

A safer, more reliable solution for the
most corrosive applications

Neotecha NXR
PFA lined ball valve



EMERSON.

The NXR PFA lined ball valve represents a significant step forward in providing a safe and reliable solution for highly demanding corrosive applications.



Lined ball valves have historically been prone to fugitive emissions and failure in corrosive conditions

When you operate in demanding environments involving high temperatures and high pressures, corrosion can have a dramatic effect on the performance and inherent safety of your valves. Lined ball valves, in particular, have traditionally been liable to leak and fail, resulting in the potential of expensive fines and unscheduled plant shutdowns. That was until Emerson developed the Neotecha NXR - the lined ball valve solution that redefines safety and reliability.



Consider your fugitive emission problems solved with the Neotecha NXR

Plant operators are liable to be fined if their valves don't meet the latest standards governing fugitive emissions.

Solution:

Neotecha NXR complies with international fugitive emissions standards.

No one understands how vital it is for valves to satisfy fugitive emissions regulations more than Emerson. We recognize how strictly these are enforced in the US, by the Environment Protection Agency (EPA), and how global operators potentially face large fines for valve leakages. Which is why the Neotecha NXR is engineered to meet every major standard, from TA Luft VDI 2440 to ISO 15848-1 BH C01.

Leaking valves require immediate maintenance to address potential hazards.

Solution:

A valve with no maintenance required.

At Emerson we recognize how destructive leaking valves can be on both your plant and the bottom line. Unscheduled maintenance, process inefficiencies and unplanned shut-downs can have a major impact on your production capability. To combat this, the Neotecha NXR has a one-piece ball stem eliminating any lining damage between the ball and stem. Compare this to a conventional floating ball valve with a two-piece ball stem, where torque transfer via the lining will invariably develop a lining weakness and result in premature valve failure.

Thermo cycling valves increases the fugitive emission rate due to stem leakage.

Solution:

A mechanically activated stem seal, which requires no maintenance or adjustment.

A spring set consisting of Belleville washers applies constant pressure to the stem seal, allowing the seal to expand at elevated temperatures and shrink at cold temperatures. For increased safety there is a secondary seal within the lined environment and a dirt excluder to make sure external debris can not affect valve performance.

Pipes and valves leak due to the stress caused by thermal expansion or misalignment.

Solution:

Deal with the stress that leaves other valves leaking.

An offset body split and metal-to-metal contact enables the Neotecha NXR to handle any pipe stress that may result from thermal expansion or piping misalignment. This prevents any leakage across the body split and stem seal reducing potential hazards due to fugitive emissions. In fact the patented body split design allows the PFA to expand at elevated temperatures and regain its shape when cooling down.



Take a detailed look at the next step in ball valve reliability

The Neotecha NXR is the latest addition to a portfolio of lined products that are trusted around the world for their performance, quality and fugitive emissions. Neotecha PTFE, TFM and PFA lined valves are designed specifically for highly corrosive media. And as extreme conditions and compliance requirements continue to place ever greater demands on operators, Emerson is now rising to the challenge with a host of innovative solutions to today's pressing ball valve issues.

Benefits of the Neotecha NXR

Maintenance free spindle seal.

The Neotecha NXR's patented spindle seal design is mechanically activated, so as well as being fugitive emission certified to TA Luft and ISO, it does not require any maintenance or adjustment.

Metal-to-metal body seal.

The patented body seal design has a metal-to-metal body split, which is balanced against expansion over the full temperature range.

One-piece ball-stem eliminates lining damage.

The NXR's one-piece ball-stem design eliminates any lining damage between shaft and ball during torque transfer. In combination with the increased maximum allowable shaft torque (MAST) this provides a much safer operation and improves valve life cycle.

Conductive liner for increased safety.

A conductive lining option is available creating a conductive connection between process media and the valve body. This avoids build up of any electrical potential caused by friction of the media against the valve surface.

Lower torque and higher MAST for increased safety.

The NXR is a much safer valve thanks to its combination of reduced operating torque and improved stem material. The strengthened stem improves the Maximum Allowable Shaft Torque ratio, providing a safer operation and allowing a wider range of actuator selection.

Preloaded ball seal.

The preloaded ball seal keeps the ball always in contact with the upstream and downstream seal. It prevents any particle penetration and therefore extends valve life cycle.

Anti-blowout spindle design.

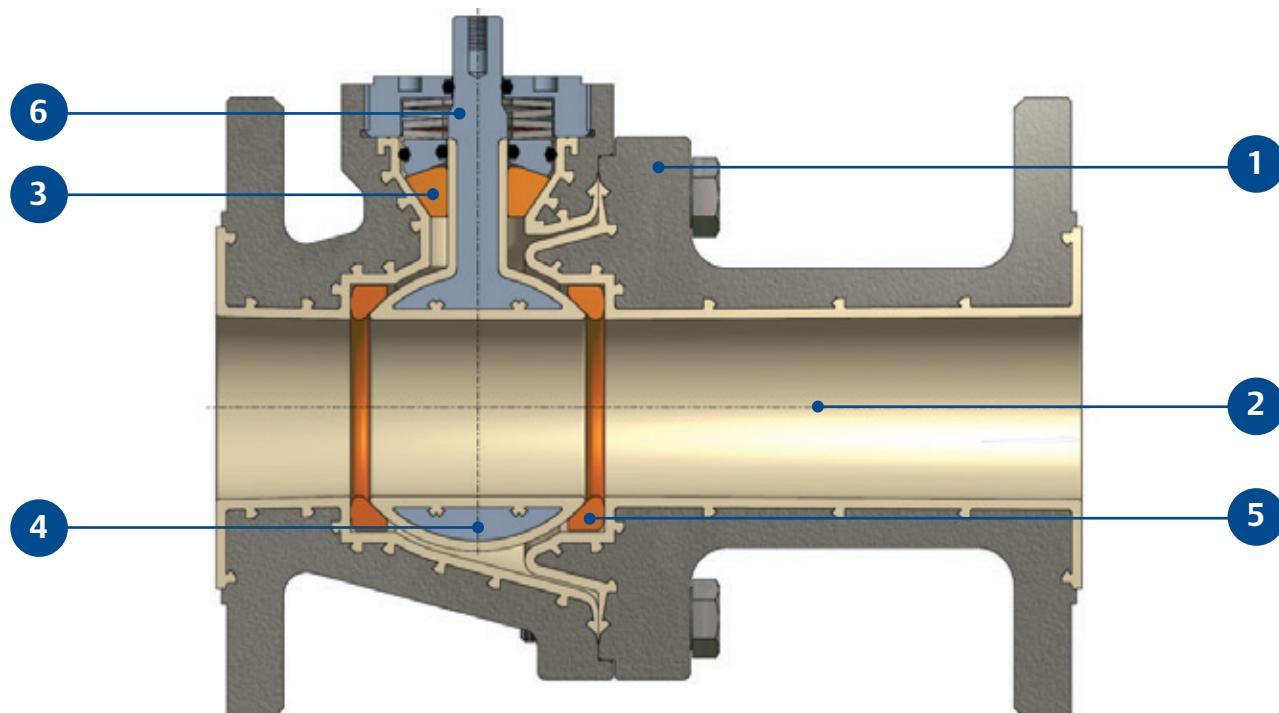
The one-piece ball stem is fully lined up to the second spindle seal, limiting any potential corrosion. The ball stem is designed to prevent the possibility it can eject from the valve. Should any corrosion occur, causing the spindle to separate from the ball, the design ensures that the spindle is kept within the valve body.

Offset body reduces potential leak paths.

To reduce the possibility of Fugitive Emissions further, the offset body split design ensures the body seal is separated from the stem seal area at all times, removing a potential leak point.

NEOTECHA™

Neotecha NXR Key Features



Key: 1. Body 2. Liner 3. Stem seal 4. One-piece ball-stem 5. Seats 6. Anti blow-out stem

Design Feature	Advantage	Benefit
Sophisticated and innovative spindle seal arrangement	Mechanically activated	Minimizes spindle seal emission Maintenance free
	Primary and secondary sealing	Increased safety Proven design in accordance to the latest industrial standards
	Dirt excluder	Keeps valve internals free from external environment
Innovative body split sealing	Metal to metal body connection	Transfers pipe stress without affecting valve performance
	Patented expansion compensation	Minimizes body seal emission at fluctuating temperatures
Blow out proof shaft design at dry side	Corrosive media has no effect on blow out proof provision	Fail safe blow out proof shaft design
One-piece ball-stem design	Torque transfer via metal core, eliminating lining damage between spindle and ball	Increased safety and extended cycle life
	Increased MAST values	Increased safety factor for automated service



Innovative Technology

The NXR ball valve incorporates several innovative and patented design features which deliver significant improvements in performance and safety for lined valve applications.

Body

The main body and adapter are made from ductile iron allowing the metal to metal body seal. The bodies have an exterior coating for robust corrosion protection.

Liner

The homogeneous PFA liner is 3mm thick, void of any pinholes and is spark tested at 30,000 volts. It provides dependable protection against diffusion and corrosion.

The liner is locked to the casting using machined dovetails in the casting which allows the valve to be used on high vacuum and elevated temperatures without the risk of liner collapse.

Stem seal

A set of Belleville disc springs exert uniform loading on the packing, resulting in a maintenance free operation. The flexible and corrosion resistant TFM packing ensures a leak free stem seal which is ISO 15848-1 approved.

One-piece ball-stem

The one-piece ball-stem allows direct torque transfer and no hysteresis. The energized spindle seal is kept in constant contact with the ball under all operating conditions reducing wear and tear on the seats and increasing operating life.

Seats

The energized valve seats ensure both up stream and down stream sealing with constant and low operating torque.

Anti blow-out stem

The blow-out proof stem is in compliance with API 609 and is located on the dry side of the stem packing providing optimum safety even in highly corrosive applications.

Specifications

Size Range

DN 15, 20, 25, 40, 50, 80, 100, 150

NPS ½, ¾, 1, 1 ½, 2R, 3R, 4R, 6R

Note: NPS 2R, 3R, 4R and 6R are all reduced bore.

Flange Connection

DIN PN16

ASME 150

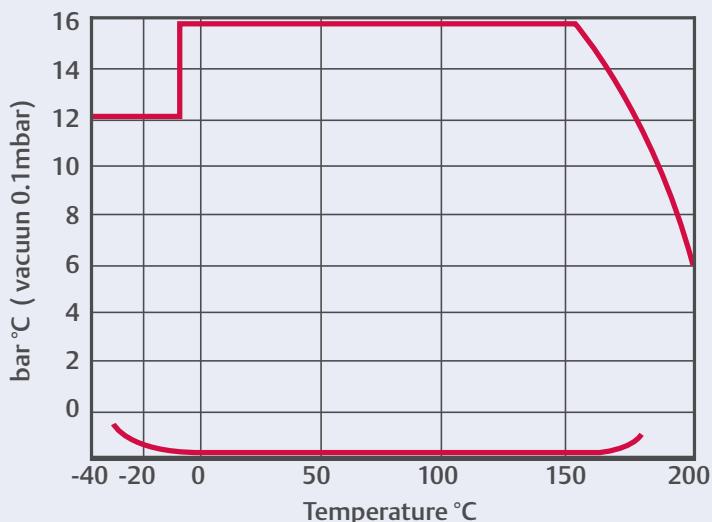
Face-to-face

DIN EN558, row 1

ASME B 16.10

DIN and ASME face to face dimensions allow easy replacement of plug and diaphragm valves.

Pressure / Temperature Range



Complete automated valve solutions from a single source

There is no need to juggle with multiple vendors or the complexities of valve integration. Emerson can supply you with the fully engineered, integrated and configured automated NXR valves you demand, from a single source.

Consider the advantages of a single supplier:

- Emerson will manage, administer and produce your automated NXR valves as 'products' and not packaged components
- Emerson manufactures all its components. This makes us totally responsible and accountable for the solutions we supply, irrespective of the parts we integrate into each product
- Having one supplier minimizes risk and commissioning complexities, while also ensuring on-time delivery and project certainty

Established brands

As part of our unrivalled automated valve solutions offering, Neotecha valves are supplied with products from leading brands such as Keystone pneumatic actuators, Fisher positioners, TopWorx switchboxes and ASCO solenoid valves.

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VCPBR-08564 EN 18/06 eDoc: D352740X012



CONSIDER IT SOLVED™

NEOTECHA SAPRO IN-LINE SAMPLING SYSTEMS

In-line sampling system for representative sampling without process interruption



GENERAL APPLICATION

The Sapro sampling systems are designed to extract true, representative samples from process piping systems with safety and simplicity as primary concerns. The sample can be collected with either a bottle or syringe. By utilizing the syringe, a sample can be taken without exposure to personnel or the environment.

TECHNICAL DATA

Valve [DN]:	25 - 100 wafer or flanged
Syringe [ml]:	20 - 250
Pressure [bar]:	valve 16 syringe 10
Vacuum [mbar]:	0.1
Temperature [°C]	
SS Sapro:	up to 200
PFA lined Sapro:	up to 200
Syringe:	up to 160

FEATURES

- The sampling system ensures a 'true representative sample' without process interruption. Designed to be installed directly into a process pipeline.
- Offered with either a bottle or syringe collection method. This allows for different levels of safety and containment for different applications.
- The syringe collection method utilizes a Sapro valve with a universal bayonet connection which allows one syringe to be used at multiple sample points.
- The operation of the sampling system with bottle adapter is very simple and safe.
- The spring loaded lever automatically closes the sampler when it is released.
- The Sapro with bottle adapter comes standard with built-in locking device for safety.
- PFA lining is available for corrosive services.
- Easily disassembled for cleaning.
- Seat change is quick and easy.
- Spindle seal (including PFA lined) approved in accordance with TA-Luft VDI 2440.
- Tightness according DIN EN 12266, leakage rate A, bubble tight.
- Spark testing of all PFA lined and encapsulated parts is performed with 20 000 Volts.

NEOTECHA SAPRO IN-LINE SAMPLING SYSTEMS

SAPRO WITH BOTTLE SAMPLING SYSTEM

The Sapro sampling system is a simple, safe and effective method to take samples of highly corrosive media. The operation is achieved by a 90 degree turning of a spring loaded lever which closes automatically when released.

The handle can be locked by a pad-lock. The stroke of the lever is adjustable to regulate the speed in which the bottle is filled.

The displaced air in the empty bottle can be released to a plant scrubbing or venting system using the 1/4 inch NPT connection on the bottle adapter, as the bottle is filled.

When there is a need to automate the sampling process, a single acting spring return diaphragm actuator can be provided on a Sapro bottle sampling system.

The stroke on the actuator is adjustable to regulate the speed in which the bottle is filled.

Options such as fill level detecting and bottle sensing are also available.



Sapro wafer stainless steel with bottle adapter

Bottle adapters

The standard bottle adapter is in PTFE with an ISO GL 45 thread and 1/4 inch vent connection.

Adapters are available per customer's bottle threading upon request.

The standard discharge diameter of the bottle adapter is 4 mm and can be enlarged up to 12 mm upon request.

An array of options are available to further customize the Sapro system per customer requirements.

Material of wetted parts: PFA lined valve

Body*	316 stainless steel PFA lined
Valve spindle	PFA encapsulated stainless steel
Seat retainer	Ceramic Al ₂ O ₃
Seat seal	Perfluor elastomer
Spindle seal	PTFE
Bottle adapter	PTFE

* Size 65-80-100 carbon steel PFA lined

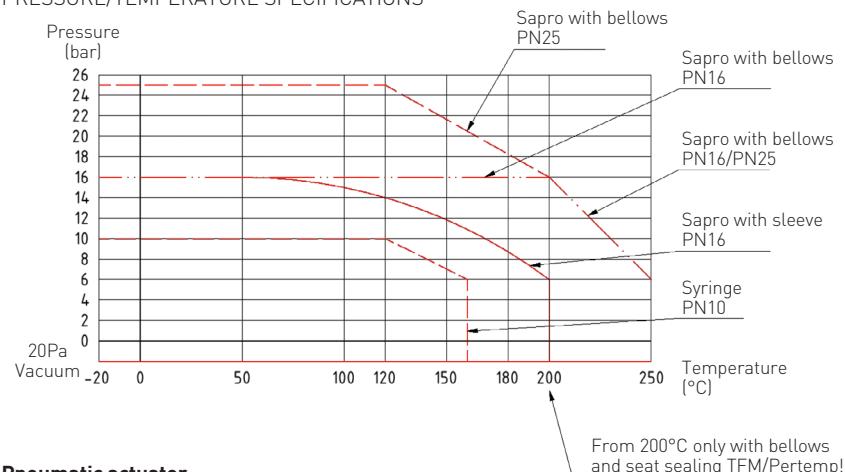
Material of wetted parts: stainless steel valve

Body	316 stainless steel
Valve spindle	316L stainless steel
Seat retainer	316L stainless steel
Seat seal	Perfluor elastomer
Spindle seal	PTFE or stainless steel bellows
Bottle adapter	PTFE



Sapro flanged PFA lined with bottle adapter

PRESSURE/TEMPERATURE SPECIFICATIONS



Pneumatic actuator

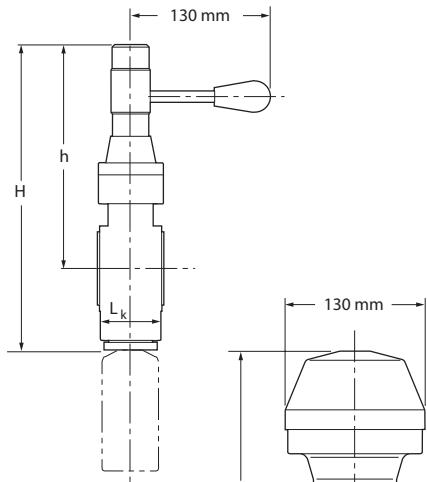
Required air pressure 2.5 bar

NEOTECHA SAPRO IN-LINE SAMPLING SYSTEMS

DIMENSIONS FOR MANUAL AND PNEUMATIC OPERATED VALVE WITH BOTTLE

PFA LINED WAFER BODY FOR DIN PN 16 AND ANSI 150 FLANGES

DN	NPS	L _k mm	H mm	h mm	h1 mm	Weight kg
25	1	60	320	200	291	4.0
40	1½	60	336	207	299	5.2
50	2	60	348	212	305	6.2
65	2½	60	365	232	315	8.8
80	3	60	378	230	321	10.0
100	4	60	406	245	337	14.0



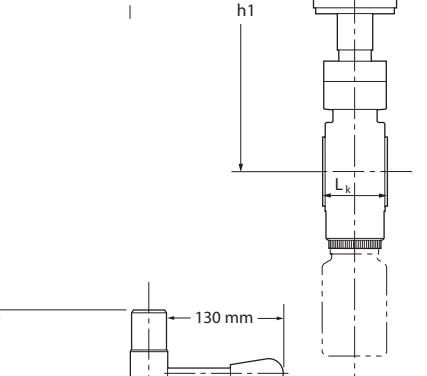
* Standard valve with bottle adapter ISO GL45E, vented and with PTFE spindle seal manual operated.

h1 When pneumatically operated.

For conductive PFA lined, substitute 7 with 5.

STAINLESS STEEL WAFER BODY FOR DIN PN 16 AND ANSI 150 FLANGES

DN	NPS	L _k mm	H mm	h mm	h1 mm	Weight kg
25	1	60	320	200	291	4.0
40	1½	60	336	207	299	5.2
50	2	60	348	212	305	6.2
65	2½	60	365	232	315	8.8
80	3	60	378	230	321	10.0
100	4	60	406	245	337	14.0



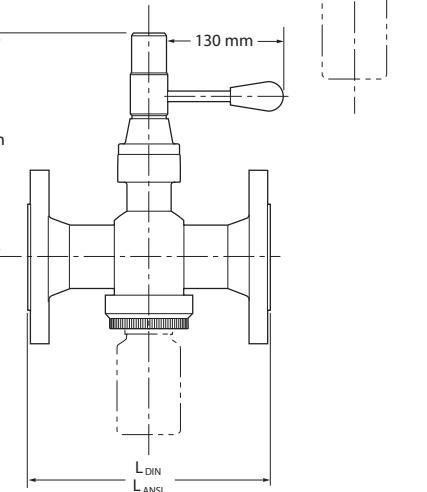
* Standard valve with bottle adapter ISO GL45E, vented and with PTFE spindle seal manual operated.

h1 When pneumatically operated.

Standard PN 16 rated, optional PN 25 rated.

PFA LINED FLANGED BODY FOR DIN PN 16 FLANGES

DN	NPS	L _{DIN} mm	h mm	h1 mm	Weight kg
25	1	160	200	291	6.6
40	1½	200	207	299	8.9
50	2	230	212	304	11.0
80	3	310	230	321	18.0



* Standard valve with bottle adapter ISO GL45E, vented and with PTFE spindle seal manual operated.

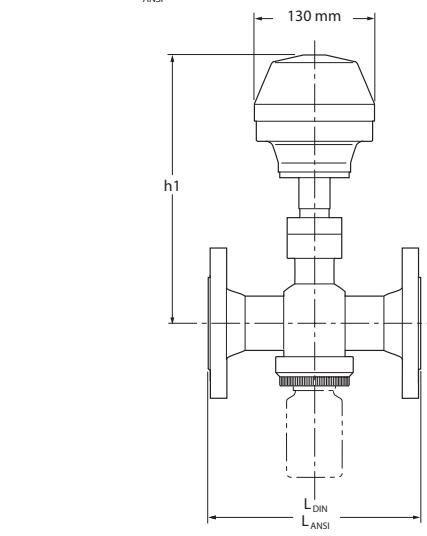
h1 When pneumatically operated.

Face to face DIN PN 16 according DIN EN 558.

For conductive PFA lined, substitute 7 with 5.

STAINLESS STEEL FLANGED BODY FOR DIN PN 16 AND ANSI 150 FLANGES

DN	NPS	L _{DIN} mm	L _{ANSI} mm	h mm	h1 mm	Weight kg
25	1	160	165	200	291	6.6
40	1½	200	165	207	299	8.9
50	2	230	178	212	304	11.0
65	2½	290	190	223	308	16.0
80	3	310	203	230	321	18.0
100	4	350	229	245	335	20.0



* Standard valve with bottle adapter ISO GL45E, vented and with PTFE spindle seal manual operated.

h1 When pneumatically operated.

Face to face DIN PN 16 according DIN EN 558 and ANSI 150 according ANSI B16.10.

Standard PN 16 rated, optional PN 25 rated.

NEOTECHA SAPRO IN-LINE SAMPLING SYSTEMS

WITH BOTTLE COLLECTION METHOD - DESCRIPTION OF OPERATION

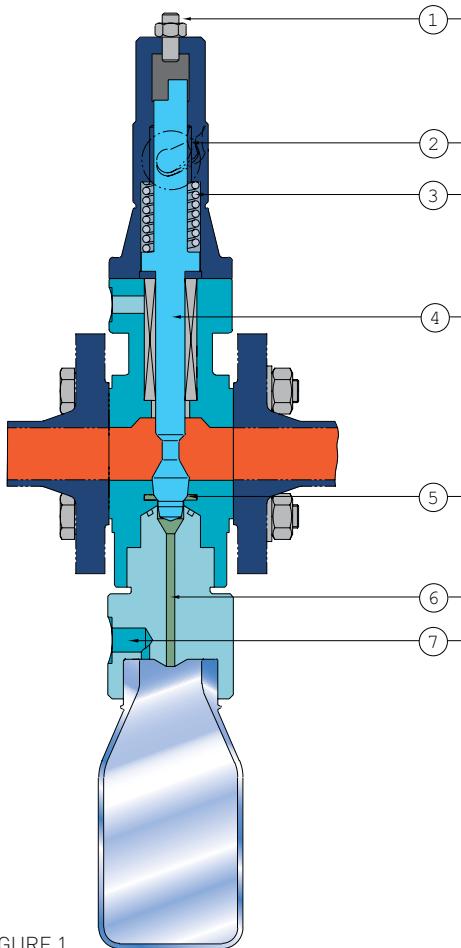
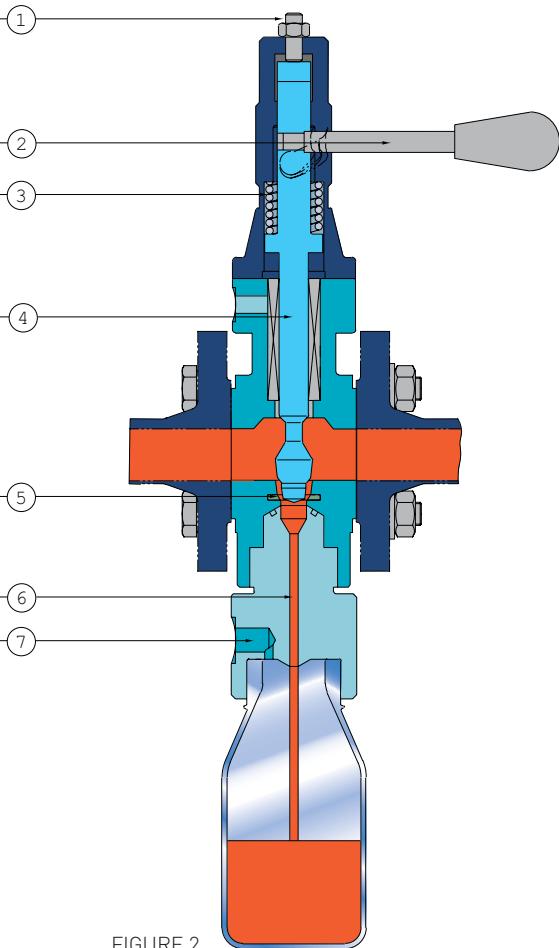


Figure 1 shows the Sapro valve with bottle in the closed position. The valve spindle [4] is pressed by the spring [3] against the soft seal [5]. The soft seal is located between the body and seal retainer to allow easy seat replacement. By operating lever [2] the spindle [4] is lifted by the dead man's lever from the seat [5], so that the medium can enter through port [6] into the bottle.

