

DEFINOX  
PIGGING SOLUTIONS

PIGGING STARMOTION®





# THE PIGGING

## WHAT'S THIS? WHAT IS IT FOR?

At the end of a transfer cycle, production lines can retain a large quantity of product.

DEFINOX pigging systems make it possible to recover the residual mass.

A pig is pushed into the pipe by a fluid or gas (propellant media), recovering the residual material for optimum use.

Once the piping has been scraped and cleaned, the line is ready for a new production cycle.

**STARMOTION®**

With **STARMOTION®**  
pigging solutions, you recover more finished products.



# STARMOTION®

## BENEFITS AND APPLICATIONS



A RETURN ON INVESTMENT OF LESS than 1 YEAR



### HYGIENIC

- Design and cleaning process according to hygienic standards
- Integrated inline cleaning of the pig



### PRODUCTIVITY / RELIABILITY

- Fast batch switch for optimal line availability
- **+** product yield, **-** waste



### ECOLOGY

- Less waste, less cleaning agent used
- Water consumption reduced
- Low energy consumption



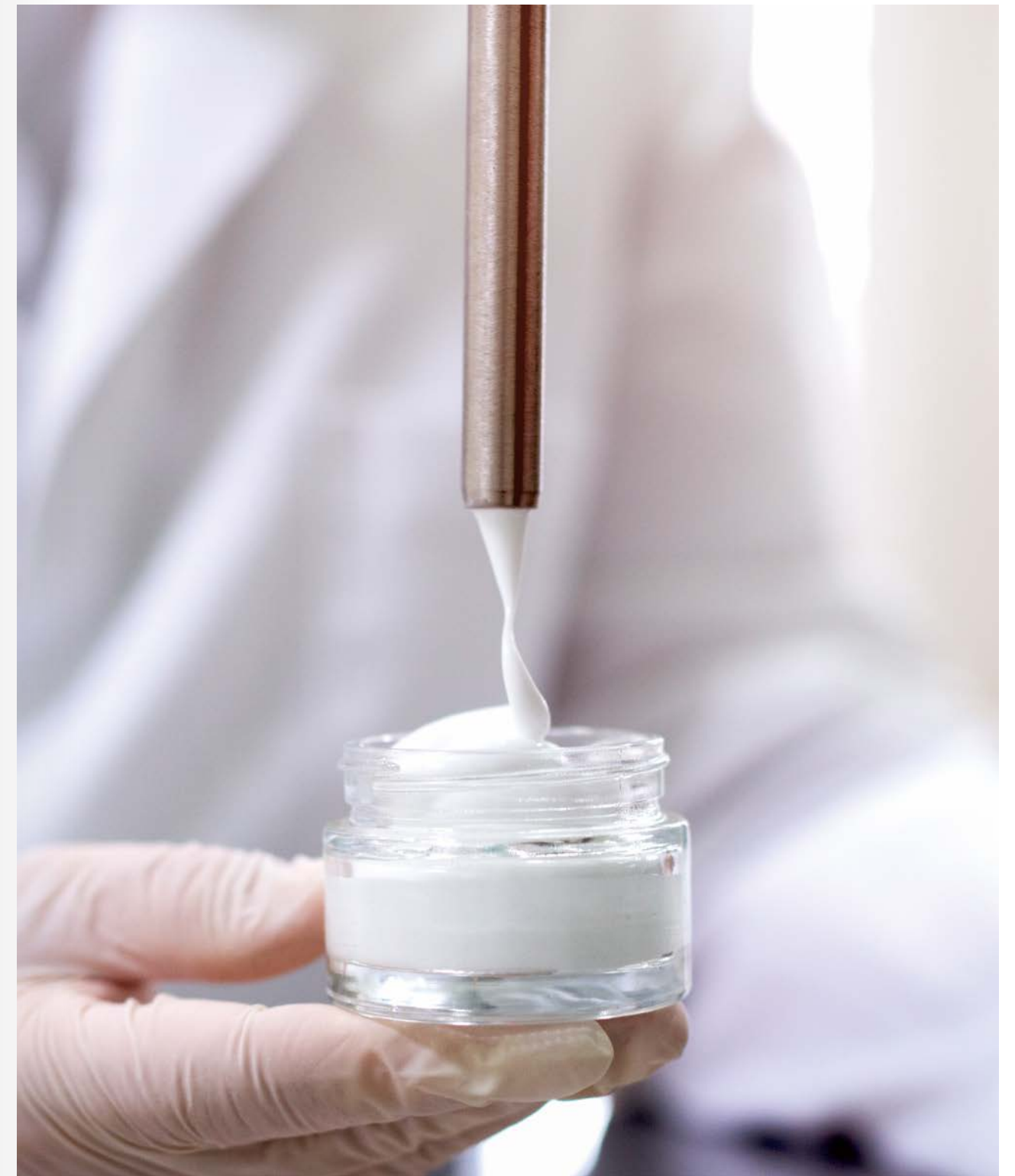
### TECHNOLOGY

- Design based on the latest proven DEFINOX technologies:
  - process and operators safety,
  - quick maintenance,
  - Starmotion® solutions easy to set up.

## FIELDS OF APPLICATION

**DEFINOX pigging systems are suitable for use on liquids or semi-liquids, more or less viscous, without risk for the core quality of the manufactured products.**

- Food: dairy products, jam, chocolate,...
- Cosmetics / Perfume
- Personal care products: toothpaste, shampoo, shower gel,...
- Home care products: laundry, detergent,...
- Petfood
- Paint industries
- Lithium battery





# 20 YEARS

## DEFINOX EXPERIENCE IN PIGGING

DEFINOX offers a wide range of modular solutions. These standard or tailor-made solutions can be easily integrated into existing sanitary process lines.

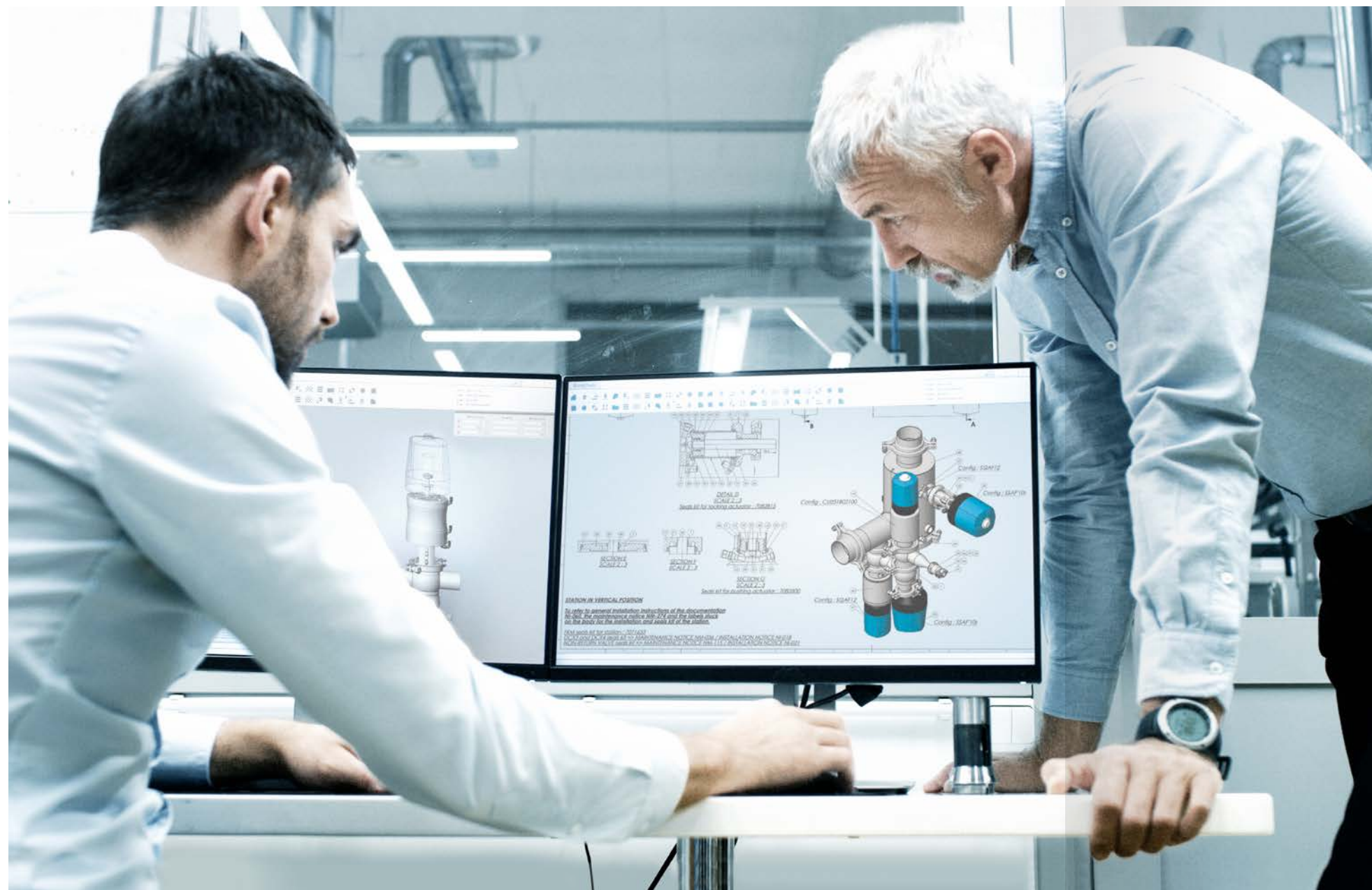
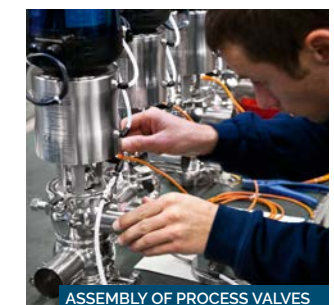
Expert for more than 50 years in the transfer of liquids and semi-liquids, DEFINOX has specialized in the design and manufacture of pigging systems.

DEFINOX'S expertise and know-how now comes from 20 years experience working with the major players in the food, cosmetics and cleaning products industries.



## DEFINOX, FLEXIBILITY AND PERFORMANCE

The machining, turning and welding techniques used by DEFINOX to produce STARMOTION® pigging solutions give the strategic components of the system in contact with the fluid a high level of finish and quality that meets process requirements.



**Volume machined body** is the guarantee of manufacturing parts without retention zones. This process provides high resistance to mechanical and thermal deformations. The spherical shape of the station body promotes optimum fluid flow and reduces pressure drops.

