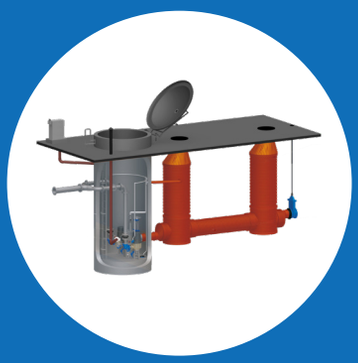
EkoWodrol®

we create friendly environment

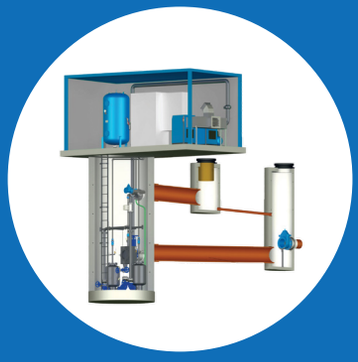
Elbow ball check valves

In-line ball check valves

EKON, EKOS columns



EDP dry pumping stations



EPP pneumatic pumping stations

PRODUCT CATALOG

Version 10.2022

CONTENTS

ELBOW BALL CHECK VALVES

Technical data

- Range of available diameters: DN32 – DN300.
- Pressure rated to PN 16 (all valves are tested to PN 10 leak test / PN 16 hydrostatic shell test).
- Medium temperature: max 40°C (temporarily to 60°C).
- Threads complying with PN-EN ISO 228-1
- Flanges complying with EN 1092-2.
- EN 12050-4 tests and requirements.

ESK 11 type

ESK 01 type

COMBI 11 type

Advantages for sectors

For Pumps

1. Enables more compact construction of the pump canopy.
2. Low service time – our ball check valves take less than 15 minutes to service.
3. Quick replacement time – customers can quickly replace the valve balls themselves without damaging the equipment.

For Pumping Stations

1. Space saving – our valves enable space saving in a pumping station therefore giving the possibility of using a much smaller tank.
2. Quick replacement time – customers can quickly replace valve balls themselves without damaging the equipment.
3. Full opening at the velocity of 0.7 m/s – the EkoWodrol check valves are fully opened at the velocity of 0.7 m/s, thereby enabling the efficient work of the customer's system.
4. Significant reduction of vibration – our check valves successfully reduce vibrations thereby making the system work more quietly.

For Waterworks

1. Full opening at the velocity of 0.7 m/s – fully open position and constant local resistance coefficient, starting from the flow rate of 0.7 m/s.
2. Easy access to valves interior and the ball which enables:
   - placing the cover in the so-called servicing position
   - inspection of the inlet pipeline (including the pump impeller) and inspection of the pressure pipeline
3. Reduction of vibrations making the system work more quietly.

For Engineers

1. Combined solution – a two-in-one compact solution (elbow, check valve) or even a three-in-one compact solution (elbow, check valve, knife gate valve).
2. Fully open position and constant local resistance coefficient, starting from the flow rate of 0.7 m/s.
3. Reduction of vibrations making the system work more quietly.

Additional options

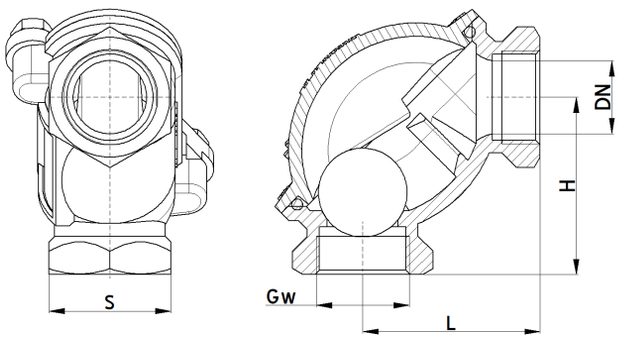
Type of check valve	Characteristics	Examples of applications
Long version (L)	The valve in L version has a free passage for the ball with a nominal diameter of the valve.	Pumping stations with separation of solids, pneumatic pumping stations.
Version with floating ball (F)	The valve in F version is equipped with a ball, the so-called „floating" ball, with a specific weight of approx 0.8 g/cm^3.	Backwater protection.
Version with Quasi ball (Q)	The valve in Q version is equipped with a quasi floating ball with a specific weight of approx 1.02 g/cm^3.	Pumping stations, pumping stations with separation of solids.
Version with drainage (D)	The valve in D version is equipped with drain plug for valve drainage.	Pumps, dry pumping stations, gravity instalations with antireflux valves.

Table of options

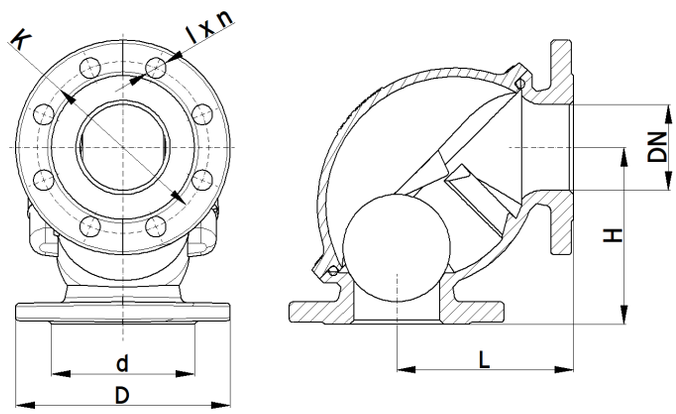
DN	PN 10	PN 16	Cast Iron	Ductile Iron	Long Version (L)	Floating Ball (F)	Quasi Ball (Q)	Drainage (D)
ESK 01 type - threaded								
32	regular	option	regular	n/a	n/a	n/a	n/a	n/a
40	regular	option	regular	n/a	n/a	n/a	n/a	n/a
50	regular	option	regular	n/a	n/a	option	n/a	n/a
ESK 11 type - flanged								
50	regular	option	regular	n/a	n/a	option	n/a	n/a
65	regular	option	regular	n/a	n/a	option	n/a	n/a
80	regular	option	regular	n/a	option	option	option	option
100	regular	option	regular	n/a	option	option	option	option
150	regular	option	n/a	regular	n/a	option	option	option
200	regular	option	n/a	regular	option	option	option	option
250	regular	option	n/a	regular	n/a	option	n/a	option
300	regular	option	n/a	regular	n/a	option	n/a	option
COMBI 01 type - threaded inlet, flanged outlet								
50	regular	n/a	regular	n/a	n/a	option	n/a	n/a
COMBI 11 type - flanged								
50	regular	n/a	regular	n/a	n/a	option	n/a	n/a
65	regular	n/a	regular	n/a	n/a	option	n/a	n/a
80	regular	n/a	regular	n/a	n/a	option	option	option
100	regular	n/a	regular	n/a	n/a	option	option	option
COMBI 11 type - flanged, oval version - O								
50.O	regular	n/a	regular	n/a	n/a	option	n/a	n/a

ESK ball check valves dimensions

ESK 01



ESK 11

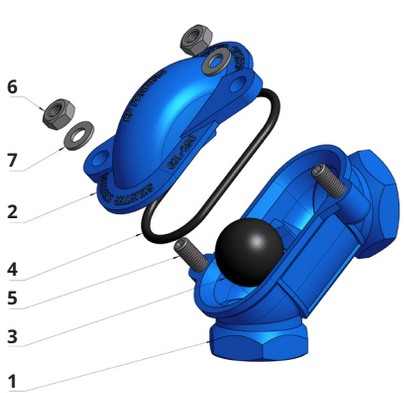


DN	L	H	D	d	K	l x n	S	Gw	ζ*	Weight
				[mm]				["]		[kg]
ESK 01 type - threaded										
32	80	80					55	G 1 1/4	1.4	1.8
40	100	100					60	G 1 1/2	3.9	2.3
50	100	100					75	G 2	2.4	4.2
ESK 11 type - flanged										
50	100	100	165	99	125	ø 19 x 4			2.4	8.3
65	140	140	185	118	145	ø 19 x 4			1.5	10.9
80	165	165	200	133	160	ø 19 x 8			1.7	16.7
100	200	200	220	156	180	ø 19 x 8			1.6	25.4
150	280	280	285	211	240	ø 23 x 8			1.6	49.6
200	350	350	340	266	295	ø 23 x 8 (12)			1.6	83.7
250	425	425	400	319	350	ø 23 x 12			1.5	131
300	510	510	455	375	400	ø 23 x 12			1.5	197
ESK 11 type - flanged, long version - L										
80	200	200	200	133	160	ø 19 x 8			0.9	17.7
100	250	250	220	156	180	ø 19 x 8			1.1	29.6
200	400	400	340	266	295	ø 23 x 8			1.6	78.1

*ζ – Local resistance coefficient within the recommended range of flow velocity through the valve from 0.7 m/s to 2.5 m/s.