Figure 2 shows the Sapro in the open position. The stroke of the lever [2] can be adjusted by the travel stop [1]. The contoured spindle head allows a smooth and controlled sample flow into the bottle. The air in the bottle is forced out through a ventilation connection [7].



NEOTECHA SAPRO IN-LINE SAMPLING SYSTEMS

SAMPLING SYSTEM WITH SYRINGE

When the number one priority is to have total containment of the sampling medium, we can provide a sampling system with a syringe.

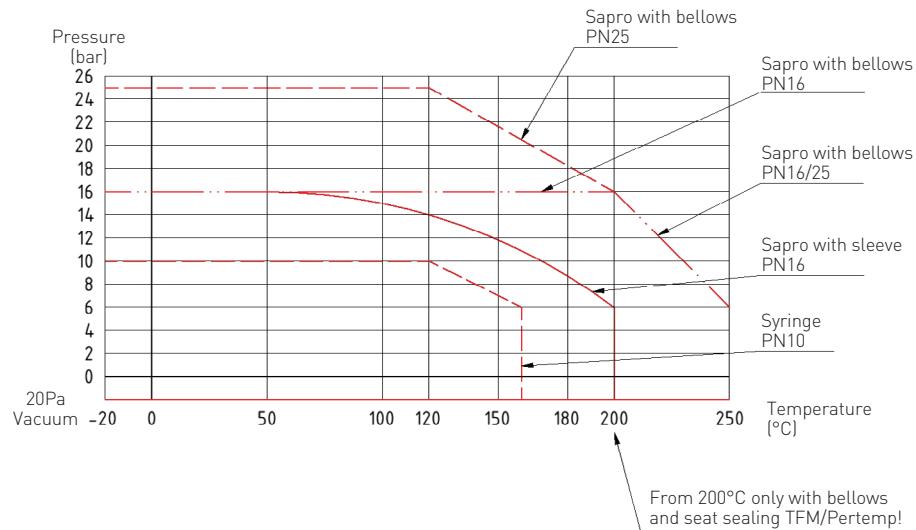
The connection of the syringe is universal and can connect to any size Sapro valve. By utilizing the available syringe, a sample can be taken without exposure to personnel or the environment. With the ever increasing concerns regarding fugitive emissions, the Sapro sampling system with the syringe is an ideal solution when hazardous samples have to be taken.

The syringe serves as both the actuator and the sample container and is available in a variety of materials which can handle highly corrosive media.

Once the sample is taken, the syringe can then be transported to the lab and can be converted to a needle syringe for easy sample transfer.



OPERATING DATA



Material of wetted parts: stainless steel valve

Body	316 stainless steel
Valve spindle	316L stainless steel
Seat retainer	316L stainless steel
Seat seal	Perfluorelastomer
Bayonet coupling	316 stainless steel
Spindle seal	316L stainless steel 2-layer bellows
Safety plug	316 stainless steel with perfluorelastomer

Material of wetted parts: PFA lined valve

Body	316 stainless steel PFA lined
Valve spindle	PFA encapsulated stainless steel
Seat retainer	Ceramic Al ₂ O ₃
Seat seal	Perfluorelastomer
Bayonet coupling	316 stainless steel/Halar coated interior
Spindle seal	PTFE
Safety plug	PTFE

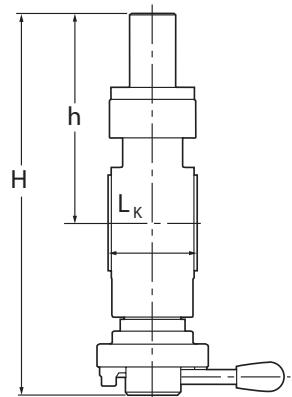
NEOTECHA SAPRO IN-LINE SAMPLING SYSTEMS

DIMENSIONS FOR VALVE WITH SYRINGE

PFA LINED WAFER BODY FOR DIN PN 16 AND ANSI 150 FLANGES

DN	NPS	L _k mm	H mm	h mm	Weight kg
25	1	60	245	142	4.0
40	1½	60	260	150	5.1
50	2	60	272	156	6.1
65	2½	60	291	166	8.7
80	3	60	305	174	10.0
100	4	60	331	188	13.7

For conductive PFA lined, substitute 7 with 5.



STAINLESS STEEL WAFER BODY FOR DIN PN 16 AND ANSI 150 FLANGES

DN	NPS	L _k mm	H mm	h mm	Weight kg
25	1	60	245	142	4.0
40	1½	60	260	150	5.1
50	2	60	272	156	6.1
65	2½	60	291	166	8.7
80	3	60	305	174	10.0
100	4	60	331	188	13.7

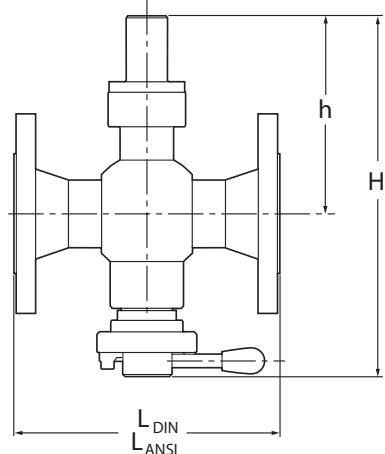
Standard PN 16 rated, optional PN 25 rated.

PFA LINED FLANGED BODY FOR DIN PN 16 FLANGES

DN	NPS	L _{DIN} mm	L _{ANSI} mm	H mm	h mm	Weight kg
25	1	160	-	245	142	6.6
40	1½	200	-	260	150	8.9
50	2	230	-	272	156	11.0
80	3	310	-	305	174	18.0

Face to face DIN PN 16 according DIN EN 558-1.

For conductive PFA lined, substitute 7 with 5.



STAINLESS STEEL FLANGED BODY FOR DIN PN 16 AND ANSI 150 FLANGES

DN	NPS	L _{DIN} mm	L _{ANSI} mm	H mm	h mm	Weight kg
25	1	160	165	245	142	6.6
40	1½	200	165	260	150	8.9
50	2	230	178	272	156	11.0
65	2½	290	190	291	166	16.0
80	3	310	203	305	174	18.0
100	4	350	229	331	188	20.0

Face to face DIN PN 16 according DIN EN 558-1 and ANSI 150 according ANSI B16.10.

Standard PN 16 rated, optional PN 25 rated.

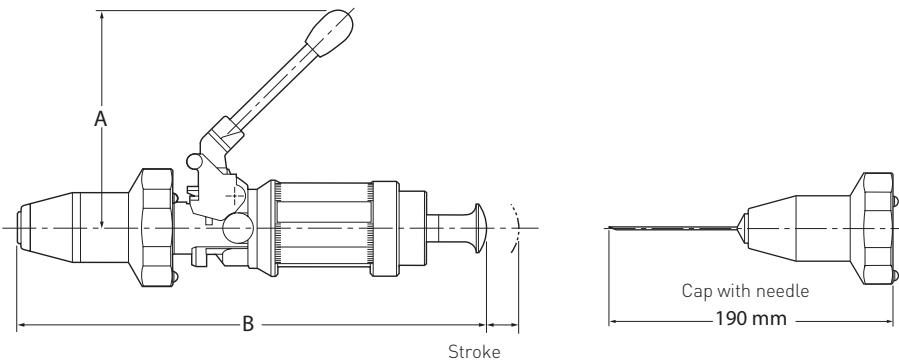
NEOTECHA SAPRO IN-LINE SAMPLING SYSTEMS

DIMENSIONS FOR VALVE WITH SYRINGE

SYRINGE WITH CAP

Volume (ml.)	Piston dia. mm	A mm	B mm	Stroke mm	Borosilicate glass Weight kg	SS 316 Weight kg	Cat.-No.*
20	25	140	300	20	1.5	1.9	SK020Z7K1SS00
50	40	140	300	40	1.5	1.9	SK050Z7K1SS00
100	40	140	340	80	1.7	2.1	SK100Z7K1SS00
250	40	140	400	130	2.4	3.0	SK250Z7K1SS00

* Standard syringe = type Z7 with Borosilicate glass and Hastelloy spindle. [Other materials see table below]



MATERIAL OF WETTED PARTS

Part	Material		
	Z7	Z1	Z2
Spindle	Hastelloy	SS 316L	SS 316L
Spindle seal	Perfluorelastomer	Perfluorelastomer	Perfluorelastomer
Piston	PTFE	PTFE	PTFE
Cylinder	Borosilicate	SS 316L	Borosilicate glass
Safety cap	Thermoplastic	Thermoplastic	Thermoplastic
Needle SS	SS	SS	SS

NEOTECHA SAPRO IN-LINE SAMPLING SYSTEMS

SYRINGE - DESCRIPTION OF OPERATION

Figure 3 shows the valve and syringe unconnected. Both units can be connected via an universal bayonet interface. The syringe is provided with a safety locking device to prevent operation when not properly connected.

FIGURE 3

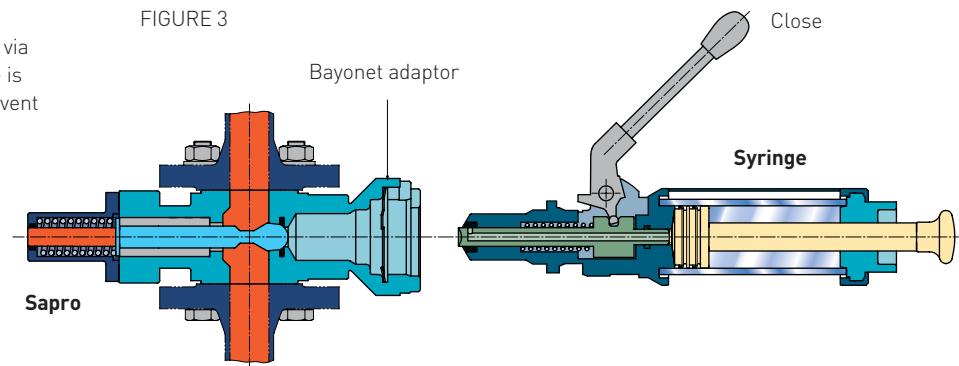


Figure 4 shows the valve and syringe in the closed position. By operating lever (1), the spindle (2) of the syringe lifts the spindle (3) of the valve from the seat (4) thus opening the valve so that medium can enter through port (5) into the syringe [See Figure 5].

FIGURE 4

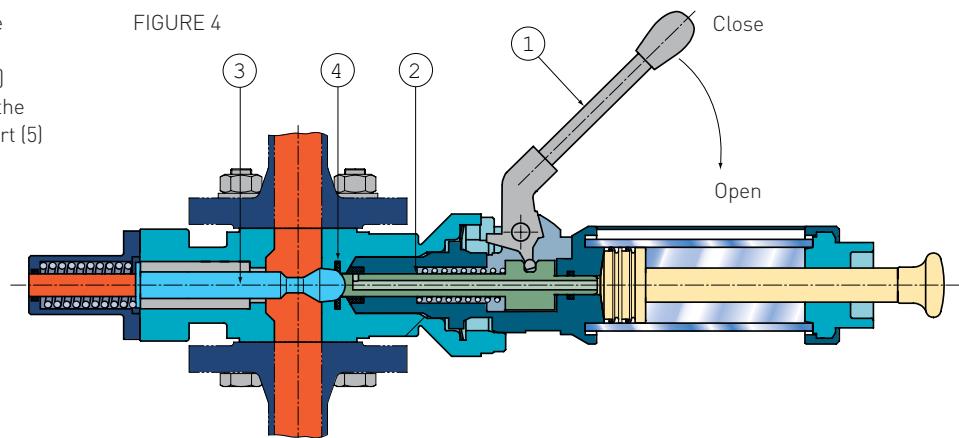
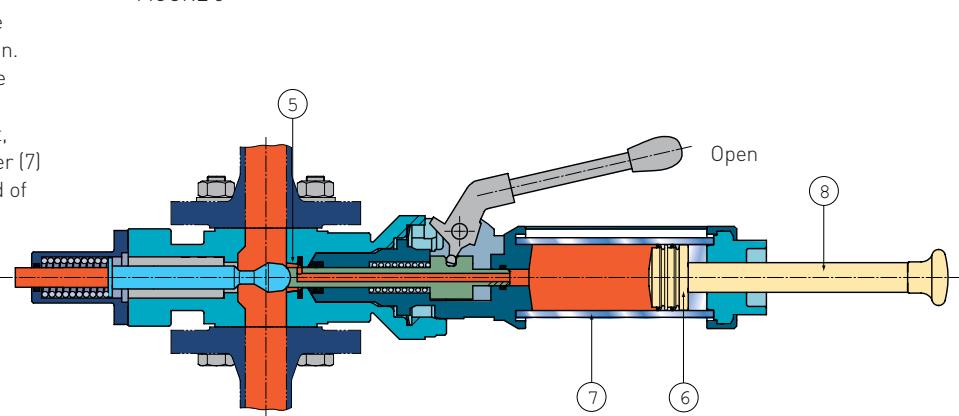


Figure 5 shows the valve and syringe in the open position. The sample can now be taken. If the system is under pressure, the sample will flow into the syringe through port (5) displacing piston (6). If a vacuum is present, the sample has to be pulled into the cylinder (7) by pulling the mushroom cap (8) on the end of the piston.

FIGURE 5



When the lever is released, the valve and syringe close automatically. For safety purposes, the syringe head cannot be inserted or removed unless it is in the locked position. This will prevent a sample from being taken before the syringe is properly in place. The syringe can be emptied by placing the cap with the needle on to the injector head.

NEOTECHA SAPRO IN-LINE SAMPLING SYSTEMS

ACCESSORIES AND OPTIONS



SAPRO WITH SEPTUM ADAPTOR



SAPRO FLANGED WITH BOTTLE BASKET



SAPRO ASEPTIC SAMPLING SYSTEM



SAPRO WITH BOTTLE SUPPORT



SAPRO WITH SAFETY CABINET



LAB STAND FOR SYRINGE



ASEPTIC TANK SAMPLER



TANK SAMPLER WITH SYRINGE



TANK SAMPLER WITH PLUG

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NEOTECHA NEOSEAL LINED BUTTERFLY VALVES

WAFER, LUGGED AND DOUBLE FLANGED

A PTFE lined solution according ISO 5752/5 short [EN 558-1/T5] with various corrosion resistant disc materials



GENERAL APPLICATION

The valves are ideally suited for corrosive applications, requiring reliable performance, tight shutoff, constant torque and no maintenance. The valves successfully handle a multitude of corrosive applications in industries such as chemical, petro-chemical, pulp and paper, semiconductor (UPW), foundries and mining.

TECHNICAL DATA

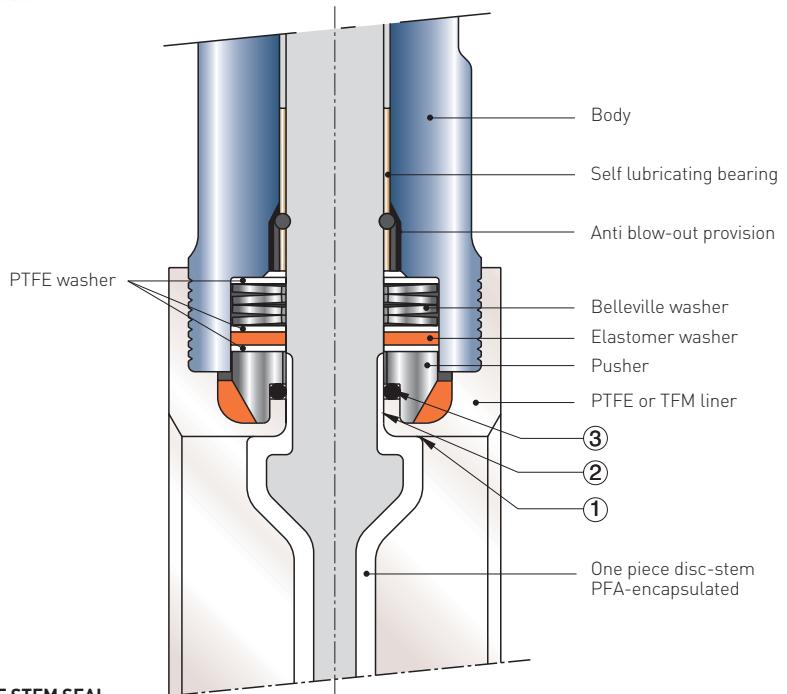
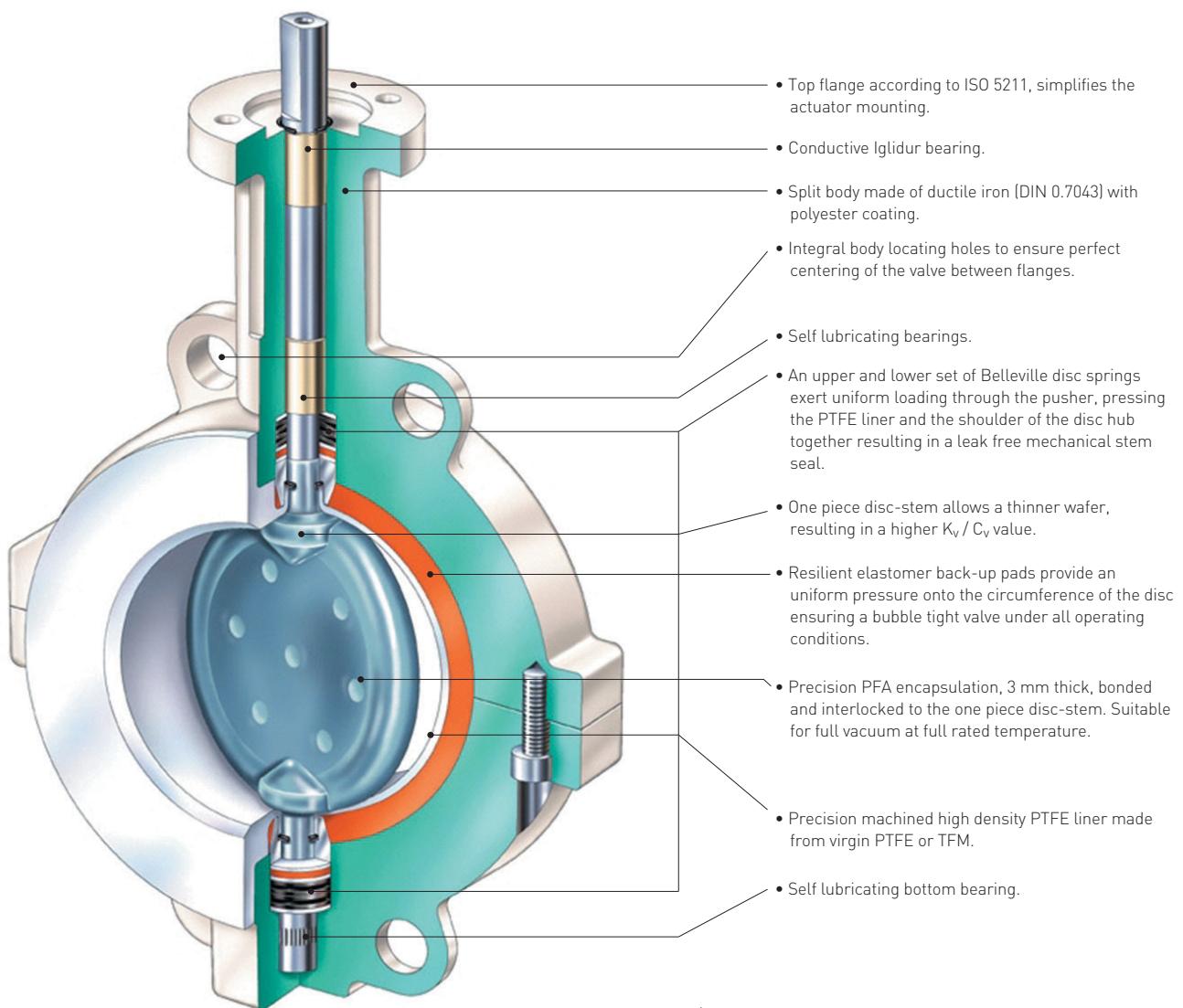
Sizes:	DN 40 - 900 [NPS 1½ - 36]
Pressure:	10 bar [DN 40 - 600] / 145 psi [NPS 1½ - 24] 6 bar [DN 700, DN 800 and DN 900] / 87 psi [NPS 28, 32 and 36] 2.5 bar [DN 750] / 36 psi [NPS 30]
Temperature:	-40°C to +200°C (-40°F to +392°F)
Flange accommodation:	DIN PN 10/[16] ASME 150, JIS 10K Bubble tight shutoff in both directions, in accordance with EN-12266-1 leakrate A [UHMWPE leakrate B].

FEATURES

- The pressure to keep the two sealing surfaces of the stem seal together is provided by an upper and lower set of Belleville springs resulting in a superior stem seal, which is TA-Luft / VDI 2440 approved.
- The elastomer back-up pads behind the liner ensure a tight fit around the disc, for a bubble tight shut-off.
- The liner provides a wide flange sealing surface.
- A one piece thin disc stem lined with 3 mm molded PFA providing high K_v values.
- The liner and disc are the only two valve parts in contact with the medium.
- Primary shaft sealing by preloaded contact between disc and liner hub.
- Secondary shaft seal by oversizing the shaft diameter in relation to the shaft hole in the liner.
- The liner and disc are molded and machined to close tolerances to provide:
 - low torque
 - less stress and deformation during opening and closing
- Vacuum tests with helium with pressures less than 20 Pa absolute (0.2 mbarA).
- Optional TFM lining available for extremely demanding applications.
- Integral body locating holes to ensure perfect centering of the valve.
- Actuator flange and stem dimensions acc. ISO 5211.
- Anti blow-out proof shaft.

