

# DCX-3

Single sealing shut-off valve

/// ISOLATION



## DCX3

### Single sealing shut-off valves

The DEFINOX DCX3 shut-off valve has been designed to efficiently respond to market requirements, both from a cleanability and an operational point of view.

Its different configurations incorporate the cutoff, tapoff and orientation functions.

With their simple design, which has been tried and tested for many years, the floating PFA seal shut-off valves have successfully passed the EHEDG and 3A tests, guaranteeing their hygienic design, which is particularly suitable for the food-processing industries.

The modular design facilitates the component interchangeability and incorporates a wide range of options and variants. DCX range shut-off valves can thus cover a large range of applications and process configurations, while at the same time meeting market expectations and requirements.

They are fitted as standard with a PFA floating seal plug ensuring excellent valve cleaning.



### DCX3 PRODUCT ADVANTAGES

- + From DN 25 to DN 150**  
(certain variants up to DN 250),  
SMS-DIN and US versions.
- + PFA floating seal, perfectly cleanable,**  
ensuring perfect leaktightness at high  
temperature and good resistance  
to chemical products.
- + Spherical body with thick walls**  
ensuring excellent resistance to  
expansion stresses and optimum  
cleanability.
- + Can be used in numerous  
applications and configurations**
  - Various sealing solutions  
(different grades of latest  
generation elastomer - PFA -  
metal-on-metal).
  - Different body configuration  
options: L - T - X - half X.
  - Numerous end connections  
possible: SMS - DIN - Clamp.
- + Removable and  
easily transformable  
pneumatic actuator:  
NO-NC-Double acting.**
- + Easy and quick  
maintenance**  
thanks to the clamp  
subassembly assembly.

# DEFINOX

## FLEXIBILITY AND PERFORMANCE



DCX3 standard valve fitted with a stainless steel plug with a floating PFA seal



DCX3 diaphragm valve fitted with a stainless steel plug with a floating PFA seal and a PTFE deformable diaphragm

The machining, turning and welding techniques used by DEFINOX for producing special valves and fittings give the strategic components of the valve in contact with fluid a high level of finish and quality that complies with process requirements.

**Volume machined body and plugs** guarantees components without retention areas. This process ensures a high level of resistance to mechanical and thermal deformation. The spherical shape of shut-off valve bodies ensures optimum fluid flow and reduced loss of pressure.



Volume machined valve bodies

**The milling and turning operations provide great flexibility** for adapting the outlet pipes. Numerous valve and fitting configurations are therefore possible.



Heat treatment

**The internal polishing** (RA = 0.8  $\mu\text{m}$  i.e. 180 grit) provides good on-line cleanability. It ensures a finish that complies with food industry requirements (RA = 0.4  $\mu\text{m}$  for demanding applications). A passivation operation improves corrosion resistance.

**The quality of welding** (carried out by certified TIG welders) meet health standards and requirements. They guarantee the good geometry and strength of mechanically welded assemblies.



Orbital welding of a pigging station

DEFINOX is committed to a **Lean Manufacturing and continuous improvement process**. Our industrial and organizational choices optimize our production flows and bring the necessary flexibility for the production of specific valves and fittings tailored to the customer's needs.



Mechanical and leak tests

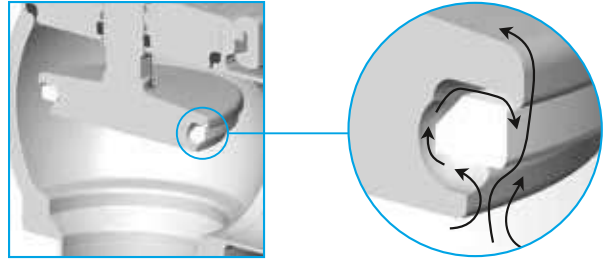
# ONE-PIECE PLUG

The DCX3 shut-off valves are fitted as standard with a one-piece plug with a floating PFA seal.  
 In its standard version, the one-piece plug is made of 316L / AISI1.4404 stainless steel.  
 Its sturdy design eliminates the risk of breakage and loosening.