ESK ball check valves constructions

ESK 01



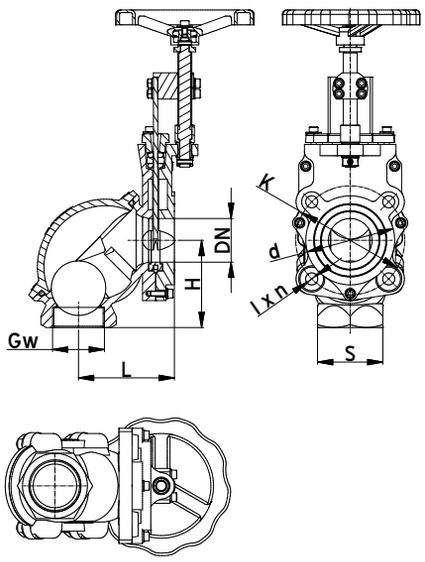
ESK 11

No.	Part	Material*
1	Body	Cast iron, GJL-250 (for DN32 - DN100); Ductile iron, GJS-400 (for DN150 - DN300)
2	Cover	Cast iron, GJL-250 (for DN32 - DN100); Ductile iron, GJS-400 (for DN150 - DN300)
3	Ball	Rubber NBR / EPDM
4	Gasket	Rubber NBR / EPDM
5	Screw cap	Stainless steel, 1.4301
6	Nut	Stainless steel, 1.4401
7	Washer	Stainless steel, 1.4301

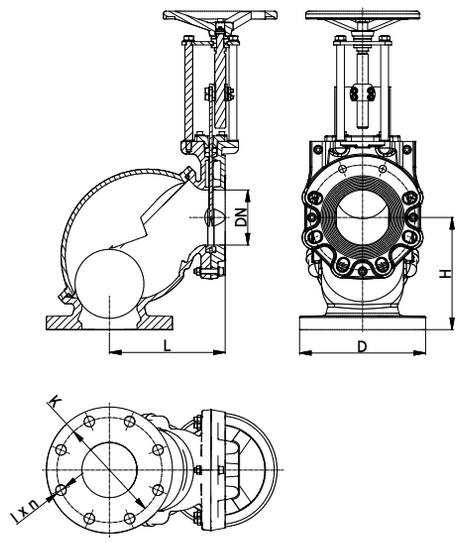
*Types of materials may be subject to change.

COMBI ball check valves dimensions

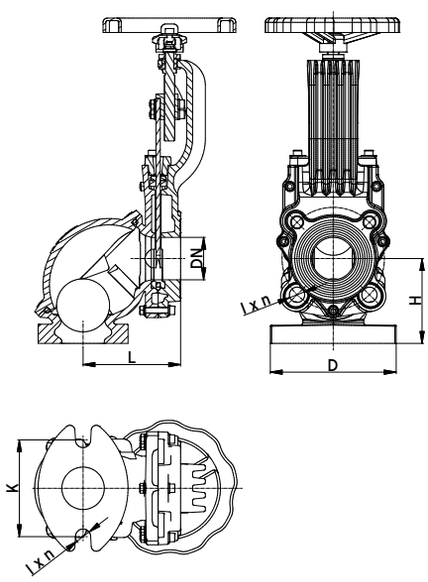
COMBI 01



COMBI 11



COMBI 11 oval

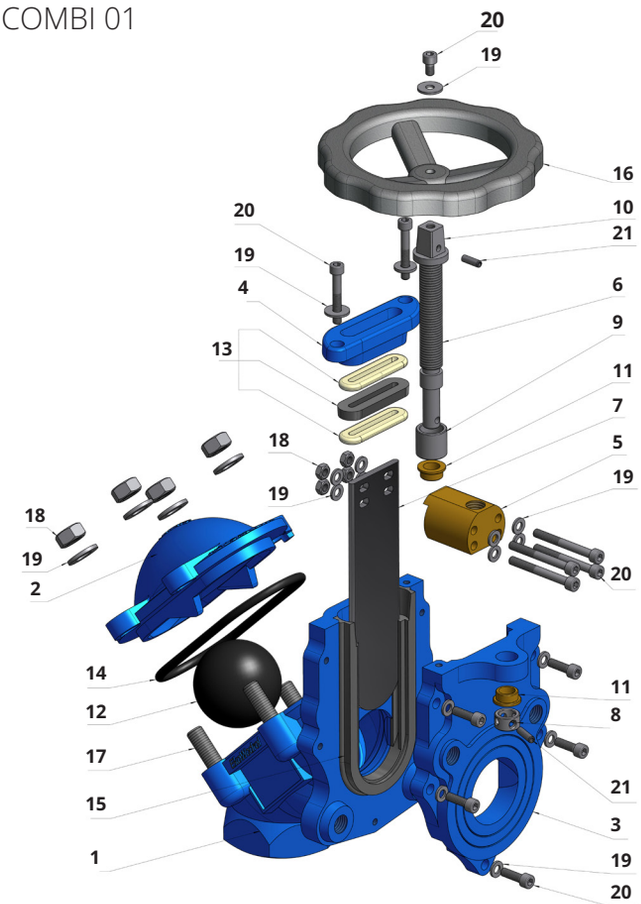


DN	L	H	D	d	K	l x n	S	Gw	ζ*	Weight
				[mm]				["]		[kg]
COMBI 01 type - threaded inlet, flanged outlet										
50	110	100	165	102	125	ø 19 x 4	75	G 2	2.6	8.6
COMBI 11 type - flanged										
50	110	100	165	102	125	ø 19 x 4	75		2.6	12.8
65	155	140	180	122	145	ø 19 x 4			1.5	16.8
80	165	165	200	138	160	ø 19 x 8			1.8	24.0
100	200	200	220	160	180	ø 19 x 8			1.7	32.7
COMBI 11 type - flanged, oval version - O										
50.O	115	100	148	-	114	ø 18 x 2			2.4	10.6

*ζ – Local resistance coefficient within the recommended range of flow velocity through the valve from 0.7 m/s to 2.5 m/s.

COMBI ball check valves construction

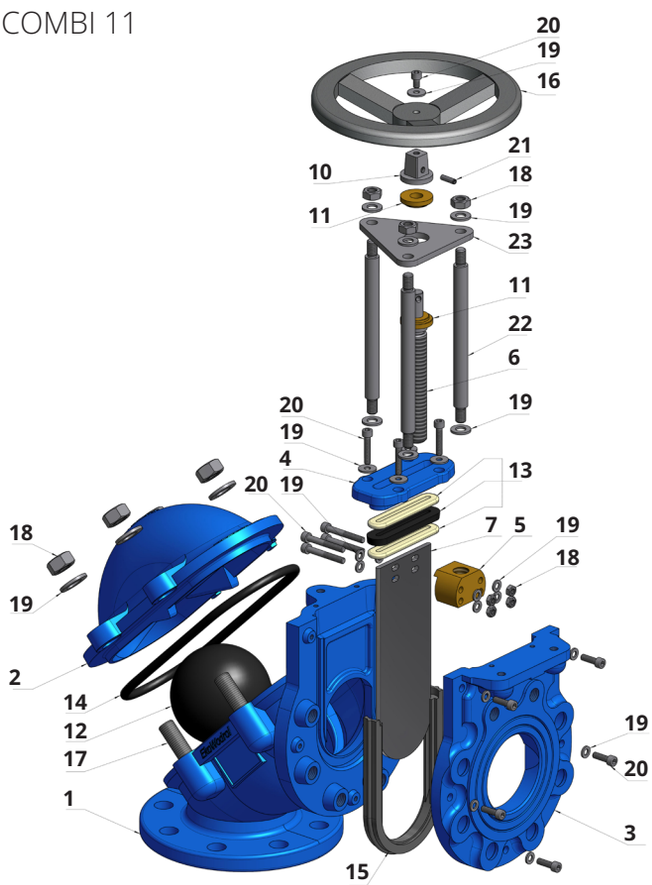
COMBI 01



No.	Part	Material*
1	Body	Cast iron, GJL-250
2	Cover	Cast iron, GJL-250
3	Plate	Cast iron, GJL-250
4	Gland clamp	Cast iron, GJL-250
5	Spindle nut	Brass, MO58
6	Spindle	Stainless steel, 1.4301
7	Knife	Stainless steel, 1.4404
8	Fastening sleeve	Stainless steel, 1.4301
9	Spacer sleeve	Stainless steel, 1.4301
10	Wheel fastening sleeve	Stainless steel, 1.4301
11	Slide sleeve	Brass, MO58
12	Ball	Rubber NBR / EPDM
13	Gland: packing	Cord PTFE + rubber NBR / EPDM
14	Seal: O-ring	Rubber NBR / EPDM
15	Seal: U-type	Rubber NBR / EPDM
16	Wheel	Aluminium, AK11
17	Flat set screw	Stainless steel, 1.4301
18	Screw cap	Stainless steel, 1.4401
19	Washer	Stainless steel, 1.4301
20	Bolt	Stainless steel, 1.4301
21	Spring-type pin	Stainless steel, 1.4301
22	Post	Stainless steel, 1.4301
23	Bracket	Stainless steel, 1.4301

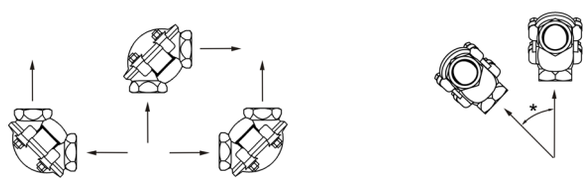
*Types of materials may be subject to change.

