
- Blow Down Service
- Blow Off Service
- Gland Steam System Drains
- Steam Turbine Inlet Isolation
- Economizer Recirculation
- Spray Water
- Attemperator Spray
- Steam Blow and Start Up

Low Pressure Cast Steel Parallel Slide Gate Valves

1. *Four pillar design on 300 & 600 class for rigidity and accessibility. (Two pillar design on 150 class)*
2. *Stem stop clearly indicates valve position & prevents stem rotation.*
3. *Aluminium reinforced expanded graphite gasket located in tongue and groove.*
4. *Hard faced Stellite® or equivalent discs and seats.*
5. *Anti-friction bearings are fitted for direct handwheel operation.*
6. *Two piece gland.*
7. *Specially designed stuffing box to suit expanded graphite packing.*
8. *Hard faced Stellite® or equivalent back seat.*
9. *Disc Retainer.*
10. *Spring or springs to hold disc against seat face for initial sealing.*
11. *Modular body design accommodates a wide range of flanged and weld connections.*



By-pass and Drains can be supplied as required.

DEWRANCE
tyco engineered products

Cast Steel Parallel Slide Gate Valves

Sizes 2½"–24"

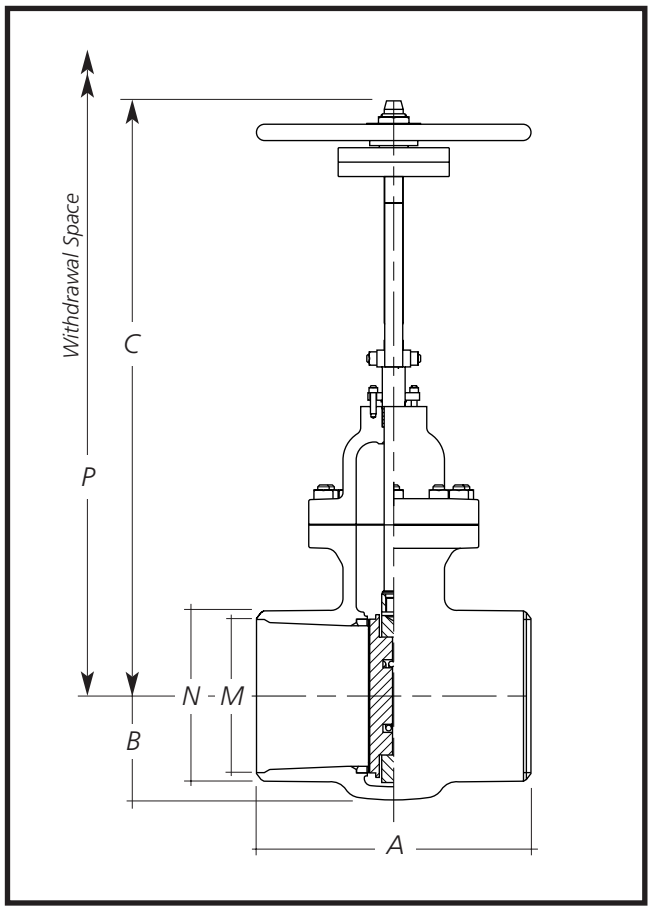
ASME B16.34 150 Class

Main component materials

Description	Carbon Steel
Body	A216 Gr WCB
Bonnet	A216 Gr WCB
Stem	AISI 431
Gland	Aluminium – Bronze
Seats	A105
Yoke Sleeve	Aluminium – Bronze
Handwheel	Cast Iron / Steel
Disc	A516 Gr 70
Gland Packing	Expanded Graphite
Gasket	Reinforced Expanded Graphite

Hydrostatic shell & seat leak test pressures

Press. Class		Body Material ASTM A-216 WCB	
		Shell	Seat
150	psi	450	325
	bar	30	22



Dimensions

Size		A	B	C	M	N	P	Weight	Cv	K Factor	Product Numbers
2½	in	9.5	2.6	19.4	2.36	3.74	24.21	65lb	447	0.139	P21ES065R
65	**mm**	**241**	**66**	**492**	**60**	**95**	**615**	**29**			
3	in	11.12	2.6	19.4	2.87	3.74	24.21	65lb	545	0.204	P21ES080R
80	**mm**	**282**	**66**	**492**	**73**	**95**	**615**	**29kg**			
4	in	12	3.1	22	3.78	4.80	27.05	91lb	948	0.203	P21ES100R
100	**mm**	**305**	**79**	**558**	**96**	**122**	**687**	**42kg**			
6	in	15.88	4.3	31.4	5.79	6.81	36.77	148lb	2362	0.180	P21ES150R
150	**mm**	**403**	**109**	**798**	**147**	**173**	**934**	**67kg**			
8	in	16.5	5.6	39.6	7.80	8.70	46.06	304lb	4399	0.171	P21ES200R
200	**mm**	**419**	**143**	**1005**	**198**	**221**	**1170**	**138kg**			
10	in	18	6.8	48.7	10.04	10.98	55.67	507lb	7084	0.181	P21ES250R
250	**mm**	**457**	**173**	**1236**	**255**	**279**	**1414**	**230kg**			
12	in	19.75	7.9	55.9	11.97	12.99	63.78	683lb	10154	0.178	P21ES300R
300	**mm**	**502**	**200**	**1419**	**304**	**330**	**1620**	**310kg**			
14	in	22.5	8.6	61.5	13.03	14.09	70.39	772lb	12894	0.155	P21ES350R
350	**mm**	**572**	**219**	**1562**	**331**	**358**	**1788**	**350kg**			
16	in	24	9.8	69.8	14.96	16.10	79.53	1240lb	17573	0.145	P21ES400R
400	**mm**	**610**	**248**	**1772**	**380**	**409**	**2020**	**564kg**			
18	in	26	11	79.5	16.96	18.11	91.26	1610lb	23611	0.133	P21ES450R
450	**mm**	**660**	**279**	**2018**	**431**	**460**	**2318**	**732kg**			
20	in	28	12	85	18.78	20.16	97.20	2135lb	29591	0.127	P21ES500R
500	**mm**	**711**	**304**	**2159**	**477**	**512**	**2469**	**970kg**			
24	in	32	14.5	102.2	22.83	24.21	116.65	2597lb	46360	0.113	P21ES600R
600	**mm**	**813**	**367**	**2595**	**580**	**615**	**2963**	**1178kg**			

Product No. P21
'R' Design, Butt Weld Ends

DEWRANCE
tyco engineered products

Cast Steel Parallel Slide Gate Valves

Sizes 2½"–24"

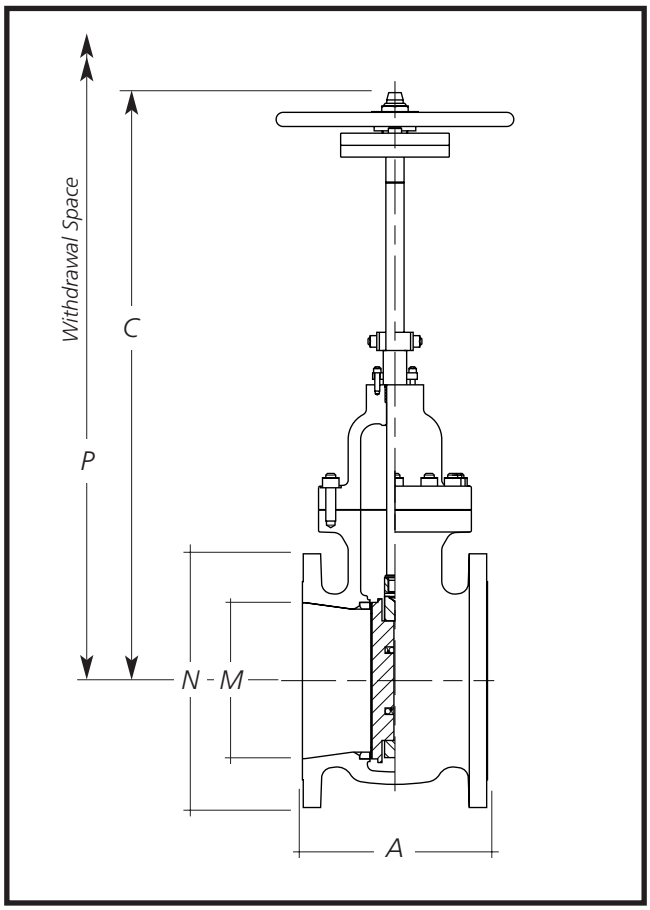
ASME B16.34 150 Class

Main component materials

Description	Carbon Steel
Body	A216 Gr WCB
Bonnet	A216 Gr WCB
Stem	AISI 431
Gland	Aluminium – Bronze
Seats	A105
Yoke Sleeve	Aluminium – Bronze
Handwheel	Cast Iron/Steel
Disc	A516 Gr 70
Gland Packing	Expanded Graphite
Gasket	Reinforced Expanded Graphite

Hydrostatic shell & seat leak test pressures

Press. Class		Body Material ASTM A-216 WCB	
		Shell	Seat
150	psi	450	325
	bar	30	22



Dimensions

Size		A	C	M	N	P	Weight	Cv	K Factor	Product Numbers
*2½	in	8	19.4	2.5	7	24.21	70lb	501	0.139	P22ES65R
65	**mm**	**203**	**492**	**63**	**178**	**615**	**32kg**			
3	in	8	19.4	3	7.5	24.21	77lb	523	0.265	P22ES80R
80	**mm**	**203**	**492**	**76**	**191**	**615**	**35kg**			
4	in	9	22	4	9	27.05	143lb	940	0.259	P22ES100R
100	**mm**	**229**	**558**	**102**	**229**	**687**	**65kg**			
6	in	10.5	31.4	6	11	36.77	220lb	2285	0.222	P22ES150R
150	**mm**	**267**	**798**	**152**	**279**	**934**	**100kg**			
8	in	11.5	39.6	8	13.5	46.06	364lb	4279	0.200	P22ES200R
200	**mm**	**292**	**1005**	**203**	**343**	**1170**	**165kg**			
10	in	13	48.7	10	16	55.67	627lb	7087	0.178	P22ES250R
250	**mm**	**330**	**1236**	**254**	**406**	**1414**	**285kg**			
12	in	14	55.9	12	19	63.78	814lb	10092	0.182	P22ES300R
300	**mm**	**356**	**1419**	**305**	**483**	**1620**	**370kg**			
14	in	15	61.5	13.25	21.0	70.39	946lb	13002	0.163	P22ES350R
350	**mm**	**381**	**1562**	**337**	**533**	**1788**	**430kg**			
16	in	16	69.8	15.25	23.5	79.53	1300lb	17439	0.159	P22ES400R
400	**mm**	**406**	**1772**	**387**	**597**	**2020**	**591kg**			
18	in	17	79.5	17.25	25	91.26	1562lb	23611	0.142	P22ES450R
450	**mm**	**432**	**2018**	**438**	**635**	**2318**	**710kg**			
20	in	18	85	19.25	27.5	97.20	2362lb	29935	0.137	P22ES500R
500	**mm**	**457**	**2159**	**489**	**699**	**2469**	**1074kg**			
24	in	20	102.2	23.25	32	116.65	3296lb	47456	0.116	P22ES600R
600	**mm**	**508**	**2595**	**591**	**813**	**2963**	**1495kg**			

* NOTE: Overall length not to ASME B16.10 1986

Product No. P22
Flanged Ends

DEWRANCE
tyco engineered products

Cast Steel Parallel Slide Gate Valves

Sizes 2"–20"

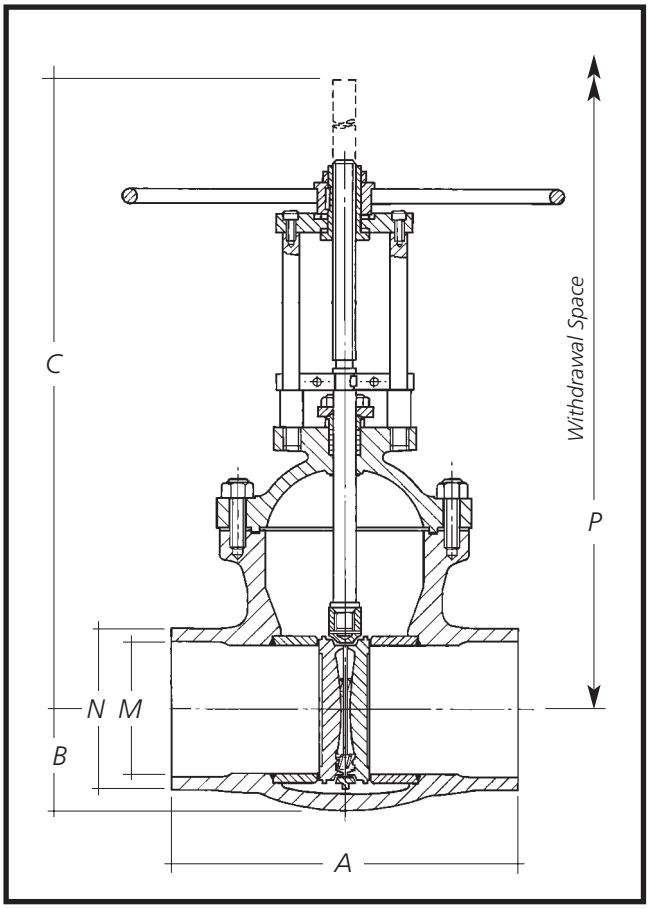
ASME B16.34 300 Class

Main component materials

Description	Carbon Steel	Alloy Steel
Body	A216 Gr WCB	A217 Gr WC6
Bonnet	A216 Gr WCB	A217 Gr WC6
Stem	AISI 431	AISI 431
Gland	Aluminium – Bronze ASTM B150 630	
Seats	A106	A182-F22
Yoke Sleeve	Aluminium – Bronze ASTM B150 630	
Handwheel	Cast Iron / Steel	
Disc	A516 Gr 70	A387 Gr 11
Gland Packing	Expanded Graphite	
Gasket	Expanded Graphite	

Hydrostatic shell & seat leak test pressures

Press. Class		Body Material ASTM A-216 WCB Shell	Seat	ASTM A-217 WC6 Shell	Seat
300	**psi**	1125	825	1125	825
	bar	78	57	78	57



Dimensions

Size		A	B	C	M	N	P	Weight	Cv	K Factor	Product Numbers Carbon Steel WCB	Alloy Steel WC6
2	in	8.5	2.09	16.93	2.07	2.38	20.35	62lb	302	0.180	P31ES050P	P31JS050P
50	**mm**	**216**	**53**	**430**	**52.6**	**60.3**	**517**	**28.2kg**				
2½	in	9.5	2.09	16.93	2.47	2.88	20.35	64lb	266	0.471	P31ES065P	P31JS065P
65	**mm**	**241**	**53**	**430**	**62.7**	**73.2**	**517**	**29.1kg**				
3	in	11.13	2.44	19.92	3.07	3.50	**23.23**	84lb	550	0.263	P31ES080P	P31JS080P
80	**mm**	**283**	**62**	**506**	**78**	**88.9**	**590**	**38.2kg**				
4	in	12	3.19	23.4	4.03	4.5	26.81	130lb	972	0.247	P31ES100P	P31JS100P
100	**mm**	**305**	**81**	**594**	**102.0**	**114.3**	**681**	**59kg**				
6	in	15.88	4.02	31.93	6.06	6.63	37.17	258lb	2246	0.239	P31ES150P	P31JS150P
150	**mm**	**403**	**102**	**811**	**154**	**168.3**	**944**	**117kg**				
8	in	16.5	5.20	40.59	8	8.63	47.44	359lb	3906	0.240	P31ES200P	P31JS200P
200	**mm**	**419**	**132**	**1031**	**203**	**219.1**	**1205**	**163kg**				
10	in	18	6.50	48.38	10.02	10.75	56.81	724lb	5808	0.265	P31ES250P	P31JS250P
250	**mm**	**457**	**165**	**1229**	**254.4**	**273**	**1443**	**329kg**				
12	in	19.75	7.64	57.17	11.94	12.75	67.20	939lb	8668	0.241	P31ES300P	P31JS300P
300	**mm**	**502**	**194**	**1452**	**303.2**	**323.9**	**1707**	**426kg**				
14	in	30	8.07	60.79	13.12	14	71.30	1314lb	10882	0.223	P31ES350P	P31JS350P
350	**mm**	**762**	**205**	**1544**	**333.3**	**355.6**	**1811**	**597kg**				
16	in	33	8.78	68.39	15	16	79.96	1772lb	14932	0.203	P31ES400P	P31JS400P
400	**mm**	**838**	**223**	**1737**	**381**	**406.4**	**2031**	**805kg**				
18	in	36	9.96	77.87	16.88	18	91.18	2300lb	18591	0.210	P31ES450P	P31JS450P
450	**mm**	**914**	**253**	**1978**	**428.6**	**457.2**	**2316**	**1045kg**				
20	in	39	11	83.66	18.81	20	97.64	3056lb	23740	0.199	P31ES500P	P31JS500P
500	**mm**	**991**	**279**	**2125**	**477.8**	**508**	**2480**	**1386kg**				

Product No. P31
'P' Design, Butt Weld Ends

DEWRANCE
tyco engineered products

Cast Steel Parallel Slide Gate Valves

Sizes 2"–20"

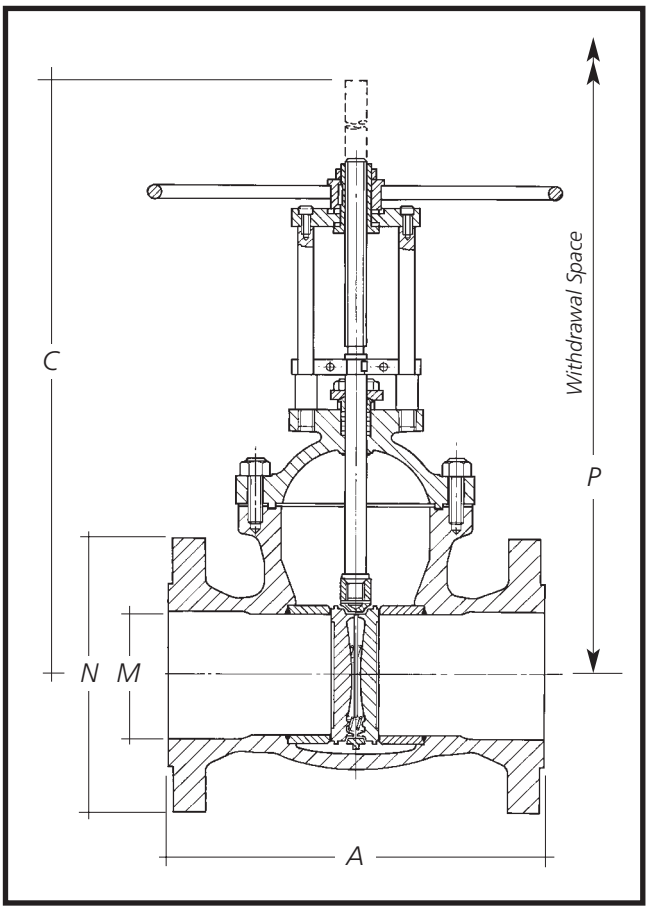
ASME B16.34 300 Class

Main component materials

Description	Carbon Steel	Alloy Steel
Body	A216 Gr WCB	A217 Gr WC6
Bonnet	A216 Gr WCB	A217 Gr WC6
Stem	AISI 431	AISI 431
Gland	Aluminium – Bronze ASTM B150 630	
Seats	A106	A182-F22
Yoke Sleeve	Aluminium – Bronze ASTM B150 630	
Handwheel	Cast Iron / Steel	
Disc	A516 Gr 70	A387 Gr 11
Gland Packing	Expanded Graphite	
Gasket	Expanded Graphite	

Hydrostatic shell & seat leak test pressures

Press. Class		Body Material ASTM A-216 WCB Shell	Seat	ASTM A-217 WC6 Shell	Seat
300	psi	1125	825	1125	825
	bar	78	57	78	57



Dimensions

Size		A	C	M	N	P	Weight	Cv	K Factor	Product Numbers Carbon Steel WCB	Alloy Steel WC6
2	in	8.5	16.93	2.07	6.5	20.35	77lb	302	0.180	P32ES050P	P32JS050P
50	mm	216	430	52.6	165	517	35kg				
2½	in	9.5	16.93	2.47	7.5	20.35	81lb	266	0.471	P32ES065P	P32JS065P
65	mm	241	430	62.7	191	517	37kg				
3	in	11.13	19.92	3.07	8.25	23.25	111lb	550	0.263	P32ES080P	P32JS080P
80	mm	283	506	78	210	590	50kg				
4	in	12	23.4	4.03	10	26.81	198lb	972	0.247	P32ES100P	P32JS100P
100	mm	305	594	102	254	681	90kg				
6	in	15.88	31.93	6.06	12.5	37.17	319lb	2246	0.239	P32ES150P	P32JS150P
150	mm	403	811	154	318	944	145kg				
8	in	16.5	40.59	8	15	47.44	508lb	3906	0.240	P32ES200P	P32JS200P
200	mm	419	1031	203	381	1205	231kg				
10	in	18	48.38	10.02	17.5	56.81	887lb	5808	0.265	P32ES250P	P32JS250P
250	mm	457	1229	254.4	445	1443	403kg				
12	in	19.75	57.17	11.94	20.5	67.2	1180lb	8668	0.241	P32ES300P	P32JS300P
300	mm	502	1452	303.2	521	1707	536kg				
14	in	30	60.79	13.12	23	71.30	1622lb	10882	0.223	P32ES350P	P32JS350P
350	mm	762	1544	333.3	584	1811	737kg				
16	in	33	68.39	15	25.5	79.96	2168lb	14932	0.203	P32ES400P	P32JS400P
400	mm	838	1737	381	648	2031	985kg				
18	in	36	77.87	16.88	28	91.18	2793lb	18591	0.210	P32ES450P	P32JS450P
450	mm	914	1978	428.6	711	23.16	1270kg				
20	in	39	83.66	18.81	30.5	97.64	3635lb	23740	0.199	P32ES500P	P32JS500P
500	mm	991	2125	477.8	775	2480	1652kg				

Product No. P32
'P' Design, Flanged Ends

DEWRANCE
tyco engineered products

Cast Steel Parallel Slide Gate Valves

Sizes 2"–20"

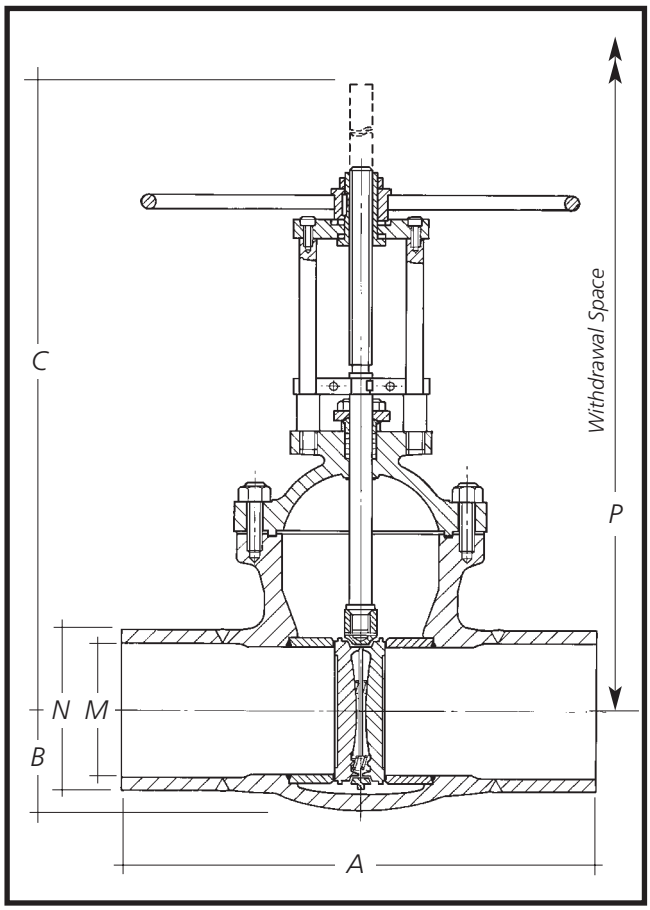
ASME B16.34 600 Class

Main component materials

Description	Carbon Steel	Alloy Steel
Body	A216 Gr WCB	A217 Gr WC6
Bonnet	A216 Gr WCB	A217 Gr WC6
Stem	AISI 431	AISI 431
Gland	Aluminium – Bronze ASTM B150 630	
Seats	A106	A182-F22
Yoke Sleeve	Aluminium – Bronze ASTM B150 630	
Handwheel	Cast Iron / Steel	
Disc	A516 Gr 70	A387 Gr 11
Gland Packing	Expanded Graphite	
Gasket	Expanded Graphite	

Hydrostatic shell & seat leak test pressures

Press. Class		Material			
		ASTM A-216 WCB		ASTM A-217-WC6	
		Shell	Seat	Shell	Seat
600	psi	2250	1650	2250	1650
	bar	156	114	156	114



Dimensions

Size		A	B	C	M	N	P	Weight	Cv	K Factor	Product Numbers Carbon Steel WCB	Product Numbers Alloy Steel WC6
2	in	11.5	2.06	16.93	1.94	2.38	20.35	65lb	275	0.167	P51ES050P	P51JS050P
50	mm	292	52	430	49.3	60.3	517	29.5kg				
2½	in	13	2.06	16.93	2.32	2.88	20.35	69lb	306	0.276	P51ES065P	P51JS065P
65	mm	330	52	430	58.9	73.2	517	31.4kg				
3	in	14	2.44	19.92	2.9	3.5	23.23	89lb	633	0.158	P51ES080P	P51JS080P
80	mm	356	62	506	73.7	88.9	590	40.5kg				
4	in	17	3.25	23.4	3.83	4.5	26.81	135lb	1152	0.145	P51ES100P	P51JS100P
100	mm	432	82	594	97.3	114.3	681	61.4kg				
6	in	22	4.13	31.93	5.76	6.63	37.17	293lb	2670	0.138	P51ES150P	P51JS150P
150	mm	559	104	811	146	168.3	944	133kg				
8	in	26	5.38	40.59	7.63	8.63	47.44	477lb	4809	0.131	P51ES200P	P51JS200P
200	mm	660	136	1031	194	219.1	1205	217kg				
10	in	31	6.5	48.38	9.56	10.75	56.81	802lb	7698	0.126	P51ES250P	P51JS250P
250	mm	787	164	1229	243	273	1443	365kg				
12	in	33	7.63	57.17	11.38	12.75	67.20	1116lb	11086	0.122	P51ES300P	P51JS300P
300	mm	838	194	1452	289	323.9	1707	507kg				
14	in	35	8.5	60.79	12.5	14	71.30	1477lb	13543	0.119	P51ES350P	P51JS350P
350	mm	889	215	1544	318	355.6	1811	671kg				
16	in	39	9.25	68.39	14.31	16	79.96	1932lb	18027	0.116	P51ES400P	P51JS400P
400	mm	991	235	1737	363	406.4	2031	878kg				
18	in	43	10.31	77.87	16.13	18	91.18	2500lb	23040	0.114	P51ES450P	P51JS450P
450	mm	1092	262	1978	410	457.2	2316	1136kg				
20	in	47	11.38	83.66	17.94	20	97.64	3275lb	28884	0.111	P51ES500P	P51JS500P
500	mm	1194	289	2125	456	508	2480	1489lb				

Product No. P51
'P' Design, Butt Weld Ends

DEWRANCE
tyco engineered products

Cast Steel Parallel Slide Gate Valves

Sizes 2"–20"

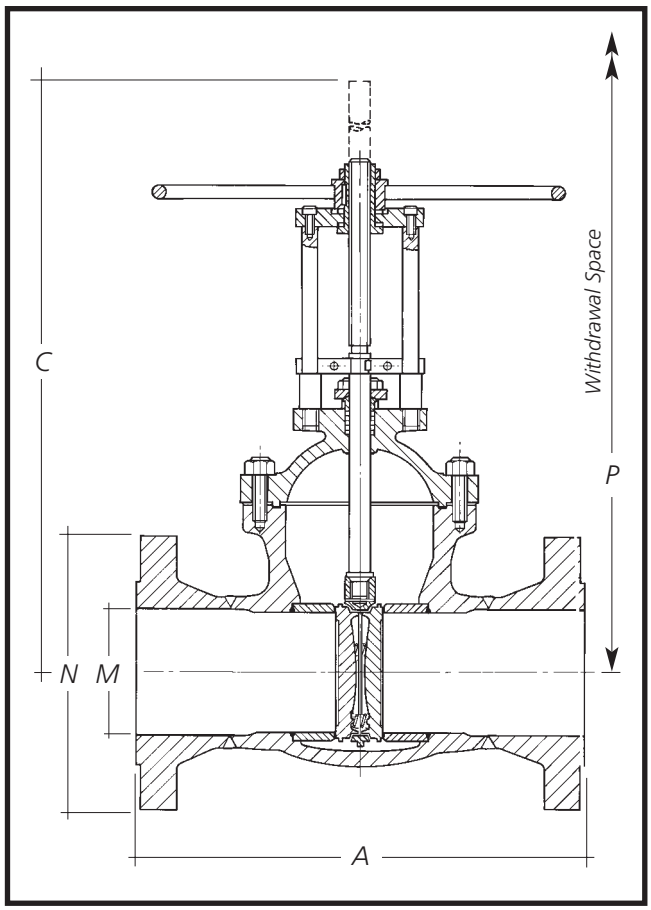
ASME B16.34 600 Class

Main component materials

Description	Carbon Steel	Alloy Steel
Body	A216 Gr WCB	A217 Gr WC6
Bonnet	A216 Gr WCB	A217 Gr WC6
Stem	AISI 431	AISI 431
Gland	Aluminium – Bronze ASTM B150 630	
Seats	A106	A182-F22
Yoke Sleeve	Aluminium – Bronze ASTM B150 630	
Handwheel	Cast Iron / Steel	
Disc	A516 Gr 70	A387 Gr 11
Gland Packing	Expanded Graphite	
Gasket	Expanded Graphite	