**Milling and turning operations offer great flexibility** to adapt the outlet connections. Many configurations are thus made possible.

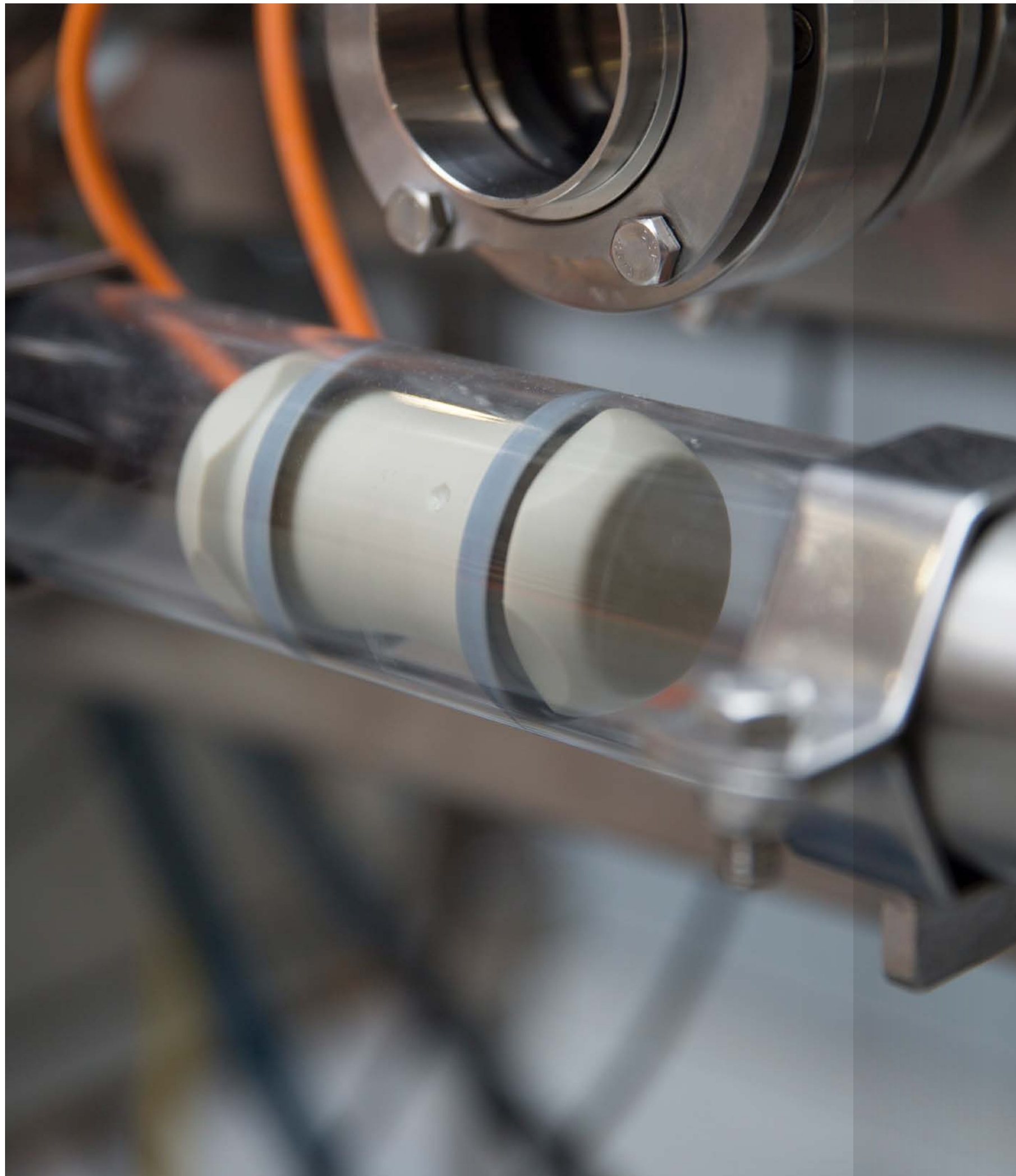
**The internal polishing** (Ra = 0.8 µm or 180 grit) contributes to good in-line cleanability. This ensures a finish that meets sanitary requirements (Ra = 0.4 µm for demanding applications). A passivation operation reinforces the corrosion resistance.

**The quality of the welds** (carried out by TIG certified welders) meets the standards and sanitary requirements. The welds guarantee a good geometry and strength of the mechanically welded assemblies.

**DEFINOX is committed to a Lean Manufacturing and continuous improvement approach.** Our industrial and organizational choices optimize our production flows and provide the necessary flexibility to produce valves or specific equipment customized according to customer needs.







# THE TECHNICAL BOOKLET

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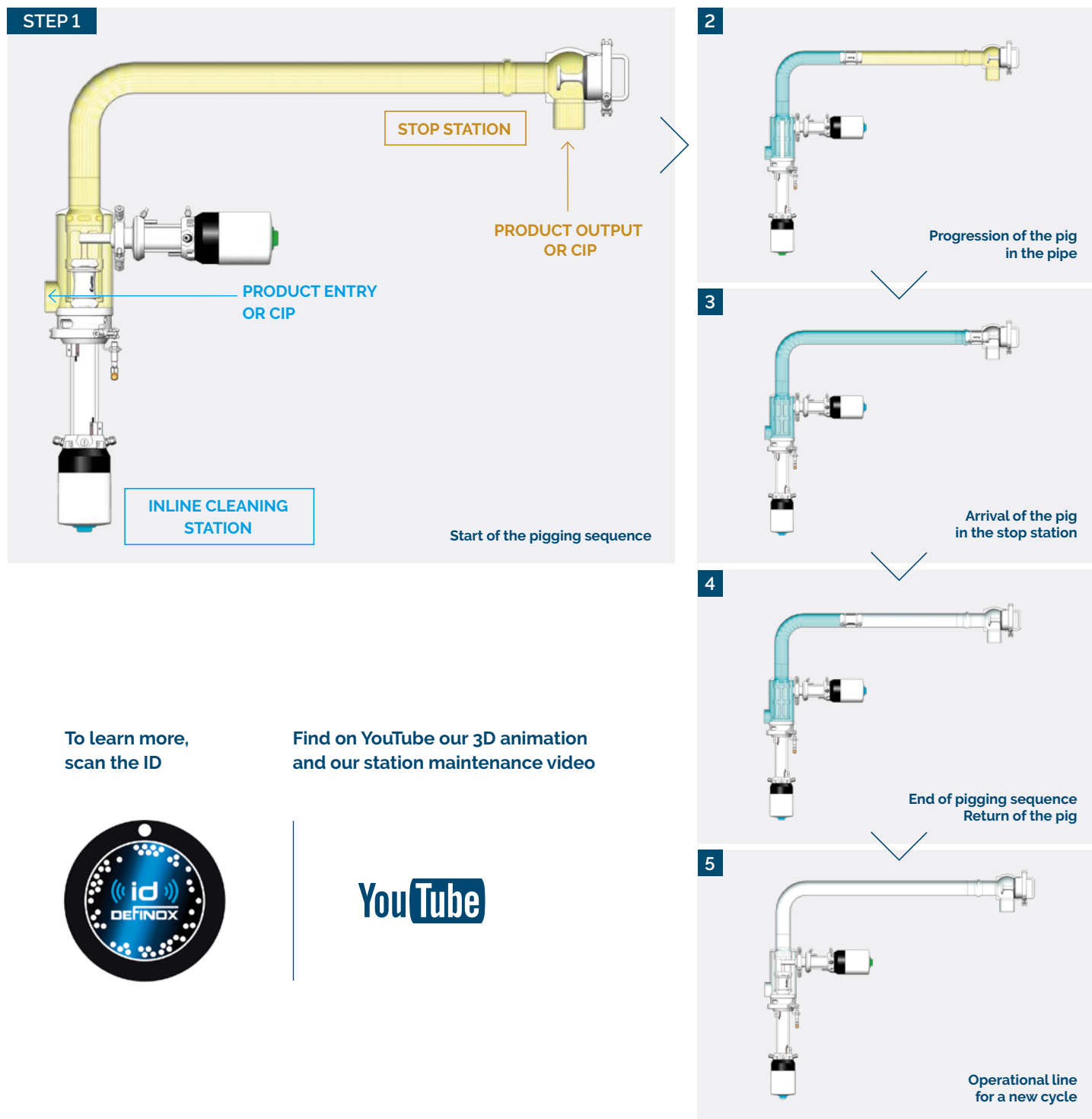
# THE CLASSIC STARMOTION® CONFIGURATION

A pigging system requires two stations.

The most common configuration is a **STOP STATION** + an **IN-LINE CLEANING STATION**.

## THE PIGGING SEQUENCE

> EXAMPLE OF A SINGLE PIGGING SEQUENCE



To learn more, scan the ID

Find on YouTube our 3D animation and our station maintenance video

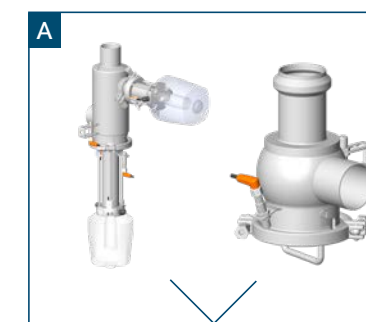


## TWO STATIONS, THREE CONFIGURATIONS

**AUTOMATIC**  
Automatic in-line cleaning

**AUTOMATIC HIGH FLEXIBILITY**  
Automatic in-line cleaning, at all points of the production line

**MANUAL**  
Manual offline cleaning

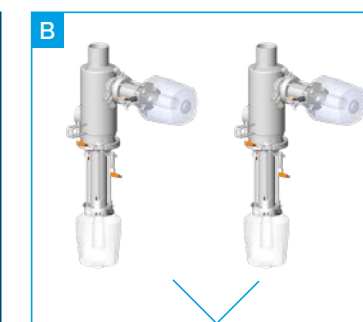


**ONE STOP STATION + ONE IN-LINE CLEANING STATION.**

The production and cleaning sequences are carried out automatically. No operator intervention is required on the line.

The insertion, transfer, cleaning of the pig and its return to the cleaning station is done automatically.

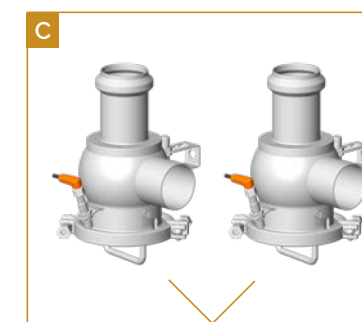
The cleaning station can be installed indifferently at the start and end location. It depends on the installation constraints or production sequences.