COMBI 11

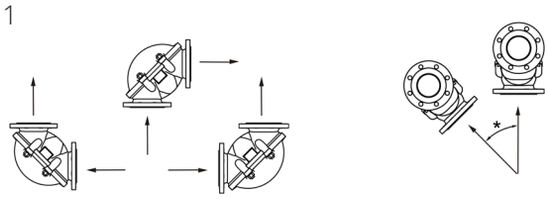


Elbow ball check valves installation method

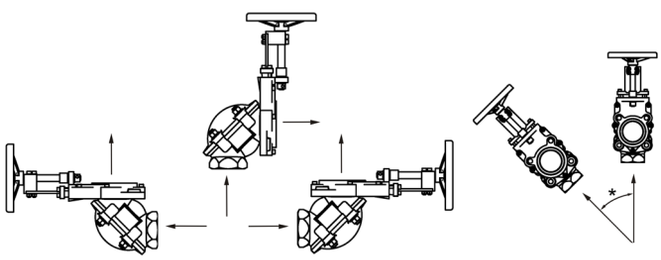
ESK 01



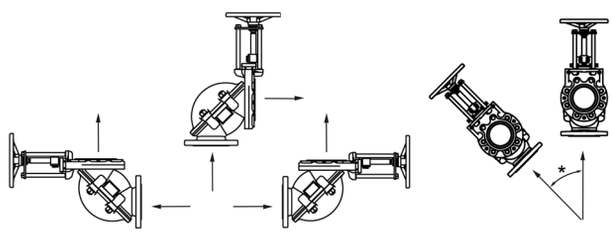
ESK 11



COMBI 01



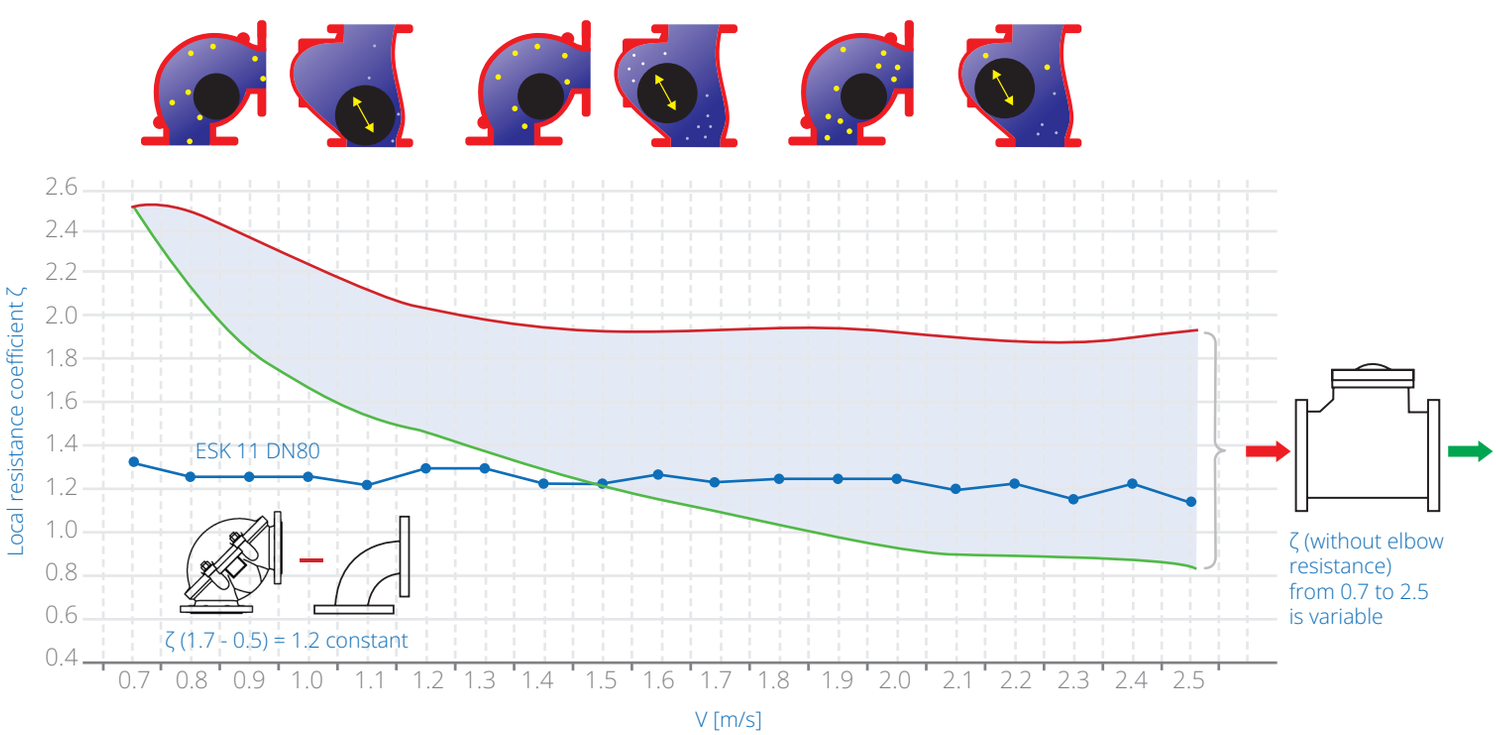
COMBI 11



* Vertical deviation in the range:

- 0 - 10° – when used with solids as gravel and sand
- 0 - 45° – when used with drinking water

Local resistance coefficient of the EkoWodrol ball check valve ESK 11 DN80 in comparison to other traditional



IN-LINE BALL CHECK VALVES

Technical data

- Range of available diameters: DN32 – DN150.
- Pressure rated to PN 16 (all valves are tested to PN 10 leak test / PN 16 hydrostatic shell test).
- Medium temperature: max 40°C (temporarily to 60°C).
- Threads complying with PN-EN ISO 228-1
- Flanges complying with EN 1092-2.
- EN 12050-4 tests and requirements.

Type ESL

Type ESL

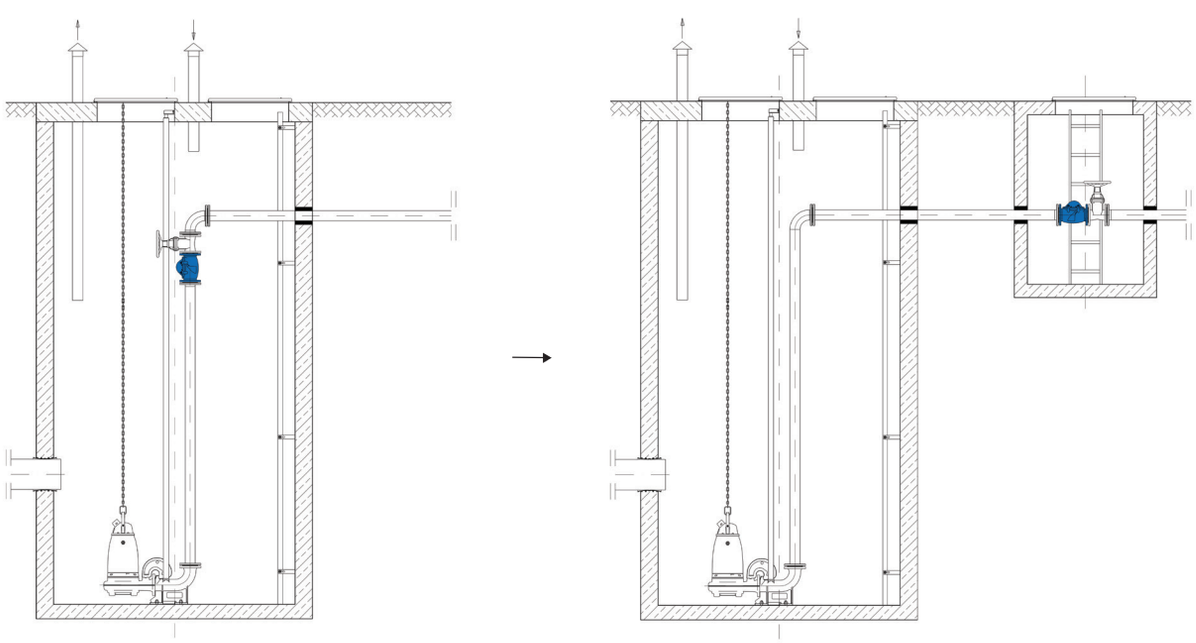
Advantages

For Lift Stations

1. Quick replacement time – customers can quickly replace valve balls themselves without damaging equipment.
2. Easy access to valves interior and the ball which enables placing the cover in the so-called servicing position.
3. Reducing energy consumption for sewage pumping due to the smaller resistance of the valve design (relative to standard ball check valves).

For Engineers

1. Fully open position and constant factor K starting from the flow rate of 0,7 m/s.
2. Reduction of vibrations making a system work more quietly.



Additional options

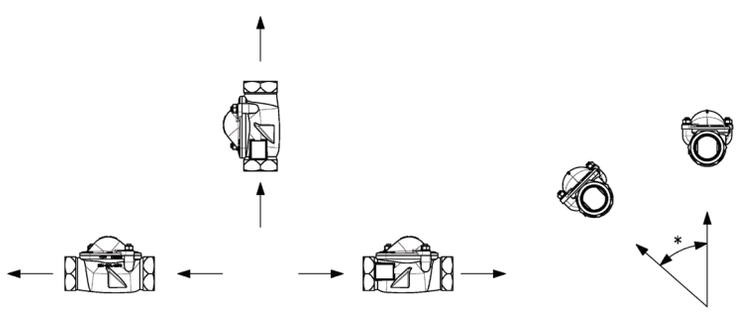
Type of check valve	Characteristics	Application examples
Version with floating ball (F)	The valve in F version is equipped with a ball, the so-called „floating" ball, with a specific weight of approx 0.8 g/cm³.	Backwater protection.
Version with quasi ball (Q)	The valve in Q version is equipped with a quasi floating ball with a specific weight of approx 1.02 g/cm³.	Lift stations, pumps with inverter.

