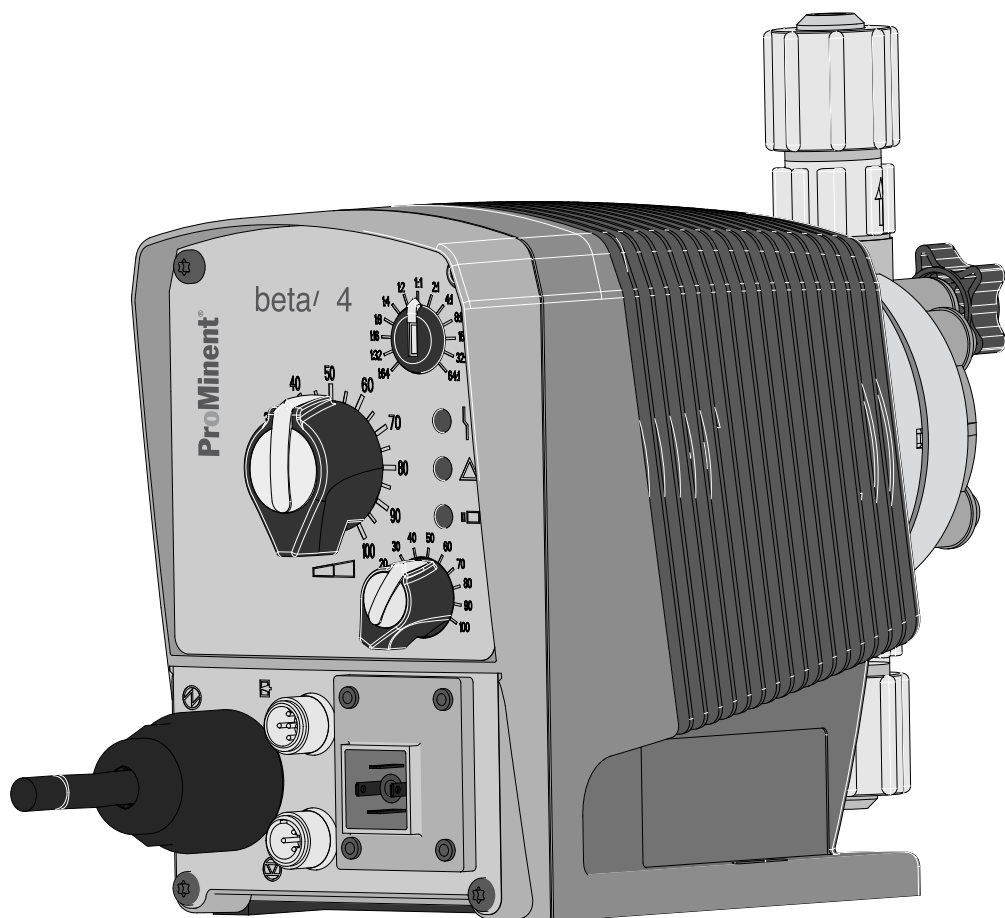


Operating Manual

Beta® b BT4b and BT5b Solenoid Metering Pump



Two sets of operating instructions are required for the safe, correct and proper operation of the dosing pumps: The product-specific operating instructions and the "General Operating Instructions ProMinent® Solenoid Metering Pumps". Both sets of operating instructions are only valid when read together.

Please carefully read these operating instructions before use! · Do not discard!
The operator shall be liable for any damage caused by installation or operating errors!
Technical changes reserved.

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BA BE 001, 1, en_GB

Supplementary information



Fig. 1: Please read!

Read the following supplementary information in its entirety! Should you already know this information, you have an even greater need of the Operating Instructions.

The following are highlighted separately in the document:

■ Enumerated lists

➔ Operating instructions

Information



This provides important information relating to the correct operation of the unit or is intended to make your work easier.

Safety information

Safety information is identified by pictograms - see Safety Chapter.

User information

Two sets of operating instructions are required for the safe, correct and proper operation of the dosing pumps: The product-specific operating instructions and the "General Operating Instructions ProMinent® Solenoid Metering Pumps".

Both sets of operating instructions are only valid when read together.

Please firstly read the Operating Instructions in full! Do not discard!

Stating the identcode and serial number

Please state the identcode and serial number, which you find on the nameplate when you contact us or order spare parts. This enables the device type and material versions to be clearly identified.

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1 Identcode

Beta® Series, Version b			
BT4 b	Type	Capacity	
		bar	l/h
	1000	10	0.74
	1601	16	1.10
	1602	16	2.20
	1604	16	3.60
	0708	7	7.10
	0413	4	12.30
	0220	2	19.00
BT5 b	Type		
	2504	25	2.90
	1008	10	6.80
	0713	7	11.00
	0420	4	17.10
	0232	2	32.00
		Material of dosing head/valves	
	PP	Polypropylene/PVDF. With the self-bleeding version (SEK): polypropylene/polypropylene	
	NP	Acrylic glass/PVDF. With the self-bleeding version (SEK): Acrylic glass/PVC	
	PV	PVDF/PVDF	
	TT	PTFE/PTFE	
	SS	Stainless steel 1.4404/1.4404	
		Material of seals/diaphragm	
	T	coated PTFE/PTFE	
	E	coated EPDM/PTFE, only with PP and NP self-bleeding (SEK)	
	B	coated FPM-B/PTFE, only with PP and NP self-bleeding (SEK)	
	S	diaphragm additionally with FPM coating for media containing silicate	
		Dosing head design	
	0	without bleed valve, without valve spring only for TT, SS and type 0232	
	1	without bleed valve, with valve spring only for TT, SS and type 0232	
	2	with bleed valve, without valve spring only for PP, PV, NP not for type 0232	
	3	with bleed valve, with valve spring only for PP, PV, NP not for type 0232	
	4	version for higher-viscous media only for PVT, type 1604, 2504, 0708, 1008, 0413, 0713, 0220, 0420	
	9	self-bleeding (SEK) only for PP/NP, not for types 1000 and 0232	

Beta® Series, Version b

Hydraulic connection									
0	standard connection in line with technical data								
5	connection for 12/6 tube, discharge side only								
9	connection for 10/4 tube, discharge side only								
Version									
0	standard								
Logo									
0	with ProMinent® Logo								
Electrical connection									
U	100-230 V ± 10 %, 50/60 Hz								
Cable and plug									
A	2 m European								
B	2 m Swiss								
C	2 m Australian								
D	2 m USA								
1	2 m open end								
Relays									
0	no relay								
1	fault indicating relay (NC) (change-over relay)								
3	fault indicating relay (NO) (change-over relay)								
4	as 1 + pacing relay, (ONE each)								
5	as 3 + pacing relay, (ONE each)								
Accessories									
0	no accessories								
1	with foot and injection valve, 2 m PVC suction line, 5 m dosing line								
Control type									
0	no lock								
1	with lock: manual operation locked when external cable plugged in								
Control versions									
0	standard								
Options									

Beta® Series, Version b

															00	no optio ns
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	----	-------------------

2 About this Pump

Properties of the device

This solenoid metering pump is equipped with all adjustment and activation functions for modern water treatment and the dosing of chemicals. It has pulse step-up and pulse step-down compared with the preceding model. This enables it to adapt more precisely to external signal generators. The result is the simpler and more precise adjustment of chemical consumption to the actual need. It also has a 10 % increase in efficiency and energy efficiency over the preceding model. The Beta[®] can be simply adjusted during operation.

3 Safety Chapter

Explanation of the safety information

The following signal words are used in these operating instructions to identify different severities of a hazard:

Signal word	Meaning
WARNING	Denotes a possibly hazardous situation. If this is disregarded, you are in a life-threatening situation and this can result in serious injuries.
CAUTION	Denotes a possibly hazardous situation. If this is disregarded, it could result in slight or minor injuries or material damage.
NOTICE	Denotes a possibly hazardous situation. If this is disregarded, it could result in material damage.

Warning signs denoting different types of hazard

The following warning signs are used in this operating instructions to denote different types of hazard:

Warning sign	Type of hazard
	Warning of a hazardous area
	Warning of hazardous electrical voltage

Correct and Proper Use

- The pump may only be used to dose liquid feed chemicals.
- The pump may only be used after it has been correctly installed and commissioned in accordance with the technical data and specifications contained in the operating instructions.
- Any other uses or modifications are prohibited.
- The pump is not intended to dose gaseous media or solids.
- The pump is not intended for operation in EX zones.
- The pumps is not intended to dose combustible fluids.
- The pump should only be operated by trained and authorised personnel.
- You are obliged to observe the information contained in the operating instructions at the different phases of the device"s service life.

Safety information

**WARNING!****Warning of hazardous or unknown feed chemical**

Should a hazardous or unknown feed chemical be used, it may escape from the hydraulic components when working on the pump.

- Take appropriate protective measures before working on the pump (protective eyewear, protective gloves, ...). Read the safety data sheet on the feed chemical.
- Drain and flush the liquid end before working on the pump.

**CAUTION!****Warning of feed chemical spraying around**

Feed chemical can spray out of the hydraulic components if they are manipulated or opened due to pressure in the liquid end and adjacent parts of the system.

- Depressurise the system prior to undertaking any maintenance or repair work!

**CAUTION!****Warning of feed chemical spraying around**

An unsuitable feed chemical can damage the parts of the pump contacted by the chemical.

- Take into account the resistance of the material contacted by the chemical when selecting the feed chemical - refer to the ProMinent® resistance list in the product catalogue or at www.prominent.com.

**CAUTION!****Danger of personal and material damage**

The use of untested third party parts can result in damage to personnel and material damage.

- Only fit parts to dosing pumps, which have been tested and recommended by ProMinent.

**CAUTION!****Danger from incorrectly operated or inadequately maintained pumps**

Danger can arise from a poorly accessible pump due to incorrect operation and poor maintenance.

- Ensure that the pump is accessible at all times.

**NOTICE!****Danger from incorrect dosing**

Should a different liquid end size be fitted, this will change the dosing behaviour of the pump.

- Have the pump reprogrammed in the works.



NOTICE!

Warning of illegal operation

Observe the regulations that apply where the device is installed.

Information in the event of an emergency

The pump cannot be de-energised!

In the event of an electrical accident, disconnect the mains cable from the mains or press the emergency cut-off switch fitted on the side of the system!

Should feed chemical leak out, refer to its safety data sheet. It is possibly enough to turn the multifunctional switch to "Stop" to switch off the pump in this instance. It may also be necessary to depressurise the pump's hydraulic system.

Qualification of personnel

Activity	Qualification
Storage, transport, unpacking	Technical personnel
Installation, installation of hydraulic system	Technical personnel
Electrical Installation	Electrician
Operation	Instructed personnel
Maintenance, repair	Technical personnel
Decommissioning, disposal	Technical personnel
Troubleshooting	Technical personnel, electrician, instructed personnel

Electrician

Electricians are deemed to be people, who are able to complete work on electrical systems and recognise and avoid possible hazards independently based on his/her technical training and experience, as well as knowledge of pertinent standards and regulations.

Electricians should be specifically trained for the working environment in which they are employed and know the relevant standards and regulations.

Electricians must comply with the provisions of the applicable statutory directives on accident prevention.

Instructed personnel

The instructed personnel have been instructed by the operator in a training session about the tasks allocated to them and potential hazards with incorrect and improper conduct.

Technical personnel

Technical personnel are deemed to be people, who are able to complete the tasks allocated to them and recognise and avoid hazards independently based on his/her technical training and experience, as well as knowledge of pertinent regulations.

Sound Pressure Level

The sound pressure level is < 70 dB (A)

at a maximum stroke length, maximum stroke rate, maximum counter pressure (water) according to:

DIN EN 12639 (Noise testing on liquid pumps).

4 Storage, Transport and Unpacking

Safety information


WARNING!

It is prohibited to ship pumps for radioactive media!
They will also not be accepted by ProMinent!


WARNING!

Only return the dosing pump for repair in a cleaned state and with a flushed liquid end - refer to the section on decommissioning! Should safety precautions nevertheless be necessary, in spite of carefully emptying and cleaning the pump, the requisite information must be completed in the Declaration of No Objection.

The Declaration of No Objection forms an integral part of an inspection/repair order. A unit can only be inspected or repaired if a Declaration of No Objection is submitted that has been completely correctly and in full by an authorised and qualified person on behalf of the pump operator.

The "Declaration of No Objection" form can be found in the Appendix or at www.prominent.com.


NOTICE!
Danger of material damage

The device can be damaged by incorrect or improper storage or transportation!

- The device should only be stored or transported in a well packaged state - preferably in its original packaging.
- The packaged unit should also only be stored or transported in accordance with the stipulated storage conditions.
- The packaged unit should be protected from moisture and the ingress of chemicals.

Personnel: Technical personnel

Ambient Conditions

Specification	Value	Unit
Minimum storage and transport temperature	-20	°C
Maximum storage and transport temperature	+60	°C
Maximum air humidity *	95	% rel. humidity

* non-condensing

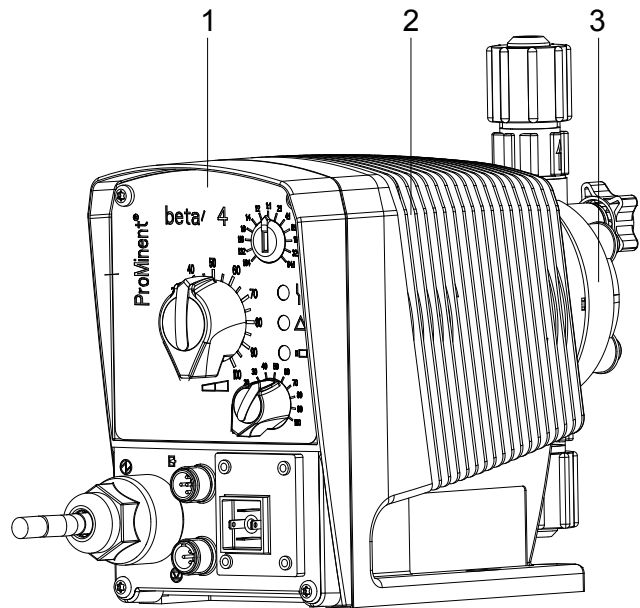
Scope of delivery

Compare the delivery note with the shipment:

- Dosing pump with mains power cable
- Connector kit for hose/pipe connection
- Product-specific operating instructions with EC Declaration of Conformity
- General operating instructions for ProMinent solenoid dosing pumps
- Optional accessories if ordered

5 Overview of the Device and Control Elements

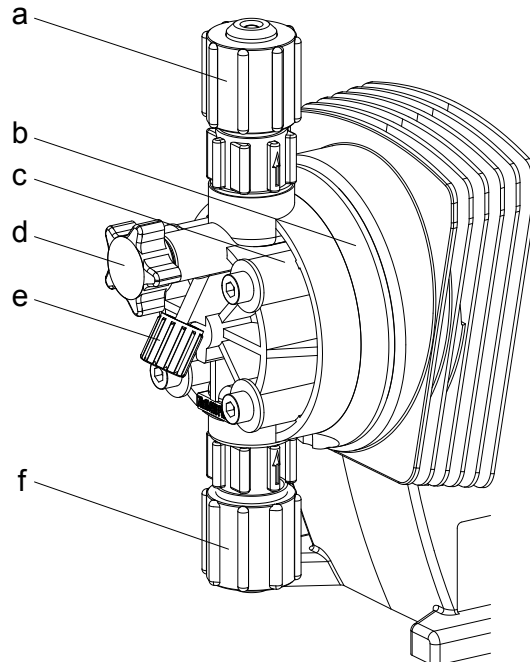
5.1 Overview of the Device



P_BE_0013_SW

Fig. 2: Complete overview

- 1 Control unit
- 2 Drive Unit
- 3 Liquid End



P_BE_0008_SW

Fig. 3: Overview of liquid end (PV)

- a Discharge valve
- b Backplate
- c Dosing head
- d Bleed valve
- e Bypass tube nozzle
- f Suction valve

5.2 Control Elements

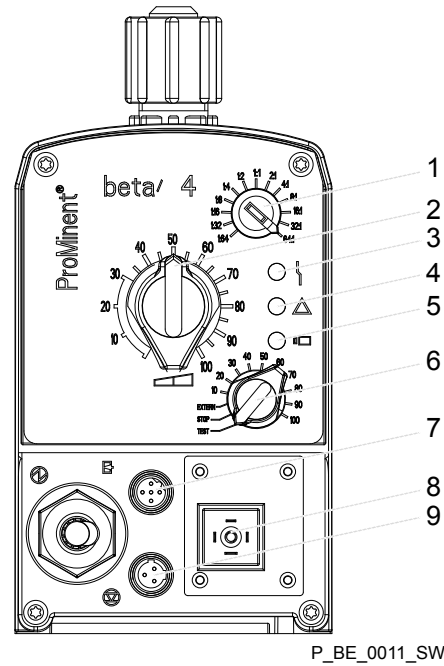


Fig. 4

- 1 Pulse Control Switch
- 2 Stroke Length Adjustment Knob
- 3 Fault indicator (red)
- 4 Warning indicator (yellow)
- 5 Operating indicator (green)
- 6 Multifunctional Switch
- 7 "External Control" Terminal
- 8 Relay connection (optional)
- 9 "Level Switch" Terminal

5.2.1 Pulse Control Switch

In the Extern Contact operating mode, either a series of strokes can be triggered or an inbound series of contacts can be stepped down via the pulse control switch by a single contact (on the "external control" terminal).

5.2.2 Stroke Length Adjustment Knob

The stroke length adjustment knob can be used to adjust the stroke length.

5.2.3 Multifunctional Switch

The multifunctional switch can be used to set the following functions, operating modes and stroke rate.

The operating modes that can be set are:

- Test (priming function)
- Stop
- Extern (Contact)
- Manual (setting stroke rate in 10 % increments)

5.2.4 Functional and Fault Indicators

Fault indicator (red)

The fault indicator lights up if the fluid level in the chemical feed container falls below the second switching point of the level switch (20 mm residual filling level in the chemical feed container).

This LED flashes in the event of an undefined operating mode.

Warning indicator (yellow)

The warning indicator lights up if the fluid level in the chemical feed container falls below the first switching point of the level switch.

Operating indicator (green)

The operating indicator lights up if the pump is ready for operation and there are no fault or warning alerts. It goes out quickly as soon as the pump has performed a stroke.

5.2.5 "External Control" Terminal

The "external control" terminal is a five-pole panel terminal.

