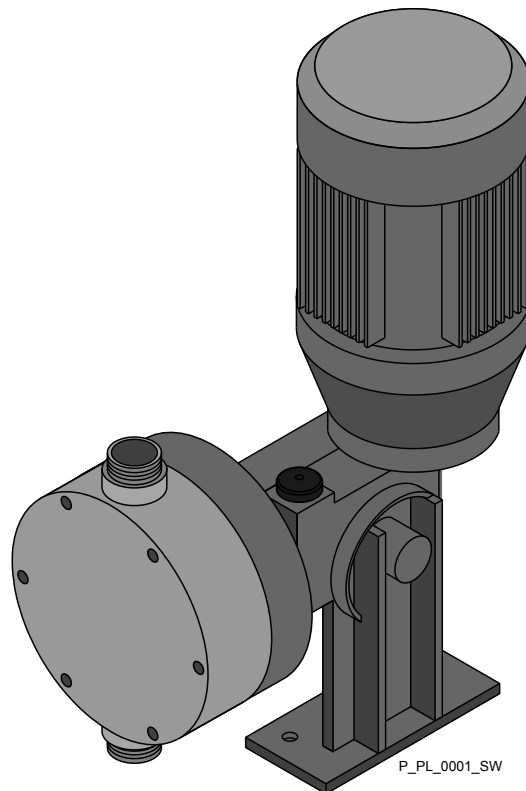


Operating Manual

Plasma PSMa

Motorised Diaphragm Metering Pump



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

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 PL 001, 1, en_GB

Supplementary information

Fig. 1: Please read carefully!

Please read the following supplementary information in its entirety! This information will enable you to make better use 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 metering pumps: The product-specific operating instructions and the "General Operating Instructions ProMinent® Motor-Driven Metering Pumps and Hydraulic Accessories".

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

Please read these operating instructions carefully before use! Do not discard!

State the identcode and serial number

Please state the identcode and the serial number that you find on the specification label in all correspondence or when you order spare parts. This enables us to clearly identify the unit type and material version.

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Table of contents

1	Identcode	5
2	About this Pump	6
3	Safety Chapter	7
4	Storage, Transport and Unpacking	10
5	Overview of the Unit and Control Elements	12
6	Functional Description	13
	6.1 Drive Unit	13
	6.2 Liquid End	14
7	Assembly	15
8	Installation	16
	8.1 Hydraulic Installation	16
	8.2 Electrical Installation	16
9	Commissioning	18
10	Maintenance	20
11	Repair	22
	11.1 Cleaning Valves	22
	11.2 Replacing the Diaphragm	24
12	Troubleshooting	26
13	Decommissioning	27
14	Technical Data	29
	14.1 Performance Data	29
	14.2 Degree of Protection and Safety Requirements	29
	14.3 Ambient Conditions	30
	14.3.1 Temperatures	30
	14.3.2 Climate	31
	14.4 Gear Oil	31
	14.5 Sound Pressure Level.....	31
15	Appendix	32
	15.1 Dimensional Drawings	32
	15.2 Diagrams for Setting the Metering Capacity	33
	15.3 Ordering Information	34
	15.3.1 Spare Parts Sets	34
	15.3.2 Diaphragms	35
	15.4 EC Declaration of Conformity	36
	15.5 Decontamination Declaration	37
16	Index	38

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1 Identcode

Plasma Series, Version I					
PSMa	Type	Power			
		bar	l/h		
	05050	5	50		
	05065	5	65		
	05100	5	90		
	05120	5	120		
	05200	5	200		
	05260	5	260		
Material of dosing head/valves					
		PC	PVC with EPDM sealing material		
		PP	Polypropylene with EPDM sealing material		
		TT	PTFE with PTFE sealing material		
		SS	Stainless steel with PTFE sealing material		
Dosing head design					
			0	Standard	
Hydraulic connection					
				0	Standard connection - cap nut with hose connection
				1	Cap nut with stainless steel insert (standard with stainless steel)
Motor connection					
				S	3-ph, 400 V \pm 10 %, 50 Hz (60 Hz versions on request)
				1	without motor
Stroke sensor					
				0	no stroke sensor
Stroke length adjustment					
				0	manual (standard)

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2 About this Pump

ProMinent® Plasma PSMa motorised metering pumps are very effective diaphragm metering pumps. They are compact, energy-saving, provide excellent precision and reflect the high standards of quality of ProMinent motorised metering pumps.

ProMinent® Plasma PSMa motorised metering pumps are available up to metering outputs of 260 l/h. There are six different maximum metering output levels available.

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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.

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

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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 equipment 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.



CAUTION!

Warning of illegal operation

Observe the regulations that apply where the unit is to be installed.

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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 the feed chemical's safety data sheet. To switch off the pump in such an event, disconnect the mains cable from the mains or press the emergency cut-off switch fitted on the side of the system. If necessary depressurise the hydraulic system around the pump.

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).

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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 metering pumps for repair in a cleaned state and with a flushed liquid end - refer to the chapter on decommissioning! Should safety precautions nevertheless be necessary, in spite of carefully cleaning the pumps, the requisite information must be entered on the Decontamination Declaration form.

