

# Diaphragm-Feeding pumps

Flow capacity 450 l/h ... 1300 l/h

Admissible counterpressure up to 3 bar



ZYM409.1



## ZYM409.1 in survey

- Leakage - free
- Safe if run dry
- High quality materials
- Low maintenance
- Low operating costs
- Integrateable into automatic processes
- Robust metallic stroke mechanism housing
- User friendly

## Infobox

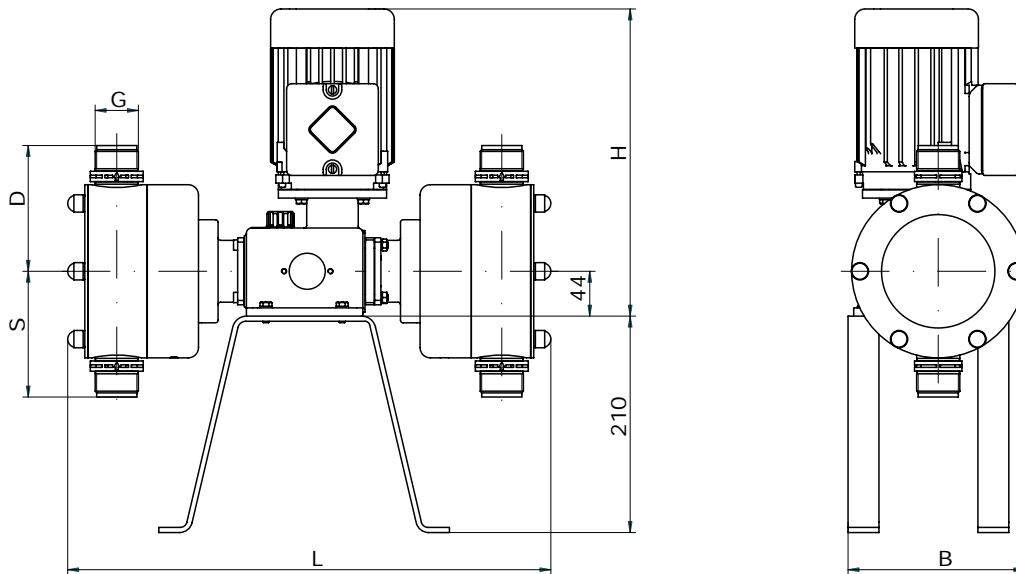
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## Technical data

Type	Nominal capacity l/h		Nominal stroke frequency 1/min		Admiss. counter-pressure bar	Admiss. pressure at pump inlet bar	Max. suction height mWS	Inlet/ Outlet nominal width DN	Max. stroke length mm	Motor output kW
	50 Hz	60 Hz	50 Hz	60 Hz						
ZYM409.1-450e	450	540	100	120	3	-0.3 / 0	3	15	10	0.37
ZYM409.1-650e	650	—	134	—	3	-0.3 / 0	3	15	10	0.37
ZYM409.1-900e	900	1.080	100	120	2	-0.2 / 0	2	20	10	0.37
ZYM409.1-1300e	1.300	—	134	—	2	-0.2 / 0	2	20	10	0.37

e in type designation means: pump with single diaphragm

## Dimensional drawing



## Dimensional chart

All indications in mm

Type	G	S	D	L	B	H	Weight
							kg
ZYM409.1-450e	G 1 1/4	122	122	457	172	510	30
ZYM409.1-650e	G 1 1/4	122	122	457	172	510	30
ZYM409.1-900e	G 1 1/4	122	122	463	172	510	30
ZYM409.1-1300e	G 1 1/4	122	122	463	172	510	30

■ Indication of weight for basic design acc. to order information

## Order information

### Basic design

#### ZYM409.1:

- Pump body PP
- Single valves PP-FRP
- Valve balls glass
- Valve seals FPM
- Working diaphragms PTFE-faced
- incl. pump support

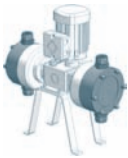


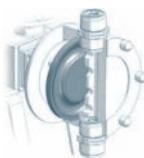
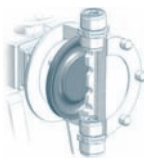

#### Motor:

- 200-254/346-440 V 50 Hz / 200-280/346-480 V 60 Hz threephase, IP 55, insul. cl. F

#### Further options and accessories:

- Connection pieces see chapter 4
- Product documentation see chapter 5

Type	Basic design	x
ZYM409.1-450e	16001456	
ZYM409.1-650e	16000894	
ZYM409.1-900e	16001801	
ZYM409.1-1300e	16002603	