## A WINNING COMBINATION PFA SEAL AND FLOATING SEAL TECHNOLOGY

The floating PFA (PerFluoroAlcoxy) seal is clipped into the plug housing. Its floating assembly ensures perfect cleanability. Its expansion allows the cleaning fluid to flow over all of its faces. Its plastomer structure also ensures the absence of porosity or crevices, risks of contamination and bacteriological growth, without risk of alteration of taste or appearance of the process fluid in contact with the PFA.

It has excellent resistance to particularly aggressive chemical products and to high temperatures.



## DIFFERENT DESIGN VARIATIONS FOR SIMPLE, FLEXIBLE ADAPTATION TO PROCESS CHANGES

### ▶ Elastomer seal for charged or abrasive products

EPDM or FKM versions available. Latest-generation elastomers providing excellent chemical resistance within their field of application.

The small area of elastomer in contact with the product increases the service life of the seals and ensures a level of hygiene that is compatible with the sanitary requirements of the processes.



### ▶ Deformable sealing diaphragm in PTFE (for aseptic applications)

Forming a physical barrier between the inside of the valve and the outside.

Surface area of diaphragm equivalent to that of the plug, helping to balance the pressure.

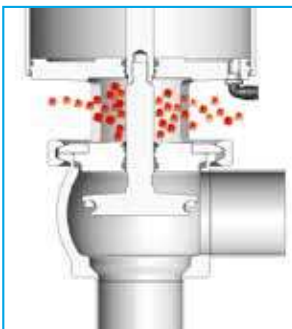
Optional: alcohol barrier.

Diaphragm service life: 100,000 movements at 90°C.

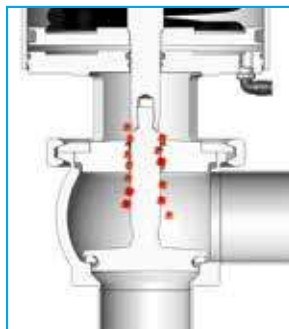


### ▶ Deformable PTFE diaphragm barrier effect

DCX3 standard valve

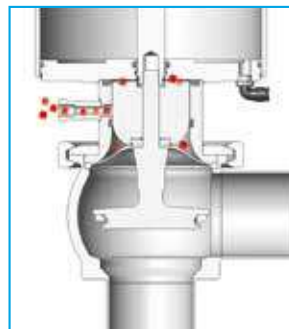


Valve open

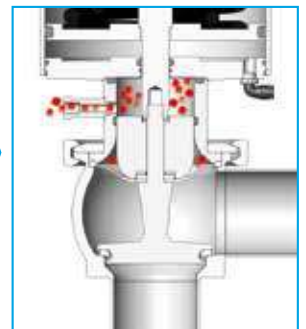


Valve closed


DCX3 diaphragm valve



Valve open



Valve closed

 Contamination from the atmosphere

PEEK plug without seal for steam and chemical product applications



Valve DCX3 also comes in alcohol barrier and steam level versions.

# DRIVE MECHANISM


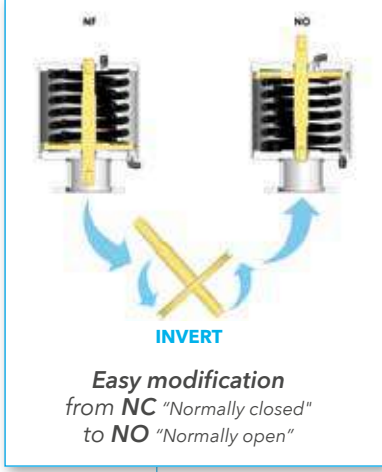






## PNEUMATIC ACTUATOR OR MANUAL DEVICE

Different versions are available to cover a maximum of functions using the same components and facilitating the management of spare parts.

All our actuators are removable. The clamp collars make for easy removal and interchangeability of the

drive mechanisms. The design of our actuators makes maintenance operations easy and quick to perform.

They are generously sized to ensure valve operation with maximum pressure acting on or under the plug (or under high line pressures).