It enables the following functions and operating modes to be used:

- Pause
- Extern Contact
- Auxiliary frequency (external frequency changeover)



The two- and four-pole cables used to date can continue to be used. The "Auxiliary frequency" function can, however, only be used with a five-pole cable.

5.2.6 "Level Switch" Terminal

A 2-stage level switch with pre-warning and end switch-off can be connected.

6 Functional Description

6.1 Liquid End

The dosing process is performed as follows: The diaphragm is pressed into the dosing head; the pressure in the dosing head closes the suction valve and the feed chemical flows through the discharge valve out of the dosing head. The diaphragm is now drawn out of the dosing head; the discharge valve closes due to the negative pressure in the dosing head and fresh feed chemical flows through the suction valve into the dosing head. One cycle is completed.

6.2 Drive Unit

The diaphragm is driven by an electromagnet, which is controlled by an electronic controller.

6.3 Capacity

The capacity is determined by the stroke length and the stroke rate.

The stroke length is adjusted by the stroke length adjustment knob within a range of 0 ... 100 %. A stroke length of between 30 ... 100 % (SEK type: 50 ... 100 %) is recommended to achieve the specified reproducibility!

Specification	Value	Unit
Recommended stroke length, standard type	30 ... 100	%
Recommended stroke length, SEK type	50 ... 100	%

The stroke rate can be set within a range of 10 ... 100 % using the multifunctional switch.

6.4 Self-Bleeding

Self-bleeding liquid ends (SEK types) are capable of independent priming when a discharge line is connected and diverting existent air pockets via a bypass. During operation they are also capable of conveying away gases which are produced, independently of the operating pressure in the system. It is also possible to dose precisely in a depressurised state due to the integral back pressure valve.

6.5 Operating Modes

The operating modes are selected by means of the multifunctional switch.

"Manual" operating mode

As soon as the stroke rate has been set by the multifunctional switch, the pump finds itself in "Manual" operating mode. 100 % corresponds to 180 strokes/min.

"Extern" operating mode:

The "Extern" operating mode is described below in the "Operation" chapter.

6.6 Functions

The functions are described below in the "Operation" chapter.

6.7 Relays

The pump has two connector options.

Fault indicating relay option

The relay can close a connected power circuit, in the event of for an alarm buzzer, in the event of fault or warning indicating alerts, such as a level warning.

The relay can be retrofitted through a knock-out opening in the pump foot - refer to Retrofitting Relays and Ordering Information in the Appendix.

Fault indicating and pacing relay option

This combined relay can generate a contact with each stroke from its pacing relay in addition to its function as a fault indicating relay.

The relay can be retrofitted through a knock-out opening in the pump foot - refer to Retrofitting Relays and Ordering Information in the Appendix.

6.8 Hierarchy of Operating Modes, Functions and Fault Statuses

The different operating modes, functions and fault statuses have a different effect on if and how the pump reacts.

The following list shows the order:

1. - Test (priming)
2. - Fault, Stop, Pause
3. - Auxiliary frequency (external frequency changeover)
4. - Manual, Extern Contact

Comments:

re 1 - "Priming" can take place in any mode of the pump (providing it is functioning).

re 2 - "Fault", "Stop" und "Pause" stop everything apart from "Priming".

re 3 - The stroke rate of "Auxiliary frequency" always has priority over the stroke rate specified by an operating mode in 4.

7 Electrical Installation



WARNING!

Risk of electric shock

There may be live voltage in the inside of the pump.

- Disconnect the mains cable on the pump from the mains power supply before working on it.



WARNING!

Risk of electric shock

This pump is supplied with a grounding conductor and a grounding-type attachment plug.

- To reduce the risk of electric shock, ensure that it is connected only to a proper grounding-type receptacle.



NOTICE!

Material damage possible by power surges

Should the pump be connected to the mains power supply in parallel to inductive consumers (such as solenoid valves, motors), inductive power surges can damage the controller when it is switched off.

- Provide proprietary contacts for the pumps and supply with voltage via an auxiliary contactor or relay.

Personnel: ■ Electrician

➞ Install the pump technically correctly and in accordance with the operating instructions and applicable regulations.

7.1 Supply Power Connection

Connect the pump to the mains power supply using the mains cable.

Parallel connection to inductive consumers

Should the pump be connected to the mains in parallel to inductive consumers (e.g. solenoid valves, motor), the pump must be electrically isolated when these consumers are switched off.

- Supply the pumps with voltage via an auxiliary contactor or relay with proprietary contacts for the pump.
- Should this not be possible then a varistor (part no. 710912) or an RC gate, 0.22 µF / 220 Ω (part no. 710802) should be connected in parallel.

7.2 Description of the Terminals

7.2.1 "External Control" Terminal

The "external control" terminal is a five-pole panel terminal. It is compatible with two- and four-pole cables.

The "Auxiliary Frequency" function can only be used with a five-pole cable.

Electrical interface for pin 1 "Pause" - pin 2 "Extern Contact" - pin 5 "Auxiliary frequency"

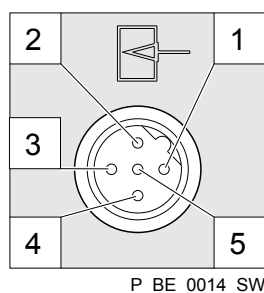


Fig. 5: Assignment on the pump

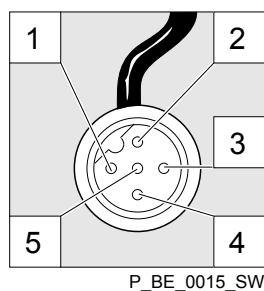


Fig. 6: Assignment on the cable

Specification	Value	Unit
Voltage with open contacts	5	V
Input resistance	10	kΩ
Max. pulse frequency	25	pulse/s
Minimum pulse duration	20	ms

Activation via:

- zero volt connection contact (load: 0.5 mA at 5 V) or
- semi-conductor switch (residual voltage < 0.7 V)

Pin	Function	5-wire cable	2-wire cable
1	Pause	brown	bridged at pin 4
2	Extern Contact	white	brown
3	-	blue	-
4	Ground mass	black	white
5	Auxiliary Frequency	grey	-



Refer to the Description of Functions for the hierarchy of functions and operation modes.

"Pause" function

The pump does not work if:

- the cable is connected and pin 1 and pin 4 are open.

The pump works if:

- the cable is connected and pin 1 and pin 4 are connected.
- no cable is connected.

"Extern Contact" operating mode

The pump performs one or more strokes if:

- Pin 2 and pin 4 are connected to each other for at least 20 ms. Pin 1 and pin 4 then also have to be connected to each other.

"Auxiliary frequency" operating mode:

The pump works at a preset stroke rate if:

- Pin 5 and pin 4 are connected to each other. Pin 1 and pin 4 then also have to be connected to each other. The auxiliary frequency is factory-preset to maximum stroke rate.

7.2.2 "Level Switch" Terminal

A 2-stage level switch with pre-warning and end switch-off can be connected.

Electrical interface

Specification	Value	Unit
Voltage with open contacts	5	V
Input resistance	10	kΩ

Activation via

- zero volt connection contact (load: 0.5 mA at 5 V) or
- semi-conductor switch (residual voltage < 0.7 V)

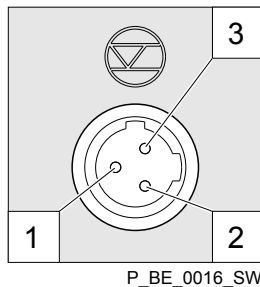


Fig. 7: Assignment on the pump

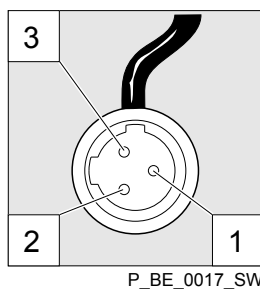


Fig. 8: Assignment on the cable

Pin	Function	3-wire cable
1	Ground mass	black
2	Minimum pre-warning	blue
3	Minimum end switch-off	brown

7.3 Relays

7.3.1 "Fault Indicating Relay" Output (Identity Code 1 + 3 or 4 + 5)

A fault indicating relay can be ordered as an option - refer to Ordering Information in the Appendix. It is used to emit a signal when there is a fault with the pump and with "Liquid level low, stage 1" warning alert and "Liquid level low stage 2" fault alert.

A cut-off relay works when there are fault alerts from the pump and in the event of the "Liquid level low stage 2" fault alert.

The fault indicating relay can be retrofitted and is operational once attached to the relay board - refer to "Retrofitting Relays" in the Appendix.

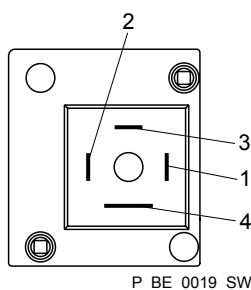


Fig. 9: Assignment on the pump

Electrical interface

Specification	Value	Unit
Maximum contact load at 230 V and 50/60 Hz:	8	A
Minimum mechanical lifespan:	200 000	Switching cycles

Identity code 1 + 3

To pin	VDE cable	Contact	CSA cable
1	white	NO (normally open)	white
2	green	NC (normally closed)	red
4	brown	C (common)	black

Identity code 4 + 5

To pin	VDE cable	Contact	Relays
1	yellow	NO (normally open)	Fault indicating relay
4	green	C (common)	Fault indicating relay
3	white	NO (normally open)	Pacing relay
2	brown	C (common)	Pacing relay

7.3.2 Output for Other Relays (Identity Code 4 + 5)

A fault indicating and a pacing relay can optionally be ordered - refer to Ordering Information in the Appendix. The pacing output is potentially-isolated by means of an optocoupler with a semiconductor switch. The second switch is a relay.

The fault indicating/pacing relay can be retrofitted and is operational once attached to the relay board - refer to "Retrofitting Relays" in the Appendix.

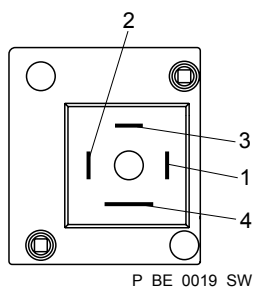


Fig. 10: Assignment on the pump

Electrical interface

for relay output:

Specification	Value	Unit
Maximum contact load at 24 V and 50/60 Hz:	0.1	A
Minimum mechanical lifespan:	200 000	Switching cycles

for semiconductor switch:

Specification	Value	Unit
Maximum residual voltage at $I_c = 1 \text{ mA}$	0.4	V
Maximum current	100	mA
Maximum voltage	24	VDC
Pacing pulse duration, approx.	100	ms

To pin	VDE cable	Contact	Relays
1	yellow	NO (normally open)	Fault indicating relay
4	green	C (common)	Fault indicating relay
3	white	NO (normally open)	Pacing relay
2	brown	C (common)	Pacing relay

8 Operation

8.1 Manual

Personnel: ■ Instructed personnel

8.1.1 Capacity

The capacity is determined by the stroke length and the stroke rate.

The stroke length is adjusted by the stroke length adjustment knob within a range of 0 ... 100 %. A stroke length of between 30 ... 100 % (SEK type: 50 ... 100 %) is recommended to achieve the specified reproducibility!

Specification	Value	Unit
Recommended stroke length, standard type	30 ... 100	%
Recommended stroke length, SEK type	50 ... 100	%

The stroke rate can be set within a range of 10 ... 100 % using the multifunctional switch.

8.1.2 Functions

The pump has the following functions:

"Pause" function

The pump can be remotely stopped via the "External Control" terminal. The "Pause" function only works via the "External Control" terminal.

"Stop" function

The pumps can be stopped by turning the multifunctional switch to "Stop" without disconnecting it from the mains power supply.

"Priming" function

Priming (transient conveyance at maximum frequency) can be provided by turning the multifunctional switch to "Test".

"Level switch" function

Information about the filling level in the feed chemical container is reported to the pump. To do so, a two-stage level switch must be fitted; it is connected to the "Level switch" terminal.

"Auxiliary frequency" function

Enables a freely selectable and programmable stroke rate to be switched on, which can be controlled via the "External Control" terminal. This auxiliary frequency has priority over the operating mode stroke rate settings. In the standard version, the "Auxiliary frequency" function is programmed to 100 % stroke rate.

8.1.3 Extern Contact

"Extern" operating mode:

In the Extern Contact operating mode, either a series of strokes can be triggered or an inbound series of contacts can be stepped down via the pulse control switch by a single contact on the "External control" terminal. To do so, the multifunctional switch has to be turned to "Extern".

Explanation of the stepped-down values:

Settable values	Incoming contacts	Strokes performed
1:1	1	1
1:2	2	1
1:4	4	1
1:8	8	1
1:16	16	1
1:32	32	1
1:64	64	1

Explanation of stepped-up values:

Settable values	Incoming contacts	Strokes performed
1:1	1	1
2:1	1	2
4:1	1	4
8:1	1	8
16:1	1	16
32:1	1	32
64:1	1	64

8.2 Remote Operation

There is an option to control the pump remotely via a signal cable - refer to your system documentation and to "Electrical Installation".

9 Maintenance



WARNING!

It is mandatory that you read the safety information and specifications in the "Storage, Transport and Unpacking" chapter prior to shipping the pump.



CAUTION!

Warning of feed chemical spraying around

Feed chemical can spray out of the hydraulic components if they are manipulated or opened due to pressure in the liquid end and adjacent parts of the system.

- Depressurise the system prior to undertaking any maintenance or repair work!

Standard liquid ends:

Interval	Maintenance task	Personnel
Quarterly*	■ Check the diaphragm for damage - refer to "Repair" ■ Check the leakage hole for escaping feed chemical ■ Check that the dosing lines are fixed firmly to the liquid end ■ Check that the suction valve and discharge valve are tight ■ Check the tightness of the entire liquid end - particularly around the leakage hole Fig. 11! ■ Check that the flow is correct: Allow the pump to prime briefly - turn the multifunctional switch briefly to "Test" ■ Check that the electrical connections are intact ■ Check that the dosing head screws are tight	Technical personnel

* under normal loading (approx. 30 % of continuous operation)

Under heavy loading (e.g. continuous operation): Shorter intervals.

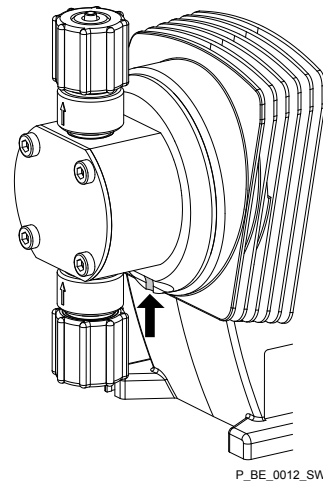


Fig. 11: Leakage hole

Liquid ends with bleed valve:

Interval	Maintenance task	Personnel
Quarterly*	In addition: ■ Check that the bypass line is fixed firmly to the liquid end ■ Check that the bleed valve is tight ■ Check the discharge and bypass line for kinks ■ Check that the bleed valve is operating correctly	Technical personnel

* under normal loading (approx. 30 % of continuous operation)

Under heavy loading (e.g. continuous operation): Shorter intervals.

Tightening torque

Specification	Value	Unit
Tightening torque for screws:	4.5 ... 5.0	Nm

10 Repair

Safety information



WARNING!

Danger of an electric shock

Unauthorised repairs inside the pump can result in an electric shock.

For this reason repairs inside the pump may only be performed by a ProMinent branch or representative, in particular the following:

- Replacement of damaged mains connection lines
- Replacement of fuses
- Replacement of electrical controller



WARNING!

It is mandatory that you read the safety information and specifications in the "Storage, Transport and Unpacking" chapter prior to shipping the pump.



WARNING!

Contact with the feed chemical

Parts that come into contact with the feed chemical become uncovered and touched during repairs.

- Protect yourself from the feed chemical should it be hazardous. Read the safety data sheet on the feed chemical.



CAUTION!

Warning of feed chemical spraying around

Feed chemical can spray out of the hydraulic components if they are manipulated or opened due to pressure in the liquid end and adjacent parts of the system.

- Depressurise the system prior to undertaking any maintenance or repair work!

10.1 Cleaning Valves

Personnel: ☐ Technical personnel



NOTICE!

Warning of faulty operation

The exploded views in the Appendix should be referred to when working on the unit.

Cleaning a discharge valve or a suction valve on types (PP, PV, NP) 1000, 1601, 1602, 1604, 2504



NOTICE!

- Discharge and suction valves differ from each other! Only take them apart one after each other, so that you do not confuse the components!
- Only use new components which fit your valve - both in terms of shape and chemical resistance!
- Recalibrate the pump after replacing a valve!
- Using an Allen key or similar, insert it into the smaller hole of the discharge connector and push the valve inserts out of it.

A suction valve is constructed in almost the same way as a discharge valve.

Please note, however, that:

- The two valve inserts are identical here
- There is an additional spacer between the valve inserts
- There is a shaped seal in the dosing head instead of an O-ring
- The flow direction of the suction connector is the opposite of that of the discharge connector

Cleaning a discharge valve or a suction valve on types (PP, PV, NP) 0708, 1008, 0220, 04204, 0413, 0713, 0232



NOTICE!

- Discharge and suction valves differ from each other! Only take them apart one after each other, so that you do not confuse the components!
- Only use new components which fit your valve - both in terms of shape and chemical resistance!
- On the PVT material version, the ball seat is integrated in the dosing head and so has to be cleaned separately!
- On the PVT material version, the discharge valve is a double ball valve!
- Using an Allen key or similar, insert it into the smaller hole of the discharge connector and push the valve inserts out of it.

A suction valve is constructed in almost the same way as a discharge valve.

Please note, however, that:

- The flow direction of the suction connector is the opposite of that of the discharge connector

10.2 Replacing the Diaphragm



WARNING!

A few cubic centimetres of feed chemical may have accumulated behind the diaphragm in the backplate following a leak - depending on the design!

- Take this feed chemical into consideration when you are planning a repair - especially if it is hazardous!

