Type overview

Flow Control	for pump type	Material version	Order no.
Size I	1000, 1601, 1602	PVDF / EPDM	1009229
		PVDF / FPM-B	1009335
Size II	1005, 0708, 0413, 0220, 1605, 1008, 0713, 0420, 0232	PVDF / EPDM	1009336
		PVDF / FPM-B	1009338

General instructions for use

Please read through the following instructions for use carefully. They will help to get the most use out of the operating instruction manual.

The following are particularly highlighted in the text:

- numbered points,
- ▶ handling instructions

operating instructions:

IMPORTANT

Notices are intended to make your work easier.

and safety instructions:

CAUTION

describes a potentially hazardous situation. If not avoided, could result in slight or minor injury or damage to property.

NOTICE

describes a potentially damaging situation. If not avoided may result in damage to property.

Please state the order no. (part no.), serial number and size, which you will find on the nameplate, with any query or spare parts order. This will enable clear identification of the flow monitor model and material version.

1 About this product

The “Flow Control” flow monitor is designed for gamma/ L series metering pumps with plastic liquid ends. It can be fitted directly onto the liquid end. The flow monitor is supplied ready fitted with a connection cable.

It is used for monitoring the flow volume pulses of the dosing pump in accordance with the float and orifice principle. The proportion of metering chemical flowing past the float is adjusted with the adjusting screw to match the pre-set lift volume of the pump so that an alarm is given if the feed rate falls by approx. 20 %.

On the gamma/ L the maximum admissible number of incomplete strokes can be pre-set to between 1-127, allowing optimum adaptation to process requirements.

2 Safety

- The Flow Control is designed exclusively to feed back to a gamma/ L series pump the pulses of liquid metering chemical created by the pump. If there is no acknowledgement pulse the Flow Control thereby indicates that no medium is being metered (due to blocked pump priming or discharge line, empty chemical feed tank, air in the liquid end, ...).
- The Flow Control can be screwed directly (without adapter) onto liquid ends made of plastic only.
- All other uses or modifications are prohibited!
- The Flow Control cannot indicate a burst in the pump discharge line.
- The Flow Control must be operated by trained personnel.
  All other activities must be carried out by appropriately trained and authorised personnel!
- Observe the relevant national directives throughout the service life phases of the equipment!
- You must observe the information in the operating instructions manual on the different service life phases of the equipment!

3 Storage and transport

Admissible storage temperature:	-10 °C to +50 °C
Humidity:	98 % rel. humidity, non condensing

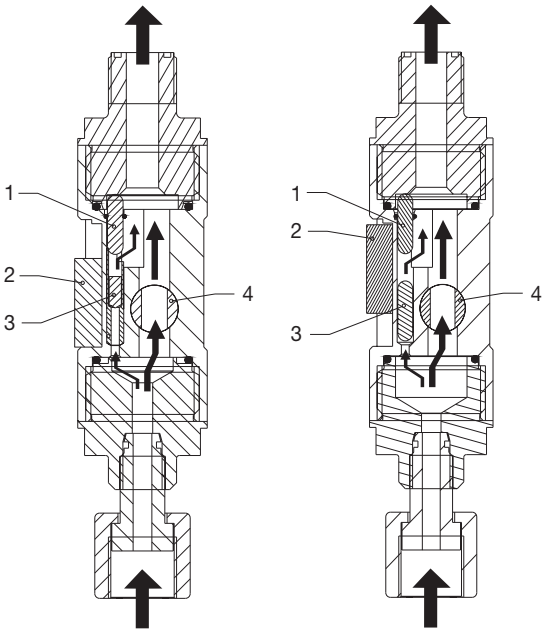
4 Equipment overview and function description

The “Flow Control” flow monitor comprises essentially a pipe with a float (3) and a bypass with adjustable cross section (see Fig. 1). The adjustable cross section (control knob) enables the Flow Control to be adapted to the lift volume of the pump - its response sensitivity is adjusted accordingly.

The float (3) rises and falls in time with the pump flow pulse in front of the reed-contact (2). This magnetic float (3) thus opens and closes the reed-contact (2). It transmits the resulting signals via the flow monitor cable to the pump.

The pump uses these signals as acknowledgement pulses for its individual strokes. If there is no acknowledgement pulse because the feed rate has fallen by approx. 20 % the pump stops after a pre-set number of failed pulses and goes into fault mode (see “ProMinent® gamma/ L Manual Solenoid Metering Pump Operating Instructions”).

In this flow monitor design there is always a flow as the line is not blocked by the float, just the bypass.