Hydrostatic shell & seat leak test pressures

Press. Class		Material			
		ASTM A-216 WCB		ASTM A-217-WC6	
		Shell	Seat	Shell	Seat
600	psi	2250	1650	2250	1650
	bar	156	114	156	114



Dimensions

Size		A	C	M	N	P	Weight	Cv	K Factor	Product Numbers: Carbon Steel WCB	Product Numbers: Alloy Steel WC6
2	in	11.5	16.93	1.97	6.5	20.35	85lb	275	0.167	P52ES050P	P52JS050P
50	mm	292	430	50	165	517	38.6kg				
2½	in	13	16.93	2.32	7.5	20.35	93lb	306	0.276	P52ES065P	P52JS065P
65	mm	330	430	58.9	191	517	42.3kg				
3	in	14	19.92	2.93	8.25	23.23	121lb	633	0.158	P52ES080P	P52JS080P
80	mm	356	506	74.4	210	590	55kg				
4	in	17	23.4	3.86	10.75	26.81	205lb	1152	0.145	P52ES100P	P52JS100P
100	mm	432	594	98	273	681	93.2kg				
6	in	22	31.93	5.82	14	37.17	430lb	2670	0.138	P52ES150P	P52JS150P
150	mm	559	811	147.8	356	944	195kg				
8	in	26	40.59	7.72	16.5	47.44	687lb	4809	0.131	P52ES200P	P52JS200P
200	mm	660	1031	196	419	1205	312kg				
10	in	31	48.38	9.66	20	56.81	1137lb	7698	0.126	P52ES250P	P52JS250P
250	mm	787	1229	245	508	1443	516kg				
12	in	33	57.17	11.49	22	67.20	1488lb	11086	0.122	P52ES300P	P52JS300P
300	mm	838	1452	292	559	1707	675kg				
14	in	35	60.79	12.64	23.75	71.30	1820lb	13543	0.119	P52ES350P	P52JS350P
350	mm	889	1544	321	603	1811	826kg				
16	in	39	68.39	14.47	27	79.96	2545lb	18027	0.116	P52ES400P	P52JS400P
400	mm	991	1737	367.5	686	2031	1154kg				
18	in	43	77.87	16.13	29.25	91.18	3280lb	23040	0.114	P52ES450P	P52JS450P
450	mm	1092	1978	410	743	2316	1488kg				
20	in	47	83.66	17.94	32	97.64	4250lb	28884	0.111	P52ES500P	P52JS500P
500	mm	1194	2125	456	813	2480	1928kg				

Product No. P52
'P' Design, Flanged Ends

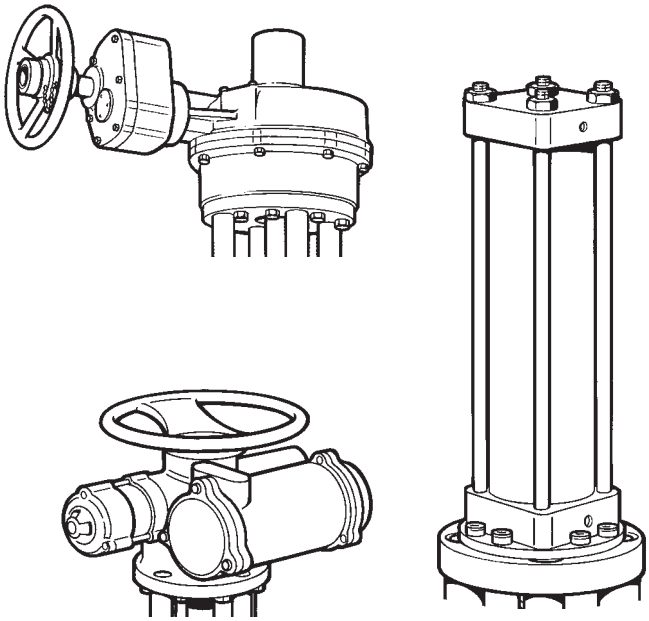
DEWRANCE
tyco engineered products

Parallel Slide Gate Valve Accessories

Operators….

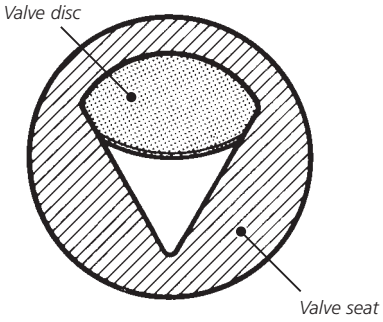
Dewrance Parallel Slide Gate Valves can be equipped with gear operators – when handwheel rim torque exceeds 50 lbs. push and 50 lbs. pull. Bevel gear; bevel and spur gear; and spur gear operators are available.

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.



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.



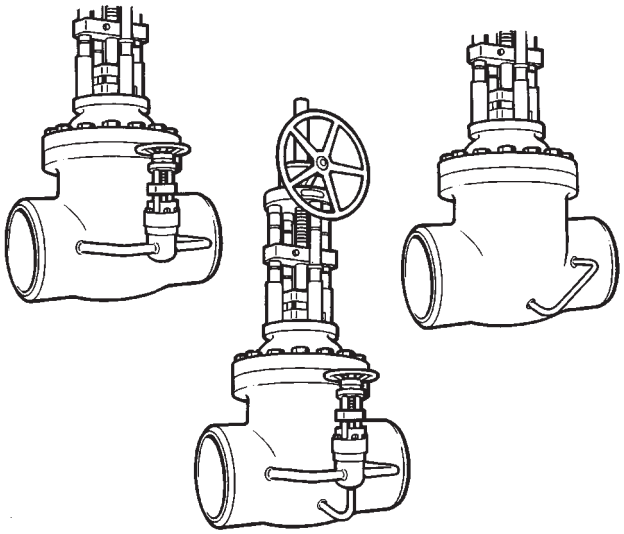
View through outlet of Vee-port Seated Valve

By-Pass Valves….

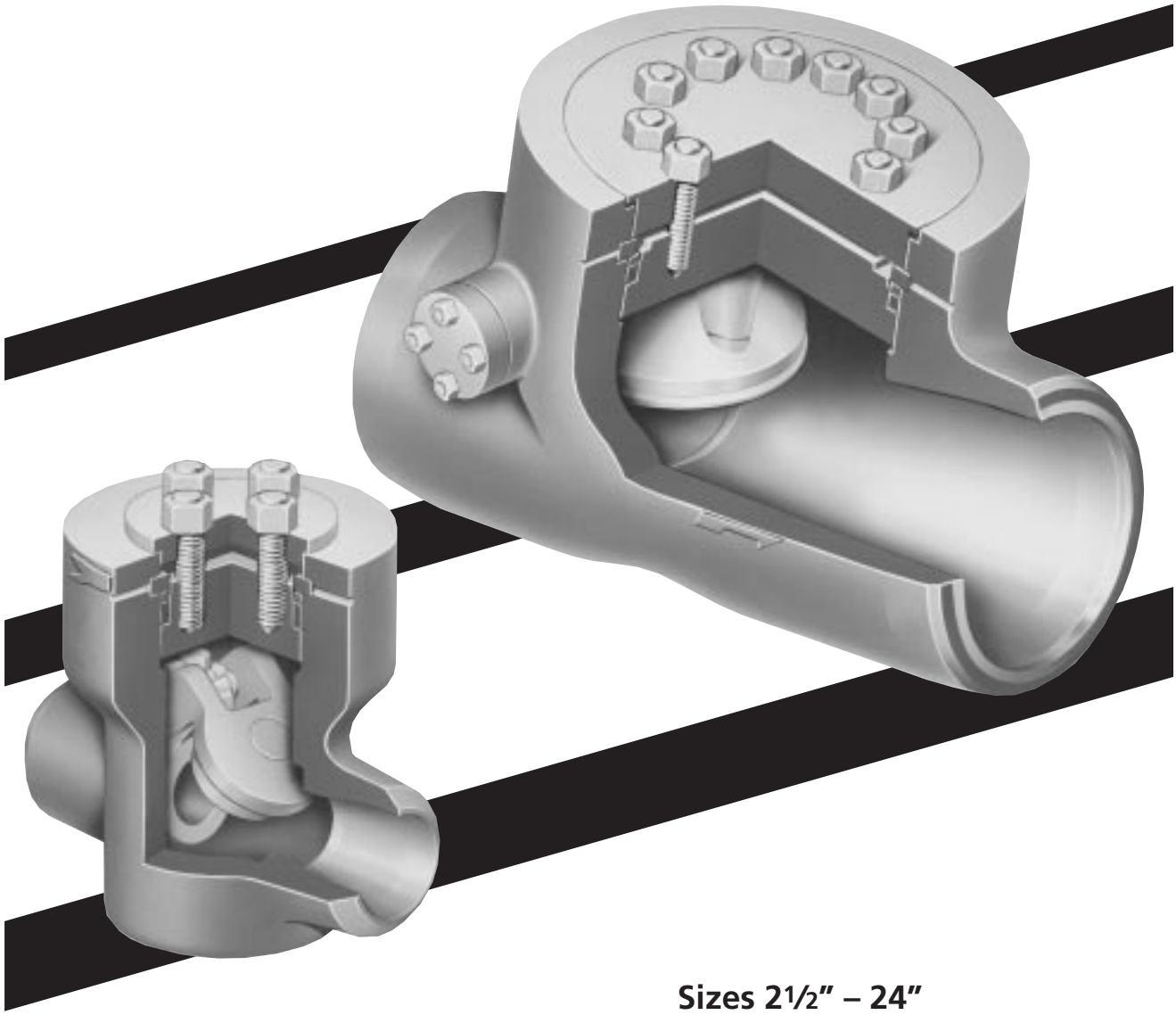
Dewrance Parallel Slide Gate Valves can be fitted with By-Pass Valves when specified by the customer. Dewrance By-Pass Valves have a parallel slide gate design with a pressure seal bonnet, a forged body, butt-weld ends, can be motor operated and are in accordance with MSS-SP-45.

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.



High pressure Steel Check Valves



Sizes 2½" – 24"

ASME B16.34 – 1996

Valve overall lengths to ASME B16.10 – 1992

Pressure Class: 1000, 1690, 2850

DEWRANCE
tyco engineered products

High Pressure Steel Check Valves

Sizes 2½" – 24"

ASME B16.34 – 1996

Valve overall lengths to ASME B16.10 – 1992

Pressure Class: 1000, 1690, 2850

Features & Benefits

Excellent Reliability

- Direct deposited seats hard-faced with Stellite® or Equivalent
- Tilting Disc design balanced for quick opening and immediate closing on flow reversal
- Lightweight disc with minimum travel
- Optimum performance underall flow conditions
- Self-draining geometry

Low Cost Maintenance

- Expanded graphite pressure seal design
- Nitrided hinge pin, supported in nitrided bearings, giving a low coefficient of friction and hardwearing surface for maximum performance
- Easy access through pressure seal cover
- Simplified seat refurbishment, only requires lapping
- Longer seat life due to non-scuffing action of seat to disc geometry

Improved Performance

- Aerodynamic self-aligning tilting disc design for low pressure drop characteristic
- Automatic self closure on flow reversal
- Inclined seat geometry combined with conical seat and disc for tight seal without scuffing

Typical Applications

- Main Steam Isolation
- Boiler Feed Pump Isolation
- Deaerator Recirculation
- Economizer Recirculation
- Spray Water Isolation
- Attemperator Spray
- Chemical injection

High Pressure Steel Check Valves

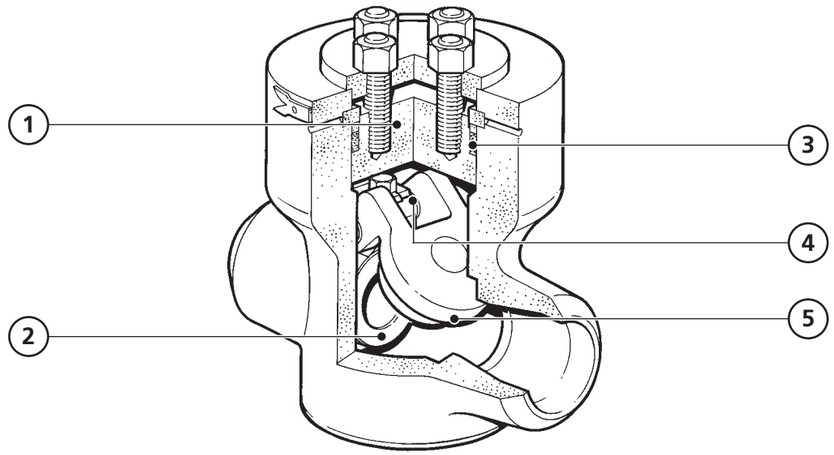
Swing Check Design

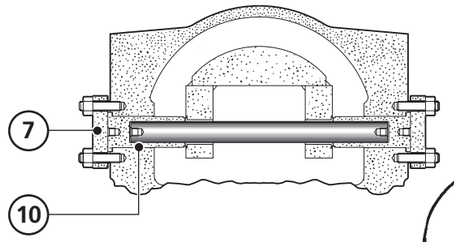
1. *Pressure Seal Closure improves as pressure increases.*
2. *Hard Faced Stellite® or equivalent Discs and Seats.*
3. *Graphoil® Pressure Seal Ring.*
4. *Unique location of Disc Hinge eliminates external bearings or seals.*
5. *Self aligning Swing Check Disc.*

Tilting Disc Design

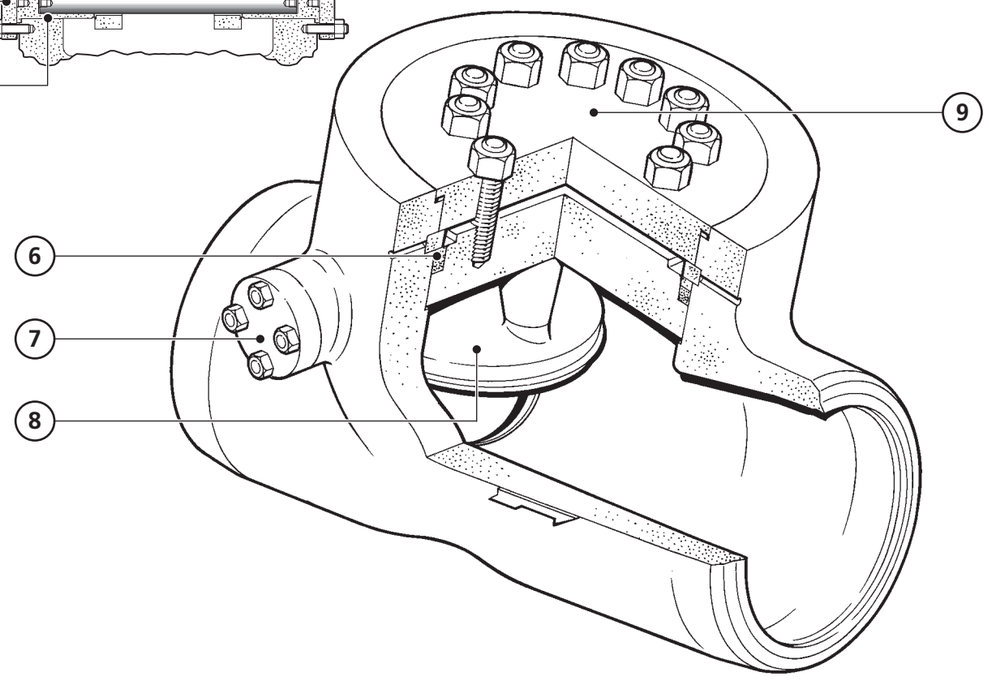
6. *Graphoil® Pressure Seal Ring.*
7. *Disc supported on Nitrided Bearings. Free to rotate on bearings and spindle, no keyways used.*
8. *Inclined Seat and aerodynamic Tilting Disc gives low pressure drop.*
9. *Pressure Seal Closure improves as pressure increases and provides easy access for inline maintenance.*
10. *Glandless hinge pin sealing for reliability and performance.*

Swing Check design





Tilting Disc design



DEWRANCE
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Pressure/Temperature Ratings (Check Valves)

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

Prod. No.	ASTM Body Material Forged		Cast		Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. °F (for intermediate ratings use linear interpolation)																	
							-20° to 100°	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
F67	D	A105	E	A216 WCB	57	Std.	2468	2250	2188	2112	1995	1823	1789	1778	1678	1373	894	–	–	–	–	–	–	–
						Spec.	**2500**	**2500**	**2500**	**2500**	**2500**	**2378**	**2333**	**2312**	**2100**	**1716**	**1116**	–	–	–	–	–	–	–
			J	A217 WC6		Std.	2500	2500	2406	2311	2217	2017	1961	1894	1773	1694	1623	1499	1062	892	722	600	478	400
						Spec.	**2500**	**2500**	**2500**	**2500**	**2500**	**2500**	**2500**	**2444**	**2428**	**2400**	**2256**	**1956**	**1328**	**1114**	**900**	**750**	**600**	**500**
	K	A182 F22	L	A217 WC9		Std.	2500	2500	2428	2351	2217	2017	1961	1894	1773	1694	1623	1499	1256	1062	868	725	583	475
						Spec.	**2500**	**2500**	**2472**	**2416**	**2400**	**2400**	**2384**	**2372**	**2300**	**2244**	**2144**	**2000**	**1572**	**1328**	**1084**	**906**	**728**	**592**

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

Prod. No.	ASTM Body Material Forged		Cast		Page No.	ASME Code B16.34	Pressure in Bar at Temp. °C (for intermediate ratings use linear interpolation)																	
							-30° to 38°	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
F67	D	A105	E	A216 WCB	57	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	–	–	–	–	–	–
						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**	–	–	–	–	–	–
			J	A217 WC6		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
						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**
	K	A182 F22	L	A217 WC9		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
						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. No.	ASTM Body Material Forged		Cast		Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. °F (for intermediate ratings use linear interpolation)																	
							-20° to 100°	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
F73	D	A105	E	A216 WCB	55	Std.	4173	3803	3696	3571	3374	3082	3025	3002	2839	2320	1509	–	–	–	–	–	–	–
						Spec.	**4225**	**4225**	**4225**	**4225**	**4225**	**4016**	**3938**	**3909**	**3549**	**2896**	**1882**	–	–	–	–	–	–	–
			J	A217 WC6	58	Std.	4225	4225	4067	3904	3746	3408	3313	3199	2996	2861	2744	2530	1796	1507	1217	1014	811	676
						Spec.	**4225**	**4225**	**4225**	**4225**	**4225**	**4225**	**4225**	**4130**	**4106**	**4056**	**3814**	**3307**	**2247**	**1884**	**1521**	**1268**	**1014**	**845**
	K	A182 F22	L	A217 WC9		Std.	4225	4225	4102	3977	3746	3408	3313	3199	2996	2861	2744	2530	2124	1797	1469	1227	985	802
						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. No.	ASTM Body Material Forged		Cast		Page No.	ASME Code B16.34	Pressure in Bar at Temp. °C (for intermediate ratings use linear interpolation)																	
							-30° to 38°	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
F73	D	A105	E	A216 WCB	55	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	–	–	–	–	–	–
						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**	–	–	–	–	–	–
			J	A217 WC6	58	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
						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**
	K	A182 F22	L	A217 WC9		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
						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 2850 int. Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Forged		Cast		Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. °F (for intermediate ratings use linear interpolation)																	
							-20° to 100°	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
F95	D	A105	E	A216 WCB	56	Std.	7035	6412	6236	6019	5688	5199	5102	5061	4788	3910	2542	–	–	–	–	–	–	–
						Spec.	**7125**	**7125**	**7125**	**7125**	**7125**	**6771**	**6641**	**6589**	**5985**	**4885**	**3175**	–	–	–	–	–	–	–
			J	A217 WC6	59	Std.	7125	7125	6858	6584	6314	5745	5591	5392	5050	4822	4628	4269	3028	2540	2052	1710	1368	1140
						Spec.	**7125**	**7125**	**7125**	**7125**	**7125**	**7125**	**7125**	**6965**	**6921**	**6840**	**6435**	**5579**	**3786**	**3175**	**2565**	**2138**	**1710**	**1425**
	K	A182 F22	L	A217 WC9		Std.	7125	7125	6920	6703	6314	5745	5591	5392	5050	4822	4628	4269	3586	3030	2475	2067	1660	1351
						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)

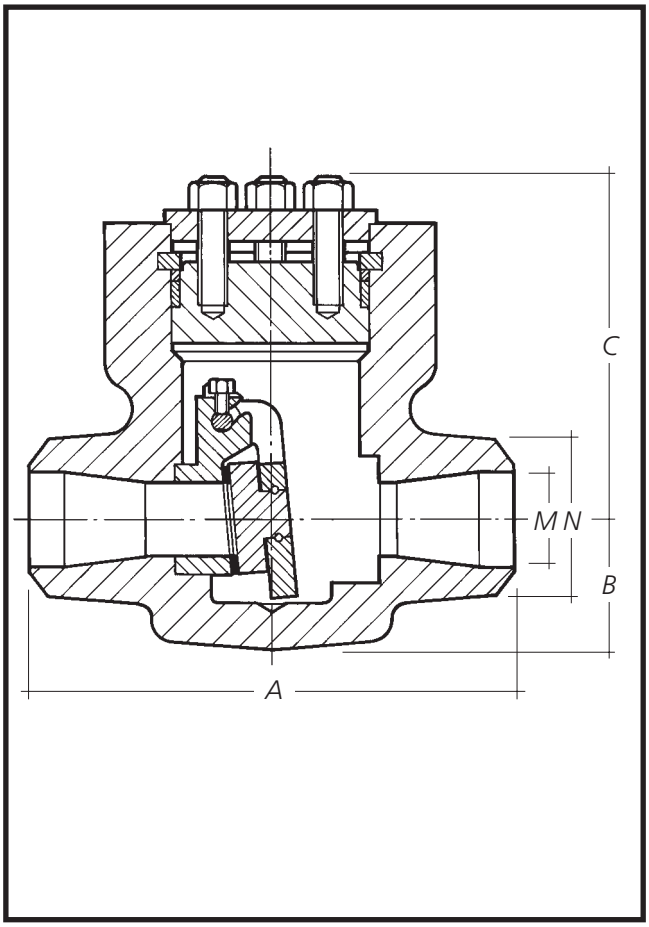
Prod. No.	ASTM Body Material Forged		Cast		Page No.	ASME Code B16.34	Pressure in Bar at Temp. °C (for intermediate ratings use linear interpolation)																	
							-30° to 38°	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
F95	D	A105	E	A216 WCB	56	Std.	484.8	475.6	440.6	429.6	416.2	396.3	367.9	351.1	346.3	327.7	273.2	190.3	–	–	–	–	–	–
						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**	–	–	–	–	–	–
			J	A217 WC6	59	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
						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**
	K	A182 F22	L	A217 WC9		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
						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**

Note 'a' – Permissible but not recommended for prolonged usage above 800°F (425°C).

Forged Steel Swing Disc Check Valve

Sizes 2½"–5"

ASME B16.34 1690 Class



Main component materials

Description	Carbon Steel	Alloy Steel
Body	A105	A182 F22
Bonnet	A516 Gr. 70	A387 Gr. 22
Cover	BS1501-161 G430A	A387 Gr. 11
Hinge Pin	AISI 431 (Nitrided)	
Hinge Pin Bush	AISI 431 (Nitrided)	
Seat	A516 Gr. 70	A387 Gr. 22
Disc	A105	A387 Gr. 22
Pressure Seal Ring	Expanded Graphite	

Hydrostatic shell & seat leak test pressures

Press. Class		Material			
		ASTM A105		ASTM A182-F22	
		Shell	Seat	Shell	Seat
1690	psi	6350	4650	6350	4650
	bar	438	321	438	321

Dimensions

* Per ASME B16.10 † 5" valve to have cast steel body

Size		A	B	C	M	N	Max.Width	Weight	Cv	K Factor	Product Numbers	
											Carbon Steel	Alloy Steel
2½	in	10	2.6	6.18	1.65	2.99	7.32	53lb	82	0.9888	F73DZ065N	F73KZ065N
65	mm	254	66	157	42	76	186	24kg				
3	in	12	2.6	7.13	2.17	3.58	7.32	126lb	145	0.9338	F73DZ080N	F73KZ080N
80	mm	305	66	181	55	91	186	57kg				
4	in	16	3.15	8.23	2.99	4.61	8.58	165lb	411	0.8719	F73DZ100N	F73KZ100N
100	mm	406	80	209	76	117	218	75kg				
†5	in	19	4.45	10.47	4.25	5.71	9.65	227lb	601	0.8093	F73EZ125N	F73LZ125N
†125	mm	483	113	266	108	145	245	103kg				

Product No. F73
'N' Design

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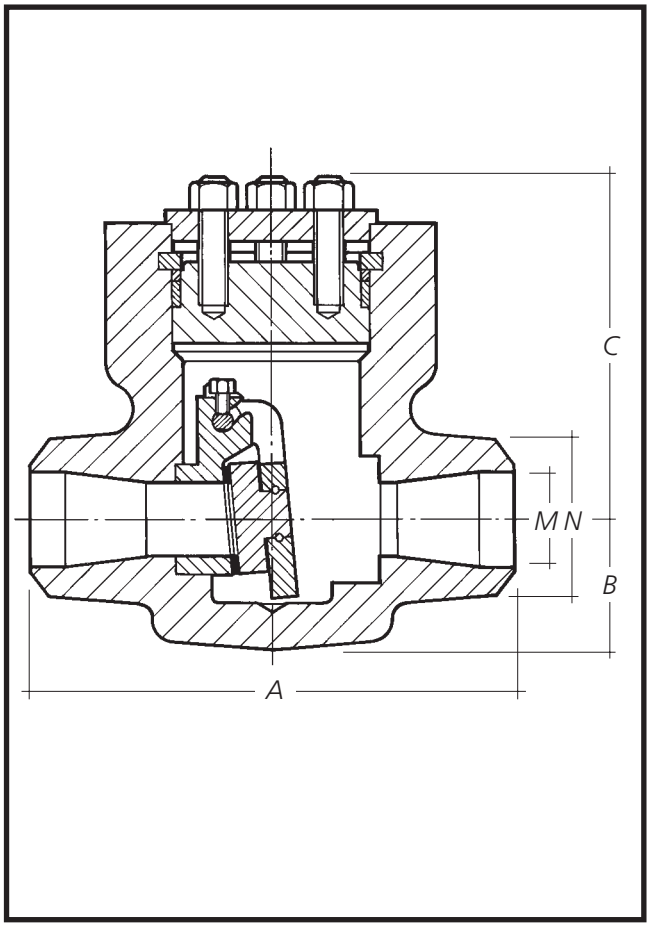
Forged Steel Swing Disc Check Valve

Sizes 2½"–5"

ASME B16.34 2850 Class



Main component materials

Description	Carbon Steel	Alloy Steel
Body	A105	A182 F22
Bonnet	A516 Gr. 70	A387 Gr. 22
Cover	BS1501-161 G430A	A387 Gr. 11
Hinge Pin	AISI 431 (Nitrided)	
Hinge Pin Bush	AISI 431 (Nitrided)	
Seat	A516 Gr. 70	A387 Gr. 22
Disc	A105	A387 Gr. 22
Pressure Seal Ring	Expanded Graphite	

Hydrostatic shell & seat leak test pressures

Press. Class		Material: ASTM A105 Shell	ASTM A105 Seat	ASTM A182-F22 Shell	ASTM A182-F22 Seat
2850	**psi**	10700	7900	10700	7900
	bar	737	541	737	541

Dimensions

* Per ASME B16.10 † 5" valve to have cast steel body

Size		A*	B	C	M	N	Max.Width	Weight	Cv	K Factor	Product Numbers: Carbon Steel A105	Product Numbers: Alloy Steel F22
2½	in	13	2.6	6.18	1.38	2.99	7.32	66lb	56	1.0277	F95DZ065N	F95KZ065N
65	**mm**	**330**	**66**	**157**	**35**	**76**	**186**	**30kg**				
3	in	14.5	3.15	7.68	1.65	3.58	8.58	150lb	82	0.9888	F95DZ080N	F95KZ080N
80	**mm**	**368**	**80**	**195**	**42**	**91**	**218**	**68kg**				
4	in	18	3.15	7.76	2.13	4.61	8.58	170lb	140	0.9375	F95DZ100N	F95KZ100N
100	**mm**	**457**	**80**	**197**	**54**	**117**	**218**	**77kg**				
5†	in	21	5.31	11.18	3.46	5.71	12	272lb	390	0.8453	F95EZ125N	F95LZ125N
125†	**mm**	**533**	**135**	**284**	**88**	**145**	**305**	**123kg**				

