

# DIAPHRAGM PUMPS



## OVERVIEW

- High dosing accuracy
- Safe to run dry
- Leakage free
- Low-maintenance
- User-friendly
- Continuous, manual stroke length adjustment
- Motor suitable for operation with frequency converter
- Robust, metallic drive housing
- Compact design
- Low weight



## TECHNICAL DATA

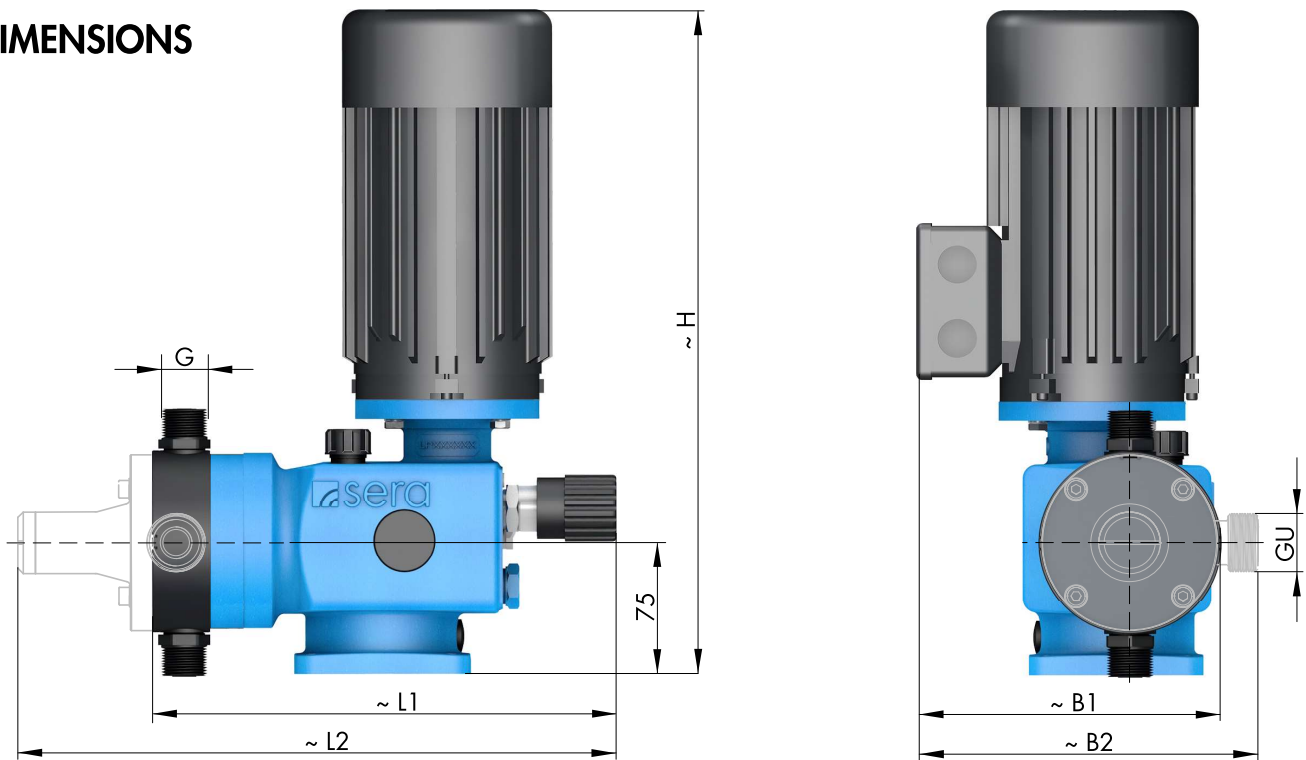
PUMP DATA			RF 409.2-...					
(* 8mWS = performance losses of nominal capacity QN of 20-25%)			1,6e	2,4e	7,0e	12e	18e	25e
Permissible pressure $p_{2max}$ at the pump outlet	bar		10	10	10	10	10	10
Nominal capacity QN at $p_{2max}$	l/h	50 Hz	0-1,6	0-2,4	0-7,0	0-12	0-18	0-25
		60 Hz	0-1,9	0-2,9	0-8,4	0-14,4	0-21,5	0-30
Quantity per stroke	ml/stroke (100%)		0,27	0,27	0,78	2,0	3,0	2,8
Max. suction height	mWC				3			3 (8*)
Min./max. permissible pressure at the pump inlet	bar	$p_{1min/max}$			-0,3/0			-0,3/0 (-0,8/0*)
Recomm. nominal diameter DN of the connecting pipes	mm		5	5	5	10	10	10
Nominal stroke frequency	1/min	50 Hz	100	150	150	100	100	150
		60 Hz	120	180	180	120	120	180
Weight approx.	kg	plastic	9	9	9	9	9	9
		stainless steel	10	10	10	10	10	10