Options/Accessories			ZYM409.1-450e ZYM409.1-650e	x	ZYM409.1-900e ZYM409.1-1300e	x
<b>Pump body and valves</b> 	PP	single valves PP-FRP	●		●	
	PVC-U	single valves PVC-U	▲		▲	
	PVDF	single valves PVDF-FRP	▲		▲	
	1.4571	single valves 1.4571/1.4581	▲		▲	
<b>Valve balls</b> 	Glass	single valves	●		●	
	1.4401	single valves	▲		▲	
	PTFE	single valves	▲		▲	
<b>Valve sealings</b> 	FPM	single valves	●		●	
	EPDM	single valves	○		○	
	FEP-covered	single valves	▲		▲	
<b>Working diaphragms</b> 		PTFE-faced	●		●	
<b>Double diaphragm design</b> 	with intermediate diaphragm made of:					
		PTFE-faced	▲		▲	
<b>Diaphragm rupture monitoring</b> 	Diaphragm rupture electrode conductive, mounted to pump					
	MBE-02	for single diaphragm pump	▲		▲	
	MBE-04	for double diaphragm pump	▲		▲	
● = Basic design      ▲ = with add. price      ○ = without add. price      Art.-Nr. = available in basic design/ accessories						

ZYM409.1

## Order information

### Basic design

#### ZYM409.1:

- Pump body PP
- Single valves PP-FRP
- Valve balls glass
- Valve seals FPM
- Working diaphragms PTFE-faced
- incl. pump support

#### Motor:

- 200-254/346-440 V 50 Hz / 200-280/346-480 V 60 Hz threephase, IP 55, insul. cl. F

#### Further options and accessories:

- Connection pieces see chapter 4
- Product documentation see chapter 5

Type	Basic design	x
ZYM409.1-450e	16001456	
ZYM409.1-650e	16000894	
ZYM409.1-900e	16001801	
ZYM409.1-1300e	16002603	

## Options/Accessories

ZYM409.1-450e  
ZYM409.1-650e

ZYM409.1-900e  
ZYM409.1-1300e

### Diaphragm rupture monitoring



ATEX-Design (Type examination, only for Double diaphragm design)  
Diaphragm rupture monitoring, konduktiv, mounted on the pump

MBE-04 incl.  
Connection cable for Diaphragm rupture monitoring  
blue for EExia-circuit (5m)

Buffer fluid glycol-glycerine-mixture 1:25  
for media with conductivity <math>\leq 5\mu\text{S}/\text{cm}</math>

### Diaphragm rupture monitoring



Electrode relay, control cabinet assembly

ER-104/C      aux. energy 230 V AC

ER-104/C      aux. energy 24 V DC

ER-142      aux. energy 230 V AC II(1)G [EExia] IIC  
acc. to ATEX 95

### Stroke frequency monitoring

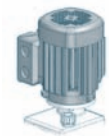


Inductive contact

10-60 V DC,  
three-wire, PNP

Namur execution,  
II2G EExia IICT6  
acc. to ATEX95

### Drive motor



Special voltage

Enclosure IP 65

Protective roof for the fan of the drive

integrated posistor (3 pcs.) insul. cl. F

VIK-design

II2G EExe IIT4 (acc. to ATEX95)

II2G EExde IICT4 (acc. to ATEX95)

Single phase AC 230V with capacitor

Driver for converter operation  
incl. posistor, 5-100 Hz

Driver for converter operation  
II2G EExde IICT4, 5-100 Hz  
acc. ATEX 95, incl. integrated posistor

● = Basic design

▲ = with add. price

○ = without add. price

Art.-Nr. = available in basic design/  
accessories

## Order information

### Basic design

#### ZYM409.1:

- Pump body PP
- Single valves PP-FRP
- Valve balls glass
- Valve seals FPM
- Working diaphragms PTFE-faced
- incl. pump support



#### Motor:

- 200-254/346-440 V 50 Hz / 200-280/346-480 V 60 Hz threephase, IP 55, insul. cl. F

#### Further options and accessories:

- Connection pieces see chapter 4
- Product documentation see chapter 5

Type	Basic design	x
ZYM409.1-450e	16001456	
ZYM409.1-650e	16000894	
ZYM409.1-900e	16001801	
ZYM409.1-1300e	16002603	