<b>DCX3 NC</b> (Normally Closed)	<b>DCX3 NO</b> (Normally Open)	<b>DCX3</b> Double-acting	<b>DCX3</b> Double-acting
 <p><i>NO version as standard</i></p>	 <p><b>INVERT</b></p> <p><i>Easy modification from NC "Normally closed" to NO "Normally open"</i></p>	 <p><i>Easily transforms into an NO or double-acting version</i></p>	
<p><b>DCX3 long stroke</b></p> <p>Liquid flow area exceeds the nominal cross-sectional area of the pipe.</p> <p>Suitable for fibrous or fragile products.</p> <p>Provides maximum plug clearance, thus avoiding fluid break-up or trapping fibers in suspension.</p> <p>Tank bottom version available.</p> 	<p><b>DCX3 manual</b></p> <p>Gradual, smooth plug operation.</p> <p>Fitted with a compression spring to prevent vibration-induced loosening.</p> <p>An indicator warns the user in the event of plug stem leakage.</p> 		
<p><b>DCX3 / 3 functions valve</b></p> <p>Enables a valve to be set under the plug, as well as a maximum valve "hold closed" pressure value.</p> 	<p><b>DCX3 mechanical adjustment</b></p> <p>Allows accurate adjustment of the calibration value. Option of sealing the pre-set pressure value.</p> 		

We recommend servicing the actuator once every 5 years, under normal operating conditions.

# DCX3 SINGLE SEALING SHUT-OFF VALVE

## DCX3 STANDARD VALVE

## DCX3 DIAPHRAGM VALVE

**ICS - ACS LED control tops**  
 Remote valve status display.  
 Easy configuration and removal.  
 Resin-coated electronic module.  
 Point-to-point or AS-interface.  
 Plastic or stainless steel cover.

**Dismountable pneumatic actuator.** Easily transformed into "Normally Open" (NO) - "Normally Closed" (NC) or "Double-Acting" (DA).  
 Actuator sized for single-acting valve operation at high line pressures.  
 Fitted with quick-fitting pneumatic connections for easy maintenance.  
 Common to the entire DCX. Shut-off valve range.

PTFE guide bushings.

Modular seal support plate.

Interchangeable components.

**Sturdy one-piece plug** meeting sanitary requirements.

**PFA floating seal,** perfectly cleanable, ensuring perfect leaktightness at high temperature, resistant to cleaning products.

**Connection of actuator** and shut-off assembly by means of clamp collars for quick intervention.

**Volume-machined spherical body** with thick walls ensuring excellent resistance to expansion stresses.  
 Ensures the modularity of all options and versions  
 L-T-X - half-X configuration.

6  
 Long stroke option for maximum plug clearance.

EPDM or FKM elastomer versions. Particularly suitable for process fluids containing particles.

### 360° LED status indication



Valve closed



Valve open



Error

Leak indicator providing a visual indication in the event of diaphragm failure.

Deformable PTFE diaphragm. Forming a physical barrier between the inside of the valve and the outside environment. Suitable for greasy and corrosive products (acid base > 3 %).

Optional alcohol barrier (up to DN 250 - 10").

# PRINCIPLE OF DCX3 OPERATION

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**CLOSED POSITION**

**NORMALLY CLOSED  
VALVE - NC**



**OPEN POSITION**



**CLOSED POSITION**

**NORMALLY OPEN  
VALVE - NO**



**OPEN POSITION**

# DCX3 BODY CONFIGURATIONS

**L BODY**



VALVE CLOSED



VALVE OPEN

**T BODY**



VALVE CLOSED



VALVE OPEN

**X BODY**



VALVE CLOSED

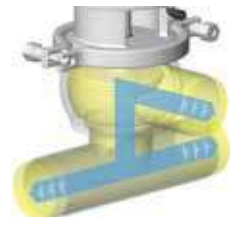


VALVE OPEN

**HALF X BODY**



VALVE CLOSED



VALVE OPEN

## ► Levels of resistance of elastomers and plastomers

	EPDM	FKM	PFA	PTFE
Oil	★	★★	★★	★★
Greasy substances	★	★★	★★	★★
NEP	★★	★★	★★	★★
Aggressive chemical products	★	★★	★★	★★
Concentrated essential oils and perfums	★	★★	★★	★★
Abrasion resistance	★	★	★	★
Low temperature < 5	★★	★	★	★