NEOTECHA NEOSEAL LINED BUTTERFLY VALVES

WAFER, LUGGED AND DOUBLE FLANGED



NOTES

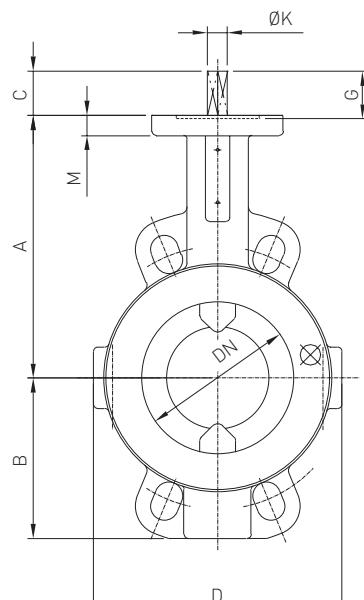
- ① Primary seal: spring loaded mechanical seal
- ② Secondary seal: radial lip seal
- ③ FKM equalizer

TFM® is a registered trademark of Dyneon

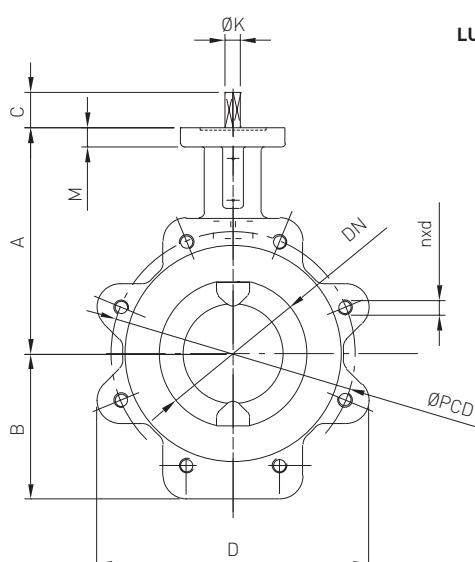
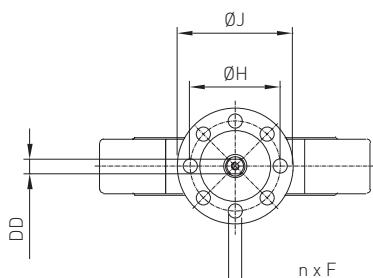
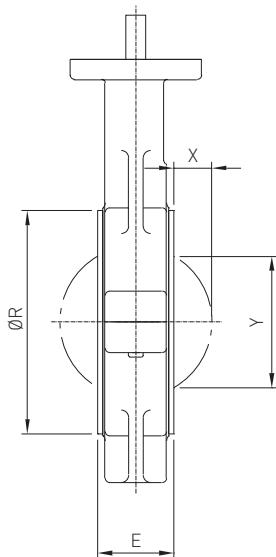
NEOTECHA NEOSEAL LINED BUTTERFLY VALVES

WAFER AND LUGGED/FLAT HEAD SHAFT CONNECTION/DN 40-300 - METRIC DATA

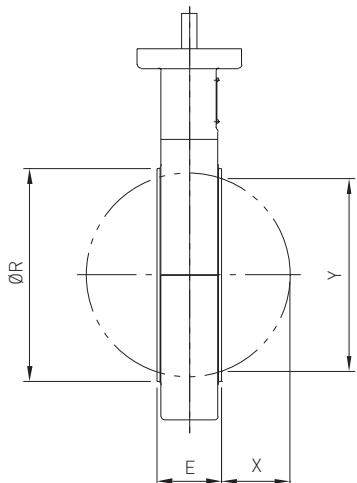
NeoSeal with flat head shaft connection



WAFER VERSION



LUGGED VERSION



VALVE DIMENSIONS WAFER AND LUGGED (mm)

Size (DN)	Type	Overall dimensions																		Wide FTF **	Weight (kg)		
		A	B	B	C	D	D	E	n x F	M	G	ØH	ØJ	ØK	ØR	S	X	Y	N/DD	E	Y	W*	L*
40	F05	110	50.0	55.0	25	108	145	33	8 x Ø7	14	26	50	65	12	80	31	3.5	23	Ø 8	-	-	1.9	2.4
50	F05	135	65.0	65.0	25	130	160	43	8 x Ø7	14	26	50	65	12	95	38	5.0	31	Ø 8	-	-	2.8	3.4
65	F07	150	85.0	85.0	30	144	176	46	4 x Ø9	14	31	70	90	15	120	41	11.5	52	Ø 11	-	-	4.7	4.2
80	F07	160	93.5	93.5	30	155	188	46	4 x Ø9	14	31	70	90	15	132	41	18.5	69	Ø 11	64	53	4.7	6.1
100	F07	180	113.0	105.0	30	180	210	52	4 x Ø9	14	31	70	90	15	153	45	26.5	91	Ø 11	64	82	5.7	7.9
125	F07	195	130.0	125.0	30	211	234	56	4 x Ø9	17	31	70	90	18	183	50	35.5	114	Ø 14	70	CF	8.7	10.6
150	F07	210	140.0	140.0	30	240	269	56	4 x Ø9	17	31	70	90	20	209	50	48.5	143	Ø 14	76	133	11.6	13.5
200	F10	240	175.0	170.0	50	310	360	60	4 x Ø11	20	51	102	125	25	259	56	71.5	196	Ø 18	89	185	21.0	23.3
250	F12	275	205.0	205.0	50	350	435	68	8 x Ø13	20	51	125	150	30	309	64	91.5	243	Ø 22	114	226	31.5	32.1
300	F12	310	250.0	250.0	50	420	500	78	8 x Ø13	20	53	125	150	30	364	74	111.5	293	Ø 22	114	281	45.0	49.9

NOTES

Slotted locating holes for wafer and lugged version according following flange accommodation:

Lugged DIN PN 10/16 [DN 40-150], DIN PN 10 [DN 200-300], ASME 150 [DN 40-300], JIS 10 K [DN 40-150].

FTF = Face to face

** Optional wide FTF according EN 558-1/15 (column 16).

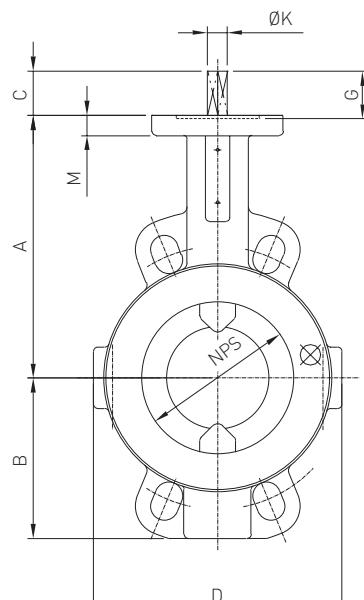
W* Wafer

L* Lugged

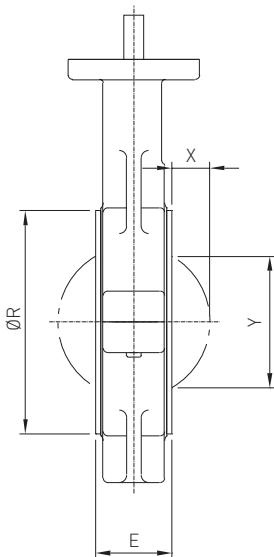
NEOTECHA NEOSEAL LINED BUTTERFLY VALVES

WAFER AND LUGGED/FLAT HEAD SHAFT CONNECTION/NPS 1½-12 - IMPERIAL DATA

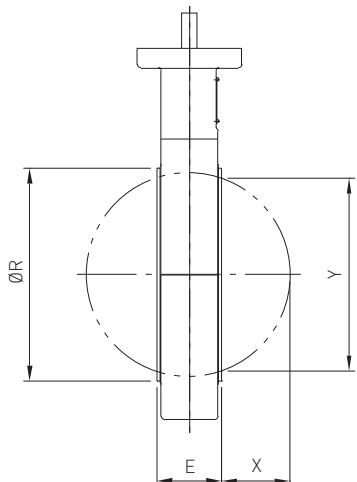
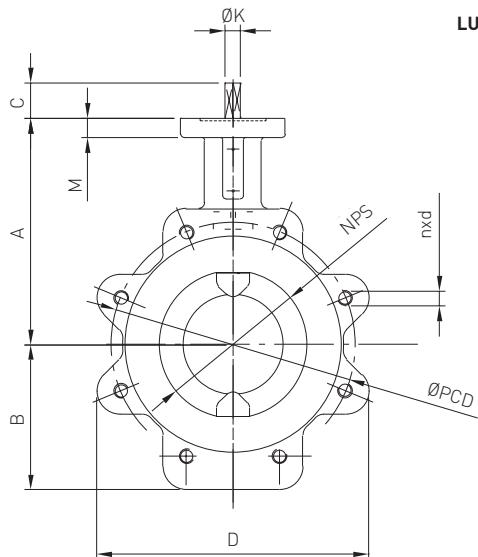
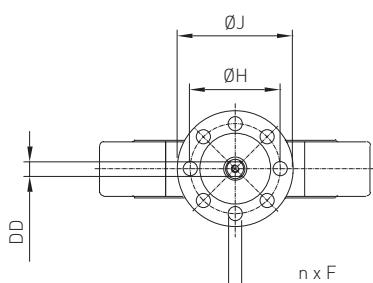
NeoSeal with flat head shaft connection



WAFER VERSION



LUGGED VERSION



VALVE DIMENSIONS WAFER AND LUGGED (inch)

S ⁽¹⁾	Type	Overall dimensions																Wide FTF **	Weight (lbs)				
		A	B	W*	L*	B	C	D	D	E	nxF	M	G	ØH	ØJ	ØK	ØR	S	X	Y	N/DD	E	Y
1½	F05	4.33	1.97	2.17	0.98	4.25	5.71	1.30	8 x ø0.28	0.55	1.02	1.97	2.56	0.48	3.15	1.22	0.14	0.91	Ø 0.32	-	-	4.2	5.3
2	F05	5.31	2.56	2.56	0.98	5.12	6.30	1.69	8 x ø0.28	0.55	1.02	1.97	2.56	0.48	3.74	1.50	0.20	1.22	Ø 0.32	-	-	6.2	7.5
2½	F07	5.91	3.35	3.35	1.18	5.67	6.93	1.81	4 x ø0.35	0.55	1.22	2.76	3.54	0.59	4.72	1.61	0.45	2.05	Ø 0.43	-	-	10.4	9.3
3	F07	6.30	3.68	3.68	1.18	6.10	7.40	1.81	4 x ø0.35	0.55	1.22	2.76	3.54	0.59	5.20	1.61	0.73	2.72	Ø 0.43	2.52	2.09	10.4	13.4
4	F07	7.09	4.45	4.13	1.18	7.09	8.27	2.05	4 x ø0.35	0.55	1.22	2.76	3.54	0.59	6.02	1.77	1.04	3.58	Ø 0.43	2.52	3.23	12.6	17.4
5	F07	7.68	5.12	4.92	1.18	8.31	9.21	2.20	4 x ø0.35	0.67	1.22	2.76	3.54	0.71	7.20	1.97	1.40	4.49	Ø 0.55	2.76	CF	19.2	23.4
6	F07	8.27	5.51	5.51	1.18	9.45	10.59	2.20	4 x ø0.35	0.67	1.22	2.76	3.54	0.79	8.23	1.97	1.91	5.63	Ø 0.55	2.99	5.24	25.6	29.8
8	F10	9.45	6.89	6.69	1.97	12.20	14.17	2.36	4 x ø0.43	0.79	2.01	4.02	4.92	0.99	10.20	2.20	2.81	7.72	Ø 0.71	3.50	7.28	46.3	51.4
10	F12	10.83	8.07	8.07	1.97	13.78	17.13	2.68	8 x ø0.51	0.79	2.01	4.92	5.91	1.18	12.17	2.52	3.60	9.57	Ø 0.87	4.49	8.90	69.4	70.7
12	F12	12.20	9.84	9.84	1.97	16.54	19.69	3.07	8 x ø0.51	0.79	2.09	4.92	5.91	1.18	14.33	2.91	4.39	11.54	Ø 0.87	4.49	11.06	99.2	110.0

NOTES

Slotted locating holes for wafer and lugged version according following flange accommodation:

Lugged DIN PN 10/16 (NPS 1½ - 6), DIN PN 10 (NPS 8 - 12), ASME 150 (NPS 1½ - 12), JIS 10 K (NPS 1½ - 6).

1. Size (NPS) FTF = Face to face

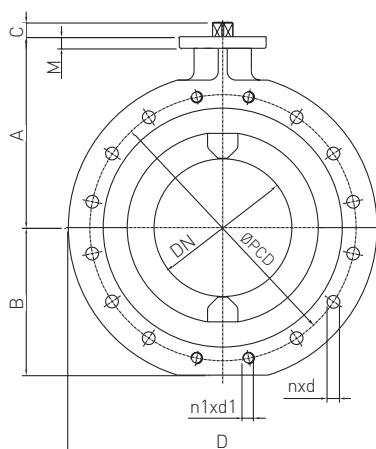
** Optional wide FTF according EN 558-1/15 (column 16).

W* Wafer

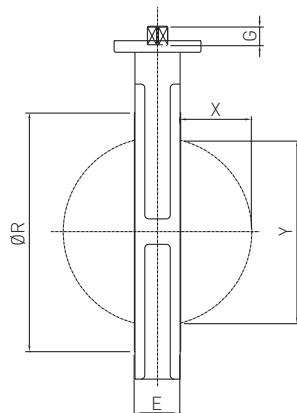
L* Lugged

NEOTECHA NEOSEAL LINED BUTTERFLY VALVES

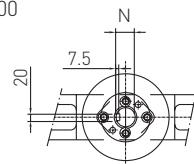
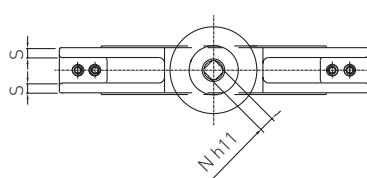
DOUBLE FLANGED DN 350-900 - METRIC DATA



DN 350-600



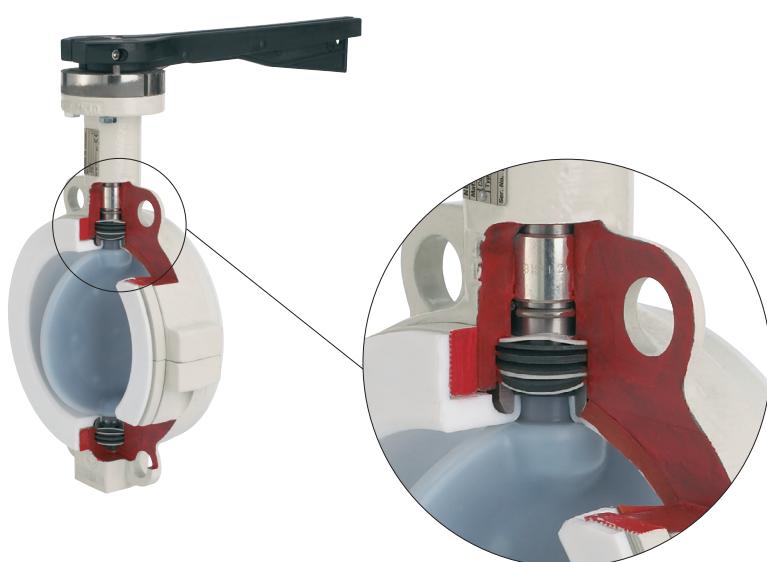
DN 700-900



VALVE DIMENSIONS DOUBLE FLANGED (mm)

Size (DN)	Type	Overall dimensions												PN 10		Wide FTF		Weight (kg)	
		A	B	C	D	E	G	M	N	ØR	X	Y	S	ØPCD	nxd	n1xd1	E	Y	
350	F12	340	255	27	534	78	32	22	27/27	412	126.0	321	17	460	12x22	4xM20	127	304	60
400	F14	380	290	36	597	102	42	25	36/36	475	149.0	387	19	515	12x26	4xM24	140	374	88
450	F14	400	310	36	635	114	42	25	36/36	525	162.0	423	21	565	16x26	4xM24	152	411	105
500	F16	430	350	36	700	127	43	25	36/36	578	186.5	484	23	620	16x26	4xM24	152	476	145
600	F16	510	420	46	813	154	53	25	46/46	680	218.0	570	30	725	16x30	4xM27	178	563	235
700	F16	605	482	80	930	165	-	-	Ø72	780	268.0	684	30	840	20x30	4xM27	-	-	423
750	F16	630	489	90	970	190	-	-	Ø60	840	280.0	726	31	-	20x30	4xM27	-	-	383
800	F25	658	558	110	1060	190	-	-	Ø80	887	305.0	781	30	950	20x33	4xM30	-	-	670
900	F30	710	612	128	1160	203	-	-	Ø98	1000	349.0	877	35	1050	24x33	4xM30	-	-	880

FTF = Face to face



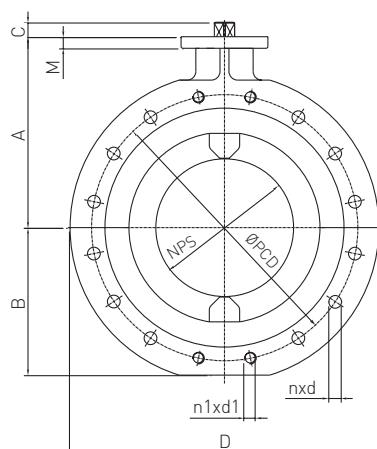
Wide face-to-face dimension according

EN 558-1/15 column 16

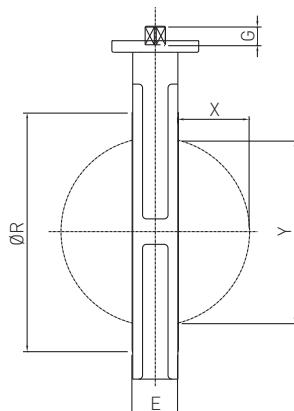
Optional the NeoSeal is available in a wide face-to-face version according EN 558-1/15 column 16 (the former DIN 3202 K3) in order to allow installation in piping systems having thick internal linings which reduce the internal pipe diameter. By using the NeoSeal wide face-to-face version, the disc chord dimension Y is reduced to prevent contact between the disc and the pipe. Typically, full bore PTFE spacers are used to eliminate interference between the disc and I.D. of the pipe, however, spacers can introduce additional emission paths, maintenance issues due to cold flow, and thermal expansion and contraction. The wide face to face Neoseal eliminates the need for PTFE spacers thus minimizing emissions to atmosphere and maintenance.

NEOTECHA NEOSEAL LINED BUTTERFLY VALVES

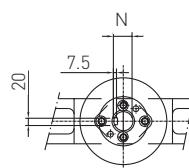
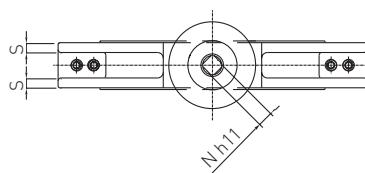
DOUBLE FLANGED NPS 14-36 - IMPERIAL DATA



NPS 14 - 24



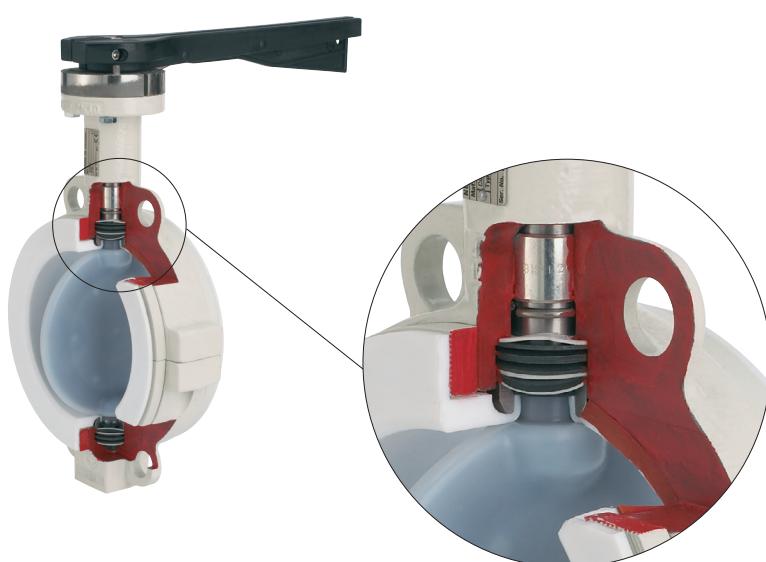
NPS 28 - 36



VALVE DIMENSIONS DOUBLE FLANGED (inch)

Size (NPS)	Type	Overall dimensions												PN 10		Wide FTF		Weight (lbs)	
		A	B	C	D	E	G	M	N	ØR	X	Y	S	ØPCD	nxd	n1xd1	E	Y	
14	F12	13.39	10.04	1.06	21.02	3.07	1.26	0.87	1.06/1.06	16.22	4.96	12.64	0.67	18.75	8x1.125	4x1	5.00	11.97	132
16	F14	14.96	11.42	1.42	23.50	4.02	1.65	0.98	1.42/1.42	18.70	5.87	15.24	0.75	21.25	12x1.125	4x1	5.51	14.72	194
18	F14	15.75	12.20	1.42	25.00	4.49	1.65	0.98	1.42/1.42	20.67	6.38	16.65	0.83	22.75	12x1.25	4x1.125	5.98	16.18	231
20	F16	16.93	13.78	1.42	27.56	5.00	1.69	0.98	1.42/1.42	22.76	7.34	19.06	0.91	25.00	16x1.25	4x1.125	5.98	18.74	320
24	F16	20.08	16.54	1.81	32.01	6.06	2.09	0.98	1.81/1.81	26.77	8.58	22.44	1.18	29.50	16x1.375	4x1.25	7.01	22.17	518
28	F16	23.82	18.98	3.15	36.61	6.50	-	-	Ø2.83	30.71	10.55	26.93	1.18	34.00	24x1.38	4x1.25	-	-	933
30	F16	24.80	19.25	3.54	38.19	7.48	-	-	Ø2.36	33.07	11.02	28.58	1.22	36.00	24x1.38	4x1.25	-	-	844
32	F25	25.91	21.97	4.33	41.73	7.48	-	-	Ø3.15	34.92	12.01	30.75	1.18	38.50	24x1.62	4x1.5	-	-	1477
36	F30	27.95	24.09	5.04	45.67	7.99	-	-	Ø3.86	39.37	13.74	34.53	1.38	42.75	24x1.62	8x1.5	-	-	1940

FTF = Face to face



Wide face-to-face dimension according

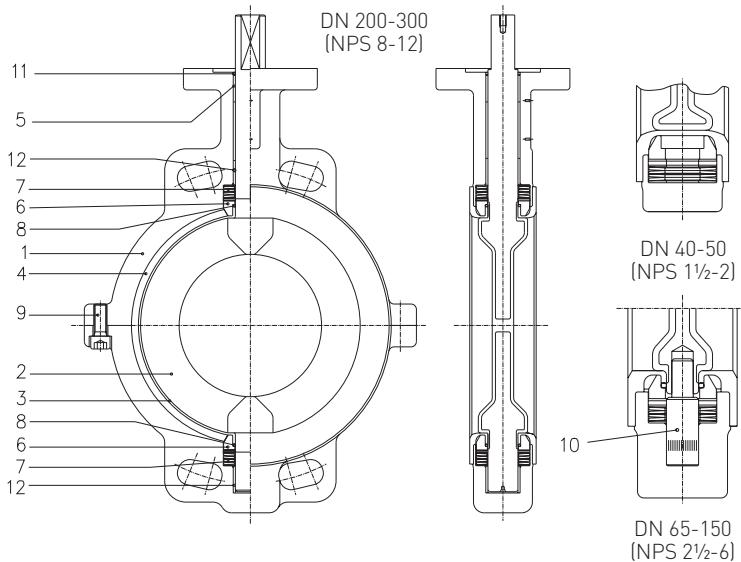
EN 558-1/15 column 16

Optional the NeoSeal is available in a wide face-to-face version according EN 558-1/15 column 16 (the former DIN 3202 K3) in order to allow installation in piping systems having thick internal linings which reduce the internal pipe diameter. By using the NeoSeal wide face-to-face version, the disc chord dimension Y is reduced to prevent contact between the disc and the pipe. Typically, full bore PTFE spacers are used to eliminate interference between the disc and I.D. of the pipe, however, spacers can introduce additional emission paths, maintenance issues due to cold flow, and thermal expansion and contraction. The wide face to face Neoseal eliminates the need for PTFE spacers thus minimizing emissions to atmosphere and maintenance.

NEOTECHA NEOSEAL LINED BUTTERFLY VALVES

PARTS LIST

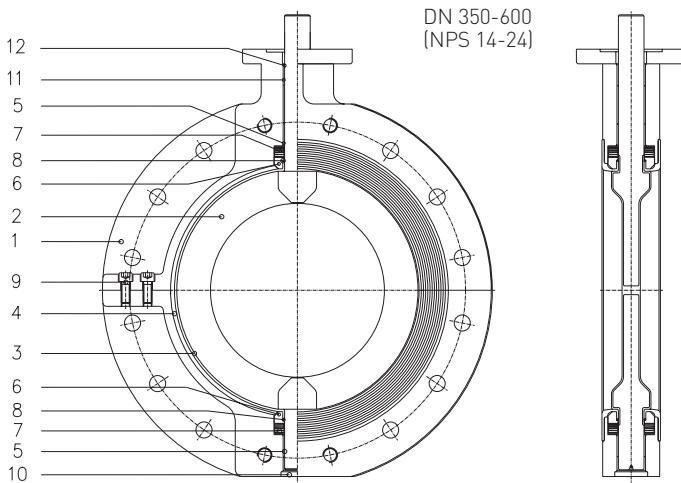
WAFER AND LUGGED



PARTS LIST

Pos.	Part	Material
1	Two piece body	Ductile iron polyester coated
2	One piece disc stem	PFA encapsulated stainless steel
3	Liner	Virgin PTFE
4	Elastomer back-up	Silicone or FKM
5	Bearing	Iglidur X (Thermoplast)
6	Pusher	Stainless steel
7	Belleville washer	Spring steel
8	O-ring	FKM
9	Int. Hex screw	Stainless steel
10	Pivot pin	Stainless steel
11	O-ring	FKM
12	Bearing	DU (Steel/PTFE)

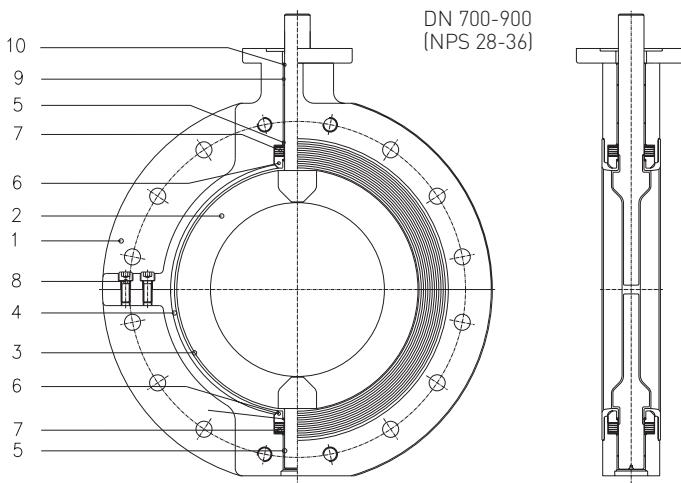
DOUBLE FLANGED



PARTS LIST

Pos.	Part	Material
1	Two piece body	Ductile iron polyester coated
2	One piece disc stem	PFA encapsulated carbon steel
3	Liner	Virgin PTFE
4	Elastomer back-up	Silicone or FKM
5	Bearing	DU (Steel/PTFE conductive)
6	Pusher	Stainless steel
7	Belleville washer	Spring steel
8	O-ring	FKM
9	Int. hex screw	Stainless steel A2-70
10	Plug	Steel zinc plated
11	Bearing	Iglidur X (Thermoplast)
12	O-ring	FKM

DOUBLE FLANGED



PARTS LIST

Pos.	Part	Material
1	Two piece body	Ductile iron epoxy coated
2	One piece disc stem	PFA encapsulated stainless steel
3	Liner	Virgin PTFE
4	Elastomer back-up	Silicone or FKM
5	Bearing	DU (Steel/PTFE conductive)
6	Pusher	Steel nickel plated
7	Belleville washer	Spring steel
8	Int. hex screw	Stainless steel A2-70
9	Bearing	DU/Steel
10	O-ring	FKM

NEOTECHA NEOSEAL LINED BUTTERFLY VALVES

VALVE DATA - METRIC DATA

K_v VALUES

Disc opening	Size (DN)														
	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
25°	1	3	5	7	12	21	56	101	172	250	302	452	521	789	974
30°	2	4	8	13	25	41	84	151	258	378	561	756	968	1221	1633
35°	4	8	16	24	45	73	134	240	352	537	750	1054	1398	1789	2496
40°	7	13	29	33	60	97	181	323	478	746	1037	1397	1786	2256	3217
45°	10	18	41	50	90	146	245	435	609	1007	1423	1852	2495	3104	4201
50°	14	27	61	69	125	203	296	525	836	1264	1814	2291	3127	3948	5413
55°	18	36	80	95	170	276	395	700	1103	1585	2314	3312	4231	5210	7036
60°	23	48	107	125	225	364	503	891	1353	2035	2938	3959	5060	6396	8764
65°	29	63	141	164	295	477	610	1080	1727	2810	3756	5124	6214	8498	12047
70°	37	78	175	222	400	647	803	1422	2131	3320	4621	6229	7962	10053	13795
75°	43	91	203	292	525	848	1130	2000	2821	4874	6024	8670	11054	13521	18406
80°	47	97	217	347	625	1009	1482	2622	3485	5416	7559	10186	13032	16449	22683
85°	50	102	228	381	685	1106	1723	3050	3846	6067	8221	11023	14023	17531	25301
90°	53	105	235	411	741	1196	1973	3492	4170	6102	8693	11647	14893	18807	25777

NOTES

1. Rated K_v = the volume of water in m³/hr that will pass through a given valve opening at a pressure drop of 1 bar.
2. Sizes DN 700-900 (please contact your sales representative).