**TWO STATIONS THAT CAN BE CLEANED IN LINE**

The functionalities are identical to configuration A. However, the use of a 2<sup>nd</sup> in-line cleaning station allows the pig to be cleaned at the beginning or end of the line.

This configuration offers a greater number of scenarios for production/cleaning sequences. In addition, it will offer a higher flexibility for future process evolution.



**TWO STOP STATIONS**

This configuration offers recovery benefits from the advantages of pigging, with a limited automation effort.

The use of two stop stations reduces the number of components to be controlled. The pigging cycle is automatic, as are configurations A and B. However, the pig must be cleaned manually after removing it from the line using the extraction tool.



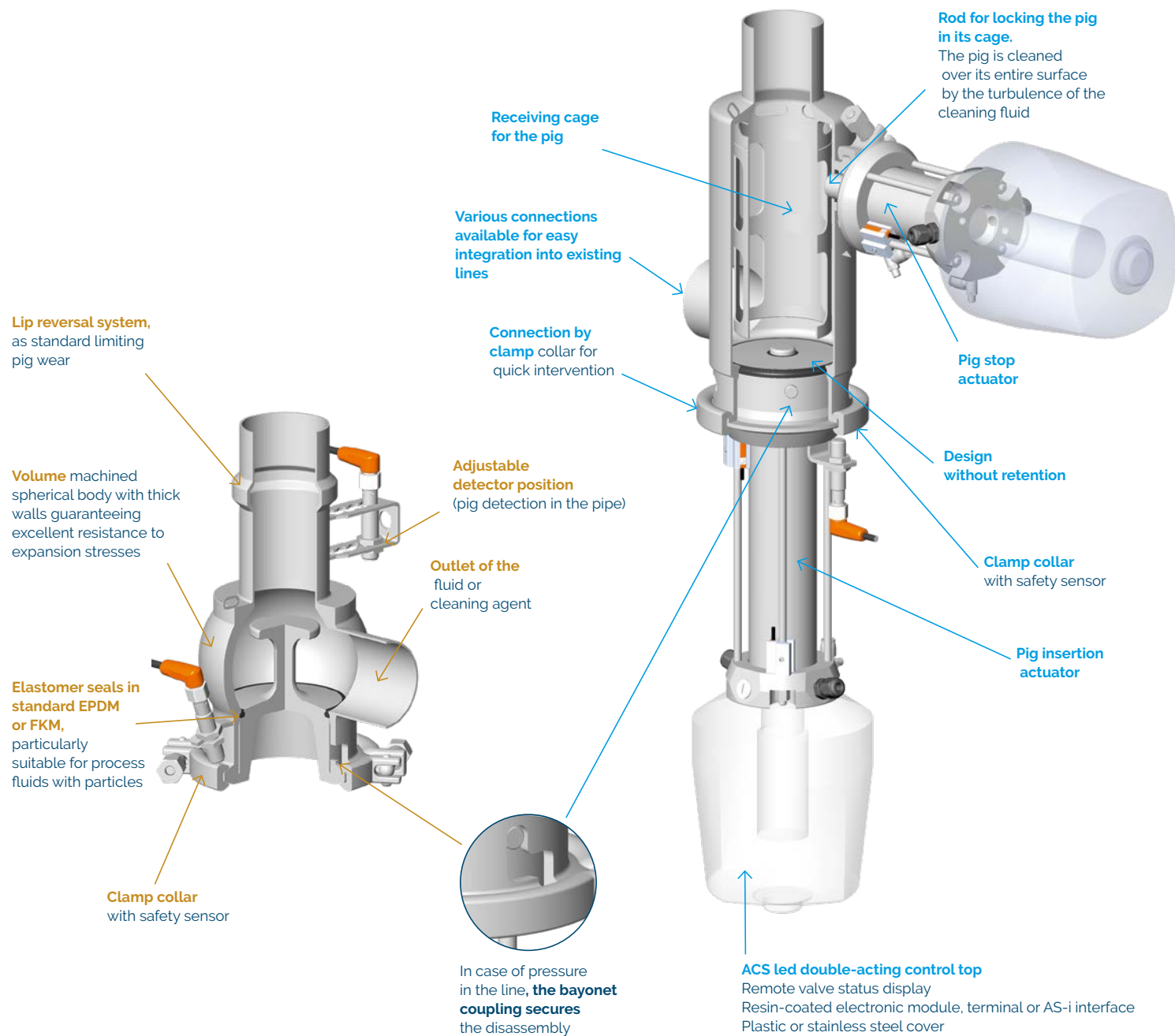
<b>BUDGET</b>	● ● ●	● ● ●	● ● ●
<b>FLEXIBILITY OF THE PROCESS</b>	● ● ●	● ● ●	● ● ●
<b>AUTOMATION</b>	● ● ●	● ● ●	● ● ●

# STATION DESIGN

Our pigging solutions are designed by the Definox R&D department and manufactured in France.

STOP STATION

INLINE CLEANING STATION



# THE TECHNICAL DESIGN

The station components in contact with the process fluid are manufactured as standard from AISI 316L (1.4404) stainless steel.

## MATERIALS AND SURFACE FINISH

Material	Body	Stainless steel 1.4404 / AISI 316L
	O-ring seal	EPDM or FKM
Surface finish	Actuator	Stainless steel 1.4301 / AISI 304
	Outside	1.2 µm (150 grit)
	Inside	0.8 µm (180 grit)

The manufacture of stations from other stainless steel grades is possible on request.

As an indication, some cases of use of materials

- > Food product: stainless steel AISI 316L (1.4404)
- > Aggressive food product: 254 SMO
- > Cosmetic product : AL-6XN
- > Aggressive product : AL6XN - Hastelloy C22
- > Saline solution: Uranus B6 – 904L

These stainless steel grades are particularly resistant to aggressive products. The choice of a material depends on the nature of the process fluid, the cleaning products used and their concentration.

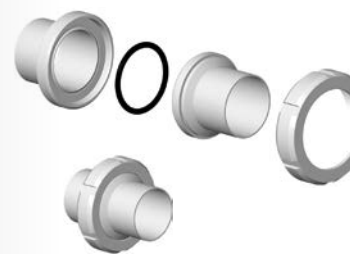
Operating conditions, particularly temperature, can also influence the choice of materials (steel and seal grades).

## THE CONNECTIONS

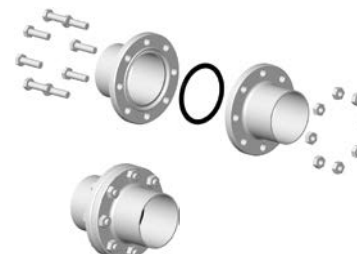
The various connections available facilitate the integration of pigging systems on process lines.

As standard, the pigging stations are supplied butt weld.

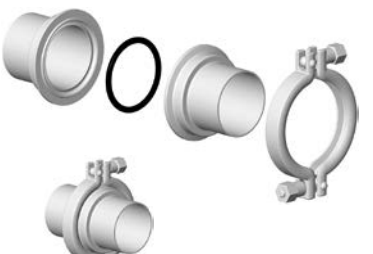
ASEPTIC SCREW CONNECTION  
DIN 11864-1 standard



ASEPTIC SCREW CONNECTION  
DIN 11864-2 standard



ASEPTIC CLAMP CONNECTION  
DIN 11864-3 standard





# THE PIGS

To cover the majority of contexts and constraints of use, DEFINOX offers two types of pigs:

## THE ONE-PIECE PIG



DN 25 SMS – 1" US - DN 25 DIN



DN 38 SMS to DN 104 SMS  
DN 1.5" US to DN 4" US  
DN 40 DIN to DN 100 DIN

## THE DISMANTABLE PIG



DN 25 SMS – 1" US - DN 25 DIN



DN 38 SMS to DN 104 SMS  
DN 1.5" US to DN 4" US  
DN 40 DIN to DN 100 DIN

## LIP REVERSAL SYSTEM

DEFINOX stations include a lip reversal system as standard. The pig is easy to move and wear is limited.



## PRODUCT RECOVERY

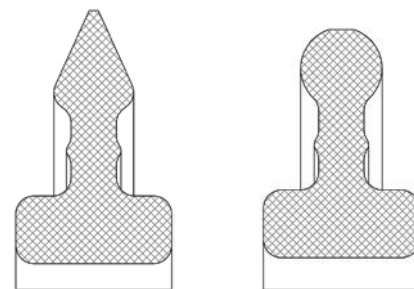
The design of our pigs offers a low friction coefficient while allowing maximum recovery of the product. The required pushing pressure is reduced. Our solutions meet the majority of line implementations as standard.

### > Example

With a dismantable pig DN 51 SMS, over 100 km covered, 95% of the product recovered.

With a one-piece pig DN 51 SMS, 97.5% of the product recovered **over 100 km covered.**

## LIP SHAPES OF PIGS



Diamond shape

Ball shape

Other lip shapes on request, depending on the process fluid and pipe characteristics.

## OPERATING CONDITIONS OF THE PIGS

Recommended speed

0.5 to 1.5 m/s

Maximum pigging distance

Up to 600 m  
For longer distances, please contact us

Pushing fluid

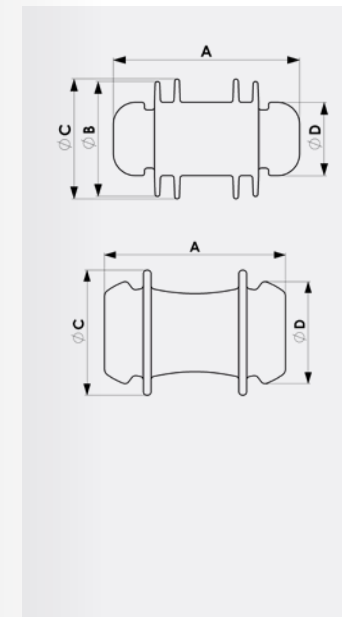
Air - water - CO<sub>2</sub> - Nitrogen - process fluid - CIP fluid

Pressure differential

20 to 200 kPa (0.2 to 2 bars) (2.9 to 29 psi)  
2 bar, only possible with a pressure regulation system

# TECHNICAL DATA OF THE PIGS

## THE ONE-PIECE PIG



The silicone pig can not be dismantled.

The magnet is enclosed in a cage, making it safe to use. It has optimal sanitary qualities for sensitive applications.