ELECTRICAL DATA			RF409.2-1,6e ... RF409.2-25e					
Power consumption	kW		0,18					
Voltage	V		230/400V 50Hz, 460V 60Hz					
Frequency	Hz		50/60					
Insulation class	ISO		F					
Enclosure	IP		55					

Flow capacity 1,6 l/h ... 30 l/h  
 Admissible counterpressure up to 10 bar

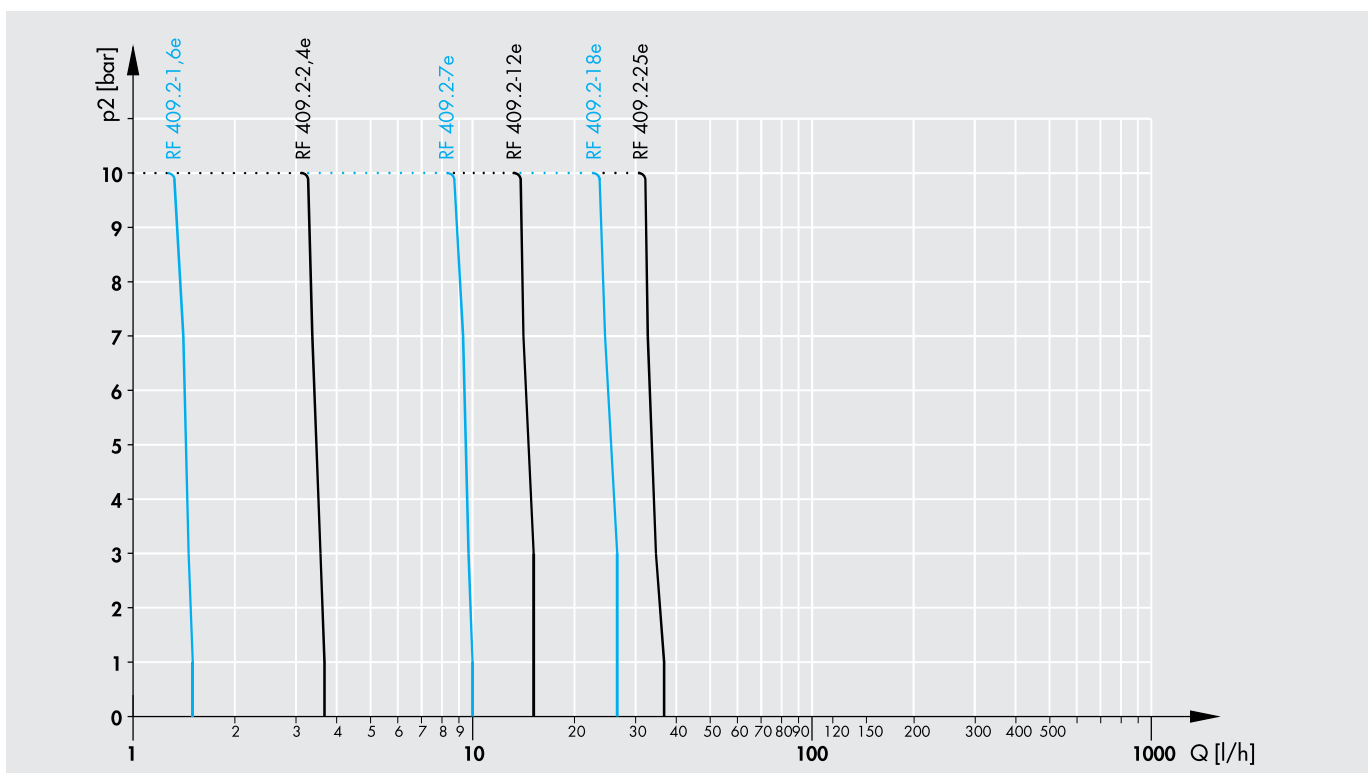
RF 409.2

## DIMENSIONS



	G	GU		B1	B2	L1	L2	H		B1	B2	L1	L2	H	
RF 409.2 -1,6e, ...-2,4e	G 3/4	X	PVC, PP, PVDF	175	X	310	X	330	▶	175	X	310	X	330	
RF 409.2 -7,0e	G 3/4	G 3/4		175	175	285	345	330		1.4571	175	174	285	345	330
RF 409.2 -12e, ...-18e, ...-25e	G 3/4	G 3/4		175	175	285	345	330		175	174	285	345	330	

## CHARACTERISTIC CURVES



# DIAPHRAGM PUMPS

## BASIC DESIGNS



### PP-FRP

Pump body **PP-FRP**  
 Valves **PP-FRP**  
 Valve balls **PTFE**  
 Diaphragm **PTFE-faced**

Type	Valve seals			
	EPDM Article-No.	Price (EUR)	FPM Article-No.	Price (EUR)
RF409.2-1,6e	16017692	☉	16020532	☉
RF409.2-2,4e	16018937	☉	16023329	☉
RF409.2-7,0e	16010428	☉	16010429	☉
RF409.2-12e	16011937	☉	16011251	☉
RF409.2-18e	16021420	☉	16022063	☉
RF409.2-25e	16015774	☉	16007035	☉

### PVDF-FRP

Pump body **PVDF-FRP**  
 Valves **PVDF-FRP**  
 Valve balls **PTFE**  
 Diaphragm **PTFE-faced**

Type	Valve seals	
	FEP-covered Article-No.	Price (EUR)
RF409.2-1,6e	×	×