★★ Very suitable  
 ★ Suitable  
 ★ Not recommended

## ► Approval of elastomers and plastomers

	EPDM	FKM	PFA	PTFE
FDA 21 CFR 177.2660	✓	✓	✓	✓
CE 1935 / 2004	✓	✓	✓	✓
ADI Free	✓	✓	✓	✓
3-A Sanitary Standards	✓ (Class II)	✓ (Class I)	✓	✓
USP Ch.87 and Ch88 Class V	✓			
NSF 51	✓			
ACS	✓		✓	

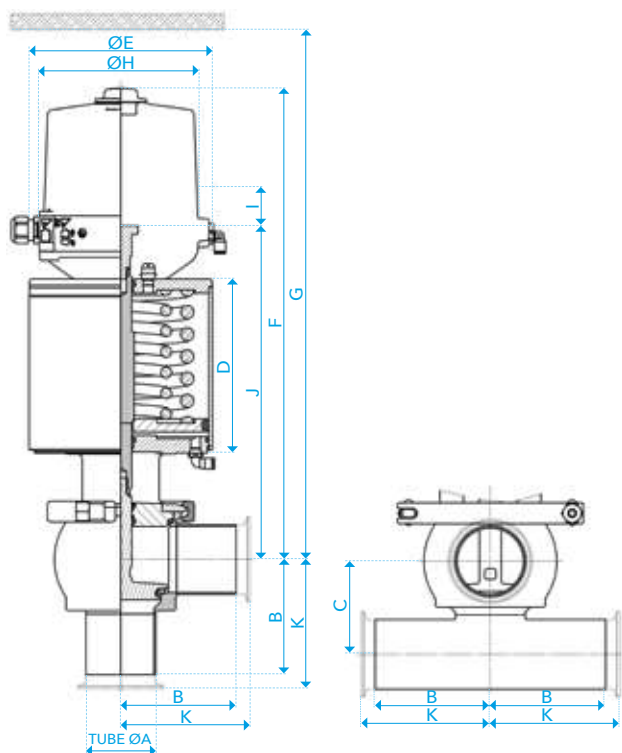
## ► Materials

Materials	Body	Stainless steel 1.4404 / AISI 316L
	Plug	Stainless steel 1.4404 / AISI 316L or PEEK
	Plug seal	- Standard PFA version - elastomer (EPDM or FKM) - Aseptic PFA version - deformable PTFE diaphragm
	O-ring seal	Elastomer (EPDM or FKM)
	Drive mechanism	Stainless steel 1.4301 / AISI 304

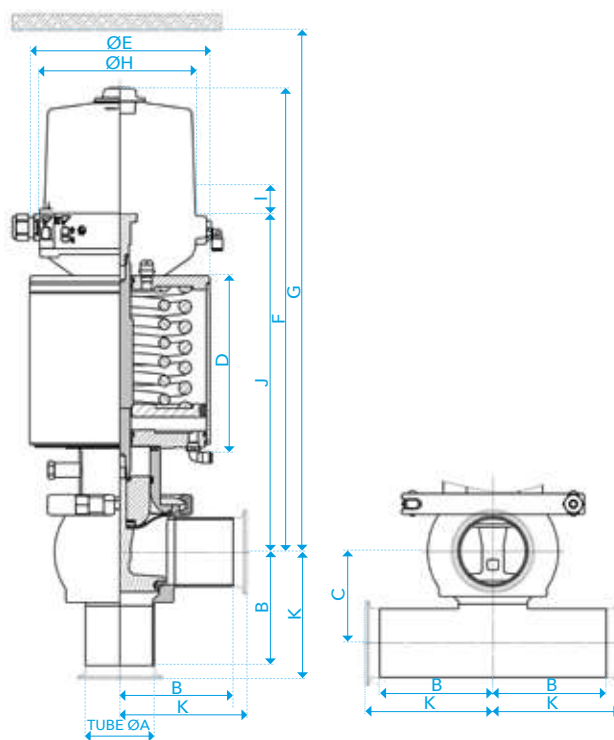
Other materials upon request (HSTL C22 URANUS B6 254 SMO,...)