Product No. F95
'N' Design

DEWRANCE
tyco engineered products

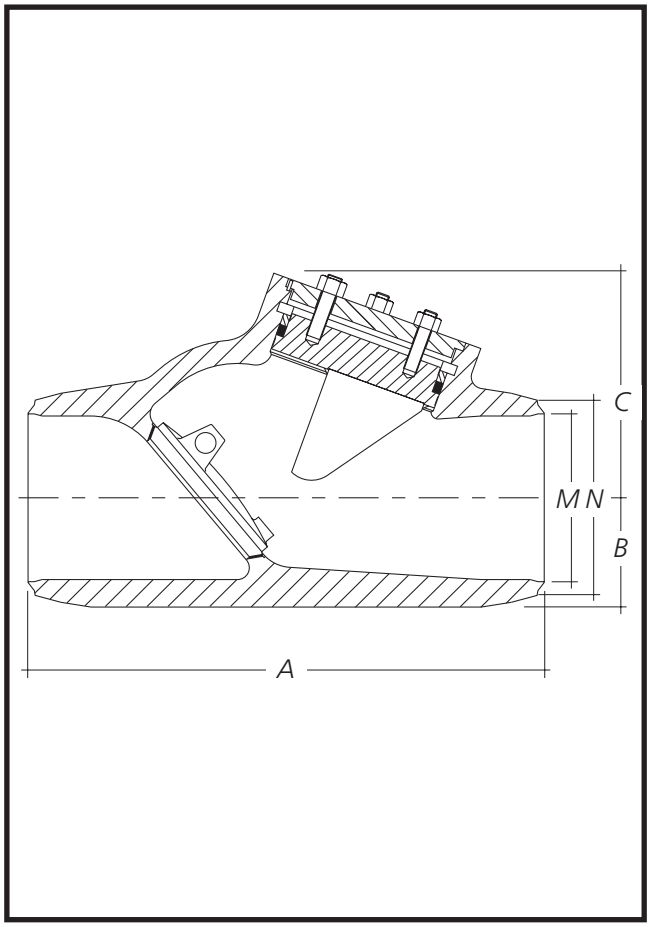
Cast Steel Tilting Disc Check Valve

Sizes 6”–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	A516 Gr. 70	A387 Gr. 11	A387 Gr. 22
Cover	BS1501-161 G430A	A387 Gr. 11	A387 Gr. 11
Hinge Pin	A565-XM32 (Nitrided)		
Hinge Pin Bush	AISI 431 (Nitrided)		
Hinge Pin Housing	AISI 431 (Nitrided)		
Disc	A216 Gr. WCB	A217 Gr. WC6	A217 Gr. WC9
Gasket	Expanded Graphite		
Pressure Seal Ring	Expanded Graphite		



Hydrostatic shell & seat leak test pressures

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

Dimensions

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

Size		A*	B	C	M	N	Max.Width	Weight	Cv	K Factor	Product Numbers Carbon Steel WCB	Alloy Steel WC6	Alloy Steel WC9
6	in	20	3.58	10.02	5.63	6.81	15.67	232lb	831	1.30	F67EZ150N	F67JZ150N	F67LZ150N
150	mm	508	91	259	143	173	398	105kg					
8	in	26	4.8	12.4	7.44	8.78	17.68	443lb	1492	1.23	F67EZ200N	F67JZ200N	F67LZ200N
200	mm	660	122	315	189	223	449	201kg					
10	in	31	5.98	14.57	9.25	10.94	20.16	722lb	2365	1.17	F67EZ250N	F67JZ250N	F67LZ250N
250	mm	787	152	370	235	278	512	328kg					
12	in	36	7.6	17.13	11.10	12.99	25.16	1180lb	3481	1.12	F67EZ300N	F67JZ300N	F67LZ300N
300	mm	914	193	435	282	330	639	535kg					
14	in	39	7.76	18.23	12.2	14.25	26.69	1652lb	4263	1.09	F67EZ350N	F67JZ350N	F67LZ350N
350	mm	991	197	463	310	362	678	749kg					
16	in	43	9.09	20.98	13.98	16.26	28.03	2137lb	5676	1.06	F67EZ400N	F67JZ400N	F67LZ400N
400	mm	1092	231	533	355	413	712	969kg					
18	in	48	9.61	23.5	15.59	18.31	33	2853lb	7126	1.04	F67EZ450N	F67JZ450N	F67LZ450N
450	mm	1219	244	597	396	465	838	1294kg					
20	in	52	10.43	26.06	17.32	20.31	34.7	3797lb	8881	1.02	F67EZ500N	F67JZ500N	F67LZ500N
500	mm	1321	265	662	440	516	880	1722kg					
24†	in	61	13.5	31.1	20.79	24.37	41.6	6367lb	13055	0.98	F67EZ600N	F67JZ600N	F67LZ600N
600†	mm	1549	343	790	528	619	1056	2888kg					

Product No. F67
‘N’ Design

DEWRANCE
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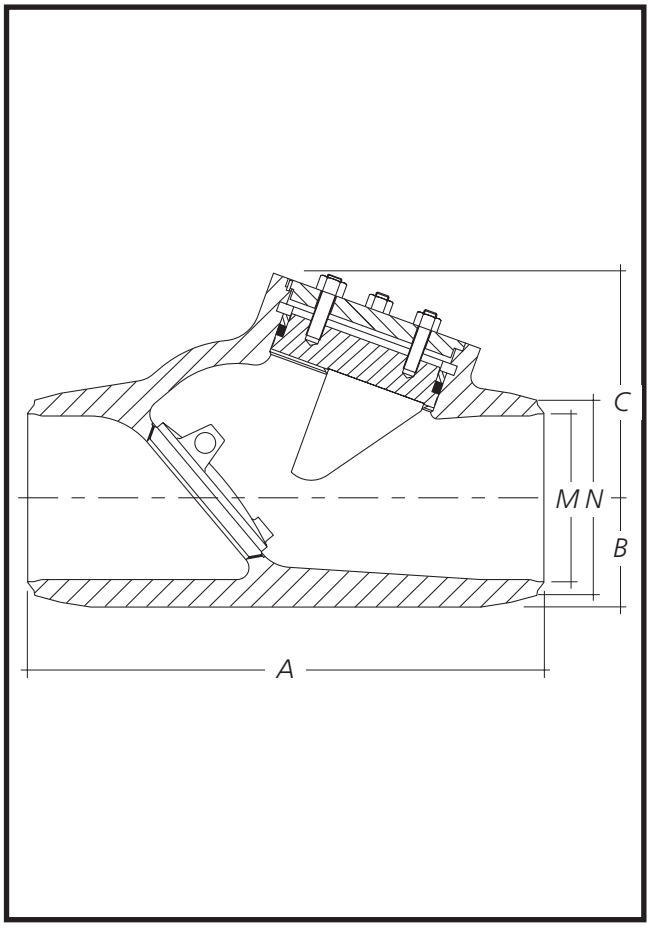
Cast Steel Tilting Disc Check Valve

Sizes 6"–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	A516 Gr. 70	A387 Gr. 11	A387 Gr. 22
Cover	BS1501-161 G430A	A387 Gr. 11	A387 Gr. 11
Hinge Pin	A565-XM32 (Nitrided)		
Hinge Pin Bush	AISI 431 (Nitrided)		
Hinge Pin Housing	AISI 431 (Nitrided)		
Disc	A216 Gr. WCB	A217 Gr. WC6	A217 Gr. WC9
Gasket	Expanded Graphite		
Pressure Seal Ring	Expanded Graphite		

Hydrostatic shell & seat leak test pressures

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

Dimensions

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

Size		A*	B	C	M	N	Max.Width	Weight	Cv	K Factor	Product Numbers Carbon Steel WCB	Alloy Steel WC6	Alloy Steel WC9
6	in	22	3.74	10.87	5.12	6.81	15.6	379lb	672	1.36	F73EZ150N	F73JZ150N	F73LZ150N
150	mm	**559**	**95**	**276**	**130**	**173**	**396**	**172kg**					
8	in	28	4.96	13.35	6.69	8.78	19.5	708lb	1178	1.29	F73EZ200N	F73JZ200N	F73LZ200N
200	mm	**711**	**126**	**339**	**170**	**223**	**495**	**321kg**					
10	in	34	6.18	16.26	8.35	10.94	22	1184lb	1880	1.23	F73EZ250N	F73JZ250N	F73LZ250N
250	mm	**864**	**157**	**413**	**212**	**278**	**560**	**537kg**					
12	in	39	7.28	19.64	10.04	12.99	28.8	1969lb	2786	1.17	F73EZ300N	F73JZ300N	F73LZ300N
300	mm	**991**	**185**	**499**	**255**	**330**	**731**	**893kg**					
14	in	42	7.87	20.83	11.02	14.25	28.43	2099lb	3401	1.14	F73EZ350N	F73JZ350N	F73LZ350N
350	mm	**1066**	**200**	**529**	**280**	**362**	**722**	**952kg**					
16	in	47	9.1	23.5	12.64	16.26	30.3	3563lb	4534	1.11	F73EZ400N	F73JZ400N	F73LZ400N
400	mm	**1194**	**231**	**597**	**321**	**413**	**770**	**1616kg**					
18	in	53	10.43	26.06	14.09	18.31	32.8	4125lb	5686	1.09	F73EZ450N	F73JZ450N	F73LZ450N
450	mm	**1346**	**265**	**662**	**358**	**465**	**833**	**1871kg**					
20	in	58	11.54	28.82	15.63	20.31	36.3	6112lb	7128	1.05	F73EZ500N	F73JZ500N	F73LZ500N
500	mm	**1473**	**293**	**732**	**397**	**516**	**921**	**2772kg**					
24†	in	66	13.86	34.61	18.78	24.37	43.5	9779lb	10493	1.01	F73EZ600N	F73JZ600N	F73LZ600N
600†	mm	**1676**	**352**	**879**	**477**	**619**	**1106**	**4435kg**					

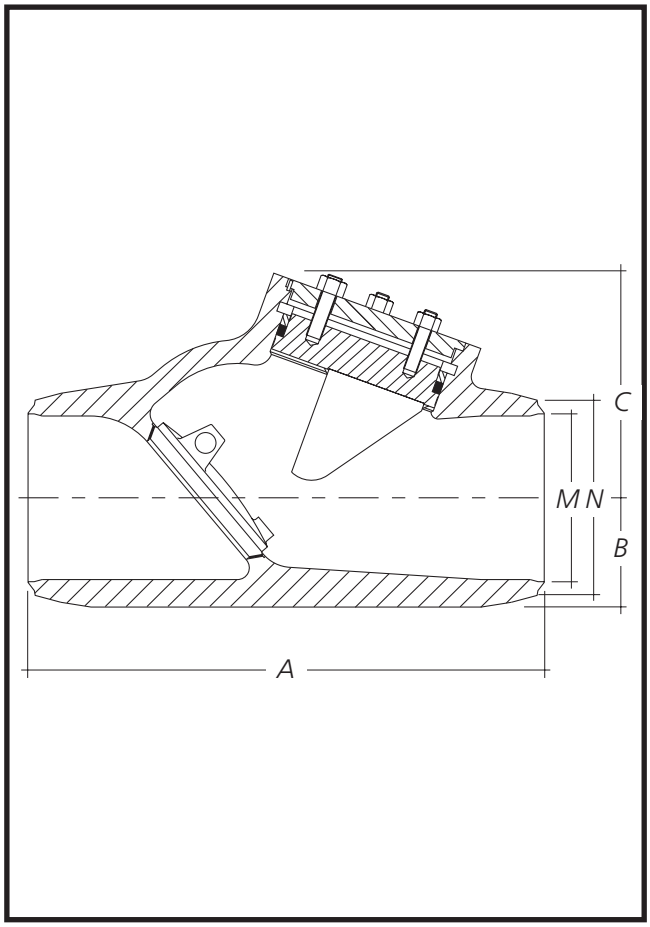
Product No. F73
'N' Design

DEWRANCE
tyco engineered products

Cast Steel Tilting Disc Check Valve

Sizes 6”–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	A516 Gr. 70	A387 Gr. 11	A387 Gr. 22
Cover	BS1501-161 G430A	A387 Gr. 11	A387 Gr. 11
Hinge Pin	A565-XM32 (Nitrided)		
Hinge Pin Bush	AISI 431 (Nitrided)		
Hinge Pin Housing	AISI 431 (Nitrided)		
Disc	A216 Gr. WCB	A217 Gr. WC6	A217 Gr. WC9
Gasket	Expanded Graphite		
Pressure Seal Ring	Expanded Graphite		

Hydrostatic shell & seat leak test pressures

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

Dimensions

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

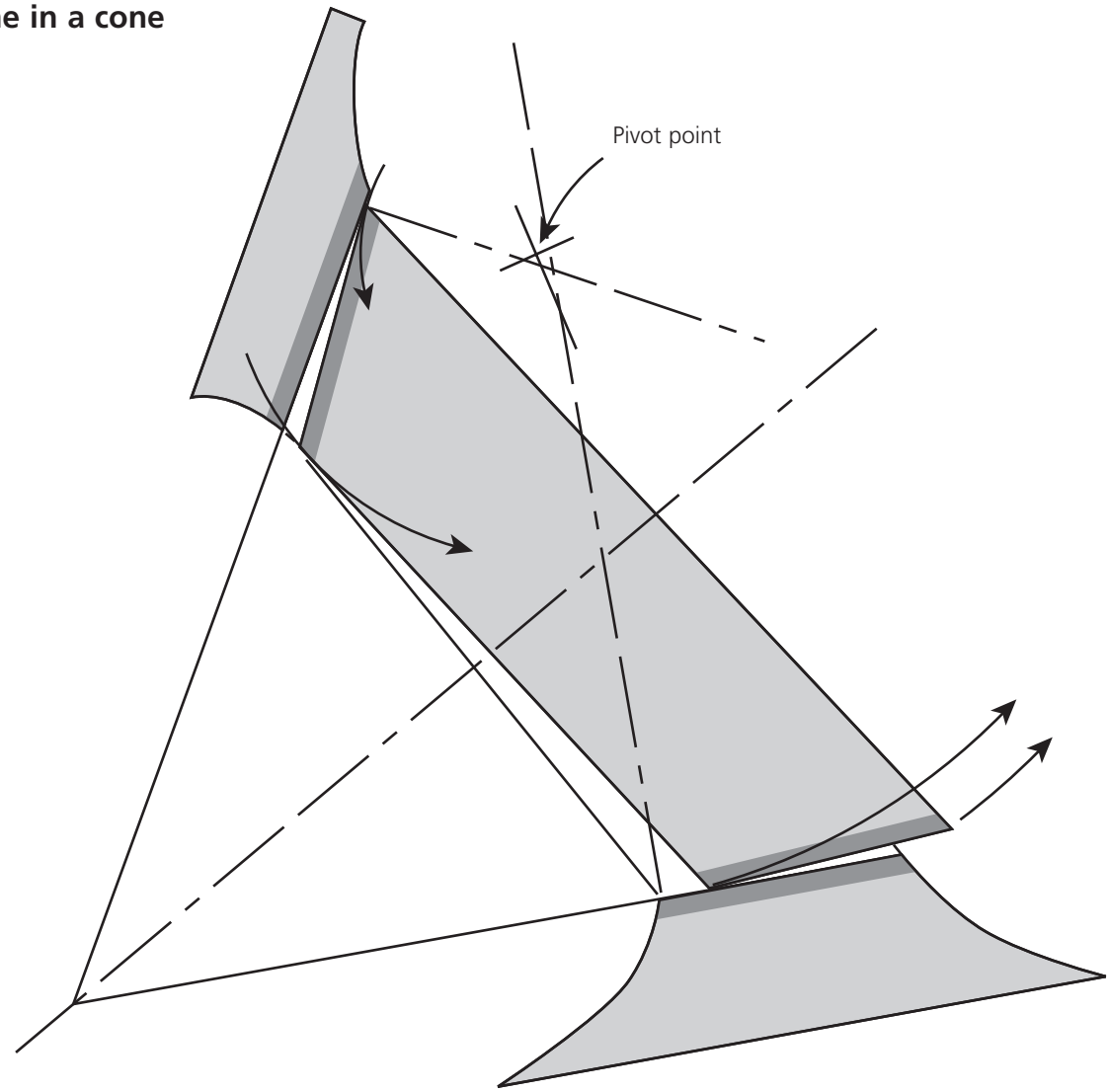
Size		A*	B	C	M	N	Max.Width	Weight	Cv	K Factor	Product Numbers Carbon Steel WCB	Alloy Steel WC6	Alloy Steel WC9
6	in	24	3.86	10.12	4.17	6.81	17.5	531lb	426	1.49	F95EZ150N	F95JZ150N	F95LZ150N
150	**mm**	**610**	**98**	**257**	**106**	**173**	**445**	**241kg**					
8	in	30	5.04	13.35	5.51	8.78	22.9	975lb	767	1.40	F95EZ200N	F95JZ200N	F95LZ200N
200	**mm**	**762**	**128**	**339**	**140**	**223**	**581**	**442kg**					
10	in	36	6.42	15.83	6.89	10.94	25.7	1693lb	1226	1.34	F95EZ250N	F95JZ250N	F95LZ250N
250	**mm**	**914**	**163**	**402**	**175**	**278**	**654**	**768kg**					
12	in	41	7.48	19.53	8.23	12.99	29.1	2796lb	1790	1.28	F95EZ300N	F95JZ300N	F95LZ300N
300	**mm**	**1041**	**190**	**496**	**209**	**330**	**740**	**1268kg**					
14	in	44	7.91	20.71	9.06	14.25	31.7	2879lb	2195	1.25	F95EZ350N	F95JZ350N	F95LZ350N
350	**mm**	**1117**	**201**	**526**	**230**	**362**	**806**	**1309kg**					
16	in	49	9.41	24.88	10.39	16.26	35.9	4600lb	2934	1.21	F95EZ400N	F95JZ400N	F95LZ400N
400	**mm**	**1245**	**239**	**632**	**264**	**413**	**913**	**2086kg**					
18	in	55	10.43	27.64	11.61	18.31	39.9	5886lb	3695	1.19	F95EZ450N	F95JZ450N	F95LZ450N
450	**mm**	**1397**	**265**	**702**	**295**	**465**	**1014**	**2675kg**					
20	in	60	11.46	28.94	12.83	20.31	40.8	7664lb	4570	1.16	F95EZ500N	F95JZ500N	F95LZ500N
500	**mm**	**1524**	**291**	**735**	**326**	**516**	**1036**	**3484kg**					
24†	in	68	13.94	36.85	15.47	24.37	53.2	12663lb	6823	1.10	F95EZ600N	F95JZ600N	F95LZ600N
600†	**mm**	**1727**	**354**	**936**	**393**	**619**	**1352**	**5756kg**					

Product No. F95
‘N’ Design

DEWRANCE
tyco engineered products

Tilting Disc Check Valve
Unique Seating Geometry

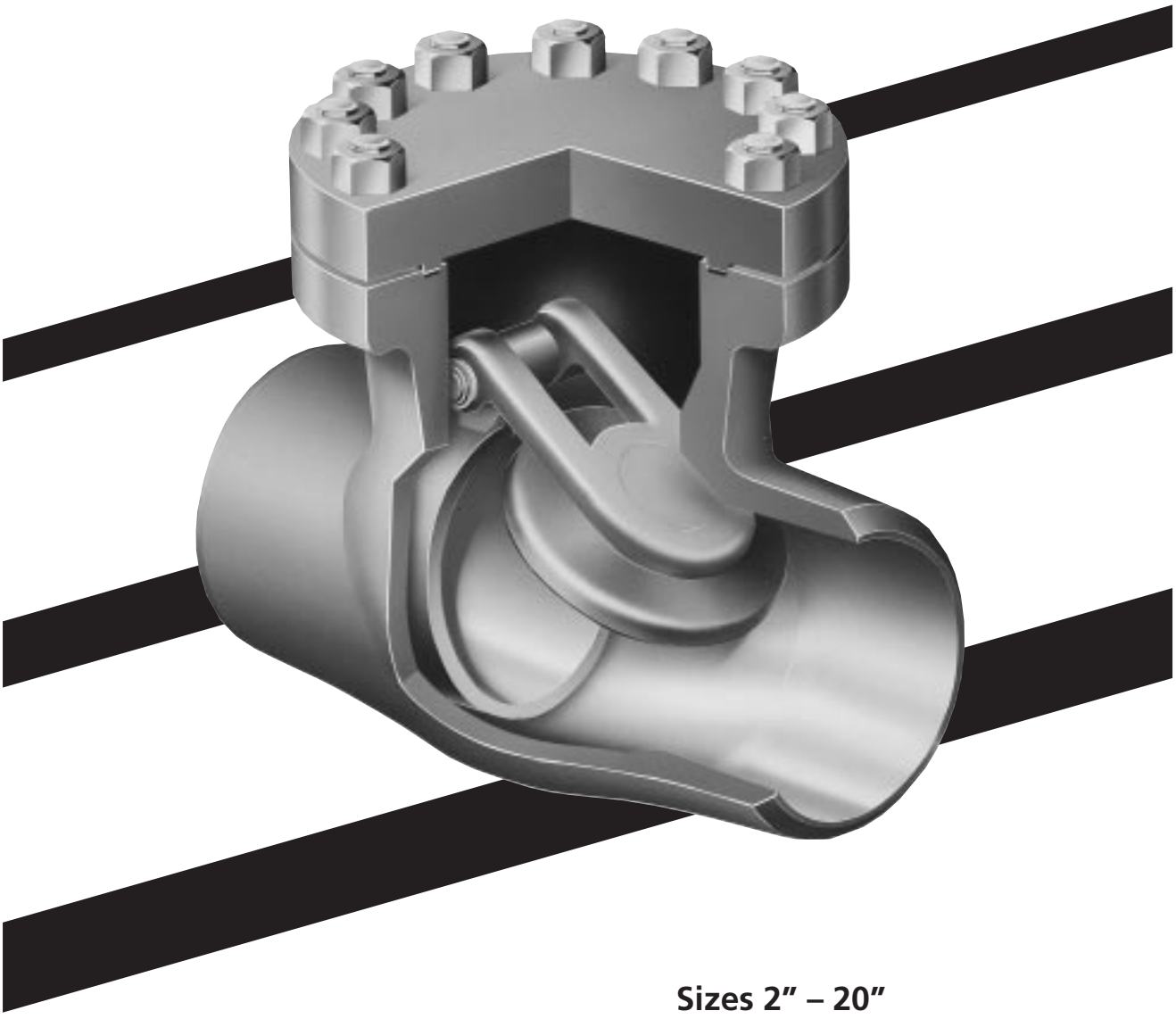
Cone in a cone



Design Features

1. *Proven cone in a cone seating geometry used on our standard Tilting Disc Check Valve.*
2. *Non scuffing design ensures disc always leaves seat due to position of pivot.*
3. *Pressure intensity high enough to seal.*
4. *Dissimilar seating materials to prevent pick-up.*

Low pressure Steel Swing Check Valves



Sizes 2" – 20"

ASME B16.34 – 1996

Valve overall lengths to ASME B16.10 – 1992

Pressure Class: 300, 600

DEWRANCE

tyco engineered products

Low Pressure Steel Swing Check Valves

Sizes 2" – 20"

ASME B16.34 – 1996

Valve overall lengths to ASME B16.10 – 1992

Pressure Class: 300, 600

Features & Benefits

Excellent Reliability

- Welded-in seats hard-faced with Stellite® or Equivalent
- Robust fixing of disc prevents possibility of failure (no fixng nut)
- No external bearings or seals
- Aluminium reinforced graphic gasket

Typical Applications:

- Main Steam Service
- Boiler Feed Pump Protection
- L.P. Feed Heaters
- Blow Down Service
- Blow Off Service
- Gland Steam System Drains
- Steam Turbine Inlet
- Economizer Recirculation
- Spray Water
- Attemperator Spray
- Steam Blow and Start Up

Low Pressure Steel Swing Check Valves

1. *The disc holder is supported by a hinge pin which is mounted in an integral lug on the valve seat, this arrangement eliminates the use of external seals or glands. The hinge pin is free to move in both components thus reducing the possibility of seizure in service.*

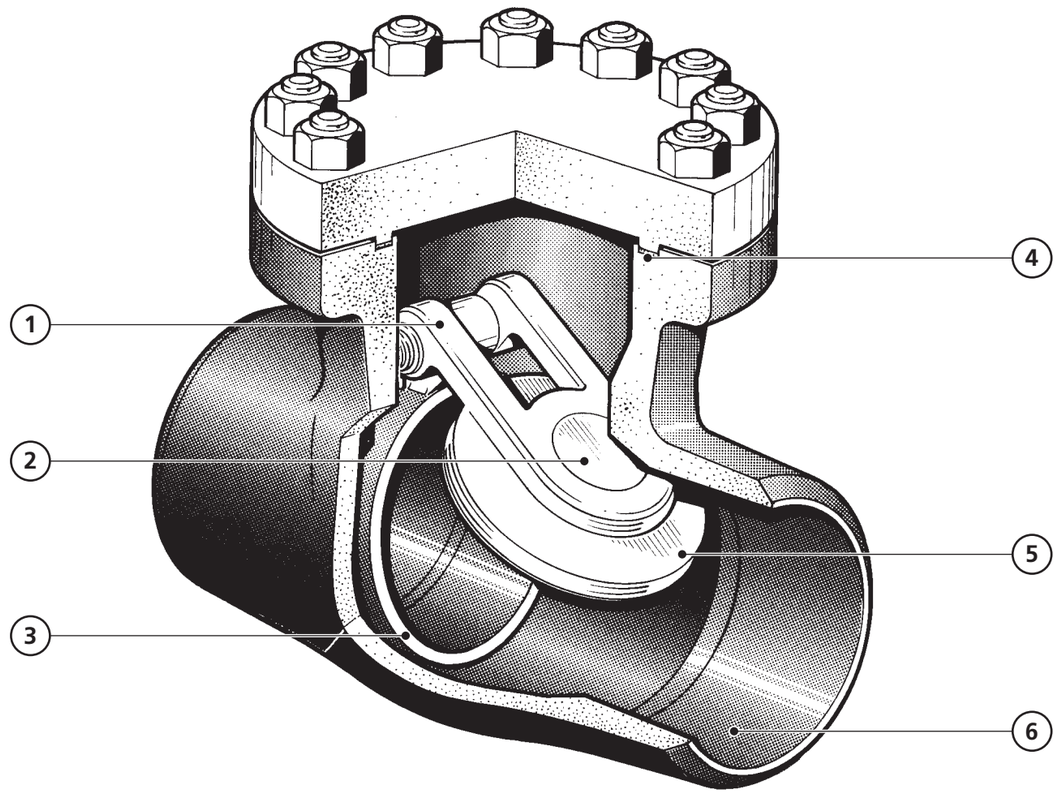
2. *The disc is securely attached to the disc holder by a locking wire which allows self alignment of the disc on the seat, thus ensuring tight shut off on reversal of flow. This feature eliminates the use of locknuts or split pins, therefore preventing possible failure in service.*

3. *Welded in seat ring Stellite® faced.*

4. *Bolted bonnet with Aluminium reinforced Graphoil Gasket. This range of valves incorporates, as standard expanded graphite joints located in tongue and groove configuration between the body and bonnet. The bonnet bolts are loaded to pre-determined values to ensure a pressure tight seal.*

5. *Self aligning disc Stellite® faced.*

6. *The Dewrance modular design body accomodates a wide range of flanged and welded connections. Even unusual size requirements can be commonly met without difficulty.*



DEWRANCE
tyco engineered products

Pressure/Temperature Ratings (Check Valves)

Imperial 300 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. ˚F (for intermediate ratings use linear interpolation)																
					-20˚ to 100˚	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
F31	E	A216 WCB	65	Std.	740	675	655	635	600	550	535	535	505	410	270	–	–	–	–	–	–	–
				Spec.	**750**	**750**	**750**	**750**	**750**	**715**	**700**	**695**	**630**	**515**	**335**	–	–	–	–	–	–	–
	J	A217 WC6		Std.	750	750	720	695	665	605	590	570	530	510	485	450	320	268	215	180	145	120
F32			66	**Spec.**	**750**	**750**	**750**	**750**	**750**	**750**	**750**	**735**	**730**	**720**	**680**	**585**	**400**	**335**	**270**	**225**	**180**	**150**
	L	A217 WC9		Std.	750	750	730	705	665	605	590	570	530	510	485	450	375	318	260	218	175	143
				Spec.	**750**	**750**	**740**	**725**	**720**	**720**	**715**	**710**	**690**	**675**	**645**	**600**	**470**	**398**	**325**	**273**	**220**	**178**