The Decontamination Declaration form constitutes an integral part of an inspection/repair order. A unit can only be inspected or repaired if a Decontamination Declaration form has been completed correctly and in full by an authorised and qualified person on behalf of the pump operator.

The "Decontamination Declaration" form can be found in the Appendix or at www.prominent.com.



CAUTION!

Danger of environmental and material damage

The unit can be damaged or oil may escape due to incorrect or improper storage or transportation!

- The unit should only be stored or transported in a well packaged state - preferably in its original packaging.
- Only transport the unit with the locking screw - not the bleed plug - fitted to the oil filling opening.
- 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.

Scope of delivery

Compare the delivery note with the shipment:

- Metering pump
- Product-specific operating instructions with EC Declaration of Conformity
- "General Operating Instructions ProMinent® Motor-Driven Metering Pumps and Hydraulic Accessories".

Storage

Personnel: ■ Technical personnel

1. ➤ Place the caps on the valves.
2. ➤ Preferably place the pump on a pallet.

3. → Cover the pump with a tarpaulin cover - allowing for rear ventilation.

Store the pump in a dry, sealed place in the following ambient conditions.

Ambient Conditions

Specification	Value	Unit
Minimum storage and transport temperature	-10	°C
Maximum storage and transport temperature	+50	°C
Maximum air humidity *	95	% rel. humidity

* non-condensing

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5 Overview of the Unit and Control Elements

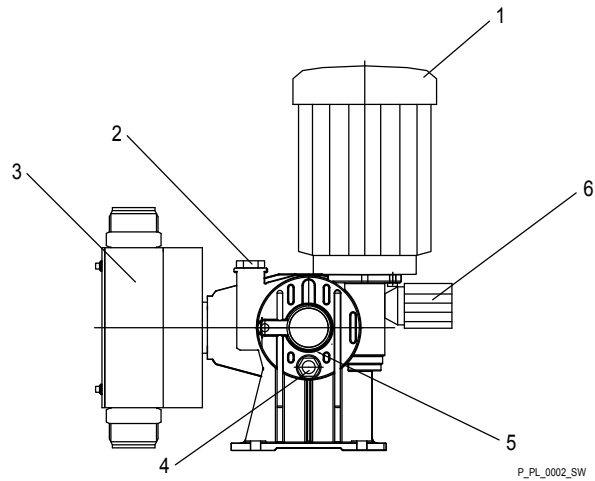



Fig. 2: Complete overview

- | | |
|-----------|-------------------------------|
| 1 | Drive motor |
| 2 | Bleed plug / Locking plug |
| 3 | Liquid end |
| 4 | Oil drain screw |
| 5 | Drive unit |
| 6 | Stroke length adjustment knob |
| not shown | Oil level indicator (on rear) |

6 Functional Description

6.1 Drive Unit

The metering pump is an oscillating displacement pump, the stroke length of which can be adjusted. An electric motor (1) drives the pump. A worm gear (2) reduces the drive rotation of the pump. An eccentric cam (3) converts it together with the receiving fork (8) into an oscillating movement of the driving rod (4). A return spring (5) presses the receiving fork together with the driving rod in a force-fit manner against the eccentric cam and thus triggers the return stroke. The stroke length can be adjusted by the stroke adjustment knob (6) and the shaft (7). The different stroke lengths are in effect caused by the limitation of the return stroke (cf.  "Illustration of the stroke movement" on page 13). The driving rod transmits the stroke motion to the diaphragm.

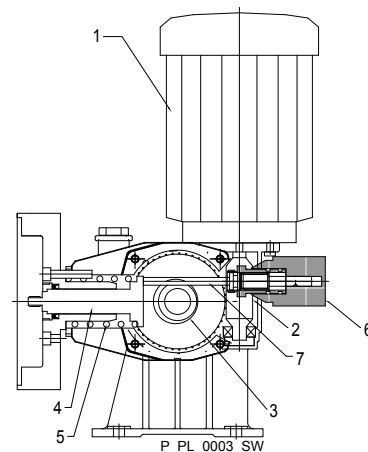


Fig. 3: Cross-section through drive unit

- 1 Electric motor
- 2 Worm gear
- 3 Eccentric cam
- 4 Driving rod
- 5 Return spring
- 6 Stroke adjustment knob
- 7 Shaft
- 8 Receiving fork

Illustration of the stroke movement

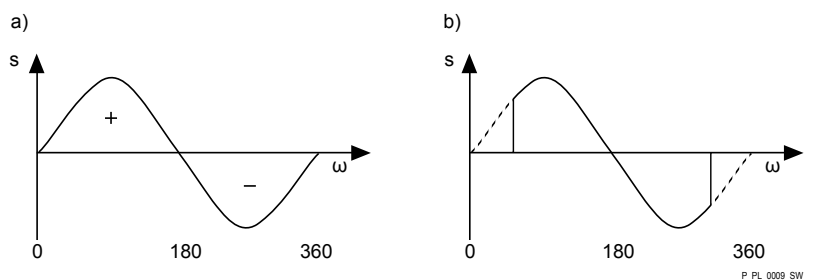


Fig. 4: Stroke movement at a) maximum stroke length and b) reduced stroke length.