Table of options

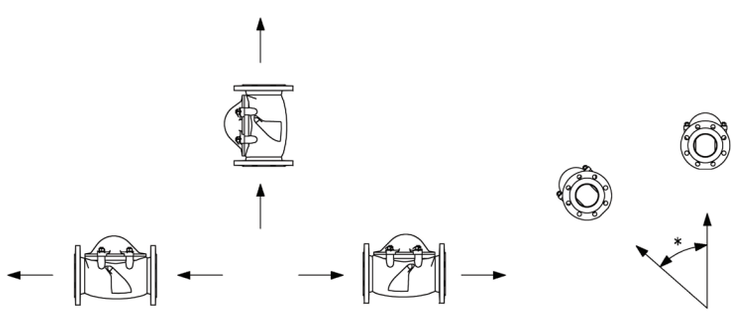
Type	DN	NPS	Ductile Iron	Floating Ball (F)	Quasi Ball (Q)
Type ESL 01 - threaded					
ESL 01	32	1 1/4"	regular	n/a	n/a
ESL 01	40	1 1/2"	regular	n/a	n/a
ESL 01	50	2"	regular	option	n/a
Type ESL 11 - flanged					
ESL 11	50	2"	regular	regular	n/a
ESL 11	65	2 1/2"	regular	regular	n/a
ESL 11	80	3"	regular	regular	option
ESL 11	100	4"	regular	regular	option
ESL 11	125	5"	regular	regular	option
ESL 11	150	6"	regular	regular	option

In-line ball check valves installation method

ESL 01



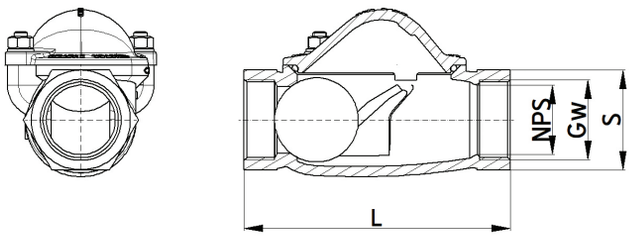
ESL 11



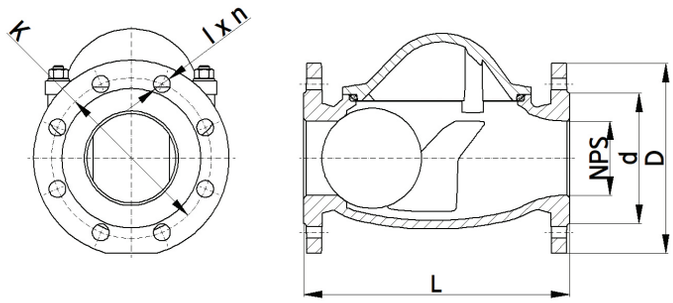
*Vertical deviation in the range:
0 – 10° – when used with solids as gravel and sand
0 – 45° – when used with drinking water

ESL ball check valves dimensions

ESL 01



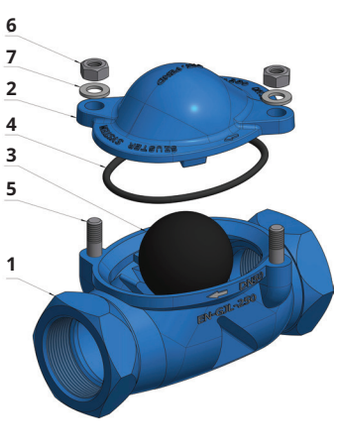
ESL 11



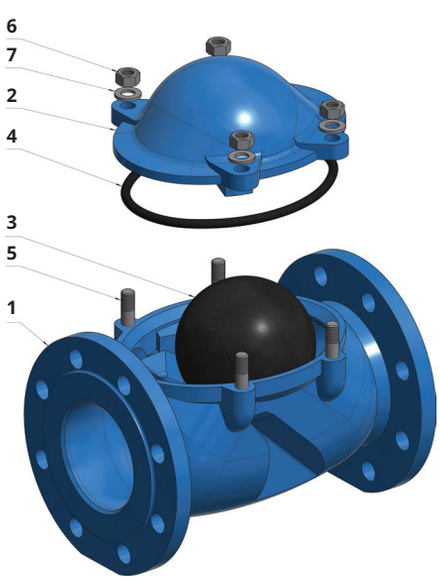
Type	DN	NPS	L	D	d	K	l x n	S	Gw	Weight
				[mm]					[inch]	[kg]
ESL 01	32	1 1/4"	140	-	-	-	-	55	1 1/2"	1.9
ESL 01	40	1 1/2"	150	-	-	-	-	59	1 1/2"	3.2
ESL 01	50	2"	200	-	-	-	-	75	2"	4.1
ESL 11	50	2"	200	163	98	125	4 x 19	-	-	7.3
ESL 11	65	2 1/2"	240	182,5	118	145	4 x 19	-	-	10.0
ESL 11	80	3"	260	197	132	160	8 x 19	-	-	13.0
ESL 11	100	4"	300	216,5	156,2	180	8 x 19	-	-	20.8
ESL 11	125	5"	350	247	184	210	8 x 19	-	-	26.2
ESL 11	150	6"	400	282	211	240	8 x 19	-	-	42.2

ESL ball check valves constructions

ESL 01



ESL 11



No.	Part	Material*
1	Body	Cast iron, GJL-250 (for DN32 - DN100); Ductile iron, GJS-400 (for DN150)
2	Cover	Cast iron, GJL-250 (for DN32 - DN100); Ductile iron, GJS-400 (for DN150)
3	Ball	Rubber NBR / EPDM
4	Gasket	Rubber NBR / EPDM
5	Screw cap	Stainless steel, 1.4301
6	Nut	Stainless steel, 1.4301
7	Washer	Stainless steel, 1.4301

*Types of materials may be subject to change.

EKON, EKOS COLUMNS

Technical data

- Column types: EKON (aeration and air release), EKOS (drain-flushing).
- Range of available diameters: DN50–DN200.
- Nominal pressure: PN 10 or PN 16.
- Flange connection: PN-EN 1092-2.
- Sewage with or without feacals, rainwater and industrial.
- Sewage temperature from 5°C to 70°C and pH 4-8.

EKON, EKOS column

EKON-INOX, EKOS-INOX column

Applications

- Used for flushing and draining of the pipeline under pressure in any direction.
- Used for air release of the pipeline in the highest points of the sewage transport network on long ascending or descending sections of the pipeline, before throttling places and after the pumps are used.
- Used for aeration of the pipeline in sections threatened by vacuum.

Advantages

For Users

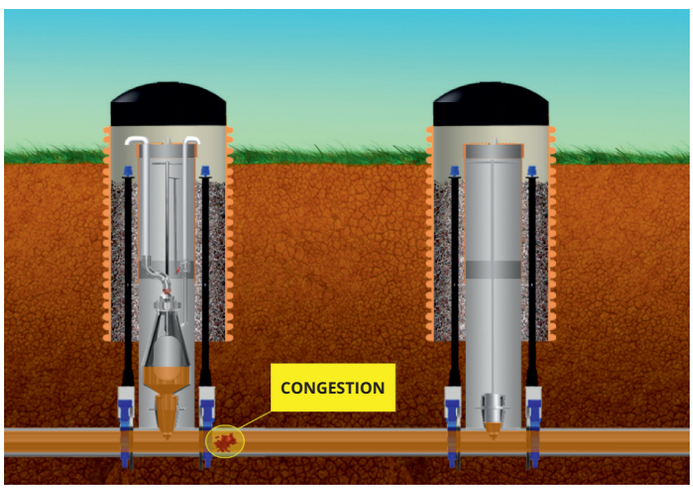
1. Pipeline flushing and draining owing to the standpipe.
2. Complete servicing from the ground level improves safety for the User.
3. Fast assembly and disassembly of the aeration valve and cost reduction enabled by the use of a quickfastening coupling.
4. The possibility of precisely situating pipeline congestion by mounting the gauge on the standpipe unit.

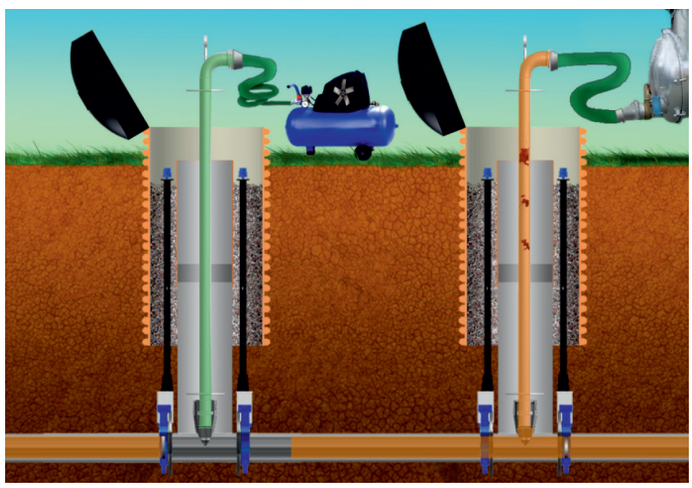
For Engineers

1. Complete servicing from the ground level improves safety for the User.
2. Eliminates branching out of the pipeline as in the case of release wells.
3. Reduced construction footprint is especially important in compact construction areas.

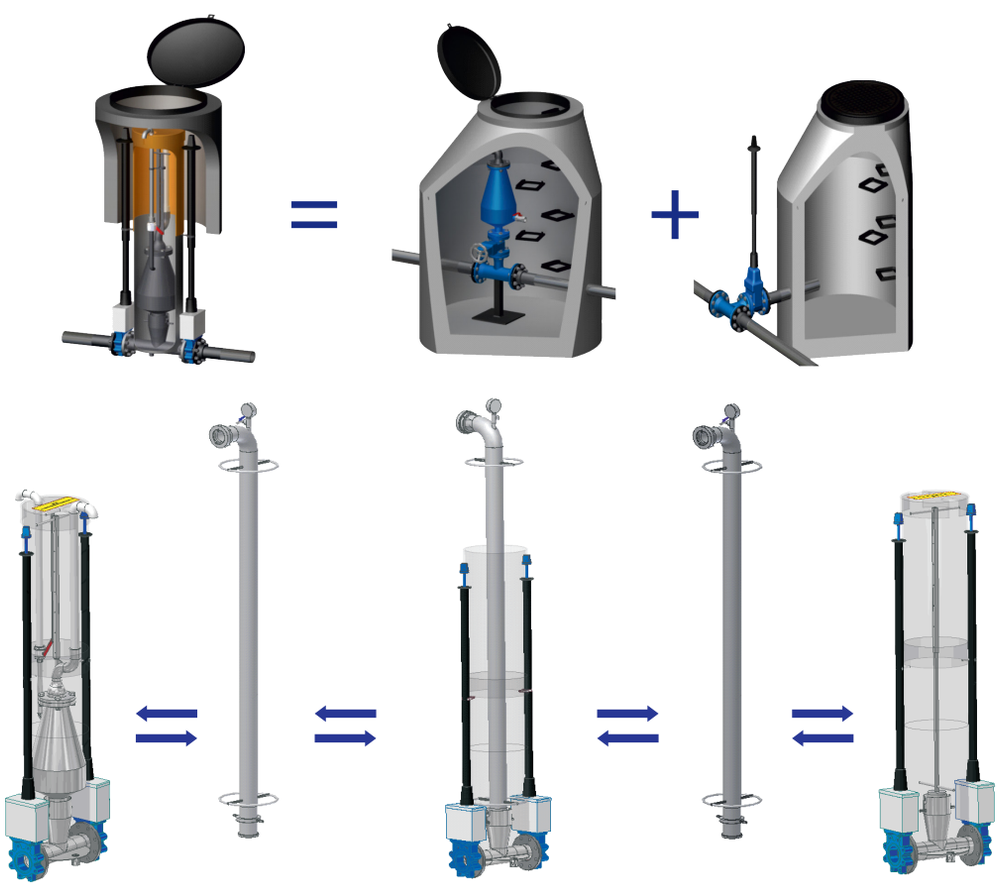
Operation principle of columns

The assembly is performed on the horizontal section of the pipeline in a vertical position with a maximum deviation of +/- 2°. An important advantage of EKON, EKOS columns is the ability to precisely locate the congestion, that has formed in the discharge line. It is possible thanks to the mounted vacuum manometer on the standpipe unit. By analyzing the pressure drop, the section which is not drained can be accurately determined. By using the gate valves on both sides of the columns and the innovative quick coupling, which should be plugged into the standpipe, it is possible to make the column retooling. The selected section must be flushed of the congestion and then restored to its original condition. The whole operation should take less than 15 minutes.