Metric 300 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in Bar at Temp. ˚C (for intermediate ratings use linear interpolation)																
					-30˚ to 38˚	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
F31	E	A216 WCB	65	Std.	51.0	50.0	46.4	45.1	43.9	41.8	38.9	36.9	36.6	34.6	28.7	20.2	–	–	–	–	–	–
				Spec.	**51.7**	**51.7**	**51.7**	**51.7**	**51.7**	**51.7**	**50.0**	**48.2**	**47.3**	**43.1**	**36.0**	**25.1**	**–**	**–**	**–**	**–**	**–**	**–**
	J	A217 WC6		Std.	51.7	51.7	51.5	49.6	48.1	46.2	42.9	40.3	38.9	36.5	35.2	33.7	31.7	25.3	18.2	12.7	8.8	6.0
F32			66	**Spec.**	**51.7**	**51.7**	**51.7**	**51.7**	**51.7**	**51.7**	**51.7**	**51.5**	**50.6**	**50.3**	**49.7**	**47.3**	**42.0**	**32.2**	**22.7**	**15.9**	**11.0**	**7.5**
	L	A217 WC9		Std.	51.7	51.7	51.5	50.3	48.7	46.3	42.9	40.3	38.9	36.5	35.2	33.7	31.7	27.7	21.6	15.3	10.5	6.9
				Spec.	**51.7**	**51.7**	**51.6**	**51.0**	**50.1**	**49.7**	**49.6**	**49.2**	**48.8**	**47.5**	**46.6**	**44.8**	**42.2**	**35.6**	**27.0**	**19.2**	**13.2**	**8.5**

Imperial 600 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. ˚F (for intermediate ratings use linear interpolation)																
					-20˚ to 100˚	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
F51	E	A216 WCB	67	Std.	1480	1350	1315	1270	1200	1095	1075	1065	1010	825	535	–	–	–	–	–	–	–
				Spec.	**1500**	**1500**	**1500**	**1500**	**1500**	**1425**	**1400**	**1390**	**1260**	**1030**	**670**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
	J	A217 WC6		Std.	1500	1500	1445	1385	1330	1210	1175	1135	1065	1015	975	900	640	535	430	360	290	240
F52			68	**Spec.**	**1500**	**1500**	**1500**	**1500**	**1500**	**1500**	**1500**	**1465**	**1460**	**1440**	**1355**	**1175**	**795**	**668**	**540**	**450**	**360**	**300**
	L	A217 WC9		Std.	1500	1500	1455	1410	1330	1210	1175	1135	1065	1015	975	900	755	638	520	435	350	285
				Spec.	**1500**	**1500**	**1485**	**1450**	**1440**	**1440**	**1430**	**1425**	**1380**	**1345**	**1285**	**1200**	**945**	**798**	**650**	**543**	**435**	**355**

Metric 600 Class (ASME B16.34 1996)

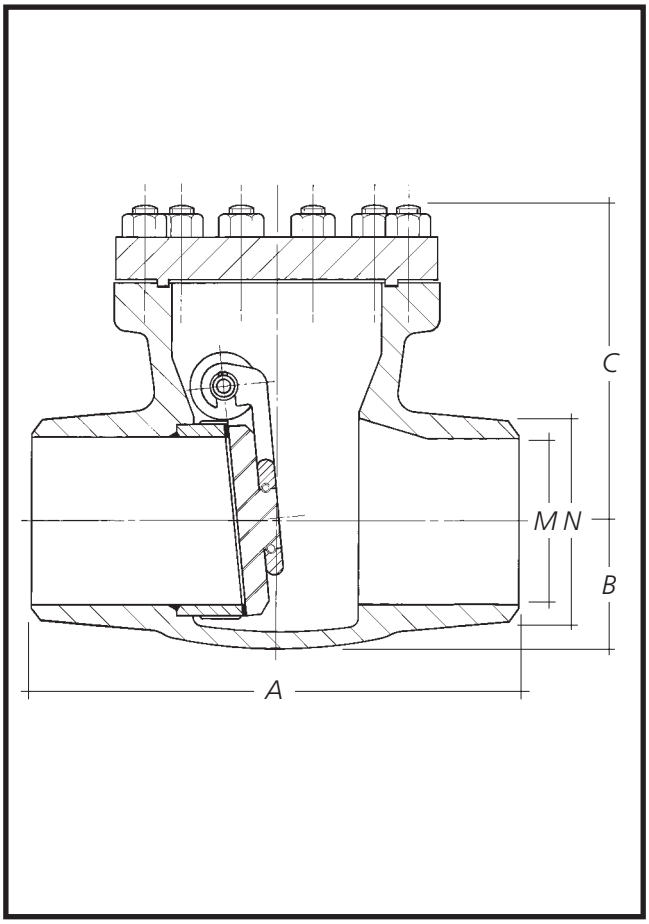
Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in Bar at Temp. ˚C (for intermediate ratings use linear interpolation)																
					-30˚ to 38˚	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
F51	E	A216 WCB	67	Std.	102.0	100.1	92.8	90.6	87.8	83.6	77.5	74.0	72.9	69.1	57.6	40.1	–	–	–	–	–	–
				Spec.	**103.4**	**103.4**	**103.4**	**103.4**	**103.4**	**103.4**	**99.7**	**96.4**	**94.6**	**86.2**	**72.0**	**50.2**	**–**	**–**	**–**	**–**	**–**	**–**
	J	A217 WC6		Std.	103.4	103.4	103.0	99.5	95.8	92.4	85.7	80.4	77.6	73.3	70.2	67.7	63.4	50.6	36.3	25.4	17.7	12.0
F52			68	**Spec.**	**103.4**	**103.4**	**103.4**	**103.4**	**103.4**	**103.4**	**103.4**	**102.8**	**101.0**	**100.6**	**99.4**	**94.4**	**84.2**	**64.2**	**45.3**	**31.8**	**22.0**	**15.1**
	L	A217 WC9		Std.	103.4	103.4	103.0	100.3	97.5	92.7	85.7	80.4	77.6	73.3	70.2	67.7	63.4	55.7	43.3	30.7	21.1	13.8
				Spec.	**103.4**	**103.4**	**103.3**	**102.3**	**100.2**	**99.4**	**99.3**	**98.5**	**97.8**	**95.1**	**92.9**	**89.3**	**84.3**	**71.5**	**54.2**	**38.3**	**26.2**	**17.2**

Note 'a' – Permissible but not recommended for prolonged usage above 800˚F (425˚C).

Cast Steel Swing Check Valve

Sizes 2½"–20"

ASME B16.34 300 Class



Main component materials

Description	Carbon Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC6
Cover	A516 Gr. 70	A387 Gr. 11
Seat	A516 Gr. 70	A387 Gr. 11
Gasket	Aluminium Reinforced Expanded Graphite	
Disc	A516 Gr. 70	A387 Gr. 11
Hinge Pin	AISI 431	AISI 431
Disc Holder	A516 Gr. 70	A387 Gr. 11

Hydrostatic shell & seat leak test pressures

Press. Class		Material			
		ASTM A-216 WCB		ASTM A-217 WC6	
		Shell	Seat	Shell	Seat
300	psi	1125	825	1125	825
	bar	78	57	78	57

Dimensions

* Per ASME B16.10

Size		A*	B	C	M	N	Max. Width	Weight	Cv	K Factor	Product Numbers	
											Carbon Steel	Alloy Steel
											WCB	WC6
2½	in	9.5	2.06	6.14	2.47	2.88	5.39	35lb	198	0.85	F31EZ065N	F31JZ065N
65	**mm**	**241**	**52**	**156**	**62.7**	**73.1**	**137**	**16kg**				
3	in	11.13	2.44	6.3	3.07	3.5	7.28	44lb	306	0.85	F31EZ080N	F31JZ080N
80	**mm**	**283**	**62**	**160**	**78**	**88.9**	**185**	**20kg**				
4	in	12	3.19	7.36	4.03	4.5	8.58	77lb	543	0.80	F31EZ100N	F31JZ100N
100	**mm**	**305**	**81**	**187**	**102.3**	**114.3**	**218**	**35kg**				
6	in	15.88	4.02	10	6.07	6.63	11.38	159lb	1272	0.75	F31EZ150N	F31JZ150N
150	**mm**	**403**	**102**	**254**	**154**	**168.3**	**289**	**72kg**				
8	in	16.5	5.20	12.4	7.98	8.63	13.46	280lb	2276	0.70	F31EZ200N	F31JZ200N
200	**mm**	**419**	**132**	**315**	**203**	**219.1**	**342**	**127kg**				
10	in	18	6.57	15.59	10.02	10.75	16.69	507lb	3772	0.68	F31EZ250N	F31JZ250N
250	**mm**	**457**	**167**	**396**	**254**	**273**	**424**	**230kg**				
12	in	19.75	7.64	18	11.94	12.75	18.74	736lb	5247	0.66	F31EZ300N	F31JZ300N
300	**mm**	**502**	**194**	**457**	**303**	**323.9**	**476**	**334kg**				
14	in	30	8.07	19.5	13.12	14	19.96	937lb	6434	0.64	F31EZ350N	F31JZ350N
350	**mm**	**762**	**205**	**495**	**333**	**355.6**	**507**	**425kg**				
16	in	33	8.78	21.61	15	16	22	1281lb	8476	0.63	F31EZ400N	F31JZ400N
400	**mm**	**838**	**223**	**549**	**381**	**406.4**	**559**	**581kg**				
18	in	36	9.96	24.37	16.88	18	23.94	1768lb	10908	0.61	F31EZ450N	F31JZ450N
450	**mm**	**914**	**253**	**619**	**429**	**457.2**	**608**	**802kg**				
20	in	39	10.98	26.18	18.81	20	26.34	2492lb	13658	0.60	F31EZ500N	F31JZ500N
500	**mm**	**991**	**279**	**665**	**478**	**508**	**669**	**1130kg**				

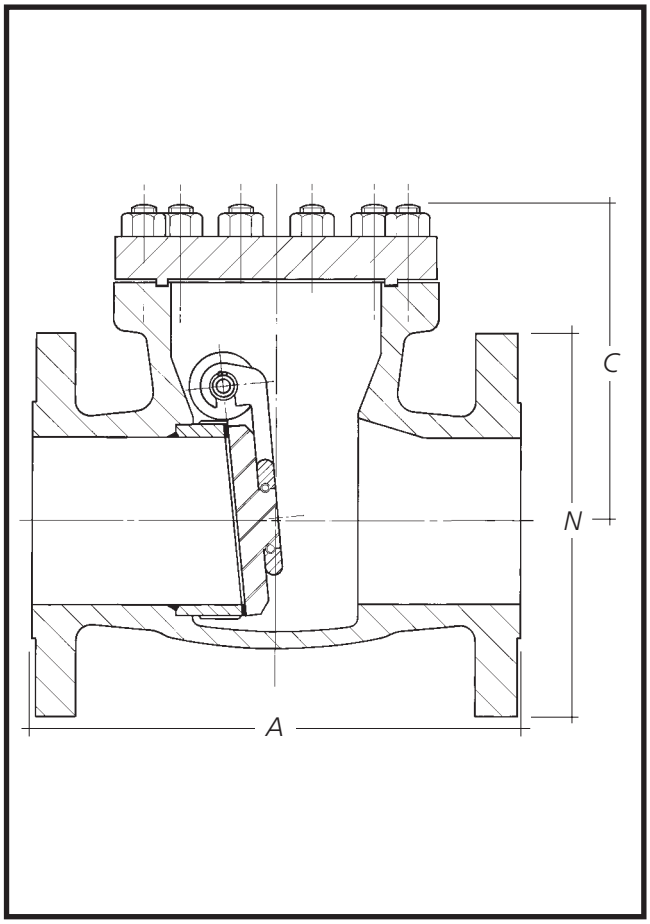
Product No. F31
'N' Design, Butt Weld Ends

DEWRANCE
tyco engineered products

Cast Steel Swing Check Valve

Sizes 2½"–20"

ASME B16.34 300 Class



Main component materials

Description	Carbon Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC6
Cover	A516 Gr. 70	A387 Gr. 11
Seat	A516 Gr.70	A387 Gr. 11
Gasket	Aluminium Reinforced Expanded Graphite	
Disc	A516 Gr. 70	A387 Gr. 11
Hinge Pin	AISI 431	AISI 431
Disc Holder	A516 Gr. 70	A387 Gr. 11

Hydrostatic shell & seat leak test pressures

Press. Class		Material			
		ASTM A-216 WCB		ASTM A-217 WC6	
		Shell	Seat	Shell	Seat
300	**psi**	1125	825	1125	825
	bar	78	57	78	57

Dimensions

* Per ASME B16.10

Size		A*	C	N	Weight	Cv	K Factor	Product Numbers	
								Carbon Steel	Alloy Steel
								WCB	WC6
2½	in	9.5	6.14	7.5	53lb	198	0.85	F32EZ065N	F32JZ065N
65	**mm**	**241**	**156**	**191**	**24kg**				
3	in	11.13	6.3	8.25	70lb	306	0.85	F32EZ080N	F32JZ080N
80	**mm**	**283**	**160**	**210**	**32kg**				
4	in	12	7.36	10	121lb	543	0.80	F32EZ100N	F32JZ100N
100	**mm**	**305**	**187**	**254**	**56kg**				
6	in	15.88	10	12.5	224lb	1272	0.75	F32EZ150N	F32JZ150N
150	**mm**	**403**	**254**	**318**	**102kg**				
8	in	16.5	12.4	15	389lb	2276	0.70	F32EZ200N	F32JZ200N
200	**mm**	**419**	**315**	**381**	**177kg**				
10	in	29.25	15.59	17.5	669lb	3772	0.68	F32EZ250N	F32JZ250N
250	**mm**	**743**	**396**	**445**	**304kg**				
12	in	31.25	18	20.5	957lb	5247	0.66	F32EZ300N	F32JZ300N
300	**mm**	**794**	**457**	**521**	**434kg**				
14	in	30	19.5	23	1243lb	6434	0.64	F32EZ350N	F32JZ350N
350	**mm**	**762**	**495**	**584**	**565kg**				
16	in	33	21.61	25.5	1674lb	8476	0.63	F32EZ400N	F32JZ400N
400	**mm**	**838**	**549**	**648**	**761kg**				
18	in	36	24.37	28	2260lb	10908	0.61	F32EZ450N	F32JZ450N
450	**mm**	**914**	**619**	**711**	**1027kg**				
20	in	39	26.18	30.5	3071lb	13658	0.60	F32EZ500N	F32JZ500N
500	**mm**	**991**	**665**	**775**	**1396kg**				

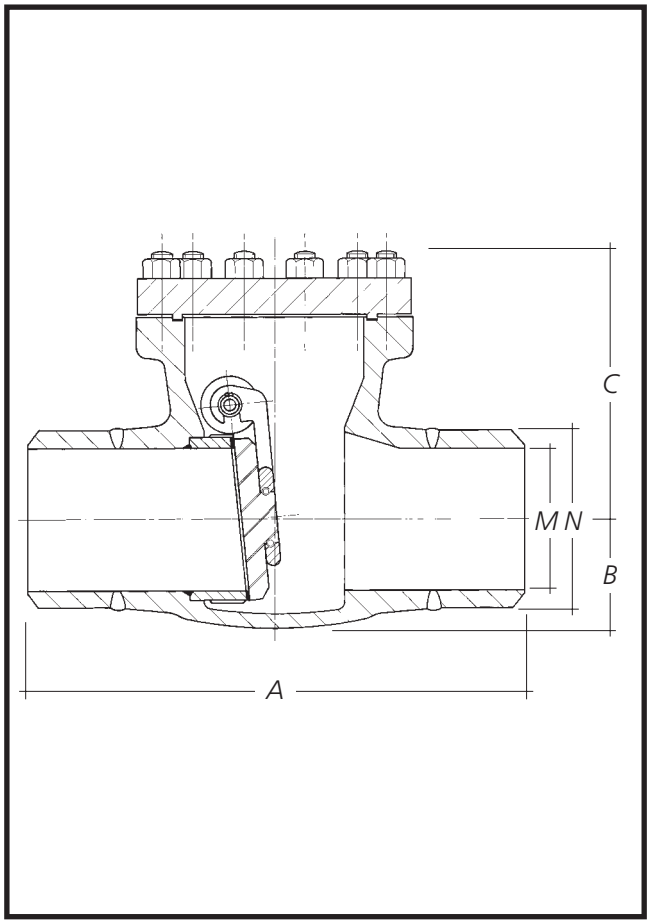
Product No. F32
'N' Design, Flanged

DEWRANCE
tyco engineered products

Cast Steel Swing Check Valve

Sizes 2½"–20"

ASME B16.34 600 Class



Main component materials

Description	Carbon Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC6
Cover	A516 Gr. 70	A387 Gr. 11
Seat	A516 Gr. 70	A387 Gr. 11
Gasket	Aluminium Reinforced Expanded Graphite	
Disc	A516 Gr. 70	A387 Gr. 11
Hinge Pin	AISI 431	AISI 431
Disc Holder	A516 Gr. 70	A387 Gr. 11

Hydrostatic shell & seat leak test pressures

Press. Class		Material			
		ASTM A-216 WCB		ASTM A-217 WC6	
		Shell	Seat	Shell	Seat
600	psi	2250	1650	2250	1650
	bar	156	114	156	114

Dimensions

* Per ASME B16.10

Size		A*	B	C	M	N	Max. Width	Weight	Cv	K Factor	Product Numbers	
											Carbon Steel	Alloy Steel
											WCB	WC6
2½	in	13	2.05	6.5	2.32	2.88	5.79	40lb	175	0.85	F51EZ065N	F51JZ065N
65	**mm**	**330**	**52**	**165**	**58.9**	**73.1**	**147**	**18kg**				
3	in	14	2.44	7	2.9	3.5	7.68	48lb	273	0.85	F51EZ080N	F51JZ080N
80	**mm**	**356**	**62**	**178**	**73.7**	**88.9**	**195**	**22kg**				
4	in	17	3.22	7.64	3.83	4.5	9.21	97lb	490	0.80	F51EZ100N	F51JZ100N
100	**mm**	**432**	**82**	**194**	**97.3**	**114.3**	**234**	**44kg**				
6	in	22	4.09	10.59	5.76	6.63	11.69	198lb	1146	0.75	F51EZ150N	F51JZ150N
150	**mm**	**559**	**104**	**269**	**146**	**168.3**	**297**	**90kg**				
8	in	26	5.35	13.39	7.63	8.63	14.21	359lb	2081	0.70	F51EZ200N	F51JZ200N
200	**mm**	**660**	**136**	**340**	**194**	**219.1**	**361**	**163kg**				
10	in	31	6.58	16.22	9.56	10.75	16.69	585lb	3314	0.68	F51EZ250N	F51JZ250N
250	**mm**	**787**	**167**	**412**	**243**	**273**	**424**	**266kg**				
12	in	33	7.63	19.02	11.38	12.75	18.5	891lb	4766	0.66	F51EZ300N	F51JZ300N
300	**mm**	**838**	**194**	**483**	**289**	**323.9**	**470**	**405kg**				
14	in	35	8.46	20.7	12.5	14	20.71	1100lb	5840	0.64	F51EZ350N	F51JZ350N
350	**mm**	**889**	**215**	**526**	**318**	**355.6**	**526**	**499kg**				
16	in	39	9.25	23.07	14.31	16	22.68	1442lb	7714	0.63	F51EZ400N	F51JZ400N
400	**mm**	**991**	**235**	**586**	**363**	**406.4**	**576**	**654kg**				
18	in	43	10.31	25.63	16.13	18	25	1969lb	9960	0.61	F51EZ450N	F51JZ450N
450	**mm**	**1092**	**262**	**651**	**410**	**457.2**	**635**	**893kg**				
20	in	47	11.38	28	17.94	20	28.19	2718lb	12423	0.60	F51EZ500N	F51JZ500N
500	**mm**	**1194**	**289**	**711**	**456**	**508**	**716**	**1233kg**				

Product No. F51
'N' Design, Butt Weld Ends

DEWRANCE
tyco engineered products

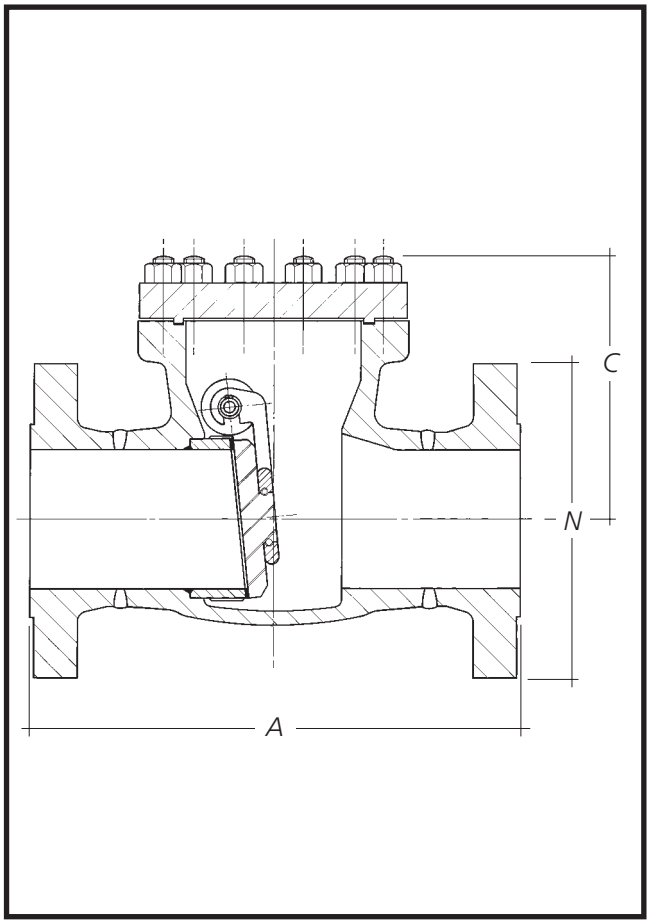
Cast Steel Swing Check Valve

Sizes 2½"–20"

ASME B16.34 600 Class

Main component materials

Description	Carbon Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC6
Cover	A516 Gr. 70	A387 Gr. 11
Seat	A516 Gr. 70	A387 Gr. 11
Gasket	Aluminium Reinforced Expanded Graphite	
Disc	A516 Gr. 70	A387 Gr. 11
Hinge Pin	AISI 431	AISI 431
Disc Holder	A516 Gr. 70	A387 Gr. 11



Hydrostatic shell & seat leak test pressures

Press. Class		Material			
		ASTM A-216 WCB		ASTM A-217 WC6	
		Shell	Seat	Shell	Seat
600	psi	2250	1650	2250	1650
	bar	156	114	156	114

Dimensions

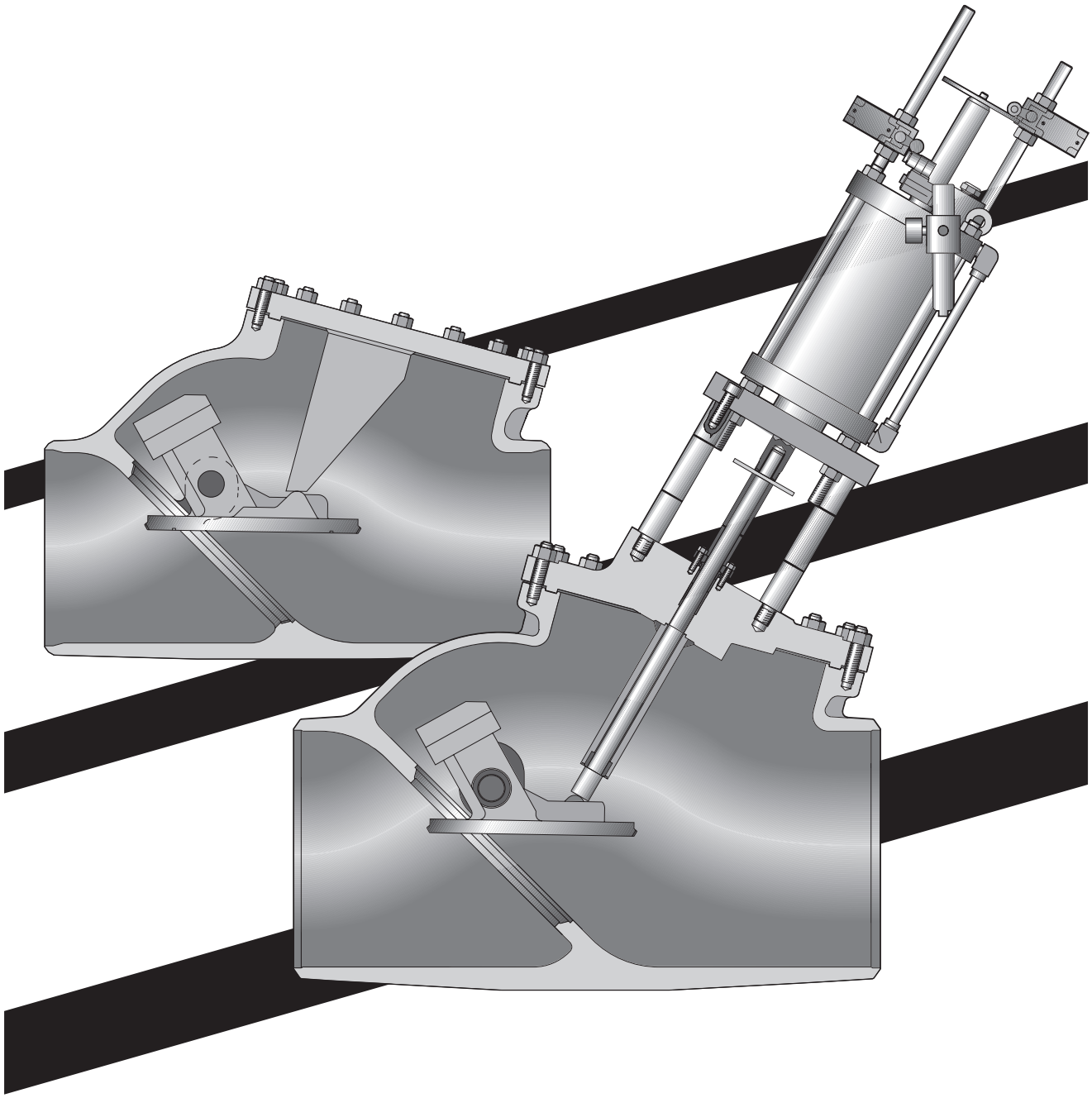
* Per ASME B16.10

Size		A*	C	N	Weight	Cv	K Factor	Product Numbers	
								Carbon Steel	Alloy Steel
								WCB	WC6
2½	in	13	6.5	7.5	57lb	175	0.85	F52EZ065N	F52JZ065N
65	**mm**	**330**	**165**	**191**	**26kg**				
3	in	14	7	8.25	81lb	273	0.85	F52EZ080N	F52JZ080N
80	**mm**	**356**	**178**	**210**	**37kg**				
4	in	17	7.64	10.75	128lb	490	0.80	F52EZ100N	F52JZ100N
100	**mm**	**432**	**194**	**273**	**58kg**				
6	in	22	10.59	14	334lb	1146	0.75	F52EZ150N	F52JZ150N
150	**mm**	**559**	**269**	**356**	**152kg**				
8	in	26	13.39	16.5	568lb	2081	0.70	F52EZ200N	F52JZ200N
200	**mm**	**660**	**340**	**419**	**258kg**				
10	in	31	16.22	20.0	920lb	3314	0.68	F52EZ250N	F52JZ250N
250	**mm**	**787**	**412**	**508**	**418kg**				
12	in	33	19.02	22	1263lb	4766	0.66	F52EZ300N	F52JZ300N
300	**mm**	**838**	**483**	**559**	**574kg**				
14	in	35	20.7	23.75	1441lb	5840	0.64	F52EZ350N	F52JZ350N
350	**mm**	**889**	**526**	**603**	**655kg**				
16	in	39	23.07	27	2053lb	7714	0.63	F52EZ400N	F52JZ400N
400	**mm**	**991**	**586**	**685**	**933kg**				
18	in	43	25.63	29.25	2746lb	9960	0.61	F52EZ450N	F52JZ450N
450	**mm**	**1092**	**651**	**743**	**1248kg**				
20	in	47	28	32	3687kg	12423	0.60	F52EZ500N	F52JZ500N
500	**mm**	**1194**	**711**	**813**	**1676lb**				

Product No. F52
'N' Design, Flanged

DEWRANCE
tyco engineered products

Bled Steam Check Valve



DEWRANCE
tyco engineered products

Sizes 6" – 28"

ASME B16.34 – 1996

Pressure Class: 150, 400, 600

Bled Steam Check Valve

Introduction

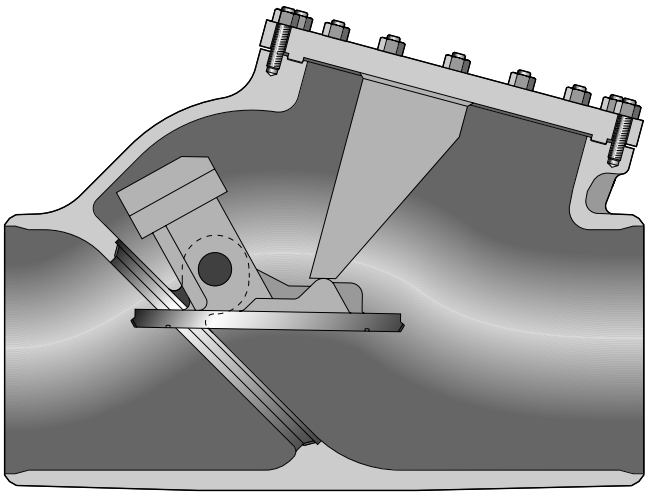
This range of valves has been specifically designed for installation in bled (extraction) steam lines between steam turbines and feed water heaters but are equally applicable to reheater connections and bleed on pass-out lines in process plants.