- s Stroke velocity
- ω Angle of rotation of eccentric cam
- + Pressure stroke
- Suction stroke

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6.2 Liquid End

The diaphragm (3) hermetically closes the pump volume of the dosing head (2) towards the outside. The suction valve (4) closes as soon as the diaphragm (3) is moved in the dosing head and the feed chemical flows out of the dosing head through the discharge valve (1). As soon as the diaphragm (3) is moved in a counter direction, the discharge valve (1) closes due to the negative pressure in the dosing head and fresh feed chemical flows through the suction valve (4) into the dosing head. One cycle is thus completed.

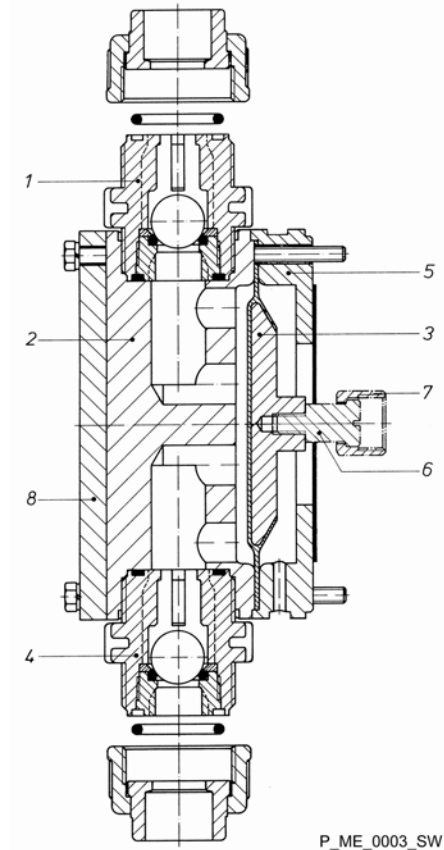


Fig. 5: Cross-section through the liquid end

- 1 Discharge valve
- 2 Dosing head
- 3 Diaphragm
- 4 Suction valve

7 Assembly

**CAUTION!****Maintenance to prevent personal and material damage**

Also refer to the "General Operating Instructions ProMinent® Motor-Driven Metering Pumps and Hydraulic Accessories"!

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

The unit can be damaged or oil may escape due to incorrect or improper storage or transportation!

- The unit should only be stored or transported in a well packaged state - preferably in its original packaging.
- Only transport the unit with the locking screw - not the bleed plug - fitted to the oil filling opening.
- 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.

**CAUTION!****Warning about personal and material damage**

Personal and material damage may be caused if the unit is operated outside of the permissible ambient conditions.

- Please observe the permissible ambient conditions - refer to the chapter entitled "Technical Data".

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8 Installation

8.1 Hydraulic Installation



WARNING!

Warning of feed chemical reactions to water

Feed chemicals that should not come into contact with water may react to residual water in the liquid end that may originate from works testing.

- Blow the liquid end dry with compressed air through the suction connector.
- Then flush the liquid end with a suitable medium through the suction connector.



CAUTION!

Maintenance to prevent personal and material damage

Also refer to the "General Operating Instructions ProMinent® Motor-Driven Metering Pumps and Hydraulic Accessories"!

Personnel: ■ Technical personnel

8.2 Electrical Installation



WARNING!

Risk of electric shock

The electrical installation of the unit may only be undertaken by technically trained personnel with a proven qualification.



CAUTION!

Maintenance to prevent personal and material damage

Also refer to the "General Operating Instructions ProMinent® Motor-Driven Metering Pumps and Hydraulic Accessories"!



CAUTION!

The pump can be damaged

The pump can be damaged if the motor drives the pump in the wrong direction.

- When wiring the motor, pay due care and attention to the correct direction of rotation indicated by the arrow on the motor housing (cf. diagram below).

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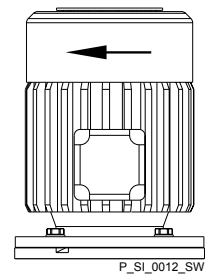


Fig. 6: Direction of rotation of motor



- Key motor data can be found on the unit specification label.
- The terminal wiring diagram is located in the terminal box.
- The motor can only be wired in star (Y) configuration.

Personnel: ■ Electrician

9 Commissioning

Safety information



CAUTION!

Maintenance to prevent personal and material damage

Also refer to the "General Operating Instructions ProMinent® Motor-Driven Metering Pumps and Hydraulic Accessories"!

Fitting the bleed plug



CAUTION!

Possible environmental and material damage

The locking screw on the oil filling opening is factory-fitted and, during operation, prevents any pressure compensation between the drive housing and the surroundings. This ensures that oil can be pushed out of the drive housing.

- Replace the locking screw on the oil filling opening with the bleed plug supplied.
- Retain the locking screw for subsequent transportation of the unit.

Checking the oil level

When the pump is idle, check whether the oil level in the pump is in the middle of the oil level indicator.

This will rule out the pump losing oil and suffering damage.