# DIMENSIONS



DCX3 standard valve



DCX3 diaphragm valve

Tube ØA	B	C	D	ØE	F	G	ØH	I	I	J	J	K	Weight in kg without control top	Weight in kg without control top DCX3 diaphragm valve
						with control top		DCX3 standard stroke	DCX3 diaphragm stroke	DCX3 standard valve	DCX3 diaphragm valve			
SMS 22.6/25	55	45	110	89	337	465	104	17	12	239	251	70	4.5	6
SMS 35.6/38	70	55	110	89	344	465	104	21	12	241	251	85	5	6.5
SMS 48.5/51	82	70	123	114	373	495	104	29	17	275	290	97	8	9.5
SMS 60.3/63.5	105	85	159	167	423	535	104	35	26	327	343	125	17	18.5
SMS 72.9/76.1	110	95	159	167	429	545	104	35	26	332	343	130	17	18.5
SMS 100/104	130	125	181	216	483	622	140	40	35	383	392	155	38	40
DN 26/29	55	47	110	89	337	465	104	17	12	239	251	/	4,6	6
DIN 32/35	55	51	110	89	342	465	104	17	12	243	251	/	4,7	6
DIN 38/41	70	55	110	89	344	465	104	21	12	241	251	/	5	6,5
DIN 50/53	80	71	123	114	373	495	104	29	17	275	290	/	8	9,5
DIN 66/70	108	93	159	167	425	535	104	35	26	328	343	/	17	18,5
DIN 81/85	115	105	159	167	455	545	104	35	35	339	392	/	18	19,5
DIN 100/104	130	125	181	216	483	622	140	40	35	383	392	/	38	40
DIN 125/129	160	155	285	270	636	752	140	70	45	519	530	/	84	92
DIN 150/154	180	180	285	270	647	782	140	70	45	531	543	/	86	94
US 1" (22.1/25.4)	51	45	110	89	337	465	104	17	12	239	251	64	4.5	6
US 1"1/2 (34.8/38.1)	57	55	110	89	344	465	104	21	12	241	251	70	5	6.5
US 2" (47.5/50.8)	76	70	123	114	373	495	104	29	17	275	290	89	8	9.5
US 2"1/2 (60.2/63.5)	76	85	159	167	423	555	104	35	26	327	343	89	17	18.5
US 3" (72.9/76.1)	82	95	159	167	429	565	104	35	26	332	343	95	17	18.5
US 4" (97.4/101.6)	130	125	181	216	483	612	140	40	35	383	392	146	38	40

# OPERATING CONDITIONS

## ▶ Actuator air supply\*

min 5.5 bar  
max 7 bar

\*Pressure with direct control top supply

## ▶ Pressure (bar)

	PFA	ELASTO	DIAPHRAGM
Maximum operating pressure	8	8	6

## ▶ Temperature (°C)\*

	PFA /EPDM	PFA/FKM	ELASTO - EPDM	ELASTO - FKM	DIAPHRAGM/PFA
Min. static temperature	-5	5	-5	5	5
Max. static temperature	120	120	120	120	140
Min. dynamic temperature	-5	5	-5	5	5
Max. dynamic temperature	95	95	120	120	110
Steam flash (20 min. at 140 °C)	Yes	Yes	Yes	Yes	Yes