MAXIMUM ALLOWABLE SHAFT TORQUES NSD TOP SHAFT CONNECTION (Nm) *

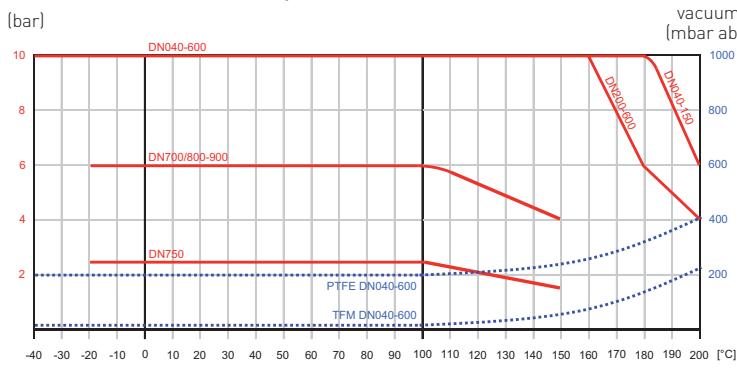
Disc material	Size (DN)														
	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
PFA	90	90	200	200	200	350	480	900	1500	1500	1300	2800	2800	2800	4000
UHMWPE	90	90	200	200	200	350	480	900	1500	1500	1300	2800	2800	2800	4000
SS 1.4581 **	45	45	100	150	150	260	340	450	1200	1280	-	-	-	-	-
SS 1.4462 **	90	90	140	150	150	280	390	775	1200	1300	1000	2150	2150	2150	4000

NOTES

* Hastelloy and titanium: contact factory

** Stainless steel

PRESSURE/TEMPERATURE DIAGRAM



UHMWPE limited to 80°C

NOTE

NeoSeal butterfly valves are generally not allowed for end-of-line service. Please contact the factory for further advice about your specific application if end-of-line service is required.

NEOTECHA NEOSEAL LINED BUTTERFLY VALVES

VALVE DATA - IMPERIAL DATA

C_v VALUES

Disc opening	Size (NPS)														
	1.5	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
25°	1	3	6	8	14	24	65	117	199	289	349	523	602	912	1126
30°	2	5	9	15	29	47	97	175	298	437	649	874	1119	1412	1888
35°	5	9	18	28	52	84	155	277	407	621	867	1218	1616	2068	2886
40°	8	15	34	38	69	112	209	373	553	862	1199	1615	2065	2608	3719
45°	12	21	47	58	104	169	283	503	704	1164	1645	2141	2884	3588	4857
50°	16	31	71	80	145	235	342	607	966	1461	2097	2649	3615	4564	6258
55°	21	42	92	110	197	319	457	809	1275	1832	2675	3829	4891	6023	8134
60°	27	55	124	145	260	421	582	1030	1564	2353	3397	4577	5850	7394	10132
65°	34	73	163	190	341	551	705	1249	1997	3249	4342	5924	7184	9824	13927
70°	43	90	202	257	462	748	928	1644	2464	3838	5342	7201	9205	11622	15948
75°	50	105	235	338	607	980	1306	2312	3261	5635	6964	10023	12779	15631	21279
80°	54	112	251	401	723	1166	1713	3031	4029	6261	8739	11776	15066	19016	26223
85°	58	118	264	440	792	1279	1992	3526	4446	7014	9504	12743	16212	20267	29250
90°	61	121	272	475	857	1383	2281	4037	4821	7054	10050	13465	17217	21742	29800

NOTES

1. Rated C_v = the volume of water in USGPM that will pass through a given valve opening at a pressure drop of 1 psi.
2. Sizes NPS 28 - 36 (please contact your sales representative).

MAXIMUM ALLOWABLE SHAFT TORQUES NSD TOP SHAFT CONNECTION (lbs.inch) *

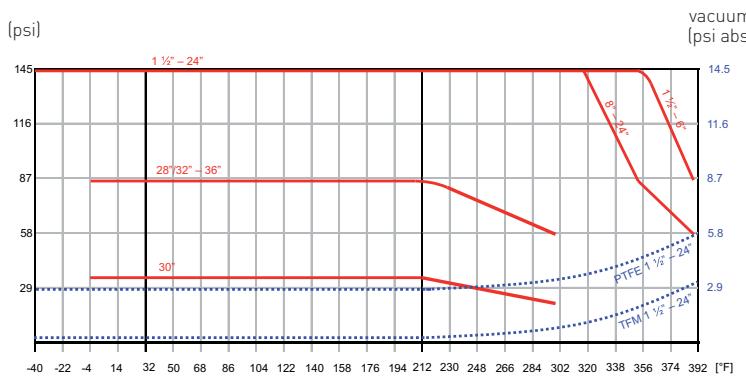
Disc material	Size (NPS)														
	1.5	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
PFA	797	797	1770	1770	1770	3098	4248	7966	13276	13276	11506	24782	24782	24782	35403
UHMWPE	797	797	1770	1770	1770	3098	4248	7966	13276	13276	11506	24782	24782	24782	35403
SS 1.4581 **	398	398	885	1328	1328	2301	3009	3983	10621	11329	-	-	-	-	-
SS 1.4462 **	797	797	1239	1328	1328	2478	3452	6859	10621	11506	8851	19029	19029	19029	35403

NOTES

* Hastelloy and titanium: contact factory

** Stainless steel

PRESSURE/TEMPERATURE DIAGRAM



UHMWPE limited to 176°F

NOTE

NeoSeal butterfly valves are generally not allowed for end-of-line service. Please contact the factory for further advice about your specific application if end-of-line service is required.

NEOTECHA NEOSEAL LINED BUTTERFLY VALVES

VALVE DATA - METRIC DATA

DYNAMIC TORQUE FACTORS F_T FOR METRIC UNITS

Disc opening	Size (DN)														
	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
10°	-	-	-	-	-	-	-	1.7	0.4	8.1	-	-	-	-	-
15°	-	0.1	0.1	0.3	0.5	1.0	1.7	4.0	7.8	13.5	8.6	12.8	18.2	25.0	43.2
20°	-	0.1	0.2	0.5	0.9	1.8	3.0	7.2	14.1	24.3	21.4	32.0	45.6	62.5	108.0
25°	0.1	0.2	0.4	0.7	1.4	2.7	4.7	11.2	21.9	37.8	42.9	64.0	91.1	125.0	216.0
30°	0.1	0.3	0.6	1.1	2.1	4.1	7.1	16.8	32.8	56.7	64.3	96.0	136.7	187.5	324.0
35°	0.2	0.4	0.8	1.5	3.0	5.9	10.1	24.0	46.9	81.0	94.3	140.8	200.5	275.0	475.2
40°	0.2	0.5	1.1	2.1	4.1	8.0	13.8	32.8	64.1	110.7	124.3	185.6	264.3	362.5	626.4
45°	0.4	0.7	1.5	2.8	5.4	10.5	18.2	43.2	84.4	145.8	171.5	256.0	364.5	500.0	864.0
50°	0.5	0.9	1.9	3.6	7.0	13.7	23.6	56.0	109.4	189.0	235.8	352.0	501.2	687.5	1188.0
55°	0.6	1.1	2.5	4.6	9.0	17.6	30.4	72.0	140.6	243.0	321.6	480.0	683.4	937.5	1620.0
60°	0.7	1.5	3.3	6.1	12.0	23.4	40.5	96.0	187.5	324.0	415.9	620.8	883.9	1212.5	2095.2
65°	0.9	1.9	4.1	7.7	15.0	29.3	50.6	120.0	234.4	405.0	544.5	812.8	1157.3	1857.5	2743.2
70°	1.3	2.5	5.5	10.2	20.0	39.1	67.5	160.0	312.5	540.0	733.2	1094.4	1558.2	2317.5	3693.6
75°	1.7	3.4	7.4	13.8	27.0	52.7	91.1	216.0	421.9	729.0	1050.4	1568.0	2232.6	3062.5	5292.0
80°	1.9	3.9	8.5	15.9	31.0	60.5	104.6	248.0	484.4	837.0	1346.3	2009.6	2861.3	3925.0	6782.4
85°	1.3	2.5	5.5	10.2	20.0	39.1	67.5	160.0	312.5	540.0	913.2	1363.2	1941.0	2662.5	4600.8
90°	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES

1. Dynamic operating torque formula:

$$T_D = F_T \times \Delta p$$

T_D = Dynamic torque (Nm)

Δp = Pressure drop across disc at desired disc-opening (bar)

F_T = Dynamic torque factor (see table)

2. The above mentioned dynamic torque includes all frictional resistances.

3. The dynamic torque is tending to close the disc.

4. Sizes DN 700-900 (please contact your sales representative).

SIZING TORQUES (AT MAX. ALLOWABLE PRESSURE DIFFERENTIAL) (Nm)

Disc/seat material	Size (DN)														
	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
I	18	20	25	45	60	85	140	190	320	420	500	550	620	680	950
II	30	35	50	60	85	120	175	330	390	500	750	880	1000	1200	1450
III	30	35	45	55	80	115	170	250	350	460	600	700	800	930	1200
IV	25	30	40	50	75	110	160	220	320	420	540	600	680	750	1050
V	25	30	40	50	75	110	160	220	320	420	540	600	680	750	1050
VI	25	30	40	50	75	110	160	220	320	420	540	600	680	750	1050

NOTES

I PFA / PTFE or TFM

II UHMWPE / UHMWPE

III SS 1.4581 or 1.4462 / UHMWPE

IV SS 1.4581 / PTFE or TFM

V SS 1.4462 / PTFE or TFM

VI Hastelloy / PTFE or TFM

- The charted maximum sizing operating torque is the sum of all friction and resistance for opening and closing of the disc against the indicated pressure differential.
- The effect of dynamic torque is not considered in tabulation.
- In sizing operators it is not necessary to include safety-factors.
- Sizes DN 700-900 (please contact your sales representative).
- For silicone free version please use 1.7 torque multiplier.

NEOTECHA NEOSEAL LINED BUTTERFLY VALVES

VALVE DATA - IMPERIAL DATA

DYNAMIC TORQUE FACTORS F_T FOR IMPERIAL UNITS

Disc opening	Size (NPS)														
	1.5	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
10°	-	-	-	-	-	-	-	1.0	0.2	4.9	-	-	-	-	-
15°	-	0.1	0.1	0.2	0.3	0.6	1.0	2.4	4.8	8.2	5.2	7.8	11.1	15.2	26.3
20°	-	0.1	0.1	0.3	0.5	1.1	1.8	4.4	8.6	14.8	13.0	19.5	27.8	38.1	65.9
25°	0.1	0.1	0.2	0.4	0.9	1.6	2.9	6.8	13.4	23.0	26.2	39.0	55.5	76.2	131.7
30°	0.1	0.2	0.4	0.7	1.3	2.5	4.3	10.2	20.0	34.6	39.2	58.5	83.4	114.3	197.6
35°	0.1	0.2	0.5	0.9	1.8	3.6	6.2	14.6	28.6	49.4	57.5	85.9	122.3	167.7	289.8
40°	0.1	0.3	0.7	1.3	2.5	4.9	8.4	20.0	39.1	67.5	75.8	113.2	161.2	221.0	382.0
45°	0.2	0.4	0.9	1.7	3.3	6.4	11.1	26.3	51.5	88.9	104.6	156.1	222.3	304.9	526.8
50°	0.3	0.5	1.2	2.2	4.3	8.4	14.4	34.1	66.7	115.2	143.8	214.6	305.6	419.2	724.4
55°	0.4	0.7	1.5	2.8	5.5	10.7	18.5	43.9	85.7	148.2	196.1	292.7	416.7	571.6	987.8
60°	0.4	0.9	2.0	3.7	7.3	14.3	24.7	58.5	114.3	197.6	253.6	378.5	539.0	739.3	1277.6
65°	0.5	1.2	2.5	4.7	9.1	17.9	30.9	73.2	142.9	247.0	332.0	495.6	705.7	1132.6	1672.7
70°	0.8	1.5	3.4	6.2	12.2	23.8	41.2	97.6	190.5	329.3	447.1	667.3	950.1	1413.1	2252.2
75°	1.0	2.1	4.5	8.4	16.5	32.1	55.5	131.7	257.3	444.5	640.5	956.1	1361.3	1867.4	3226.8
80°	1.2	2.4	5.2	9.7	18.9	36.9	63.8	151.2	295.4	510.4	820.9	1225.4	1744.7	2393.3	4135.6
85°	0.8	1.5	3.4	6.2	12.2	23.8	41.2	97.6	190.5	329.3	556.8	831.2	1183.5	1623.5	2805.4
90°	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

NOTES

1. Dynamic operating torque formula:

$$T_D = F_T \times \Delta p$$

T_D = Dynamic torque (Lbf.inch)

Δp = Pressure drop across disc at desired disc-opening (psi)

F_T = Dynamic torque factor (see table)

2. The above mentioned dynamic torque includes all frictional resistances.
 3. The dynamic torque is tending to close the disc.
 4. Sizes NPS 28 - 36 (please contact your sales representative).

SIZING TORQUES (AT MAX. ALLOWABLE PRESSURE DIFFERENTIAL) (lbs.inch)

Disc/seat material	Size (NPS)														
	1.5	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
I	159	177	221	398	531	752	1239	1682	2832	3717	4425	4868	5487	6019	8408
II	266	310	443	531	752	1062	1549	2921	3452	4425	6638	7789	8851	10621	12834
III	266	310	398	487	708	1018	1505	2213	3098	4071	5310	6196	7081	8231	10621
IV	221	266	354	443	664	974	1416	1947	2832	3717	4779	5310	6019	6638	9293
V	221	266	354	443	664	974	1416	1947	2832	3717	4779	5310	6019	6638	9293
VI	221	266	354	443	664	974	1416	1947	2832	3717	4779	5310	6019	6638	9293

NOTES

- I PFA / PTFE or TFM
 II UHMWPE / UHMWPE
 III SS 1.4581 or 1.4462 / UHMWPE
 IV SS 1.4581 / PTFE or TFM
 V SS 1.4462 / PTFE or TFM
 VI Hastelloy / PTFE or TFM

- The charted maximum sizing operating torque is the sum of all friction and resistance for opening and closing of the disc against the indicated pressure differential.
- The effect of dynamic torque is not considered in tabulation.
- In sizing operators it is not necessary to include safety-factors.
- Sizes NPS 28 - 36 (please contact your sales representative).
- For silicone free version please use 1.7 torque multiplier.

NEOTECHA NEOSEAL LINED BUTTERFLY VALVES

LINING MATERIALS



PTFE seat liners

Isostatically molded virgin PTFE with a minimum thickness of 3 mm/0.12". PTFE high density liners have a high specific gravity of at least 2.16 gr/cm³.

Operating temperature: -40°C to +200°C

(-40°F to +392°F)

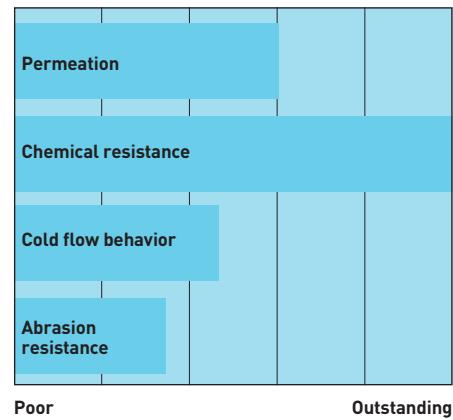
Size range:

DN 40-900

(NPS 1½ - 36)

Virgin PTFE:

FDA approved



PFA and PFA conductive

Injection molded PFA with a minimum thickness of 3 mm/0.12". Neotecha has a track record of more than 25 years of PFA injection molding technology, which is essential to obtain the know how to eliminate internal stresses in the PFA lining and achieve a perfect bonding between PFA and the metal surface.

Operating temperature: -40°C to +200°C

(-40°F to +392°F)

Size range:

DN 40-900

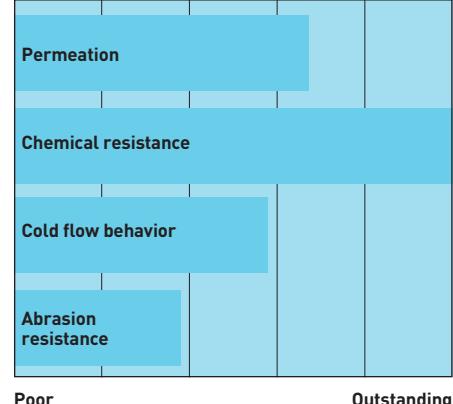
(NPS 1½ - 36)

Virgin PFA:

FDA approved

Conductive PFA:

Not FDA approved



TFM and TFM conductive seat liners

TFM (or enhanced PTFE) has a significantly lower melt viscosity than PTFE, resulting in better particle fusion during the sintering process. TFM has the ultimate resistance against permeation and an improved resistance against cold flow. Conductive TFM is available to prevent harmful electrostatic discharge.

Operating temperature: -40°C to +200°C

(-40°F to +392°F)

Size range:

DN 40-900

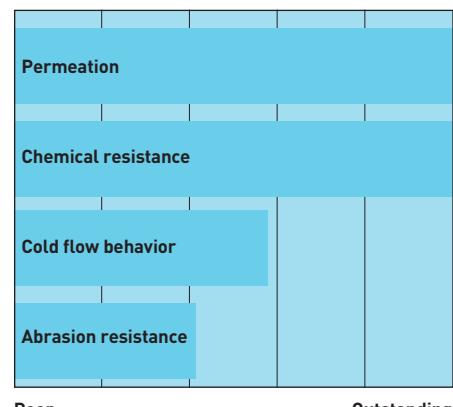
(NPS 1½ - 36)

Virgin TFM:

FDA approved

Conductive TFM :

FDA approved



NEOTECHA NEOSEAL LINED BUTTERFLY VALVES

LINING MATERIALS



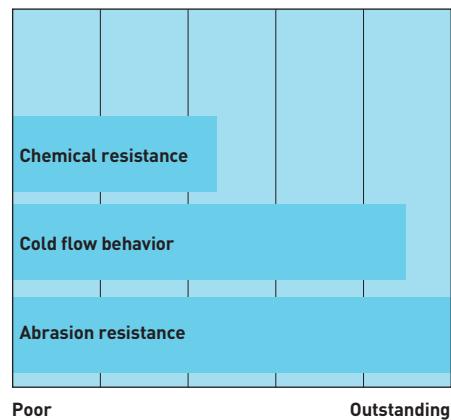
UHMWPE

Seat liner and disc cover made of ultra high molecular weight polyethelyne with a minimum thickness of 3 mm/0.12". This material provides maximum abrasion and wear resistance and a high impact resistance. It makes UHMWPE the ideal choice for highly abrasive chemical applications.

Operating temperature: -40°C to +80°C
(-40°F to +176°F)

Size range: DN 40-600
(NPS 1½ - 24)

UHMWPE: FDA approved



Special liners for high purity applications

Neotecha is also able to offer special treated PTFE, PFA and TFM liners for the production of valves used in high purity applications in the semiconductor industry and pharmaceutical industry. For this purpose we use liners with an extremely smooth lining surface and of a superior purity. Valves which are used for this service are ultrasonically washed to stringent cleaning standards, assembled and tested in our in-house clean room. These valves are packed in vacuum sealed double bags for protection during transport and handling before installation. Based on this special process Neotecha is able to supply valves for ultra pure water (UPW) applications without the need for any additional cleaning on site.

Other lining materials are available on request.



Valve assembly in clean room

NEOTECHA NEOSEAL LINED BUTTERFLY VALVES

MATERIAL SELECTION

SELECTION GUIDE

Example:	NSD	150	N01	W	M4	B	00
Type							
NSD NeoSeal compatible to ISO 5211							
Sizes DN (NPS)							
40 - 900 (1½ - 36)							
Trim number							
See valve material selection table							
Body							
W Wafer							
L Lugged							
F Double flanged							
Flange standard							
M4 Multi drilled PN 10/16 ASME 150							
10 DIN PN 10							
16 DIN PN 16							
A1 ASME 150							
Operation							
B Bare shaft							
4 F10 top flange (default for DN 200)							
Variant							
00 Standard							
For other variants, contact factory							

NOTES

For definitive variant, please contact your local sales office.