Options/Accessories		ZYM409.1-450e ZYM409.1-650e	x	ZYM409.1-900e ZYM409.1-1300e	x
<b>Stroke frequency adjustment electrical</b> 	Frequency converter series 8200 Motec mounted-on, input 4-20mA				
	Single-phase 230 V, 50/60 Hz      0.37 kW	▲		▲	
	Three-phase 320-550 V, +/- 0%, 50/60 Hz      0.55 kW	▲		▲	
	Switch-potentiometer for manuell stroke frequency adjustment and to switch on the pump motor (External control of the frequency converter with mounted switch potentiometer unit is not possible)	▲		▲	
	Service module hand terminal and keypad incl. 2,5m connection cable	▲		▲	
<b>Stroke frequency adjustment electrical</b> 	Frequency converter series 8200 Vector input 4-20mA, incl. Keypad (for integration into control cabinet)				
	Single-phase 230 V, 50/60 Hz      0.37 kW	90017522		90017522	
	Three-phase 320-550 V, +/- 0%, 50/60 Hz      0.55 kW	90017526		90017526	
● = Basic design      ▲ = with add. price      ○ = without add. price      Art.-Nr. = available in basic design/ accessories					

# Diaphragm-Feeding pumps

Flow capacity 450 l/h ... 1300 l/h

Admissible counterpressure up to 3 bar



ZYM409.1

Fittings for suction side of dosing pumps		ZYM409.1-450e		ZYM409.1-650e		ZYM409.1-900e		ZYM409.1-1300e	
		Type	p.	Type	p.	Type	p.	Type	p.
Suction lance	with level switch 1-stage	S-04	3.40	⊘		⊘		⊘	
	without level switch	S-01	3.42	S-01	3.42	S-01	3.42	S-01	3.42
Suction aid / Siphon Vessel	transparent PVC-U	770.2	3.76	770.2	3.76	771.2	3.76	772.2	3.76
Calibration Pot	PVC-U	795.1	3.78	796.1	3.78	796.1	3.78	796.1	3.78
Foot valve	PVC-U	732.2	3.80	732.2	3.80	733.2	3.80	733.2	3.80
	PP / PVDF	732	3.82	732	3.82	733	3.82	733	3.82
	1.4571	732	3.82	732	3.82	733	3.82	733	3.82
Line strainer	PVC-U / PP / PVDF	752.1	3.86	752.1	3.86	753.1	3.86	754.1	3.86
	1.4408	752	3.88	752	3.88	753	3.88	754	3.88
Float valve	PVC-U	872	3.90	872	3.90	873	3.90	873	3.90
Pulsation damper without separating diaphragm	PVC-U / PP	702.1	3.14	702.1	3.14	703.1	3.14	703.1	3.14
	1.4571	802.1	3.18	802.1	3.18	803.1	3.18	803.1	3.18
Fittings for pressure side of dosing pumps		ZYM409.1-450e		ZYM409.1-650e		ZYM409.1-900e		ZYM409.1-1300e	
		Type	p.	Type	p.	Type	p.	Type	p.
Diaphragm-type relief valve		622.10	3.4	622.10	3.4	623.10	3.4	623.10	3.4
	for suspension	622.S	3.6	622.S	3.6	623.S	3.6	623.S	3.6
Diaphragm-type pressure keeping valve		622.D	3.8	622.D	3.8	623.D	3.8	623.D	3.8
Pulsation damper without separating diaphragm	PVC-U / PP	702.1	3.14	702.1	3.14	703.1	3.14	703.1	3.14
	1.4571	802.1	3.18	802.1	3.18	803.1	3.18	803.1	3.18
Diaphragm-pulsation damper with Elastomer-diaphragm	1.4571	713.1	3.22	713.1	3.22	713.1	3.22	713.1	3.22
Diaphragm-pulsation damper with PTFE/PTFE-faced diaphragm	PVC-U / PP / PVDF	723.1	3.24	723.1	3.24	723.1	3.24	723.1	3.24
Check valve	PP-GFK / PVDF-GFK	663.2	3.50	663.2	3.50	663.2	3.50	663.2	3.50
	1.4571	662.2	3.50	662.2	3.50	663.2	3.50	663.2	3.50
Dosing valve	PVC-U / PP / PVDF	682.1	3.60	682.1	3.60	683.1	3.60	683.1	3.60
	PP-GFK / PVDF-GFK	693.1	3.56	693.1	3.56	693.1	3.56	693.1	3.56
	1.4571	692.1	3.56	692.1	3.56	693.1	3.56	693.1	3.56
Injection fitting	PVC-U / PP / PVDF	8062.1	3.62	8062.1	3.62	8063.1	3.62	8063.1	3.62