Their function is to prevent the reverse flow of stored steam and any water from the heater or its bled steam pipe to the turbine. Installation would be in a horizontal pipe as near to the turbine as possible.

These valves are Free Acting whereby the disc moves to the closed position when flow in the forward direction ceases. Gravity action on the disc provides a closing moment from the fully open to fully closed position. Where power assistance is required a Spring return pneumatic cylinder can easily be accommodated whilst still maintaining the automatic Gravity closing feature. The Dewrance bled steam Check Valve is the result of evolution from the original vertical seated design, field experience, customers requirements and is based on the Dewrance Tilting Disc Check Valve.

All Dewrance Tilting Disc Check valves are based on the same seat geometry of a conical seated disc in a conical body seat, which has been applied over a wide range of conditions from sub-atmospheric bled steam up to ANSI 2500 Class for steam and water. The seating intensity is high enough to give a good seal and yet low enough not to cause any surface scuffing. The position of the hinge pin ensures that the disc opens and closes without a rubbing action to effect a tight seal over the full range of pressures.

The combination of disc geometry and the body shape produce a seat angle which gives a short disc travel as the flow falls progressively with decreasing flow. This disc will be on the seat when flow ceases and before reversal takes place without SLAMMING. This arrangement gives a low pressure drop and flow under the disc assists in keeping the valve fully open over a wide range of flows.



Product Application Tests

Flow Tests

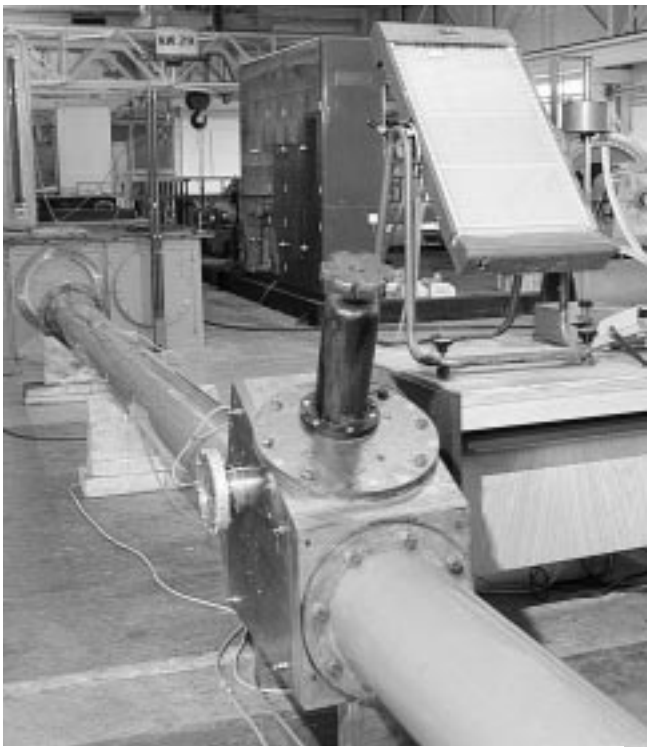
Extensive flow tests have been carried out to establish flow characteristics for these valves.

The tests consisted of:-

1 A scale model (230mm) tested with air to establish the aerodynamic torque on the disc and the flow coefficient at various angles of opening.

The lowest pressure drop occurs when the disc is in the fully open position.

2. A full size 400mm valve tested in Steam flows up to 300ft/sec (92 Metres/Sec) to confirm the disc opening angle and establish the body and disc design shape. These tests confirmed that the Dewrance design is stable under the flow conditions and achieves the fully open position at minimum flow, thus giving low pressure drop. (Details of flow coefficients are available on request).



Actual scale model under air test in GEC Aerodynamic Laboratory.

Pneumatic actuator functional test simulating increasing load over the full load.

Actuator Tests

Power closing actuators designed for on-load testing are tested on a specially designed rig which simulates the increasing load as the valve closure occurs. The load is critically associated with the stroking time and this too is accurately checked.

Closing time and the pressure against which it must close the valve must be specified by the feed heating plant designer. Each actuator is specially designed for its particular application.

Functional Tests

Every Dewrance valve is hydrostatically tested to prove the shell and ensure the seat is leak tight prior to leaving the factory.

Gravity closing times are checked in still air to ensure the valve closes in one second or less.

Where pneumatic actuators are fitted the complete valve is stroked in free air in addition to the Actuator tests described above.

Bled Steam Check Valve

Bled Steam Check Valve

Sizes 6" – 28"

ASME B16.34 – 1996

Pressure Class: 150, 400, 600

Features & Benefits

Excellent Reliability

- Internal Counterweight to balance disc under low load conditions
- Direct deposited seats
- Tilting disc design for quick closing due to lower centre of gravity
- Lightweight disc with minimum travel, for quick closing in less than 1 second
- Optimum performance under all flow conditions
- Self-draining geometry
- Pneuamtic Power Assistance acts directly onto disc, without leakages to inhibit operation

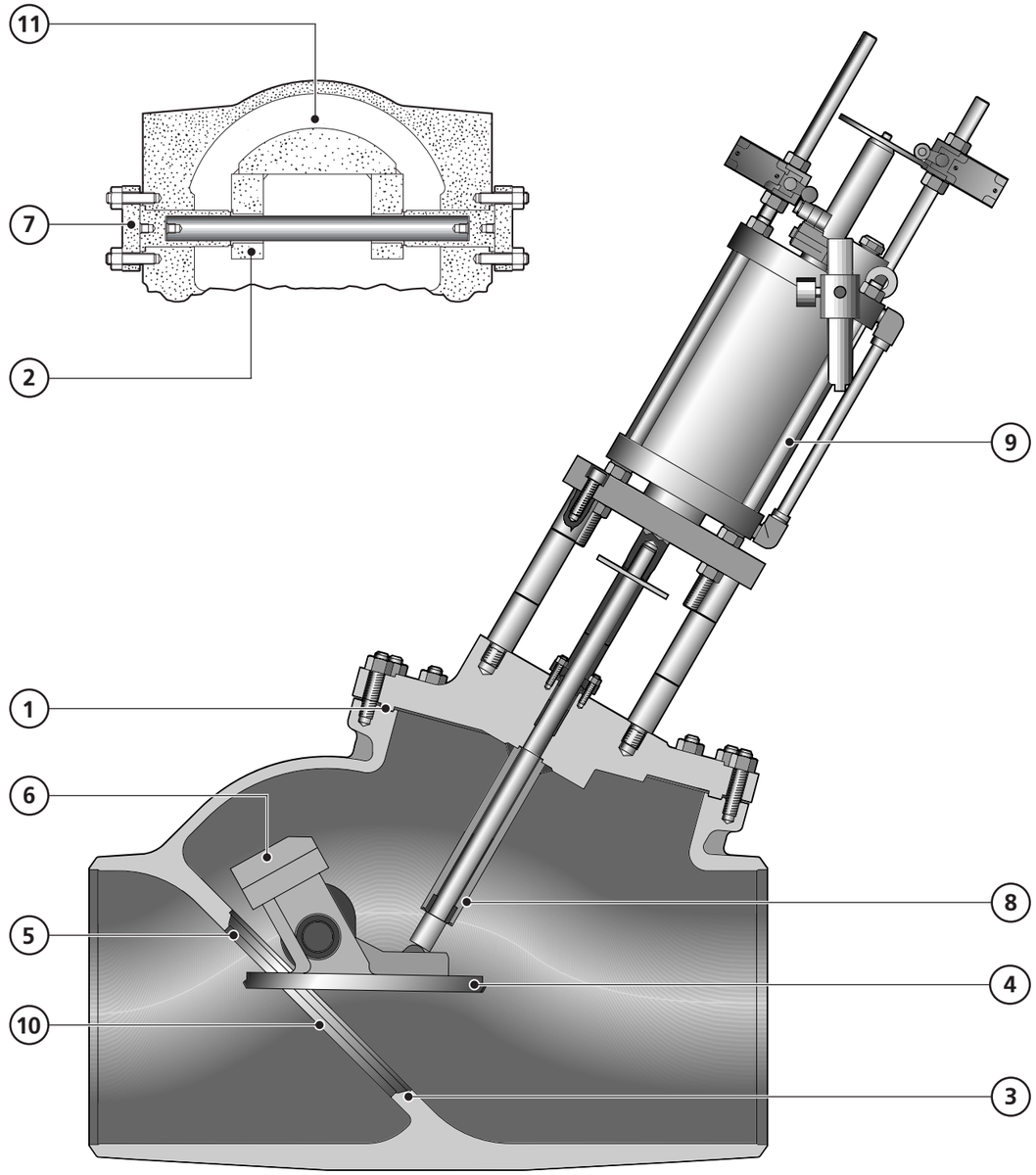
Low Cost Maintenance

- Expanded graphite gasket pressure seal design
- Nitrided hinge pin, supported in nitrided bearings, giving a low coefficient of friction and hard wearing surface for maximum performance
- Easy access through cover
- Simplified seat refurbishment, only requires lapping
- Longer seat life due to non-scuffing action of seat to disc geometry

Improved Performance

- Aerodynamic self aligning tilting disc design for low pressure drop characteristics
- Automatic self closure on flow reversal
- Inclined seat geometry combined with conical seat & disc for tight seal without scuffing
- No hinge pin gland to inhibit performance

1. *Graphoil Gasket/Pressure Seal bonnet (dependant on) Size/Pressure*
2. *Disc supported in Nitrided Bearings*
3. *Inclined seat and aerodynamic Tilting disc gives low pressure drop, and minimum disc travel*
4. *Variable seat/disc to suit actual condition for optimum flow characteristics*
5. *Hard faced Stellite® or equivalent disc*
6. *Internal counterweight if required to ensure maximum opening position under low flow conditions*
7. *No External Glands or keyway to inhibit operation*
8. *Positive open position stop and Aerodynamic disc provides stability over wide range of flow (no flutter)*
9. *Direct Mounted Quick Closing Pneumatic Actuator to assist closure, act directly onto disc*
10. *Unique seat geometry and seating materials prevent scuffing and ensure leak tight seals*
11. *Free swinging Tilting Disc design, no linkages, keys or pins to inhibit operation*



DEWRANCE
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Pressure/Temperature Ratings

Imperial 150 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. °F (for intermediate ratings use linear interpolation)																
					-20° to 100°	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
B21	E	A216 WCB	75	Std.	285	260	230	200	170	140	125	110	95	80	65	–	–	–	–	–	–	–
				Spec.	**290**	**290**	**290**	**290**	**290**	**275**	**270**	**265**	**240**	**200**	**130**	–	–	–	–	–	–	–
	J	A217 WC6		Std.	290	260	230	200	170	140	125	110	95	80	65	50	35	28	20	20	20	20
				Spec.	**290**	**290**	**290**	**290**	**290**	**290**	**290**	**280**	**280**	**275**	**260**	**225**	**155**	**130**	**105**	**88**	**70**	**58**
	L	A217 WC9		Std.	290	260	230	200	170	140	125	110	95	80	65	50	35	28	20	20	20	20
				Spec.	**290**	**290**	**285**	**280**	**275**	**275**	**275**	**275**	**265**	**260**	**245**	**230**	**180**	**153**	**125**	**105**	**85**	**70**

Metric 150 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in Bar at Temp. °C (for intermediate ratings use linear interpolation)																
					-30° to 38°	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
B21	E	A216 WCB	75	Std.	19.6	19.3	17.7	15.8	14.0	12.1	10.2	8.4	7.4	6.5	5.6	4.6	–	–	–	–	–	–
				Spec.	**20.0**	**20.0**	**20.0**	**20.0**	**20.0**	**20.0**	**19.3**	**18.5**	**18.0**	**16.4**	**14.0**	**9.7**	–	–	–	–	–	–
	J	A217 WC6		Std.	20.0	19.5	17.7	15.8	14.0	12.1	10.2	8.4	7.4	6.5	5.6	4.6	3.7	2.8	1.9	1.4	1.4	1.4
				Spec.	**20.0**	**20.0**	**20.0**	**20.0**	**20.0**	**20.0**	**20.0**	**19.8**	**19.3**	**19.3**	**19.0**	**18.1**	**16.1**	**12.4**	**8.8**	**6.2**	**4.2**	**2.9**
	L	A217 WC9		Std.	20.0	19.5	17.7	15.8	14.0	12.1	10.2	8.4	7.4	6.5	5.6	4.6	3.7	2.8	1.9	1.4	1.4	1.4
				Spec.	**20.0**	**20.0**	**20.0**	**19.6**	**19.3**	**19.0**	**19.0**	**19.0**	**18.9**	**18.3**	**17.9**	**17.1**	**16.1**	**13.7**	**10.4**	**7.4**	**5.2**	**3.5**

Imperial 400 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. °F (for intermediate ratings use linear interpolation)																
					-20° to 100°	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
B43	E	A216 WCB	76	Std.	990	900	875	845	800	730	715	710	670	550	355	–	–	–	–	–	–	–
				Spec.	**1000**	**1000**	**1000**	**1000**	**1000**	**950**	**935**	**925**	**840**	**685**	**445**	–	–	–	–	–	–	–
	J	A217 WC6		Std.	1000	1000	965	925	885	805	785	755	710	675	650	600	425	358	290	240	190	160
				Spec.	**1000**	**1000**	**1000**	**1000**	**1000**	**1000**	**1000**	**980**	**970**	**960**	**905**	**785**	**530**	**445**	**360**	**300**	**240**	**200**
	L	A217 WC9		Std.	1000	1000	970	940	885	805	785	755	710	675	650	600	505	425	345	290	235	190
				Spec.	**1000**	**1000**	**990**	**965**	**960**	**960**	**955**	**955**	**920**	**895**	**855**	**800**	**630**	**533**	**435**	**363**	**290**	**238**

Metric 400 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in Bar at Temp. °C (for intermediate ratings use linear interpolation)																
					-30° to 38°	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
B43	E	A216 WCB	76	Std.	68.2	66.9	61.8	60.3	58.4	55.7	51.7	49.2	48.6	45.9	38.4	26.6	–	–	–	–	–	–
				Spec.	**68.9**	**68.9**	**68.9**	**68.9**	**68.9**	**68.9**	**66.5**	**64.3**	**63.0**	**57.5**	**47.9**	**33.3**	–	–	–	–	–	–
	J	A217 WC6		Std.	68.9	68.9	68.7	66.5	64	61.5	57	53.6	51.6	48.9	46.7	45.1	42.3	33.6	24.3	17	11.7	8.1
				Spec.	**68.9**	**68.9**	**68.9**	**68.9**	**68.9**	**68.9**	**68.9**	**68.6**	**67.5**	**66.9**	**66.2**	**63**	**56.3**	**42.9**	**30.2**	**21.2**	**14.7**	**10.1**
	L	A217 WC9		Std.	68.9	68.9	68.7	66.8	65	61.7	57	53.6	51.6	48.9	46.7	45.1	42.3	37.2	28.9	20.4	14.1	9.1
				Spec.	**68.9**	**68.9**	**68.9**	**68.2**	**66.7**	**66.3**	**66.2**	**65.8**	**65.5**	**63.4**	**61.8**	**59.4**	**56.1**	**47.7**	**36.2**	**25.6**	**17.5**	**11.6**

Imperial 600 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. °F (for intermediate ratings use linear interpolation)																
					-20° to 100°	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
B51	E	A216 WCB	77	Std.	1480	1350	1315	1270	1200	1095	1075	1065	1010	825	535	–	–	–	–	–	–	–
				Spec.	**1500**	**1500**	**1500**	**1500**	**1500**	**1425**	**1400**	**1390**	**1260**	**1030**	**670**	–	–	–	–	–	–	–
	J	A217 WC6		Std.	1500	1500	1445	1385	1330	1210	1175	1135	1065	1015	975	900	640	535	430	360	290	240
				Spec.	**1500**	**1500**	**1500**	**1500**	**1500**	**1500**	**1500**	**1465**	**1460**	**1440**	**1355**	**1175**	**795**	**668**	**540**	**450**	**360**	**300**
	L	A217 WC9		Std.	1500	1500	1455	1410	1330	1210	1175	1135	1065	1015	975	900	755	638	520	435	350	285
				Spec.	**1500**	**1500**	**1485**	**1450**	**1440**	**1440**	**1430**	**1425**	**1380**	**1345**	**1285**	**1200**	**945**	**798**	**650**	**543**	**435**	**355**

Metric 600 Class (ASME B16.34 1996)

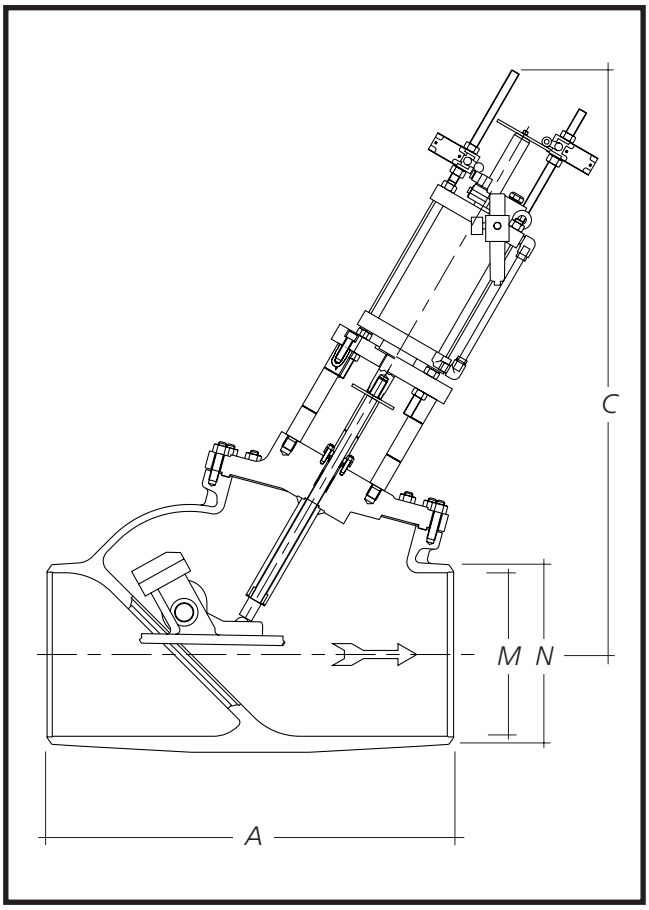
Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in Bar at Temp. °C (for intermediate ratings use linear interpolation)																
					-30° to 38°	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
B51	E	A216 WCB	77	Std.	102.0	100.1	92.8	90.6	87.8	83.6	77.5	74.0	72.9	69.1	57.6	40.1	–	–	–	–	–	–
				Spec.	**103.4**	**103.4**	**103.4**	**103.4**	**103.4**	**103.4**	**99.7**	**96.4**	**94.6**	**86.2**	**72.0**	**50.2**	–	–	–	–	–	–
	J	A217 WC6		Std.	103.4	103.4	103.0	99.5	95.8	92.4	85.7	80.4	77.6	73.3	70.2	67.7	63.4	50.6	36.3	25.4	17.7	12.0
				Spec.	**103.4**	**103.4**	**103.4**	**103.4**	**103.4**	**103.4**	**103.4**	**102.8**	**101.0**	**100.6**	**99.4**	**94.4**	**84.2**	**64.2**	**45.3**	**31.8**	**22.0**	**15.1**
	L	A217 WC9		Std.	103.4	103.4	103.0	100.3	97.5	92.7	85.7	80.4	77.6	73.3	70.2	67.7	63.4	55.7	43.3	30.7	21.1	13.8
				Spec.	**103.4**	**103.4**	**103.3**	**102.3**	**100.2**	**99.4**	**99.3**	**98.5**	**97.8**	**95.1**	**92.9**	**89.3**	**84.3**	**71.5**	**54.2**	**38.3**	**26.2**	**17.2**

Note 'a' – Permissible but not recommended for prolonged usage above 800°F (425°C).

Bled Steam Check Valve

Sizes 8"–28"

ASME B16.34 150 Class



Main component materials

Description	Carbon Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC9
Cover	A216 Gr. WCB	A217 Gr. WC9
Gasket	Aluminium Reinforced Expanded Graphite	
Disc	A216 Gr. WCB	A217 Gr. WC9
Hinge Pin	ASTM A565 XM32	

Hydrostatic shell & seat leak test pressures

Press. Class		Material			
		ASTM A-216 WCB		ASTM A-217 WC9	
		Shell	Seat	Shell	Seat
150	**psi**	450	325	450	325
	bar	30	22	30	22

Dimensions

Size		A	C	M	N	Weight	Product Numbers	
							Carbon Steel	Alloy Steel
							WCB	WC9
8	in	23	47	8.07	8.63	695lb	B21EN200-	B21LN200-
200	**mm**	**584**	**1195**	**205**	**219.1**	**315kg**		
10	in	28	48.82	10.13	10.75	864lb	B21EN250-	B21LN250-
250	**mm**	**711**	**1240**	**257.4**	**273**	**392kg**		
12	in	31	52	12.09	12.75	1184lb	B21EN300-	B21LN300-
300	**mm**	**787**	**1320**	**307**	**323.8**	**537kg**		
14	in	33	53.15	13.25	14	1730lb	B21EN350-	B21LN350-
350	**mm**	**838**	**1350**	**336.6**	**355.6**	**785kg**		
16	in	37	54.33	15.25	16	1845lb	B21EN400-	B21LN400-
400	**mm**	**940**	**1380**	**387.4**	**406.4**	**837kg**		
18	in	42.52	63	17.13	18	2612lb	B21EN450-	B21LN450-
450	**mm**	**1080**	**1600**	**435**	**457.2**	**1185kg**		
20	in	47	65.75	19	20.00	2742lb	B21EN500-	B21LN500-
500	**mm**	**1194**	**1670**	**482.6**	**508**	**1244kg**		
22	in	50	68.11	21.06	22	3670lb	B21EN550-	B21LN550-
550	**mm**	**1270**	**1730**	**535**	**558.8**	**1665kg**		
24	in	54.72	72.05	22.87	24	4608lb	B21EN600-	B21LN600-
600	**mm**	**1390**	**1830**	**581**	**609.6**	**2090kg**		
28	in	61	76.77	26.81	28	5688lb	B21EN700-	B21LN700-
700	**mm**	**1550**	**1950**	**681**	**711.2**	**2580kg**		

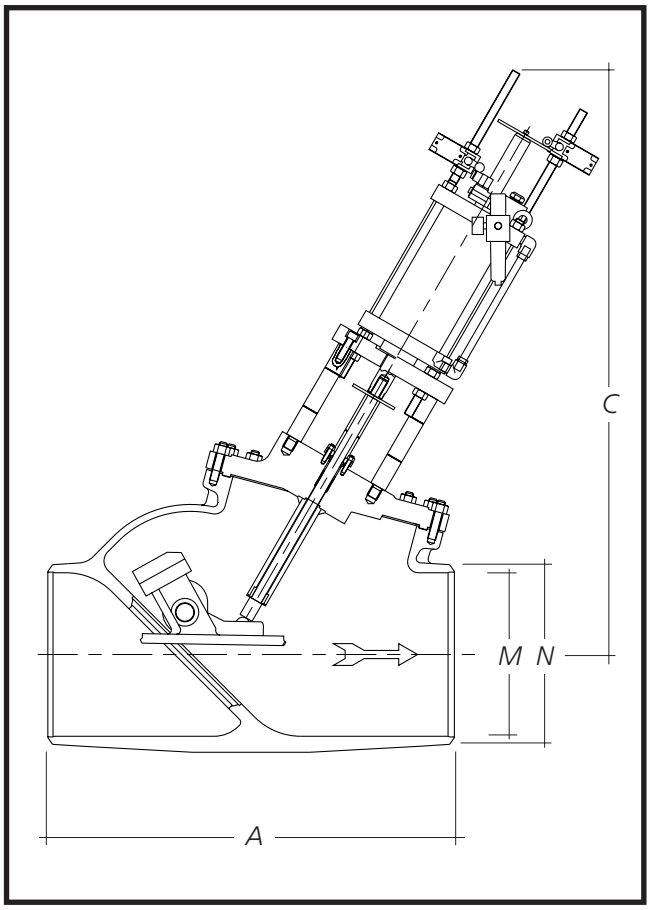
Sizes greater than 700mm are available on application.

Product No. B21

Bled Steam Check Valve

Sizes 6”–24”

ASME B16.34 400 Class



Main component materials

Description	Carbon Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC9
Cover	A216 Gr. WCB	A217 Gr. WC9
Gasket	Aluminium Reinforced Expanded Graphite	
Disc	A216 Gr. WCB	A217 Gr. WC9
Hinge Pin	ASTM A565 XM32	

Hydrostatic shell & seat leak test pressures

Press. Class		Material			
		ASTM A-216 WCB		ASTM A-217 WC9	
		Shell	Seat	Shell	Seat
400	psi	1500	1100	1500	1100
	bar	104	76	104	76

Dimensions

							Product Numbers	
							Carbon Steel	Alloy Steel
Size		A	C	M	N	Weight	WCB	WC9
6	in	20	34.09	5.76	6.63	540lb	B43EN150-	B43LN150-
150	mm	508	866	146.3	168.3	245kg		
8	in	26	49.21	7.63	8.63	926lb	B43EN200-	B43LN200-
200	mm	660	1250	193.7	219.1	420kg		
10	in	31	51.18	9.56	10.75	1118lb	B43EN250-	B43LN250-
250	mm	787	1300	242.8	273	507kg		
12	in	35.43	54.33	11.38	12.75	1433lb	B43EN300-	B43LN300-
300	mm	900	1380	289	323.8	650kg		
14	in	37	58.07	12.50	14	2524lb	B43EN350-	B43LN350-
350	mm	940	1475	317.6	355.6	1145kg		
16	in	41	59.45	14.31	16	3097lb	B43EN400-	B43LN400-
400	mm	1041	1510	363.6	406.4	1405kg		
18	in	46	61.02	16.13	18	3659lb	B43EN450-	B43LN450-
450	mm	1169	1550	409.6	457.2	1660kg		
20	in	51	63.78	17.94	20	3828lb	B43EN500-	B43LN500-
500	mm	1295	1620	455.6	508	1737kg		
22	in	56	73.23	19.76	22	4595lb	B43EN550-	B43LN550-
550	mm	1422	1860	502	558.8	2085kg		
24	in	60	77.95	21.57	24	5371lb	B43EN600-	B43LN600-
600	mm	1524	1980	547.8	609.6	2437kg		

Sizes greater than 600mm are available on application.