Personnel: ■ Technical personnel

- If necessary take protective measures.
 - Read the safety data sheet on the feed chemical.
 - Depressurise the system.
1. ► Empty the liquid end (turn the liquid end upside down and allow the feed chemical to run out; flush out with a suitable medium; flush the liquid end thoroughly when using hazardous feed chemicals!)
 2. ► Turn the stroke adjustment knob until it can go no further at 0 % stroke length if the pump is running (the drive shaft is then difficult to turn).
 3. ► Switch off the pump.
 4. ► Unscrew the hydraulic connectors on the discharge and suction side.
 5. ► With PP types with bleed valve: Firstly remove the bleed valve (star handle), then lift off the cover of the liquid end with a screwdriver.
 6. ► Remove the screws (1).
 7. ► Loosen the dosing head (2) and the backplate (4) from the pump housing (6) - but only loosen!
 8. ► Hold the pump housing (6) with one hand and clamp the diaphragm (3) with the other hand between the dosing head (2) and the backplate (4).
 9. ► Loosen the diaphragm (3) from the drive shaft with a gentle backwards turn of the dosing head (2), diaphragm (3) and backplate (4) in an anticlockwise direction.
 10. ► Unscrew the diaphragm (3) completely from the drive shaft.
 11. ► Remove the backplate (4) from the pump housing (6).
 12. ► Check the condition of the safety diaphragm (5) and replace if necessary.
 13. ► Push the safety diaphragm (5) onto the drive shaft only until it lies flush with the pump housing (6) and no further!
 14. ► Tentatively screw the new diaphragm (3) onto the drive shaft until its stop position.
 - ⇒ The diaphragm (3) is now sitting at the end position of the thread.
 15. ► Should this not work, remove dirt or swarf out of the threads and screw the diaphragm (3) onto the drive shaft correctly this time.

**NOTICE!**

The diaphragm must be screwed exactly onto the drive shaft otherwise the pump will subsequently not dose correctly!

16. Unscrew the diaphragm (3) again.

17. Place the backplate (4) onto the pump housing (6).

**NOTICE!**

- The leakage hole must point downwards when the pump is later installed - Fig. 12!
- Place the backplate (4) immediately into the correct position on the pump housing (6)! Do not twist the backplate on the pump housing so that the safety diaphragm (5) becomes warped!

18. Place the diaphragm (3) into the backplate (4).

**NOTICE!**

- Do not overtighten the diaphragm (3) in the following step!
- The backplate (4) must remain in its position so that the safety diaphragm does not become warped!

19. Hold the backplate (4) firmly and screw the diaphragm (3) in a clockwise direction until it is sitting tightly (the twisting resistance of the retaining spring can be felt).

20. Set the stroke length to 100 %.

21. Place the dosing head (2) with the screws (1) onto the diaphragm (3) and the backplate (4) - the suction connector must be pointing downwards when the pump is later installed.

22. Gently tighten the screws (1) and then further tighten cross-wise. See below for tightening torque.

23. With PP types with bleed valve: Allow the cover of the liquid end to rest in the dosing head, then press the star handle of the bleed valve into the dosing head.

**NOTICE!**

- Check the tightening torque of the screws after 24-hours of operation!
- With PP dosing heads, recheck the tightening torque again after three months!

Specification	Value	Unit
Tightening torque for the screws	4.5 ... 5.0	Nm

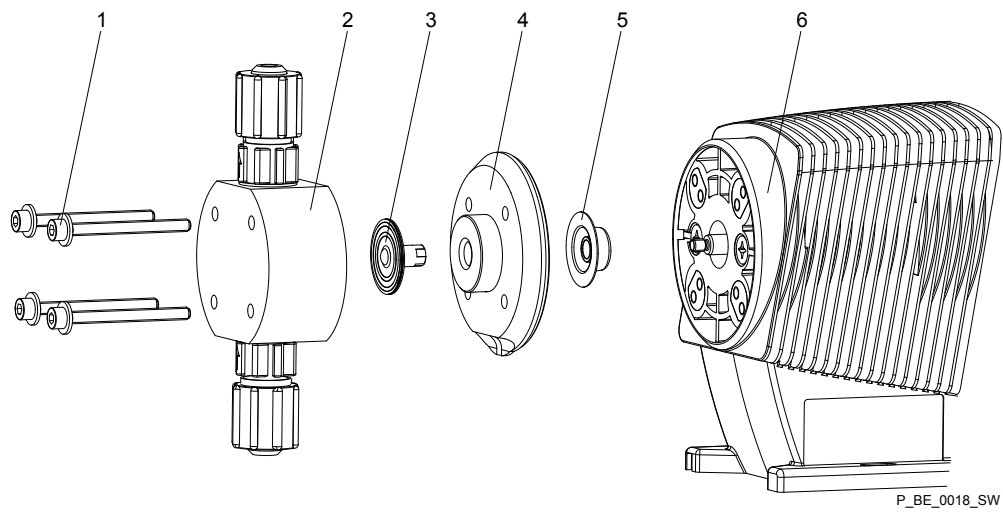


Fig. 12: Exploded view of liquid end

11 Troubleshooting

Safety information



WARNING!

Warning of hazardous or unknown feed chemical

Should a hazardous or unknown feed chemical be used, it may escape from the hydraulic components when working on the pump.

- Take appropriate protective measures before working on the pump (protective eyewear, protective gloves, ...). Read the safety data sheet on the feed chemical.
- Drain and flush the liquid end before working on the pump.



CAUTION!

Warning of feed chemical spraying around

Feed chemical can spray out of the hydraulic components if they are manipulated or opened due to pressure in the liquid end and adjacent parts of the system.

- Depressurise the system prior to undertaking any maintenance or repair work!

11.1 Faults without Fault Alert

Error description	Cause	Solution	Personnel
Pump does not prime in spite of full stroke motion and bleeding	Minor crystal-line deposits on the ball seat due to the valves drying out	Take suction tube out of the storage container and thoroughly flush out the liquid end	Technical personnel
	Major crystal-line deposits on the ball seat due to the valves drying out	Dismantle the valves and clean them - refer to "Repair"	Technical personnel
Fluid is escaping from the backplate	The screws in the dosing head are too loose	Tighten the screws in the dosing head crosswise - refer to "Repair" for tightening torque	
	The diaphragm is not tight	Replace the diaphragm - refer to "Repair"	Technical personnel
Green LED indicator (operating indicator) does not light up	The wrong mains voltage or no mains voltage is connected	Connect the pump correctly to the specified mains voltage - according to the specification on the nameplate	Electrician

11.2 Fault Alerts

Error description	Cause	Solution	Personnel
Red LED indicator (fault indicator) lights up and the pump stops	The fluid level in the feed tank has reached "low liquid level stage 2"	Fill the feed tank	Instructed personnel
	The multifunctional switch is not turned to "Extern" but an external cable is connected and the pump has the identity code feature "Controller type" - "1" "with lock".	Either turn the multifunctional switch to "Extern" or remove the Extern cable from the pump	Technical personnel

11.3 Warning Alerts

Error description	Cause	Solution	Personnel
Yellow LED indicator (warning indicator) lights up	The fluid level in the feed tank has reached "low liquid level stage 1"	Fill the feed tank	Instructed personnel

11.4 All Other Faults

Please contact the responsible ProMinent branch or representative!

12 Decommissioning

Decommissioning

**WARNING!****Danger from chemical residues**

There is normally chemical residue in the liquid end and on the housing after operation. This chemical residue could be hazardous to people.

- It is mandatory that the safety information relating to the "Storage, Transport and Unpackaging" chapter is read before shipping or transporting the unit.
- Thoroughly clean the liquid end and the housing of chemicals and dirt. Read the safety data sheet on the feed chemical.

**WARNING!****Warning of hazardous or unknown feed chemical**

Should a hazardous or unknown feed chemical be used, it may escape from the hydraulic components when working on the pump.

- Take appropriate protective measures before working on the pump (protective eyewear, protective gloves, ...). Read the safety data sheet on the feed chemical.
- Drain and flush the liquid end before working on the pump.

**CAUTION!****Warning of feed chemical spraying around**

Feed chemical can spray out of the hydraulic components if they are manipulated or opened due to pressure in the liquid end and adjacent parts of the system.

- Depressurise the system prior to undertaking any maintenance or repair work!

**NOTICE!****Danger of damage to the device**

Take into account the information on storage, transportation and unpacking if the system is decommissioned for a temporary period.

Personnel: ■ Technical personnel

1. ➞ Disconnect the pump from the mains power supply.
2. ➞ Empty the liquid end by turning the pump upside down and allowing the feed chemical to run out.
3. ➞ Flush the liquid end with a suitable medium; flush the dosing head thoroughly when using hazardous feed chemicals!

Disposal

Personnel: ■ Technical personnel



CAUTION!

Environmental hazard due to electronic waste

There are electronic components in the pump, which can have a toxic effect on the environment.

- Separate the electronic components from the remaining parts.
- Note the pertinent regulations currently applicable in your country!

For Germany: The cleaned used parts can be disposed of at municipal waste collection points. Should you be unable to locate a municipal waste collection point - ProMinent head office will take back the cleaned used parts at a small charge - providing that they are covered by adequate postage.

13 Technical Data

13.1 Performance Data

Beta® b operating at 180 strokes/minute and 100 % stroke length

Type	Minimum flow rate at maximum counter pressure			Minimum flow rate at medium counter pressure			Connector size äØ x iØ	Suction lift*	Priming lift**	Maximum priming pressure on suction side
	bar	l/h	ml/stroke	bar	l/h	ml/stroke	mm	m WS	m WS	bar
Beta®										
1000	10	0.74	0.069	5.0	0.82	0.076	6x4	6.0	1.8	8
0700	7	0.8	0.074	3.5	0.8	0.074	6x4	6.0	1.8	8
0400	4	0.84	0.078	2.0	0.84	0.078	6x4	6.0	1.8	8
2001	20	0.96	0.089	10	1.5	0.13	6x3	6.0	2.0	8
1601	16	1.1	0.10	8.0	1.40	0.13	6x4	6.0	2.0	8
1001	10	1.3	0.12	5.0	1.5	0.14	6x4	6.0	2.0	8
0701	7	1.4	0.13	3.5	1.5	0.14	6x4	6.0	2.0	8
0401	4	1.5	0.14	2.0	2.0	0.18	6x4	6.0	2.0	8
2002	20	1.7	0.16	10	2.8	0.26	6x3	6.0	2.5	5.5
1602	16	2.2	0.20	8.0	2.50	0.24	6x4	6.0	2.5	5.5
1002	10	2.4	0.22	5.0	2.8	0.26	6x4	6.0	2.5	5.5
0702	7	2.6	0.24	3.5	3.1	0.29	6x4	6.0	2.5	5.5
0402	4	2.8	0.26	2.0	3.9	0.36	6x4	6.0	2.5	5.5
1604	16	3.6	0.33	8.0	4.3	0.40	6x4	6.0	3.0	3
1004	10	3.9	0.36	5.0	4.7	0.44	6x4	5.0	3.0	3
0704	7	4.2	0.39	3.5	5.1	0.47	6x4	5.0	3.0	3
0404	4	4.5	0.42	2.0	5.6	0.52	6x4	5.0	3.0	3
0708	7	7.1	0.66	3.5	8.40	0.78	8x5	6.0	2.0	2
0408	4	8.3	0.77	2	10.0	0.93	8x5	4.0	2.0	2
0413	4	12.3	1.14	2.0	14.2	1.31	8x5	3.0	2.5	1.5
0220	2	19.0	1.76	1.0	20.9	1.94	12x9	2.0	2.0	1
2504	25	2.9	0.27	12.5	3.7	0.34	8x4 ¹	4.0	3.0	3
1008	10	6.8	0.63	5.0	8.3	0.76	8x5	3.0	3.0	2
0713	7	11.0	1.02	3.5	13.1	1.21	8x5	3.0	3.0	1.5
0420	4	17.1	1.58	2.0	19.1	1.77	12x9	3.0	3.0	1
0232	2	32.0	2.96	1.0	36.2	3.35	12x9	2.0	3.0	0.8
Beta® b dosing pumps with self-bleeding dosing head SEK***										
1601	16	0.59	0.055	8.0	0.80	0.072	6x4	6.0	2.0	0.5

Type	Minimum flow rate at maximum counter pressure			Minimum flow rate at medium counter pressure			Connector size ãØ x iØ	Suction lift*	Priming lift**	Maximum priming pressure on suction side
	bar	l/h	ml/ stroke	bar	l/h	ml/ stroke				
1001	10	0.72	0.067	5.0	0.60	0.08	6x4	6.0	2.0	0.5
0701	7	0.84	0.078	3.5	1.12	0.10	6x4	6.0	2.0	0.5
0401	4	0.9	0.083	2.0	1.2	0.11	6x4	6.0	2.0	0.5
2002	20	0.78	0.07	10.0	1.8	0.17	6x4	6.0	2.5	0.5
1602	16	1.40	0.13	8.0	1.74	0.174	6x4	6.0	2.5	0.5
1002	10	1.7	0.16	5.0	2.0	0.18	6x4	6.0	2.5	0.5
0702	7	1.8	0.17	3.5	2.2	0.20	6x4	6.0	2.5	0.5
0402	4	2.1	0.19	2.0	2.5	0.23	6x4	6.0	2.5	0.5
1604	16	2.7	0.25	8.0	3.6	0.33	6x4	6.0	3.0	0.5
1004	10	3.3	0.30	5.0	3.9	0.36	6x4	6.0	3.0	0.5
0704	7	3.6	0.33	3.5	4.0	0.37	6x4	6.0	3.0	0.5
0404	4	3.9	0.36	2.0	4.2	0.39	6x4	6.0	3.0	0.5
0708	7	6.60	0.61	3.5	7.50	0.69	8x5	4.0	2.0	0.5
0408	4	7.5	0.64	2.0	8.1	0.77	8x5	4.0	2.0	0.5
0413	4	10.8	1.0	2.0	12.6	1.17	8x5	3.0	2.5	0.5
0220	2	16.2	1.5	1.0	18.0	1.67	12x9	2.0	2.0	0.5
1008	10	6.3	0.58	5.0	7.5	0.69	8x5	3.0	3.0	0.5
0713	7	10.5	0.97	3.5	12.3	1.14	8x5	2.5	2.5	0.5
0420	4	15.6	1.44	2.0	17.4	1.61	12x9	2.5	2.5	0.5

* - Suction lift with a filled suction line and filled liquid end. With self-bleeding dosing head with air in the suction line.

** - Priming lift with clean and moist valves. Priming lift at 100 % stroke length and free flow or opened bleed valve.

*** - The given performance data constitutes guaranteed minimum values, calculated using medium water at room temperature. The bypass connection with a self-bleeding dosing head is 6x4 mm.

¹ - The connector width is 6 mm on SST material versions.

Beta[®] dosing pumps for higher-viscosity media (HV) have a 10-20 % lower capacity and are not self-priming. Connector G 3/4-DN 10 with tube nozzle d16-DN10.

13.2 Accuracy

13.2.1 Standard Liquid End

Specification	Value	Unit
Capacity range of the series	-5 ... +10	% *
Reproducibility	±2	% **

* - at max. stroke length and max. operating pressure for all material versions

** - at constant conditions and min. 30 % stroke length

13.2.2 Self-Bleeding Liquid End

As the self-bleeding liquid end is used with outgassing media and when operating with air bubbles, no dosing accuracy or reproducibility can be provided.

The recommended minimum stroke length with self-bleeding dosing pumps is 50 %.

13.3 Viscosity

The liquid ends are suitable for the following viscosity ranges:

Version	Range	Unit
standard	0 ... 200	mPas
With valve springs	200 ... 500	mPas
Self-bleeding (SEK)	0 ... 50	mPas
HV (highly viscous)	500 ... 3000*	mPas

* Only when the installation is correctly adjusted

13.4 Material Data

Standard liquid ends

Version	Dosing head	Suction/ Discharge connector	Seals	Valve balls
PPE	Polypropylene	Polypropylene	EPDM	Ceramic
PPB	Polypropylene	Polypropylene	FPM	Ceramic
PPT	Polypropylene	PVDF	PTFE	Ceramic
NPE	Acrylic glass	PVC	EPDM	Ceramic
NPB	Acrylic glass	PVC	FPM	Ceramic
NPT	Acrylic glass	PVDF	PTFE	Ceramic
PVT	PVDF	PVDF	PTFE	Ceramic
TTT	PTFE with carbon	PTFE with carbon	PTFE	Ceramic
SST	Stainless steel 1.4404	Stainless steel 1.4404	PTFE	Ceramic

Only the self-bleeding version in PPE, PPB, NPE and NPB material models with a valve spring made of hastelloy C and a valve insert made of PVDF. Diaphragm with a PTFE coating.

FPM = fluororubber

Pump

Housing parts: polyphenyl ether (PPE with fibreglass)

13.5 Electrical Data

Version: 100 - 230 V $\pm 10\%$, 50/60 Hz, Beta®/ 4b

Specification	Value	Unit
Power rating, approx.	6.4 ... 15.2	W
Current I _{eff}	0.45 ... 0.1	A
Peak current	4.2 ... 1.3	A
Switch on peak current (within approx. 50 ms decaying)	15	A
Fuse*	0.8	AT

Version: 100 - 230 V $\pm 10\%$, 50/60 Hz, Beta® / 5b

Specification	Value	Unit
Power rating, approx.	19 ... 21	W
Current I _{eff}	0.71 ... 0.28	A
Peak current	5.9 ... 2.3	A
Switch on peak current (within approx. 50 ms decaying)	15	A
Fuse*	0.8	AT

* Fuses must have VDE, UL and CSA certification. e.g. type 19195 manufactured by Wickmann in compliance with IEC Publ. 127 - 2/3.

Power consumption

Type	Capacity W	Type	Capacity W	Type	Capacity W
1000	7.2	1602	11.2	0408	12.7
0700	6.4	1002	10.4	0413	15.2
0400	5.7	0702	9.3	0220	15.2
2001	10.5	0402	7.9	2504	19.2
1601	9.6	1604	15.2	1008	19.2
1001	8.3	1004	12.7	0713	19.2
0701	7.5	0704	11.1	0420	19.2
0401	6.9	0404	9.5	0232	22.6
2002	13.5	0708	15.2		

13.6 Ambient Conditions

13.6.1 Temperatures

Pump, compl.

Specification	Value	Unit
Storage and transport temperature	-20 ... +60	°C
Ambient temperature in operation (drive and controller):	-10 ... +45	°C

PPT liquid end

Specification	Value	Unit
Max. temperature long-term at max. operating pressure	45	°C
Max. temperature for 15 min at max. 2 bar	100	°C
Minimum temperature	-10	°C

NPT liquid end

Specification	Value	Unit
Max. temperature long-term at max. operating pressure	45	°C
Max. temperature for 15 min at max. 2 bar	60	°C
Minimum temperature	-10	°C

PVT liquid end

Specification	Value	Unit
Max. temperature long-term at max. operating pressure	45	°C
Max. temperature for 15 min at max. 2 bar	120	°C
Minimum temperature	-10	°C

TTT liquid end

Specification	Value	Unit
Max. temperature long-term at max. operating pressure	45	°C
Max. temperature for 15 min at max. 2 bar	120	°C
Minimum temperature	-10	°C

SST liquid end

Specification	Value	Unit
Max. temperature long-term at max. operating pressure	45	°C
Max. temperature for 15 min at max. 2 bar	120	°C
Minimum temperature	-10	°C

13.6.2 Climate

Specification	Value	Unit
Maximum air humidity *:	95	% rel. humidity

* non-condensing

Exposure in a humid and alternating climate:

FW 24 according to DIN 50016 (the standard was withdrawn in 2007).