\* For pressure of 5 bar

## ▶ Temperature differential between the upper channel and the lower channel: max. 120 °C

## ▶ Vacuum retention: 0.9 bar

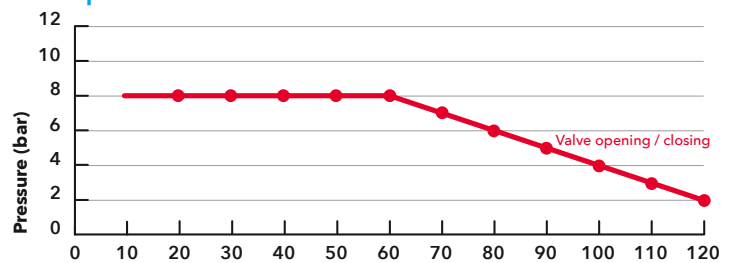


DCX3 particle passage standard stroke



DCX3 PFA particle passage long stroke

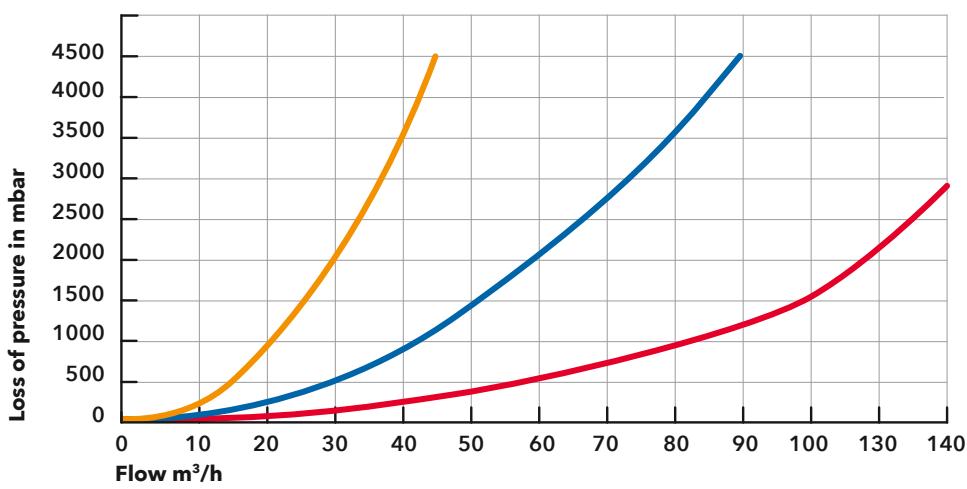
## ▶ Temperature / Pressure ratio for the PFA seal



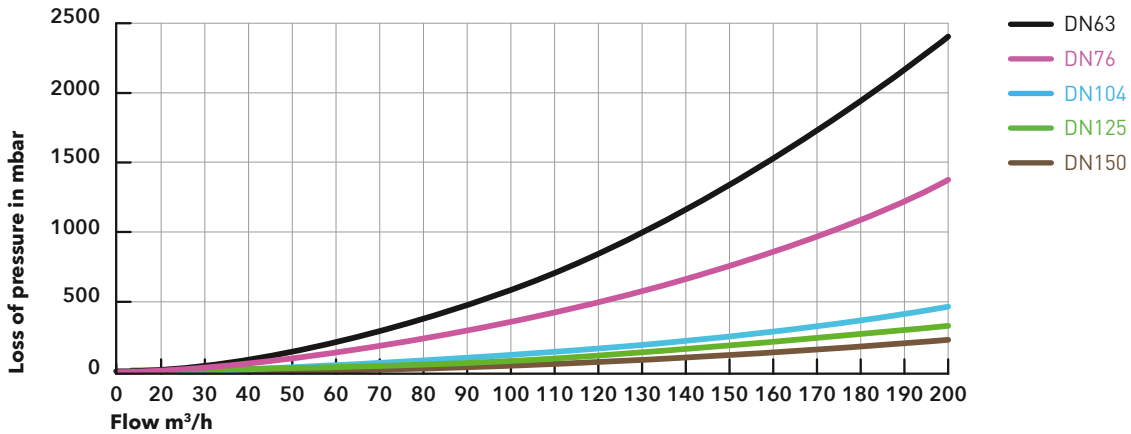
	SMS	UNIT	25		38		51		63		76		104									
			US		1 1/2		2"		2 1/2"		3"		4"									
			DIN 11850 RANGE 2		25	32	40	50	65	85	100	125	150									
<b>Specifications</b> 	Ø particle K standard DCX3	mm	12	12	12	12	16	16	16	24	24	24	29	29	29	30	30	34	34	34	66	67
	Ø particle K diaphragm DCX3	mm	6.5	6.5	6.5	6.5	6.5	6.5	6.5	11.5	11.5	11.5	20	20	20	20	20	30	30	30	40	40
	Ø particle K long stroke DCX3	mm	20	20	20	20	24	24	24	35	35	35	51	51	51	52	52	62	74	74	86	98
	Body wall thickness	mm	5	5	5	5	5	5	5	6	6	6	7	7	7	7	7	7	7	7	9	9
<b>Air consumption (volume at atmospheric pressure)</b>	Standard DCX 3 shut-off valve	NI	0.25				0.5				1.25				2.25		4		4			
	Diaphragm DCX 3 shut-off valve	NI	0.125				0.25				0.875				2		2.5		2.5			
<b>Operating time (with ICS or ACS top unit)</b> Actuator air : 6 bar Operating pressure: 6 bar Circulation speed 2.5 m/s	Valve opening	sec	5	3	5	5	5	5	5	1	1	1	1.5	1.5	1.5	1.5	1.5	2.6	2.6	2.6	11.4	11.4
	Valve closure	sec	7	3	7	7	7	7	7	1.5	1.5	1.5	3.3	3.3	3.3	3.3	3.3	6.5	6.5	6.5	15.5	15.5
	Quick drain	sec	<2	<2	<2	<2	<2	<2	<2	1	1	1	1.5	1.5	1.5	1.5	1.5	2.5	2.5	2.5	6	6