Checking the direction of rotation

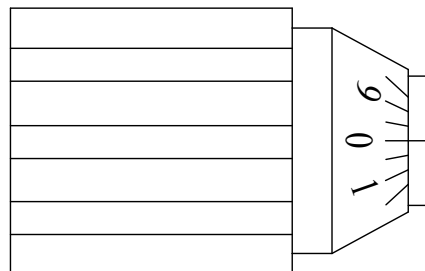
When commissioning the unit, check whether the drive motor is rotating correctly - check this against the arrow on the motor housing or the diagram in the chapter entitled "Electrical Installation."

Adjusting the stroke length



CAUTION!

- Only adjust the stroke length when the pump is running.
- Only turn the stroke adjustment knob one revolution, corresponding to 100% stroke length. The figures on the stroke adjustment knob x 10 correspond to the stroke length set in % - see diagram below.



P_PL_0006_SW

Fig. 7: 1 revolution = 100 % stroke length

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Correctly adjusting the pump:

- Select as large a stroke length as possible for viscous feed chemicals.
- Select as large a stroke length as possible for outgassing feed chemicals.
- Select as high a stroke rate as possible for good mixing.
- Do not set the stroke length at less than 30 % for precise dosing.



Eliminating priming problems (only with TTT and SST)

Should you experience priming problems during commissioning, unscrew the valves from the liquid end, place on a solid surface and, using a brass bar (2), gently tap with a hammer (1) the PTFE ball seat disc through the valve ball - see diagram below. Then allow the valves to prime in a damp state.

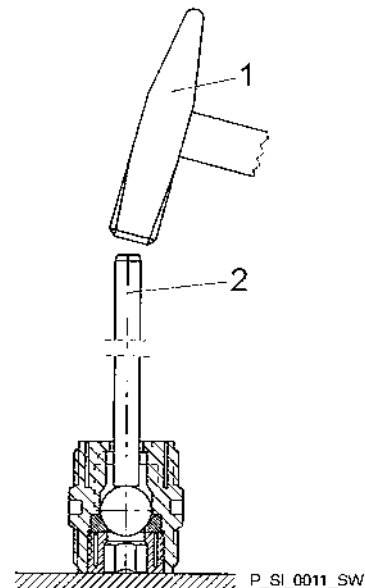


Fig. 8: Tapping the valve seat disc

- 1 Hammer, approx. 300 g
- 2 Brass bar \varnothing 9 x approx. 200 mm

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10 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 before commencing work on hydraulic parts!

Standard liquid ends:

Interval	Maintenance task	Personnel
After approx. 5,000 operating hours	Change gear oil - refer to "Changing gear oil" in this chapter.	Instructed personnel
Quarterly*	<ul style="list-style-type: none"> ■ 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! ■ Check that the flow is correct: allow the pump to prime briefly. ■ 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.

Changing gear oil

Draining gear oil

1. ➤ Remove the bleed plug (1).
2. ➤ Place an oil tray under the oil drain screw (2).
3. ➤ Unscrew the oil drain screw (2) from the drive housing.
4. ➤ Allow the gear oil to run out of the drive.
5. ➤ Replace the oil drain screw (2) with a new seal.

Filling gear oil

1. ➤ Start up the pump.
2. ➤ Slowly fill gear oil through the opening for the bleed plug (1) until the oil level indicator (3) is half-covered.
3. ➤ Allow the pump to run for a further 1... 2 minutes.
4. ➤ Replace the bleed plug (1).

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Tightening torque

Specification	Value	Unit
Tightening torque for screws:	9.0	Nm

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11 Repair

Safety information



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!

11.1 Cleaning Valves

Personnel: Technical personnel

Repairing ball valves



CAUTION!

Warning about personal and material damage

Feed chemical may escape from the liquid end, for example, if ball valves not repaired correctly.

- Only use new components that fit your valve - both in terms of shape and chemical resistance!
- Pay attention to the flow direction of the discharge and suction connections when fitting the valve.

1. ➤ Screw on the valve cap (5) on the suction side - see diagram.
2. ➤ Carefully remove the parts from the valve body (2).
3. ➤ Replace the worn parts.
4. ➤ Clean the remaining parts.
5. ➤ Check all parts.
6. ➤ Insert the valve ball (3) and the valve seat (4).
7. ➤ Screw on the valve cap (5).

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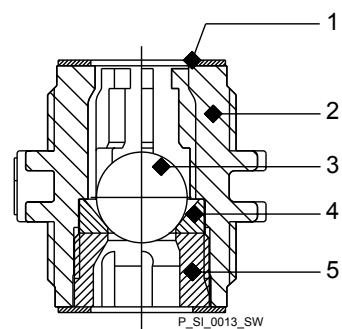


Fig. 9: Simple cross-section through ball valve

- 1 Flat seal
- 2 Valve body
- 3 Valve ball
- 4 Valve seat
- 5 Valve cap

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11.2 Replacing the Diaphragm



WARNING!

