



I Application

The NDL (Non Dead Leg T Valve) diaphragm valves, manually or pneumatically operated, are specially designed for use on aseptic processes in the pharmaceutical industry. The valves are widely used at points of use in the loops of purified water (PW) or water for injections (WFI).

I Operating principle

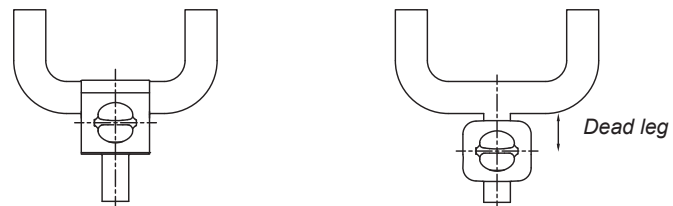
The diaphragm provides the body seal as well as the seat seal. There are no paths to the outside environment and, as such, the valve is suitable for aseptic processes. When the valve is being closed, a pressure pad which supports the diaphragm moves towards the sealing face on the body. As the pressure plate moves, the diaphragm flexes and is forced down onto the seat area in the centre of the body, thus, closing off the flow path through the body.

The valve can be actuated either manually or pneumatically and controlled by control units and solenoid valves.

A standard diaphragm valve is used to shut the flow of a line, an NDL type valve shuts only one outlet of the main line.

I Design and features

Comparing with a traditional diaphragm valve, the dead leg of an NDL valve is reduced to a minimum due to the design of the valve, and the pharmaceutical normatives like ASME BPE prioritise this condition.



Broad flexible range based upon a modular design concept with key components being common with other valves.

Autoclavable stainless steel bonnets and handles.

Handle with stroke limiter.

Hygienic design of the handles.

The valve body is machined out of a stainless steel block.

Completely drainable design.

Traceability of components.

I Technical specifications

Materials:

Parts in contact with the product

Stainless steel AISI 316L (1.4404)

Other stainless steel parts

Stainless steel AISI 304 (1.4301)

Plastic parts

PP + 30 GF

Diaphragm

EPDM (according to FDA 177.2600 and USP Class VI)

Surface finish:

Internal

$Ra \leq 0,5 \mu m$

External

Bright polish

Available sizes

DN 3/4" - DN 3"

Connections

Clamp OD / Weld

I Technical specifications

Operating limits:

Max. working temperature (St.St. actuator)	-20 °C to +90 °C (EPDM)	-4°F to +194°F
	+140 °C (SIP, max. 30 min)	284°F
Max. working pressure (according to the model)	10 bar	145 PSI
Compressed air pressure	6-8 bar	87-116 PSI

I Options

Diaphragm: FPM, VMQ (according to FDA 177.2600 and USP class VI)
and PTFE / EPDM separate (according to FDA 177.2600).

Stainless steel bonnet with plastic or stainless steel handle.

Pneumatic actuator with stroke limiter.

Pneumatic actuator with external switch.

Control box with switches and solenoid valves.

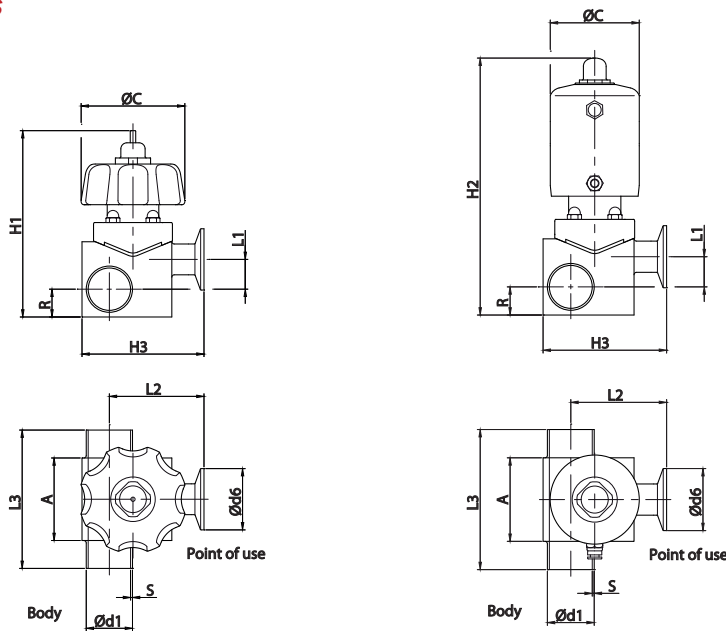
Materials and roughness certificates.