13.7 Protection class and Safety Requirements

Degree of protection

Protection against contact and humidity:

IP 65 in accordance with IEC 529, EN 60529, DIN VDE 0470 Part 1

Safety requirements

Degree of protection:

1 - mains power connection with protective earth conductor

13.8 Compatibility

Some hydraulic parts of the Beta[®] b are identical to those of the Beta[®] a, gamma/ L and delta[®].

There is most compatibility with pumps of the Beta[®] a, gamma/ L and delta[®] series with the following components and accessories:

- Signal cable gamma/Vario 2-, 4- and 5-wire for the "Extern" function
- Level switch 2-stage (gamma / Vario / Beta[®])
- Dosing line cross-sections
- Standard gamma connector kit
- Chemical feed container
- Overall height (distance between the suction and discharge connector)
- Same use of accessories, such as back pressure valves, multi-functional valves, dosing monitor and flushing equipment

13.9 Sound Pressure Level

Sound Pressure Level

The sound pressure level is < 70 dB (A)

at a maximum stroke length, maximum stroke rate, maximum counter pressure (water) according to:

DIN EN 12639 (Noise testing on liquid pumps).

13.10 Shipping Weight

Shipping weight of Beta[®] b types in kg

Material	BT4b						BT5b		
	1000, 0700, 0400	2001, 1601, 1001, 0701, 0401	2002, 1602, 1002, 0702, 0402	1604, 1004, 0704, 0404	0708, 0408, 0413	0220	2504, 1008, 0713	0420	0232
PP, NP, PV, TT	2.5	2.9	2.9	3.1	3.1	3.3	4.5	4.7	5.1
SS	3.0	3.6	3.6	3.9	3.9	4.4	5.3	5.8	6.6

14 Appendix

14.1 Dimensional Drawings

Dimensional drawing of Beta[®] b, PP material version

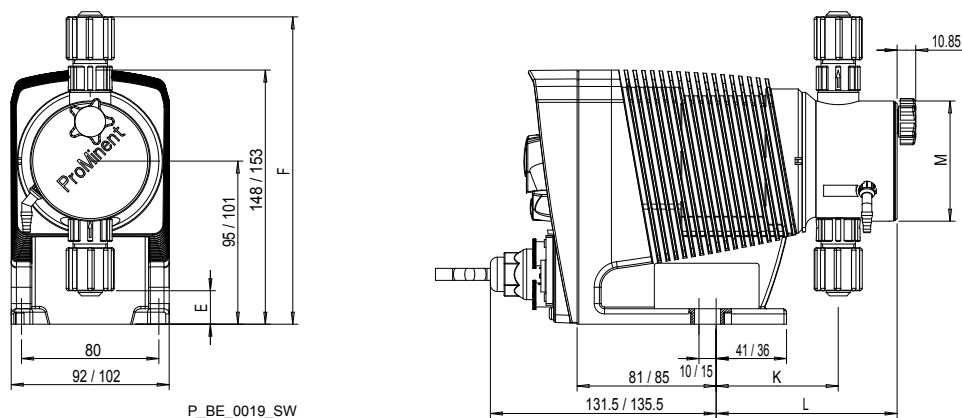


Fig. 13: Dimensional drawing of Beta[®] BT4b/BT5b, PP material version - dimensions in mm

	1000 - 1604	0708 - 0220	1008 - 0420	0232
E	19.5	7	14	1.5
F	179	186.5	191.5	200.5
K	71	77.5	74	77.5
L	105.5	111	107.5	94.5
M	Ø 70	Ø 90	Ø 90	Ø 110

Dimensional drawing of Beta® b, NP material version

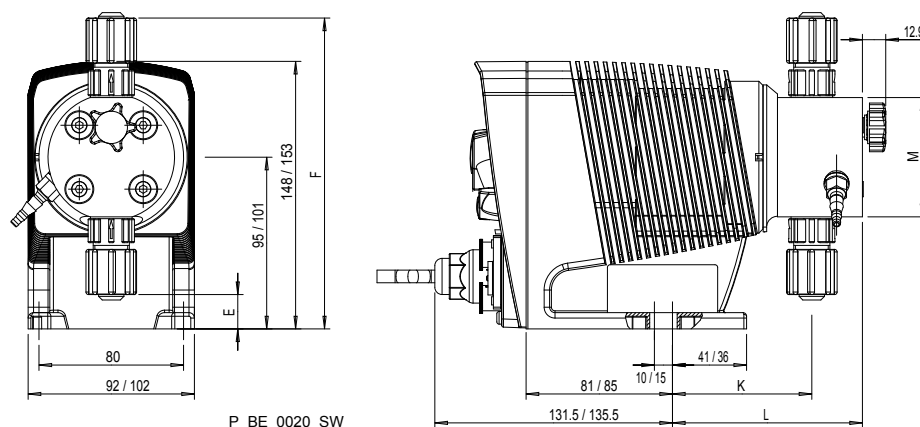


Fig. 14: Dimensional drawing of Beta® BT4b/BT5b, NP material version - dimensions in mm

	1000 - 1604	0708 - 0220	2504	1008 - 0420	0232
E	19	7.2	24.5	14	3.2
F	172	183	178.5	188	199
K	77	77.5	77	74	76
L	105	105.5	105	102	104.5
M	Ø 70	Ø 90	Ø 70	Ø 90	Ø 110

Dimensional drawing of Beta® b, PP and NP SEK material version

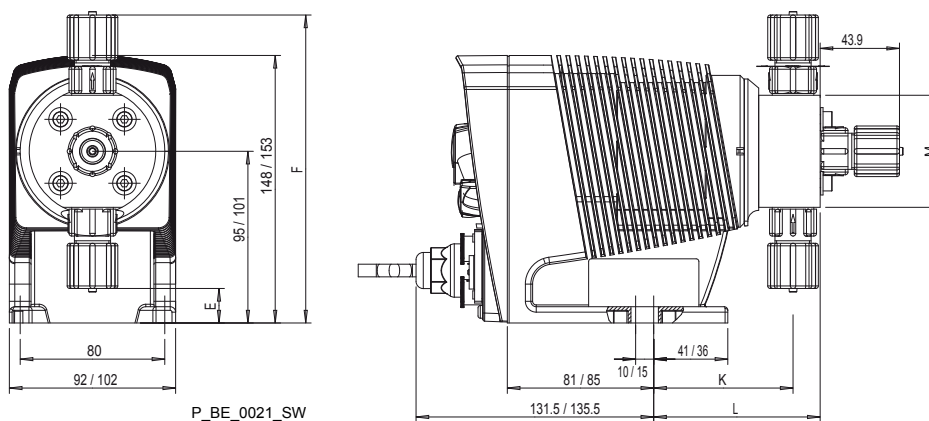


Fig. 15: Dimensional drawing of Beta® BT4b/BT5b, PP and NP material versions with self-bleeding dosing head SEK - dimensions in mm

	1604	0708 - 0220	1008 - 0232
E	19	7.5	13.5
F	170.5	182.5	188.5
K	77	74	74
L	92	105.5	89
M	Ø 70	Ø 90	Ø 90

Dimensional drawing of Beta® b, PV material version

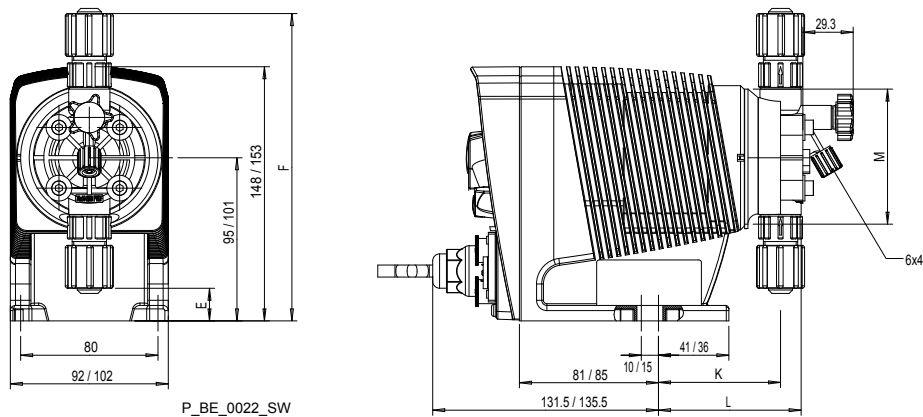


Fig. 16: Dimensional drawing of Beta® BT4b/BT5b, PV material version - dimensions in mm

	1604	0708 - 0220	1008 - 0420	0232
E	19	8	14	3.2
F	179	185.5	191.5	199
K	71	73	73	76
L	83	90	90	93
M	Ø 70	Ø 90	Ø 90	Ø 110

Dimensional drawing of Beta® b, PV HV material version

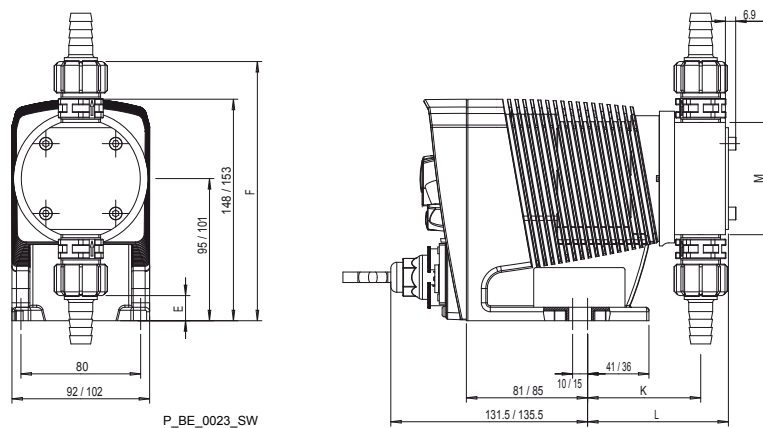


Fig. 17: Dimensional drawing of Beta® BT4b/BT5b, PV material version for highly viscous feed chemicals - dimensions in mm

	1604	0708 - 0220	1008 - 0713	0420
E	17	13	22.8	19
F	173	177	179.2	183
K	75.5	77	75.5	78.5
L	94	95	94	96.5
M	Ø 80	Ø 85	Ø 85	Ø 85

Dimensional drawing of Beta® b, TT material version

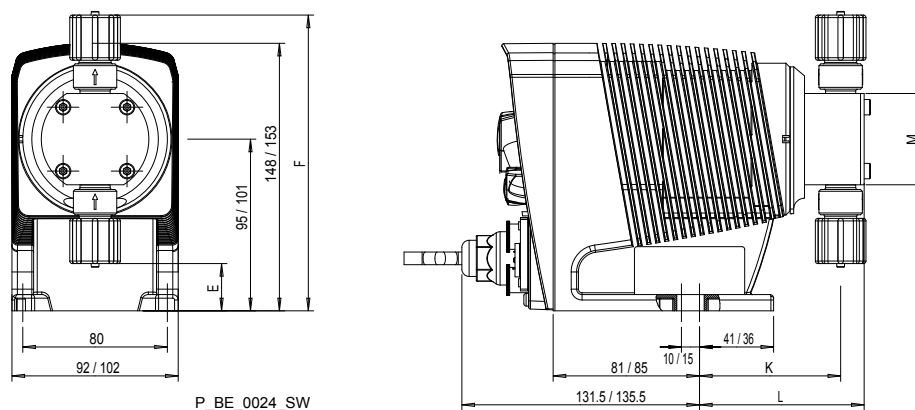


Fig. 18: Dimensional drawing of Beta® BT4b/BT5b, TT material version - dimensions in mm

	1000 - 1601	1602 - 1604	0708 - 0220	1008 - 0420	0232
E	26	21.5	-13	-7.2	-15.2
F	164	169	203	208.7	216.7
K	78	72	77	77	78
L	91	86	94	94	97
M	Ø 60	Ø 70	Ø 85	Ø 85	Ø 100

Dimensional drawing of Beta® b, SS material version

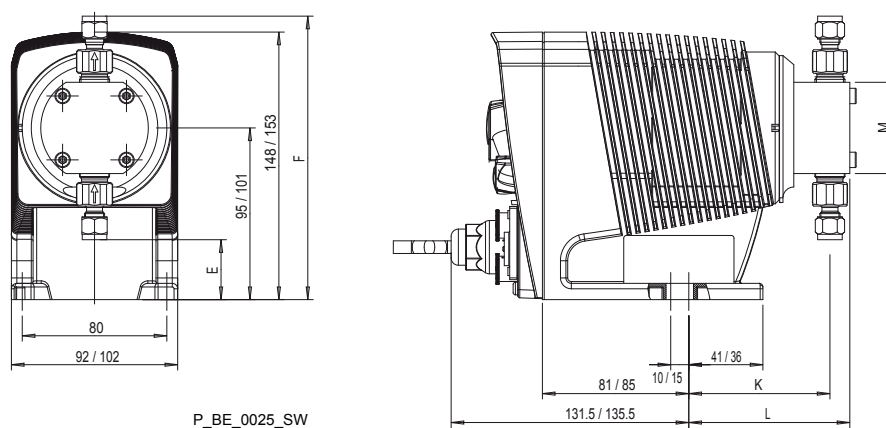


Fig. 19: Dimensional drawing of Beta® BT4b/BT5b, SS material version - dimensions in mm

	1000 - 1601	1602 - 1604	0708 - 0220	2504	1008 - 0420	0232
E	33	24.5	-8	31.7	-1.8	-8
F	157	165.5	197.5	170.4	203.3	210
K	78	75	82	72	77	78
L	89	87	97	84	92	95
M	Ø 60	Ø 70	Ø 85	Ø 70	Ø 85	Ø 110

14.2 Diagrams for Setting the Capacity

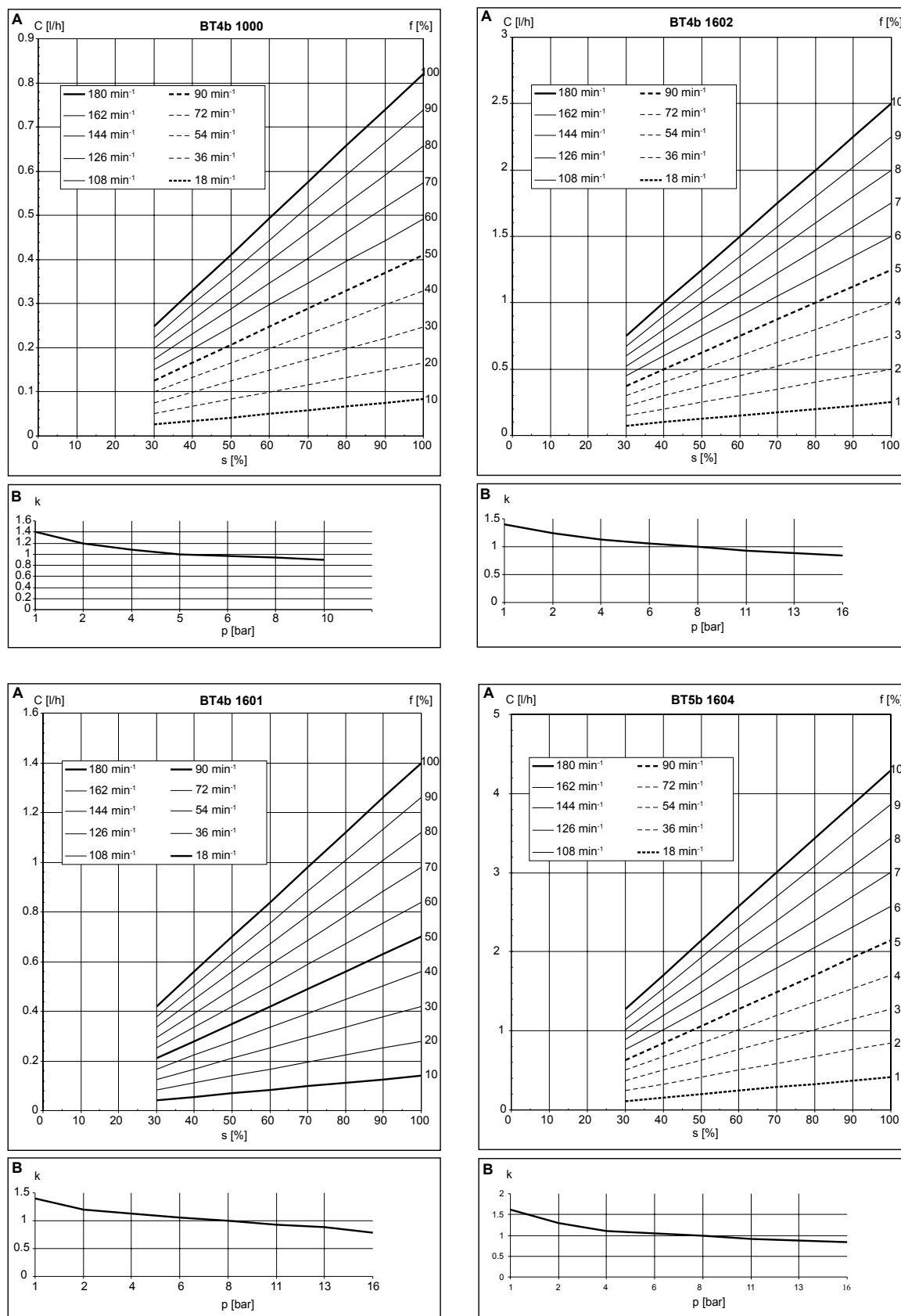


Fig. 20: A) Capacity C at medium counter pressure according to the stroke length s for different stroke rates f . B) Associated correction factors k according to the counter pressure p .