VALVE MATERIAL SELECTION

Trim number	Body	Disc	Shaft	Seat	Seat backing	Sizes DN (NPS)	Remarks
N01	Ductile iron	PFA	Stainless steel	PTFE	Silicone	40-900 (1½ - 36)	
N02	Ductile iron	PFA	Stainless steel	PTFE	FKM	40-900 (1½ - 36)	
N5D	Ductile iron	Conductive PFA	Stainless steel	Conductive TFM	Silicone	40-900 (1½ - 36)	
N5E	Ductile iron	Conductive PFA	Stainless steel	Conductive TFM	FKM	40-900 (1½ - 36)	
N07	Ductile iron	Stainless steel	Stainless steel	PTFE	Silicone	40-900 (1½ - 36)	
N08	Ductile iron	Stainless steel	Stainless steel	PTFE	FKM	40-900 (1½ - 36)	
N6D	Ductile iron	Stainless steel	Stainless steel	Conductive TFM	Silicone	40-900 (1½ - 36)	
N6E	Ductile iron	Stainless steel	Stainless steel	Conductive TFM	FKM	40-900 (1½ - 36)	
N13	Ductile iron	Polished stainless steel	Stainless steel	PTFE	Silicone	40-900 (1½ - 36)	
N14	Ductile iron	Polished stainless steel	Stainless steel	PTFE	FKM	40-900 (1½ - 36)	
N5M	Ductile iron	Polished stainless steel	Stainless steel	Conductive TFM	Silicone	40-900 (1½ - 36)	
N5N	Ductile iron	Polished stainless steel	Stainless steel	Conductive TFM	FKM	40-900 (1½ - 36)	
N81	Ductile iron	Stainless steel	Stainless steel	UHMWPE	Silicone	40-600 (1½ - 24)	NSA / NSD
N42	Ductile iron	UHMWPE	Stainless steel	UHMWPE	Silicone	40-600 (1½ - 24)	NSA only
N52	Ductile iron	PFA	Stainless steel	TFM	Silicone	40-900 (1½ - 36)	
N53	Ductile iron	PFA	Stainless steel	TFM	FKM	40-900 (1½ - 36)	
N1R	Ductile iron	Titanium	Titanium	PTFE	Silicone	40-900 (1½ - 36)	Contact factory
N1S	Ductile iron	Titanium	Titanium	PTFE	FKM	40-900 (1½ - 36)	Contact factory

NEOTECHA NEOSEAL LINED BUTTERFLY VALVES

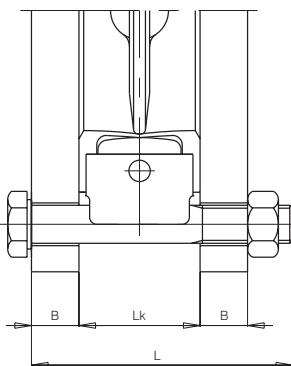
MATERIAL SELECTION

VALVE MATERIAL LIST

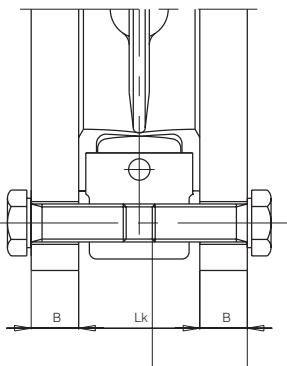
Part name	Material	DIN designation	DIN mat. no.	Sizes DN (NPS)	Remarks
Body	Ductile iron	EN-GJS 400-18U-LT-Z (GGG40.3)	0.7043	040-600 [1½-24]	Heat treated coating: 2-components polyester powder, RAL9002
	Ductile iron	EN-GJS 400-18	0.7043	700-900 [28-36]	Epoxy coated RAL9002
Disc	PFA covered	ASTMA747	1.4542	040-300 [1½ - 24]	FDA 21CFR177.1550
	PFA covered	St 52-3	1.0570	350-600 [14-24]	FDA 21CFR177.1550
	PFA covered	St 52-3	1.0577	700-900 [28-36]	-
	Conductive PFA covered	ASTMA747	1.4542	040-300 [1½ - 12]	-
	Conductive PFA covered	St 52-3	1.0570	350-600 [14-24]	-
	Stainless steel	X 2 CrNiMo N22 53	1.4462	040-600 [1½ - 24]	
	Stainless steel	X 2 CrNiMo 17 12 2	1.4404	700-900 [28-36]	-
	UHMWPE covered	ASTMA747	1.4542	040-300 [1½-24]	FDA 21CFR177.1550
	UHMWPE covered	St 52-3	1.0570	350-600 [14-24]	FDA 21CFR177.1550
Shaft	PFA covered	ASTMA747	1.4542	040-300 [1½-12]	FDA 21CFR177.1550
	PFA covered	X17 CrNi 16 2	1.4057	350-600 [14-24]	FDA 21CFR177.1550
	PFA covered	X 2 CrNiMo 17 12 2	1.4404	700-900 [28-36]	FDA 21CFR177.1550
	Conductive PFA covered	ASTMA747	1.4542	040-300 [1½-12]	-
	Conductive PFA covered	St 52-3	1.0570	350-600 [14-24]	-
	Stainless steel	ASTMA747	1.4542	040-300 [1½-12]	-
	Stainless steel	X 2 CrNiMo N22 53	1.4462	350-600 [14-24]	-
	UHMWPE covered	ASTMA747	1.4542	040-300 [1½-12]	FDA 21CFR177.1550
	UHMWPE covered	X17 CrNi 16 2	1.4057	350-600 [14-24]	FDA 21CFR177.1550
Seat	PTFE	-	-	040-900 [1½-36]	FDA 21CFR177.1550
	UHMWPE	-	-	040-600 [1½-24]	FDA 21CFR177.1520
	TFM1600	-	-	040-600 [1½-24]	FDA 21CFR177.1550
	TFM6221 conductive	-	-	040-900 [1½-36]	FDA 21CFR177.1550
	TFM1700	-	-	700-900 [28-36]	FDA 21CFR177.1550
Body screws	Stainless steel	X 5 CrNi 18 10	1.4301	-	A2-70
Top spring	Spring steel	50 CrV 4	1.8159	-	DIN 17222
O-rings	FKM	-	-	040-900 [1½-36]	-
Seat backing	EPDM	-	-	040-600 [1½-24]	-
	FKM	-	-	040-900 [1½-36]	-
	Silicone	-	-	040-900 [1½-36]	-
Top bearing	Iglidur X (Thermoplast)	-	-	040-900 [1½-36]	ST/PTFE 700-900
Bottom bearing	Steel/PTFE conductive	-	-	-	-

NEOTECHA NEOSEAL LINED BUTTERFLY VALVES

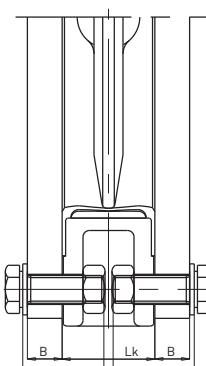
REQUIRED FLANGE BOLTS - METRIC DATA



WAFER



LUGGED



DOUBLE FLANGE

WAFER

Valve size (DN)	FTF Lk	PN 10 EN 1092-1				PN 16 EN 1092-1				ASME 150			
		B ⁽¹⁾	Bolt holes	PCD	Bolt size L	B ⁽¹⁾	Bolt holes	PCD	Bolt size L	B ⁽¹⁾	Bolt holes	PCD	Bolt size L (UNC)
40	35	18	4	110	M16x80	18	4	110	M16x80	0.69"	4	3.88"	0.5" x 3.25"
50	43	18	4	125	M16x100	18	4	125	M16x100	0.75"	4	4.75"	0.625" x 3.75"
65	46	18	4	145	M16x100	18	4	145	M16x100	0.87"	4	5.50"	0.625" x 4"
80	46	20	8	160	M16x100	20	8	160	M16x100	0.94"	4	6.00"	0.625" x 4.5"
100	51	20	8	180	M16x110	20	8	180	M16x110	0.94"	8	7.50"	0.625" x 4.5"
125	56	22	8	210	M16x120	22	8	210	M16x120	0.94"	8	8.50"	0.75" x 5"
150	56	22	8	240	M20x120	22	8	240	M20x120	1.00"	8	9.50"	0.75" x 5"
200	62	24	8	295	M20x130	24	12	295	M20x130	1.12"	8	11.75"	0.75" x 5.5"
250	70	26	12	350	M20x140	26	12	355	M24x140	1.19"	12	14.25"	0.875" x 6"
300	80	26	12	400	M20x150	28	12	410	M24x150	1.25"	12	17.00"	0.875" x 7"

LUGGED

Valve size (DN)	FTF Lk	PN 10 EN 1092-1				PN 16 EN 1092-1				ASME 150			
		B ⁽¹⁾	Bolt holes	PCD	Bolt size L	B ⁽¹⁾	Bolt holes	PCD	Bolt size L	B ⁽¹⁾	Bolt holes	PCD	Bolt size L (UNC)
40	35	18	4	110	M16x30	18	4	110	M16x30	0.69"	4	3.88"	0.5" x 1.125"
50	43	18	4	125	M16x35	18	4	125	M16x35	0.75"	4	4.75"	0.625" x 1.375"
65	46	18	4	145	M16x35	18	4	145	M16x35	0.87"	4	5.50"	0.625" x 1.625"
80	46	20	8	160	M16x35	20	8	160	M16x35	0.94"	4	6.00"	0.625" x 1.625"
100	51	20	8	180	M16x40	20	8	180	M16x40	0.94"	8	7.50"	0.625" x 1.625"
125	56	22	8	210	M16x45	22	8	210	M16x45	0.94"	8	8.50"	0.75" x 1.875"
150	56	22	8	240	M20x45	22	8	240	M20x45	1.00"	8	9.50"	0.75" x 1.875"
200	62	24	8	295	M20x50	-	-	-	-	1.12"	8	11.75"	0.75" x 2"
250	70	26	12	350	M20x55	-	-	-	-	1.19"	12	14.25"	0.875" x 2.25"
300	80	26	12	400	M20x60	-	-	-	-	1.25"	12	17.00"	0.875" x 2.25"

DOUBLE FLANGE

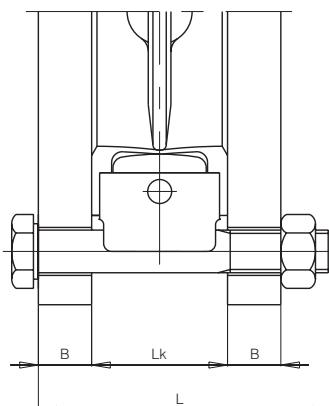
Valve size (DN)	FTF Lk	PN 10 EN 1092-1				PN 16 EN 1092-1				ASME 150			
		B ⁽¹⁾	Bolt holes	PCD	Bolt size L	B ⁽¹⁾	Bolt holes	PCD	Bolt size L	B ⁽¹⁾	Bolt holes	PCD	Bolt size L (UNC)
350	80	26	16	460	M20x50	-	-	-	-	1.37"	12	18.75"	1" x 2.5"
400	104	26	16	515	M24x65	-	-	-	-	1.44"	16	21.25"	1" x 3"
450	114	28	20	565	M24x65	-	-	-	-	1.56"	16	22.75"	1.125" x 3.25"
500	127	28	20	620	M24x65	-	-	-	-	1.69"	20	25.00"	1.125" x 3.25"
600	157	28	20	725	M27x80	-	-	-	-	1.87"	20	29.50"	1.25" x 3.5"
700	165	30	24	840	18xM27x310 ^[2]	-	-	-	-	2.81"	28	34.00"	22x1.25"x16" ^[2]
700	-	-	-	-	12xM27x70	-	-	-	-	-	-	-	12x1.25"x4.5"
750	190	-	-	-	-	-	-	-	-	2.94"	28	36.00"	22x1.25"x18" ^[2]
750	-	-	-	-	-	-	-	-	-	-	-	-	12x1.25"x4.5"
800	190	32	24	950	18xM30x350 ^[2]	-	-	-	-	3.19"	28	38.50"	22x1.5"x18" ^[2]
800	-	-	-	-	12xM30x70	-	-	-	-	-	-	-	12x1.5"x5"
900	203	34	28	1050	22xM33x370 ^[2]	-	-	-	-	3.56"	32	42.75"	26x1.5"x19.5" ^[2]
900	-	-	-	-	12xM36x80	-	-	-	-	-	-	-	12x1.5"x5"

FTF = Face to face

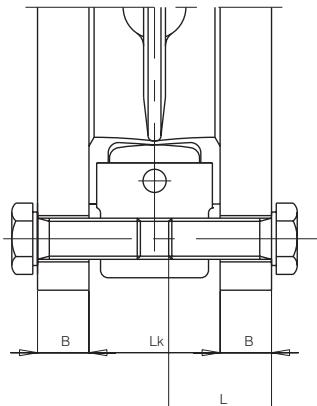
1. Pipe flange thickness 2. Required studs

NEOTECHA NEOSEAL LINED BUTTERFLY VALVES

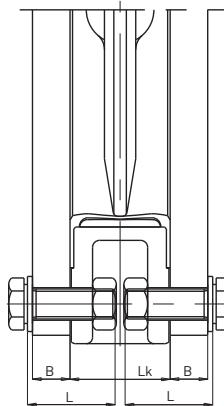
REQUIRED FLANGE BOLTS - IMPERIAL DATA



WAFER



LUGGED



DOUBLE FLANGE

WAFER

ASME 150

Valve size (NPS)	Face to face length Lk	Flange thickness B	Bolt holes	PCD	Bolt size L (UNC)
1½	1.38	11/16"	4	3.88	1/2" x 3 1/4"
2	1.69	3/4"	4	4.75	5/8" x 3 1/4"
2½	1.81	7/8"	4	5.50	5/8" x 4"
3	1.81	15/16"	4	6.00	5/8" x 4 1/2"
4	2.01	15/16"	8	7.50	5/8" x 4 1/2"
5	2.20	15/16"	8	8.50	3/4" x 5"
6	2.20	1"	8	9.50	3/4" x 5"
8	2.44	1 1/8"	8	11.75	3/4" x 5 1/2"
10	2.76	1 3/16"	12	14.25	7/8" x 6"
12	3.15	1 1/4"	12	17.00	7/8" x 7"

LUGGED

ASME 150

Valve size (NPS)	Face to face length Lk	Flange thickness B	Bolt holes	PCD	Bolt size L (UNC)
1½	1.38	11/16"	4	3.88	1/2" x 1 1/8"
2	1.69	3/4"	4	4.75	5/8" x 1 1/8"
2½	1.81	7/8"	4	5.50	5/8" x 1 1/8"
3	1.81	15/16"	4	6.00	5/8" x 1 1/8"
4	2.01	15/16"	8	7.50	5/8" x 1 1/8"
5	2.20	15/16"	8	8.50	3/4" x 1 1/8"
6	2.20	1"	8	9.50	3/4" x 1 1/8"
8	2.44	1 1/8"	8	11.75	3/4" x 2"
10	2.76	1 3/16"	12	14.25	7/8" x 2 1/4"
12	3.15	1 1/4"	12	17.00	7/8" x 2 1/4"

DOUBLE FLANGE

ASME 150

Valve size (NPS)	Face to face length Lk	Flange thickness B	Bolt holes	PCD	Bolt size L (UNC)
14	3.15	1 3/8"	12	18.75	1" x 2 1/2"
16	4.09	1 7/16"	16	21.25	1" x 3"
18	4.49	1 9/16"	16	22.75	1 1/8" x 3 1/4"
20	5.00	1 11/16"	20	25.00	1 1/8" x 3 1/4"
24	6.18	1 7/8"	20	29.50	1 1/4" x 3 1/2"

Note: sizes NPS 28 - 36: contact factory.

RECOMMENDED BOLT TORQUES FOR INSTALLATION

Valve size (NPS)	Torque (in/lbs)	Valve size (NPS)	Torque (in/lbs)
1½	177	10	885
2	310	12	1018
2½	398	14	1240
3	443	16	1505
4	487	18	1682
5	575	20	1947
6	620	24	2478
8	841	-	-

Note: sizes NPS 28 - 36: contact factory.

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NEOTECHA NTB - NTC PFA LINED BALL VALVES

These PFA lined ball valves are used in a wide variety of applications in many industries



GENERAL APPLICATION

The valves are ideally suited for corrosive applications, requiring reliable performance, tight shutoff, constant torque and no maintenance. The valves successfully handle a multitude of corrosive applications in industries such as chemical, petro-chemical, pharmaceutical, pulp and paper, foundries and mining like sulphuric acid, etc. This unique design, together with the self adjusting stem seal (U.S. Patent 4.696.323) are two of the reasons behind the excellent performance and broad industry acceptance of this valve.

TECHNICAL DATA

Size range:	DN 15 - 150 [NPS ½ - 6]
Temperature [°C]:	-40 up to +210
Pressure range:	vacuum 0.1 mbar to 16 bar (see diagram)
Flange connections:	DIN PN 16, ANSI 150, JIS B 2212 10 K
Face to face:	DIN EN 558, row 1 ANSI B 16.10

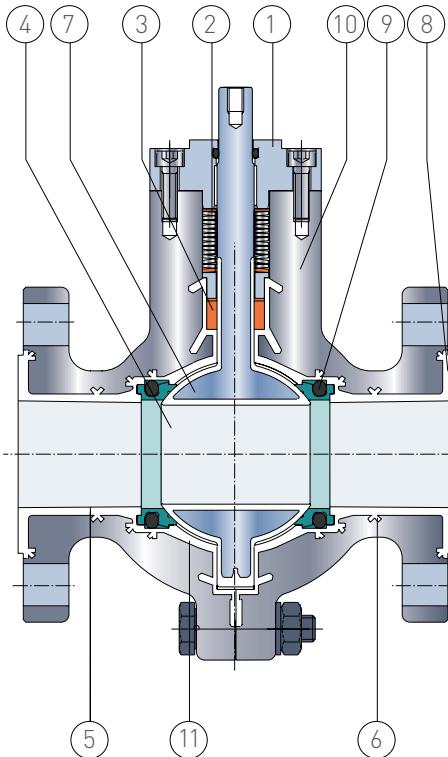
FEATURES

- PFA lining offers highest corrosion resistance
- Bubble tight shut-off: precision machined ball and seats guarantees an absolute leak-free valve.
- Full bore offers high K_v -value equal to the pipe
- One-piece ball/stem: no possibility of damaging PFA-lining on ball by the stem, no hysteresis, ideal for flow control applications.
- Specific anti blow-out shaft design, which can not be affected by the media, according API 609.
- Static electricity: any build-up of static electricity is eliminated since the ball/stem and the housing are of the same potential.
- Constant torque: the unique two-piece body construction together with the spring loaded seats guarantee a constant torque even after months of operation. TA-Luft VDI 2440 approved.
- The self adjusting packing is maintenance free and provides a leak free stem seal.
- The handle features a positive locked position in the open and closed position for type NTB, and 6 intermediate positions for type NTC.
- The body has a thermally applied polyester powder coating (RAL 9002) which offers excellent protection against external corrosion and rust.
- Direct mounting according to ISO 5211.

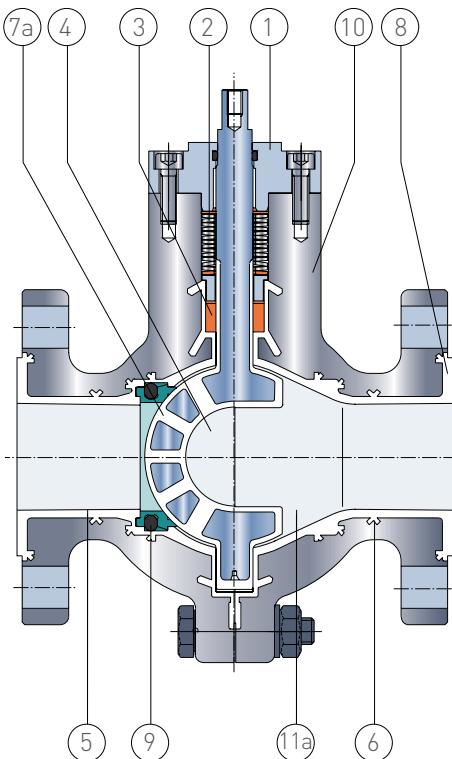
NEOTECHA NTB - NTC PFA LINED BALL VALVES

FEATURES

TYPE NTB



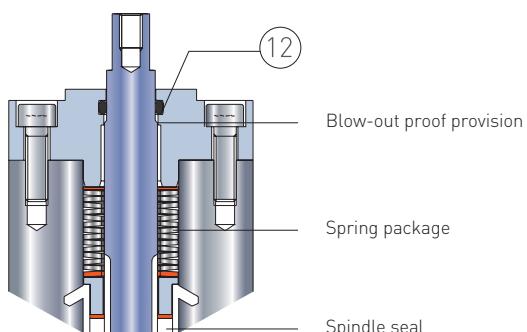
TYPE NTC



1. Every valve has a mounting flange according to ISO 5211 which simplifies the mounting of any actuator built to this standard.
2. A set of Belleville disc springs exert uniform loading on the packing, resulting in a maintenance free operation.
3. Flexible and corrosion resistant virgin PTFE packing ensures a leak-free stem seal (TA-Luft VDI 2440 approved).
4. Full bore design resulting in high K_v -value, especially required when high viscosity liquids have to be controlled.
5. The PFA lining is 3 mm thick and is spark tested at 20 000 Volts. This ensures a homogeneous PFA lining, void of any pinholes, giving protection against diffusion and corrosion.
6. The liner is locked to the casting by means of machined dovetails in the casting, permitting the valve to be used on high vacuum and elevated temperature without the danger of a liner collapse.
7. The one-piece trunnion mounted ball/stem ensures uniform support of the ball. The energized seats keep in constant contact with the ball under all operating conditions. Wear and tear on the seats is reduced, resulting in an increased operating life.
- 7a. The C-ball* reduces flow distortion and provides excellent regulating characteristics. The C-ball design is also, an ideal control valve for highly corrosive and sterile conditions.
8. Available in DIN and ANSI face to face dimensions, which allow an easy replacement of plug and diaphragm valves.
9. Locked in energized seats ensure both up stream and down stream bubble tight sealing, constant operating torque, and extended service life versus a floating ball seat design which depends on differential pressure for sealing.
10. Rugged symmetrical body halves made from ductile iron [GGG 40.3], coated on the outside with polyester powder coating which offers excellent corrosion protection.

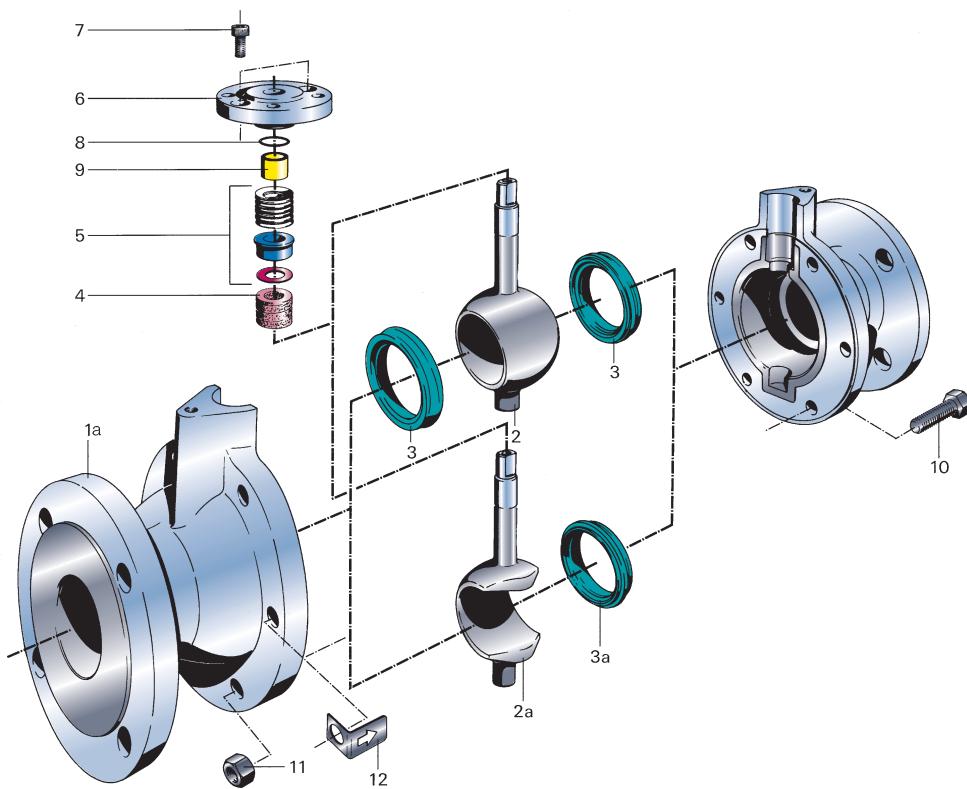
11. The split body design allows the dead space between the ball stem and housing to be kept to an absolute minimum. The C-ball version is dead space free.
- 11a. The C-ball valve is dead space free and is ideally suited for tight shut off and control of hazardous, solidifying or high purity products where it is imperative that no product is entrapped in the ball and surrounding cavity.
12. Full proof anti blow-out shaft design, located in the dry area of the valve and therefore unaffected by the media.

* C-Ball® is a registered trademark



NEOTECHA NTB - NTC PFA LINED BALL VALVES

CONSTRUCTIONS, ASSEMBLY AND MATERIALS



BALL VALVE TYPE NTB

Pos.	Description	Material
1a	Body halves	PFA lined ductile iron ASTM A395
2	Ball-stem	PFA encapsulated alloy steel
3	Ball seat with O-ring	PTFE with PFA encapsulated FKM O-ring
4	Stem seal	PTFE
5	Spring package	Spring steel
6**	Mounting flange	Stainless steel
7	Internal hex bolt	DIN 912, 8.8 galv.
8	O-ring	FKM
9	Bearing	Iglidur*
10	Hex bolt	DIN 931, 8.8 galv.
11	Nut	DIN 934, galv.