RF409.2-2,4e	×	×
RF409.2-7,0e	16023599	☉
RF409.2-12e	16020686	☉
RF409.2-18e	16023820	☉
RF409.2-25e	16023821	☉



### PVC-U

Pump body **PVC-U**  
 Valves **PVC-U**  
 Valve balls **PTFE**  
 Diaphragm **PTFE-faced**

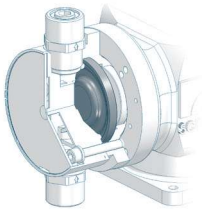
Type	Valve seals			
	EPDM Article-No.	Price (EUR)	FPM Article-No.	Price (EUR)
RF409.2-1,6e	16020050	☉	16020047	☉
RF409.2-2,4e	16020147	☉	16020785	☉
RF409.2-7,0e	16024669	☉	16024733	☉
RF409.2-12e	16024654	☉	16024614	☉
RF409.2-18e	16024592	☉	16024487	☉
RF409.2-25e	16024676	☉	16024633	☉

### STAINLESS STEEL

Pump body **1.4571**  
 Valves **1.4571**  
 Valve balls **1.4401**  
 Diaphragm **PTFE-faced**

Type	Valve seals	
	FEP-covered Article-No.	Price (EUR)
RF409.2-1,6e	15006618	☉
RF409.2-2,4e	16009811	☉
RF409.2-7,0e	16017990	☉
RF409.2-12e	16020559	☉
RF409.2-18e	16023407	☉
RF409.2-25e	16019308	☉

## OPTIONS



### Working diaphragm

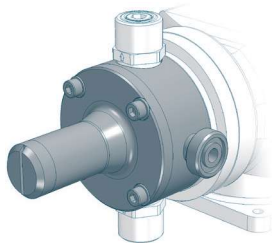
		Surcharge (EUR)
Material		
FPM	only with ...-115e and ...-180e	▲





### Diaphragm monitoring

Diaphragm rupture electrode, conductive, mounted on pump  
(Evaluation via electrode relay, ER-104 (see accessories))

		Surcharge (EUR)
MBE-02	incl. connection cable (length 2m)	▲
	Connection cable for EEXia-circuit (blue, length 5m)	▲