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

- 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. ▶ With the pump running, move the stroke adjustment knob to its end position at 0 % stroke length (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. ▶ Remove the 6 screws on the dosing head.
 6. ▶ Remove the dosing head.
 7. ▶ Loosen the diaphragm from the drive shaft with a gentle backwards turn in a clockwise direction.
 8. ▶ Unscrew the diaphragm fully from the drive shaft.
 9. ▶ Tentatively screw the new diaphragm anticlockwise onto the drive shaft as far as its stop position.
 - ⇒ The diaphragm is now sitting at the end position of the thread.
 10. ▶ Should this not work, remove dirt or swarf out of the threads and screw the diaphragm correctly onto the drive shaft this time.
 11. ▶ Place the dosing head with the screws onto the diaphragm - the suction connector must be pointing downwards when the pump is installed later.
 12. ▶ Tighten the screws gently to start with.
 13. ▶ Start up the pump and adjust the stroke length to 100 %.
 14. ▶ Now further tighten the screws crosswise. See below for tightening torque.



CAUTION!

Warning of escaping feed chemical

The liquid end may leak should it not be possible to check the tightening torque of the screws.

» see next page

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- Check the tightening torque of the screws after 24-hours of operation!
- Recheck the tightening torque again after three months with PP dosing heads!

Tightening torque

Specification	Value	Unit
Tightening torque for screws:	9.0	Nm

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12 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!



WARNING!

Danger of an electric shock

Personnel working on electrical parts can be electrocuted if all electrical lines carrying current have not been disconnected.

- Disconnect the supply cable before working on the motor and prevent it from being reconnected accidentally.
- Any separately driven fans, servo motors, speed controllers or diaphragm rupture sensors fitted should also be disconnected.
- Check that the supply cables are de-energised.

Tasks

Error description	Cause	Solution	Personnel
Pump does not prime in spite of full stroke motion and bleeding.	The valves are dirty or worn.	Repair the valves - see chapter entitled "Repair".	Technical personnel
Pump does not reach high pressure rates.	The valves are dirty or worn.	Repair the valves - see chapter entitled "Repair".	Technical personnel
	The motor is wired incorrectly.	1. Check the mains voltage and mains frequency. 2. Wire the motor correctly.	Electrician
	The mains voltage has failed.	Eliminate the cause.	Electrician
The drive motor is very hot.	The discharge line is seriously constricted.	Rectify any constriction of the discharge line.	Technical personnel

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13 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 individuals.

- 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!



CAUTION!

Danger of damage to the unit

Take into account the information in the "Storage, Transport and Unpackaging" chapter if the system is decommissioned for a temporary period.

Final decommissioning

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!
4. ➔ Drain the gear oil - refer to the chapter entitled "Maintenance".

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Temporary decommissioning

Additional work: refer to the chapter on "Storage, Transport and Unpacking".

Disposal

Personnel: ■ Technical personnel



CAUTION!

Environmental hazard due to gear oil

The pump contains gear oil that can cause damage to the environment.

- Drain the gear oil from the pump.
- Note the pertinent regulations currently applicable in your country!

14 Technical Data

14.1 Performance Data

Plasma with 0.2 kW motor, 400 V, 50 Hz, 1440 rpm

Type	Minimum flow rate at maximum back pressure			Maximum stroke rate	Stroke length	Suction lift	Connector size
	bar	l/h	ml/stroke	Strokes/min	mm	m WS	G-DN
05050	5	50	8.0	105	2	1.5	1 1/4" - 20
05065	5	65	7.8	140	2	1.5	1 1/4" - 20
05090	5	90	14.3	105	2	1.5	1 1/4" - 20
05120	5	120	14.3	140	2	1.5	1 1/4" - 20
05200	5	200	31.8	105	4	1.5	1 1/4" - 20
05260	5	260	31.0	140	4	1.5	1 1/4" - 20

All figures apply to water at 20 °C.

The suction lift applies to a filled suction line and filled liquid end - when installed correctly.

Accuracy

Specification	Value	Unit
Reproducibility	± 2	% *

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

Materials that come into contact with the feed chemical

Material version	Liquid end	Suction/ Discharge connector	Seals	Valve balls	Valve seats
PC	PVC	PVC	EPDM	PTFE	EPDM
PP	Polypropylene	Polypropylene	EPDM	PTFE	EPDM
TT	PTFE with carbon	PTFE with carbon	PTFE	Ceramics	PTFE
SS	Stainless steel SS 316	Stainless steel SS 316	PTFE	Stainless steel SS 316	PTFE

Shipping weight

Material version	Shipping weight in kg
PP, PC, TT	12.1
SS	14.5

14.2 Degree of Protection and Safety Requirements

Degree of protection

Protection against contact and humidity:

IP 55 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

14.3 Ambient Conditions**14.3.1 Temperatures**

Pump, compl.

Specification	Value	Unit
Storage and transport temperature	-10 ... +50	°C
Ambient temperature in operation (drive):	-10 ... +45	°C

PP liquid end

Specification	Value	Unit
Max. temperature long-term at max. operating pressure	45	°C
Max. temperature for 15 min at max. 2 bar	70	°C
Minimum temperature	-10	°C

PC 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

TT 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

SS 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

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14.3.2 Climate

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

* non-condensing

14.4 Gear Oil

Manufacturer	Name	Viscosity class (ISO 3442)	Oil volume
Shell	Omala HD	320	0.25 l

14.5 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).