NOTES

* Iglidur = registered trademark of Igus GmbH

** Mounting flange according ISO 5211

C-BALL VALVE

Pos.	Description	Material
1a	Body halves	PFA lined ductile iron ASTM A395
2a	C-ball-stem	PFA encapsulated alloy steel
3a	Ball seat with O-ring	TFM with PFA encapsulated FKM O-ring
4	Stem seal	PTFE
5	Spring package	Spring steel
6**	Mounting flange	Stainless steel
7	Internal hex bolt	DIN 912, 8.8 galv.
8	O-ring	FKM
9	Bearing	Iglidur*
10	Hex bolt	DIN 931, 8.8 galv.
11	Nut	DIN 934, galv.
12	Flow arrow	Stainless steel (304)

NEOTECHA NTB - NTC PFA LINED BALL VALVES

TECHNICAL DATA NTB - METRIC

OPERATING TORQUES AND Kv-VALUES

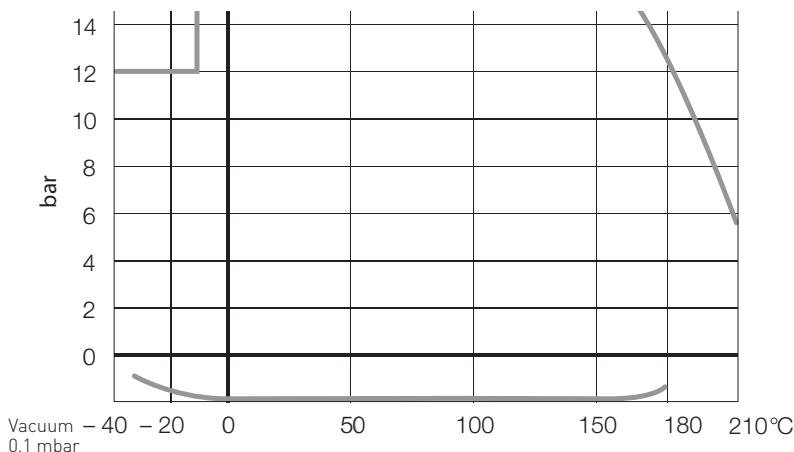
Size		Torque*		K _v	C _v
DN	NPS	Nm	inlb	m ³ /h	USGPM
15	1/2	20	177	12	14
20	3/4	20	177	18	21
25	1	30	266	37	43
40	1 1/2	50	443	96	111
50	2	70	620	170	196
65	2 1/2	145	1283	380	439
80	3	145	1283	490	566
100	4	190	1681	780	901
150	6	350	3096	1900	2196

* Torque applicable for full pressure range

TECHNICAL DATA

Size (DN):	15 - 150
Temperature (°C):	-40 up to +210
Pressure range:	vacuum 0.1 mbar to 16 bar (see diagram)
Flange connections:	DIN PN 16, ANSI 150, JIS B 2212 10 K
Face to face:	DIN EN 558-1, row 1 ANSI B 16.10

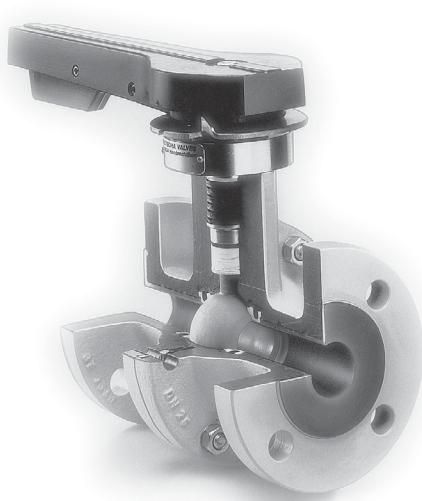
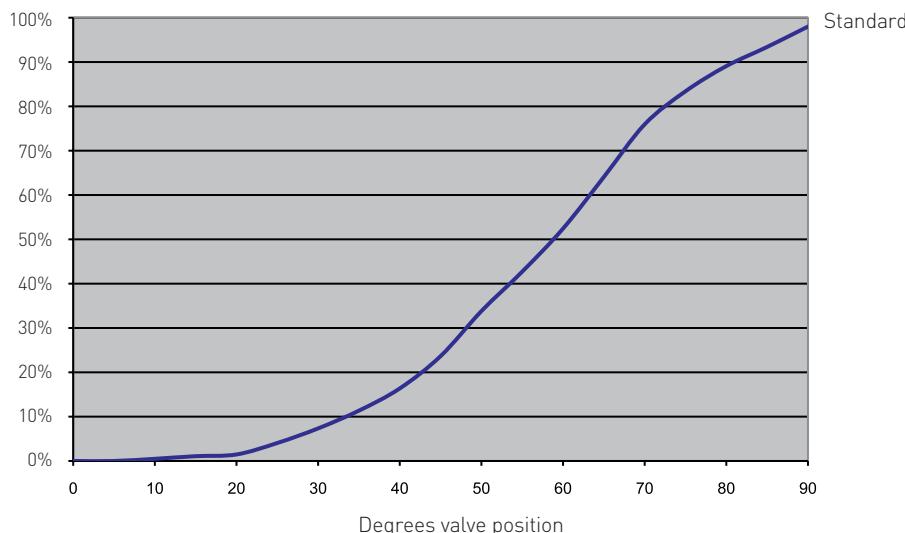
PRESSURE-TEMPERATURE DIAGRAM



HEAVY DUTY SERVICE

Neotecha also offers the NTB-NB2 prepared for chlorine [Cl₂], HCl, HF and oxygen service. The specially prepared NB2 version includes TFM as seat material, stringent cleaning before assembly, special inert grease and packed in sealed bags to avoid contamination during transport or handling.

NTB DN 80 WITH STANDARD SEAT



Example of inherent flow characteristic for a NTB DN 80

NEOTECHA NTB - NTC PFA LINED BALL VALVES

TECHNICAL DATA NTB - IMPERIAL

OPERATING TORQUES AND C_v-VALUES

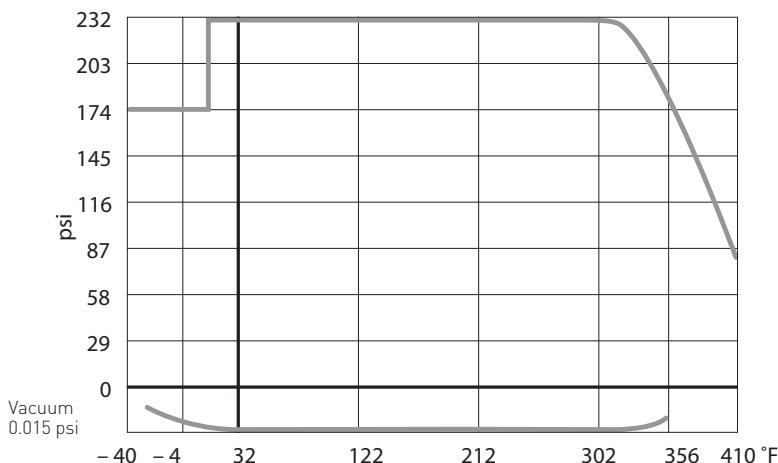
Size DN	NPS	Torque*		K _v m ³ /h	C _v USGPM
		Nm	inlb		
15	1/2	20	177	12	14
20	3/4	20	177	18	21
25	1	30	266	37	43
40	1 1/2	50	443	96	111
50	2	70	620	170	196
65	2 1/2	145	1283	380	439
80	3	145	1283	490	566
100	4	190	1681	780	901
150	6	350	3096	1900	2196

* Torque applicable for full pressure range

TECHNICAL DATA

Size (NPS):	1/2 - 6
Temperature (°F):	40 up to +410
Pressure range:	0.015 to 232 psi
Flange connections:	DIN PN 16, ANSI 150, JIS B 2212 10 K
Face to face:	DIN EN 558-1, row 1 ANSI B 16.10

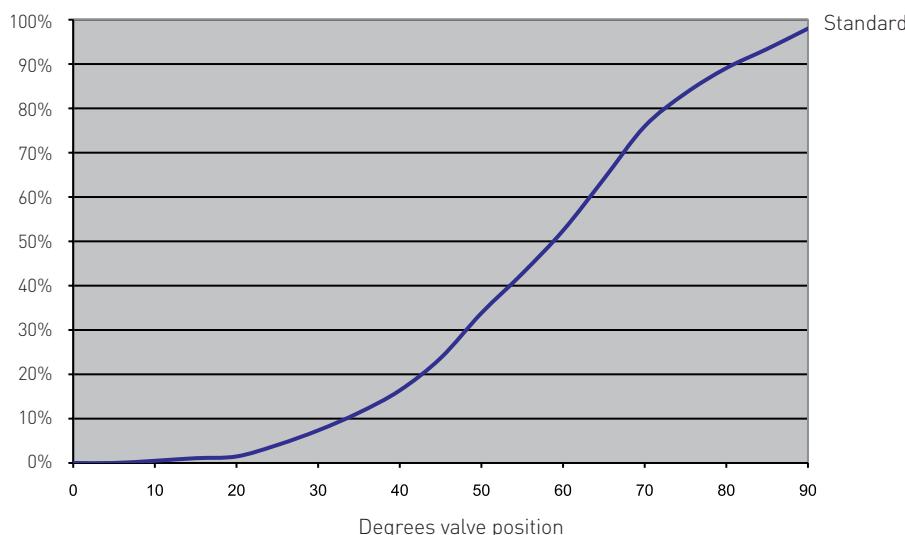
PRESSURE-TEMPERATURE DIAGRAM



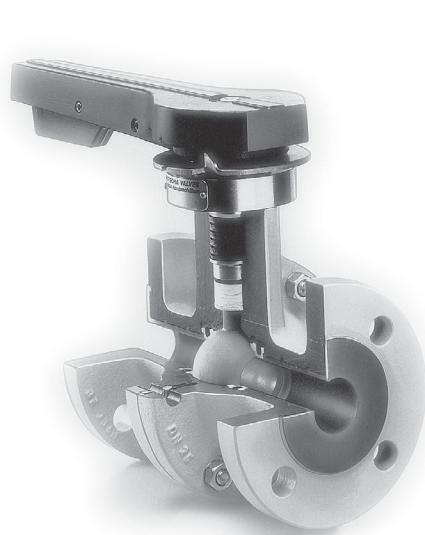
HEAVY DUTY SERVICE

Neotecha also offers the NTB-NB2 prepared for chlorine (Cl₂), HCl, HF and oxygen service. The specially prepared NB2 version includes TFM as seat material, stringent cleaning before assembly, special inert grease and packed in sealed bags to avoid contamination during transport or handling.

NTB 3" WITH STANDARD SEAT



Example of inherent flow characteristic for a NTB 3"



NEOTECHA NTB - NTC PFA LINED BALL VALVES

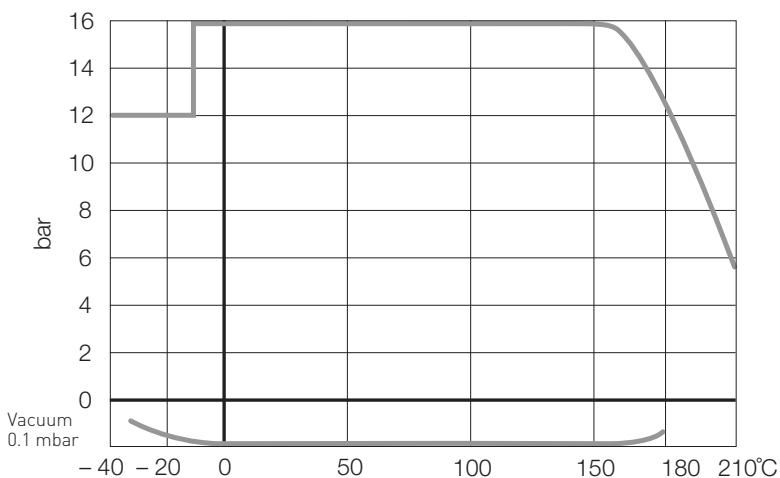
TECHNICAL DATA NTC - METRIC

OPERATING TORQUES AND Kv-VALUES

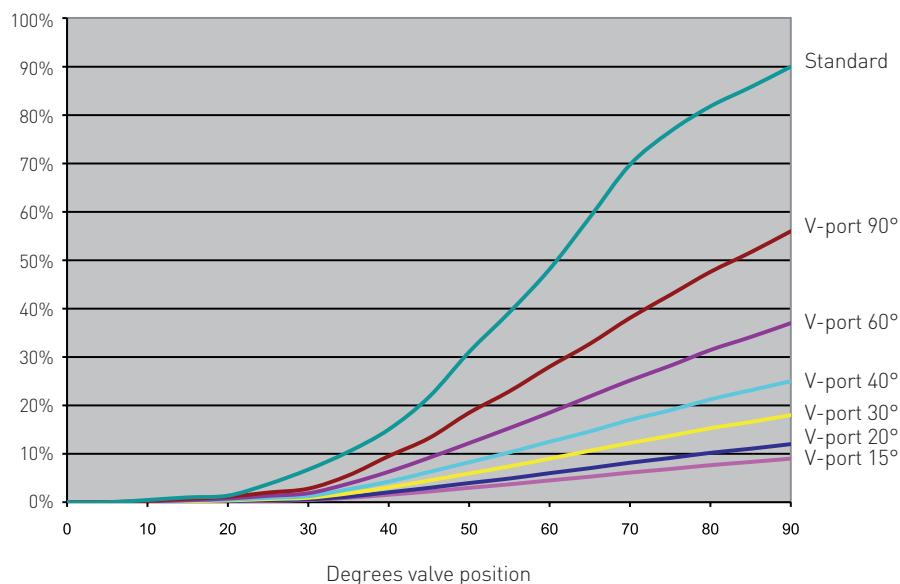
Size DN	NPS	Torque*		K _v m ³ /h	C _v USGPM
		Nm	in/lbs		
15	½	10	89	11	13
20	¾	10	89	16	18
25	1	15	133	34	39
40	1½	25	222	90	104
50	2	35	310	160	185
65	2½	75	664	360	416
80	3	75	664	450	520
100	4	110	973	710	821
150	6	200	1770	1800	2081

* Torque values applicable for standard seats only. For NTC with "V port seats" use the torque values indicated for the NTB

PRESSURE-TEMPERATURE DIAGRAM



NTC DN 80 WITH V-PORT



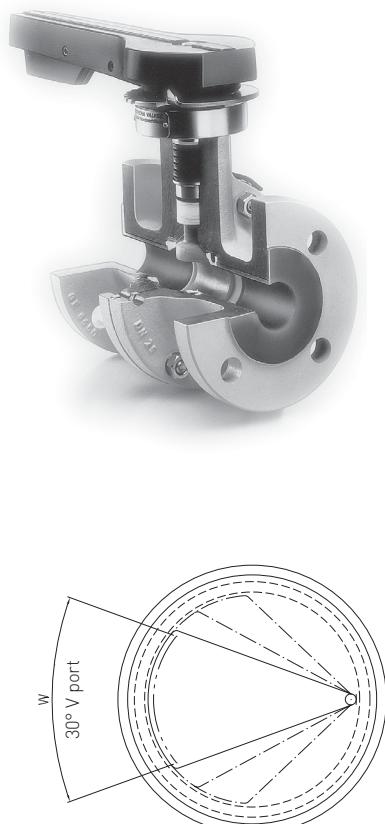
Example of inherent flow characteristics for a NTC DN 80.
V-port seats transform the standard equal percentage characteristics into a linear characteristics.

TECHNICAL DATA

Size (DN):	15 - 150
Temperature (°C):	-40 up to +210
Pressure range:	vacuum 0.1 mbar to 16 bar (see diagram)
Flange connections:	DIN PN 16, ANSI 150, JIS B 2212 10 K
Face to face:	DIN EN 558-1, row 1 ANSI B 16.10

HEAVY DUTY SERVICE

Neotecha also offers the NTC-NB2 version. These valves are especially prepared for chlorine (Cl_2), HCl, HF and oxygen service. The specially prepared NB2 version includes TFM as seat material, stringent cleaning before assembly, special inert grease and packed in sealed bags to avoid contamination during transport or handling.



NEOTECHA NTB - NTC PFA LINED BALL VALVES

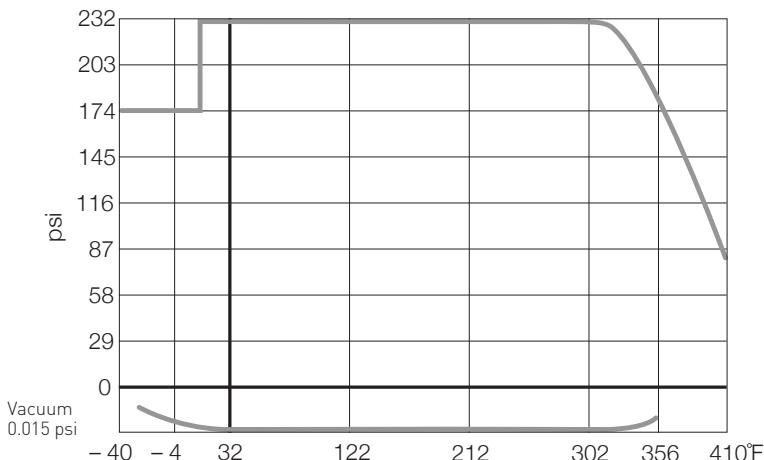
TECHNICAL DATA NTC - IMPERIAL

OPERATING TORQUES AND Cv-VALUES

Size DN	NPS	Torque*		K _v m ³ /h	C _v USGPM
		Nm	in/lbs		
15	½	10	89	11	13
20	¾	10	89	16	18
25	1	15	133	34	39
40	1½	25	222	90	104
50	2	35	310	160	185
65	2½	75	664	360	416
80	3	75	664	450	520
100	4	110	973	710	821
150	6	200	1770	1800	2081

* Torque values applicable for standard seats only. For NTC with "V port seats" use the torque values indicated for the NTB

PRESSURE-TEMPERATURE DIAGRAM



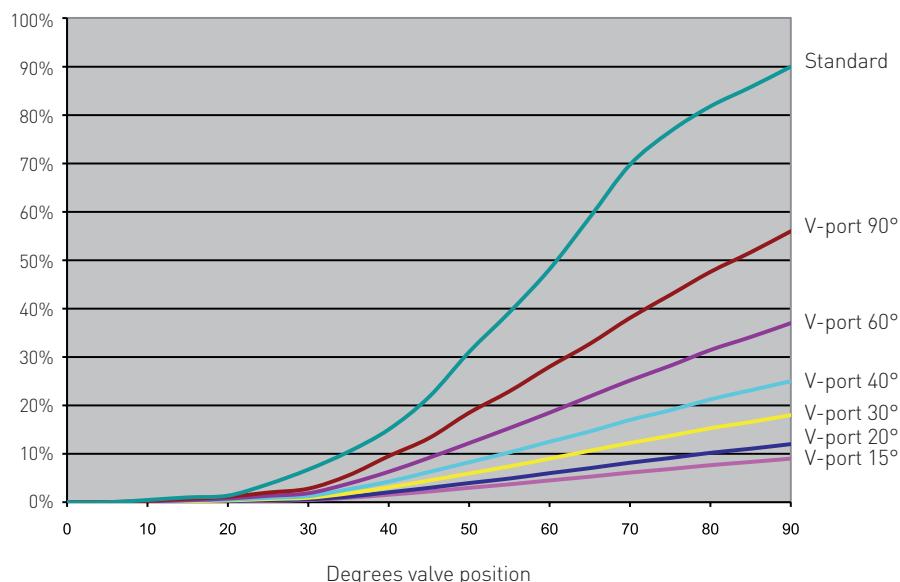
TECHNICAL DATA

Size (NPS):	½ - 6
Temperature (°F):	-40 up to +410
Pressure range:	vacuum 0.015 to 232 psi
Flange connections:	DIN PN 16, ANSI 150, JIS B 2212 10 K
Face to face:	DIN EN 558-1, row 1 ANSI B 16.10

HEAVY DUTY SERVICE

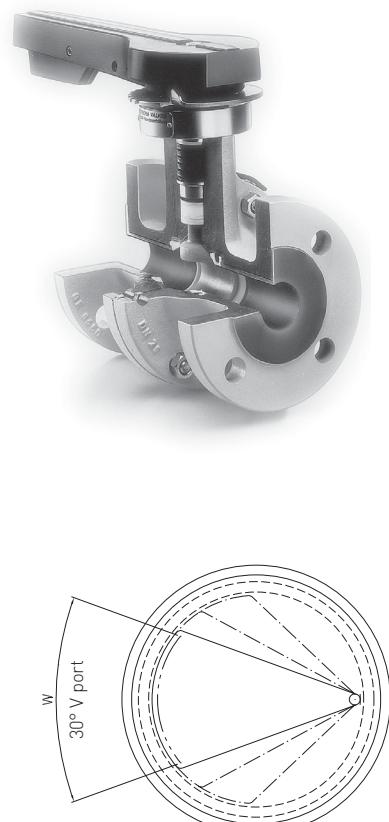
Neotecha also offers the NTC-NB2 version. These valves are especially prepared for chlorine (Cl_2), HCl, HF and oxygen service. The specially prepared NB2 version includes TFM as seat material, stringent cleaning before assembly, special inert grease and packed in sealed bags to avoid contamination during transport or handling.

NTC 3" WITH V-PORT



Example of inherent flow characteristics for a NTC 3".

V-port seats transform the standard equal percentage characteristics into a linear characteristics.



NEOTECHA NTB - NTC PFA LINED BALL VALVES

K_v VALUES FOR V-PORT CONTROL SEAT

Size DN	V-port	Valve opening angle																	
		0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°
15	15°	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.5	0.6	0.7	0.8	0.9	1.1	1.2	1.3	1.4
	20°	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.3	1.4	1.6	1.7	1.9
	30°	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.5	0.7	0.9	1.1	1.4	1.6	1.9	2.1	2.4	2.8
	40°	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.6	0.9	1.2	1.5	1.9	2.2	2.5	2.8	3.1	3.7
	60°	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.6	1.0	1.4	1.9	2.4	2.8	3.3	3.9	4.3	4.8	5.2
	90°	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.8	1.4	2.0	2.8	3.6	4.2	5.0	5.7	6.4	7.2	8.4
20	15°	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.5	0.6	0.8	0.9	1.0	1.1	1.3	1.4	1.5
	20°	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.5	0.7	0.9	1.0	1.2	1.4	1.6	1.8	1.9	2.1
	30°	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.5	0.8	1.0	1.3	1.6	1.8	2.1	2.4	2.7	3.1
	40°	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.4	0.7	1.0	1.3	1.7	2.0	2.4	2.8	3.1	3.4	4.0
	60°	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.6	1.0	1.5	2.0	2.5	3.1	3.6	4.2	4.7	5.2	5.7
	90°	0.0	0.0	0.1	0.1	0.2	0.3	0.5	0.9	1.6	2.3	3.1	3.8	4.6	5.4	6.3	7.1	7.9	8.5
25	15°	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.7	1.0	1.4	1.7	2.1	2.4	2.8	3.2	3.5	3.8	4.2
	20°	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.6	1.0	1.4	1.9	2.3	2.8	3.3	3.9	4.3	4.8	5.3
	30°	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.9	1.4	2.0	2.8	3.5	4.2	4.9	5.7	6.4	7.2	7.8
	40°	0.0	0.0	0.1	0.2	0.2	0.4	0.6	1.2	2.0	2.8	3.8	4.8	5.8	6.8	7.9	8.8	9.8	10.7
	60°	0.0	0.0	0.1	0.3	0.4	0.6	0.9	1.7	3.0	4.2	5.7	7.0	8.7	10.1	11.8	13.1	14.7	15.9
	90°	0.0	0.0	0.1	0.3	0.5	1.0	1.3	2.8	4.3	6.4	8.4	10.5	12.7	15.0	17.3	19.5	22.0	24.0
40	15°	0.0	0.0	0.1	0.1	0.2	0.4	0.6	1.2	2.0	2.9	3.8	4.7	5.8	6.8	7.9	8.8	9.8	10.7
	20°	0.0	0.0	0.1	0.2	0.3	0.5	0.8	1.5	2.8	3.9	5.3	6.7	8.1	9.5	11.0	12.3	13.8	14.9
	30°	0.0	0.0	0.1	0.2	0.5	0.9	1.2	2.6	4.1	5.9	8.0	9.9	12.1	14.2	16.5	18.6	20.6	22.0
	40°	0.0	0.0	0.2	0.4	0.7	1.1	1.6	3.4	5.5	8.0	10.7	13.5	16.2	19.0	22.0	25.0	28.0	30.0
	60°	0.0	0.0	0.2	0.6	1.0	1.7	2.4	4.3	8.3	12.3	16.0	20.4	24.0	29.0	33.0	37.0	41.0	45.0
	90°	0.0	0.0	0.4	0.9	1.5	2.6	3.6	7.6	12.4	17.9	24.0	31.0	36.0	43.0	50.0	55.0	62.0	68.0
50	15°	0.0	0.0	0.1	0.2	0.4	0.6	0.9	2.0	3.1	4.4	6.1	7.4	9.2	10.8	12.6	14.1	15.7	17.1
	20°	0.0	0.0	0.1	0.3	0.5	0.8	1.3	2.6	4.3	6.3	8.4	10.4	12.7	14.9	17.3	19.4	22.0	24.0
	30°	0.0	0.0	0.2	0.5	0.8	1.2	1.9	3.9	6.5	9.4	12.6	15.7	19.1	22.0	26.0	29.0	32.0	36.0
	40°	0.0	0.0	0.3	0.7	1.0	1.5	2.5	5.2	8.6	12.7	16.8	20.8	25.0	30.0	35.0	39.0	43.0	47.0
	60°	0.0	0.0	0.4	0.8	1.5	2.3	3.8	8.0	13.0	18.6	25.0	31.0	38.0	44.0	52.0	58.0	65.0	70.0
	90°	0.0	0.0	0.6	1.6	2.3	3.6	5.7	11.4	19.5	28.0	38.0	47.0	57.0	67.0	78.0	87.0	97.0	106.0
65	15°	0.0	0.0	0.2	0.4	0.8	1.2	2.0	4.3	6.9	9.7	13.4	16.6	20.2	24.0	28.0	31.0	34.0	38.0
	20°	0.0	0.0	0.3	0.6	1.2	1.8	2.9	6.0	9.8	14.2	19.1	24.0	29.0	34.0	39.0	44.0	49.0	53.0
	30°	0.0	0.0	0.4	1.2	1.7	2.6	4.3	8.6	14.7	21.0	29.0	35.0	43.0	51.0	59.0	66.0	74.0	80.0
	40°	0.0	0.0	0.6	1.0	2.3	4.0	5.8	12.0	19.7	29.0	38.0	48.0	58.0	67.0	79.0	88.0	98.0	107.0
	60°	0.0	0.0	0.9	2.3	3.5	6.0	8.7	18.0	29.0	43.0	57.0	71.0	87.0	101.0	118.0	132.0	147.0	160.0
	90°	0.0	0.0	1.3	3.5	5.1	9.2	12.7	28.0	43.0	63.0	84.0	105.0	127.0	149.0	173.0	194.0	216.0	236.0
80	15°	0.0	0.0	0.3	0.6	1.0	1.6	2.6	5.2	8.8	12.7	17.2	21.0	26.0	30.0	35.0	40.0	44.0	48.0
	20°	0.0	0.0	0.4	0.9	1.4	2.4	3.5	6.6	11.8	17.1	23.0	28.0	35.0	41.0	47.0	53.0	59.0	64.0
	30°	0.0	0.0	0.5	1.1	2.1	3.7	5.2	10.5	17.7	26.0	34.0	43.0	52.0	61.0	71.0	79.0	88.0	96.0
	40°	0.0	0.0	0.7	2.2	2.9	5.1	7.2	15.4	25.0	36.0	48.0	59.0	72.0	84.0	98.0	110.0	123.0	134.0
	60°	0.0	0.0	1.1	2.3	4.3	7.6	10.7	22.0	36.0	53.0	71.0	88.0	107.0	126.0	145.0	163.0	182.0	197.0
	90°	0.0	0.0	1.6	4.1	6.5	11.5	16.2	32.0	55.0	76.0	107.0	132.0	162.0	189.0	220.0	248.0	275.0	298.0
100	15°	0.0	0.0	0.4	0.9	1.6	2.6	4.0	8.2	13.8	19.7	27.0	33.0	40.0	47.0	55.0	62.0	69.0	75.0
	20°	0.0	0.0	0.6	1.3	2.3	4.0	5.8	11.7	19.7	28.0	38.0	47.0	58.0	68.0	79.0	88.0	98.0	107.0
	30°	0.0	0.0	0.8	2.1	3.4	5.1	8.4	16.6	28.0	40.0	55.0	69.0	84.0	99.0	114.0	127.0	142.0	155.0
	40°	0.0	0.0	1.1	3.4	4.5	8.5	11.3	22.0	38.0	56.0	74.0	92.0	113.0	131.0	153.0	170.0	192.0	208.0
	60°	0.0	0.0	1.7	4.6	6.7	12.0	16.8	36.0	57.0	84.0	111.0	140.0	168.0	197.0	228.0	253.0	285.0	310.0
	90°	0.0	0.0	2.5	8.0	10.2	18.0	25.0	50.0	86.0	119.0	168.0	207.0	254.0	297.0	346.0	386.0	432.0	471.0
150	15°	0.0	0.0	1.0	2.4	4.2	6.6	10.4	20.9	35.0	50.0	69.0	85.0	104.0	121.0	141.0	158.0	177.0	192.0
	20°	0.0	0.0	1.4	4.0	5.8	8.8	14.5	30.0	49.0	71.0	95.0	117.0	145.0	168.0	197.0	219.0	246.0	267.0
	30°	0.0	0.0	2.1	5.0	8.6	14.0	21.0	42.0	73.0	105.0	141.0	174.0	214.0	249.0	291.0	325.0	364.0	394.0
	40°	0.0	0.0	2.9	5.0	11.6	18.0	29.0	58.0	98.0	135.0	191.0	237.0	289.0	335.0	393.0	444.0	491.0	533.0
	60°	0.0	0.0	4.3	8.0	17.1	29.0	43.0	87.0	145	203.0	282.0	352.0	428.0	500.0	582.0	653.0	727.0	793.0
	90°	0.0	0.0	6.4	16.0	26.0	42.0	64.0	134.0	218	317.0	423.0	532.0	642.0	758.0	873.0	980.0	1091.0	1189