Product No. B43

DEWRANCE
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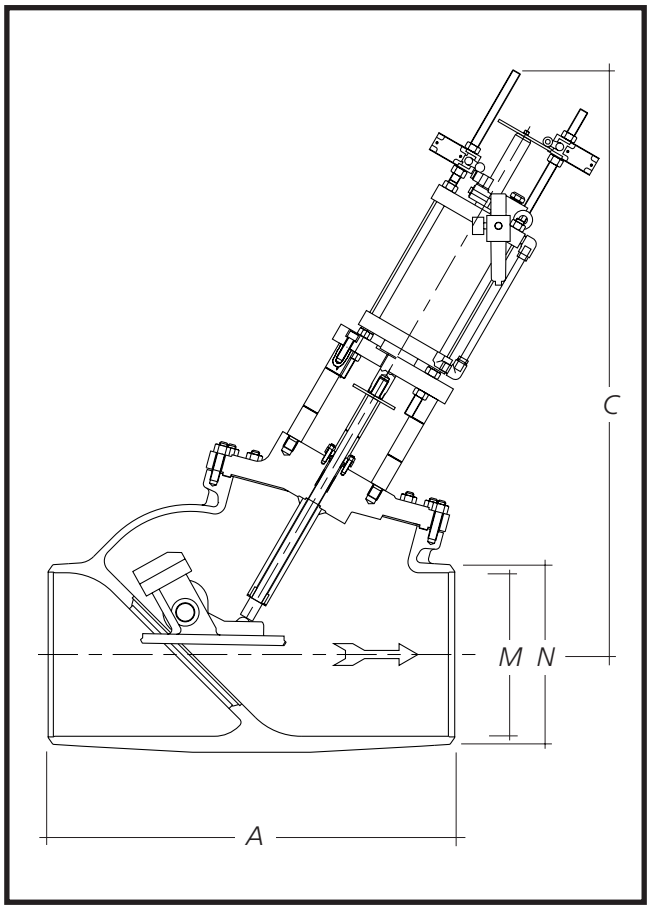
Bled Steam Check Valve

Sizes 6”–10”

ASME B16.34 600 Class



Main component materials

Description	Carbon Steel	Alloy Steel
Body	A216 Gr. WCB	A217 Gr. WC9
Cover	A216 Gr. WCB	A217 Gr. WC9
Gasket	Aluminium Reinforced Expanded Graphite	
Disc	A216 Gr. WCB	A217 Gr. WC9
Hinge Pin	ASTM A565 XM32	

Hydrostatic shell & seat leak test pressures

Press. Class		Material			
		ASTM A-216 WCB		ASTM A-217 WC9	
		Shell	Seat	Shell	Seat
600	**psi**	2250	1650	2250	1650
	bar	156	114	156	114

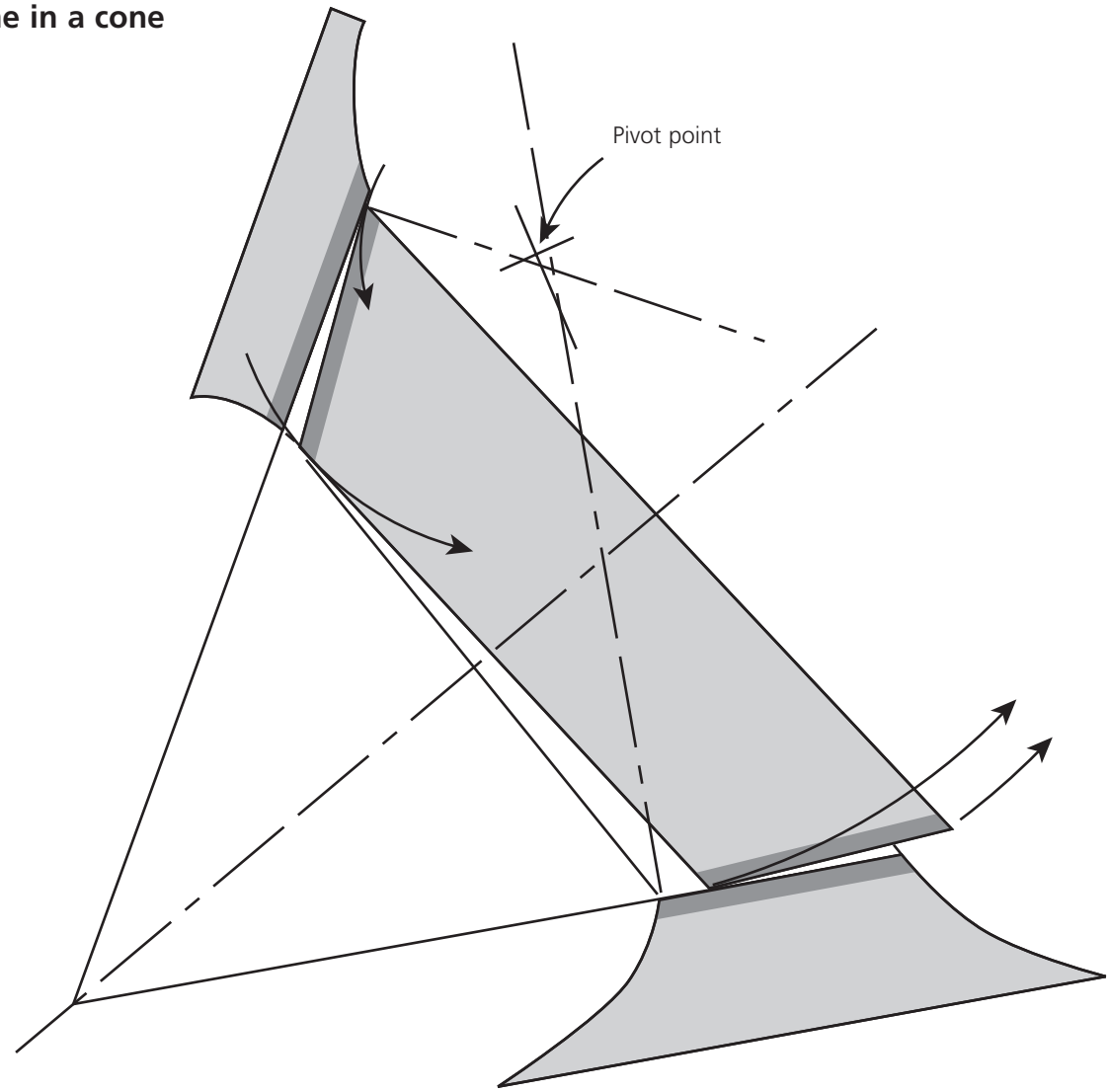
Dimensions

Size		A	C	M	N	Weight	Product Numbers	
							Carbon Steel	Alloy Steel
							WCB	WC9
6	in	20	36.22	5.76	6.63	760lb	B51EN150-	B51LN150-
150	**mm**	**508**	**920**	**146.3**	**168.3**	**345kg**		
8	in	26	49.61	7.63	8.63	1058lb	B51EN200-	B51LN200-
200	**mm**	**660**	**1260**	**193.7**	**219.1**	**480kg**		
10	in	33	53.15	9.56	10.75	1355lb	B51EN250-	B51LN250-
250	**mm**	**838**	**1350**	**242.8**	**273**	**616kg**		

Sizes greater than 250mm are available on application.

Bled Steam Check Valve
Unique Seating Geometry

Cone in a cone



Design Features

1. *Proven cone in a cone seating geometry used on our standard Bled Steam Check Valve.*
2. *Non scuffing design ensures disc always leaves seat due to position of pivot.*
3. *Pressure intensity high enough to seal.*
4. *Dissimilar seating materials to prevent pick-up.*

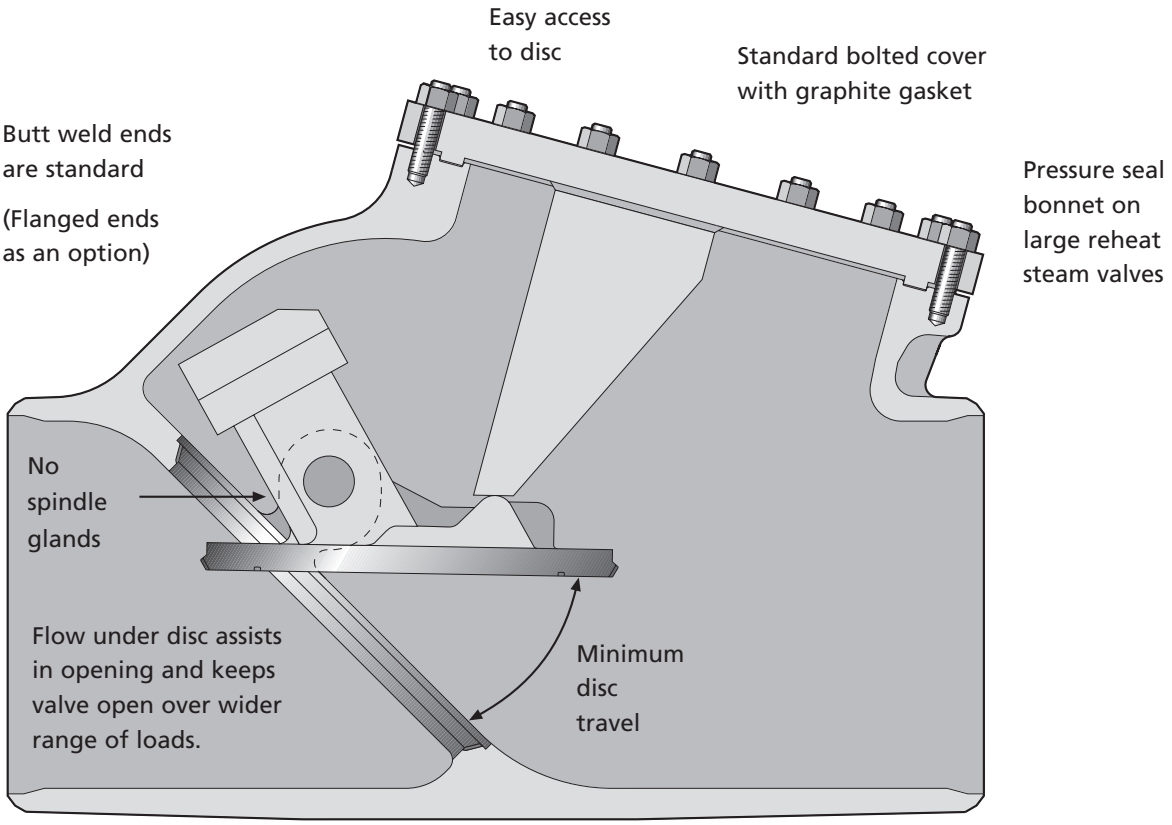
Simple design for maximum reliability in operation

The disc is free to rotate on the hinge pin and the hinge pin is free to rotate on its bearings, thus ensuring freedom of movement and maximum reliability without the use of glands.

Nitride treated hinge pin and bearings give hard wearing surfaces with a low coefficient of friction.

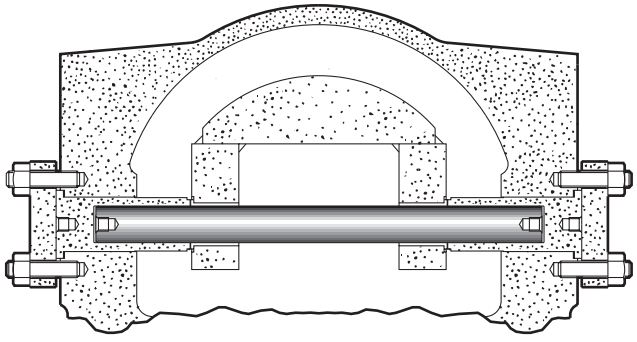
Deposits on sealing surfaces are of different hardness and analysis to prevent 'scuffing'.

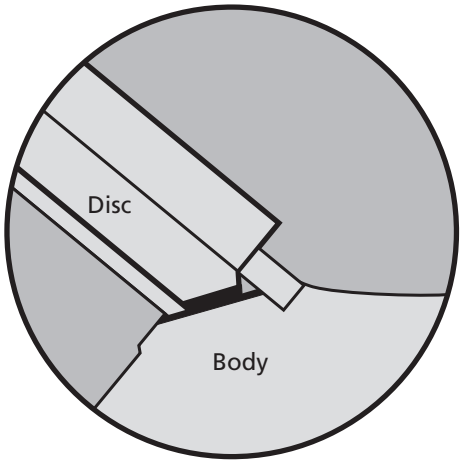
In the full open position the valves offer a maximum flow area as will be seen from the illustrations. Standard designs close in less than one second, this time being determined by a test in still air.



Robust cast steel body to resist thrusts and moments from pipework.

Reduces any tendency for valve to 'stick'.

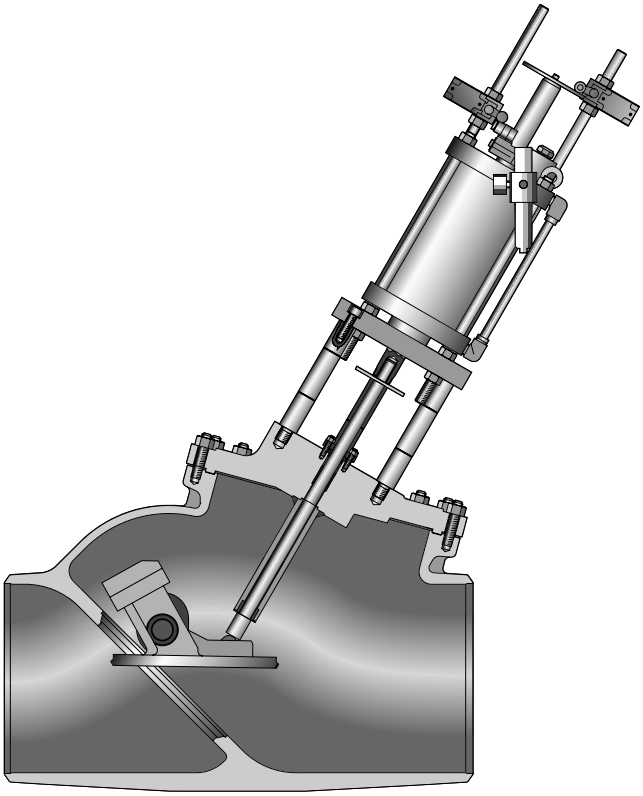




Bled Steam Check Valve – Options

Power Closing

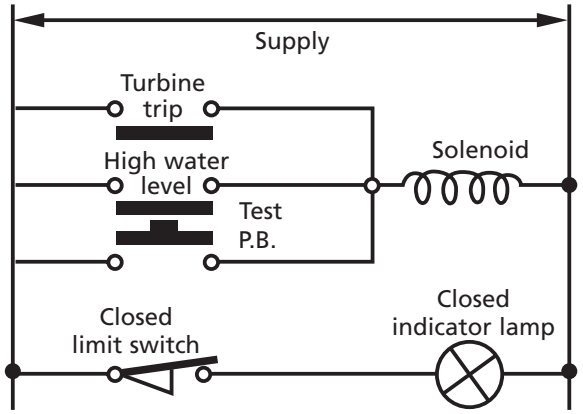
Where power assistance or 'power closing' is required an Air to open and Spring or Spring + air to close Pneumatic cylinder can easily be accommodated whilst still maintaining the Automatic Gravity Closing feature. Power assisted valves can close in less than half a second but is dependent on size and pressure.



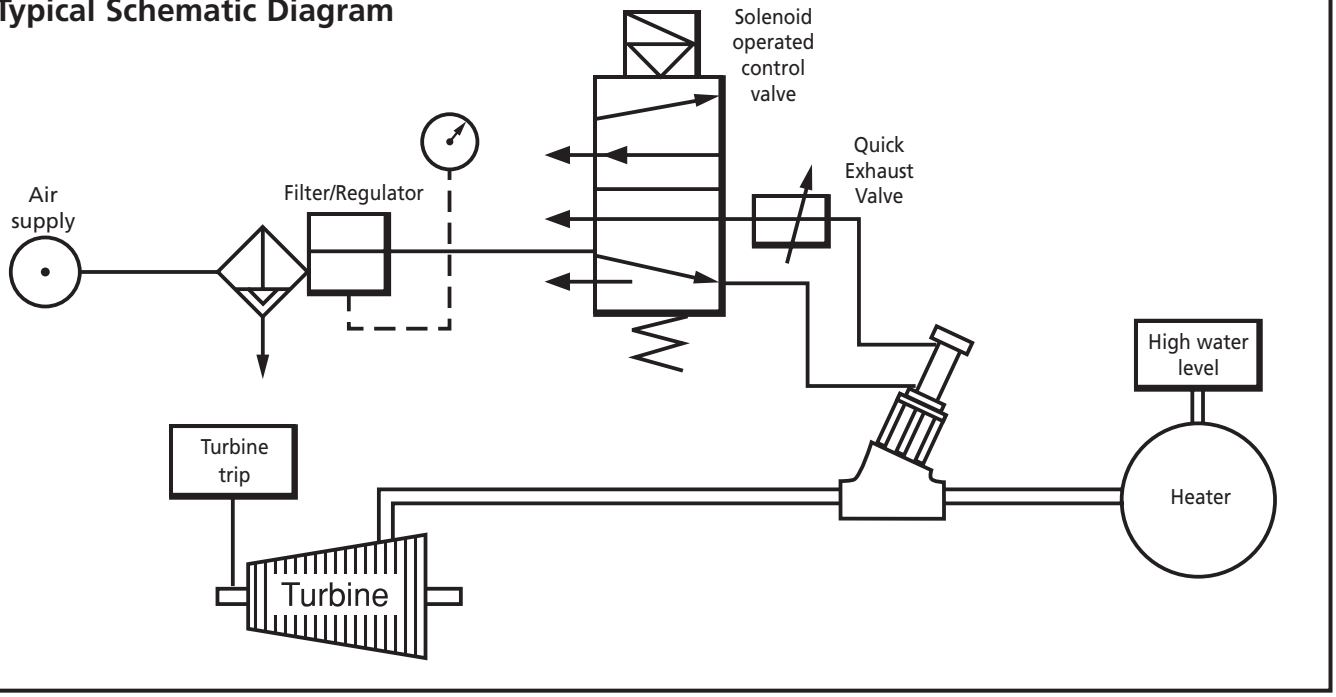
Typical Schematic and Wiring Diagram

This is a basic diagram, however, other arrangements can be supplied to suit specific requirements.

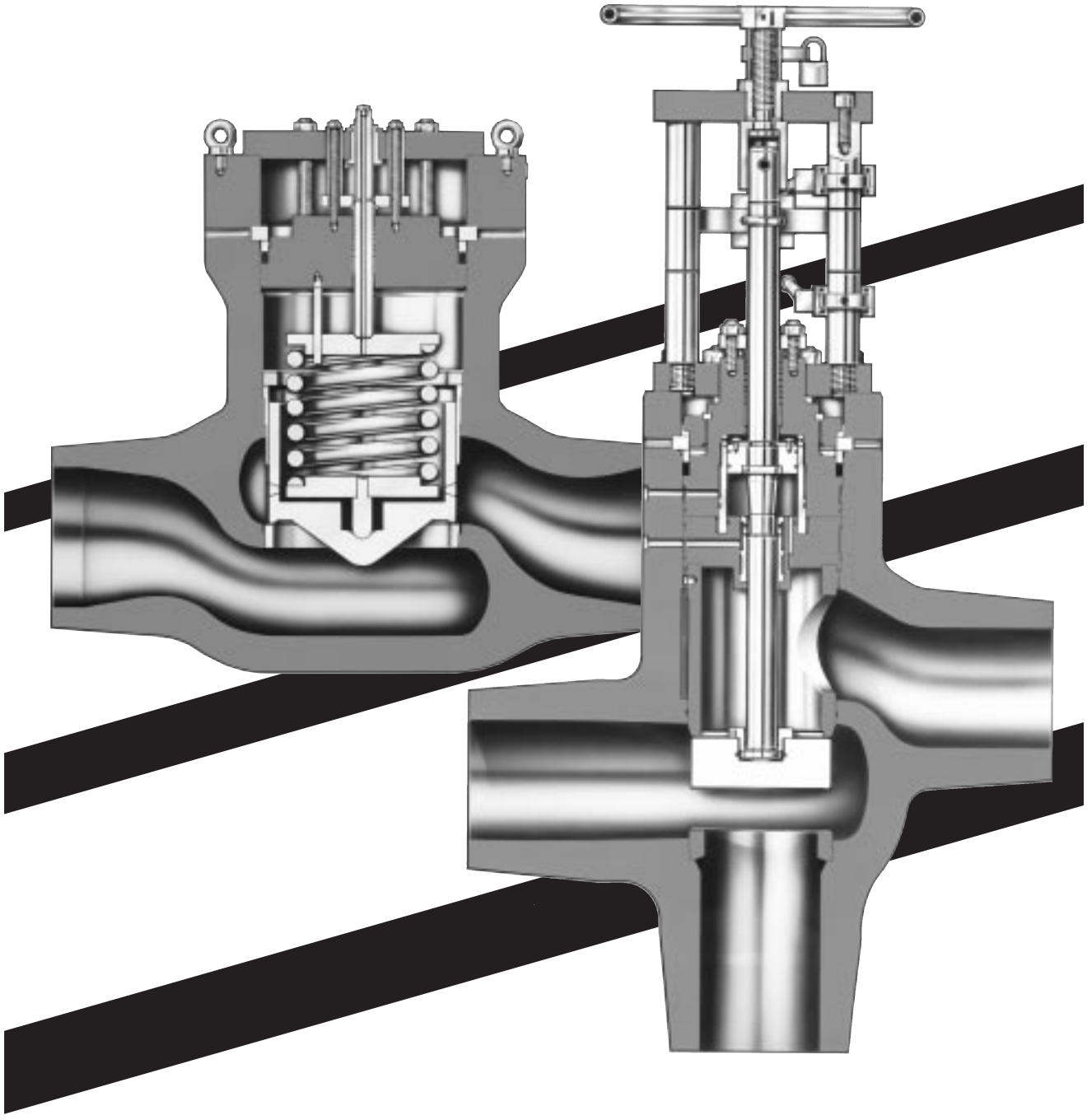
Typical Wiring Diagram



Typical Schematic Diagram



Feed Water Heater Isolation System



DEWRANCE
tyco engineered products

Sizes 6" – 20"

ASME B16.34 – 1996

Pressure Class: 1690, 1715 int.

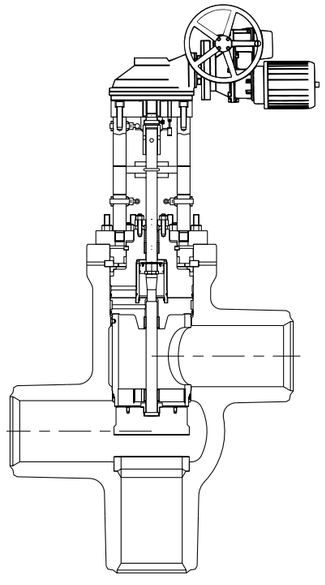
Feed Water Heater Isolation System

These valves are designed to bypass high pressure feedwater around a group of heaters in the event of high water level in the shell caused by a defective tube, weld or drain system. The time available to give protection to a turbine in modern feed systems is short but these valves can operate in approximately 5 seconds in a 300mm bore pipe system with the minimum of hydraulic shock. Protection is achieved in the system by installing fast closing tee and changeover valves in the pipework around a heater or group of heaters. These valves are equally applicable in new or established stations. The motive power employed is the feedwater pressure and the system is designed to 'fail safe' in that the heaters will be by-passed if either electric or pneumatic supplies fail.

As an alternative to the medium operated valves, a spring loaded bypass valve can be supplied. This is the simplest form of bypass which relieves at a set pressure and is fail safe.

The Dewrance design has the advantages of a pressure seal bonnet and external spring adjustment whilst the valve is still under pressure.

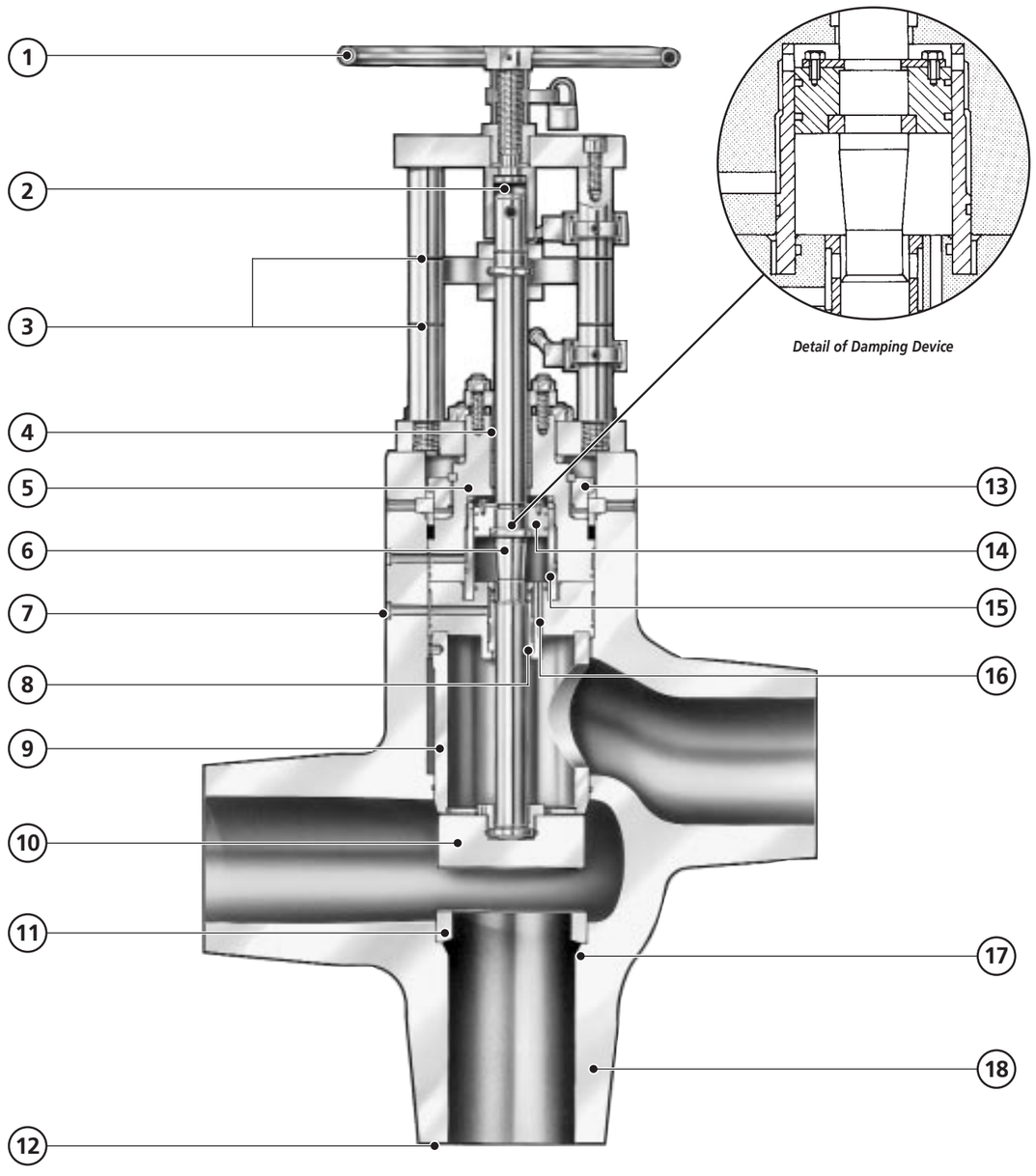
These valves can also be supplied with a direct mounted electric actuator.



Feed Water Heater Isolation System

1. *Fabricated steel handwheel.*
2. *Split stem (with separate coupling) to allow hand operation for commissioning and maintenance without having any effect on normal operation.*
3. *Position indication.*
4. *Expanded graphite packing.*
5. *Forged steel bonnet (A.S.T.M. A105-Carbon limit 0.25%).*
6. *Dewrance, Patented profiled stem arrangement to damp movement and prevent disc slamming onto seat when quick closing.*
7. *Exhaust from cylinder to quick acting valve.*
8. *Neck bush for adequate stem support.*
9. *Upper valve seat*, hard faced (Stellite or equivalent) removable for maintenance.*
10. *Valve disc. self aligning, double seated* and hard faced (Stellite or equivalent).*
11. *Lower valve seat, hard faced (Stellite or equivalent).*
12. *Butt weld ends.*
13. *Pressure seal bonnet.*
14. *Piston fitted with Piston rings.*
15. *Stainless steel cylinder liner.*
16. *Orifice to control flow into bottom of cylinder.*
17. *Lower seat ring welded.*
18. *Cast steel body (WCB) standard forged/fabricated body available in same sizes as an option.*

**Applies to two way changeover valve only.*



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Feed Water Heater Isolation System Operation

This system is designed to be "FAIL SAFE". Failure of the controlling electric or pneumatic supplies will cause the main changeover and outlet valves to close and so isolate the feed side of the feed heater or heater bank.

Float switches on feed water heaters are intended to have contacts normally made and to break with rising water level. Relays and solenoid are normally energised and are to be continuously rated.

Assuming the unit to be in normal operation the changeover valve will be in the position shown i.e. with the bypass line isolated. The out of balance forces acting on the disc caused by a combination of the differential area between the bottom and top of the disc and the pressure drop across the heater bank, will hold it in this position.

The solenoids on the Quick Acting Valve will be normally energised allowing air pressure on the top of the diaphragm to keep the valve closed.

Rising water level in a heater will cause the float switch contacts to break, de-energising the solenoids on the Quick Acting Valve causing it to open.

When the Quick Acting Valve opens, water is exhausted from the lower chamber (A) of the operating cylinder of both the Changeover valve and the 2-way outlet valve at a far greater rate than it can enter through the small filling orifice (Refer to (16) on previous page).

Feed Water passes through the adjustable orifice into chamber (B) and the resulting pressure difference on the pistons causes both valves to isolate the heater or heater bank.

Control of the speed of operation, to reduce the effects of hydraulic shock, is by means of the adjustable orifice over the major part of the stroke and finally by the patented specially profiled stem and port arrangement which prevents any tendency for the disc to slam onto the seat.

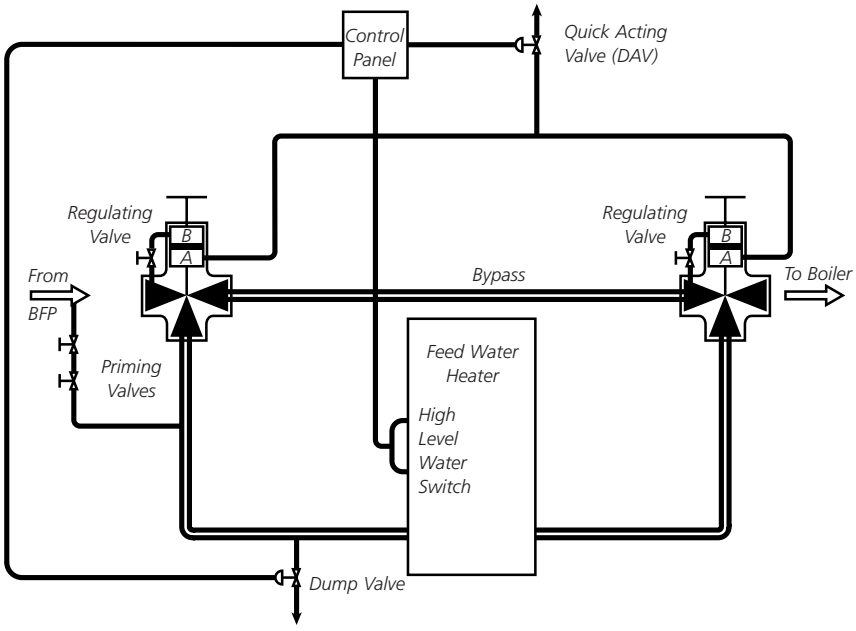
During the above closing process, the electrically operated Dump Valve has also opened allowing the safety relief valve to operate and reduce the pressure in the heater and feed piping to ensure that both valves are held firmly closed under all conditions.