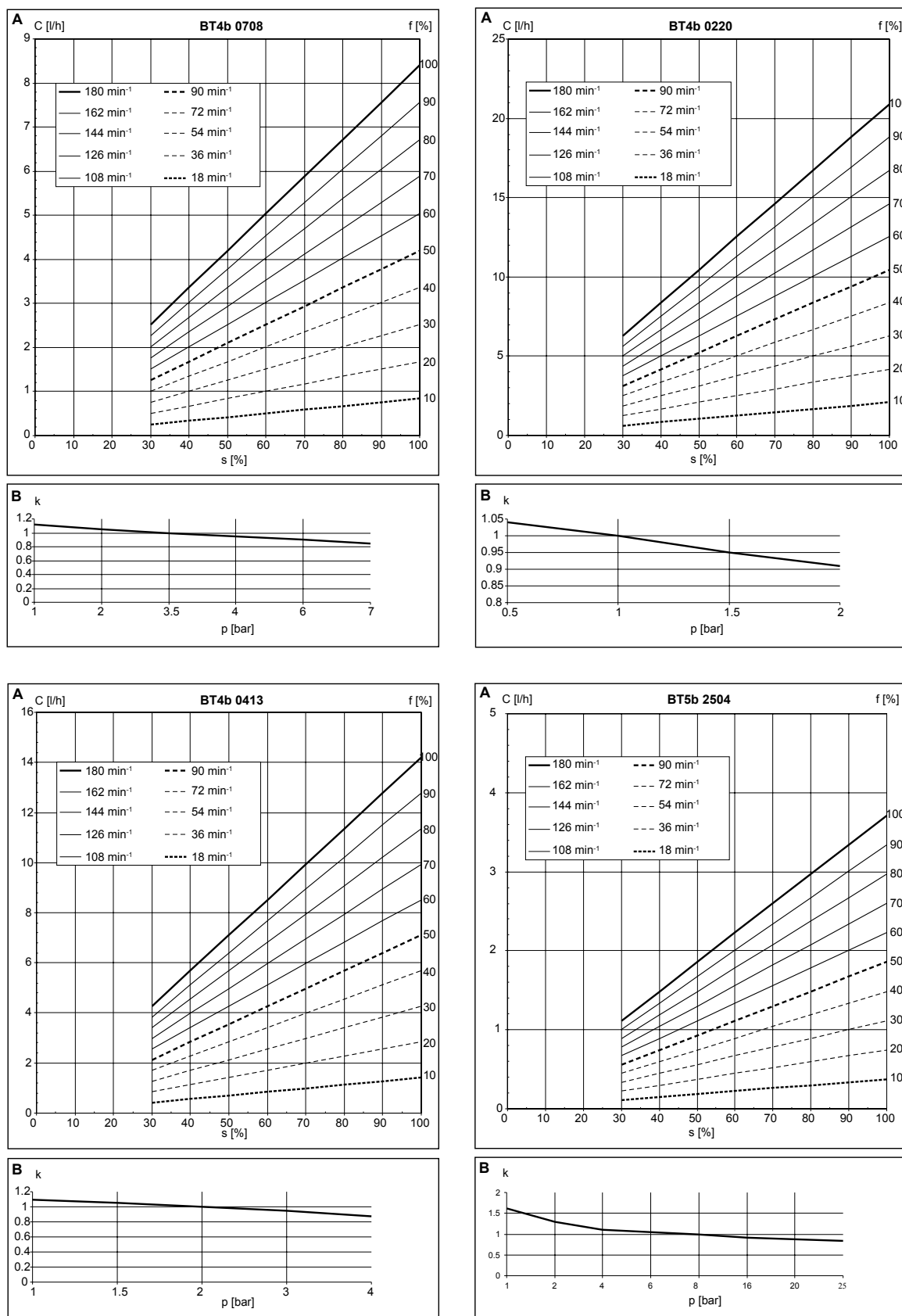


Fig. 21: A) Capacity C at medium counter pressure according to the stroke length s for different stroke rates f . B) Associated correction factors k according to the counter pressure p .

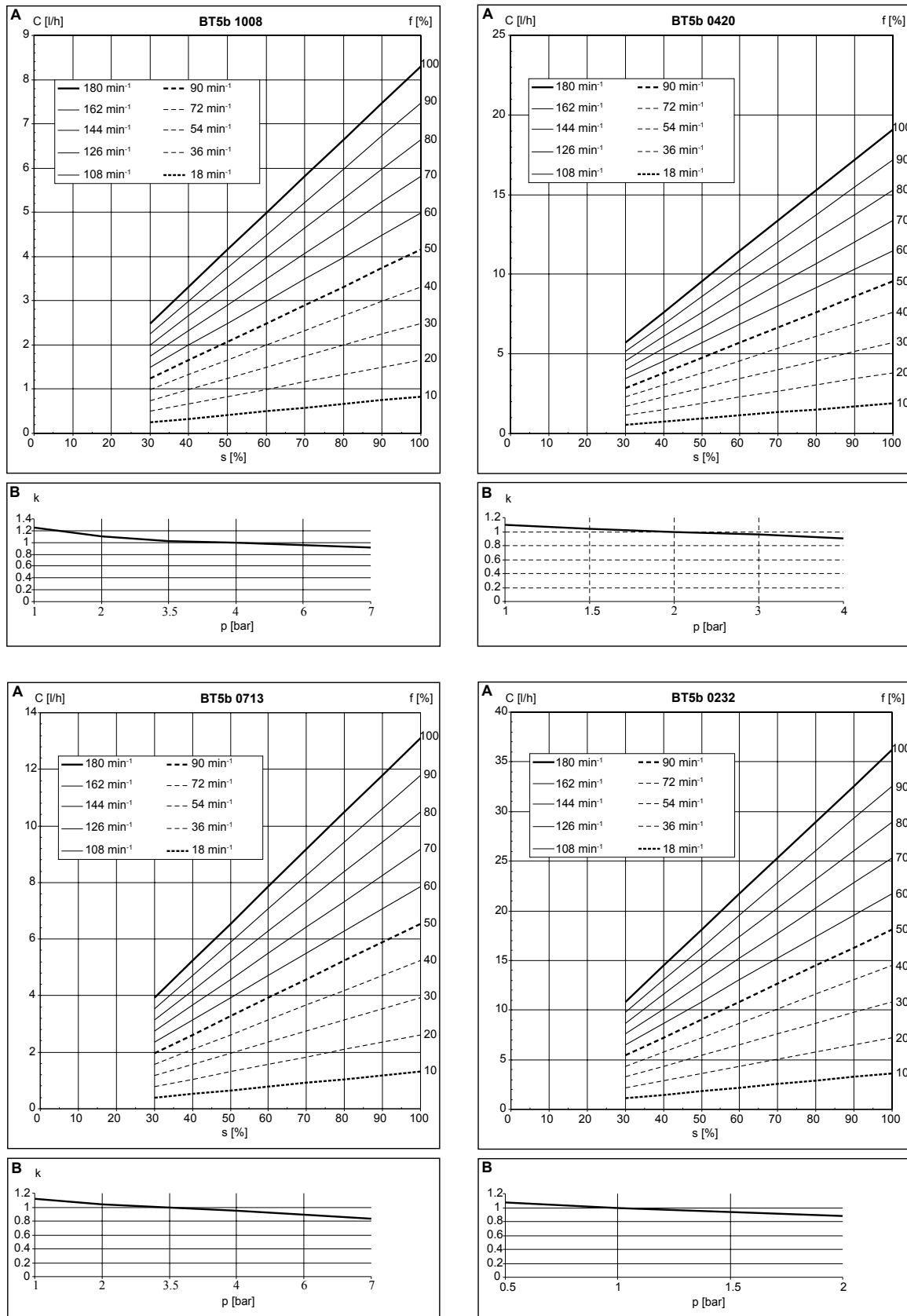


Fig. 22: A) Capacity C at medium counter pressure according to the stroke length s for different stroke rates f . B) Associated correction factors k according to the counter pressure p .

14.3 Exploded Views of Liquid Ends

Beta® 1000 - 1604 PP liquid end with bleed valve

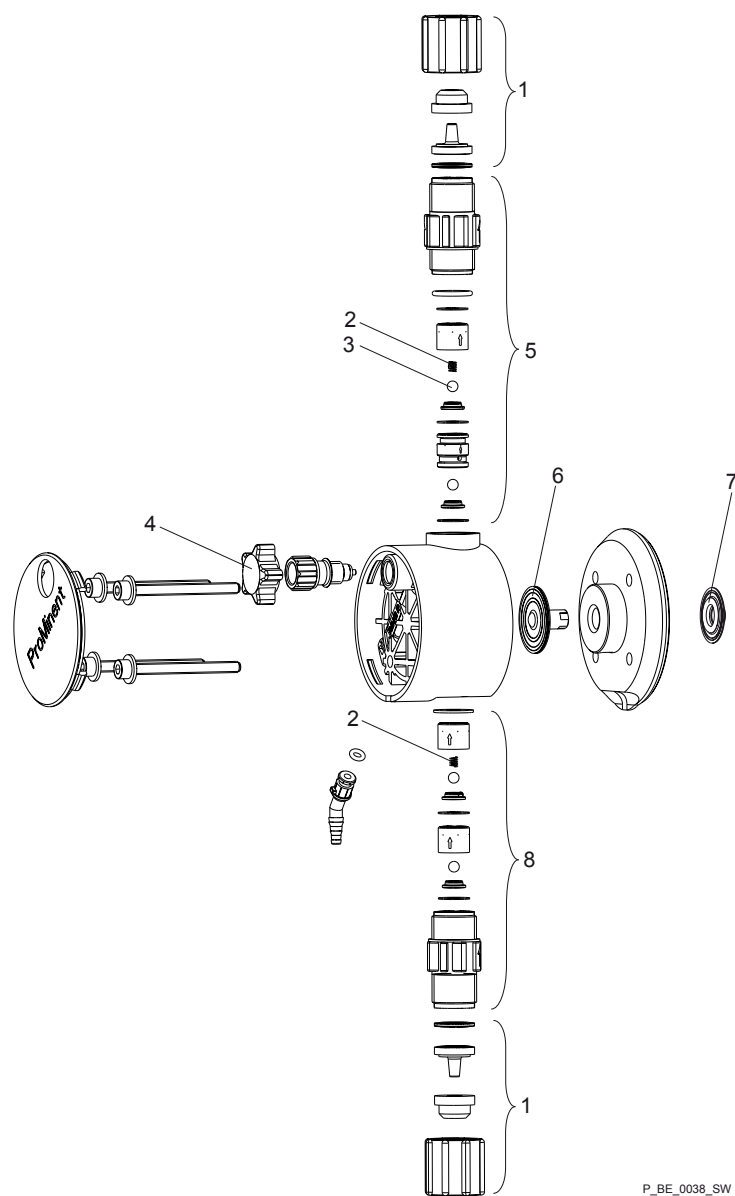
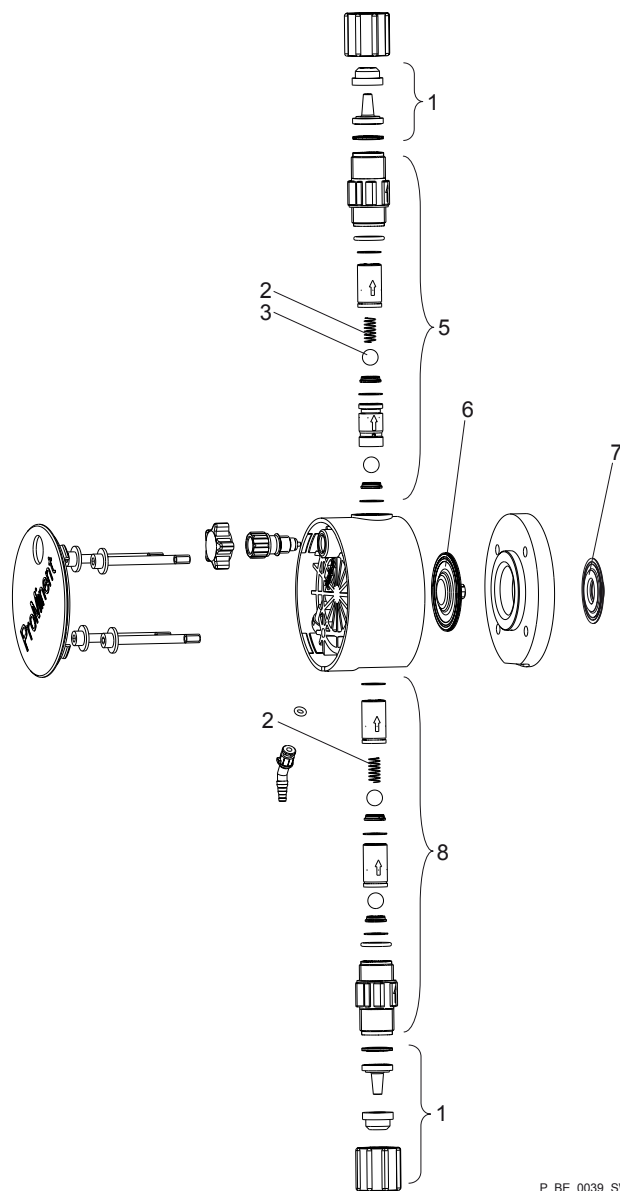


Fig. 23: Beta® 1000 - 1604 PP liquid end with bleed valve

Pos.	Description	Type 1000	Type 1601	Type 1602	Type 1604
1	Connector kit 6/4 PVT	1023246	1023246	1023246	1023246
3	4 Valve balls	404201	404201	404201	404201
4	Bleed valve	1021662	1021662	1021662	1021662
5	Discharge valve, compl. 4.7-2 PVT	1023127	1023127	1023127	1023127
6	Diaphragm	1000244	1000245	1000246	1034612
7	Safety diaphragm	1027414	1027414	1027414	1027414
8	Suction valve, compl. 4.7-2 PVT	1023128	1023128	1023128	1023128

Spring (pos. 2) is a special accessory. The positions listed are included in the spare parts kit. We reserve the right to make technical modifications.

Beta® 0708 (1008) - 0220 (0420) PP
liquid end with bleed



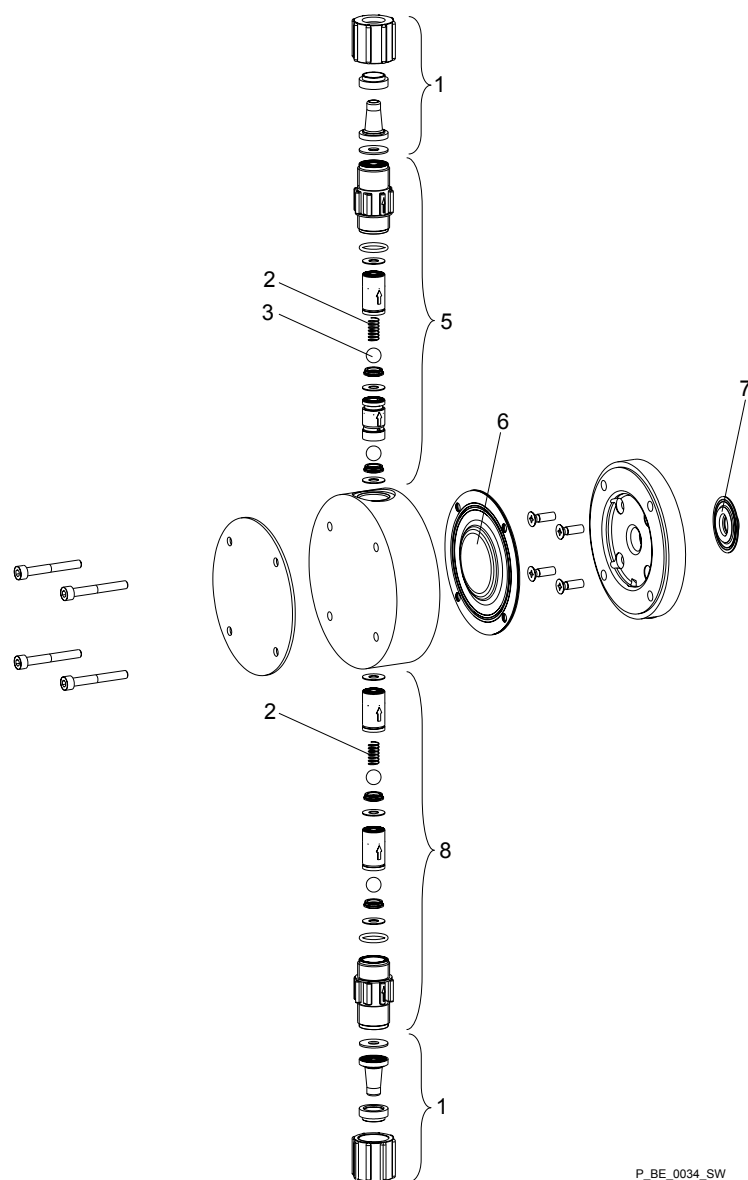
P_BE_0039_SW

Fig. 24: Beta® 0708 (1008) - 0220 (0420) PP liquid end with bleed

Pos.	Description	Type 0708 (1008)	Type 0413 (0713)	Type 0220 (0420)
1	Connector kit 8/5 PVT	1023247	1023247	1023247
3	4 Valve balls	404281	404281	404281
4	Bleed valve	1021662	1021662	1021662
5	Discharge valve, compl. 9.2-2 PVT	1023125	1023125	1023125
6	Diaphragm	1000248	1000249	1000250
7	Safety diaphragm	1027414	1027414	1027414
8	Suction valve, compl. 9.2-2 PVT	1023126	1023126	1023126

Spring (pos. 2) is a special accessory. The positions listed are included in the spare parts kit. We reserve the right to make technical modifications.