NEOTECHA NTB - NTC PFA LINED BALL VALVES

C_v VALUES FOR V-PORT CONTROL SEAT

Size NPS	V-port	Valve opening angle																	
		0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°
1/2"	15°	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.5	0.6	0.7	0.8	0.9	1.1	1.2	1.3	1.4
	20°	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.3	1.4	1.6	1.7	1.9
	30°	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.5	0.7	0.9	1.1	1.4	1.6	1.9	2.1	2.4	2.6
	40°	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.6	0.9	1.2	1.5	1.9	2.2	2.5	2.8	3.1	3.4
	60°	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.6	1.0	1.4	1.9	2.4	2.8	3.3	3.9	4.3	4.8	5.2
	90°	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.8	1.4	2.0	2.8	3.6	4.2	5.0	5.7	6.4	7.2	7.8
3/4"	15°	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.5	0.6	0.8	0.9	1.0	1.1	1.3	1.4	1.5
	20°	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.5	0.7	0.9	1.0	1.2	1.4	1.6	1.8	1.9	2.1
	30°	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.5	0.8	1.0	1.3	1.6	1.8	2.1	2.4	2.7	2.9
	40°	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.4	0.7	1.0	1.3	1.7	2.0	2.4	2.8	3.1	3.4	3.7
	60°	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.6	1.0	1.5	2.0	2.5	3.1	3.6	4.2	4.7	5.2	5.7
	90°	0.0	0.0	0.1	0.1	0.2	0.3	0.5	0.9	1.6	2.3	3.1	3.8	4.6	5.4	6.3	7.1	7.9	8.5
1"	15°	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.7	1.0	1.4	1.7	2.1	2.4	2.8	3.2	3.5	3.8	4.2
	20°	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.6	1.0	1.4	1.9	2.3	2.8	3.3	3.9	4.3	4.8	5.3
	30°	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.9	1.4	2.0	2.8	3.5	4.2	4.9	5.7	6.4	7.2	7.8
	40°	0.0	0.0	0.1	0.2	0.2	0.4	0.6	1.2	2.0	2.8	3.8	4.8	5.8	6.8	7.9	8.8	9.8	10.7
	60°	0.0	0.0	0.1	0.3	0.4	0.6	0.9	1.7	3.0	4.2	5.7	7.0	8.7	10.1	11.8	13.1	14.7	15.9
	90°	0.0	0.0	0.1	0.3	0.5	1.0	1.3	2.8	4.3	6.4	8.4	10.5	12.7	15.0	17.3	19.5	22.0	24.0
1 1/2"	15°	0.0	0.0	0.1	0.1	0.2	0.4	0.6	1.2	2.0	2.9	3.8	4.7	5.8	6.8	7.9	8.8	9.8	10.7
	20°	0.0	0.0	0.1	0.2	0.3	0.5	0.8	1.5	2.8	3.9	5.3	6.7	8.1	9.5	11.0	12.3	13.8	14.9
	30°	0.0	0.0	0.1	0.2	0.5	0.9	1.2	2.6	4.1	5.9	8.0	9.9	12.1	14.2	16.5	18.6	20.6	22.0
	40°	0.0	0.0	0.2	0.4	0.7	1.1	1.6	3.4	5.5	8.0	10.7	13.5	16.2	19.0	22.0	25.0	28.0	30.0
	60°	0.0	0.0	0.2	0.6	1.0	1.7	2.4	4.3	8.3	12.3	16.0	20.4	24.0	29.0	33.0	37.0	41.0	45.0
	90°	0.0	0.0	0.4	0.9	1.5	2.6	3.6	7.6	12.4	17.9	24.0	31.0	36.0	43.0	50.0	55.0	62.0	68.0
2"	15°	0.0	0.0	0.1	0.2	0.4	0.6	0.9	2.0	3.1	4.4	6.1	7.4	9.2	10.8	12.6	14.1	15.7	17.1
	20°	0.0	0.0	0.1	0.3	0.5	0.8	1.3	2.6	4.3	6.3	8.4	10.4	12.7	14.9	17.3	19.4	22.0	24.0
	30°	0.0	0.0	0.2	0.5	0.8	1.2	1.9	3.9	6.5	9.4	12.6	15.7	19.1	22.0	26.0	29.0	32.0	36.0
	40°	0.0	0.0	0.3	0.7	1.0	1.5	2.5	5.2	8.6	12.7	16.8	20.8	25.0	30.0	35.0	39.0	43.0	47.0
	60°	0.0	0.0	0.4	0.8	1.5	2.3	3.8	8.0	13.0	18.6	25.0	31.0	38.0	44.0	52.0	58.0	65.0	70.0
	90°	0.0	0.0	0.6	1.6	2.3	3.6	5.7	11.4	19.5	28.0	38.0	47.0	57.0	67.0	78.0	87.0	97.0	106.0
2 1/2"	15°	0.0	0.0	0.2	0.4	0.8	1.2	2.0	4.3	6.9	9.7	13.4	16.6	20.2	24.0	28.0	31.0	34.0	38.0
	20°	0.0	0.0	0.3	0.6	1.2	1.8	2.9	6.0	9.8	14.2	19.1	24.0	29.0	34.0	39.0	44.0	49.0	53.0
	30°	0.0	0.0	0.4	1.2	1.7	2.6	4.3	8.6	14.7	21.0	29.0	35.0	43.0	51.0	59.0	66.0	74.0	80.0
	40°	0.0	0.0	0.6	1.0	2.3	4.0	5.8	12.0	19.7	29.0	38.0	48.0	58.0	67.0	79.0	88.0	98.0	107.0
	60°	0.0	0.0	0.9	2.3	3.5	6.0	8.7	18.0	29.0	43.0	57.0	71.0	87.0	101.0	118.0	132.0	147.0	160.0
	90°	0.0	0.0	1.3	3.5	5.1	9.2	12.7	28.0	43.0	63.0	84.0	105.0	127.0	149.0	173.0	194.0	216.0	236.0
3"	15°	0.0	0.0	0.3	0.6	1.0	1.6	2.6	5.2	8.8	12.7	17.2	21.0	26.0	30.0	35.0	40.0	44.0	48.0
	20°	0.0	0.0	0.4	0.9	1.4	2.4	3.5	6.6	11.8	17.1	23.0	28.0	35.0	41.0	47.0	53.0	59.0	64.0
	30°	0.0	0.0	0.5	1.1	2.1	3.7	5.2	10.5	17.7	26.0	34.0	43.0	52.0	61.0	71.0	79.0	88.0	96.0
	40°	0.0	0.0	0.7	2.2	2.9	5.1	7.2	15.4	25.0	36.0	48.0	59.0	72.0	84.0	98.0	110.0	123.0	134.0
	60°	0.0	0.0	1.1	2.3	4.3	7.6	10.7	22.0	36.0	53.0	71.0	88.0	107.0	126.0	145.0	163.0	182.0	197.0
	90°	0.0	0.0	1.6	4.1	6.5	11.5	16.2	32.0	55.0	76.0	107.0	132.0	162.0	189.0	220.0	248.0	275.0	298.0
4"	15°	0.0	0.0	0.4	0.9	1.6	2.6	4.0	8.2	13.8	19.7	27.0	33.0	40.0	47.0	55.0	62.0	69.0	75.0
	20°	0.0	0.0	0.6	1.3	2.3	4.0	5.8	11.7	19.7	28.0	38.0	47.0	58.0	68.0	79.0	88.0	98.0	107.0
	30°	0.0	0.0	0.8	2.1	3.4	5.1	8.4	16.6	28.0	40.0	55.0	69.0	84.0	99.0	114.0	127.0	142.0	155.0
	40°	0.0	0.0	1.1	3.4	4.5	8.5	11.3	22.0	38.0	56.0	74.0	92.0	113.0	131.0	153.0	170.0	192.0	208.0
	60°	0.0	0.0	1.7	4.6	6.7	12.0	16.8	36.0	57.0	84.0	111.0	140.0	168.0	197.0	228.0	253.0	285.0	310.0
	90°	0.0	0.0	2.5	8.0	10.2	18.0	25.0	50.0	86.0	119.0	168.0	207.0	254.0	297.0	346.0	386.0	432.0	471.0
6"	15°	0.0	0.0	1.0	2.4	4.2	6.6	10.4	20.9	35.0	50.0	69.0	85.0	104.0	121.0	141.0	158.0	177.0	192.0
	20°	0.0	0.0	1.4	4.0	5.8	8.8	14.5	30.0	49.0	71.0	95.0	117.0	145.0	168.0	197.0	219.0	246.0	267.0
	30°	0.0	0.0	2.1	5.0	8.6	14.0	21.0	42.0	73.0	105.0	141.0	174.0	214.0	249.0	291.0	325.0	364.0	394.0
	40°	0.0	0.0	2.9	5.0	11.6	18.0	29.0	58.0	98.0	135.0	191.0	237.0	289.0	335.0	393.0	444.0	491.0	533.0
	60°	0.0	0.0	4.3	8.0	17.1	29.0	43.0	87.0	145	203.0	282.0	352.0	428.0	500.0	582.0	653.0	727.0	793.0
	90°	0.0	0.0	6.4	16.0	26.0	42.0	64.0	134.0	218	317.0	423.0	532.0	642.0	758.0	873.0	980.0	1091.0	1189



NEOTECHA NTB - NTC PFA LINED BALL VALVES

K_v VALUES FOR EQUAL PERCENTAGE CONTROL SEAT

Size DN	Valve opening angle																		
	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°
15	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.5	0.5	0.8	1.1	1.4	1.7	2.0	2.5	3.6	4.2	5.6	5.9
20	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.9	1.2	1.5	1.9	2.2	2.7	3.9	4.7	6.1	6.5
25	0.0	0.2	0.4	0.6	0.7	1.0	1.1	1.3	1.6	2.1	3.4	4.1	5.2	6.6	9.4	12.6	14.9	16.7	18.5
40	0.0	0.1	0.2	0.3	0.4	1.1	1.4	1.9	2.3	3.5	4.7	6.6	8.0	10.2	12.9	15.7	19.1	25.0	30.0
50	0.0	0.0	0.3	0.4	0.5	1.0	2.0	2.9	3.1	4.0	5.5	7.0	9.4	12.0	16.0	21.0	29.0	34.0	36.0
65	0.0	0.0	0.2	0.7	2.7	6.2	10.4	15.0	20.1	26.0	34.0	43.0	54.0	68.0	89.0	120.0	151.0	180.0	190.0
80	0.0	2.5	5.5	12.0	22.0	35.0	45.0	52.0	61.0	73.0	85.0	97.0	117.0	129.0	170.0	202.0	233.0	262.0	293.0
100	0.0	2.5	7.0	18.0	32.0	49.0	55.0	67.0	79.0	95.0	111.0	124.0	150.0	168.0	220.0	262.0	304.0	340.0	381.0
150	0.0	7.6	48.0	71.0	98.0	123.0	151.0	189.0	222.0	282.0	355.0	514.0	651.0	747.0	853.0	969.0	1060.0	1104.0	1153.0



C_v VALUES FOR EQUAL PERCENTAGE CONTROL SEAT

Size NPS	Valve opening angle																		
	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°
1/2"	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.5	0.5	0.8	1.1	1.4	1.7	2.0	2.5	3.6	4.2	5.6	5.9
3/4"	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.9	1.2	1.5	1.9	2.2	2.7	3.9	4.7	6.1	6.5
1"	0.0	0.2	0.4	0.6	0.7	1.0	1.1	1.3	1.6	2.1	3.4	4.1	5.2	6.6	9.4	12.6	14.9	16.7	18.5
1 1/2"	0.0	0.1	0.2	0.3	0.4	1.1	1.4	1.9	2.3	3.5	4.7	6.6	8.0	10.2	12.9	15.7	19.1	25.0	30.0
2"	0.0	0.0	0.3	0.4	0.5	1.0	2.0	2.9	3.1	4.0	5.5	7.0	9.4	12.0	16.0	21.0	29.0	34.0	36.0
2 1/2"	0.0	0.0	0.2	0.7	2.7	6.2	10.4	15.0	20.1	26.0	34.0	43.0	54.0	68.0	89.0	120.0	151.0	180.0	190.0
3"	0.0	2.5	5.5	12.0	22.0	35.0	45.0	52.0	61.0	73.0	85.0	97.0	117.0	129.0	170.0	202.0	233.0	262.0	293.0
4"	0.0	2.5	7.0	18.0	32.0	49.0	55.0	67.0	79.0	95.0	111.0	124.0	150.0	168.0	220.0	262.0	304.0	340.0	381.0
6"	0.0	7.6	48.0	71.0	98.0	123.0	151.0	189.0	222.0	282.0	355.0	514.0	651.0	747.0	853.0	969.0	1060.0	1104.0	1153.0



K_v VALUES FOR LINEAR CONTROL SEAT

Size DN	Slot (mm)	Valve opening angle																		
		0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°
15	1.6	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.6	0.7	0.7	0.8	0.9	0.9
	3.0	0.0	0.0	0.0	0.2	0.3	0.6	0.8	1.1	1.3	1.5	1.8	2.0	2.2	2.5	2.7	2.9	3.2	3.4	3.6
20	1.6	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.4	0.5	0.5	0.6	0.7	0.8	0.8	0.9	1.0	1.1	1.1
	3.0	0.0	0.0	0.0	0.2	0.4	0.7	0.9	1.3	1.5	1.8	2.1	2.5	2.7	3.1	3.4	3.6	4.0	4.2	4.4
25	1.6	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.6	0.7	0.9	1.0	1.2	1.3	1.4	1.5	1.7	1.8	2.0	2.1
	3.0	0.0	0.0	0.0	0.2	0.5	0.9	1.2	1.6	2.0	2.3	2.7	3.1	3.5	3.9	4.3	4.5	5.1	5.3	5.6
40	1.6	0.0	0.0	0.1	0.2	0.3	0.5	0.7	0.9	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.7	2.9	3.1	3.3
	3.0	0.0	0.0	0.0	0.4	0.8	1.4	1.9	2.6	3.1	3.8	4.4	5.0	5.6	6.3	6.9	7.3	8.2	8.6	9.1
50	1.6	0.0	0.0	0.1	0.2	0.4	0.6	0.9	1.1	1.4	1.7	2.0	2.3	2.5	2.8	3.0	3.3	3.6	3.9	4.1
	3.0	0.0	0.0	0.0	0.5	0.9	1.7	2.4	3.3	4.0	4.7	5.5	6.3	7.1	7.9	8.7	9.2	10.2	10.8	11.4



SPECIAL CUSTOMIZED CONTROL SEATS

Please contact factory

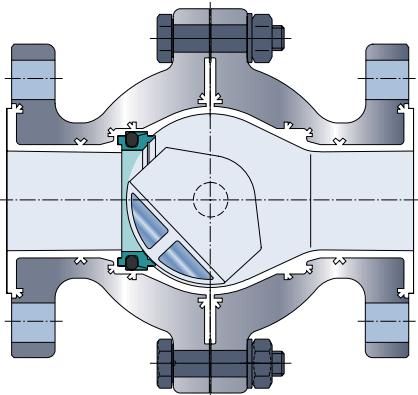
NEOTECHA NTB - NTC PFA LINED BALL VALVES

TECHNICAL DATA

The C-ball lined valve is dead spot free and is ideally suited for shut-off and control of corrosive, poisonous, crystallizing or high purity products where it is imperative that no product is entrapped in the ball and surrounding cavity.

The C-ball valve is based on a full port design resulting in high K_v values, which are especially required when high viscosity liquids have to be controlled or for those applications which require a large rangeability.

The advantage of the C-ball is a reduced flow distortion and excellent control characteristic. The wide range of available seat control styles have been designed based on our experience in corrosive flow control applications for many years. Most common control seats are the various V-port designs as well as the equal percentage of linear. These V-port seats are available with a V-port opening of 15, 20, 30, 40, 60 and 90°. For the most demanding flow control applications, Neotecha is able to calculate customized control seats.



Main benefits NTC as control valve

- Full trunnion mounted ball stem design utilized enhance control accuracy by eliminating a point of undesired hysteresis and it eliminates torque transmission through the PFA lining common to two piece designs.
- Full port design resulting in a large rangeability.
- Dead spot and cavity free design.
- Smooth flow path due to C-ball design.
- High cycle spindle seal construction.
- Fully trunnion mounted design eliminates radial shaft movement resulting in extreme low emissions (spindle seal is TA-Luft and VDI 2440 approved).
- Standard TFM seat resulting in low friction and low wear seat design.
- Wide range of control seats able to suit wide range of flow control characteristics.
- Integrated ISO 5211 topplate to allow direct actuator mounting resulting in a compact package.
- Emerson is able to supply complete flow control packages including flow calculation, control valves, actuators and positioners, all from one source.

NEOTECHA NTB - NTC PFA LINED BALL VALVES

TECHNICAL DATA

SELECTION GUIDE

Example:	NTB	050	NB1	F	16	L	00
Type							
NTB	standard ball stem						
NTC	C-ball stem						
Size (DN)							
15 - 150							
Trim							
See material trim table							
Body style							
F	Flanged						
Flange pattern / face to face							
A1	ANSI 150 (face to face in accordance to ANSI B16.10 class 150)						
16	PN 16 (face to face in accordance to DIN EN 558-1, row 1)						
J0	JIS 10K						
Operation/Connection							
L	Lever operated	4	With mounting flange F10				
G	Gear operated	5	With mounting flange F12				
1	With mounting flange F04	6	With mounting flange F14				
2	With mounting flange F05	7	With mounting flange F16				
3	With mounting flange F07	B	Bare shaft				
Variant							
00	Standard						
15	15 degrees V port seat						
20	20 degrees V port seat						
30	30 degrees V port seat						
40	40 degrees V port seat						
60	60 degrees V port seat						
90	90 degrees V port seat						

MATERIAL TRIM TABLE NTB AND NTC

Trim number	Body	Ball	Shaft	Seat	O-ring backing	Sizes	Remarks
NB1	PFA encapsulated	PFA encapsulated	PFA encapsulated	TFM	FPM/PFA encapsulated	DN 15-150 ½"-6"	NTC control seats are made of PTFE/glass
NB2	PFA encapsulated	PFA encapsulated	PFA encapsulated	TFM	FPM/PFA encapsulated	DN 15-150 ½"-6"	Especially cleaned and treated for HCl and Cl₂
NB4	Conductive PFA encapsulated	Conductive PFA encapsulated	Conductive PFA encapsulated	TFM Conductive	FPM/PFA encapsulated	DN 15-150 ½"-6"	
NB5	Conductive PFA encapsulated	Conductive PFA encapsulated	Conductive PFA encapsulated	TFM Conductive	FPM/PFA encapsulated	DN 15-150 ½"-6"	Especially cleaned and treated for HCl and Cl₂

NEOTECHA NTB - NTC PFA LINED BALL VALVES

LEVER AND GEAR OPERATOR - METRIC

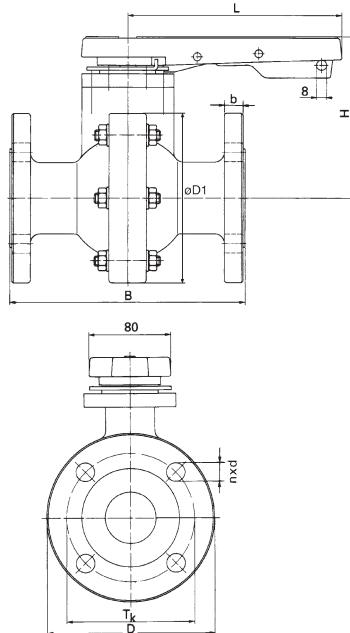
FLANGE DRILLED DIN PN 16, FACE TO FACE DIN EN 558, ROW 1

Size DN	B	H	L	D	D1	T _k	nxd	b	Weight (kg)
15	130	110	210	95	95	65	4x14	12	3.6
20	150	110	210	105	95	75	4x14	14	3.9
25	160	135	210	115	120	85	4x14	14	6.2
40	200	150	210	150	156	110	4x18	16	11.0
50	230	155	210	165	165	125	4x18	18	13.5
65	290	190	300	185	230	145	4x18	18	24.3
80	310	190	300	200	230	160	8x18	20	25.0
100	350	205	300	220	265	180	8x18	22	35.0
150	*480	270	-	279	365	241	8x22	26	98.0

* With spool piece

HANDLEVER

Type ZE: lockable in end position (DN 15-80)
Type Z for C-ball valve: lockable in 6 intermediate positions.