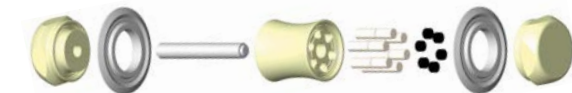
DIAMETER	ØA	ØB	ØC	ØD
DN 25 SMS - 1" US	38	23,5	24,5	15
DN 25 DIN		27,5	28,5	
DN 38 SMS - 1½" US	61		43	34
DN 40 DIN				
DN 51 SMS - 2" US	80		55	45
DN 50 DIN				
DN 63 SMS - 2½" US	100		65	57
DN 65 DIN	109,5		71	62
DN 76 SMS - 3" US	124		76	67
DN 80 DIN	138		86	75
DN 104 SMS	172		105	93



Material: VMQ grey

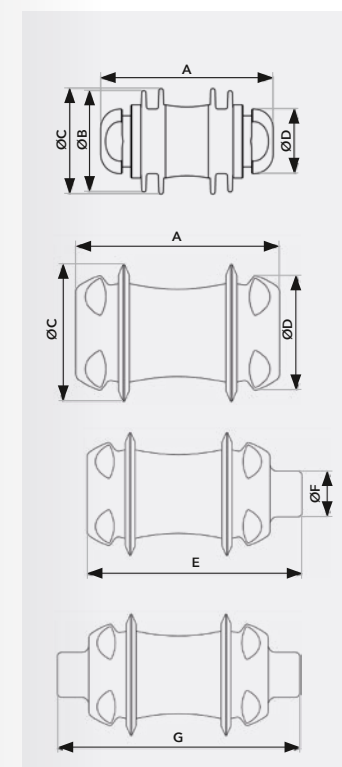
Homologations :  
FDA21 CFR 177.2600, 3A  
Sanitary Standard Class I,  
USP Class VI

## THE DISMANTABLE PIG



The dismantable version has an interesting operating cost.

The lip seals can be replaced according to their wear and tear and adapted according to the process fluid.



DIAMETER	A	ØB	ØC	ØD	E	ØF	G
DN 25 SMS - 1" US	40	23,5	24,5	15			
DN 25 DIN		27,5	28,5				
DN 38 SMS - 1½" US	61		41	33,8	78,5	14	96
DN 40 DIN			43				
DN 51 SMS - 2" US	80		53,8	45,3	94		108
DN 50 DIN			55,8				
DN 63 SMS - 2½" US	100		67,4	56,7	124	20	148
DN 65 DIN	109,5		74,5	61,7	134		158,5
DN 76 SMS - 3" US	124		80,9	67,3	149		174
DN 80 DIN	138		90	74,9	163		188
DN 104 SMS - 100 DIN	172		110	92,4	198,5	25	225
DN 4" US	166,5		107,4	90	193		219,5
DN 150 DIN	264		168	138			

Material:

- pig :  
- Polypropylene.  
- PFA, on request

- lip seal :  
- QMV or reinforced QMV  
- FKM or reinforced FKM  
- On request:  
- FFKM,  
- FKM antacid

DN 6" US, on request



# CONTROL OF THE PIG SPEED

An effective pigging sequence will depend on the speed of the pig, which should be approximately 1 to 1.5m/s. The pig will then be slowed down near the stations to prevent damage to the system. The pig can be pushed with water or gas. The choice will depend on the product but also on the utilities available on site.

There are therefore 3 possible schemes:

- 1 / pushes with water and back with air >>> This is the most common and recommended method if possible
- 2 / pushes with water and back with water
- 3 / pushes with air and returns with air

## FLOW RATE IN THE PIPEWORK

ACCORDING TO THE DESIRED PIG SPEED

Nominal diameter	SMS	25	38	51	63,5	76	104
	Ø inside	22,6	35,6	48,5	60,3	72,9	100
Speed	2,00 m/sec	48 l/min	119 l/min	222 l/min	343 l/min	501 l/min	942 l/min
	1,75 m/sec	42 l/min	105 l/min	194 l/min	300 l/min	438 l/min	825 l/min
	1,50 m/sec	36 l/min	90 l/min	166 l/min	257 l/min	376 l/min	707 l/min
	1,25 m/sec	30 l/min	75 l/min	139 l/min	214 l/min	313 l/min	589 l/min
	1,00 m/sec	24 l/min	60 l/min	111 l/min	171 l/min	250 l/min	471 l/min
	0,75 m/sec	18 l/min	45 l/min	83 l/min	129 l/min	188 l/min	353 l/min
	0,50 m/sec	12 l/min	30 l/min	55 l/min	86 l/min	125 l/min	236 l/min
	0,25 m/sec	6 l/min	15 l/min	28 l/min	43 l/min	63 l/min	118 l/min
	0,10 m/sec	2 l/min	6 l/min	11 l/min	17 l/min	25 l/min	47 l/min
	0,00 m/sec	0 l/min	0 l/min	0 l/min	0 l/min	0 l/min	0 l/min



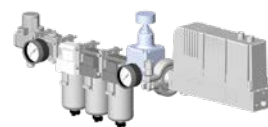
Recommended speed

Nominal diameter	US	1"	1"1/2	2"	2"1/2	3"	4"	6"
	Ø inside	22,1	34,8	47,5	60,3	72,9	97,4	146,9
Speed	2,00 m/sec	46 l/min	114 l/min	213 l/min	343 l/min	501 l/min	894 l/min	2034 l/min
	1,75 m/sec	40 l/min	100 l/min	186 l/min	300 l/min	438 l/min	782 l/min	1780 l/min
	1,50 m/sec	35 l/min	86 l/min	159 l/min	257 l/min	376 l/min	671 l/min	1525 l/min
	1,25 m/sec	29 l/min	71 l/min	133 l/min	214 l/min	313 l/min	559 l/min	1271 l/min
	1,00 m/sec	23 l/min	57 l/min	106 l/min	171 l/min	250 l/min	447 l/min	1017 l/min
	0,75 m/sec	17 l/min	43 l/min	80 l/min	129 l/min	188 l/min	335 l/min	763 l/min
	0,50 m/sec	12 l/min	29 l/min	53 l/min	86 l/min	125 l/min	224 l/min	508 l/min
	0,25 m/sec	6 l/min	14 l/min	27 l/min	43 l/min	63 l/min	112 l/min	254 l/min
	0,10 m/sec	2 l/min	6 l/min	11 l/min	17 l/min	25 l/min	45 l/min	102 l/min
	0,00 m/sec	0 l/min	0 l/min	0 l/min	0 l/min	0 l/min	0 l/min	0 l/min



Recommended speed

Nominal diameter	DIN	25	32	40	50	65	80	125	150
	Ø inside	26	32	38	50	66	81	125	150
Speed	2,00 m/sec	64 l/min	97 l/min	136 l/min	236 l/min	411 l/min	618 l/min	1473 l/min	2121 l/min
	1,75 m/sec	56 l/min	84 l/min	119 l/min	206 l/min	359 l/min	541 l/min	1289 l/min	1856 l/min
	1,50 m/sec	48 l/min	72 l/min	102 l/min	177 l/min	308 l/min	464 l/min	1104 l/min	1590 l/min
	1,25 m/sec	40 l/min	60 l/min	85 l/min	147 l/min	257 l/min	386 l/min	920 l/min	1325 l/min
	1,00 m/sec	32 l/min	48 l/min	68 l/min	118 l/min	205 l/min	309 l/min	736 l/min	1060 l/min
	0,75 m/sec	24 l/min	36 l/min	51 l/min	88 l/min	154 l/min	232 l/min	552 l/min	795 l/min
	0,50 m/sec	16 l/min	24 l/min	34 l/min	59 l/min	103 l/min	155 l/min	368 l/min	530 l/min
	0,25 m/sec	8 l/min	12 l/min	17 l/min	29 l/min	51 l/min	77 l/min	184 l/min	265 l/min
	0,10 m/sec	3 l/min	5 l/min	7 l/min	12 l/min	21 l/min	31 l/min	74 l/min	106 l/min
	0,00 m/sec	0 l/min	0 l/min	0 l/min	0 l/min	0 l/min	0 l/min	0 l/min	0 l/min

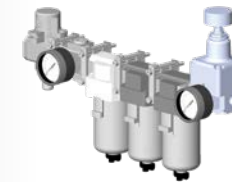


Recommended speed

## CONTROL THE SPEED OF THE PIG

ACCORDING TO THE PRODUCTS AND PRESSURE

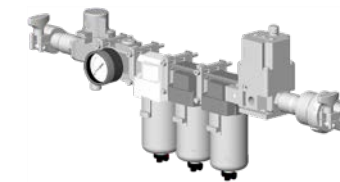
### MANUAL



#### Efficient and simple solution, IF:

- The required pressure is constant and less than 2 bar
- There is little difference in height between the departure and arrival station
- Several products are scraped; they must have the same viscosity.

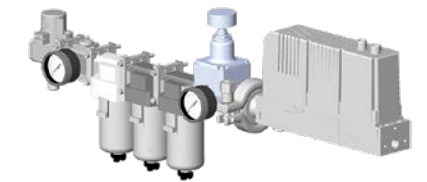
### AUTOMATIC



#### Unlike the manual version, the automatic version will also allow:

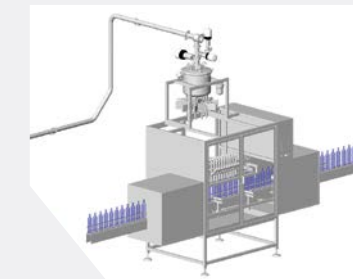
- To produce at pressures higher than 2 bar
- To manage products of different viscosities

### VOLUMETRIC



#### The volumetric version will provide a fluid and adapted pig speed when the back pressure is not constant, in case of:

- Significant height difference between start and finish
- Long pipe distance



### GOOD TO KNOW

- As water is not compressible, controlling the speed of the pig will be easier. In most cases, the push will be carried out using the pump.
- In the case of a gas push, which can therefore be compressible, it is recommended to use air treatment modules. These modules will provide the necessary pressure to obtain the movement of the pig and control its speed until the end of the sequence.
- Collars equipped with magnetic sensors (see accessories page) will be installed on the line and will be able to give in real time the progress of the pig and thus deduce its speed. They will also make it possible to anticipate the arrival of the pig at the station and reduce its speed.