Beta® 0232 PP liquid end without bleed valve



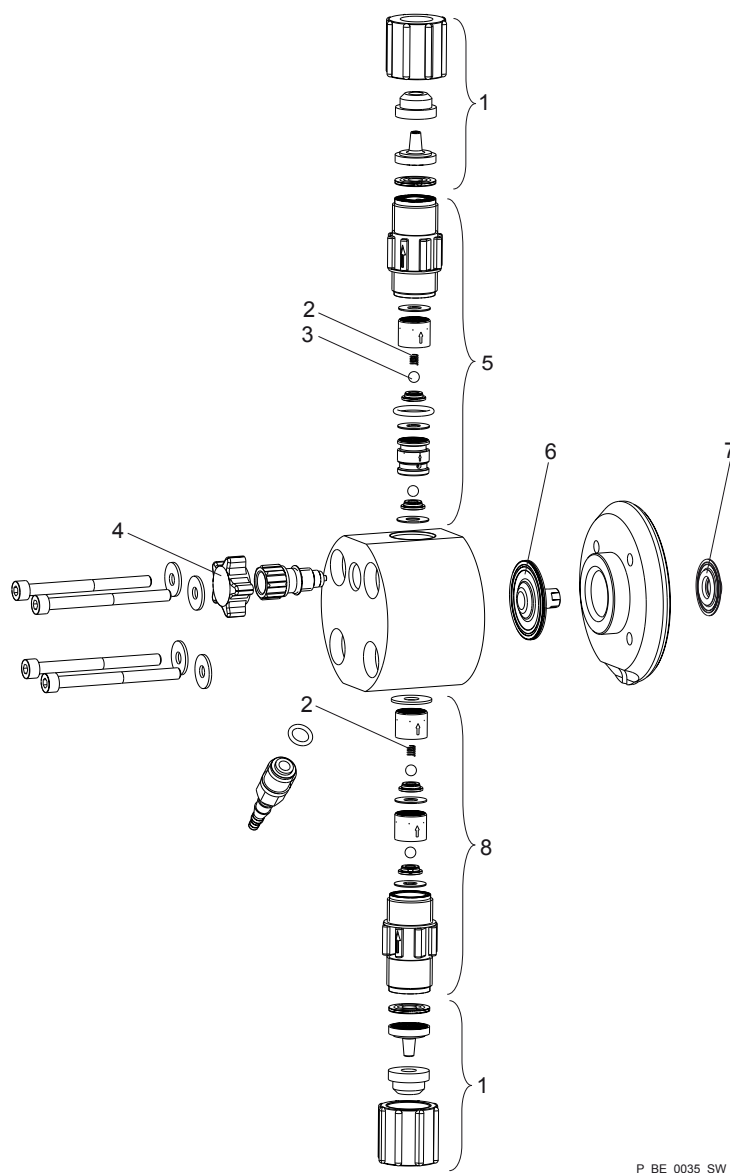
P_BE_0034_SW

Fig. 25: Beta® 0232 PP liquid end without bleed valve

Pos.	Description	Type 0232
1	Connector kit 12/9 PVT	1023248
3	4 Valve balls	404281
5	Discharge valve, compl. 9.2-2 PVT	1023125
6	Diaphragm	1000251
7	Safety diaphragm	1027414
8	Suction valve, compl. 9.2-2 PVT	1023126

Spring (pos. 2) is a special accessory. The positions listed are included in the spare parts kit. We reserve the right to make technical modifications.

**Beta® 1000 - 1604 NP liquid end with
and without bleed valve**



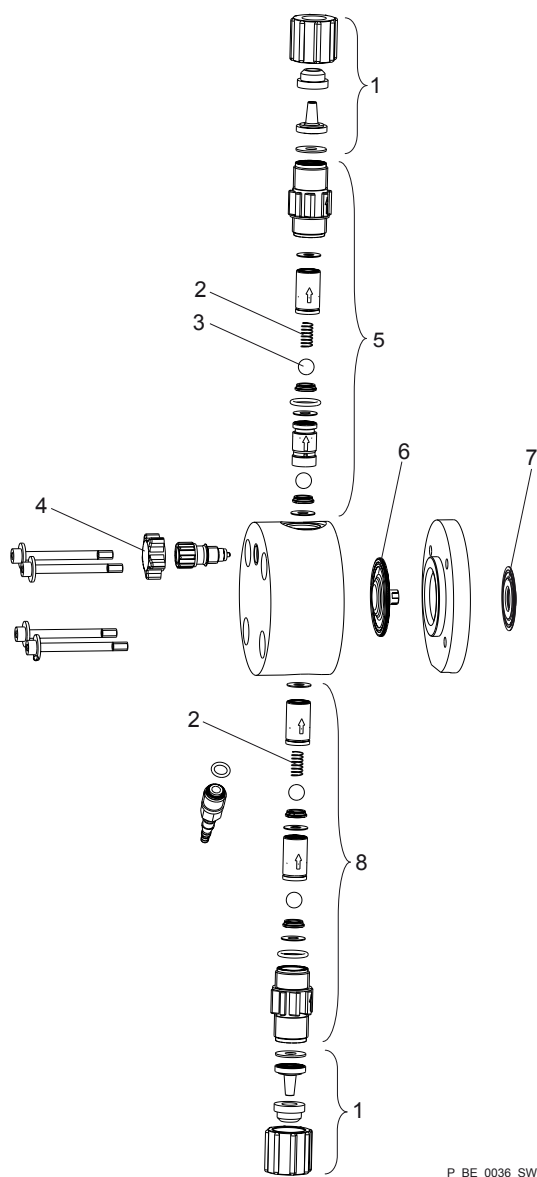
P_BE_0035_SW

Fig. 26: Beta® 1000 - 1604 NP liquid end with and without bleed valve

Pos.	Description	Type 1000	Type 1601	Type 1602	Type 1604
1	Connector kit 6/4 PVT	1023246	1023246	1023246	1023246
3	4 Valve balls	404201	404201	404201	404201
4	Bleed valve	1021662	1021662	1021662	1021662
5	Discharge valve, compl. 4.7-2 PVT	1023127	1023127	1023127	1023127
6	Diaphragm	1000244	1000245	1000246	1034612
7	Safety diaphragm	1027414	1027414	1027414	1027414
8	Suction valve, compl. 4.7-2 PVT	1023128	1023128	1023128	1023128

Spring (pos. 2) is a special accessory. The positions listed are included in the spare parts kit. We reserve the right to make technical modifications.

Beta® 0708 (1008) - 0220 (0420) NP
liquid end with and without bleed valve



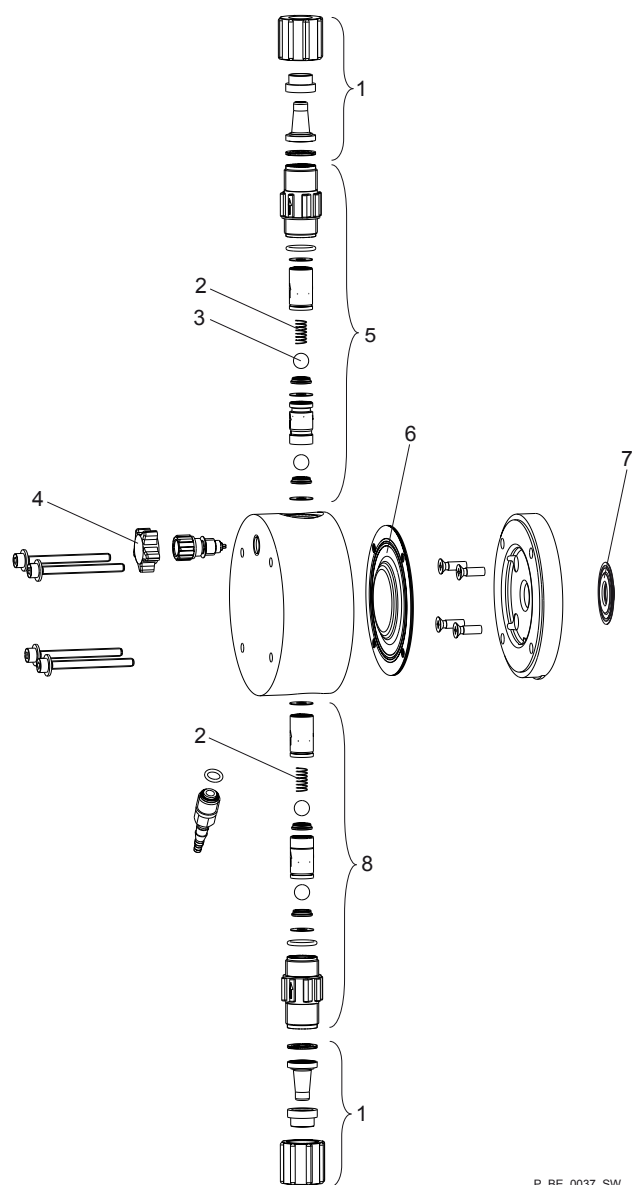
P_BE_0036_SW

Fig. 27: Beta® 0708 (1008) - 0220 (0420) NP liquid end with and without bleed valve

Pos.	Description	Type 0708 (1008)	Type 0413 (0713)	Type 0220 (0420)
1	Connector kit 8/5 PVT	1023247	1023247	1023247
3	4 Valve balls	404281	404281	404281
4	Bleed valve	1021662	1021662	1021662
5	Discharge valve, compl. 9.2-2 PVT	1023125	1023125	1023125
6	Diaphragm	1000248	1000249	1000250
7	Safety diaphragm	1027414	1027414	1027414
8	Suction valve, compl. 9.2-2 PVT	1023126	1023126	1023126

Spring (pos. 2) is a special accessory. The positions listed are included in the spare parts kit. We reserve the right to make technical modifications.

Beta® 0232 NP liquid end with and without bleed valve



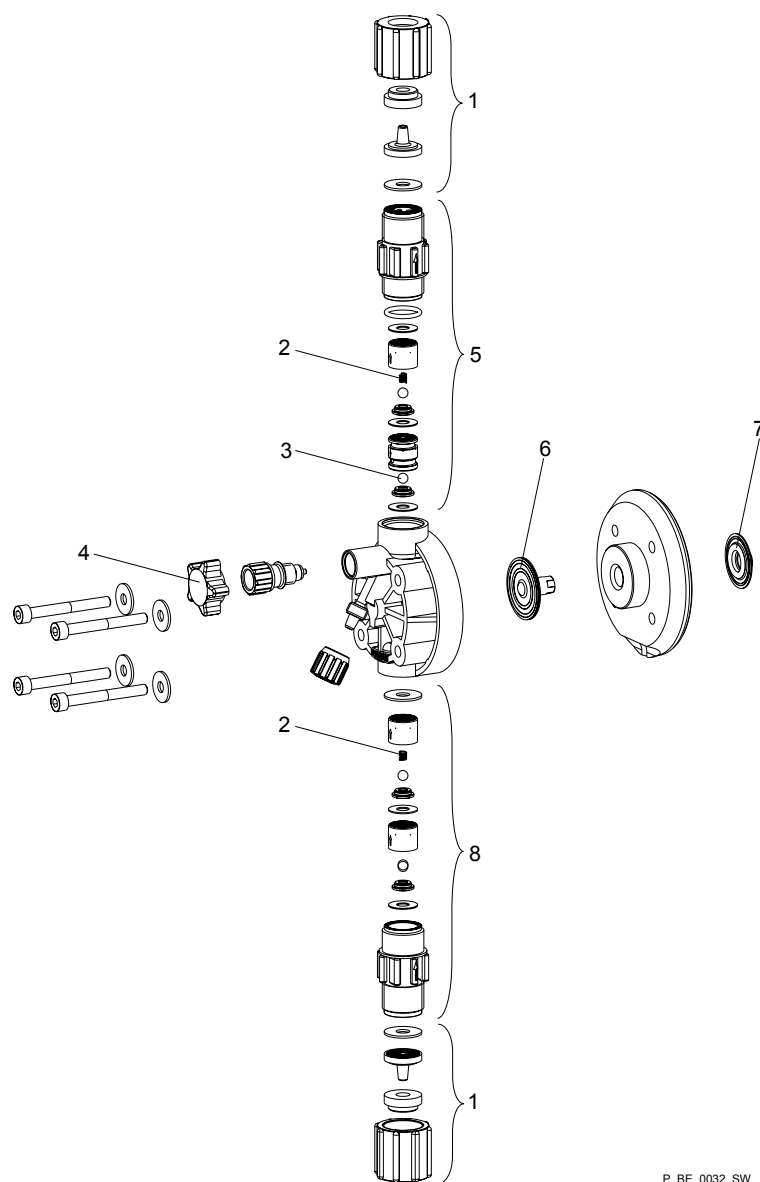
P_BE_0037_SW

Fig. 28: Beta® 0232 NP liquid end with and without bleed valve

Pos.	Description	Type 0232
1	Connector kit 12/9 PVT	1023248
3	4 Valve balls	404281
5	Discharge valve, compl. 9.2-2 PVT	1023125
6	Diaphragm	1000251
7	Safety diaphragm	1027414
8	Suction valve, compl. 9.2-2 PVT	1023126

Spring (pos. 2) is a special accessory. The positions listed are included in the spare parts kit. We reserve the right to make technical modifications.

Beta® 1000 - 1604 PV liquid end with bleed valve



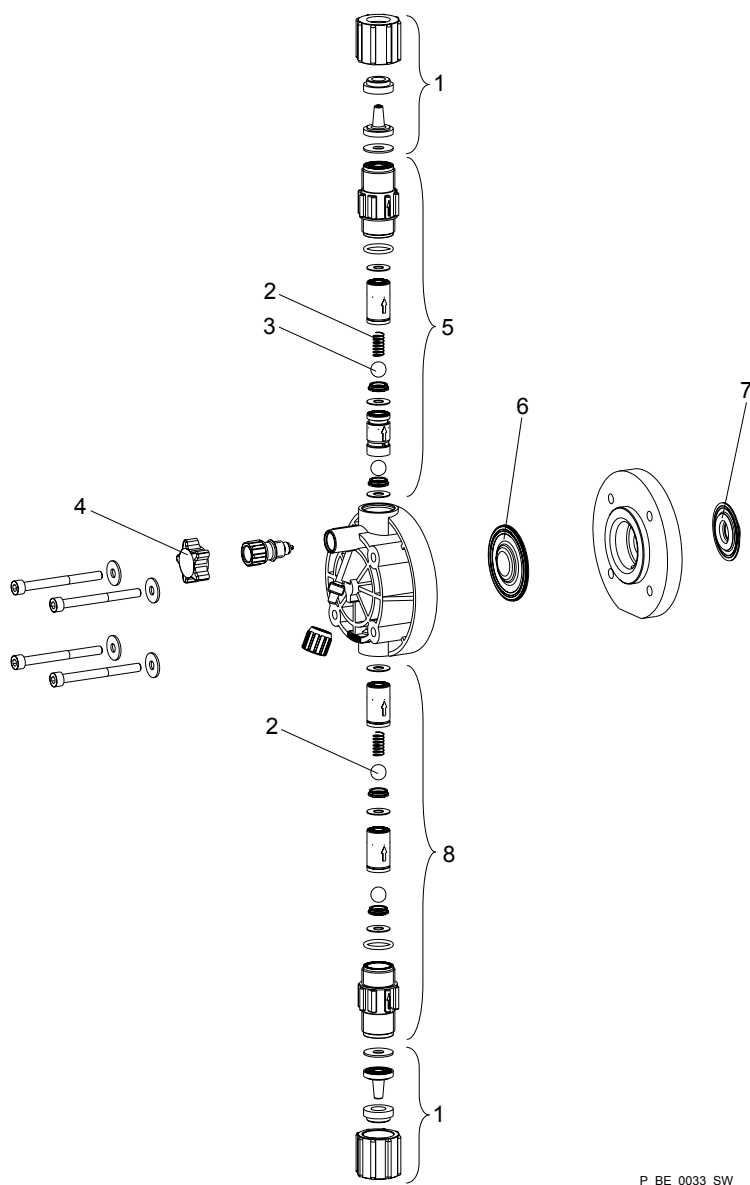
P_BE_0032_SW

Fig. 29: Beta® 1000 - 1604 PV liquid end with bleed valve

Pos.	Description	Type 1000	Type 1601	Type 1602	Type 1604
1	Connector kit 6/4 PVT	1035660	1035660	1035660	1035660
3	4 Valve balls	404201	404201	404201	404201
4	Bleed valve	1021662	1021662	1021662	1021662
5	Discharge valve, compl. 4.7-2 PVT	1023127	1023127	1023127	1023127
6	Diaphragm	1000244	1000245	1000246	1034612
7	Safety diaphragm	1027414	1027414	1027414	1027414
8	Suction valve, compl. 4.7-2 PVT	1023128	1023128	1023128	1023128

Spring (pos. 2) is a special accessory. The positions listed are included in the spare parts kit. We reserve the right to make technical modifications.

Beta® 0708 (1008) - 0220 (0420) PV
liquid end with bleed valve



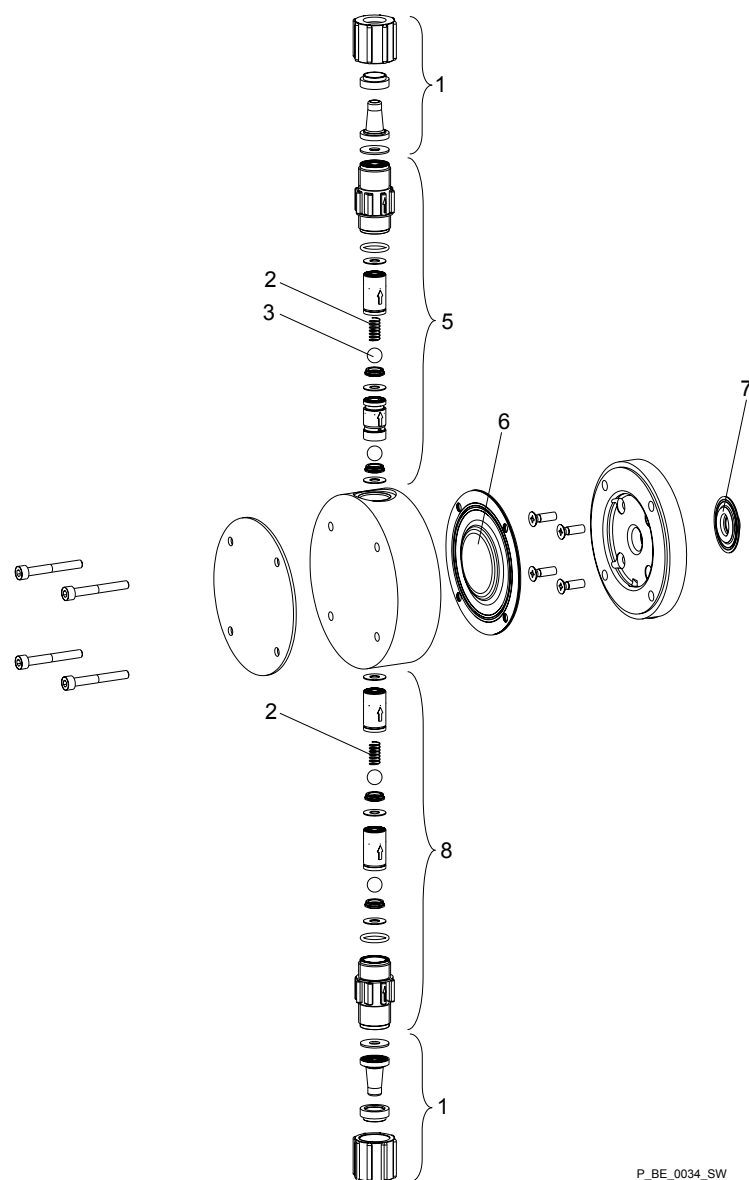
P_BE_0033_SW

Fig. 30: Beta® 0708 (1008) - 0220 (0420) PV liquid end with bleed valve

Pos.	Description	Type 0708 (1008)	Type 0413 (0713)	Type 0220 (0420)
1	Connector kit 8/5 PVT	1035661	1035661	1035661
3	4 Valve balls	404281	404281	404281
4	Bleed valve	1021662	1021662	1021662
5	Discharge valve, compl. 9.2-2 PVT	1023125	1023125	1023125
6	Diaphragm	1000248	1000249	1000250
7	Safety diaphragm	1027414	1027414	1027414
8	Suction valve, compl. 9.2-2 PVT	1023126	1023126	1023126

Spring (pos. 2) is a special accessory. The positions listed are included in the spare parts kit. We reserve the right to make technical modifications.