I Pressure range

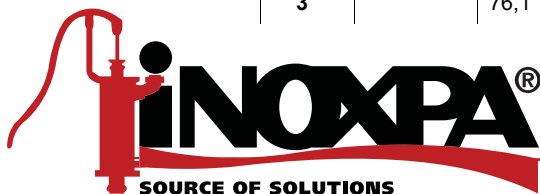
Size	DN	Handle		Actuator	
	Point of use	[bar]	[PSI]	[bar]	[PSI]
N°1	½"	10	145	8	116
N°2	¾"	10	145	8	116
	1"				
N°3	1½"	10	145	8	116
N°4	2"	6	87	6	87



I Dimensions



Size	DN		Ø d1	S	Ø d6	A	H1	H2	H3	Ø C	R	L1	L2	L3
	Body	Point of use												
N°1	½"	½"	12,7	1,65	25,4	38	93	149	70,5	60	10,5	13	53	86
	¾"		19		25,4		98	154	70		12,5	16	56	
	1"		25,4		50,5		104	160	76,5		15,5	19	60	
	1 ½"		38,1		50,5		118	174	88,5		22,5	26	66	
	2"		50,8		64		131	187	92		29,5	32	72	
N°2	¾"	¾"	19	1,65	25,4	68	133	189	91	89	13,5	14	68	114
	1"		25,4		50,5		139	195	91		15	18	71	
	1 ½"		38,1		50,5		154	210	100		23	25	77,5	
	2"		50,8		64		167	223	114		30	30	84	
	1"	1"	25,4	1,65	50,5	68	139	195	90	89	15	18	71	114
	1 ½"		38,1		50,5		154	210	100		23	25	78	
	2"		50,8		64		167	223	114		30	30,5	84	
	2 ½"		63,5		77,5		179	235	127		37	35,5	90	
3"	76,1	91	195	251	140	46	43	97						
N°3	1 ½"	1 ½"	38,1	1,65	50,5	95	184	292	126	89	25	24	102	140
	2"		50,8		64		195	303	140		30	30	108	
	2 ½"		63,5		77,5		208	317	151,5		36,5	37	115	
	3"		76,1		91		224	332	164		46	43	121	
N°4	2"	2"	50,8	1,65	64	130	252	333	155	134	29	35	123	176
	2 ½"		63,5		77,5		275	421	167		47	41	129	
	3"		76,1		91		285	430	177,5		49	48	136	





I Application

Diaphragm valves, manually or pneumatically operated, are specially designed for use in hygienic and aseptic processes in the food-processing and pharmaceutical industries. The valve is excellent for flow control as well as for open/close duties.

I Operating principle

The diaphragm provides the body seal as well as the seat seal. There are no paths to the outside environment and, as such, the valve is suitable for aseptic processes. When the valve is being closed, a pressure pad which supports the diaphragm moves towards the sealing face on the body. As the pressure plate moves, the diaphragm flexes and is forced down onto the seat area in the centre of the body, thus, closing off the flow path through the body. The inter-relationship of body to the pressure plate prevents over compression of the diaphragm.

The valve can be actuated either manually or pneumatically and controlled by control units and solenoid valves.

I Design and features

- Straight through flow path. High Kv factor.
- Controlled compression of sealing.
- Compact actuator.
- Normally closed (NC) pneumatic actuator (standard).
- Sealed actuator with no maintenance required (stainless steel version).
- Handle with stroke limiter (except size N°4).
- Leak detector.
- Position indicator.
- Interchangeability of parts.
- Ergonomic handle.
- Traceability of components.

I Technical specifications

Materials:		
Parts in contact with the product		Stainless steel AISI 316L (1.4404)
Other stainless steel parts		Stainless steel AISI 304 (1.4301)
Plastic parts		PP + 30 GF
Diaphragm	EPDM	(according to FDA 177.2600 and USP Class VI)
Surface finish:		
Internal		Ra ≤ 0,5 µm
External		Bright polish
Available sizes		DN ¼" - DN 2"
Connections		Weld and Clamp OD / DIN
Operating limits:		
Max. working temperature (St.St. actuator)	-20 °C to +90 °C (EPDM)	-4°F to +194°F
	+140 °C (SIP, max. 30 min)	284°F
Max. working temperature (plastic actuator)	+80 °C (EPDM)	+176 °F
Max. working pressure (according to the model)	10 bar	145 PSI
Compressed air pressure	6-8 bar	87-116 PSI

I Combinations



plastic bonnet and handle



stainless steel bonnet and handle



stainless steel pneumatic actuator

I Options

Diaphragm: FPM, VMQ (according to FDA 177.2600 and USP Class VI) and PTFE / EPDM separate (according to FDA 177.2600).

Manual or pneumatic actuation.

Handle: stainless steel or plastic.

Bonnet: stainless steel or plastic.

Normally open (NO) double-acting pneumatic actuator.

Pneumatic actuator with stroke limiter.

Pneumatic actuator with external switch.

Control box with switches and solenoid valves.