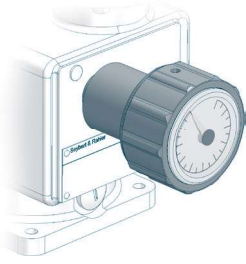


### Integrated relief valve

Diaphragm: <b>PTFE-faced</b>	Connecting seals: <b>EPDM or FPM</b>	Surcharge (EUR)
<b>PP</b> 	RF409.2-1,6e, ...-2,4e	×
	RF409.2-4,0e, ...-7,0e, ...-12e, ...-18e, ...-25e	▲
<b>PVDF</b>	RF409.2-1,6e, ...-2,4e	×
	RF409.2-4,0e, ...-7,0e, ...-12e, ...-18e, ...-25e	Ⓞ
<b>PVC-U</b> 	RF409.2-1,6e, ...-2,4e	×
	RF409.2-4,0e, ...-7,0e, ...-12e, ...-18e, ...-25e	▲
<b>1.4571</b>	RF409.2-1,6e, ...-2,4e	×
	RF409.2-4,0e, ...-7,0e, ...-12e, ...-18e, ...-25e	▲
Connecting seals <b>FEP-covered</b>		
for connection G 3/4	RF409.2-...e	▲

# DIAPHRAGM PUMPS

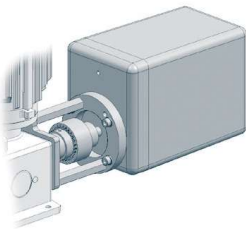
## OPTIONS



### Stroke length adjustment

Surcharge (EUR)

with position indicator



### Stroke length adjustment with actuator

(version uL/CSA on request)

Surcharge (EUR)

#### RF409.2-1,6e ...-2,4e

Actuator



#### RF409.2-7,0e ... RF409.2-25e

Actuator N C1-BA

230V ±10%, 50/60Hz, 128s/10 U, 1,5Nm  
incl. mounting set



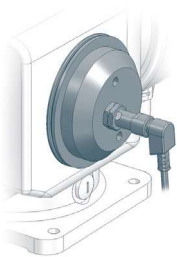
Elektronischer Stellungsregler ESR-N  
(only integrated in N C1-BA)

Input signal 0/4 - 20mA including  
feedback signal 0/4 - 20mA



Actuator D30D-10-Ex  
II2G EExde IIC T4 acc. to ATEX95

400V, 50Hz, 10 U/min  
incl. mounting set and base plate



### Stroke frequency monitoring

Inductive contact

Surcharge (EUR)

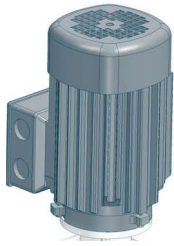
10 - 60 V DC, three-wire, PNP



NAMUR-design, II2G EExia IIC T6 (acc. to ATEX95)



## OPTIONS



### Drive motor

- Please note: If one or several options 'drive motor' are required to fix the add. price of the drive, the calculation will be as follows: 'add. price special drive' plus the single options of the drive.
- Surcharge and availability must be requested from **sera**.

Surcharge special drive		Surcharge (EUR)
RF 409.2-1,6e, ...-2,4e, ...-7,0e, ...-12e, ...-18e, ...-25e		▲
Special voltage	(all types)	Ⓞ
Enclosure IP65	(all types)	▲
Protection roof	(all types)	▲
VIK design	(all types)	Ⓞ
Electrical acc. to uL/CSA	(all types)	Ⓞ

### Single-phase alternating current motor, 230V/50Hz with capacitor

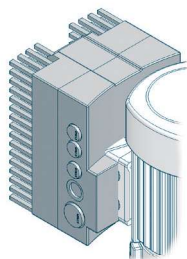
RF 409.2-1,6e, ...-2,4e, ...-7,0e, ...-12e, ...-18e, ...-25e	▲
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### II 2 G EExe II T4 (acc. to ATEX95)

RF 409.2-1,6e, ...-2,4e, ...-7,0e, ...-12e, ...-18e, ...-25e	▲
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### II2G EExde II C T4 (suitable for converter operation, 5-50Hz)

RF 409.2-1,6e, ...-2,4e, ...-7,0e, ...-12e, ...-18e, ...-25e	▲
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### Stroke frequency adjustment, electrical