Beta® 0232 PV liquid end without bleed valve



P_BE_0034_SW

Fig. 31: Beta® 0232 PV liquid end without bleed valve

Pos.	Description	Type 0232
1	Connector kit 12/9 FVD PVT	1035659
3	4 Valve balls	404281
5	Discharge valve, compl. 9.2-2 PVT	1023125
6	Diaphragm	1000251
7	Safety diaphragm	1027414
8	Suction valve, compl. 9.2-2 PVT	1023126

Spring (pos. 2) is a special accessory. The positions listed are included in the spare parts kit. We reserve the right to make technical modifications.

Beta® 1604 - 0220 (0420) PV HV liquid end, for highly viscous feed chemicals

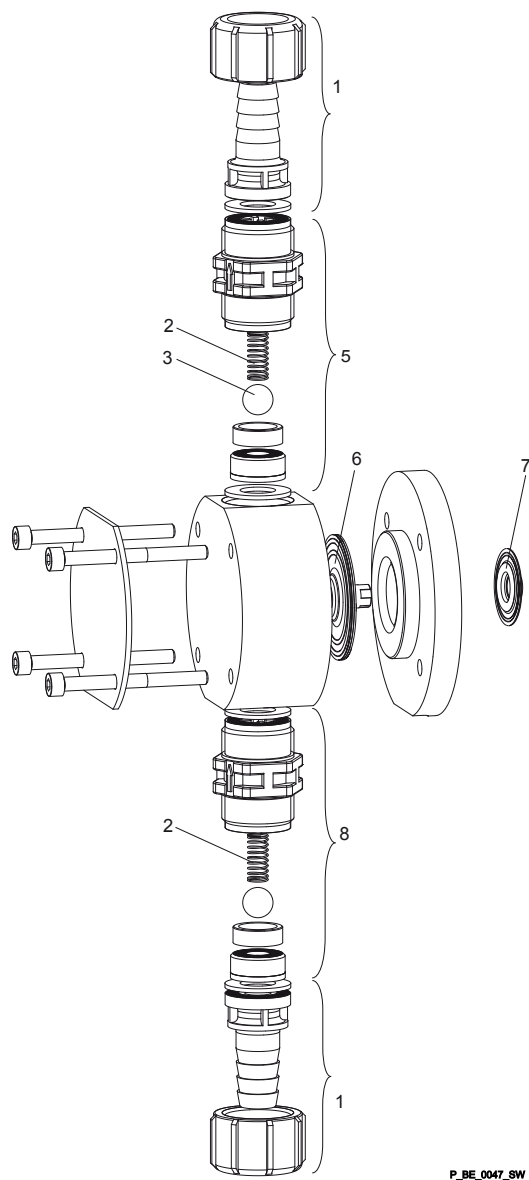
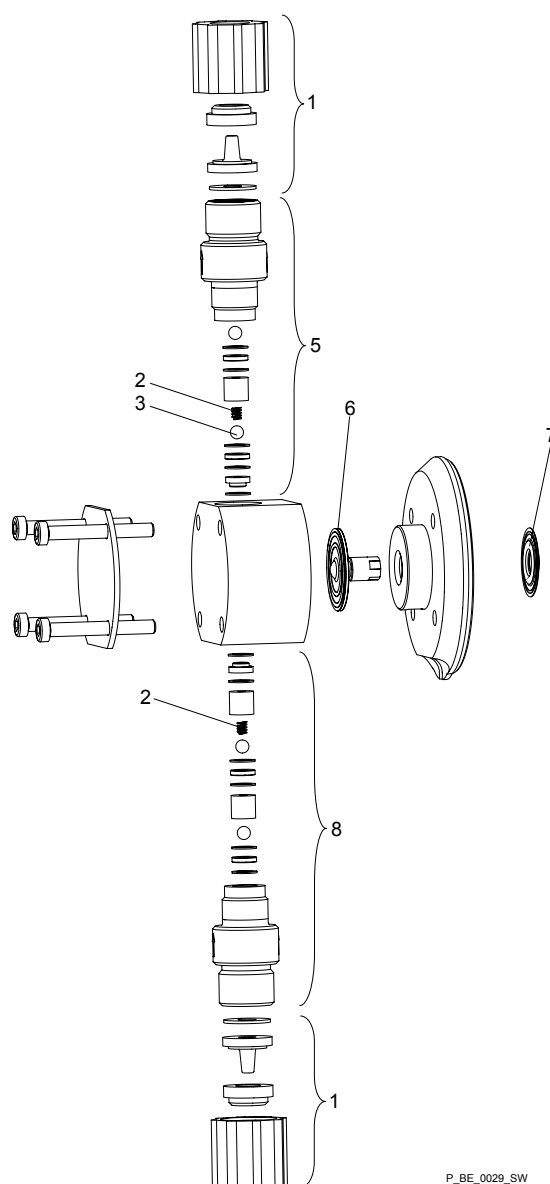


Fig. 32: Beta® 1604 - 0220 (0420) PV HV liquid end, for highly viscous feed chemicals

Pos.	Description	Type 1604	Type 0708	Type 0413	Type 0220
1	Connector kit DN10 HV with PVT tube nozzle	1017405	1017405	1017405	1017405
3	4 Valve balls	404277	404277	404277	404277
6	Diaphragm	1034612	1000248	1000249	1000250
7	Safety diaphragm	1027414	1027414	1027414	1027414

The positions listed are included in the spare parts kit. We reserve the right to make technical modifications.

Beta® 1000 - 1604 TT liquid end



P_BE_0029_SW

Fig. 33: Beta® 1000 - 1604 TT liquid end

Pos.	Description	Type 1000	Type 1601	Type 1602	Type 1604
1	Connector kit 6/4 TTT	817201	817201	817201	817201
3	4 Valve balls	404201	404201	404201	404201
5	Discharge valve, compl. 4.7-2 TTT	809406	809406	809406	809406
6	Diaphragm	1000244	1000245	1000246	1034612
7	Safety diaphragm	1027414	1027414	1027414	1027414
8	Suction valve, compl. 4.7-2 TTT	809407	809407	809407	809407

Spring (pos. 2) is a special accessory. The positions listed are included in the spare parts kit. We reserve the right to make technical modifications.

Beta® 0708 (1008) - 0220 (0420) TT
liquid end

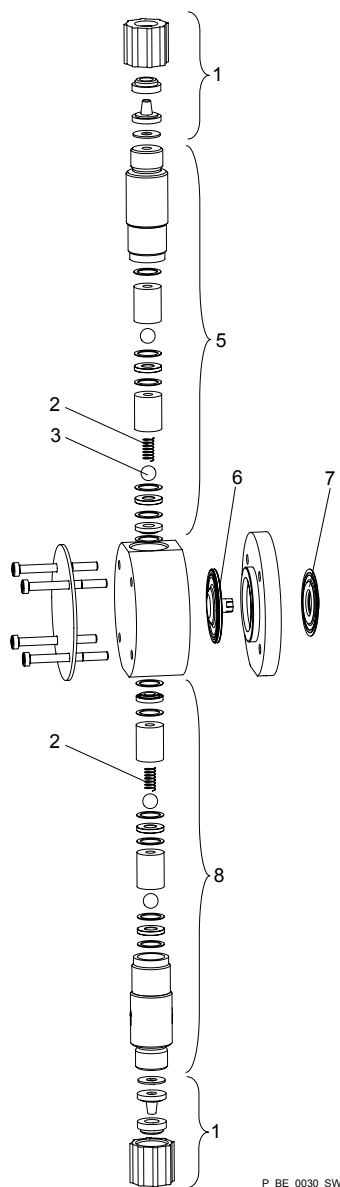


Fig. 34: Beta® 0708 (1008) - 0220 (0420) TT liquid end

Pos.	Description	Type 0708 (1008)	Type 0413 (0713)	Type 0220 (0420)
1	Connector kit 8/5 TTT	817204	817204	817204
3	4 Valve balls	404281	404281	404281
5	Discharge valve, compl. 9.2-2 TTT	809444	809444	809444
6	Diaphragm	1000248	1000249	1000250
7	Safety diaphragm	1027414	1027414	1027414
8	Suction valve, compl. 9.2-2 TTT	809445	809445	809445

Spring (pos. 2) is a special accessory. The positions listed are included in the spare parts kit. We reserve the right to make technical modifications.

Beta® 0232 TT liquid end

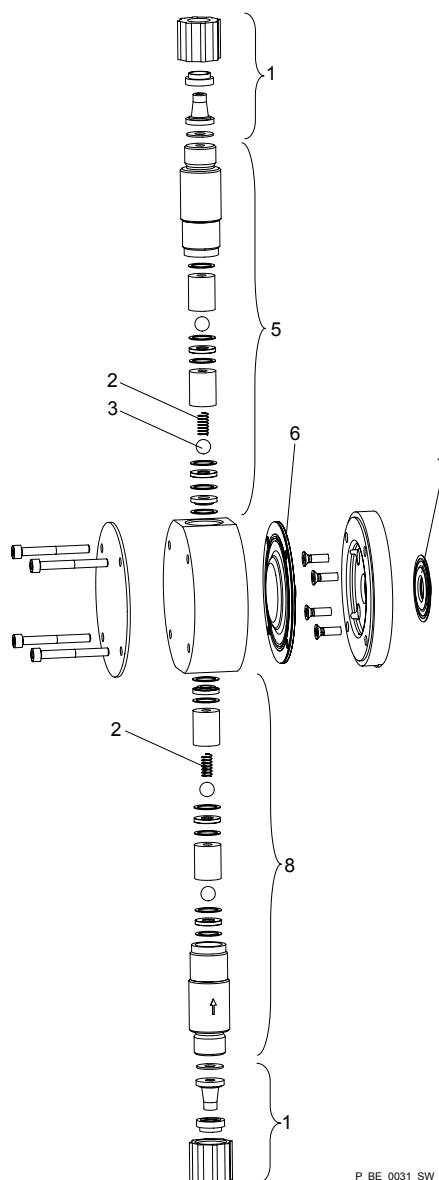


Fig. 35: Beta® 0232 TT liquid end

- | | | | |
|---|-----------------------------------|---|---------------------------------|
| 1 | Connector kit 12/9 TTT 817202 | 5 | Diaphragm 0232 1000251 |
| 2 | Spring, special accessory | 6 | Safety membrane 1027414 |
| 3 | 4 Valve balls 404281 | 7 | Suction valve compl. TTT 809445 |
| 4 | Discharge valve compl. TTT 809444 | | |

Pos.	Description	Type 0232
1	Connector kit 12/9 TTT	817202
3	4 Valve balls	404281
5	Discharge valve compl. TTT	809444
6	Diaphragm	1000251
7	Safety diaphragm	1027414
8	Suction valve compl. TTT	809445

Spring (pos. 2) is a special accessory. The positions listed are included in the spare parts kit. We reserve the right to make technical modifications.

Beta® 1000 - 1604 SS liquid end

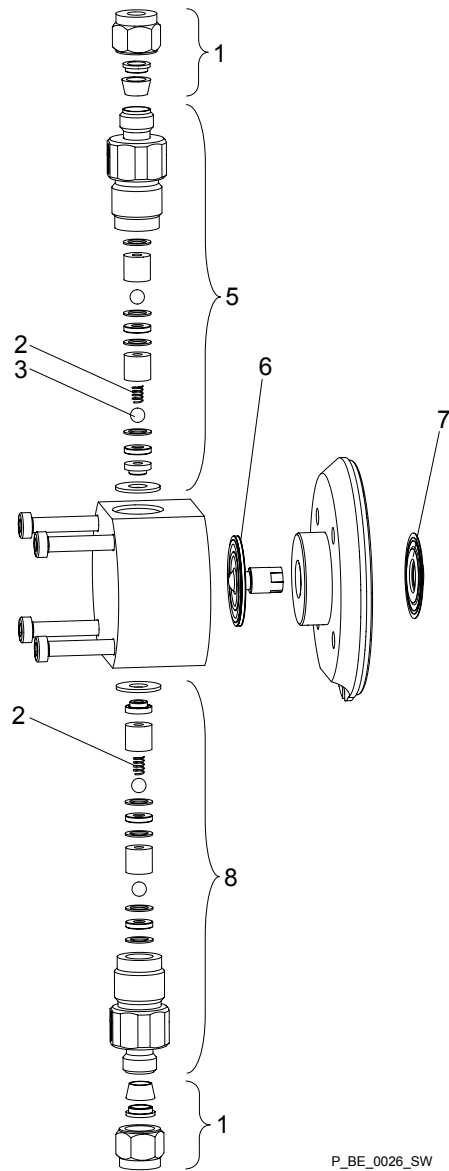
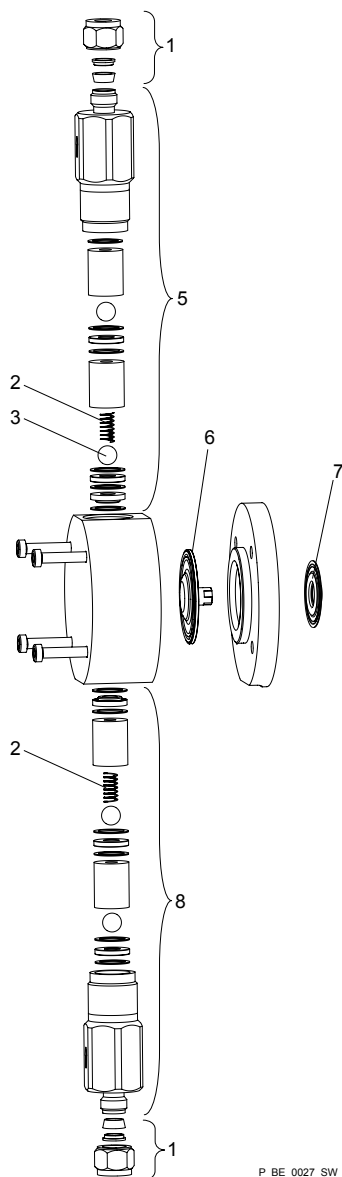


Fig. 36: Beta® 1000 - 1604 SS liquid end

Pos.	Description	Type 1000	Type 1601	Type 1602	Type 1604
1	Connector kit 6 mm SS	104233	104233	104233	104233
3	4 Valve balls	404201	404201	404201	404201
5	Discharge valve compl. 6 mm SST	809418	809418	809418	809418
6	Diaphragm	1000244	1000245	1000246	1034612
7	Safety diaphragm	1027414	1027414	1027414	1027414
8	Suction valve compl. 6 mm SST	809419	809419	809419	809419

Spring (pos. 2) is a special accessory. The positions listed are included in the spare parts kit. We reserve the right to make technical modifications.

Beta® 0708 (1008) - 0220 (0420) SS
liquid end



P_BE_0027_SW

Fig. 37: Beta® 0708 (1008) - 0220 (0420) SS liquid end

Pos.	Description	Type 0708 (1008)	Type 0413 (0713)	Type 0220 (0420)
1	Connector kit 8 mm SS	817204	817204	817204
3	4 Valve balls	404281	404281	404281
5	Discharge valve compl. 8 mm SST	809444	809444	809444
6	Diaphragm	1000248	1000249	1000250
7	Safety diaphragm	1027414	1027414	1027414
8	Suction valve compl. 8 mm SST	809445	809445	809445

Spring (pos. 2) is a special accessory. The positions listed are included in the spare parts kit. We reserve the right to make technical modifications.