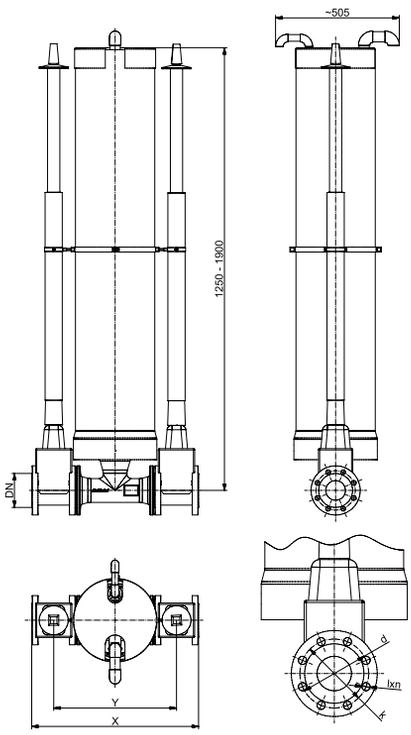


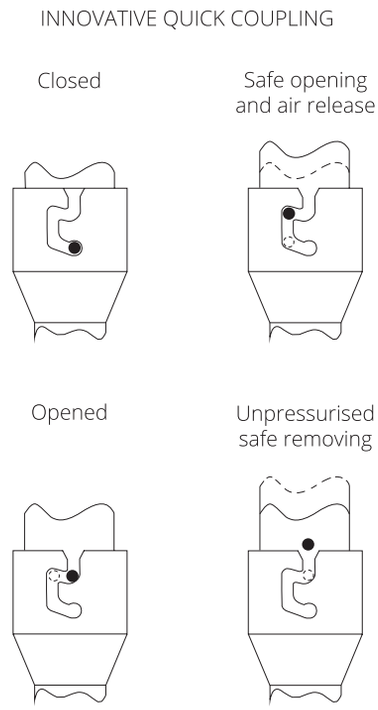


Multifunctionality and quick changeover of EKON, EKOS columns



EKON, EKOS columns dimensions

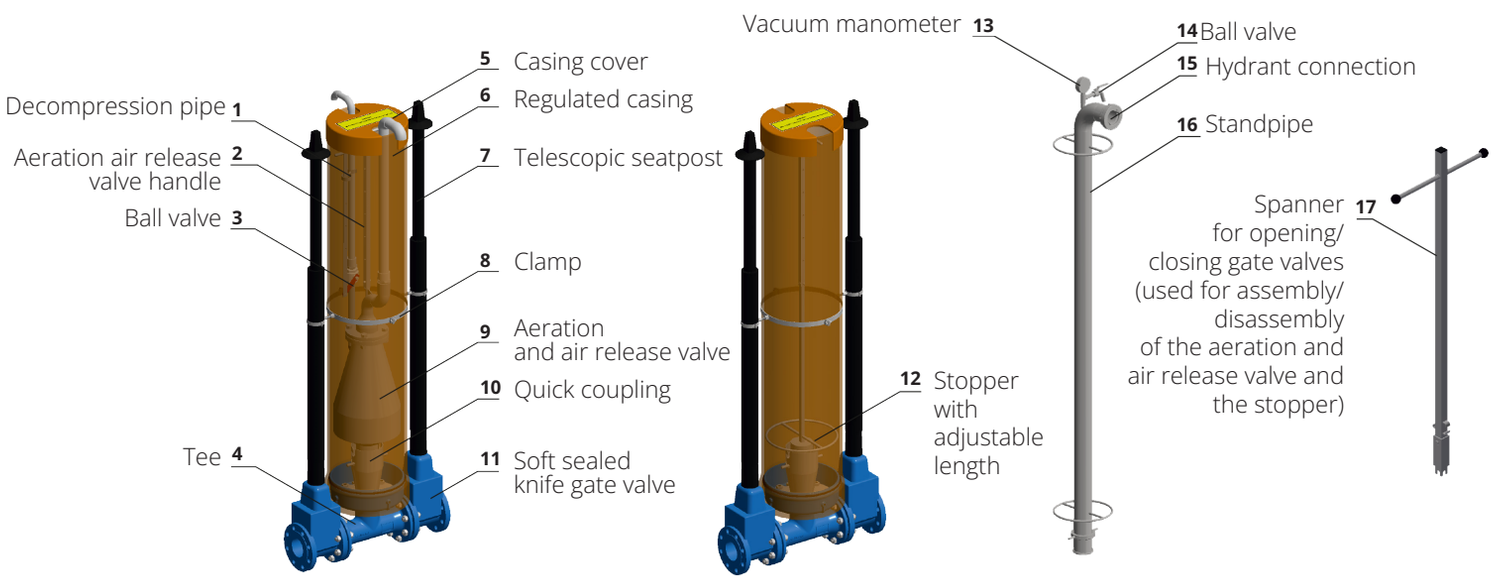




DN	PN*	X	Y	Z	d	K	l x n	EKON column weight	EKOS column weight	Standpipe weight
[mm]	[Mpa]	[mm]						[kg]		
80	1.0	~680	~500	-	158	180	8 x M16	110	97	13.8
100	1.0	~690	~500	-	188	210	8 x M16	120	107	13.8
150	1.0	~750	~540	-	212	240	8 x M20	167	154	13.8
200	1.0	~770	~540	-	268	295	8 x M20	217	204	13.8