FLANGE DRILLED ANSI B 16.5 CLASS 150, FACE TO FACE ANSI B 16.10 CLASS 150

Size NPS	B	H	L	D	D1	T _k	nxd	b	Weight (kg)
1/2	108	110	210	89	95	60.3	4x16	11	3.4
3/4	117	110	210	98	95	70.0	4x16	13	3.6
1	127	135	210	108	120	79.5	4x16	14	5.7
1 1/2	165	150	210	127	156	98.5	4x16	18	9.6
2	178	155	210	152	165	120.5	4x19	18	12.2
2 1/2	*290	190	300	185	230	145.0	4x19	18	24.3
3	203	190	300	190	230	152.5	4x19	24	23.8
4	229	205	300	229	265	190.5	8x19	24	33.8
6	267	270	-	279	365	241.0	8x22	26	79.0

* Face to face to DIN EN 558, row 1

FLANGE DRILLED JIS B 2212 10K, FACE TO FACE DIN EN 558, ROW 1

Size DN	B	H	L	D	T _k	nxd	b	Weight (kg)
3.6	15	130	110	210	95	70	4x15	12.0
3.9	20	150	110	210	100	75	4x15	14.0
6.2	25	160	135	210	118	90	4x19	14.0
11.0	40	200	150	210	140	105	4x19	16.0
13.5	50	230	155	210	155	120	4x19	18.0
24.3	65	290	190	300	175	140	4x19	18.0
25.0	80	310	190	300	185	150	8x19	20.0
100.0	350	205	300	210	175	8x19	22	35.0
150.0	*480	270	-	279	240	8x23	26	98.0

* With spool piece

GEAR OPERATOR

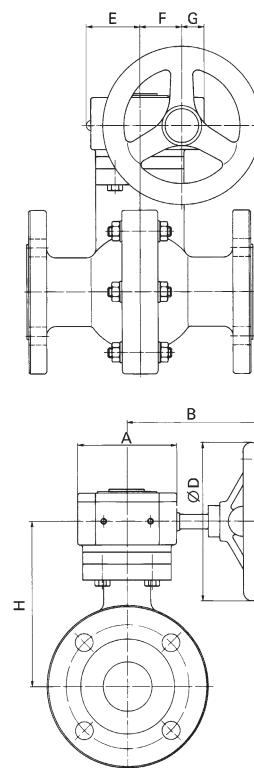
Size DN	Size NPS	H	Weight (kg)
15	1/2	118	7.1
20	3/4	118	7.3
25	1	140	9.6
40	1 1/2	153	14.4
50	2	158	16.9
65	2 1/2	206	31.6
80	3	206	32.3
100	4	222	42.3
150	6	285	122.2

GEAR OPERATOR DIMENSIONS

Size DN (NPS)	Gear	ISO	A	B	Ø D	E	F	G
15-50 (1/2-2)	*	F07	150	194	200	71	46	28
65-150 (2 1/2-6)	**	F10	140	213	250	85	70	35

* Type 1

** Type 2



NEOTECHA NTB - NTC PFA LINED BALL VALVES

LEVER AND GEAR OPERATOR - IMPERIAL

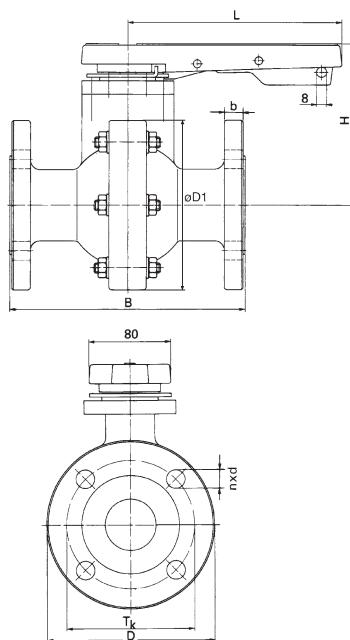
FLANGE DRILLED DIN PN 16, FACE TO FACE DIN EN 558, ROW 1

Size NPS	B	H	L	D	D1	T _k	nxd	b	Weight (lb)
1/2	5.12	4.33	8.27	3.74	3.74	2.56	4 x 0.55	0.47	7.94
3/4	5.91	4.33	8.27	4.13	3.74	2.95	4 x 0.55	0.55	8.60
1	6.30	5.31	8.27	4.53	4.72	3.35	4 x 0.55	0.55	13.67
1 1/2	7.87	5.91	8.27	5.91	6.14	4.33	4 x 0.71	0.63	24.25
2	9.06	6.10	8.27	6.50	6.50	4.92	4 x 0.71	0.71	29.76
2 1/2	11.42	7.48	11.81	7.28	9.06	5.71	4 x 0.71	0.71	53.57
3	12.20	7.48	11.81	7.87	9.06	6.30	8 x 0.71	0.79	55.12
4	13.78	8.07	11.81	8.66	10.43	7.09	8 x 0.71	0.87	77.16
6	*18.89	10.63	-	10.98	14.37	9.49	8 x 0.87	1.02	216.05

* With spool piece

HANDLEVER

Type ZE: lockable in end position (DN 15-80)
Type Z for C-ball valve: lockable in 6 intermediate positions.



FLANGE DRILLED ANSI B 16.5 CLASS 150, FACE TO FACE ANSI B 16.10 CLASS 150

Size NPS	B	H	L	D	D1	T _k	nxd	b	Weight (lb)
1/2	4.25	4.33	8.27	3.50	3.74	2.37	4 x 0.63	0.43	7.50
3/4	4.61	4.33	8.27	3.86	3.74	2.76	4 x 0.63	0.51	7.94
1	5.00	5.31	8.27	4.25	4.72	3.13	4 x 0.63	0.55	12.57
1 1/2	6.50	5.91	8.27	5.00	6.14	3.88	4 x 0.63	0.71	21.16
2	7.01	6.10	8.27	5.98	6.50	4.74	4 x 0.75	0.71	26.90
2 1/2	*11.42	7.48	11.81	7.28	9.06	5.71	4 x 0.75	0.71	53.57
3	7.99	7.48	11.81	7.48	9.06	6.00	4 x 0.75	0.94	52.47
4	9.02	8.07	11.81	9.02	10.43	7.50	8 x 0.75	0.94	74.52
6	10.51	10.63	-	10.98	14.37	9.49	8 x 0.87	1.02	174.17

* Face to face to DIN EN 558, row 1

FLANGE DRILLED JIS B 2212 10K, FACE TO FACE DIN EN 558, ROW 1

Size NPS	B	H	L	D	T _k	nxd	b	Weight (lb)
1/2	5.12	4.33	8.27	3.74	2.76	4 x 0.59	0.47	7.94
3/4	5.91	4.33	8.27	3.94	2.95	4 x 0.59	0.55	8.60
1	6.30	5.31	8.27	4.65	3.54	4 x 0.75	0.55	13.67
1 1/2	7.87	5.91	8.27	5.51	4.13	4 x 0.75	0.63	24.25
2	9.06	6.10	8.27	6.10	4.72	4 x 0.75	0.71	29.76
2 1/2	11.42	7.48	11.81	6.89	5.51	4 x 0.75	0.71	53.57
3	12.20	7.48	11.81	7.28	5.91	8 x 0.75	0.79	55.12
4	13.78	8.07	11.81	8.27	6.89	8 x 0.75	0.87	77.16
6	*18.90	10.63	-	10.98	9.45	8 x 0.91	1.02	216.05

* With spool piece

GEAR OPERATOR

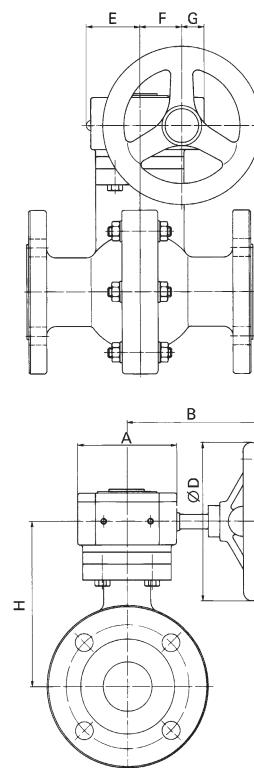
Size NPS	Size DN	H	Weight (lb)
1/2	15	4.65	15.65
3/4	20	4.65	16.09
1	25	5.51	21.16
1 1/2	40	6.02	31.75
2	50	6.22	37.26
2 1/2	65	8.11	69.67
3	80	8.11	71.21
4	100	8.74	93.26
6	150	11.22	269.41

GEAR OPERATOR DIMENSIONS

Size NPS (DN)	Gear	ISO	A	B	Ø D	E	F	G
1/2 - 2 (15-50)	*	F07	5.91	7.64	7.87	2.80	1.81	1.10
2 1/2 - 6 (65-150)	**	F10	5.51	8.39	9.84	3.35	2.76	1.38

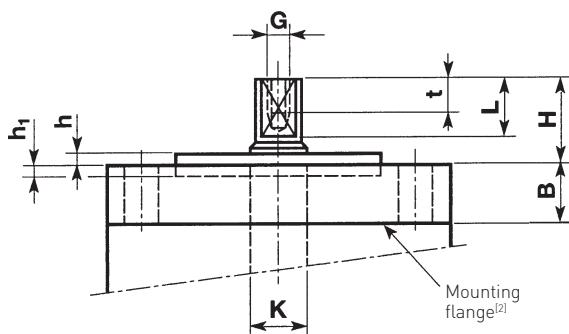
* Type 1

** Type 2



NEOTECHA NTB - NTC PFA LINED BALL VALVES

ISO 5211 FLANGE AND STEM ADAPTER DIMS - METRIC

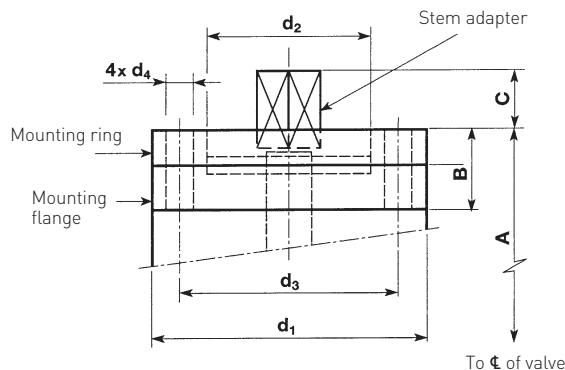


NOTES

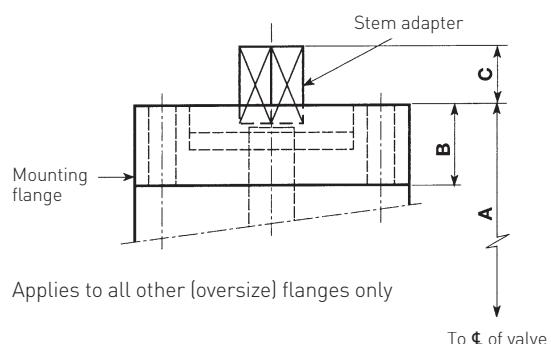
- For direct mounting of actuators/gear units, please use the ISO5211 version.
- All Mounting flanges for DN 150 have a recess (h_1).
- All flange and stem dimensions are in mm.

BARE SHAFT FLANGE AND STEM DIMENSIONS in mm (Operation code "B")

Size DN	ISO flange	PCD	Stem Dia K	Double "D" (Flat)	Diag. Sq.	G	H	h/h_1	L	t	B
015 - 020	F04	42	11.0	7.0	NA	M5	22.0	2	15	8	18.0
025 - 040	F05	50	12.8	10.0	NA	M5	22.0	3	15	9	19.0
050	F07	70	14.0	10.0	NA	M6	22.0	3	15	9	19.0
065 - 080	F07	70	18.0	NA	14.0	NA	33.5	3	25	NA	19.0
100	F07	70	20.0	NA	16.0	NA	33.5	3	25	NA	19.0
150	F10	102	28.0	NA	22.0	M8	23.5	13 ^[2]	35	20	30.5



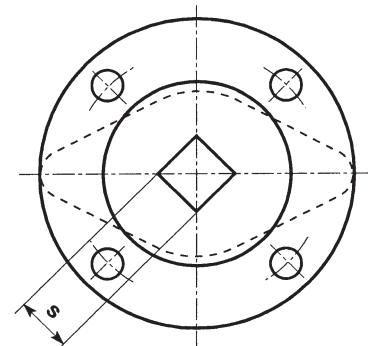
Applies to flange sizes marked^[4] only



Applies to all other (oversize) flanges only

ISO 5211/DIN 3337 TOP FLANGE AND STEM DIMENSIONS in mm (Operation code 1 - 7)

Size DN	PCD	Diag. Sq. ^[5]	A	B	C	D1	D2	D3	D4	Code
015 - 020	F04 ^[4]	11 x 11	95.0	30.0	11.5	54	30	42	5.4	1
015 - 020	F05	14 x 14	93.0	27.5	12.5	65	35	50	7.0	2
015 - 020	F07	17 x 17	93.0	27.5	15.5	90	55	70	9.0	3
025	F05 ^[4]	14 x 14	115.0	27.5	15.5	65	35	50	7.0	2
025	F07	17 x 17	115.0	27.5	18.5	90	55	70	9.0	3
025	F10	22 x 22	115.0	27.5	22.5	125	70	102	11.0	4
040	F05 ^[4]	14 x 14	128.0	27.5	15.5	65	35	50	7.0	2
040	F07	17 x 17	128.0	27.5	18.5	90	55	70	9.0	3
040	F10	22 x 22	128.0	27.5	22.5	125	70	102	11.0	4
050	F07 ^[4]	17 x 17	133.0	27.5	18.5	90	55	70	9.0	3
050	F10	22 x 22	133.0	27.5	22.5	125	70	102	11.0	4
050	F12	27 x 27	132.0	26.5	27.5	150	85	125	13.0	5
065 - 080	F07 ^[4]	17 x 17	171.0	31.0	18.5	90	55	70	9.0	3
065 - 080	F10	22 x 22	168.0	27.5	22.0	125	70	102	11.0	4
065 - 080	F12	27 x 27	165.0	24.5	25.0	150	85	125	13.0	5
065 - 080	F14	36 x 36	165.0	24.5	30.0	175	100	140	17.0	6
100	F07 ^[4]	17 x 17	187.0	31.0	18.5	90	55	70	9.0	3
100	F10	22 x 22	184.0	27.5	22.0	125	70	102	11.0	4
100	F12	27 x 27	181.0	24.5	25.0	150	85	125	13.0	5
100	F14	36 x 36	181.0	24.5	30.0	175	100	140	17.0	6
150	F10 ^[4]	22 x 22	246.5	30.5	23.5	125	70	102	11.0	4
150	F12	27 x 27	243.0	27.0	27.0	150	85	125	13.0	5
150	F14	36 x 36	238.0	22.0	32.0	175	100	140	17.0	6
150	F16	46 x 46	238.0	22.0	40.0	210	130	165	22.0	7



NOTES

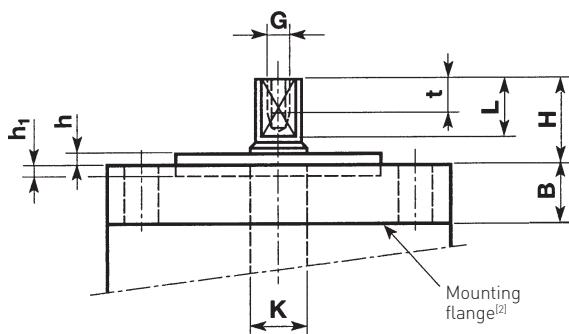
- Flange dimensions for standard ball valves.
- Diagonal square to ISO 5211

WARNING

The mounting flange is an integral part of the valve. Removal, alteration or modification will disturb the "live-loaded" stem seal design and void warranty. Please consult your Neotecha technical representative.

NEOTECHA NTB - NTC PFA LINED BALL VALVES

ISO 5211 FLANGE AND STEM ADAPTER DIMS - IMPERIAL

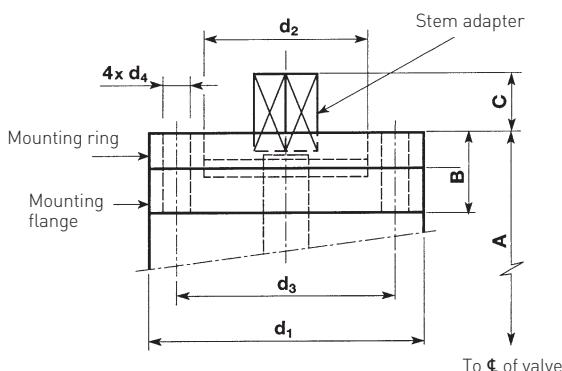


NOTES

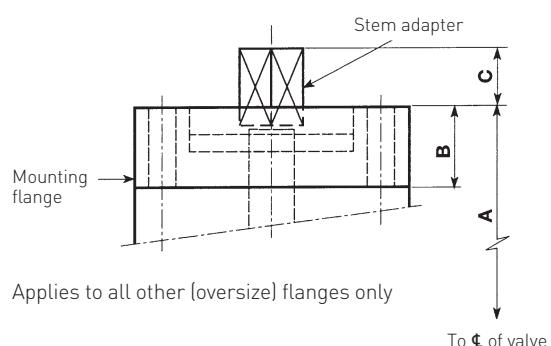
- For direct mounting of actuators/gear units, please use the ISO5211 version.
- All Mounting flanges for DN 150 have a recess (h_1).
- All flange and stem dimensions are in imperial units.

BARE SHAFT FLANGE AND STEM DIMENSIONS in inch (Operation code "B")

Size NPS	ISO flange	PCD	Stem Dia K	Double "D" (Flat)	Diag. Sq.	G	H	h/h_1	L	t	B
1/2-3/4	F04	1.65	0.43	0.28	NA	M5	0.87	0.08	0.59	0.31	0.71
1-1/2	F05	1.97	0.50	0.39	NA	M6	0.87	0.12	0.59	0.35	0.75
2	F07	2.76	0.55	0.39	NA	M6	0.87	0.12	0.59	0.35	0.75
2 1/2-3	F07	2.76	0.71	NA	0.55	NA	1.32	0.12	0.98	NA	0.75
4	F07	2.76	0.79	NA	0.63	NA	1.32	0.12	0.98	NA	0.75
6	F10	4.02	1.10	NA	0.87	M8	0.93	0.51 ^[2]	1.38	0.79	1.20



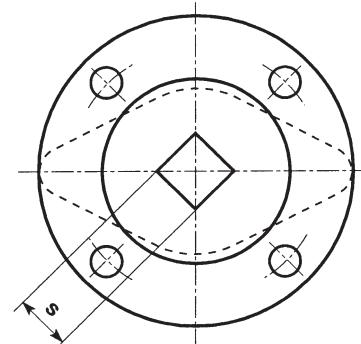
Applies to flange sizes marked^[4] only



Applies to all other (oversize) flanges only

ISO 5211/DIN 3337 TOP FLANGE AND STEM DIMENSIONS in inch (Operation code 1 - 7)

Size NPS	PCD	Diag. Sq. ^[5]	A	B	C	D1	D2	D3	D4	Code
1/2-3/4	F04 ^[4]	0.43 x 0.43	3.74	1.18	0.45	2.13	1.18	1.65	0.21	1
1/2-3/4	F05	0.55 x 0.55	3.66	1.08	0.49	2.56	1.38	1.97	0.28	2
1/2-3/4	F07	0.67 x 0.67	3.66	1.08	0.61	3.54	2.17	2.76	0.35	3
1	F05 ^[4]	0.55 x 0.55	4.53	1.08	0.61	2.56	1.38	1.97	0.28	2
1	F07	0.67 x 0.67	4.53	1.08	0.73	3.54	2.17	2.76	0.35	3
1	F10	0.87 x 0.87	4.53	1.08	0.89	4.92	2.76	4.02	0.43	4
1 1/2	F05 ^[4]	0.55 x 0.55	5.04	1.08	0.61	2.56	1.38	1.97	0.28	2
1 1/2	F07	0.67 x 0.67	5.04	1.08	0.73	3.54	2.17	2.76	0.35	3
1 1/2	F10	0.87 x 0.87	5.04	1.08	0.89	4.92	2.76	4.02	0.43	4
2	F07 ^[4]	0.67 x 0.67	5.24	1.08	0.73	3.54	2.17	2.76	0.35	3
2	F10	0.87 x 0.87	5.24	1.08	0.89	4.92	2.76	4.02	0.43	4
2	F12	1.06 x 1.06	5.20	1.04	1.08	5.91	3.35	4.92	0.51	5
2 1/2-3	F07 ^[4]	0.67 x 0.67	6.73	1.22	0.73	3.54	2.17	2.76	0.35	3
2 1/2-3	F10	0.87 x 0.87	6.61	1.08	0.87	4.92	2.76	4.02	0.43	4
2 1/2-3	F12	1.06 x 1.06	6.50	0.96	0.98	5.91	3.35	4.92	0.51	5
2 1/2-3	F14	1.42 x 1.42	6.50	0.96	1.18	6.89	3.94	5.51	0.67	6
4	F07 ^[4]	0.67 x 0.67	7.36	1.22	0.73	3.54	2.17	2.76	0.35	3
4	F10	0.87 x 0.87	7.24	1.08	0.87	4.92	2.76	4.02	0.43	4
4	F12	1.06 x 1.06	7.13	0.96	0.98	5.91	3.35	4.92	0.51	5
4	F14	1.42 x 1.42	7.13	0.96	1.18	6.89	3.94	5.51	0.67	6
6	F10 ^[4]	0.87 x 0.87	9.70	1.20	0.93	4.92	2.76	4.02	0.43	4
6	F12	1.06 x 1.06	9.57	1.06	1.06	5.91	3.35	4.92	0.51	5
6	F14	1.42 x 1.42	9.37	0.87	1.26	6.89	3.94	5.51	0.67	6
6	F16	1.81 x 1.81	9.37	0.87	1.57	8.27	5.12	6.50	0.87	7



NOTES

- Flange dimensions for standard ball valves.
- Diagonal square to ISO 5211

WARNING

The mounting flange is an integral part of the valve. Removal, alteration or modification will disturb the "live-loaded" stem seal design and void warranty. Please consult your Neotecha technical representative.

NEOTECHA NTB - NTC PFA LINED BALL VALVES

QUESTIONNAIRE FOR CONTROL VALVE SIZING - METRIC

Flow calculations can be made with the following sizing formulas for liquid and gas.

Neotecha is able to supply a detailed flow control calculation sheet based on the actual process data and the required system characteristic.

Liquid:

$$K_V = Q \sqrt{\frac{RHO}{(P_1 - P_2) \times 1000}}$$

Gas:

$$K_V = \frac{Q_N}{514} \sqrt{\frac{RHO_N \times T}{\Delta p \times P_2}}$$

K_V valve capacity coefficient

Q flow [m^3/h]

RHO density [kg/m^3]

P_1 inlet pressure [bar a]

P_2 outlet pressure [bar a]

K_V valve capacity coefficient

Q_N flow [Norm m^3/h]

RHO_N density [$kg/Norm m^3$]

P_1 inlet pressure [bar a]

P_2 outlet pressure [bar a]

ΔP Delta P ($P_1 - P_2$)

T temperature in °Kelvin

For factory sizing please indicate the following data's:

Liquid:

Flow

Q min. [m^3/h]

Q norm. [m^3/h]

Q max. [m^3/h]

P_1 inlet pressure absolute

P_1 at min. flow [bar a]

P_1 at norm. flow [bar a]

P_1 at max. flow [bar a]

P_2 outlet pressure absolute

P_2 at min. flow [bar a]

P_2 at norm. flow [bar a]

P_2 at max. flow [bar a]

Vapor pressure absolute

p_v [bar a]

Critical pressure absolute

p_c [bar a]

Density

RHO [kg/m^3]

Line size

DN [mm]

Preferred valve size

DN [mm]

Gas:

Flow

W min. [kg/h]

W norm. [kg/h]

W max. [kg/h]

P_1 inlet pressure absolute

P_1 at min. flow [bar a]

P_1 at norm. flow [bar a]

P_1 at max. flow [bar a]

P_2 outlet pressure absolute

P_2 at min. flow [bar a]

P_2 at norm. flow [bar a]

P_2 at max. flow [bar a]

Temperature upstream

T_1 [Kelvin]

Norm density

RHO_N [kg/nm^3]

Density

RHO [kg/m^3]

Ratio of spec. Heat

Kappa []

Line size

DN [mm]

Preferred valve size

DN [mm]

The units mentioned are preferred units. If you have different units please precise them.

With equal percentage and V-port seats, the best control characteristics are between a opening angle of 20° to 60°.

The control of minimum to maximum flow should be chosen in this opening range.

NEOTECHA NTB - NTC PFA LINED BALL VALVES

QUESTIONNAIRE FOR CONTROL VALVE SIZING - IMPERIAL

Flow calculations can be made with the following sizing formulas for liquid and gas.

Neotecha is able to supply a detailed flow control calculation sheet based on the actual process data and the required system characteristic.

Liquid:

$$C_V = Q \sqrt{\frac{R.D.}{\Delta p}}$$

Gas:

$$C_V = \frac{Q}{61} \sqrt{\frac{R.D.}{P_2 \Delta p}}$$

C_V valve capacity coefficient

Q flow [cu ft/hr]

R.D. relative density of liquid [water = 1]

Δp pressure drop [psi]

C_V valve capacity coefficient

Q flow [scu ft/hr]

R.D. relative density of gas [air = 1]

Δp pressure drop [psi]

[less than ½ inlet pressure (psia)]

P_2 outlet pressure [psi abs.]

For factory sizing please indicate the following data's:

Liquid:

Fluid name

Temperature

Flow rate min.

Flow rate norm.

Flow rate max.

P_1 inlet pressure absolute

[°F]

[cu ft/hr]

[cu ft/hr]

[cu ft/hr]

[psia]

[psia]

[psia]

P_2 outlet pressure absolute

[psia]

[psia]

[psia]

Vapor pressure absolute

[psia]

Critical pressure absolute

[psia]

Density

at p_{1t1}

Line size

[lbs/ ft³]

Preferred valve size

[inch]

[inch]

Gas:

Fluid name

Flow rate min. [scu ft/hr]

Flow rate norm. [scu ft/hr]

Flow rate max. [scu ft/hr]

P_1 inlet pressure absolute [psia]

P_1 at min. flow [psia]

P_1 at norm. flow [psia]

P_1 at max. flow [psia]

P_2 outlet pressure absolute [psia]

P_2 at min. flow [psia]

P_2 at norm. flow [psia]

P_2 at max. flow [psia]

Temperature upstream [°F]

Density at p_{1t1} [lbs/ ft³]

Compressibility factor []

Adiabatic ratio cp/cv [inch]

Line size [inch]

Preferred valve size [inch]

The units mentioned are preferred units. If you have different units please precise them.

With equal percentage and V-port seats, the best control characteristics are between a opening angle of 20° to 60°.

The control of minimum to maximum flow should be chosen in this opening range.

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