Beta® 0232 SS liquid end

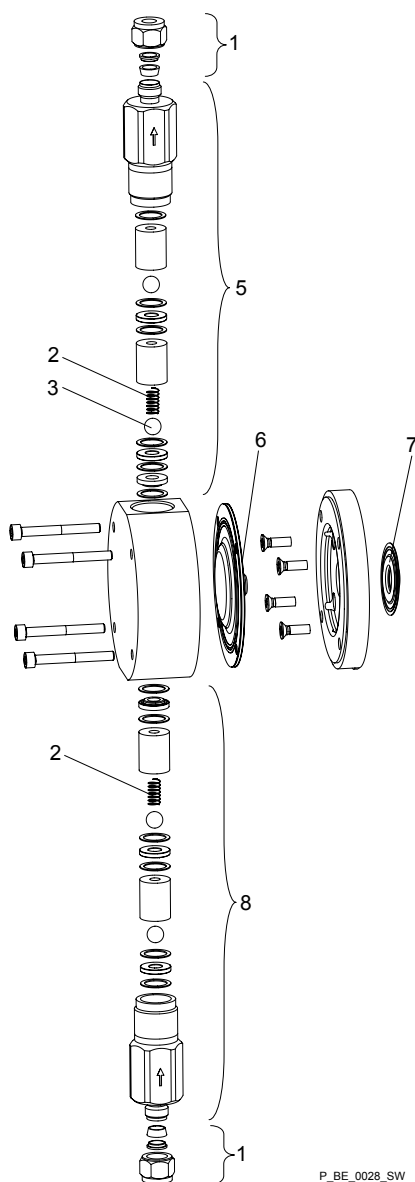
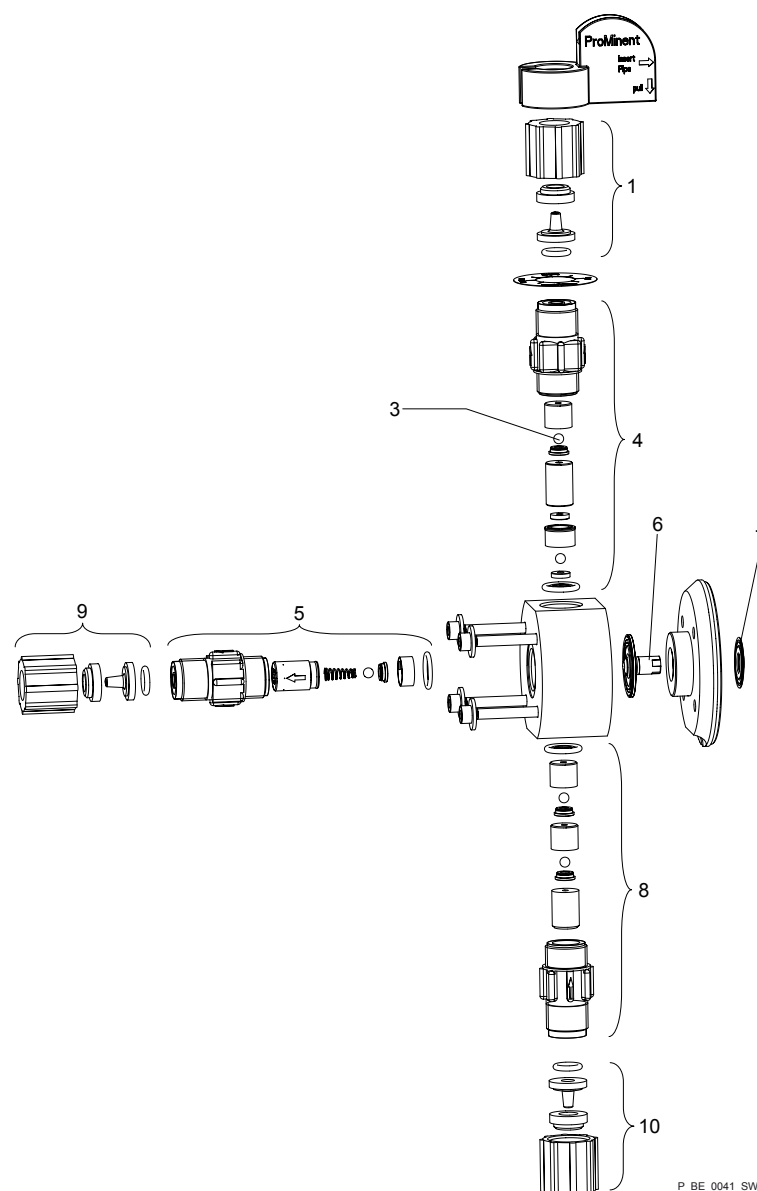


Fig. 38: Beta® 0232 SS liquid end

Pos.	Description	Type 0232
1	Connector kit 12 mm SS	104245
3	4 Valve balls	404281
5	Discharge valve compl. 12 mm SST	809446
6	Diaphragm	1000251
7	Safety diaphragm	1027414
8	Suction valve compl. 12 mm SST	809447

Spring (pos. 2) is a special accessory. The positions listed are included in the spare parts kit. We reserve the right to make technical modifications.

**Beta® 1601 - 1604 PP SEK and 1601
- 1604 NP SEK liquid end, self-bleeding**



P_BE_0041_SW

Fig. 39: Beta® 1601 - 1604 PP SEK and 1601 - 1604 NP SEK liquid end, self-bleeding

Pos.	Part	Material version	Part no.
1, 9, 10	Connector kit 6/4	PPE	817160
1, 9, 10	Connector kit 6/4	PPB	817173
1, 9, 10	Connector kit 6/4	PCE	791161
1, 9, 10	Connector kit 6/4	PCB	817165
9, 10	Connector kit 8/5	PPE	817161
9, 10	Connector kit 8/5	PPB	817174
9, 10	Connector kit 8/5	PCE	792058
9, 10	Connector kit 8/5	PCB	817066
9	With 2504:	PCB	1035844

Pos.	Part	Material version	Part no.
	Connector kit 8/4		
10	With 2504: Connector kit 6/4	PCE	791161
10	With 2504: Connector kit 6/4	PCB	817065
3	4 Valve balls		404201
4	Bleed valve	PPE	1001063
4	Bleed valve	PPB	1001062
4	Bleed valve	PCE	1001061
4	Bleed valve	PCB	1001060
5	Discharge valve compl.	PPE	1001067
5	Discharge valve compl.	PPB	1001066
5	Discharge valve compl.	PCE	1001065
5	Discharge valve compl.	PCB	1001064
6	Diaphragm 1601		1000245
6	Diaphragm 1602		1000246
6	Diaphragm 1604		1034612
7	Safety diaphragm		1027414
8	Suction valve compl.	PPE	792644
8	Suction valve compl.	PPB	792646
8	Suction valve compl.	PCE	792119
8	Suction valve compl.	PCB	792026

Spare parts kits for type:	Material version	Part no.
1601	PPE	1001756
1602	PPE	1001757
1604 with spring	PPE	1035335
1604 without spring	PPE	1035339
1601	PPB	1001762
1602	PPB	1001763
1604 with spring	PPB	1035336
1604 without spring	PPB	1035340

Spare parts kits for type:	Material version	Part no.
1601	NPE	1001660
1602	NPE	1001661
1604 without spring	NPE	1035337
1604 with spring	NPE	1035333
1601	NPB	1001666
1602	NPB	1001667
1604 without spring	NPB	1035338
1604 with spring	NPB	1035334

Seal sets	Material	Part no.
1 Seal set	EPDM	1001674
1 Seal set	FPM	1001672

The positions listed are included in the spare parts kit.

We reserve the right to make technical modifications.

Beta® 0708 (1008) - 0220 (0420)
PP / NP SEK liquid end, self-bleeding

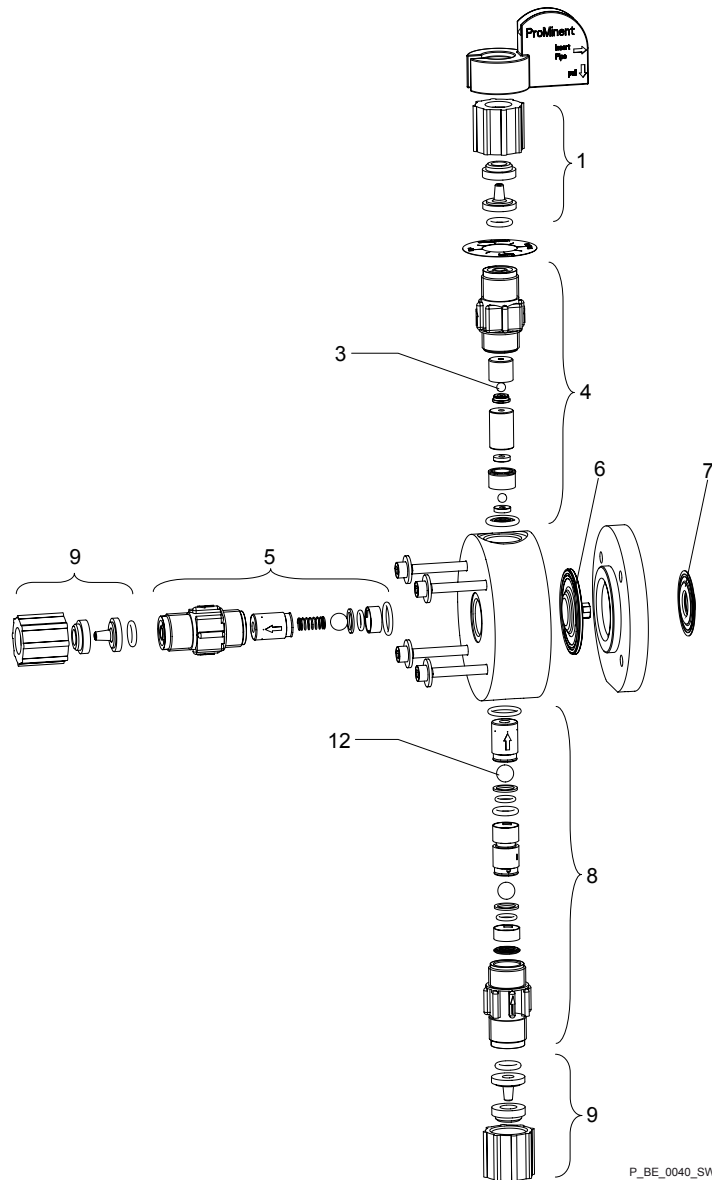


Fig. 40: Beta® 0708 (1008) - 0220 (0420) PP / NP SEK liquid end, self-bleeding

Pos.	Part	Material version	Part no.
1	Connector kit 6/4	PPE	817160
1	Connector kit 6/4	PPB	817173
1	Connector kit 6/4	PCE	791161
1	Connector kit 6/4	PCB	817165
9	Connector kit 8/5	PPE	817161
9	Connector kit 8/5	PPB	817174
9	Connector kit 8/5	PCE	792058
9	Connector kit 8/5	PCB	817066
9	Connector kit 12/9	PPE	817162

Pos.	Part	Material version	Part no.
9	Connector kit 12/9	PPB	817175
9	Connector kit 12/9	PCE	790577
9	Connector kit 12/9	PCB	817067
3	4 Valve balls		404201
4	Bleed valve	PPE	1001063
4	Bleed valve	PPB	1001062
4	Bleed valve	PCE	1001061
4	Bleed valve	PCB	1001060
5	Discharge valve compl.	PPE	1001071
5	Discharge valve compl.	PPB	1001070
5	Discharge valve compl.	PCE	1001069
5	Discharge valve compl.	PCB	1001068
6	Diaphragm 0708		1000248
6	Diaphragm 0413		1000249
6	Diaphragm 0220		1000250
7	Safety diaphragm		1027414
8	Suction valve compl.	PPE	1001437
8	Suction valve compl.	PPB	1001436
8	Suction valve compl.	PCE	1001435
8	Suction valve compl.	PCB	1001434

Spare parts kits for type:	Material version	Part no.
0708 (1008)	PPE	1001759
0413 (0713)	PPE	1001760
0220 (0420)	PPE	1001761
0708 (1008)	PPB	1001765
0413 (0713)	PPB	1001766
0220 (0420)	PPB	1001767
0708 (1008)	NPE	1001663
0413 (0713)	NPE	1001664
0220 (0420)	NPE	1001665

Spare parts kits for type:	Material version	Part no.
0708 (1008)	NPB	1001669
0413 (0713)	NPB	1001670
0220 (0420)	NPB	1001671

Seal sets	Material	Part no.
1 Seal set	EPDM	1001674
1 Seal set	FPM	1001672

The positions listed are included in the spare parts kit.
We reserve the right to make technical modifications.

14.4 Ordering Information

Spare parts sets for SEK types

The information is given in the corresponding exploded views.

Spare parts sets for other types

Type	PP, NP, PV	TT	SS	HV types
1000	1023107	1001737	1001729	-
1601	1023108	1001738	1001730	-
1602	1023109	1001739	1001731	-
1604 (2504)	1035332	1035330	1035331	1035342
0708 (1008)	1023111	1001741	1001733	1019067
0413 (0713)	1023112	1001742	1001734	1019069
0220 (0420)	1023113	1001754	1001735	1019070
0232	1024124	1001755	1001736	-

Seal sets for SEK types

The information is given in the corresponding exploded views.

Seal sets for other types

Type	PP, NP	PV	TT, SS
1000, 1601, 1602, 1604	1023130	1023130	483907 *
0708 (1008) 0413 (0713) 0220 (0420)	1023129	1023129	483975
* 11-part			

Type	PP, NP	PV	TT, SS
0232	1023129	1023129	483975
All HV types	-	1019364	-
* 11-part			

Relays

Product	Part no.
Fault indicating relay Beta® b:	1028839
Fault indicating / pacing relay option Beta® b:	1028840

Interference suppression aids

Product	Part no.
Varistor:	710912
RC Gate, 0.22 µF / 220 Ω:	710802

Further sources of information

Further information on spare parts, accessories and options can be found in:

- the exploded drawings
- the identity code
- the "General Operating Instructions on ProMinent® solenoid dosing pumps".
- the ProMinent® Equipment catalogue

14.5 Retrofitting Relays



WARNING!

Risk of electrocution

When retrofitting relays, there is access to live parts

- Disconnect the pump from the mains power supply prior to commencing work

Scope of delivery

- 1 - Relay board, compl., with 2 fixing screws
- 1 - Relay cable, compl., with connector
- 1 - Seal

Breaking push-through opening



CAUTION!

Pump can be damaged

The pump circuit board can become damaged when the opening is broken open.

- When breaking open the opening, avoid pushing the screwdriver deep into the pump foot.

- Personnel: ■ Technical personnel
- Materials: ■ Screwdriver 8 x 1.5 (mm)
■ Torx wrench
■ Philips head screwdriver

The pump is hydraulically and electrically clamped.

It is fixed well.

1. ➤ Push the screwdriver into the slot opening.
⇒ The screwdriver must be placed almost at the base of the slot opening and lie solidly against its sides.
2. ➤ Break open the cover with a movement to the side Fig. 41.
3. ➤ Neaten the edge of the opening if necessary.
4. ➤ Remove the knock-out from the pump.

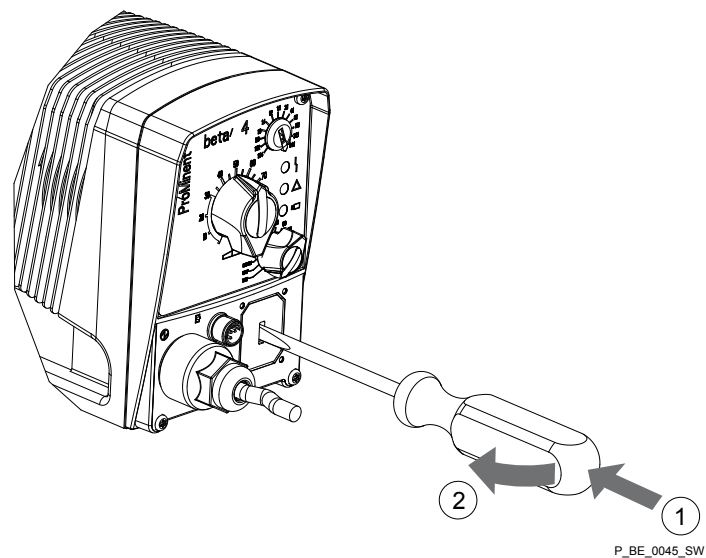


Fig. 41: Breaking open knock-out opening

Fitting the relay board

- Personnel: ■ Electrician

1. ➤ Hold the relay board by the edge of the relay cover Fig. 42.
2. ➤ Push the relay board into the knock-out opening; at the same time ensure that the 2x3 pins on the left-hand side of the relay board are positioned correctly on the 2x3 contact in the knock-out opening.
3. ➤ Push the relay board with gentle pressure into the knock-out opening.
4. ➤ Tighten the screws of the relay cover with the Torx wrench to the housing.
5. ➤ Insert the seal of the relay cable plug into the relay cover, fit the relay cable plug and then tighten.

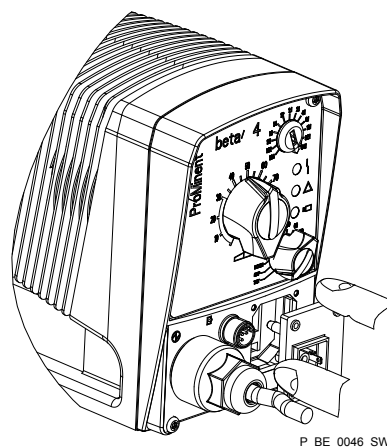


Fig. 42: Fitting the relay board



The pump is factory-programmed to "fault indicating relay (NC)" and - if fitted - "pacing relay (NO)". Should another switching function be required, the pump can be reprogrammed in the Heidelberg head office.

Retrofit relay kit for Beta[®] b

Name	Part no.
Beta [®] b	1028839
Beta [®] b	1028840

14.6 Declaration of Conformity

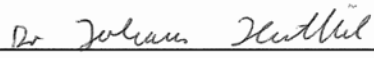
EC Declaration of Conformity	
We hereby declare,	ProMinent Dosiertechnik GmbH Im Schuhmachergewann 5 - 11 D - 69123 Heidelberg
that the following designated product complies with the pertinent fundamental safety and health requirements of the EC Directive in terms of its design and construction and in terms of the version marketed by us. This declaration loses its validity in the event of a modification to the product not agreed with us.	
Description of the product:	<i>Metering pump, series Beta/4 and Beta/5</i>
Product type:	<i>BT4b , BT5b</i>
Serial no.:	<i>refer to nameplate on the device</i>
Pertinent EC Directives:	<i>EC Machinery Directive (98/37/EC) until 28.12.2009 EC Machinery Directive (2006/42/EC) from 29.12.2009 EC Low Voltage Directive (2006/95/EC) EC EMC Directive (2004/108/EC)</i>
Applied harmonised standards in particular:	<i>EN ISO 12100-1, EN ISO 12100-2, EN 809, EN 60335-1, EN 61010-1, EN 60529, EN 55014-1, EN 55014-2, EN 61000-3-2/3, EN 61000-4-2/3/4/5/6/8/11, EN 61000-6-3</i>
technical documents have been compiled by	<i>Norbert Berger Im Schuhmachergewann 5-11 DE-69123 Heidelberg</i>
Date / Manufacturer - Signature :	<i>06.07.2009</i> 
Details of the signatory:	<i>Dr. Johannes Hartfiel, Assistant Head of Development</i>

Fig. 43: EC Declaration of Conformity for Beta® BT4b and BT5b

14.7 Safety Declaration Form

Safety declaration form

A completed form must always be returned with the equipment!

This declaration must only be completed and signed by an authorized member of the technical staff!

The equipment or its parts will only be repaired or serviced if it is accompanied by a correctly completed and signed safety declaration form. The work could be delayed if no form is returned.

Legally binding declaration

We hereby assure that:

1. The enclosed equipment

Type: _____

Serial No.: _____

is free from any

- ☐ toxic
- ☐ corrosive
- ☐ microbiological
- ☐ carcinogenic
- ☐ explosive
- ☐ radioactive substances
- ☐ or other substances that may be harmful to health.

2. The equipment was thoroughly cleaned before being shipped.

3. There is no hazard due to residual contamination.

4. The details given in this form are correct and complete.

Company / Institute: _____

Street: _____ Postcode, Town: _____

Tel: _____ Fax: _____

Surname, First name: _____ Position: _____

Date: _____

Legally binding signature

Company stamp

Part No. 986715 / AL_017_03/06 GB

Fig. 44: ProMinent® Declaration of No Objection

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