⊘ = on request

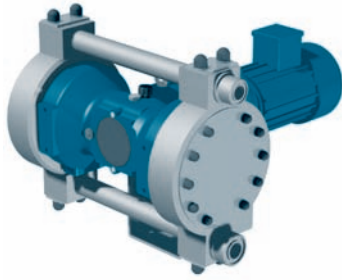
The above allocation considers the fittings which have to be used at least regarding their nominal width in order to ensure the safe and trouble-free operation of the respective pumps when feeding liquids which are resembling to water.

Absolutely note the max. admissible operating pressure of the fittings.

The use of fittings of a bigger nominal width is unproblematically possible in most cases.

When choosing the fittings note the installation instructions for dosing pumps or confer with s e r a.





## ZX411.3 im Überblick

- Leakage - free
- Safe to run dry
- High quality materials
- Low maintenance
- Low operating costs
- Integrateable in automatoc processes
- Robust metallic stroke mechanism housing
- User friendly
- Manual stroke frequency adjustment (only ZXRI-Types)

## Infobox

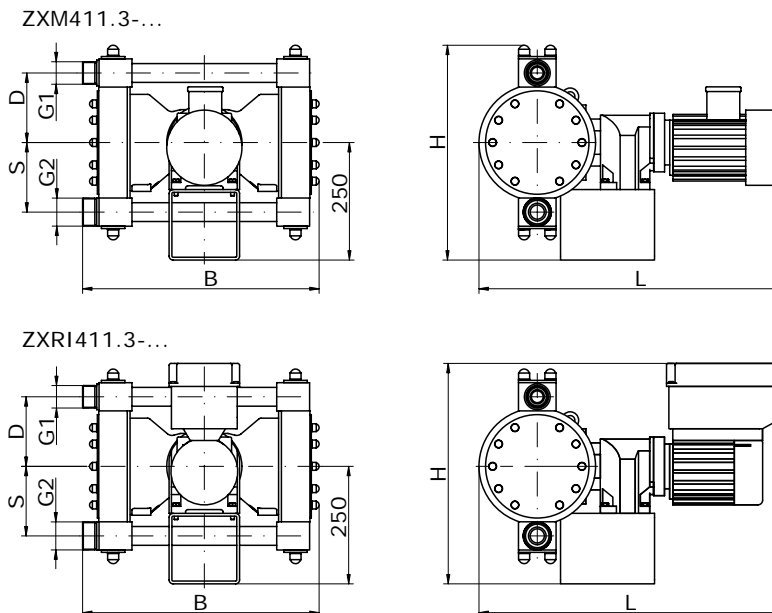
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- resistance chart [Chapter 5](#)
- installation examples [Chapter 5](#)

## Technical data

Type	Nominal capacity l/h		Nominal stroke frequency 1/min		Admiss. counter-pressure bar	Admiss. pressure at pump inlet bar	Max. suction height mWS	Inlet nominal width DN	Outlet nominal width DN	Max. stroke length mm	Motor output kW
	50 Hz	60 Hz	50 Hz	60 Hz							
ZXM411.3-2200e	2,00	2.640	92	110	4	-0.8 / 0	8	32	25	20	0.75
ZXRI411.3-2200e	230 - 2.200	–	84	–	4	-0.8 / 0	8	32	25	20	0.75
ZXM411.3-2600e	2.600	3.120	103	123	4	-0.8 / 0	8	32	25	20	0.75
ZXRI411.3-2600e	230 - 2.600	–	110	110	4	-0.8 / 0	8	32	25	20	0.75
ZXM411.3-3100e	3.100	–	128	–	4	-0.8 / 0	8	32	25	20	0.75
ZXRI411.3-3100e	230 - 3.100	–	123	123	4	-0.8 / 0	8	32	25	20	0.75

e in type designation means: pump with single diaphragm / RI in type designation means: pump with integrated frequency converter

## Dimensional drawing



## Dimensional chart

All indications in mm

Type	G2	G1	S	D	L	B	H	Weight
								kg
ZXM411.3-2200e	G 2	G 1 1/2	148	148	580	500	450	70
ZXRI411.3-2200e	G 2	G 1 1/2	148	148	650	500	450	80
ZXM411.3-2600e	G 2	G 1 1/2	148	148	580	500	450	70
ZXRI411.3-2600e	G 2	G 1 1/2	148	148	650	500	450	80
ZXM411.3-3100e	G 2	G 1 1/2	148	148	580	500	450	70
ZXRI411.3-3100e	G 2	G 1 1/2	148	148	650	500	450	80