## CALCULATION OF THE PRESSURE

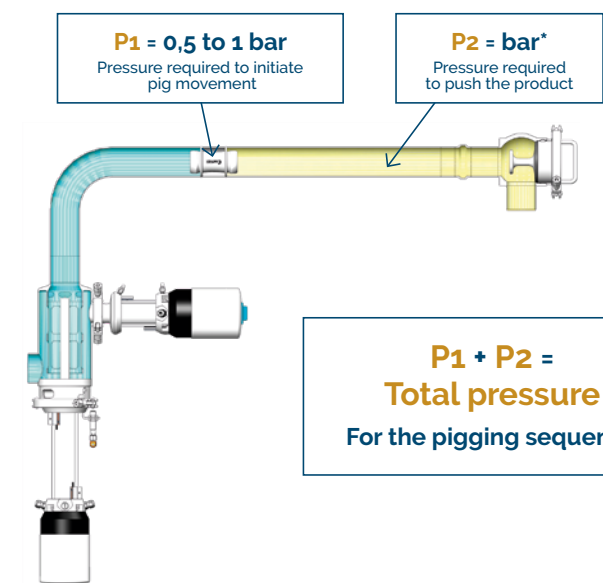
REQUIRED IN THE LINE



### THE RIGHT QUESTIONS TO ASK YOURSELF

The project managers are at your disposal to help you calculate the pressure necessary for the proper functioning of the pigging process.

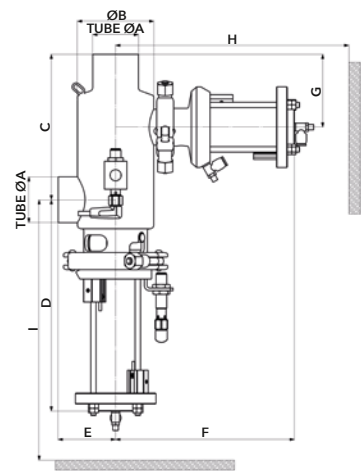
Contact us:  
[caf@definox.com](mailto:caf@definox.com)



\*Depending on the nature of the product and the design of the line.

# DIMENSIONS IN-LINE CLEANING STATION

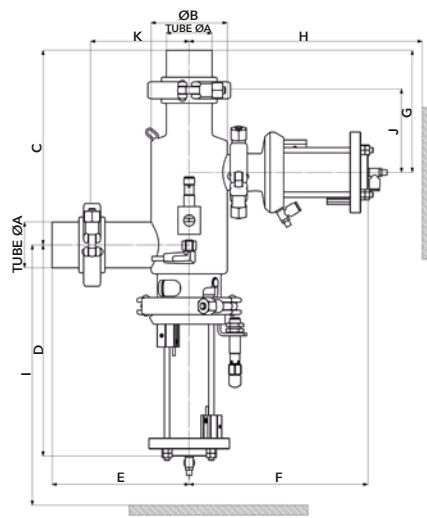
## > BUTTWELD



SMS	DN			TUBE Ø A	Ø B	C	D	E	F	G	H'	I'	WEIGHT (Kg)
	DIN	US											
25				25 x 1,2	51	109	188	38	154	58	450	550	3
		1"		25,4 x 1,65	51	120	188	53	154	68	500	600	3
	25			29 x 1,5	51	108	189	36	154	59	450	550	3
38				38 x 1,2	70	146	206	60	163	83	450	550	5
		1"1/2		38,1 x 1,65	70	150	206	60	163	87	550	600	5
	40			41 x 1,5	70	148	207	59	163	87	500	600	5
51				51 x 1,25	85	162	236	64	200	81	500	600	7
		2"		50,8 x 1,65	85	178	235	65	200	96	550	650	7
	50			53 x 1,5	85	165	236	64	200	85	550	650	7
63,5				63,5 x 1,6	115	239	298	78	214	122	550	650	10
		2"1/2		63,5 x 1,6	115	239	298	78	214	122	550	650	10
	65			70 x 2	115	242	300	96	214	130	550	650	11
76				76,1 x 1,6	129	239	304	83	222	126	550	650	11
		3"		76,1 x 1,6	129	239	304	83	222	126	550	650	11
	80			85 x 2	154	271	365	115	234	139	650	750	18
104	100			104 x 2	154	296	375	127	234	135	650	750	18
		4"		101,6 x 2,1	154	298	373	108	234	136	650	750	18
	150			154 x 2	254	463	510	201	344	227	700	900	41
		6"		152,4 X 2,75	254	465	509	202	344	227	700	900	42

Add 175 mm to the D-F dimensions for a configuration with ACS control top  
\* Clearance dimension for easy disassembly with the control top.

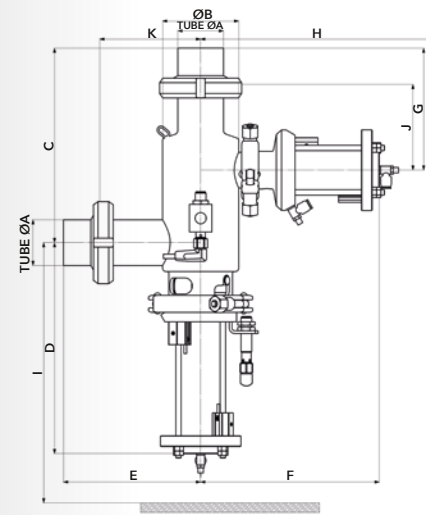
## > CLAMP



SMS	DN			TUBE Ø A	Ø B	C	D	E	F	G	H'	I'	J	K	WEIGHT (Kg)
	DIN	US													
25				25 x 1,2	51	166	188	115	154	115	450	550	78	78	4
		1"		25,4 x 1,65	51	167	188	115	154	115	500	600	78	78	4
	25			29 x 1,5	51	165	189	113	154	116	450	550	79	76	4
38				38 x 1,2	70	190	206	148	163	127	450	550	85	105	7
		1"1/2		38,1 x 1,65	70	190	206	148	163	127	550	600	85	105	7
	40			41 x 1,5	70	188	207	147	163	127	500	600	85	104	7
51				51 x 1,25	85	217	236	153	200	136	500	600	93	110	9
		2"		50,8 x 1,65	85	218	235	154	200	136	550	650	93	111	9
	50			53 x 1,5	85	216	236	153	200	136	550	650	93	110	9
63,5				63,5 x 1,6	115	298	298	193	214	181	550	650	125	137	13
		2"1/2		63,5 x 1,6	115	298	298	193	214	181	550	650	125	137	13
	65			70 x 2	115	295	300	209	214	183	550	650	128	154	13
76				76,1 x 1,6	129	300	304	200	222	187	550	650	130	143	14
		3"		76,1 x 1,6	129	300	304	200	222	187	550	650	130	143	14
	80			85 x 2	154	323	365	232	234	191	650	750	134	175	20
104	100			104 x 2	154	355	375	247	234	194	650	750	135	189	22
		4"		101,6 x 2,1	154	355	373	227	234	193	650	750	135	169	22
	150			154 x 2	-	-	-	-	-	-	-	-	-	-	-
		6"		152,4 X 2,75	-	-	-	-	-	-	-	-	-	-	-

Add 175 mm to the D-F dimensions for a configuration with ACS control top  
\* Clearance dimension for easy disassembly with the control top.

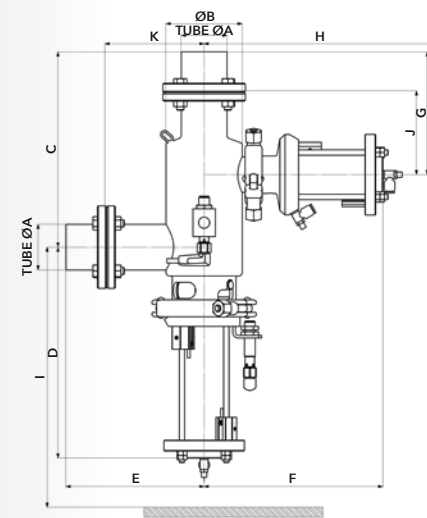
## > THREADED



SMS	DN			TUBE Ø A	Ø B	C	D	E	F	G	H'	I'	J	K	WEIGHT (Kg)
	DIN	US													
25				25 x 1,2	51	165	188	114	154	114	450	550	81	81	4
		1"		25,4 x 1,65	51	166	188	113	154	114	500	600	81	81	4
	25			29 x 1,5	51	165	189	113	154	116	450	550	82	79	4
38				38 x 1,2	70	190	206	148	163	127	450	550	88	108	6
		1"1/2		38,1 x 1,65	70	190	206	148	163	127	550	600	88	108	6
	40			41 x 1,5	70	188	207	147	163	127	500	600	87	107	6
51				51 x 1,25	85	217	236	153	200	136	500	600	96	113	9
		2"		50,8 x 1,65	85	218	235	154	200	136	550	650	96	113	9
	50			53 x 1,5	85	216	236	153	200	136	550	650	95	112	9
63,5				63,5 x 1,6	115	298	298	193	214	181	550	650	126	138	13
		2"1/2		63,5 x 1,6	115	298	298	193	214	181	550	650	126	138	13
	65			70 x 2	115	295	300	209	214	183	550	650	130	156	13
76				76,1 x 1,6	129	300	304	200	222	187	550	650	134	147	15
		3"		76,1 x 1,6	129	300	304	200	222	187	550	650	134	147	15
	80			85 x 2	154	323	365	232	234	191	650	750	138	179	21
104	100			104 x 2	154	355	375	247	234	194	650	750	138	191	23
		4"		101,6 x 2,1	154	355	373	227	234	193	650	750	138	172	23
	150			154 x 2	-	-	-	-	-	-	-	-	-	-	-
		6"		152,4 X 2,75	-	-	-	-	-	-	-	-	-	-	-

Add 175 mm to the D-F dimensions for a configuration with ACS control top  
\* Clearance dimension for easy disassembly with the control top.

## > FLANGE



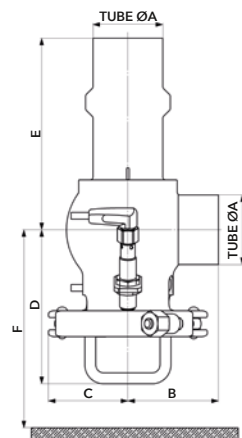
SMS	DN			TUBE Ø A	Ø B	C	D	E	F	G	H'	I'	J	K	WEIGHT (Kg)
	DIN	US													
25				25 x 1,2	51	169	188	118	154	118	450	550	80	79	4
		1"		25,4 x 1,65	51	170	188	118	154	118	500	600	80	79	4
	25			29 x 1,5	51	168	189	116	154	119	450	550	81	78	4
38				38 x 1,2	70	192	206	150	163	129	450	550	86	106	7
		1"1/2		38,1 x 1,65	70	192	206	150	163	129	550	600	86	106	7
	40			41 x 1,5	70	190	207	149	163	129	500	600	86	105	7
51				51 x 1,25	85	218	236	154	200	137	500	600	94	111	9
		2"		50,8 x 1,65	85	219	235	155	200	138	550	650	94	111	9
	50			53 x 1,5	85	217	236	154	200	137	550	650	94	110	9
63,5				63,5 x 1,6	115	291	298	186	214	174	550	650	122	134	13
		2"1/2		63,5 x 1,6	115	291	298	186	214	174	550	650	122	134	13
	65			70 x 2	115	290	300	204	214	178	550	650	126	151	14
76				76,1 x 1,6	129	295	304	195	222	182	550	650	128	140	15
		3"		76,1 x 1,6	129	295	304	195	222	182	550	650	128	140	15
	80			85 x 2	154	322	365	231	234	190	650	750	133	174	22
104	100			104 x 2	154	351	375	243	234	190	650	750	133	187	24
		4"		101,6 x 2,1	154	352	373	224	234	190	650	750	133	168	24
	150			154 x 2	254	443	510	321	344	207	700	900	148	263	51
		6"		152,4 X 2,75	-	-	-	-	-	-	-	-	-	-	-

Add 175 mm to the D-F dimensions for a configuration with ACS control top  
\* Clearance dimension for easy disassembly with the control top.