The operating conditions are given for information only. Combinations of extreme operating conditions may sometimes be inappropriate. In these cases, it is strongly advised to obtain advice from us.

### LOSS OF PRESSURE DCX3 SHUT-OFF VALVES DN25 TO DN51



### LOSS OF PRESSURE DCX3 SHUT-OFF VALVES DN63 TO DN51



SMS	25			38		51		63		76		104		
US	1"			1 1/2"		2"		2 1/2"		3"		4"		3"
DIN 11850 RANGE 2		25	32		40		50		65		80	100	125	150
Loss of pressure Kv	21	24	36	42	44	82	85	128	142	170	190	290	348	418
Loss of pressure Cv	24.36	27.84	41.76	48.72	51.04	95.12	98.6	148.48	164.72	197.2	220.4	336.4	403.68	484.88

### ► Tribofinishing

Surface condition maximizing external and internal cleanability of the valves.

For heavy-duty applications, erasure of external and internal welds upon request.

Surface condition	External	1.2 µm (150 grit)
	Internal	0.8 µm (180 grit)

# DCX3 SHUT-OFF VALVE SIGNALING

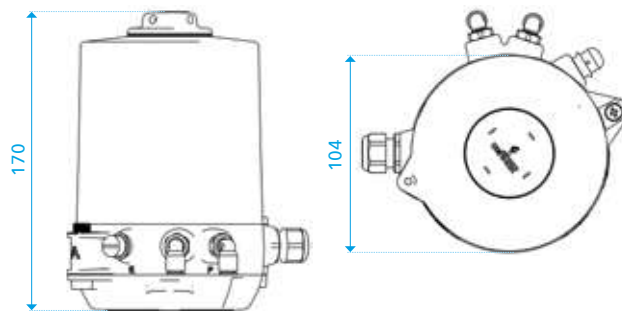
The DEFINOX control tops allow remote visualization of valve status. This easily adapted and configured unit provides numerous functions (point-to-point - AS-i - retro-data - linear sensor - relief valve).

The ACS and ICS control tops monitor and control the valves remotely and provide real time alerts for any fault conditions so that immediate action can be taken and production downtime can be minimized.

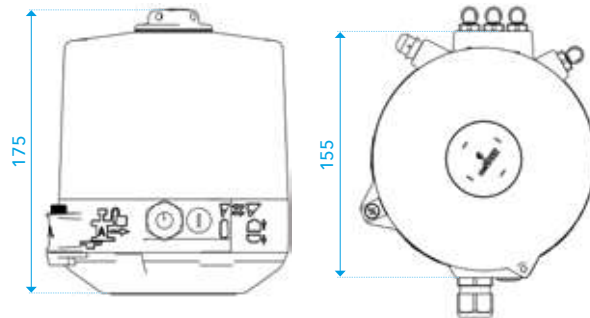
The resinated electronic modules give the DEFINOX units unique characteristics in terms of strength and protection of the components.