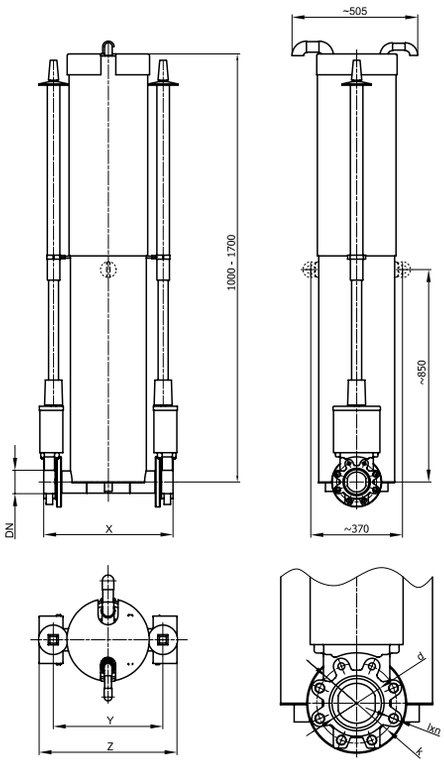
* PN 1.6 [Mpa] – on request

EKON, EKOS columns construction

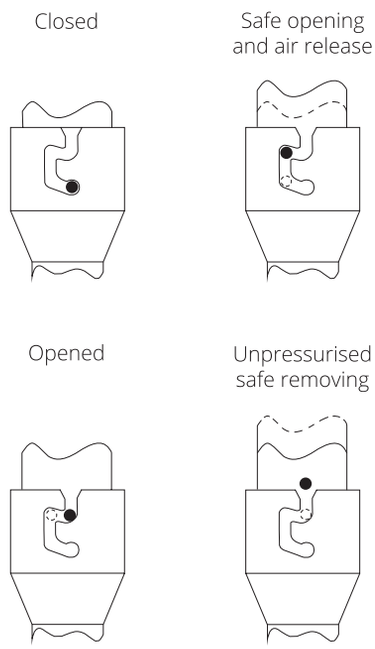


1, 5, 6 - PVC
2, 3, 8 – 17 – Stainless steel, 1.4301
4 – Ductile iron, GJS-500

EKON-INOX, EKOS-INOX columns dimensions



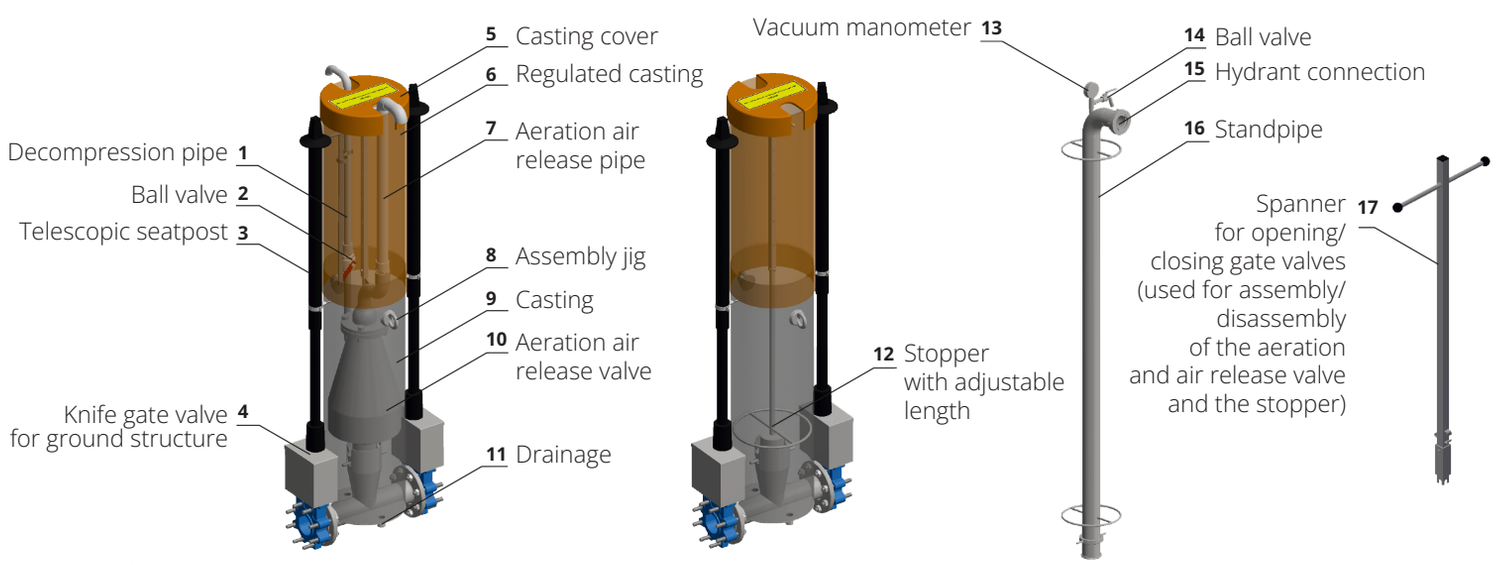
INNOVATIVE QUICK COUPLING



DN	PN*	X	Y	Z	d	K	l x n	EKON-INOX column weight	EKOS-INOX column weight	Standpipe weight
[mm]	[Mpa]	[mm]						[kg]		
50	1.0	~535	~440	~585	102	125	4 x M16	78	71	13.8
65	1.0	~540	~445	~590	122	145	4 x M16	82	75	13.8
80	1.0	~535	~440	~585	138	160	8 x M16	86	70	13.8
100	1.0	~550	~440	~590	158	180	8 x M16	96	81	13.8
125	1.0	~560	~455	~590	188	210	8 x M16	100	86	13.8
150	1.0	~570	~460	~610	212	240	8 x M20	104	91	13.8
200	1.0	~630	~465	~665	268	295	8 x M20	114	101	13.8

* PN 1,6 [Mpa] – on request

EKON-INOX, EKOS-INOX columns construction



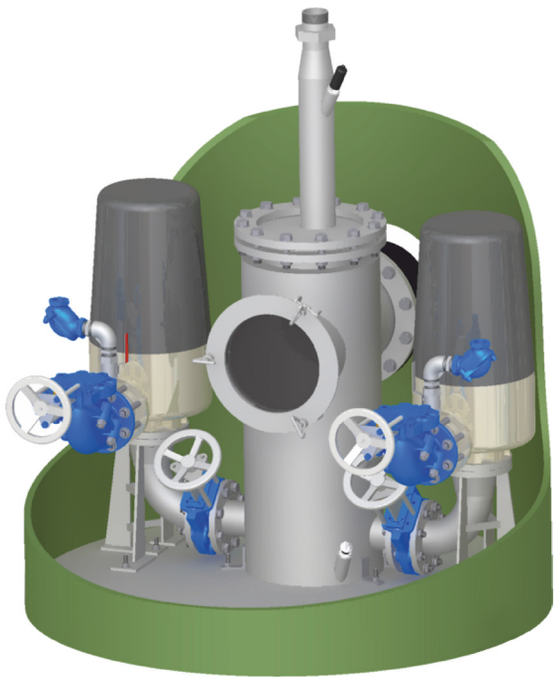
1, 5 – 7 - PVC
2, 8 – 17 – Stainless steel, 1.4301

4 – Cast iron, GJL-250

EDP DRY PUMPING STATIONS

Technical data

- Comply with harmonized norms:
  PN-EN 12050-1, PN-EN 12050-2, PN-EN 12050-4.
- Comply with the requirements of the Regulation of the European Parliament and of the Council (EU) No. 305/2011.
- Possibility to use any manufacturer pumps.



Applications

- Pumping municipal or industrial sewage.
- Pumping stations: main, zonal or local.
- Technological buildings with dry pump location.

Advantages

For Users

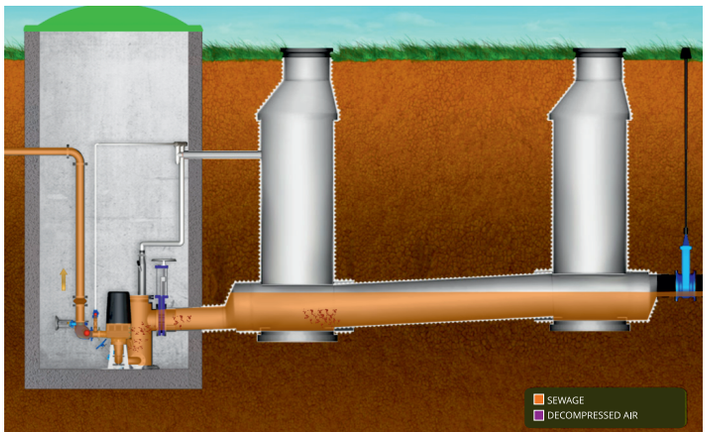
1. Fittings and pumps protection from sudden polluted wastewater discharges of solids through the use of the horizontal pipe retention tank.
2. Safe and hygienic operation by placing the technological part in the dry chamber.
3. The possibility of cutting off the system and service the pump units in hygienic conditions.
4. Limiting the dead retention space to a minimum and thereby minimizing the occurence of odors.
5. The possibility of installation in close proximity with residential buildings or outbuildings.

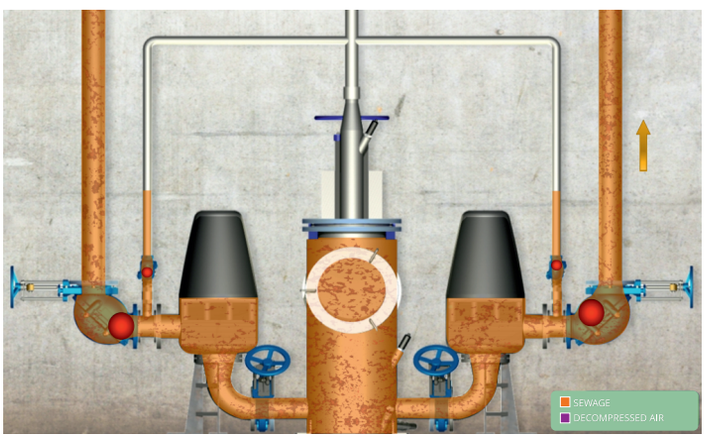
For Engineers

1. Limiting the dead retention space to a minimum and thereby minimizing the occurence of odors.
2. The possibility of using any manufacturers pumps.
3. The possibility of installation in close proximity with residential buildings or outbuildings.

Operating principle of EDP dry pumping station

The EDP dry pumping station constitutes a complete and fully automated installation, consisting of a technological pre-set built together with pumps in the dry chamber and cooperating with the external retention tank.
Sewage flows to the pumping station through the cascade well and the pipe storage tank. Sewage flowing to the pumping station is directed to the distributive tank, to which pump units are attached. Pump units are automatically and alternatively powered up once an adequate level of wastewater has been reached in the distributive tank. This level is measured by hydrostatic pressure converter, in the case of failure – by high and low level alarm sensors. The hydrostatic pressure converter and alarm sensors are installed in the distributive tank and cooperate with the electric switchboard executing a predetermined control algorithm in the automatic operation system. With an intense inflow and when the power-up level of one of the pumps has been exceeded, the other pump is powered up. The capacity of the distributive tank as well as the output and the number of pump units are selected taking into account the quantity of sewage inflow. The whole dry sewage pumping station is installed in a dry chamber (prefabricated concrete or polymer concrete rings either plastic chambers), which allows a direct inspection of the correctness of the pumping station operation. It also facilitates the disassembly, replacement and the maintenance of its individual elements in hygienic conditions.