■ Indication of weight for basic design acc. to order information

## Order information

### Basic design

#### ZX...411.3

- Pump body PP
- Single valves PP/PP-FRP
- Valve balls glass
- Valve seals FPM
- Working diaphragms PTFE-faced

#### Motor:

- 230/400 V threephase, 50/60 Hz, IP 55, insul. cl. F

#### Further options and accessories:

- Connection pieces see chapter 4
- Product documentation see chapter 5

Type	Basic design	x
ZXM411.3-2200e	15002194	
ZXRI411.3-2200e	15002195	
ZXM411.3-2600e	15002196	
ZXRI411.3-2600e	15002197	
ZXM411.3-3100e	15002003	
ZXRI411.3-3100e	15002198	

Options/Accessories			ZXM411.3-2200e ZXM411.3-2600e ZXM411.3-3100e	x	ZXRI411.3-2200e ZXRI411.3-2600e ZXRI411.3-3100e	x
<b>Pump body and valves</b> 	PP	single valves PP/PP-FRP	●		●	
	PVC-U	single valves PVC/PVDF-FRP	○		○	
		single valves PVC-U	▲		▲	
	PVDF	single valves PVDF/PVDF-FRP	▲		▲	
1.4571	single valves 1.4571/1.4581 Connections: Pressure side: Flange DN25 Suction side: Flange DN32	▲		▲		
<b>Valve balls</b> 	Glass	single valves	●		●	
	1.4401	single valves	▲		▲	
	PTFE	single valves	▲		▲	
<b>Valve sealings</b> 	FPM	single valves	●		●	
	EPDM	single valves	○		○	
	FEP-covered	single valves	▲		▲	
<b>Working diaphragms</b> 	PTFE-faced		●		●	
<b>Double diaphragm design</b> 	with intermediate diaphragm made of:					
	PTFE-faced		⊗		⊗	
	PTFE		⊗		⊗	
<b>Diaphragm rupture monitoring</b> 	Diaphragm rupture electrode conductive, mounted to pump					
	MBE-02	for single diaphragm pump	▲		▲	
	MBE-04	for double diaphragm pump	⊗		⊗	
● = Basic design    ○ = without add. price    ▲ = with add. price    ⊗ = on request    – = not available    Art.-Nr. = available in basic design/accessories						



## Order information

### Basic design

#### ZX...411.3

- Pump body PP
- Single valves PP/PP-FRP
- Valve balls glass
- Valve seals FPM
- Working diaphragms PTFE-faced

#### Motor:

- 230/400 V threephase, 50/60 Hz, IP 55, insul. cl. F

#### Further options and accessories:

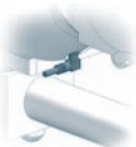

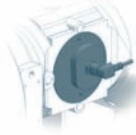
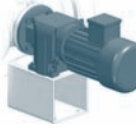
- Connection pieces see chapter 4
- Product documentation see chapter 5

Type	Basic design	x
ZXM411.3-2200e	15002194	
ZXRI411.3-2200e	15002195	
ZXM411.3-2600e	15002196	
ZXRI411.3-2600e	15002197	
ZXM411.3-3100e	15002003	
ZXRI411.3-3100e	15002198	