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15 Appendix

15.1 Dimensional Drawings

Dimensional drawing of Plasma

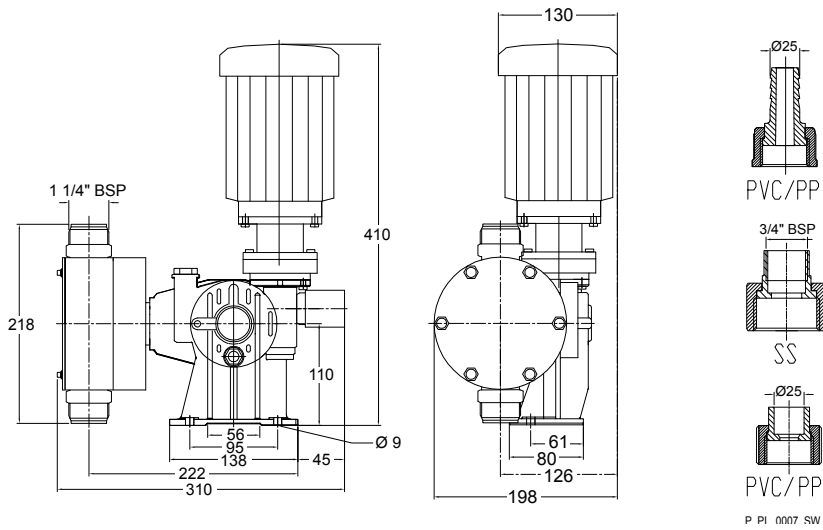


Fig. 10: Dimensional drawing of Plasma PSMa - dimensions in mm

Dimensional drawing of Plasma without motor

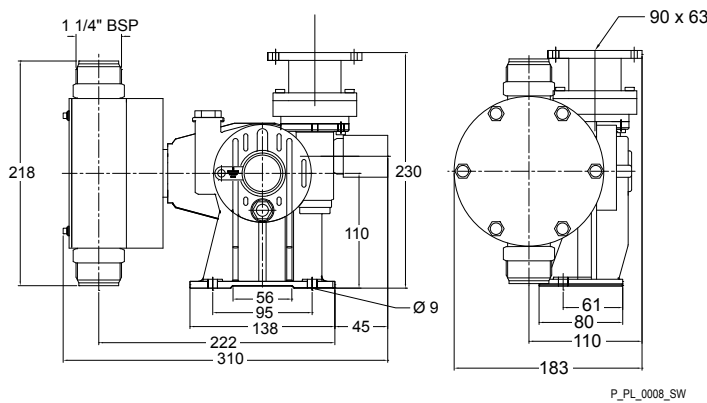


Fig. 11: Dimensional drawing of Plasma PSMa without motor - dimensions in mm

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15.2 Diagrams for Setting the Metering Capacity