Any increase in pressure from whatever source in the isolated section of feed water piping between the two main valves, will be automatically reduced by the safety relief valve.

At the point of main valve closure the Quick Acting Valves will also close to prevent unnecessary loss of feed water to drain.

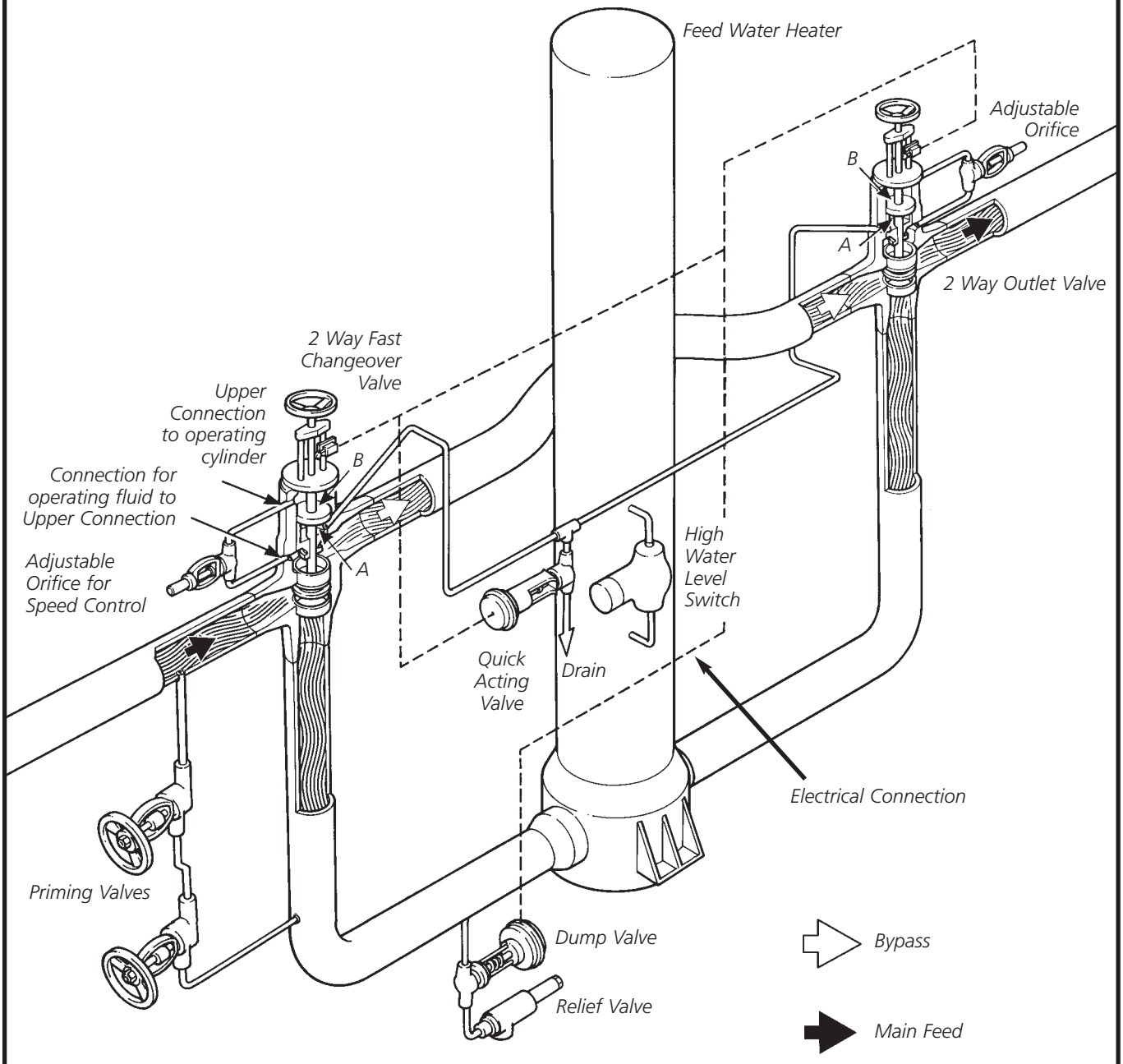
Dewrance medium operated valves are available in a wide variety of sizes and pressure classes and can be supplied together with the ancillary equipment to suit individual customers requirements.

Typical Feed Water Heater Isolation System



Feed Water Heater Isolation System
Typical System

Single Bank Isolation



Pressure/Temperature Ratings

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

Prod. No.	ASTM Body Material				Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. ˚F (for intermediate ratings use linear interpolation)																
	Forged		Cast				-20˚ to 100˚	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
					87																			
W8A	D	A105	E	A216	88	Std.	4235	3859	3751	3624	3424	3127	3070	3047	2881	2355	1531	–	–	–	–	–	–	–
Y8A				WCB	89	**Spec.**	**4288**	**4288**	**4288**	**4288**	**4288**	**4076**	**3996**	**3967**	**3602**	**2939**	**1910**	**–**	**–**	**–**	**–**	**–**	**–**	**–**

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

Prod. No.	ASTM Body Material				Page No.	ASME Code B16.34	Pressure in Bar at Temp. ˚C (for intermediate ratings use linear interpolation)																
	Forged		Cast				-30˚ to 38˚	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
					87																			
W8A	D	A105	E	A216	88	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	–	–	–	–	–	–
Y8A				WCB	89	**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**	**–**	**–**	**–**	**–**	**–**	**–**

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

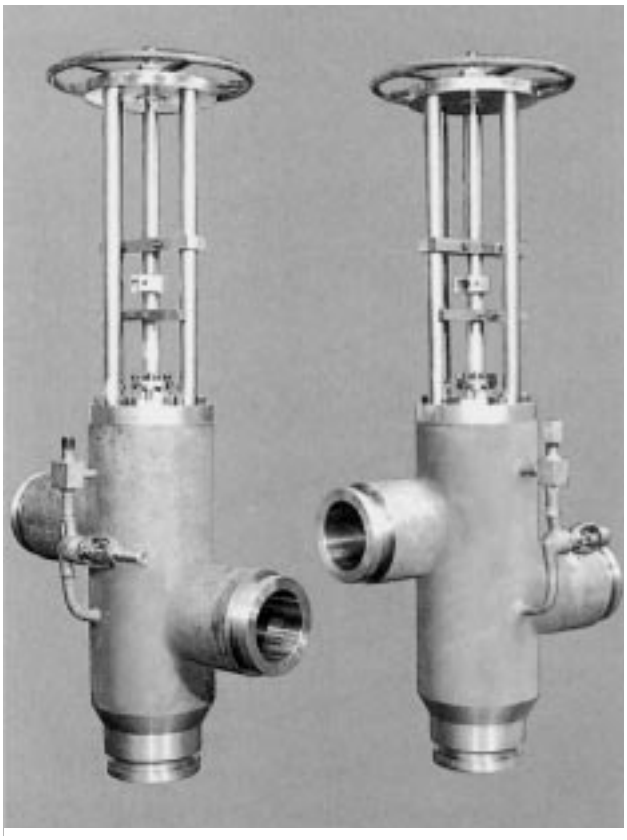
Prod. No.	ASTM Body Material				Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. ˚F (for intermediate ratings use linear interpolation)																
	Forged		Cast				-20˚ to 100˚	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
A73	D	A105	E	A216	90	Std.	4173	3803	3696	3571	3374	3082	3025	3002	2839	2320	1509	-	-	-	-	-	-	-
				WCB		**Spec.**	**4225**	**4225**	**4225**	**4225**	**4225**	**4016**	**3938**	**3909**	**3549**	**2896**	**1882**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

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

Prod. No.	ASTM Body Material				Page No.	ASME Code B16.34	Pressure in Bar at Temp. ˚C (for intermediate ratings use linear interpolation)																
	Forged		Cast				-30˚ to 38˚	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
A73	D	A105	E	A216	90	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	–	–	–	–	–	–
				WCB		**Spec.**	**291.3**	**291.3**	**291.3**	**291.3**	**291.3**	**291.3**	**280.9**	**271.0**	**266.0**	**247.9**	**202.4**	**140.9**	**–**	**–**	**–**	**–**	**–**	**–**

Note 'a' – Permissible but not recommended for prolonged usage above 800˚F (425˚C).

Other pressure classes (up to 2500 class) available on request.



Specially modified top gear on size 10" 1690 Class valves supplied to Hyundai Engineering Co. Ltd, for Makkah Taif Power Station in Saudi Arabia.

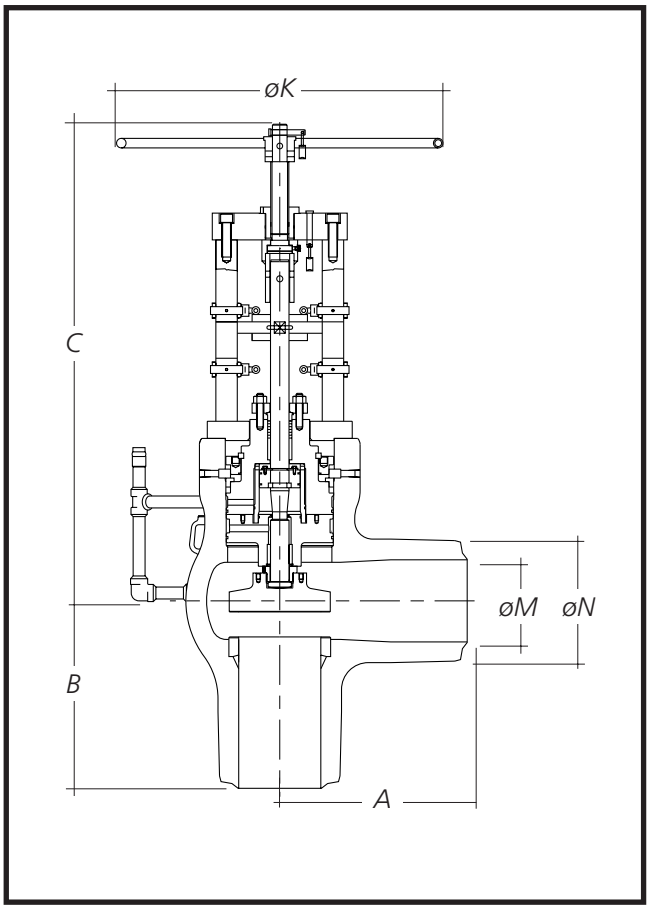
Feed Water Heater Isolation Valve

Sizes 6”–20”

ASME B16.34 1715 Int. Class

Main component materials

Body	ASTM A216 WCB (0.25% C max)
Pressure Seal	Expanded Graphite
Bonnet	ASTM A105
Valve Head	ASTM A105 H/F Stellite or Equivalent
Seat	ASTM A105 H/F Stellite or Equivqlent



Hydrostatic shell & seat leak test pressures

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

Dimensions

Size		A	B	C	K	M	N	Product Numbers
6	in	12.40	12.40	33	18	5.12	6.81	W8AE150P
150	mm	315	315	838	457	130	173	
8	in	12.80	12.80	42	18	6.69	8.78	W8AE200P
200	mm	325	325	1067	457	170	223	
10	in	17	17	46	24	8.35	10.94	W8AE250P
250	mm	432	432	1169	610	212	278	
12	in	20.67	20.67	51	36	9.06	12.95	W8AE300P
300	mm	525	525	1295	914	230	329	
14	in	21.65	21.65	55	36	11.02	14.25	W8AE350P
350	mm	550	550	1397	914	280	362	
16	in	24.76	24.76	57	36	12.64	16.26	W8AE400P
400	mm	629	629	1448	914	321	413	
18	in	27.63	27.63	60	36	14.09	18.31	W8AE450P
450	mm	702	702	1524	914	358	465	
20	in	28.98	28.98	63	36	15.63	20.31	W8AE500P
500	mm	736	736	1600	914	397	516	

Outlet, Angle Pattern Medium Operated Valve

DEWRANCE
tyco engineered products

Feed Water Heater Isolation Valve

Sizes 6”–20”

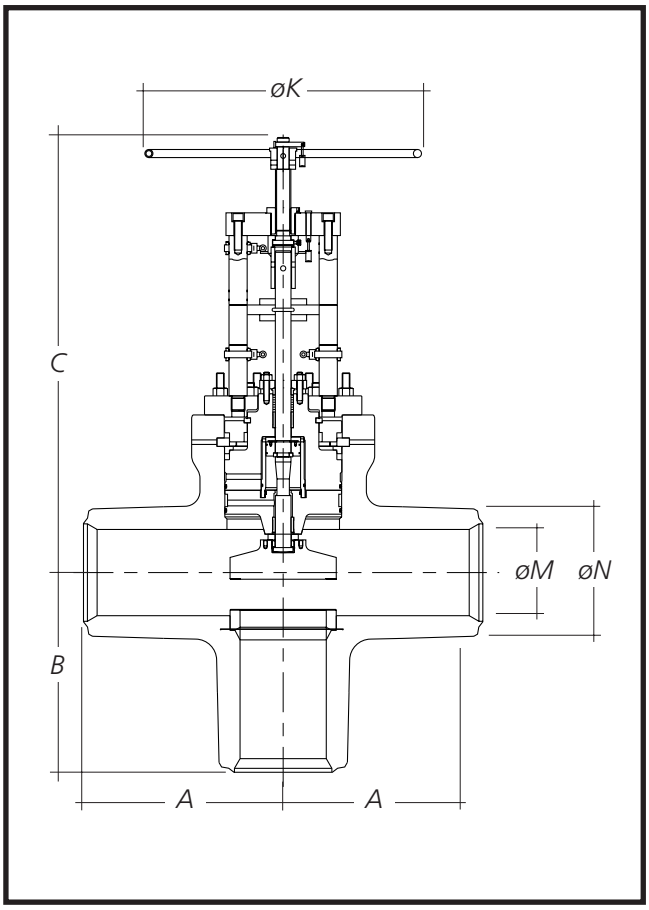
ASME B16.34 1715 Int. Class

Main component materials

Body	ASTM A216 WCB (0.25% C max)
Pressure Seal	Expanded Graphite
Bonnet	ASTM A105
Valve Head	ASTM A105 H/F Stellite or Equivalent
Seat	ASTM A105 H/F Stellite or Equivqlent

Hydrostatic shell & seat leak test pressures

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



Dimensions

Size		A	B	C	K	M	N	Product Numbers
6	in	12.40	12.40	33	18	5.12	6.81	W8AE150P
150	mm	315	315	838	457	130	173	
8	in	12.80	12.80	42	18	6.69	8.78	W8AE200P
200	mm	325	325	1067	457	170	223	
10	in	17	17	47	18	8.35	10.94	W8AE250P
250	mm	432	432	1194	457	212	278	
12	in	20.67	20.67	51	36	10.04	12.99	W8AE300P
300	mm	525	525	1295	914	255	330	
14	in	21.65	21.65	55	36	11.02	14.25	W8AE350P
350	mm	550	550	1397	914	280	362	
16	in	24.76	24.76	57	36	12.64	16.26	W8AE400P
400	mm	629	629	1448	914	321	413	
18	in	27.64	27.64	60	36	14.09	18.31	W8AE450P
450	mm	702	702	1524	914	358	465	
20	in	28.98	28.98	63	36	15.63	20.31	W8AE500P
500	mm	736	736	1600	914	397	516	

Two Way Outlet, Tee Pattern Medium Operated Valve

DEWRANCE
tyco engineered products

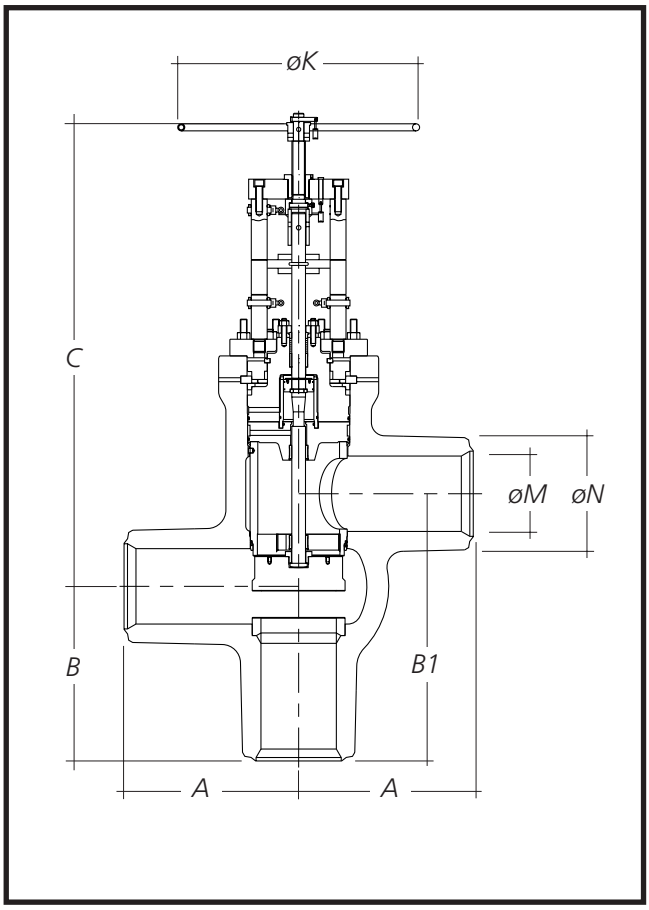
Feed Water Heater Isolation Valve

Sizes 6”–20”

ASME B16.34 1715 Int. Class

Main component materials

Body	ASTM A216 WCB (0.25% C max)
Pressure Seal	Expanded Graphite
Bonnet	ASTM A105
Valve Head	ASTM A105 H/F Stellite or Equivalent
Seat	ASTM A105 H/F Stellite or Equivqlent



Hydrostatic shell & seat leak test pressures

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

Dimensions

Size		A	B	B1	C	K	M	N	Product Numbers
6	in	12.40	12.40	18.70	39.25	18	5.12	6.81	Y8AE150P
150	mm	315	315	475	997	457	130	173	
8	in	12.80	12.80	19.10	51	24	6.69	8.78	Y8AE200P
200	mm	325	325	485	1295	610	170	223	
10	in	17	17	26.42	55.43	24	8.35	10.94	Y8AE250
250	mm	432	432	871	1408	610	212	278	
12	in	20.67	20.67	27.56	61.85	24	9.06	12.95	Y8AE300P
300	mm	525	525	700	1571	610	230	329	
14	in	21.65	21.65	28.54	65	36	11.02	14.25	Y8AE350P
350	mm	550	550	725	1651	914	280	362	
16	in	24.76	24.76	31.65	70	36	12.64	16.26	Y8AE400P
400	mm	629	629	804	1778	914	321	413	
18	in	27.63	27.63	44.13	75	36	14.09	18.31	Y8AE450P
450	mm	702	702	1121	1905	914	358	465	
20	in	28.98	28.98	46.22	79	36	15.63	20.31	Y8AE500P
500	mm	736	736	1174	2007	914	397	516	

Two Way Inlet, Medium Operated Change Over Valve

DEWRANCE
tyco engineered products

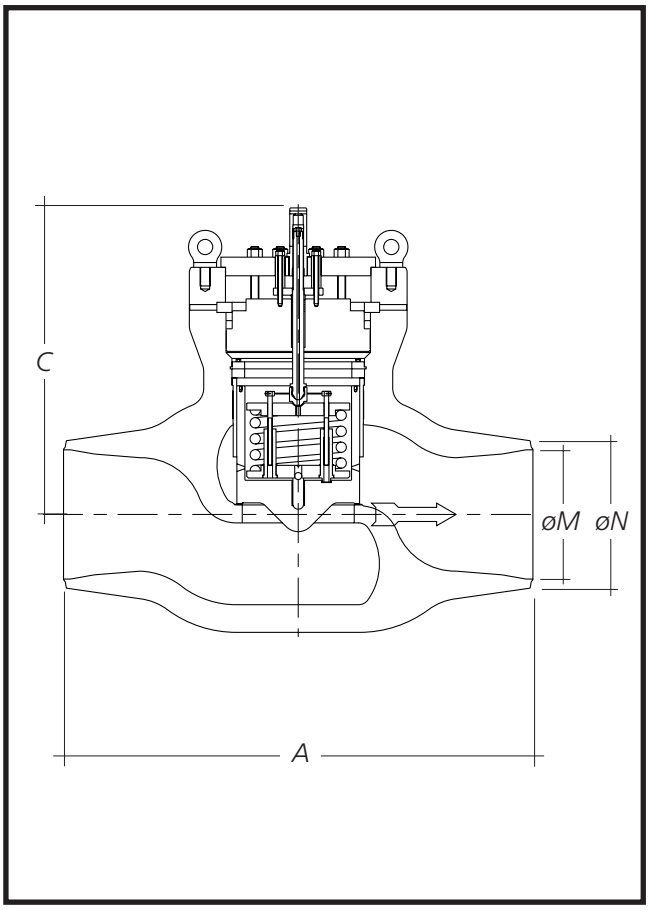
Feed Water Heater Isolation Valve

Sizes 8”–18”

ASME B16.34 1690 Int. Class

Main component materials

Body	ASTM A216 WCB (0.25% C max)
Pressure Seal	Expanded Graphite
Bonnet	ASTM A105
Spring	FV 520B (17/4 PH)
Disc Guide	17/4 PHSS



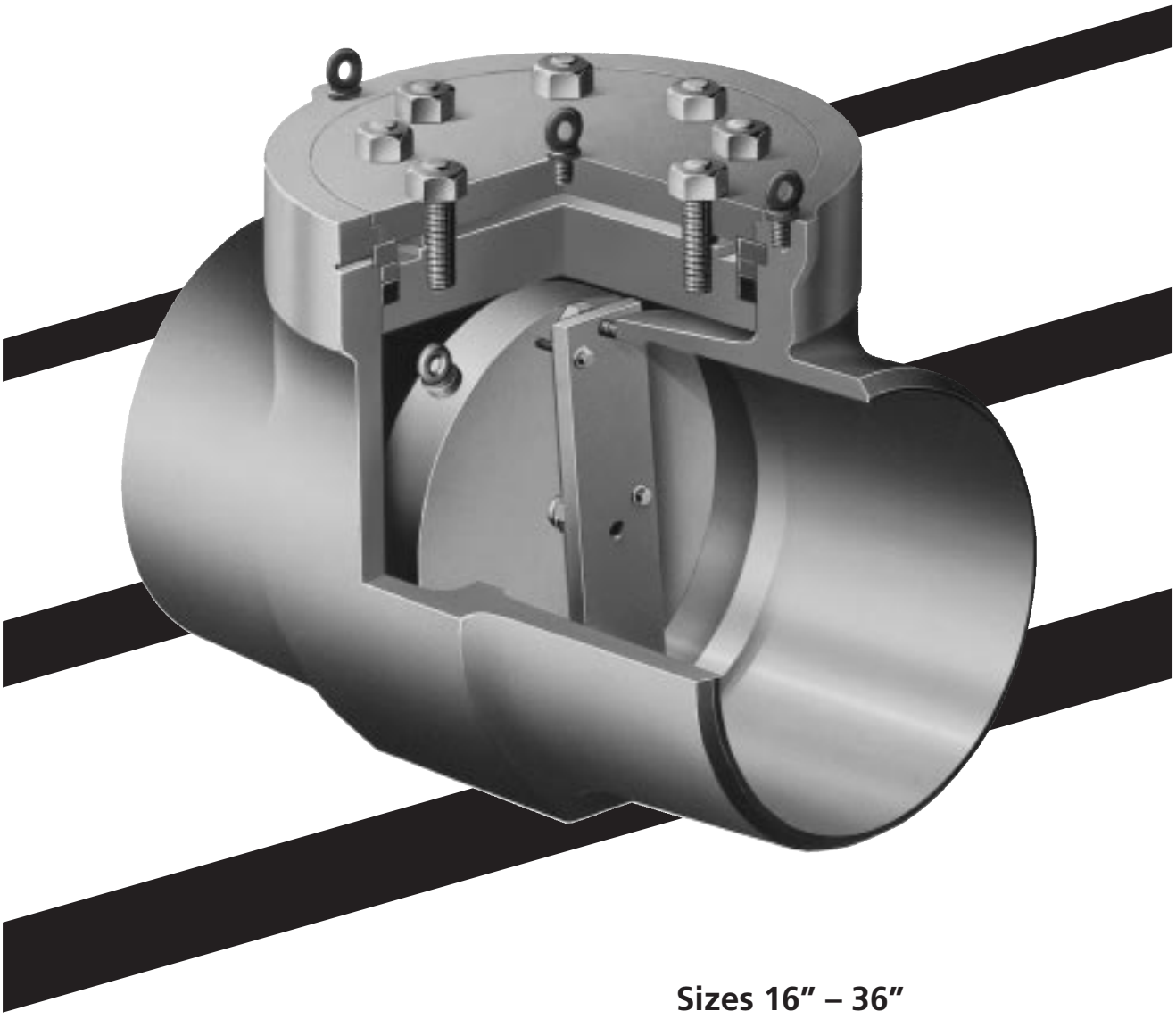
Hydrostatic shell & seat leak test pressures

		Body Material	
Press. Class		ASTM A-216 WCB	
		Shell	Rev.Seat
1690	psi	6350	450
	bar	438	31

Dimensions

Size		Lift press. psi/bar		A	C	M	N	Product Numbers
		Min.	Max.					
8	in	20	44	35	23.6	6.69	8.78	A73E200P
200	mm	1.4	3.0	889	399.4	169.9	223	
10	in	20	44	39	26.2	8.35	10.94	A73E250P
250	mm	1.4	3.0	991	665.5	212.1	277.9	
12	in	20	44	44.5	32.1	10.04	12.99	A73E300P
300	mm	1.4	3.0	1130	815.3	255	32.9	
14	in	20	44	49.5	37	11.02	14.25	A73E350P
350	mm	1.4	3.0	1257	939.8	279.9	362	
16	in	20	44	53	39.1	12.64	16.26	A73E400P
400	mm	1.4	3.0	1346	993.1	321	413	
18	in	20	44	61	41.3	14.09	18.31	A73E450P
450	mm	1.4	3.0	1549	1049	357.9	465.1	

Reheater Isolating Device



Sizes 16" – 36"

ASME B16.34 – 1996

Valve overall lengths to ASME B16.10 – 1992

Pressure Class: 500, 900

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Reheater Isolating Device

Sizes 16”–36”

ASME B16.34

Introduction

Hundreds of thousands of pounds per day are lost whenever a power plant closes!

Repairs of installation facilities are frequently a part of a planned programme of maintenance. The downtime cost is figured into the operating budget. Even so, any innovation which can save time will also save significant amounts of money.

A chief method for determining the effectiveness of the repairs done on plant pipelines is hydrostatic testing. In one area of a plant, the reheat tubes located in the boiler and the pipelines adjacent to the boiler, testing has been a time consuming and costly problem.

Isolation of the tubes from the pipeline has been done by mechanically forcing a blind flange between two flanges welded into the line. This procedure is slow, difficult, awkward and expensive.

Isolating of the hot reheat section has been traditionally achieved by closing the turbine intercept valve. However, turbine manufacturers and utilities have expressed some concern in relying solely on the turbine intercept valve as a stop valve.

The Dewrance Reheater Isolating Device, (R.H.I.D.), however, allows hydrostatic testing to be conducted easily and efficiently on both the cold and hot reheat lines. On the cold reheat line, from the high pressure turbine, temperatures average 600-700 ˚F and pressures range from 600-700 psi. The R.H.I.D. has an ASME 500 Intermediate rating and cast carbon steel (A.216 Gr. WCB) body material to satisfy pressure temperature requirements of the cold reheat line.

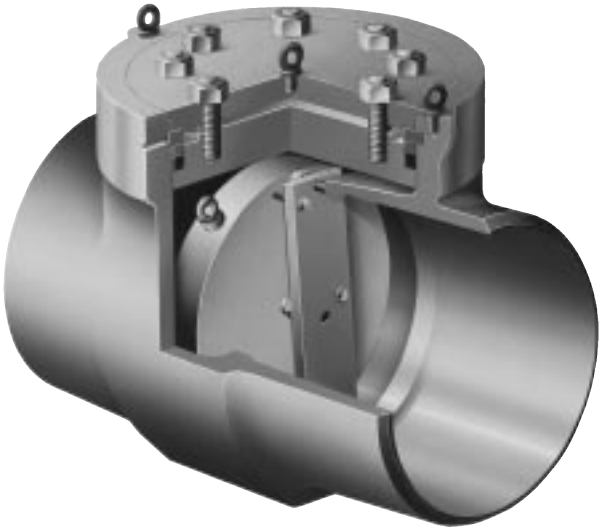
On the reheat line, from the Reheater Section of the boiler, temperatures range trom 900-1025 ˚F and pressures from 500 to 1200 psi. ASME Class 900# R.H.I.D. with cast alloy steel (A.217 Gr. WC9) body material is utilized on the hot reheat lines.

The R.H.I.D. also reduces the possibility of damaging the intercept valve by providing a reliable seal in front of the turbine intercept valve.

After installation the R.H.I.D. is merely a conduit and during normal operation it is open and free from any component parts.

When hydrostatic testing is to be done the system can be isolated by merely placing a closure in the path of the flow. This is accomplished by removing the bolted pressure seal joint from the R.H.I.D. fitting the Isolating Closure into position and then resetting the pressure seal.