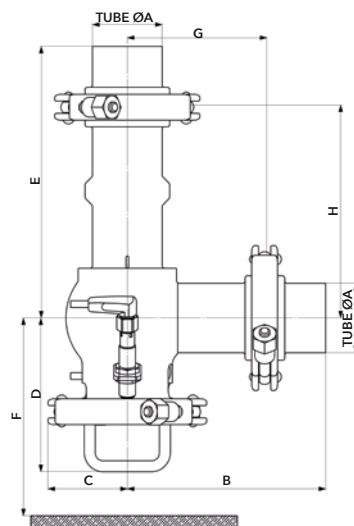
# DIMENSIONS STOP STATION

## > BUTTWELD



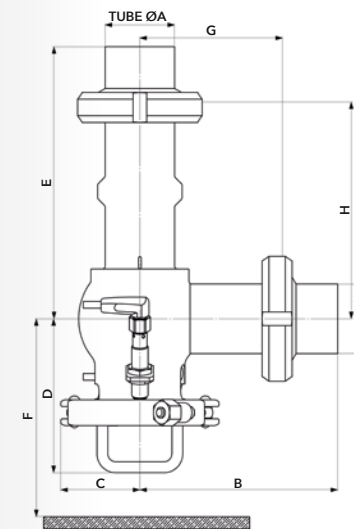
SMS	DN		TUBE Ø A	B	C	D	E	F	WEIGHT (Kg)
	DIN	US							
25			25 x 1,2	52	80	100	88	400	3
		1"	25,4 x 1,65	62	80	100	98	400	4
	25		29 x 1,5	54	80	101	86	400	3
38			38 x 1,2	62	80	106	116	500	3
		1"1/2	38,1 x 1,65	52	80	106	106	500	3
	40		41 x 1,5	61	80	107	104	500	3
51			51 x 1,25	67	80	113	141	500	4
		2"	50,8 x 1,65	67	80	113	142	500	4
	50		53 x 1,5	66	80	114	142	500	4
63,5		2"1/2	63,5 x 1,6	101	100	120	171	550	6
	65		70 x 2	101	100	122	176	550	6
	76	3"	76,1 x 1,6	101	100	126	177	550	6
	80		85 x 2	101	100	130	187	550	6
104	100		104 x 2	122	130	147	227	550	15
		4"	101,6 x 2,1	122	130	146	227	550	16
	150		154 x 2	146	160	173	339	650	25
		6"	152,4 X 2,75	146	160	172	340	650	26

## > CLAMP



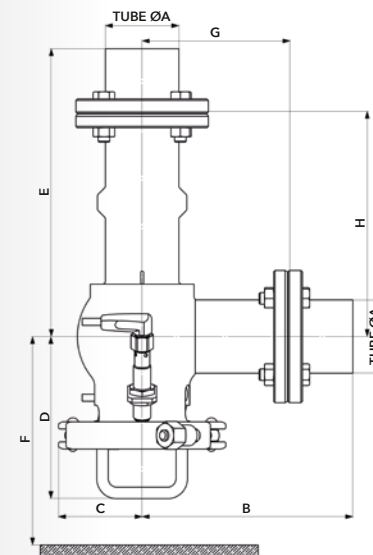
SMS	DN		TUBE Ø A	B	C	D	E	F	G	H	WEIGHT (Kg)
	DIN	US									
25			25 x 1,2	124	80	100	145	400	87	108	5
		1"	25,4 x 1,65	139	80	100	145	400	102	108	5
	25		29 x 1,5	126	80	101	143	400	89	106	5
38			38 x 1,2	135	80	106	174	500	92	131	5
		1"1/2	38,1 x 1,65	135	80	106	174	500	92	131	5
	40		41 x 1,5	134	80	107	172	500	92	130	5
51			51 x 1,25	146	80	113	200	500	103	157	6
		2"	50,8 x 1,65	146	80	113	201	500	103	158	6
	50		53 x 1,5	145	80	114	201	500	102	158	6
63,5		2"1/2	63,5 x 1,6	186	100	120	256	550	130	200	8
	65		70 x 2	184	100	122	259	550	129	204	8
	76	3"	76,1 x 1,6	188	100	126	264	550	131	207	9
	80		85 x 2	188	100	130	274	550	131	217	9
104	100		104 x 2	212	130	147	317	550	154	259	19
		4"	101,6 x 2,1	211	130	146	316	550	153	258	20
	150		154 x 2	-	-	-	-	-	-	-	-
		6"	152,4 X 2,75	-	-	-	-	-	-	-	-

## > THREADED



SMS	DN		TUBE Ø A	B	C	D	E	F	G	H	WEIGHT (Kg)
	DIN	US									
25			25 x 1,2	123	80	100	144	400	90	111	4
		1"	25,4 x 1,65	138	80	100	144	400	105	111	4
	25		29 x 1,5	126	80	101	143	400	92	109	4
38			38 x 1,2	135	80	106	174	500	95	134	5
		1"1/2	38,1 x 1,65	135	80	106	174	500	95	134	5
	40		41 x 1,5	134	80	107	172	500	94	132	5
51			51 x 1,25	146	80	113	200	500	105	159	5
		2"	50,8 x 1,65	146	80	113	201	500	105	160	6
	50		53 x 1,5	145	80	114	201	500	104	160	5
63,5		2"1/2	63,5 x 1,6	186	100	120	256	550	131	201	9
	65		70 x 2	184	100	122	259	550	131	206	9
	76	3"	76,1 x 1,6	189	100	126	264	550	135	211	10
	80		85 x 2	188	100	130	274	550	135	221	10
104	100		104 x 2	212	130	147	317	550	156	261	20
		4"	101,6 x 2,1	211	130	146	316	550	156	261	21
	150		154 x 2	-	-	-	-	-	-	-	-
		6"	152,4 X 2,75	-	-	-	-	-	-	-	-

## > FLANGE



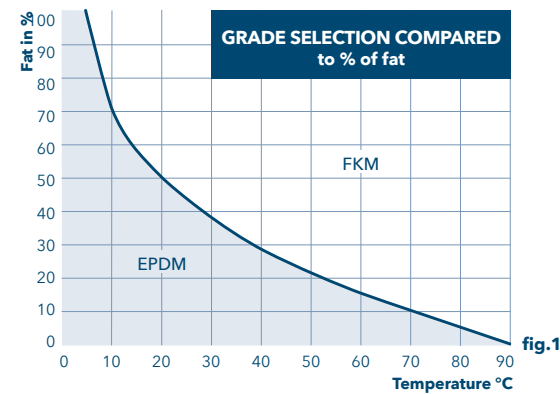
SMS	DN		TUBE Ø A	B	C	D	E	F	G	H	WEIGHT (Kg)
	DIN	US									
25			25 x 1,2	127	80	100	148	400	89	110	5
		1"	25,4 x 1,65	142	80	100	148	400	104	110	5
	25		29 x 1,5	129	80	101	146	400	91	108	5
38			38 x 1,2	137	80	106	176	500	93	132	5
		1"1/2	38,1 x 1,65	137	80	106	176	500	93	132	5
	40		41 x 1,5	136	80	107	174	500	93	131	5
51			51 x 1,25	147	80	113	201	500	103	157	6
		2"	50,8 x 1,65	147	80	113	202	500	103	158	6
	50		53 x 1,5	146	80	114	202	500	103	159	6
63,5		2"1/2	63,5 x 1,6	179	100	120	249	550	127	197	8
	65		70 x 2	179	100	122	254	550	127	202	9
	76	3"	76,1 x 1,6	183	100	126	259	550	129	205	10
	80		85 x 2	187	100	130	273	550	131	216	11
104	100		104 x 2	208	130	147	313	550	152	257	22
		4"	101,6 x 2,1	208	130	146	313	550	152	257	22
	150		154 x 2	236	160	173	409	650	178	351	35
		6"	152,4 X 2,75	-	-	-	-	-	-	-	-

# OPERATING CONDITIONS PIGGING STATIONS

## PIGGING STATION SEALS

	EPDM		FKM	
<b>COLOUR</b>	Black		Blue	
<b>INFORMATION</b>	For use with water, steam, acids and bases. Not suitable for greasy substances. The most widespread solution in the food industry.		Excellent resistance to oils, fats and chemicals (concentrated acids, bases and peroxides). Good resistance to high temperatures.	
<b>PRODUCT</b>	<b>Static</b>	<b>Dynamic</b>	<b>Static</b>	<b>Dynamic</b>
Min temperature	-30°C	-10°C	0°C	1°C
Max temperature	130°C	120°C	130°C	120°C
<b>STEAM</b>	<b>Static</b>	<b>Dynamic</b>	<b>Static</b>	<b>Dynamic</b>
Max. continuous temperature	130°C	120°C	130°C	120°C
Max flash temperature (15-20 min)	150°C	-	150°C	-
<b>FEATURES / OUTFIT</b>				
Oils	★		★★	
Fatty substance*	★ (see fig.1)		★★	
CIP	★★		★★	
SIP	up to 140°C		up to 160°C	
Aggressive chemicals	★		★★	
Essential oils and concentrated fragrances	★		★★	
Abrasion resistance	★		★	
Elasticity	★★		★	
Low temperatures	★★		★	
<b>HOMOLOGATIONS</b>				
FDA 21 CFR 177.2600	✓		✓	
CE 1935 / 2004	✓		✓	
ADIfree	✓		✓	
3-A® Sanitary Standards	✓		✓	
USP Ch. 87 and Ch. 88 - Class VI	✗		✓	
NSF 51	✗		✓	
BNIC	✗		✓	

\* For a water flow based on a speed of 2 m/s    ★★Very good    ★Correct    ★Poor performance