Valve with controller and positioner.

Tank bottom valve.

Various types of connections.

Materials and roughness certificates.

I Pressure range

DN		Plastic handle				St.St. handle		Stainless steel pneumatic actuator	
		Plastic bonnet		St.St. bonnet		St.St. bonnet			
mm	inches	[bar]	[PSI]	[bar]	[PSI]	[bar]	[PSI]	[bar]	[PSI]
6	¼"	8	116	10	145	10	145	8	116
8	⅜"	8	116	10	145	10	145	8	116
10	½"	8	116	10	145	10	145	8	116
15	⅝"	8	116	10	145	10	145	6	87
20	¾"	8	116	10	145	10	145	6	87
25	1"	8	116	10	145	10	145	6	87
40	1 ½"	8	116	10	145	10	145	6	87
50	2"	-	-	-	-	6	87	4	58

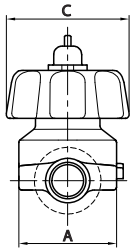
Values valid for EPDM gaskets (other materials to be consulted).

Performance in vacuum to be consulted.

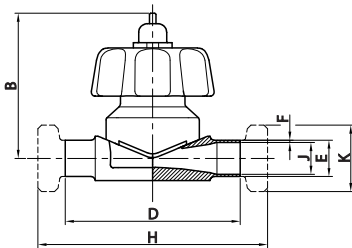


I General dimensions

Handle

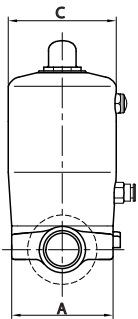


Size	DN	A	B	C	Weld			Clamp OD			Male SMS		
					D	E	F	H	J	K	H	J	K
N°1	1/4"	38	68	60	86	6,4	1,65	86	3,1	25,4	---	---	---
	3/8"					9,5			6,2		---	---	---
	1/2"					12,7			9,4		---	---	---
	5/8"					15,9			12,6		---	---	---
N°2	3/4"	68	105	89	122	19	1,65	114	15,8	25,4	---	---	---
	1"					25,4			22,1		50,5	160	22,5
N°3	1 1/2"	95	134	89	160	38,1	1,65	140	34,8	50,5	206	35,5	60
N°4	2"	130	160	134	191	50,8	1,65	159	47,5	64	237	48,5	70

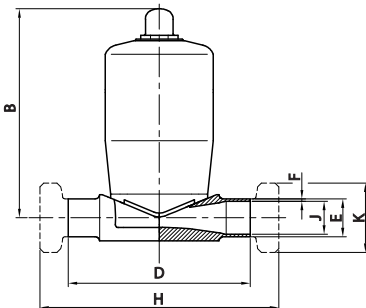


Size	DN	A	B	C	D	Weld		Clamp DIN			Male DIN		
						E	F	H	J	K	H	J	K
N°1	6	38	68	60	86	8	1	86	6,2	25,4	---	---	---
	8					10			8		---	---	---
	10					12			1,5		10	34	120
N°2	15	68	105	89	122	19	1,6	158	16	34	156	16	34
	20					23			20		160	20	44
	25					29			2		114	26	50,5
N°3	32	95	134	89	160	35	1,5	140	32	50,5	204	32	58
	40					41			38		38	65	
N°4	50	130	160	134	191	53	1,5	159	50	64	237	50	78

Stainless steel pneumatic actuator



Size	DN	A	B	C	D	Weld			Clamp OD			Male SMS		
						E	F	H	J	K	H	J	K	
N°1	1/4"	38	111	57	86	6,4	1,65	86	3,1	25,4	---	---	---	
	3/8"					9,5			6,2		---	---	---	
	1/2"					12,7			9,4		---	---	---	
	5/8"					15,9			12,6		---	---	---	
N°2	3/4"	68	143	72	122	19	1,65	114	15,8	25,4	---	---	---	
	1"					25,4			22,1		50,5	160	22,5	40
N°3	1 1/2"	95	211	108	160	38,1	1,65	140	34,8	50,5	206	35,5	60	
N°4	2"	130	287	135	191	50,8	1,65	159	47,5	64	237	48,5	70	



Size	DN	A	B	C	D	Weld		Clamp DIN			Male DIN		
						E	F	H	J	K	H	J	K
N°1	6	38	111	57	86	8	1	86	6,2	25,4	---	---	---
	8					10			8		---	---	---
	10					12			1,5		10	34	120
N°2	15	68	143	72	122	19	1,6	158	16	34	156	16	34
	20					23			20		160	20	44
	25					29			2		114	26	50,5
N°3	32	95	211	108	160	35	1,5	140	32	50,5	204	32	58
	40					41			38		38	65	
N°4	50	130	287	135	191	53	1,5	159	50	64	237	50	78