Frequency converter (Series INVEOR) mounted on drive motor  
Input 4-20 mA

		Surcharge (EUR)
<b>1-phase</b>		
200-230V ±10%, 50/60Hz	0,37 kW	▲
<b>3-phase</b>		
400-480V ±10%, 50/60Hz	0,55 kW	▲

### Frequency converter accessories

	Article-No.	Price (EUR)
Operating module (incl. control cable)	90039445	▲
Communication cable for parameterization via PC	90042176	▲

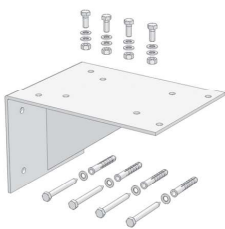
# DIAPHRAGM PUMPS

## ACCESSORIES



### Diaphragm monitoring (evaluation)

Electrode relay for mounting in control cabinet (for evaluating the diaphragm rupture electrode MBE-02 (see options))		Article-No.	Price (EUR)
ER-104	auxiliary power 230 V AC	90022944	▲
ER-104	auxiliary power 24 V DC	90022945	▲
ER-142	auxiliary power 230 V AC II(1)G [EExia] II C	90200363	▲



### Bracket

for wall mounting (incl. mounting kit)		Article-No.	Price (EUR)
PP		90023848	▲
1.4301		90023875	▲



### Connection pieces

Extensive range of connection / transition pieces and dosing hoses

Inserts and pipe sockets with union nuts, flange connections, hose screw connections, hose nozzles as well as dosing hoses and accessories.

to be found in **CHAPTER 4** of this catalog, from **page 442**

## FITTINGS FOR THE SUCTION SIDE



### Multi-function device

#### Properties

- Can be used as an priming aid and/or an calibration pot
- Compact design
- Flexible Connection
- Maintenance-free
- incl. glue joint (PVC-U) and welding joint (PP)

#### Basic version

- Housing: **PVC-U / PVC-transparent**
- Seals: **FPM or EPDM**
- max. operating pressure: **-0,5 ... +2 bar**

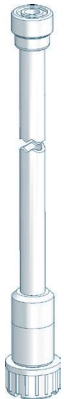
Type	DN	Connetion	Volume	Seals	Article-No.	Price (EUR)
<b>MFD 60</b>	8	G $\frac{3}{4}$	0,5 Ltr.	EPDM	37606311	▲
<b>MFD 60</b>	8	G $\frac{3}{4}$	0,5 Ltr.	FPM	37605864	▲

### ACCESSORIES

<b>Hand vacuum pump</b>	PVC/FPM	37605682	▲
(incl. 1,5m PVC-Hose d=12/21)			



## FITTINGS FOR THE SUCTION SIDE



### Suction lance S-01 (without level switch)

#### Properties

- Compact, robust design
- Maintenance-free
- Easy handling
- High-quality materials
  
- individual special lengths  
up to max. 1.500mm possible

#### Basic version

- Suction lance: **PVC-U**
- Foot valve: **PVC-U**
- Seals: **EPDM** or **FPM**
- Valve ball: **PTFE**
- max. flow rate: **200 l/h**
- Standard length: **650mm, 1.000mm und 1.250mm**

Type	Length	Connection	Seals	Article-No.	Price (EUR)
S-01	650 mm	G 3/4	EPDM	37606591	▲
S-01	1.000 mm	G 3/4	EPDM	37606592	▲
S-01	1.250 mm	G 3/4	EPDM	37606593	▲
S-01	max. 1.500 mm	G 3/4	EPDM	37600705	▲
S-01	650 mm	G 3/4	FPM	37606594	▲
S-01	1.000 mm	G 3/4	FPM	37606595	▲
S-01	1.250 mm	G 3/4	FPM	37606596	▲
S-01	max. 1.500 mm	G 3/4	FPM	37600817	▲



### Suction lance SL-12.1 (with level switch, 2-stage with plug, 3-pole)

#### Properties

- Compact design
- Height-adjustable
- 2-stage level monitoring
- Flexible connection
- Easy handling
- High-quality materials
- Maintenance-free
- incl. hose connections  
4/6, 6/8, 6/12

#### Basic version

- Suction lance: **PVC-U**
- Foot valve: **PVC-U**
- Valve ball: **PTFE**
- Hose (inboard): **PE**
- Level switch: **PP**  
2-stage, normally closed (NC)  
5m cable (from foot valve) with plug, M12, 3-pole
- max. flow rate: **14 l/h (4/6) ... 35 l/h (6/12)**