SMS	unit	25	38	51	63,5	76	104
US	unit	1"	1 1/2"	2"	2 1/2"	3"	4"
DIN 11850 reihe 2		25	32	40	50	65	80
Ø particle	mm	8	8	8	15	15	15
Stop actuator*	n liter	0,017	0,017	0,017	0,017	0,017	0,14
Push actuator*	n liter	0,04	0,04	0,04	0,04	0,2	0,24

\*Air consumption (volume at atmospheric pressure)

Maximum working pressure	10 bar (145 psi)
Air supply to the actuator* min.	5,5 bar (80 psi)
Air supply to the actuator* max.	7 bar (101 psi)
Actuating time of push cylinder	6 sec
Operating time of locking cylinder	3 sec

\*Pressure with direct control top supply

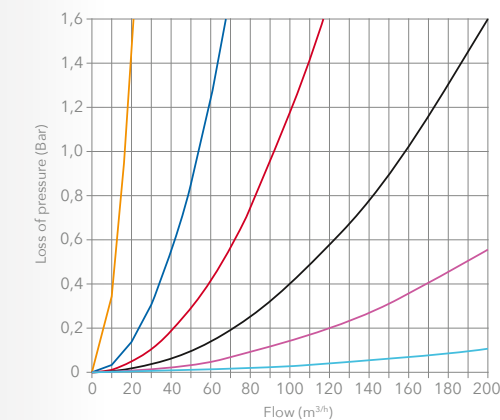
The operating conditions are given for information only. Combinations of extreme operating conditions may sometimes be inappropriate in these cases, it is strongly advised to obtain advice from us.

## PRESSURE DROP OF THE PIGGING STATIONS

SMS	unit	25	38	51	63	76	104
US	unit	1"	1 1/2"	2"	2 1/2"	3"	4"
DIN 11850 reihe 2		25	40	50	65	85	100
In-line cleaning station (bottom to top)	Kv	16	20	38	42	64	66
	Cv	19	24	45	49	75	77
In-line cleaning station (top to bottom)	Kv	20	23	56	64	103	105
	Cv	23	27	65	74	119	122
Stop station (bottom to top)	Kv	15	20	39	46	68	68
	Cv	17	23	45	53	79	79
Stop station (top to bottom)	Kv	17	23	54	47	59	92
	Cv	20	27	63	55	69	107

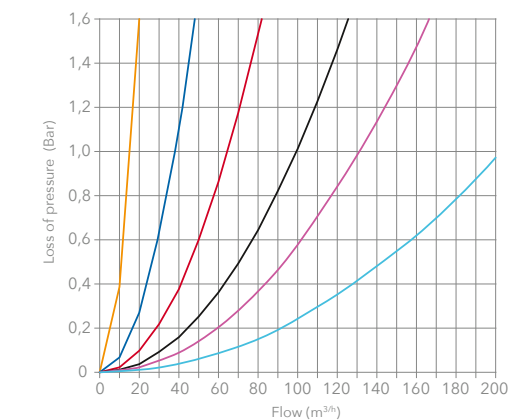
### STOP STATION

#### PRESSURE DROP (top to bottom) SMS - US

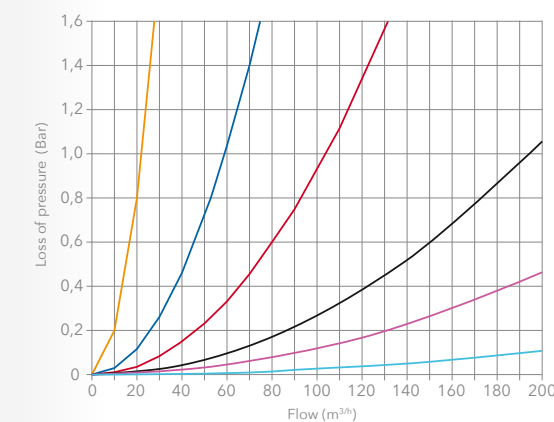


### IN-LINE CLEANING STATION

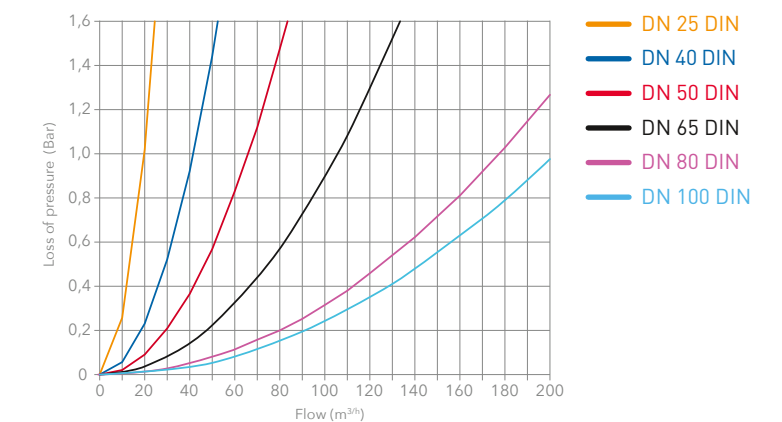
#### PRESSURE DROP (bottom to top) SMS - US



#### PRESSURE DROP (top to bottom) DIN



#### PRESSURE DROP (bottom to top) DIN





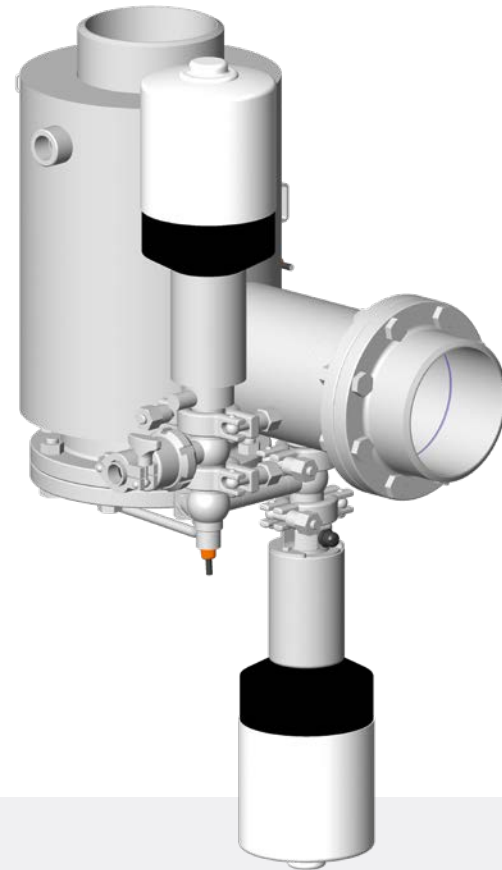
# TAILOR-MADE SOLUTIONS

Depending on production constraints and the nature of the products manufactured, customised pigging systems can be designed by our teams on request (pressures above 10 bar (145 psi), viscous products, etc.).

These customized solutions require a feasibility study and longer delivery times than standard versions.

## DOUBLE-WALLED SOLUTION

Depending on the recipes and the nature of the products manufactured, it may be necessary to maintain the process fluid at a temperature (hot or cold).



For explosive ATEX environments, our sales representatives are at your disposal to guide you towards an appropriate solution.

## CUSTOMER TESTIMONIAL

DEFINOX supports us in the realization of customized solutions.

|| We asked DEFINOX for help in improving our productivity. Our objective was to drastically reduce our product losses.

One of the main tracks was the relocation of the machines in order to optimize the lengths of the pipes. The feasibility study conducted with DEFINOX confirmed rapid gains, with minor modifications to the existing installation.

The pigging system, STARMOTION® combined with the use of manifold, has allowed us to increase our efficiency and continue the automation of our production line.

Today, filling machines operate at a higher product rate. As a result, we were able to significantly reduce our reprocessing operations.

The modular approach of the solutions proposed by DEFINOX has enabled us to control our investments and to keep pace with the evolution of our range.

Thanks to the DEFINOX team, our production performance is increased while offering an ever higher level of quality.



A perfume extract manufacturer - SINGAPORE

# THE DOUBLE PIG CONFIGURATION

A double pig system ensures the distribution of a process fluid to several points (different tanks, different lines).

## THE BENEFITS

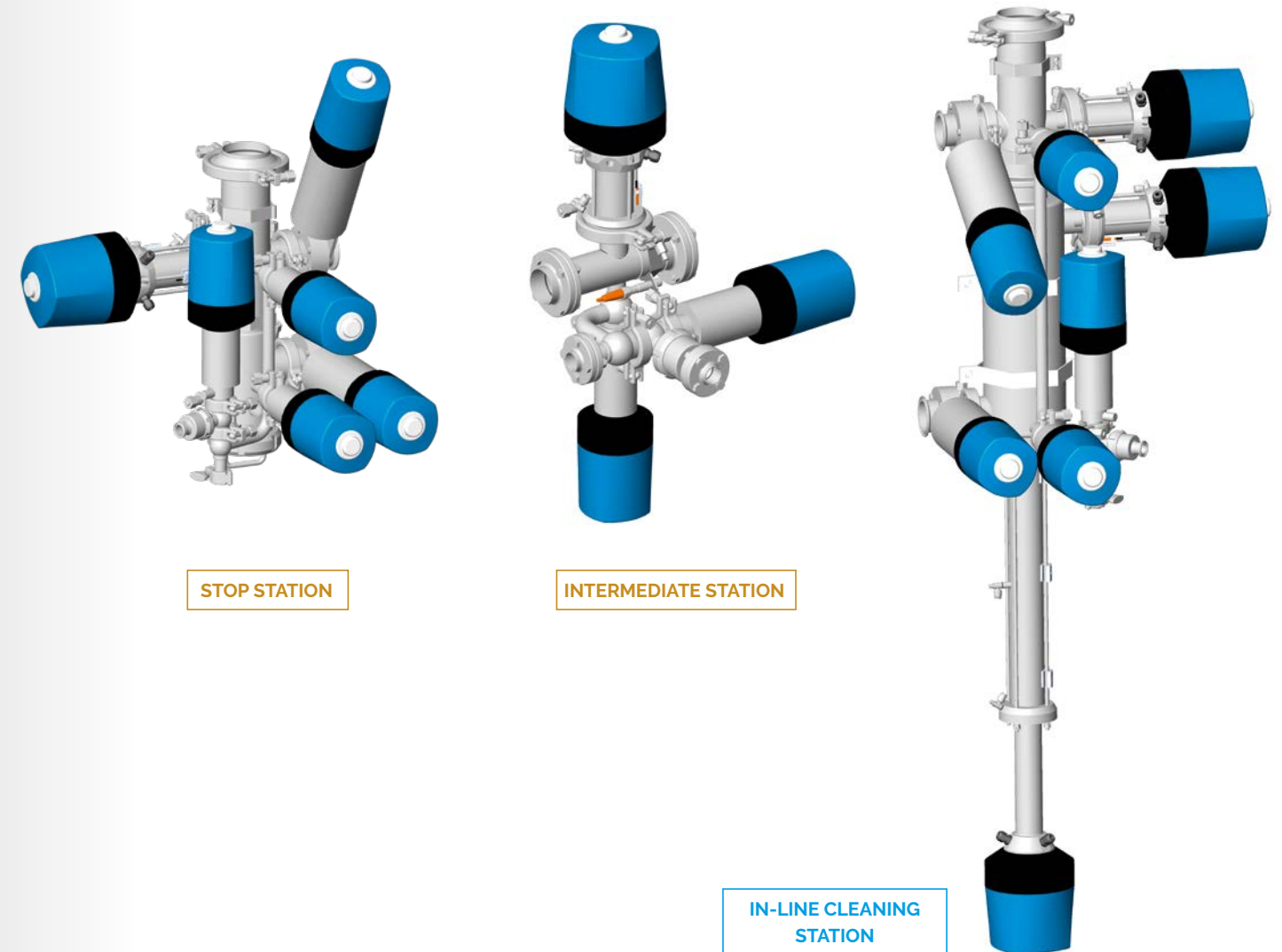
This configuration creates a physical barrier between two different fluids. It guarantees better management of process fluid changes in line. Productivity is optimal.