## Options/Accessories

ZXM411.3-2200e  
ZXM411.3-2600e  
ZXM411.3-3100e

ZXRI411.3-2200e  
ZXRI411.3-2600e  
ZXRI411.3-3100e

Options/Accessories		ZXM411.3-2200e ZXM411.3-2600e ZXM411.3-3100e	x	ZXRI411.3-2200e ZXRI411.3-2600e ZXRI411.3-3100e	x
<b>Diaphragm rupture monitoring</b> 	ATEX-Design (Type examination, only for Double diaphragm design) Diaphragm rupture monitoring, konduktiv, mounted on the pump				
	MBE-04 incl. Connection cable for Diaphragm rupture monitoring blue for EExia-circuit (5m)	⊙		⊙	
	Buffer fluid glycol-glycerine-mixture 1:25 for media with conductivity <= 5µS/cm	⊙		⊙	
<b>Diaphragm rupture monitoring</b> 	Electrode relay, control cabinet assembly				
	ER-104/C aux. energy 230 V AC	90022944		90022944	
	ER-104/C aux. energy 24 V DC	90022945		90022945	
ER-142 aux. energy 230 V AC II(1)G [EExia] IIC acc. to ATEX 95	90200363		90200363		
<b>Stroke frequency monitoring</b> 	Inductive contact				
	10-60 V DC, three-wire, PNP	▲		▲	
	Namur execution, II2G EExia IICT6 acc. to ATEX95	▲		▲	
<b>Drive motor</b> 	Special voltage	▲		⊙	
	Enclosure IP 65	▲		⊙	
	Protective roof for the fan of the drive	▲		⊙	
	integrated posistor (3 pcs.) insul. cl. F	▲		●	
	VIK-design	▲		⊙	
	II2G EExe IIT3 (acc. to ATEX95)	▲		–	
	II2G EExe IIT4 (acc. to ATEX95)	⊙		–	
	II2G EExde IICT4 (acc. to ATEX95)	▲		–	
	Single phase AC 230V with capacitor	⊙		–	
	Driver for converter operation incl. integrated posistor, 5-50/60Hz	▲		●	
Driver for converter operation II2G EExde IICT4, 5-50/60 Hz acc. ATEX 95, incl. integrated posistor	⊙		–		

● = Basic design    ⊙ = without add. price    ▲ = with add. price    ⊙ = on request    – = not available    Art.-Nr. = available in basic design/accessories

## Order information

### Basic design

#### ZX...411.3

- Pump body PP
- Single valves PP/PP-FRP
- Valve balls glass
- Valve seals FPM
- Working diaphragms PTFE-faced


#### Motor:

- 230/400 V threephase, 50/60 Hz, IP 55, insul. cl. F

#### Further options and accessories:

- Connection pieces see chapter 4
- Product documentation see chapter 5

Type	Basic design	x
ZXM411.3-2200e	15002194	
ZXRI411.3-2200e	15002195	
ZXM411.3-2600e	15002196	
ZXRI411.3-2600e	15002197	
ZXM411.3-3100e	15002003	
ZXRI411.3-3100e	15002198	

Options/Accessories		ZXM411.3-2200e ZXM411.3-2600e ZXM411.3-3100e	x	ZXRI411.3-2200e ZXRI411.3-2600e ZXRI411.3-3100e	x
<b>Stroke frequency adjustment electrical</b> 	Frequency converter series 8200 Vector input 4-20mA, incl. Keypad (for integration into control cabinet)				
	Single-phase 230 V, 50/60 Hz      1.5 kW	90016865		–	
	Three-phase 320-550 V, +/- 0%, 50/60 Hz      1.5 kW	90017528		–	
● = Basic design    ○ = without add. price    ▲ = with add. price    ⊗ = on request    – = not available    Art.-Nr. = available in basic design/accessories					

Fittings for suction side of dosing pumps		ZXM411.3-2200e up to ZXRI411.3-3100e	
		Type	p.
Suction aid / Siphon Vessel	transparent PVC-U	772.2	3.76
Calibration Pot	PVC-U	797.1	3.78
Foot valve	PVC-U	735.2	3.80
	PP / PVDF	735	3.82
	1.4571	735	3.82
Line strainer	PVC-U / PP / PVDF	755.1	3.86
	1.4408	755	3.88
Float valve	PVC-U	875	3.90
Pulsation damper without separating diaphragm	PVC-U / PP	706.1	3.14
	1.4571	804.1	3.18
Fittings for pressure side of dosing pumps		ZXM411.3-2200e up to ZXRI411.3-3100e	
		Type	p.
Diaphragm-type relief valve		624.10	3.4
Diaphragm-type pressure keeping valve		624.D	3.8
Pulsation damper without separating diaphragm	PVC-U / PP	706.1	3.14
	1.4571	804.1	3.18
Diaphragm-pulsation damper with Elastomer-diaphragm	PVC-U / PP / PVDF	713.1	3.20
	1.4571	713.1	3.22
Dosing valve	PVC-U / PP / PVDF	684.1	3.60

The above allocation considers the fittings which have to be used at least regarding their nominal width in order to ensure the safe and trouble-free operation of the respective pumps when feeding liquids which are resembling to water.

Absolutely note the max. admissible operating pressure of the fittings.

The use of fittings of a bigger nominal width is unproblematically possible in most cases.

When choosing the fittings note the installation instructions for dosing pumps or confer with s e r a.