Type	Length	Seals	Article-No.	Price (EUR)
SL-12.1	600 mm	PTFE	37606120	▲
SL-12.1	1.000 mm	PTFE	37606117	▲
SL-12.1	1.200 mm	PTFE	37606118	▲



# DIAPHRAGM PUMPS

## FITTINGS FOR THE SUCTION SIDE



### Foot valve (Plastic)

#### Properties

- Compact design
- Easy installation
- High-quality materials
- Maintenance-free

#### Basic version

- Ball: **PTFE**
- Sieve: **ETFE**
- Mesh size: **1mm**

Type	DN	Connection	Material	Seals	Article-No.	Price (EUR)
<b>781.1</b>	8	G 3/4	PVDF/PVDF-GFK	FEP	30073008	▲



### Foot valve (plastic)

#### Properties

- Compact design
- Easy installation
- High-quality materials
- Maintenance-free

#### Basic version

- Ball: **PTFE**
- Sieve: **ETFE**
- Mesh size: **1mm**

Type	DN	Connection	Material	Seals	Article-No.	Price (EUR)
<b>731</b>	8	G 3/4	PVC-U	EPDM	37601636	▲



### Foot valve (Stainless steel)

#### Properties

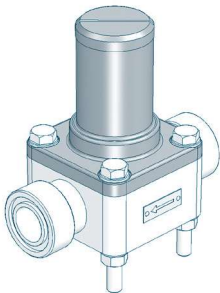
- Compact design
- Easy installation
- High-quality materials
- Maintenance-free

#### Basic version

- Ball: **1.4401**
- Sieve: **ETFE**
- Mesh size: **1mm**

Type	DN	Connection	Material	Seals	Article-No.	Price (EUR)
<b>731</b>	8	G 3/4	1.4571	FEP	37601149	▲

## FITTINGS FOR THE PRESSURE SIDE



### Diaphragm relief valve

for overpressure protection

#### Properties

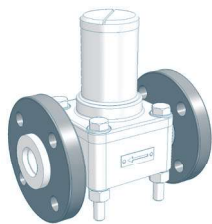
- Compact design
- Easy installation
- Maintenance-free
- High-quality materials

#### Basic version

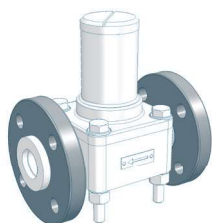
- Valve body: **PVC-U, 1.4581, PP** or **PVDF**
- Diaphragm: **PTFE-faced**

Type	Nominal size	Connection	Valve body	Seals	Article-No.	Price (EUR)
620.10	DN8	G 3/4	PVC-U	FPM	37603632	▲
620.10	DN8	G 3/4	PVC-U	EPDM	36200101	▲
620.10	DN8	G 3/4	PP	FPM	37603630	▲
620.10	DN8	G 3/4	PP	EPDM	37603629	▲
620.10	DN8	G 3/4	PVDF	FEP	37601792	▲
620.10	DN8	G 3/4	1.4581	FEP	37600670	▲

### OPTIONS



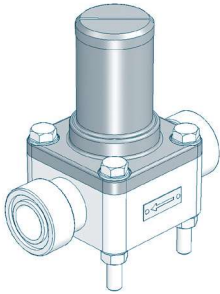
Type	Design	Loose flange	Surcharge [EUR]
620.10	PVC	Loose flange made of PVC-U	Ⓞ
620.10	PP-FRP/PVDF-FRP	Loose flange made of PP with steel inlay	×
620.10	PP	Loose flange made of PP with steel inlay	▲
620.10	PVDF	Loose flange made of PP with steel inlay	▲



Type	Design	Loose flange	Surcharge [EUR]
622.10	PVC	Loose flange made of PVC-U	▲
622.10	PP-FRP/PVDF-FRP	Loose flange made of PP with steel inlay	Ⓞ
622.10	PP	Loose flange made of PP with steel inlay	▲
622.10	PVDF	Loose flange made of PP with steel inlay	▲