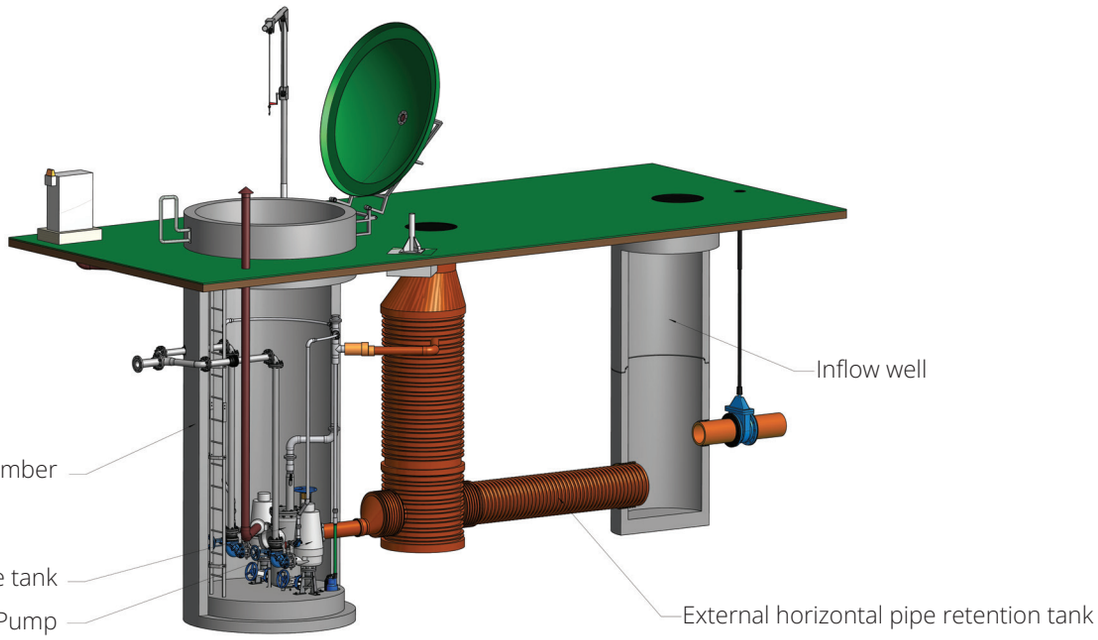
Range of parameters

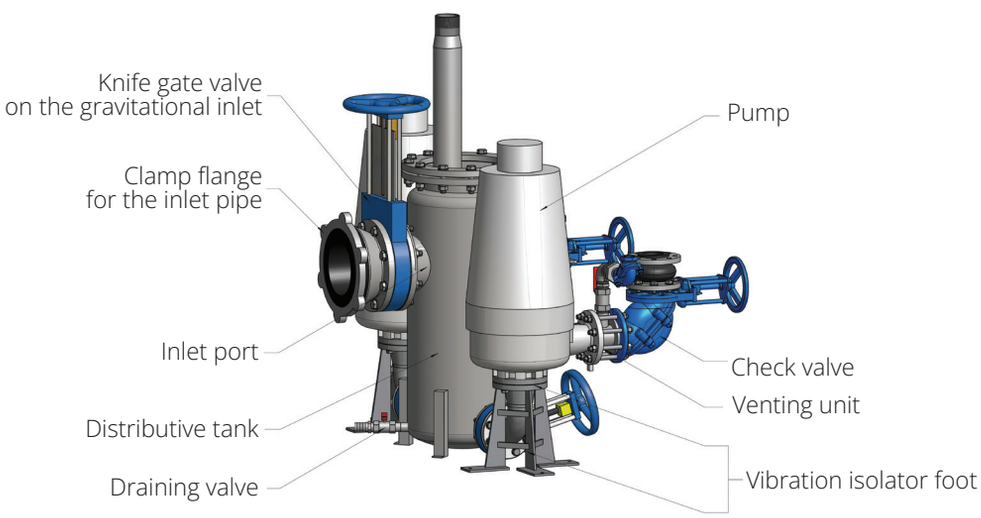
Type	Maximum inflow	Minimum diameter of pressing pipeline	Quantity of working tanks	Minimum retention capacity*
EDP	[m³/h]	[mm]	[psc.]	[l]
01	40	80	1	320
02, 03	40	80	2	160
04	65	100	2	250
05, 06	145	150	2	560
07	250	200	2	990
08, 09, 10	400	250	2	1550
11, 12	575	300	2	2230

* Types of EDP pumping station arise from parameters invisible in the table (eg. lifting height) and are customized for specific application.

** The minimum retention capacity is calculated according to the minimum pumps efficiency and the numbers of starts (no more than 10 cycles/hour) of a single pump. The specified capacity may be reduced when using pumps with higher possible numbers of cycles/hour and/or when inflow is less than maximum.

EDP dry pumping station construction





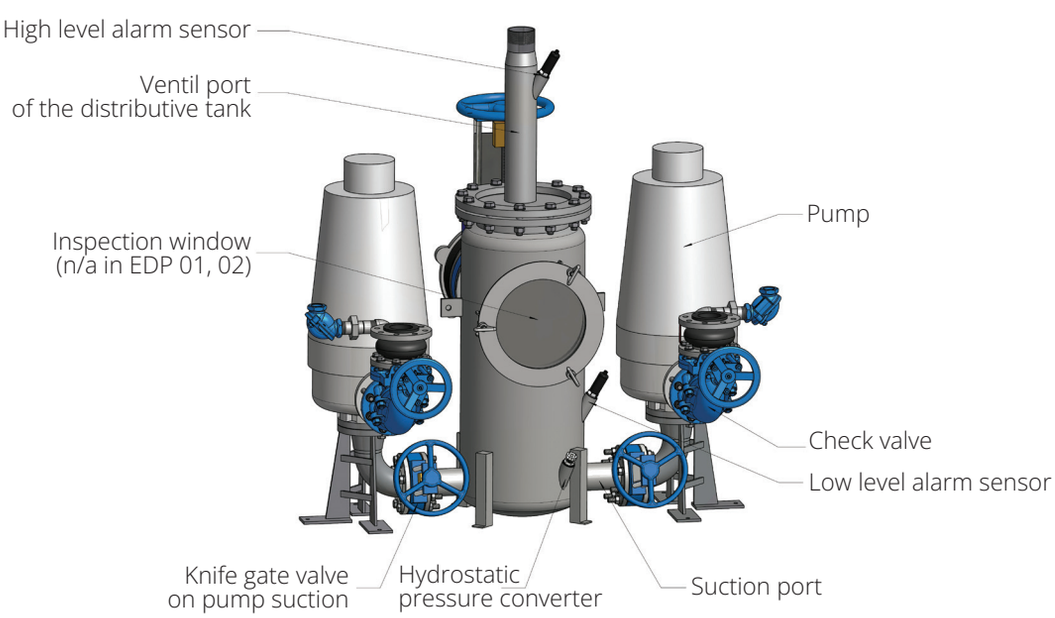


Table of configuration options

EDP characteristics	Basic options		
Dry chamber	Prefabricated concrete rings	Prefabricated concrete rings with the plastic insert	Polymer concrete rings
Cover of the dry chamber	Lenticular cover GRP (impassable version)	Concrete cover with stainless steel hatches (impassable version)	Paved cover with cast-iron hatches D400 type (passable version)
Flow measurement (electromagnetic flowmeter)	Without measurement	Measurement in the dry chamber	Measurement outside the dry chamber in the additional well
Flowmeter assembly	The sensor installed on the vertical discharge line, the flowmeter transmitter - on the dry chamber wall or additional well (compact version)	The sensor installed on the vertical discharge line, the flowmeter transmitter - on the dry chamber wall /additional well (removable version)	The sensor installed on the vertical discharge line, the flowmeter transmitter - inside the control cabinet (removable version)
Pumps assembly	Vertical, on a specially prefabricated vibration isolator with a quick coupling	Vertical, on a specially prefabricated support for large, heavy pumps	Vertical, on a typical two-flanged elbow with N foot
Pump protection against solid objects	Horizontal pipe retention tank	Horizontal pipe retention tank + inflow well with the settler (in case of a high concentration of solids)	Horizontal pipe retention tank + the basket screen in the inflow well (in case of high concentration of fibrous fraction)

EPP PNEUMATIC PUMPING STATIONS

Technical data

- Comply with harmonized norms:
  PN-EN 12050-1, PN-EN 12050-2, PN-EN 12050-4.
- Comply with the requirements of the Regulation of the European Parliament and of the Council (EU) No. 305/2011.
- Lifting height up to 10 bars (higher pressure for special performances).
- Full flow from DN80 to DN200.

Applications

- Sewage pumping over very large distances and/or heights (pumping pressure to 10 bars).
- Municipal or industrial sewage.
- Main, zonal or local pumping station.
- Pumping sewage in sections threaten by putrescibility in the discharge pipe (periodic aeration and/or emptying of the pipeline from the wastewater function).

Advantages

For Users

1. Refresh pumped sewage and prevent putrefying during transport.
2. Allow periodic aeration and/or entire emptying of the pressing pipeline using compressed air.
3. Allow the possibility to adjust the efficiency of the pumping station to the current requirements without replacing any equipment.
4. Enable safe and hygienic operation by placing a technological part in the dry chamber.
5. Do not cause any silting or formation of sludge and surface scum being the result of sedimentation and floatation in the retention chamber.

For Engineers

1. Allow the possibility to pump sewage over very large distances and/or heights (working pressure 8-10 bars).
2. Allow the possibility to adapt the capacity of the system to current needs without any necessity to replace any devices.
3. Allow the possibility to abandon the installation of aeration – air release valves in the pressing pipeline.
4. The possibility of installation in close proximity with residential buildings or outbuildings.
5. Do not need to dose chemical substances that eliminate waste purification.

Operating principle of EPP pneumatic pumping station

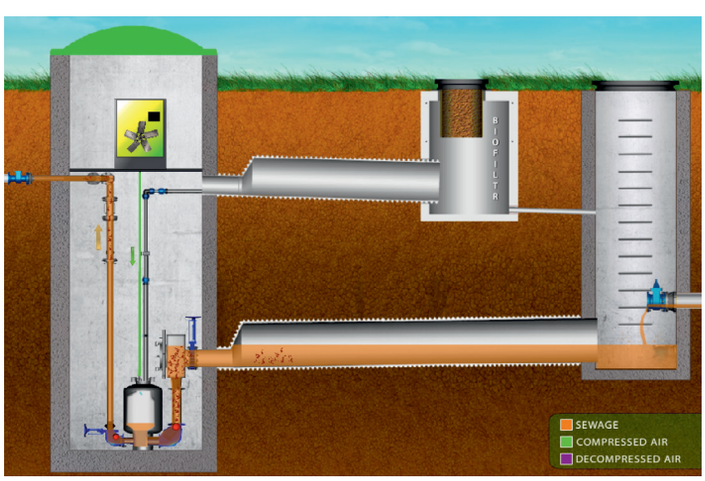
The EPP pneumatic pumping station constitutes a complete and fully automated installation.