ICS housing  
(DN10 to DN80)  
ICS LED plastic cover




ACS housing  
(from DN100 to DN150)  
ACS LED plastic cover and for  
the double-acting version



Both versions available  
with stainless steel cap



ATEX version also available for both versions

 II 2 GD (Group IIC - category 2 zone 1  
for gases - and zone 21 for dusts)  
ib IIC T4 Gb - ib IIIC T135°C Db -IP67



# SUMMARY OF DCX3 SINGLE SEALING

## SHUT-OFF VALVES

### 1/ STANDARD

 DCX3

### 2/ FRACTIONAL

 DCX3 FRACT. MANUAL

 DCX3 FRACT. AUTOMATIC

### 3/ ASEPTIC

 DCX3 STANDARD DIAPHRAGM VALVE

 DCX3 WASHING VALVE **SPECIAL**

 DCX3 WITH ALCOHOL BARRIER **SPECIAL**

 DCX3 WITH STEAM BEARING

 DCX3 WITH ASEPTIC AND COOLING BEARING **SPECIAL**

### 4/ REGULATION

 DCX3 REGULATING VALVE

### 5/ TANK BOTTOM

 DCX3 FDC

 DCX3 FDC POWDER **SPECIAL**

### 6 RELIEF VALVE

 DCX3 MECHANICALLY ADJUSTABLE RELIEF VALVE

 DCX3 ADDITIONAL AIR VALVE

 DCX3 3 FUNCTION VALVE

### 7/ OTHER VERSIONS

 DCX3 HIGH PRESSURE **SPECIAL**

 DCX3 METAL-ON-METAL **SPECIAL**

 DCX3 DOSING VALVE **SPECIAL**

**DCX3 VALVES FULFILL  
THE FOLLOWING FUNCTIONS**

**ISOLATION**

**/// ASEPTIC**

**/// REGULATION**

**/// TANK BOTTOM**

**/// PROTECTION DEVICE**

**/// PIGGING**

# PERSONALIZED SUPPORT

Our customers services offer training and maintenance services and assiste you with the management of your spare parts.

## SELF-SERVICING OF YOUR INSTALLED VALVE FLEET

With technical and practical training adapted to suit your needs, on site or at DEFINOX\*.

*\*declaration of activity recorded under number 52 44 06683 44.  
This record is not equivalent to State approval.*

## SAFE SERVICING

With tool kits and removal presses.



## PERSONALIZED VALVE FLEET MONITORING PROGRAM

Our teams of specialized technicians carry out valve maintenance in France and abroad.

Our actuators are guaranteed for 5 years from the date of delivery, under normal operating conditions, with a supply of dry, filtered air complying with DIN/ISO standard 8573-1.

We recommend replacing the wear parts of the actuator at the end of the warranty period, then once every 5 years.

## GUARANTEED OEM SPARE PARTS

- Designed and selected specifically for DEFINOX products.
- Interchangeable parts for optimum management of spare part stocks.
- Valve design for a reduced number of seals.

### ► Estimated average servicing time for our valves

VALVES	ON-LINE SERVICING	WORKBENCH OPERATIONS	ACTUATOR
DCX3 4 Fractional valve	20'/30'	10'/15'	20'
DCX3	20'/25'	10'/15'	20'/25'
DCX4	30'/40'	15'/20'	20'/25'
DCX3 DA	30'/40'	15'/20'	25'/30'
VDCI MC	35'/45'	18'/25'	25'
VDCI MC 4"	60'	30'	30'
Control top	15'		

# DEFINOX ID



## Test, download, scan...

### AUGMENTED REALITY DEVELOPED BY DEFINOX FOR ADDED SERVICES

- Instant identification of valves and their spare parts.
- Saves time for the management of the valve fleet.
- Reduced risk of errors.
- Immediate access to valve-related documents.



Find us on our web site [www.definox.com](http://www.definox.com)

- Access all available information and documentation in the **customer center**.
- 2D and 3D drawings and symbols of our valves available on the **CAD portal**.

DEDICATED TO CUSTOMERS

CAD 2D 3D E-PORTAL



[www.definox.com](http://www.definox.com)

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