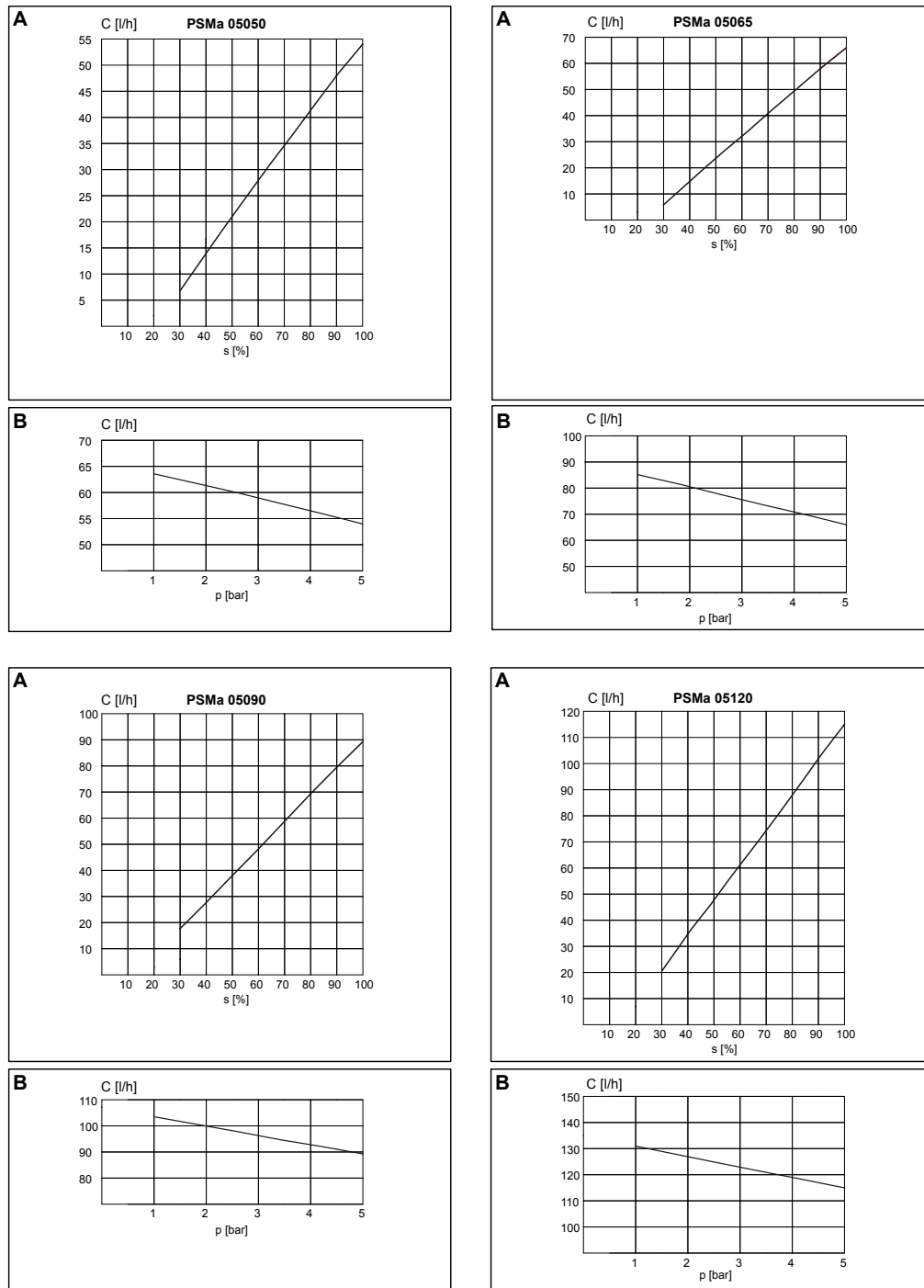


Fig. 12: A) Metering capacity C at medium back pressure according to the stroke length for maximum stroke rate. B) Metering capacity C at medium back pressure according to the back pressure p .

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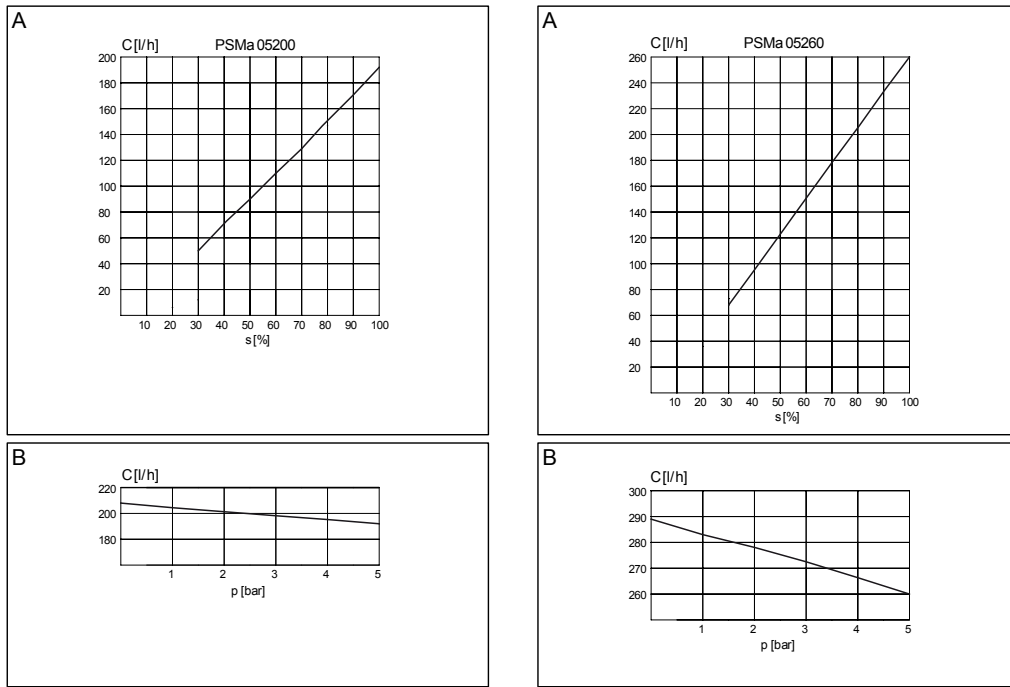


Fig. 13: A) Metering capacity C at medium back pressure according to the stroke length for maximum stroke rate. B) Metering capacity C at medium back pressure according to the back pressure p.

15.3 Ordering Information

15.3.1 Spare Parts Sets

Spare parts sets normally include the wearing parts of a liquid end.

Standard delivery for material version PPE

- 1 - Diaphragm
- 1 - Suction valve
- 1 - Discharge valve
- 2 - Valve balls
- 1 - Seal set

Standard delivery for material version SST

- 1 - Diaphragm
- 2 - Valve balls
- 1 - Seal set

Spare parts sets for types 05050, 05065

Liquid end	Material version	Part no.
FM 130 - DN 20	PP	PMIN-3303001
FM 130 - DN 20	PC	PMIN-3303002
FM 130 - DN 20	SS	PMIN-3303003
FM 130 - DN 20	TT	PMIN-3303004

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Spare parts sets for types 05100,
05120, 05200, 05260

Liquid end	Material version	Part no.
FM 260 - DN 20	PP	PMIN-3303005
FM 260 - DN 20	PC	PMIN-3303006
FM 260 - DN 20	SS	PMIN-3303007
FM 260 - DN 20	TT	PMIN-3303008

PMIN = Heidelberg ProMinent Fluid Controls India Pvt. Ltd.