Watch the 3D movie on YouTube to discover how it works

## TYPES OF CONFIGURATION

The configuration principles remain the same in three possible combinations:  
> 1 inline cleaning station + 1 stop station  
> 2 stations that can be cleaned in line  
> 2 stop stations



# ACCESSORIES

Many accessories and devices are available depending on the configuration.

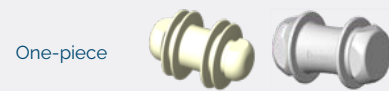
## THE PUSH ACTUATOR AND STOP ACTUATOR

can be equipped with a led control top, available in terminal or AS-i version with plastic or stainless steel cover.

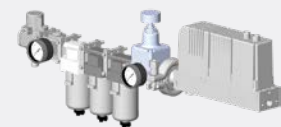


Plastic cover Stainless steel cover

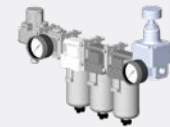
## PIG



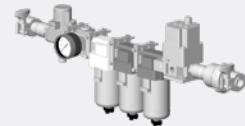
## AIR TREATMENT MODULE



Automatic, speed management



Manual, pressure management

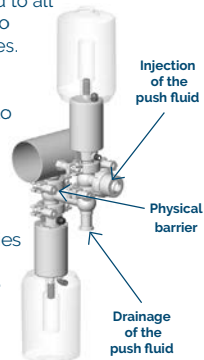


Automatic, pressure management

## OPTIONAL AIR PUSH MODULE as an option

Our solutions are flexible and can be adapted to all processes, thanks to the air push modules. They facilitate the integration of pigging systems into process lines.

These modules can be equipped with valves of different technologies depending on the configuration of the customer process.



## PIG DETECTION PEN



Not ATEX



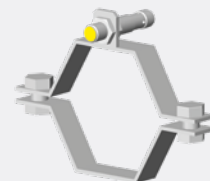
ATEX\*

## EXTRACTION TOOL

to facilitate the recovery of the pig inside the pipe.



## IN-LINE PIGGING DETECTION



Collar equipped with a detector

## PIGGABLE VALVE PASSAGE OF THE PIG IN THE LOWER LINE



Mixproof valve VDCI MC - VEOX

## BENDS

Suitable for piggable lines. We recommend the use of minimum 3D bends. They promote a regular movement of the pig.



## JUNCTION BOX



We can provide a junction box for plug & play operation.

# INSTALLATION RECOMMENDATIONS

The optimal use of a pigging system depends on the geometric quality of the production line. Before integrating a pigging solution, it is recommended to follow a few tips; this is the guarantee of proper operation.

## WELDING QUALITY

All our pigging solutions are guaranteed without retention zones. Particular care is taken with welds, carried out by TIG certified welders. They comply with hygienic standards and requirements. They guarantee a good geometry and resistance of the mechanically welded assemblies.



## INTEGRATION OF PIGGING STATIONS ON PROCESS LINES



### IN-LINE CLEANING STATION

- Vertical positioning is necessary and allows the pigging to position itself in the cage by gravity

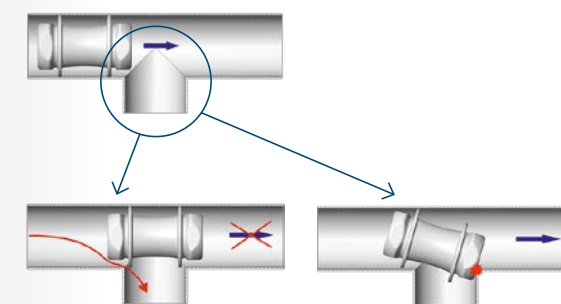


### STOP STATION

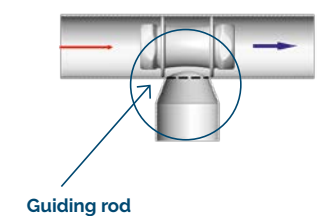
- Vertical or horizontal positioning is possible

## CONNECTION PARTS

T's can alter or prevent the movement of the pig



> We recommend the use of reduced T



## LINE GEOMETRY

The use of minimum 3D bends is recommended. They promote a regular movement of the pig, without blocking.





# OUR SUPPORT

## SUPPORT

### THROUGHOUT THE PROJECT

The sales team is at your disposal to study, with our project managers, the functional specifications and propose pigging solutions **that meet the constraints of your processes, adapted to existing lines or for your new projects.**

Our teams can also assist you in the **integration and implementation of on-site pigging solutions.** Our **test bench** allows us to carry out **series of water tests** on lines from DN 25 to DN 104. These tests provide a representation of the performance of the pigging systems under the operating conditions.



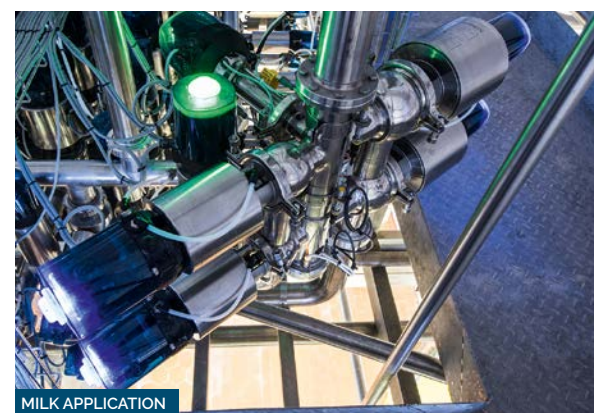
## A PERSONALIZED FOLLOW-UP PROGRAM

### FLEET OF VALVES AND EQUIPMENT

Our teams of specialized multilingual technicians work **all over the world** to maintain valves and pigging stations.

**Our actuators are guaranteed for 5 years** from delivery, under normal operating conditions, with a filtered dry air supply in accordance with DIN/ISO 8573-1.

We recommend changing the wear parts of the actuator at the end of the warranty and then every 5 years.



## AUTONOMY OF INTERVENTION

### ON YOUR INSTALLED FLEET OF VALVES AND STATIONS

Thanks to theoretical **and practical training** adapted to your needs, on site or at DEFINOX\*.

The training program is established with our customer service according to the number of valves installed.

\* DEFINOX is a Datadock approved training organization.



## MAINTENANCE ADVICE

Consult the **maintenance and installation** instructions on our website **definox.com**

In the maintenance manual NM-274, you will find all our advice on how to work on pigging stations.

Before any intervention on our valves and pigging stations, it is recommended to use the appropriate tool kits.

Follow step by step the dismantling and reassembly of the pigging stations on the video maintenance, **available on YouTube.**

YouTube

definox.com

## WARRANTY ON ORIGINAL SPARE PARTS

The use of original spare parts is the guarantee of optimal operation and reliability of the installations.

Our spare parts are designed and selected specifically for DEFINOX products.

They are interchangeable, for an optimized management of the spare parts stock.

The design of valves and stations reduces the number of seals; maintenance is facilitated, line shutdown is limited.

You can find the list of spare parts needed to maintain your equipment from the ID augmented reality application.

# RETURN ON INVESTMENT



Configure your standard pigging system by connecting to the configurator:

[definox.com/piggingssystem](https://definox.com/piggingssystem)

Get an online quote in 4 steps, by choosing:



The return on investment estimate is obtained from the process parameters and product characteristics.

The higher the value of the scraped product, the faster the return on investment.

The online tool available on our website allows you to develop a standard solution yourself, available within 6 weeks.

## > Example of return on investment on a pigging process

Pipe length	200	m
ø inside	65	mm
Number of cycles/day	1	c/j
Material cost	2	€/kg
Number of days worked in the year	365	Days
Density of the product	1	Kg/L
Estimate of the lost product	10	%
<b>Quantity of the lost product</b>	<b>24 223</b>	<b>kg</b>
<b>Cost of annual losses</b>	<b>48 447</b>	<b>€</b>
Estimated gain on lost product	95	%
<b>Product earned</b>	<b>23 012</b>	<b>kg</b>
<b>Annual gain</b>	<b>46 024</b>	<b>€</b>
Estimation of a pigging line	20 000	€
Return on investment	5,21	months

Without pigging solution

With pigging solution

Based on a pigging solution including an in-line cleaning station and a stop station

# AUGMENTED REALITY: ID DEFINOX



## TEST, DOWNLOAD, SCAN...

### AUGMENTED REALITY DEVELOPED BY DEFINOX FOR MORE SERVICES

- Immediate identification of stations and their spare parts.
- Saving time in the management of the equipment fleet.
- Reduced risk of errors.
- Immediate access to documentation.
- Individualized follow-up of the station with the maintenance booklet.



Visit our website: [definox.com](https://definox.com)

- Access all the information and documentation available on the customer area

- 2D and 3D plans and symbols available on the **CAD portal**





DEFINOX, 50 years strong experience,  
has served industry leaders in the food, cosmetic and  
consumer goods with expertise and know-how for problem  
solving and creative fluid handling solutions.

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70   
COUNTRIES

60 000   
EQUIPMENT AND VALVES  
SOLD PER YEAR

150   
EMPLOYEES

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**definox.com**

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