The R.H.I.D. is uniquely designed to take advantage of two different forces for establishing seals. During regular service the Body/Bonnet Joint is mechanically preloaded prior to operation. When steam passes through the line it reinforces the mechanical seal with pressure. The Isolating Closure used during hydrostatic testing is similar; it is mechanically preloaded before testing and water pressure acting on the closure upgrades the seal.



Reheater Isolating Device

Sizes 16”–36”

ASME B16.34

The Dewrance Reheat Isolating Device was developed to provide the simplest means of isolating a reheater for hydrostatic test. This test may be to prove the reheater during a planned shut-down which will prevent an unplanned shut-down later, or to carry out test after repair. The isolator is permanently welded into the pipelines on both sides of the reheater.

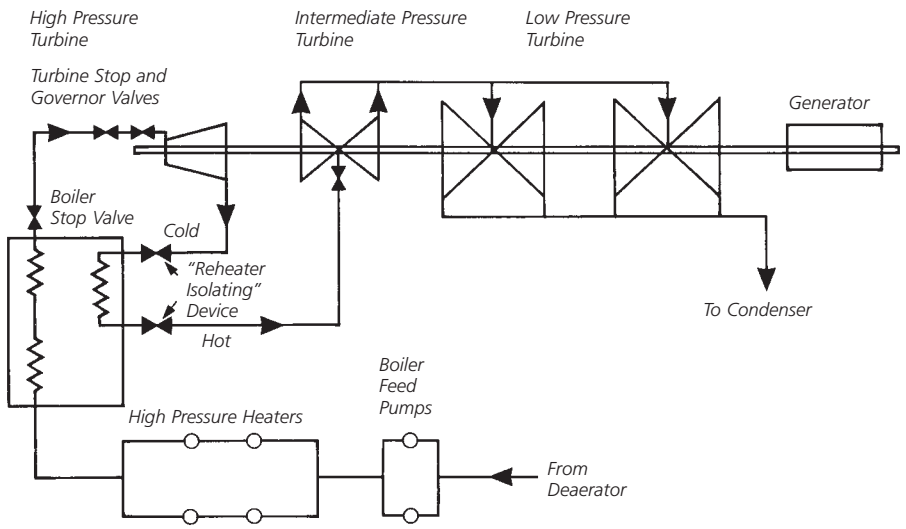
The cast steel body has two parallel faces inside the centre chamber. One of these faces at the turbine end of the fitting is a sealing face which is deposited with austenitic stainless steel to prevent corrosion. Access to the centre chamber is provided by a proven pressure seal closure which has sufficient preloading to seal against the vacuum conditions experienced during start-up. Under normal working conditions the pressure is held by a stainless steel segmental ring through a forged steel bonnet and the sealing is effected by an asbestos sealing ring which is stainless steel reinforced. This sealing ring does not require a lapped surface or expensive metal inlay.

During normal plant operation only the external pressure seal closure is used and the isolator body effectively becomes a part of the pipe with unobstructed passage. The Dewrance Reheat Isolating Device is simple in design and compact in its construction. It has many of the merits of a Parallel Slide Gate valve without the bulk, weight, or expense.

Before hydrostatic test, the top cover and bonnet are removed and the test closure assembly is then lowered into the centre chamber and located in the machined cradle in the lower part of the body. The test closure assembly consist of a disc with an “O” ring seal in the face, which contacts the stainless steel deposited faced within the body, and a captive preloading lever. The upper end of this lever is fitted with a single screw which, when turned in a clock-wise direction, compresses the “O” ring sufficiently to provide the initial seal. All other sealing pressure is provided by the test fluid itself. Replacing the top pressure seal closure isolates the reheater (or other plant) and is ready for hydrostatic test.

The Dewrance Reheat Isolating Device provides a time saving method for doing hydrostatic testing, wet or dry lay-up and chemical cleaning. It provides an open pipeline during normal operation and an isolating closure that can be installed and removed in 4 to 5 hours.

Boiler – Turbine Plant Layout



Showing Location of Reheater Isolating Device on Cold & Hot Reheater Lines

Reheater Isolating Device

Reheater Isolating Device

Sizes 16" – 36"

ASME B16.34 – 1996

Valve overall lengths to ASME B16.10 – 1992

Pressure Class: 500, 900

Features & Benefits

Excellent Reliability

- Minimal parts with full bore seat for optimum performance and low pressure drop
- Simple Isolating closure with one jacking stud

Low Cost Maintenance

- Pressure seal bonnet design gives maximum reliability with minimum maintenance
- No replacement parts required (other than pressure seal)

Improved Performance

- Low cost isolating device
- Simple method of isolation with full bore, low pressure drop
- Ability to enter pipe system through cover for steam purge (chemical clean)

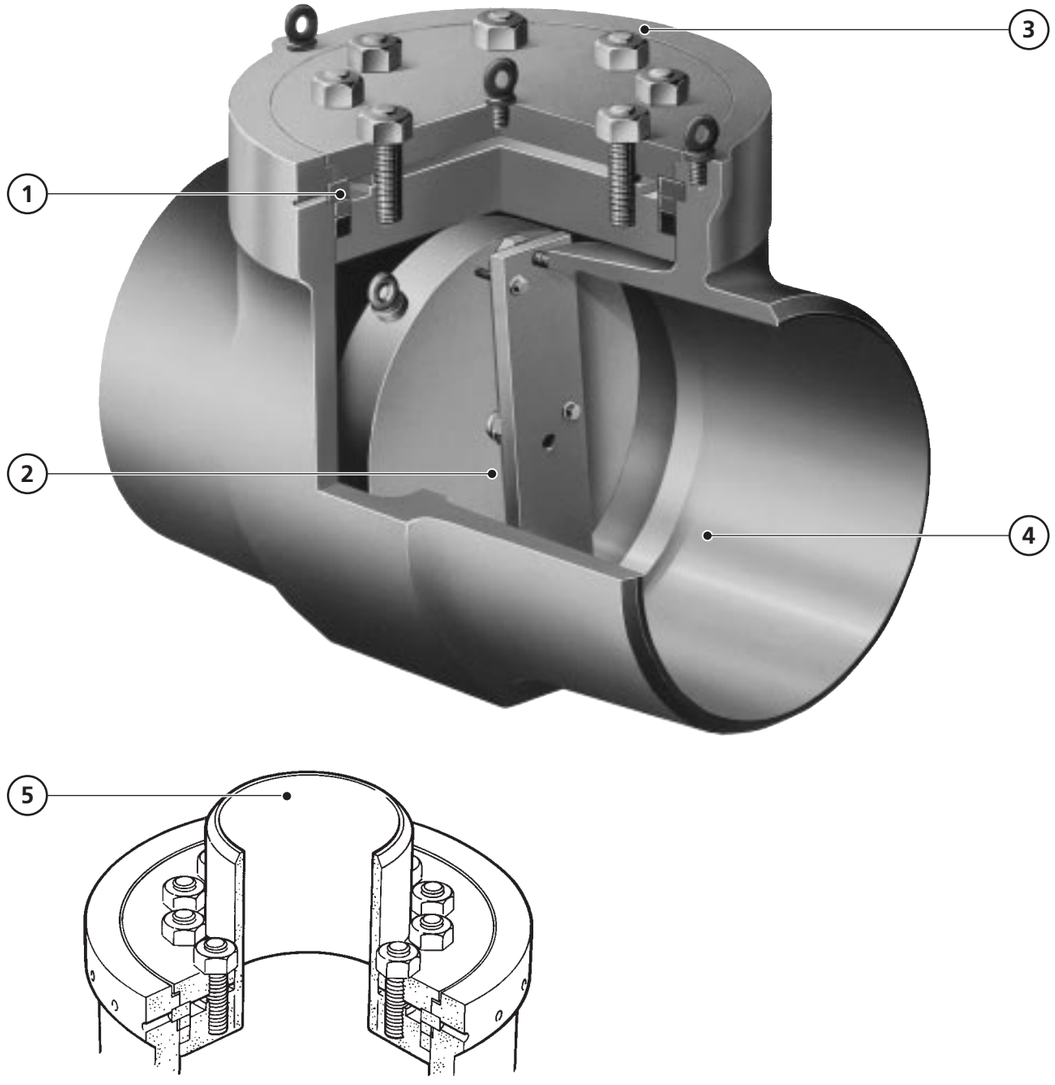
(1) *High Integrity Pressure Seal. The greater the force under the bonnet, the tighter the seal becomes at the body/bonnet joint. Light weight and resilient the pressure seal ring is made of exfoilated graphite. The pressure seal ring is retained in a cavity and under pressure expands radially. During field maintenance replacement of the pressure seal ring, or lapping of the pressure seal area is unnecessary. The need for an inlay or hone finish has been eliminated.*

(2) *High Integrity Seal Closure. The high integrity seal offers positive closing and zero leak for hydrotest. This high integrity seal allows for nitrogen layup and gas padding so a system may be charged with gas to eliminate corrosion. Once the seal has been placed in the position, the tightening of one unobstructed jacking stud gives a positively closed "zero leakage" seat seal.*

(3) *Top entry design. The Dewrance Reheat Isolator valve simplifies maintenance. It is not necessary to cut the valve out of line. There are no welds to break and cutting is eliminated. The top cover and bonnet are held to the body of the valve by means of jacking studs that firmly seal the bonnet against the flexible seal ring which is held in place by a segmented removable retaining ring.*

(4) *Low Pressure Drop. Once the isolator body is installed, it literally becomes part of the piping system. The straight in-line design allows a smooth, in-line flow with unobstructed passage. Pressure drop is therefore held to an absolute minimum.*

(5) *A chemical cleaning connection as an optional extra.*



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Pressure/Temperature Ratings

Cold

Imperial 500 int. Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. ˚F (for intermediate ratings use linear interpolation)																
					-20˚ to 100˚	200	300	400	500	600	650	700	750	800	850 note 'a'	900	950	975	1000	1025	1050	1075
R45	E	A216 WCB	97	Std.	1235	1125	1095	1058	1000	913	895	888	840	688	445	–	–	–	–	–	–	–
				Spec.	**1250**	**1250**	**1250**	**1250**	**1250**	**1188**	**1168**	**1158**	**1050**	**858**	**558**	–	–	–	–	–	–	–

Metric 500 int. Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in Bar at Temp. ˚C (for intermediate ratings use linear interpolation)																
					-30˚ to 38˚	50	100	150	200	250	300	350	375	400	425	450 note 'a'	475	500	525	550	575	600
R45	E	A216 WCB	97	Std.	85.1	83.5	77.3	75.4	73.1	69.7	64.6	61.6	60.7	57.5	48.0	33.4	–	–	–	–	–	–
				Spec.	**86.2**	**86.2**	**86.2**	**86.2**	**86.2**	**86.2**	**83.1**	**80.3**	**78.8**	**71.9**	**59.9**	**41.7**	–	–	–	–	–	–

Note 'a' – Permissible but not recommended for prolonged usage above 800˚F (425˚C).

Hot

Imperial 900 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in lbf/sq. in. at Temp. ˚F (for intermediate ratings use linear interpolation)																
					-20˚ to 100˚	200	300	400	500	600	650	700	750	800	850	900	950	975	1000	1025	1050	1075
R61	L	A217 WC9	97	Std.	2250	2250	2185	2115	1995	1815	1765	1705	1595	1525	1460	1350	1130	955	780	653	525	428
				Spec.	**2250**	**2250**	**2225**	**2175**	**2160**	**2160**	**2145**	**2135**	**2070**	**2020**	**1930**	**1800**	**1415**	**1195**	**975**	**815**	**655**	**533**

Metric 900 Class (ASME B16.34 1996)

Prod. No.	ASTM Body Material Cast		Page No.	ASME Code B16.34	Pressure in Bar at Temp. ˚C (for intermediate ratings use linear interpolation)																
					-30˚ to 38˚	50	100	150	200	250	300	350	375	400	425	450	475	500	525	550	575	600
R61	L	A217 WC9	97	Std.	155.1	155.1	154.6	150.6	146.2	139.0	128.6	120.7	116.5	109.8	105.4	101.4	95.1	83.4	64.9	46.0	31.6	20.7
				Spec.	**155.1**	**155.1**	**154.9**	**153.3**	**150.2**	**149.1**	**148.9**	**147.7**	**146.6**	**142.6**	**139.5**	**134.1**	**126.4**	**107.1**	**81.2**	**57.5**	**39.4**	**25.7**

Main component materials

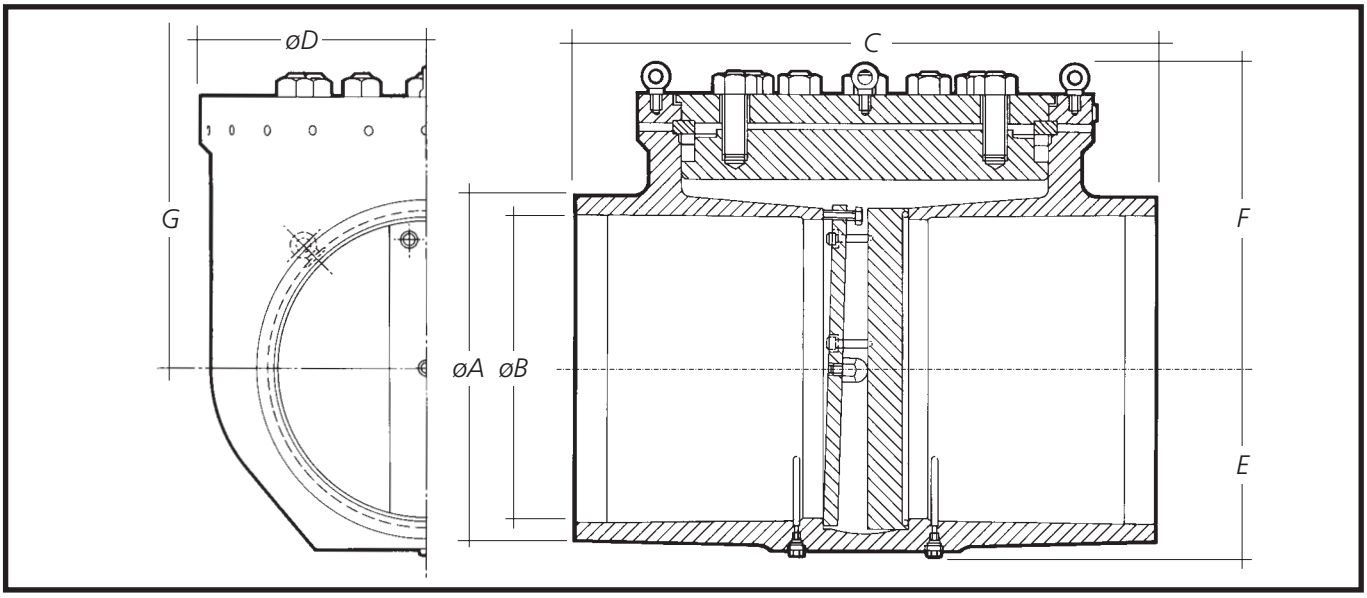
Description	Cold R.H.I.D.	Hot R.H.I.D.
Body	Steel ASTM A-216 Gr. WCB	ASTM A-217 Gr.WC9
Bonnet	Steel ASTM A-105	ASTM A-182-F-22
Cover	ASTM A-516 Gr. 70	ASTM A-182-F-11
Pressure Seal	Expanded Graphite	Expanded Graphite
Distance Piece	Steel ASTM A-182-F-6	ASTM A-182-F-6
Segment Ring	Steel ASTM A-182-F-6	ASTM A-182-F-6

Pressure boundary materials to ASTM specifications. All other materials to stated comparable U.S. specifications.

Reheater Isolating Device

Sizes 16”–36”

ASME B16.34



Cold – ASME 500 Intermediate Rating B16.34 – 1996

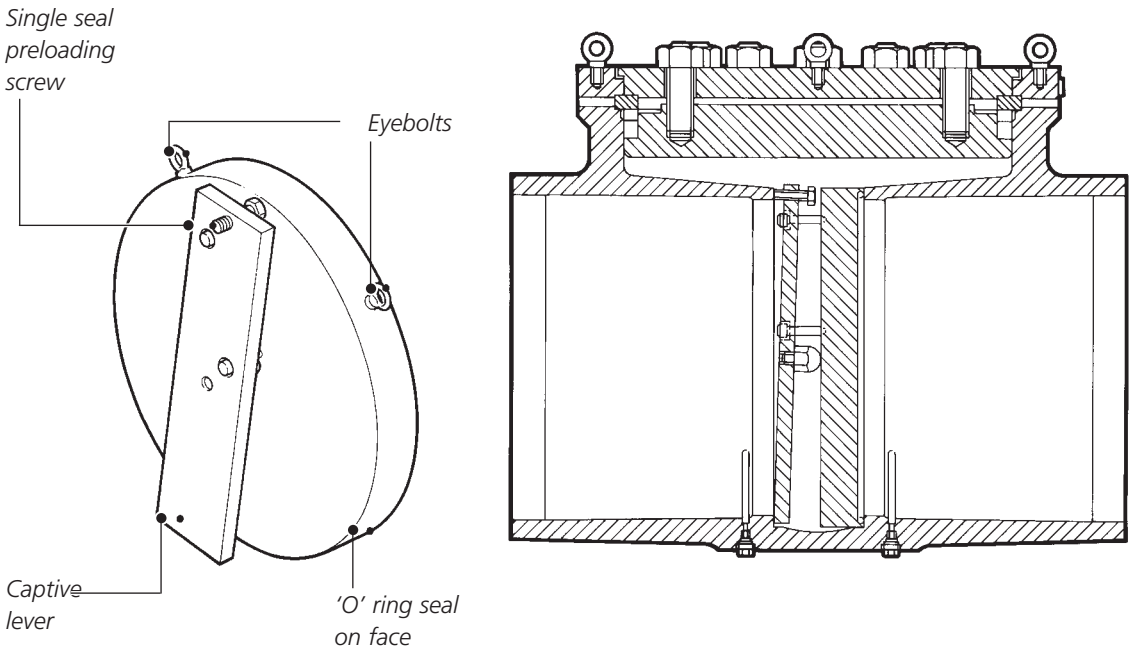
Product No.	Test Assembly	Nom. Size		C	E	F	G	D	B Min.	A Max.		Approx. Weight	Isolating Closure Weight
R45EZ400PFDA	RZ0EZ400N	16	in	34	10.62	16.38	30.43	21.54	14.61	16.26	lb	882	146
		400	**mm**	**864**	**270**	**416**	**773**	**547**	**371**	**413**	**kg**	**400**	**66**
R45EZ450PFDA	RZ0EZ450N	18	in	37	11.61	17.72	33.54	23.62	16.50	18.27	lb	1477	196
		450	**mm**	**940**	**295**	**450**	**852**	**598**	**419**	**464**	**kg**	**670**	**89**
R45EZ500PFDA	RZ0EZ500N	20	in	41	12.48	18.86	36.26	25.67	57.76	20.31	lb	1929	245
		500	**mm**	**1041**	**317**	**479**	**921**	**642**	**467**	**516**	**kg**	**875**	**111**
R45EZ550PFDA	RZ0EZ550N	22	in	44	13.70	20.83	40.35	27.76	20.24	22.72	lb	2976	328
		550	**mm**	**1118**	**348**	**529**	**1025**	**724**	**514**	**577**	**kg**	**1350**	**149**
R45EZ600PFDA	RZ0EZ600N	24	in	48	14.64	22.68	43.46	31.14	22.01	24.37	lb	3197	417
		600	**mm**	**1219**	**372**	**576**	**1104**	**772**	**559**	**619**	**kg**	**1450**	**189**
R45EZ650PFDA	RZ0EZ650N	26	in	51	15.67	24.53	46.65	33.19	24.02	26.42	lb	4034	516
		650	**mm**	**1295**	**398**	**623**	**1185**	**827**	**610**	**671**	**kg**	**1830**	**234**
R45EZ700PFDA	RZ0EZ700N	28	in	54	16.61	26.84	50.04	35.63	25.98	28.43	lb	4630	626
		700	**mm**	**1372**	**422**	**669**	**1271**	**875**	**660**	**722**	**kg**	**2100**	**284**
R45EZ750PFDA	RZ0EZ750N	30	in	56	17.64	28.31	53.03	37.64	27.72	30.47	lb	5335	752
		750	**mm**	**1422**	**448**	**719**	**1347**	**920**	**704**	**774**	**kg**	**2420**	**341**
R45EZ800PFDA	RZ0EZ800N	32	in	61	18.74	29.92	56.61	36.69	29.49	32.52	lb	6834	915
		800	**mm**	**1549**	**476**	**760**	**1438**	**989**	**749**	**826**	**kg**	**3100**	**415**
R45EZ850PFDA	RZ0EZ850N	34	in	64	19.80	31.34	59.92	42.76	31.50	34.53	lb	7915	1089
		850	**mm**	**1626**	**503**	**796**	**1522**	**1047**	**800**	**877**	**kg**	**3590**	**494**
R45EZ900PFDA	RZ0EZ900N	36	in	68	20.67	33.54	62.76	45.20	32.80	36.57	lb	8818	1257
		900	**mm**	**1727**	**525**	**852**	**1594**	**1110**	**833**	**929**	**kg**	**4000**	**570**

Hot – ASME Class 900 B16.34 – 1996

Product No.	Test Assembly	Nom. Size		C	E	F	G	D	B Min.	A Max.		Approx. Weight	Isolating Closure Weight
R61LZ400PFDA	RZ0EZ350N	16	in	34	10.43	18	29.96	21.54	13.94	16.26	lb	1398	128
		400	**mm**	**864**	**265**	**447**	**761**	**547**	**354**	**413**	**kg**	**634**	**58**
R61LZ450PFDA	RZ0EZ400N	18	in	37	11.26	18.94	32.68	23.62	15.87	18.27	lb	1543	146
		450	**mm**	**940**	**286**	**481**	**830**	**600**	**403**	**464**	**kg**	**700**	**66**
R61LZ500PFDA	RZ0EZ450N	20	in	41	12.32	20.51	36.02	25.67	17.44	20.31	lb	2425	196
		500	**mm**	**1041**	**313**	**521**	**915**	**652**	**443**	**516**	**kg**	**1100**	**89**
R61LZ550PFDA	RZ0EZ500N	22	in	44	13.23	21.93	39.17	27.76	19.17	22.72	lb	3086	245
		550	**mm**	**1118**	**336**	**557**	**995**	**705**	**487**	**577**	**kg**	**1400**	**111**
R61LZ600PFDA	RZ0EZ550N	24	in	48	14.53	23.86	43.15	31.14	20.91	24.37	lb	4189	328
		600	**mm**	**1219**	**369**	**606**	**1096**	**791**	**531**	**619**	**kg**	**1900**	**149**
R61LZ650PFDA	RZ0EZ600N	26	in	51	15.59	25.95	46.54	33.19	22.64	26.42	lb	5049	417
		650	**mm**	**1295**	**396**	**659**	**1182**	**843**	**575**	**671**	**kg**	**2290**	**189**
R61LZ700PFDA	RZ0EZ650N	28	in	54	16.65	28.07	50	35.63	24.41	28.43	lb	6173	516
		700	**mm**	**1372**	**423**	**713**	**1270**	**905**	**620**	**722**	**kg**	**2800**	**234**
R61LZ750PFDA	RZ0EZ700N	30	in	56	17.68	30.08	53.35	37.64	26.14	30.47	lb	7143	626
		750	**mm**	**1422**	**449**	**764**	**1355**	**956**	**664**	**774**	**kg**	**3240**	**284**
R61LZ800PFDA	RZ0EZ750N	32	in	61	18.78	32.24	56.50	36.69	27.87	32.52	lb	8598	752
		800	**mm**	**1549**	**477**	**819**	**1435**	**1008**	**708**	**826**	**kg**	**3900**	**341**
R61LZ850PFDA	RZ0EZ800N	34	in	64	19.92	34.25	60.63	42.76	29.61	34.53	lb	10802	915
		850	**mm**	**1626**	**506**	**870**	**1540**	**1086**	**752**	**877**	**kg**	**4900**	**415**
R61LZ900PFDA	RZ0EZ850N	36	in	68	21.10	35.87	64.17	45.20	31.38	36.57	lb	12853	1089
		900	**mm**	**1727**	**536**	**911**	**1630**	**1148**	**797**	**929**	**kg**	**5830**	**494**

Product No. R45E, R61L

Reheater Isolating Device Features and Benefits



The Components

The Isolating Closure consists of two principal pieces, isolating disc and backing plate. The preloading bolt (see Detail) is threaded into the backing plate. As the preloading bolt head is turned, it comes in contact with the face opposite the seat. From this point the top of the backing plate is forced away from the face opposite the seat, pivoting about the dome nut, until the bottom of the plate comes into contact with the face opposite the seat. Additional turning of the preloading bolt head results in the dome nut applying axial seating pressure to the isolating disc.

Isolating Closure Installation

The Isolating Closure is designed to be handled as one assembly. There are two eye bolts on the disc to assist in installation. The backing plate is held to the disc by two cap screws, but the backing plate is free to move axially. The Isolating Closure is lowered into the body, the preloading bolt tightened, which seats the "O" ring to the body. After the pressure seal assembly has been installed, the system is ready for hydrostatic testing. The testing pressure will cause the ring to seal even more tightly.

Down stream leakage, past the "O" ring, should it occur can be determined by removing the pipe plug at the bottom of the body.

After hydrostatic testing, the Isolating Closure is removed and the pressure seal assembly reinstalled.

What the Dewrance Reheater Isolating Device Offers:

To the Specifying Engineer, an Alternative!
Whether for new construction or retrofit, there is now a workable choice other than blanking flanges for isolating a section of pipeline.

To the Maintenance Engineer, Ease of Operation!
One unit permits an efficient means of doing hydrostatic testing, wet or dry lay-up and chemical cleaning.

To the Plant Chief Engineer, Savings Through Efficiency!
Compared with the blanking flange method, the Isolating Closure is clearly better. Furthermore, it will pay for itself. Upon completion of the second operation the accumulated savings in reduced down-time and maintenance labour could cover the purchase cost.

To the Plant Operations Manager, Increased Profitability!
Consider the versatility, efficiency and savings of the Dewrance Reheater Isolating Device, then the impact on the "bottom line" is self evident.

Quick Guide to Product Numbering Systems

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

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

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

Materials of Construction

ASTM specification

Ferrous

TYPE	FORGINGS						CASTINGS				STUDS		
MAIN USE	BONNETS, COVERS,SEATS DISCS						VALVE BODIES				COVERS, GLANDS		
ASTM SPEC (UNS)	A105	A182 F22	A276 420	A182 F347	BS970 316S31	A182 F91	A216 WCB	A217 WC6	A217 WC9	ASTM A743 GR.C12A	A193 GR.B7	A193 GR.B16	A193 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	0.5MAX	*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 SPEC (UNS)	ASTM A516 GR 70	A276 S43100	ASTM A565– XM32	A108 G10200	A193 GR.B7	A194 GR.2H	A194 GR.4	A194 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

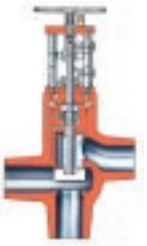
TYPE	NON FERROUS
MAIN USE	SLEEVE GLAND
ASTM SPEC (UNS)	B150 C63000
ALMUMIN.%	9.0–11.0
SILICON %	**0.25 max**
MANG.%	1.5 max
TIN. %0.2 max	
ZINC %	0.3 max
NICKEL %	**4.0–5.5**
COPPER	BAL
IRON %	**2.0–4.0**
PHOSP.%	–
NIOBIUM %	**–**
VANADIUM	–
LEAD %	**–**
U.T.S.ksi min	**94**
YIELD KIS MIN	46

Recommended Spare Parts Holding by product

Class I – Start-up/Consumable

Class II – 1–5 Years Operational Spares

Class III – 5–10 Years Major Overhaul

		 Parallel Slide Valves	 Check Valves	 Bled Steam Check Valves	 Feed Heater Isolation Device	 Reheater Isolation Devices
Class I	Bonnet Gasket	●	●	●		
	Closure Seal					●
	Gasket					●
	Gland Packing	●			●	
	Hinge Pin Gasket		●	●		
	'O' Rings				●	
	Pressure Seal	●	●	●	●	●
Class II	Discs	●				
	Disc Assembly			●		
	Disc Clips	●				
	Disc/Disc Assembly		●			
	Disc Springs	●				
	Gland	●		●	●	
	Gland Ring				●	
	Hinge Pin		●	●		
	Hinge Pin Bush		●	●		
	Hinge Pin Housing		●	●		
	Neck Bush	●		●	●	
	Stems				●	
	Stem/Belteye Assy.	●				
	Stem Stop	●			●	
	Valve Head				●	
	Valve Head Nut				●	
Class III	Bonnet	●	●		●	●
	Bonnet Collar	●				
	Collar				●	
	Cover	●	●	●	●	●
	Distance Piece	●	●	●	●	●
	Gland Flange	●		●	●	
	Pillars	●		●	●	
	Screwed Plug					●
	Segment Ring	●	●		●	●
	Split Ring	●			●	
	Thrust Plate				●	
	Yoke Bush				●	

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tyco engineered products

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Because of a policy of continuous product improvement Dewrance reserve the right to change designs, materials or specifications without notice.