15.3.2 Diaphragms

Diaphragms for types 05050, 05065

Liquid end	Part no.
FM 130	PMIN-3301019

Diaphragms for types 05100, 05120,
05200, 05260

Liquid end	Part no.
FM 260	PMIN-3301020

PMIN = Heidelberg ProMinent Fluid Controls India Pvt. Ltd.

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15.4 EC Declaration of Conformity

EC Declaration of Conformity

We hereby declare.

**Heidelberg ProMinent Fluid Controls India Pvt. Ltd.
#2/2, MES Road
Yeshwanthpur
IND - Bangalore 560 022**

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.

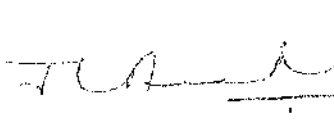
Description of the product:	<i>Metering pump, series Plasma</i>
Product type:	<i>PSMa...</i>
Serial no.:	<i>refer to nameplate on the device</i>
Pertinent EC Directives:	<i>EC Machinery Directive (98/37/EC) until 28.12.2009 EC Machinery Directive (2006/42/EC) from 29.12.2009 EC Low Voltage Directive (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 60034-1</i>
technical documents have been compiled by:	<i>Norbert Berger Im Schuhmachergewann 5-11 DE-69123 Heidelberg</i>
Date / Manufacturer - Signature :	<i>8/19/2009</i> 
Details of the signatory:	<i>P. Prasanna Kumar Rao, branch manager</i>

Fig. 14

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15.5 Decontamination Declaration

Declaration of Decontamination

(see download: www.prominent.com)

Because of legal regulations and for the safety of our employees and operation equipment, we need the „declaration of decontamination“, with your signature, before your order can be handled.

Please make absolutely sure to include it with the shipping documents, or – even better – attach it to the outside of the packaging.

Please return your products to:

ProMinent Dosiertechnik GmbH
Department: Reparaturabteilung
Im Schuhmachergewann 5-11
69123 Heidelberg, Germany

Please direct your inquiry to:

0049 6221 8420
customercare@prominent.de

ProMinent®

Type of instrument / sensor: _____ Serial number: _____

Process data: Temperature: _____ [° C] Pressure: _____ [bar]

Mediums and warnings:



	Medium/ Concentration	Identi- fication	flammable	toxic	corrosive	harmful/ irritant	other*	harmless
Process medium								
Medium for pro- cess- cleaning								
Returned part cleaned with								

* explosive; oxidising; dangerous for the environment; biological risk; radioactive

Please tick should one of the above be applicable, include security sheet and, if necessary, special handling instructions.

Reason for return:

Company data:

Company: _____ Phone number: _____
Contact person: _____ Fax: _____
Straße: _____ E-Mail: _____
Address: _____ Your order No: _____

„We hereby certify that the returned parts have been carefully cleaned. To the best of our knowledge they are free from any residues in dangerous quantities.“

Place, date

Company stamp and legally binding signature

Fig. 15

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16 Index

A	
About this Pump	6
Accuracy	29
Air humidity	31
Ambient Conditions	30
Appendix	32
Assembly	15
B	
Bleed plug	12
C	
Capacity diagrams	33
Cleaning Valves	22
Climate	31
Commissioning	18
Connector size	29
Control Elements	12
Correct and Proper Use.....	7
D	
Declaration of Conformity	36
Decommissioning	27
Decontamination Declaration	37
Degree of protection	29
Diagrams	33
Diaphragm	14
Diaphragms	35
Dimensional Drawings	32
Direction of rotation of	17
Discharge valve	14
Disposal	28
Dosing head	14
Drive Unit	13
E	
EC Declaration of Conformity	36
Emergency	9
Emptying the liquid end	27
Explanation of the safety information	7
F	
Flow rate	29
Functional Description	13
G	
Gear Oil	31
I	
Identcode	5
Information in the event of an emergency	9
Installation	16
IP	29
L	
Leakage hole	20
Liquid end	12
Liquid End	14
Locking screw	12
M	
Maintenance	20
Materials that come into contact with the feed chemical	29
motor	17
O	
Oil drain screw	12
Ordering Information	34
Overview of the Unit	12
P	
Protection against contact and humidity	29
Q	
Qualification of personnel.....	9
R	
Radioactive	10
Repair	22
Replacing the Diaphragm	24
S	
Safety Chapter	7
Safety Declaration Form	10
Safety requirements	29
Scope of delivery	10
Shipping weight	29
Sound Pressure Level.....	9, 31
Spare Parts Sets	34
Storage	10
Storage and transport temperature	30
Stroke length	18
Stroke length adjustment knob	12
Suction lift	29
Suction valve	14
T	
Temperatures	30
Transport	10
Troubleshooting	26
U	
Unpacking	10
W	
Warning sign.....	7
Weight	29