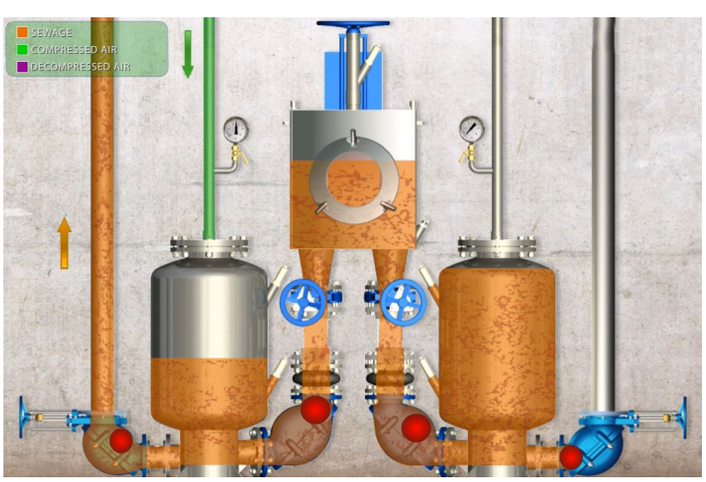
The operating principle of the EPP pneumatic pumping station consists in a cyclical and alternate occurrence of two operating phases of the pumping station: the filling phase and the pumping phase.

In the filling phase, sewage flows to the vertical external pipe retention chamber; from there, it flows through the inflow well to the working chambers through open inlet valves. The outlet valve is open so that air could be released from the working chambers, while all the other valves remain closed. Once the working chambers have been filled with sewage, waste continues to accumulate in the inflow well and in the pipe retention chamber. Once the adequate level of sewage has been reached in the pipe retention chamber, the sewage pumping phase is switched on, which continues until the switching off level has been reached.

The pumping phase starts with the outlet valves being closed. The inlet elbow valve is closed under the influence of control air supplied to the working chamber by opening of the control valve. Once the inlet valve is closed, the working air valve is open, through which compressed air is pumped, as a result of which the elbow check valve is open that is located on the outlet from the working chambers, while sewage is forced out with compressed air from the working chamber and is forced into the pressure conduit. Pumping of sewage continues until the time set has elapsed or an adequate level in the working chamber has been reached. Then, the outlet valve is open and air that is inside the working chamber is decompressed in the suppressor, after which the biofilter is located. After the completion of the compression phase, the system enters the filling phase. These cycles are repeated, and air is alternately forced into the working chambers until the level of sewage in the retention chamber has reached the minimum.

One of the chief advantages of the EPP pneumatic pumping station is the function of periodical (e.g. at night) entire emptying of the pressure conduit from sewage using compressed air. In this manner, excessive putrefying of sewage in the pressure conduit is prevented, and odors that are hazardous to human life in the release wells are eliminated.



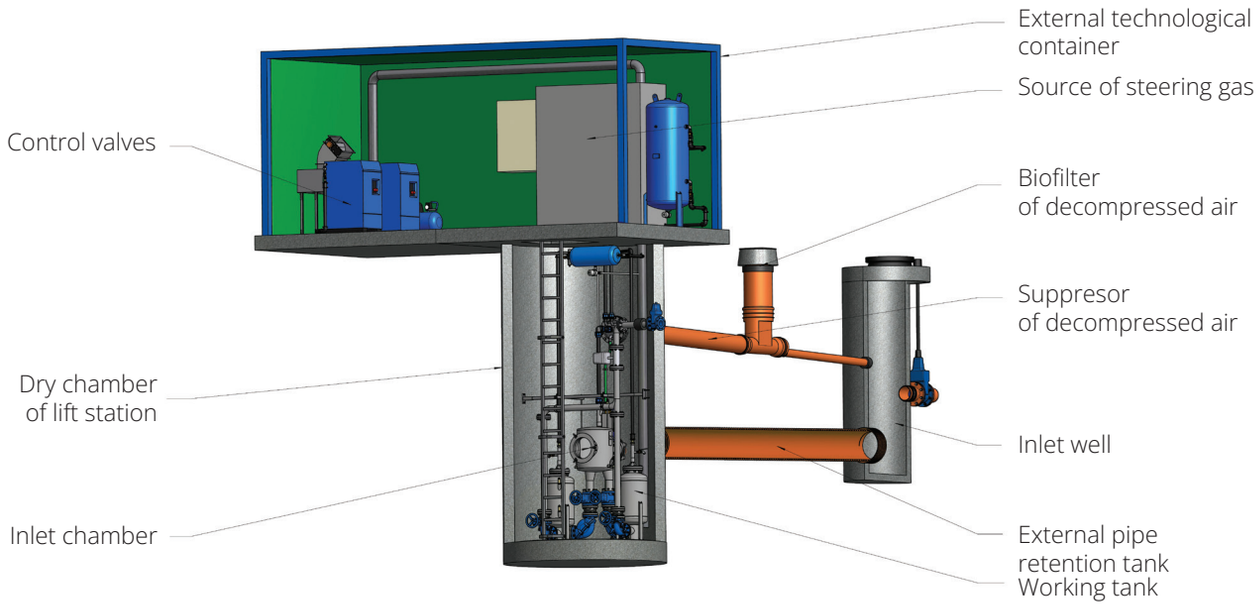


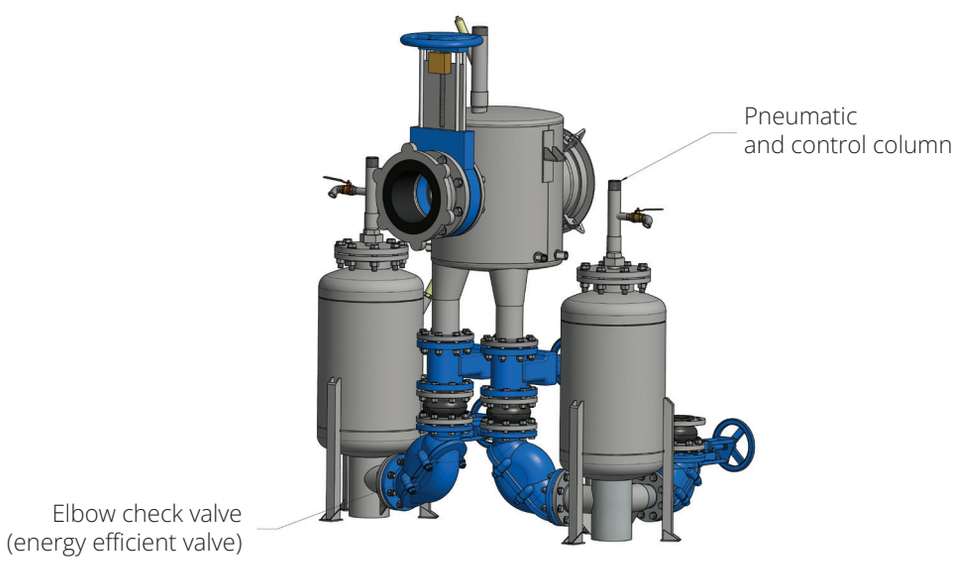
Range of parameters

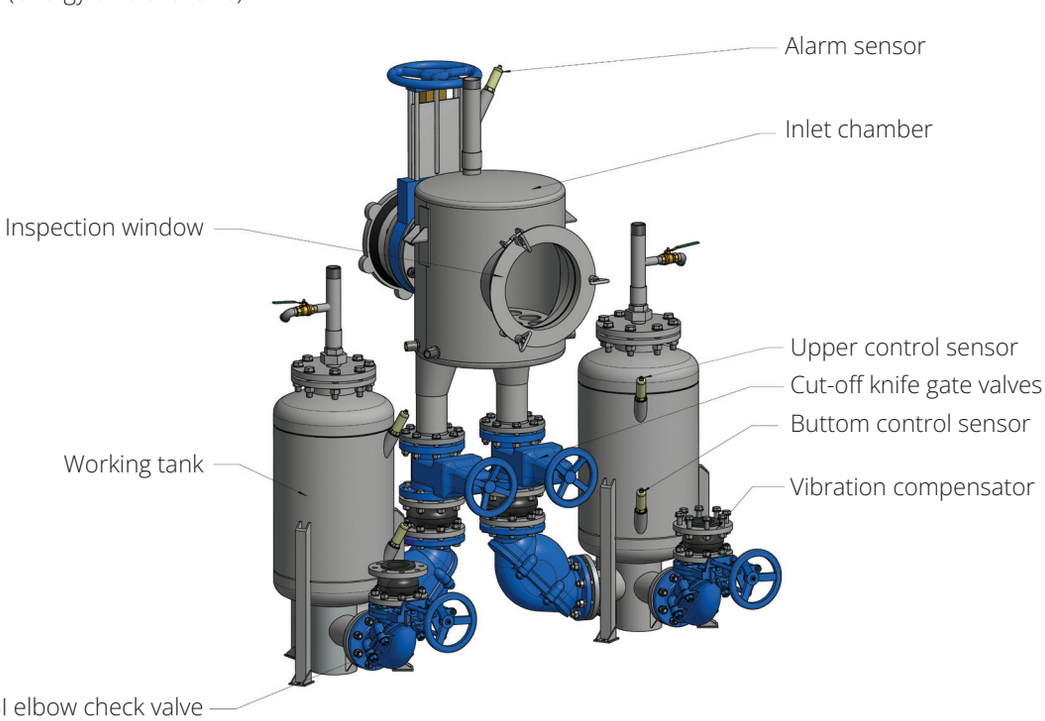
Type	Maximum inflow	Minimum diameter of pressing pipeline	Minimum number of compressors	Number of working tanks	Minimum retention capacity*
EPP	[m³/h]	[mm]	[psc.]	[psc.]	[l]
01	8	80	1	1	350
02	16	80	1	2	350
03	28	80	1	2	350
04	40	100	1	2	550
05	70	125	2	2	425
06	100	150	2	2	615
07	140	150	2	2	615
08	200	200	2	2	1100

* Minimum retention capacity may be decreased when the inflow is less then maximum or/and the number of compressors will be reduced.

EPP pneumatic pumping station construction







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