# DIAPHRAGM PUMPS

## FITTINGS FOR THE PRESSURE SIDE



### Diaphragm pressure keeping valve

to prevent over-conveyance

#### Properties

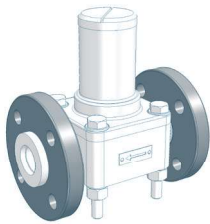
- Compact design
- Easy installation
- Maintenance-free
- High-quality materials

#### Basic version

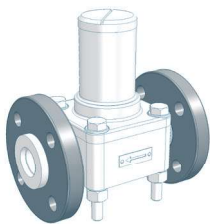
- Valve body: **PVC-U, 1.4581, PP** or **PVDF**
- Diaphragm: **PTFE-faced**

Type	Nominal size	Connection	Valve body	Seals	Article-No.	Price (EUR)
620.D	DN8	G 3/4	PVC-U	FPM	37600048	▲
620.D	DN8	G 3/4	PVC-U	EPDM	36201101	▲
620.D	DN8	G 3/4	PP	FPM	37600055	▲
620.D	DN8	G 3/4	PP	EPDM	36201105	▲
620.D	DN8	G 3/4	PVDF	FEP	37601827	▲
620.D	DN8	G 3/4	1.4581	FEP	37600525	▲

### OPTIONS

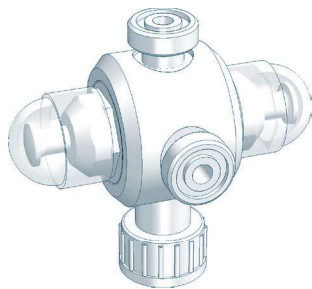


Type	Design	Loose flange	Surcharge [EUR]
620.D	PVC	Loose flange made of PVC-U	Ⓞ
620.D	PP-FRP/PVDF-FRP	Loose flange made of PP with steel inlay	×
620.D	PP	Loose flange made of PP with steel inlay	▲
620.D	PVDF	Loose flange made of PP with steel inlay	▲



Type	Design	Loose flange	Surcharge [EUR]
622.D	PVC	Loose flange made of PVC-U	▲
622.D	PP-FRP/PVDF-FRP	Loose flange made of PP with steel inlay	Ⓞ
622.D	PP	Loose flange made of PP with steel inlay	▲
622.D	PVDF	Loose flange made of PP with steel inlay	▲

## FITTINGS FOR THE PRESSURE SIDE



### Multi function valve

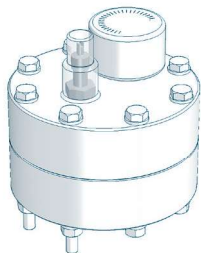
#### Properties

- Maximum operating pressure 10 bar
- Compact design
- Easy installation
- Maintenance-free
- Venting
- Overpressure protection for dosing pumps
- Prevention of over conveyance

#### Basic version

- Diaphragms: **PTFE-faced**
- Connection: **G<sup>3/4</sup>**
- **Relief valve side**  
Opening pressure: **2 up to 10 bar** (adjustable)
- **Pressure keeping valve side**  
Holding pressure: **1,0 - 1,5 bar**

Type	Valve body	Seals	Article-No.	Price (EUR)
MFV 050	PVC-U	EPDM	37600973	▲
MFV 050	PVC-U	FPM	37600974	▲
MFV 050	PVC-U	FEP	37600975	▲
MFV 050	PP	EPDM	37600982	▲
MFV 050	PP	FPM	37600983	▲
MFV 050	PP	FEP	37600984	▲



### Diaphragm pulsation damper (Plastic, PTFE-diaphragm, max. 10 bar)

#### Properties

- Any mounting position
- Easy installation
- Long service life
- Easy handling
- High-quality materials
- Low maintenance

Type	Connection	max. Pressure	Material	Diaphragm	Article-No.	Price (EUR)
720.1	G 1/2	10 bar	PVC-U	PTFE	37601848	▲
720.1	G 1/2	10 bar	PP	PTFE	37601856	▲
720.1	G 1/2	10 bar	PVDF	PTFE	37601857	▲

## ACCESSORIES

### Connection adapter



Thread connection	G3/4 male	PVC-U	EPDM	90021733	▲
Connction to pulsation damper	G1/2 male	PVC-U	FPM	90025079	▲
		PP	EPDM	90038083	▲
		PP	FPM	90038082	▲
		PVDF	FEP	☉	☉

### Retaining clamp



(2 Piece each pulsation damper)	PP	d 16	90010649	▲
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### Filling pump FLP 2 for filling device



with manometer, max. 7 bar incl. 2m hose and coupling for air valve	90009396	▲
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# DIAPHRAGM PUMPS

## FITTINGS FOR THE PRESSURE SIDE



### Diaphragm pulsation damper (Stainless steel, max. 10 bar)

#### Properties

- Any mounting position
- Easy installation
- Long service life
- Easy handling
- High-quality materials
- Low maintenance

Type	Connection	max.Pressure	Material	Diaphragm	Article-No.	Price (EUR)
810.1-0,16/10	G ½	10 bar	1.4571	Butyl	37603720	▲
810.1-0,16/10	G ½	10 bar	1.4571	FPM	37603724	▲
810.1-0,16/10	G ½	10 bar	1.4571	PTFE	×	×

## ACCESSORIES



### Filling- and pressure measuring device

(mounted on pulsation damper)

Design: <b>Plastic</b>	Manometer: 0-16 bar Measuring system: copper alloyed	●
Design: <b>Stainless steel</b>	Manometer: 0-16 bar, glycerine-damped Measuring system: copper alloyed Housing: 1.4301	▲



### Filling pump FLP 2 for filling device

with manometer, max. 7 bar incl. 2m hose and coupling for air valve	90009396	▲
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## Injection fitting

#### Properties

- incl. injection lance for better mixing
- Easy installation
- Any mounting position
- Maintenance-free
- High-quality materials

#### Basic version

- Cone-type check valve (spring loaded)
- Shut-off ball valve
- Injection lance (L=150mm)
- max. operating pressure: 10 bar

Type	DN	Inlet	Outlet	Material	Seals	Article-No.	Price (EUR)
8061.1	10	G ¾	R ½	PVC-U	EPDM	37602105	▲
8061.1	10	G ¾	R ½	PVC-U	FPM	37602106	▲
8061.1	10	G ¾	R ½	PP	EPDM	37602107	▲
8061.1	10	G ¾	R ½	PP	FPM	37602108	▲
8061.1	10	G ¾	R ½	PVDF	FPM	37602109	▲

## FITTINGS FOR THE PRESSURE SIDE



### Dosing valve (Plastic)

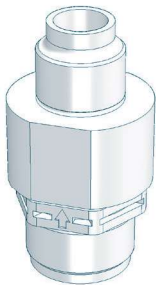
#### Properties

- Compact design
- Any mounting position
- Maintenance-free
- High-quality materials

#### Basic version

- integrated injection lance
- Valve ball: **PTFE**
- Seals: **EPDM** or **FPM**
- Spring: **Hastelloy C4**

Type	DN	Inlet	Outlet	Material	Seal	Article-No.	Price (EUR)
691.2	8	G 3/4	R 1/2	PVC-U	EPDM	37606318	▲
691.2	8	G 3/4	R 1/2	PVC-U	FPM	37605769	▲
691.2	8	G 3/4	R 1/2	PP-GFK	EPDM	37605768	▲
691.2	8	G 3/4	R 1/2	PP-GFK	FPM	37606317	▲



### Dosing valve (Plastic)

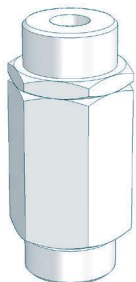
#### Properties

- Compact design
- Any mounting position
- Maintenance-free
- High-quality materials

#### Basic version

- Valve ball: **PTFE**
- Spring: **Hastelloy C4**

Type	DN	Inlet	Outlet	Material	Seal	Article-No.	Price (EUR)
691.1	8	G 3/4	R 1/2	PVDF/-GFK	FEP	30072015	▲



### Dosing valve (Stainless steel)

#### Properties

- Compact design
- Any mounting position
- Maintenance-free
- High-quality materials

#### Basic version

- Valve ball: **1.4401**
- Seals: **FEP-covered**
- Spring: **Hastelloy C4**

Type	DN	Inlet	Outlet	Material	Seal	Article-No.	Price (EUR)
691.1	8	G 3/4	R 1/2	1.4571	FEP	37600493	▲