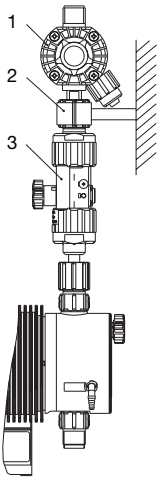
Size I Size II

1 Counter magnet
2 Reed contact
3 Float
4 Adjusting valve (adjustment knob)

Fig. 1

5 Installation

5.1 Installation, hydraulic



1 Multifunction valve
2 Hose clamp
3 Flow Control

Fig. 2

NOTICE

- **In the case of the pump types 0413, 0220, 0420, 0713 and 0232, if a hose is used on the discharge side, fit this near the liquid end or fit the Flow Control.**

  Strong vibrations may otherwise occur which will damage the liquid end.
- **If a multifunction valve is screwed to the Flow Control, secure with a hose clamp (see figure)!**
  Strong vibrations may otherwise occur which will damage the liquid end.
- **The Flow Control must never exceed the maximum admissible operating pressure of 16 bar, irrespective of the operating status of the system.**
- **The Flow Control must always be used in the vertical position!**
- **Fit a foot valve to the suction side of the pump.**

  Sediments in the Flow Control can obstruct the float.
- **When metering aggressive chemicals check the resistance of the materials used (see ProMinent resistance list in the latest product catalogue or at www.prominent.de)!**

Materials in contact with chemical

Housing:	PVDF
Float:	PTFE coating
Seals:	FPM-B or EPDM (depending on order no.)

Screw the Flow Control directly onto the pump discharge valve (is the adjustment knob facing the operator?).

5.2 Installation, electric

Plug the flow monitor connector into the “flow monitor” socket on the pump (symbol ⊜).

The description “Flow” will now appear in the bottom left of the LCD display of the gamma/ L. If not, switch from OFF to ON in the FLOW-menu and set the number of permitted failed strokes (the FLOW-menu is only accessible, if the connector is plugged into the “flow monitor” socket).

6 Commissioning

NOTICE

- **If the gamma/ L was calibrated before the Flow Control was installed it may be necessary to recalibrate the gamma/ L after the installation.**
- **The Flow Control cannot be used as a stop element. The adjustment knob cannot be used to stop the bore hole for the float.**

IMPORTANT

If the pump goes into “Error” mode during commissioning, acknowledge by pressing the P-key.

Priming

- ▶ prime (press the two arrow keys on the pump together)
- ▶ turn the control knob in both directions while filling the Flow Control (to speed up venting)

Settings

a) dynamic

NOTICE

Take into account the minimum values for the stroke length and the maximum viscosity for the metering chemical!

Stroke length, minimum values

Pump type gamma/ L ...	medium Operating pressure	stroke length (scale divisions)	length max. Operating pressure	stroke length (scale divisions)
1000	5 bar	> 50 %	10 bar	> 60 %
1601	8 bar	> 30 %	16 bar	> 40 %
1602	8 bar	> 30 %	16 bar	> 40 %
1005	5 bar	> 30 %	10 bar	> 50 %
0708	4 bar	> 30 %	7 bar	> 40 %
1605	8 bar	> 30 %	16 bar	> 50 %
1008	5 bar	> 30 %	10 bar	> 40 %
0413, 0713,	-	> 30 %	-	> 30 %
0220, 0420,	-	> 30 %	-	> 30 %
0232	-	> 30 %	-	> 30 %

Viscosity, max. (for dynamic operation):

Flow Control	in the case of pump types gamma/ L	Viscosity, max. (at 180 strokes/min)
Size I	1000, 1601 1602	50 mPa s 100 mPa s
Size II	all	150 mPa s

In the case of higher viscosity either :

- lower stroke rate or
- operate with static flow monitoring (see “Settings” - “b) static”; only in the case of gamma/ L with Identcode characteristic “flow monitor”: 1 (if nec. have reprogrammed).

IMPORTANT

The indicator “Flow” will disappear when the reed-contact is closed (the float is at the topmost position).

- ▶ Unplug the flow monitor cable (to temporarily disable the flow monitor)
- ▶ turn the control knob left as far as it will go (“ - ”)
- ▶ set the required operating pressure at the discharge line
- ▶ set the required feed rate at the pump while it is running (via frequency and stroke)
- ▶ plug the flow monitor cable back in
- ▶ the indicator “Flow” in the pump LCD display will disappear at each pressure surge
- ▶ turn the flow monitor’s control knob slowly to the right (“+”), until the indicator “Flow” stops flashing
- ▶ turn the control knob backwards slightly until the indicator “Flow” starts flashing again
- ▶ now lower the stroke length at the pump by approx. 20 % (scale division) (note old value) - the indicator “Flow” should stop flashing. If not, turn the flow monitor control knob slowly to the right (“+”), until the indicator “Flow” stops flashing
- ▶ set the stroke length back to the old value - the indicator “Flow” must start flashing again.

b) static

(gamma/ L series with Identcode characteristic “flow monitor” only: 1; only possible from viscosity stated in “Stroke length” tab.)

IMPORTANT

The indicator “Flow” will disappear when the reed-contact is closed (the float is at the topmost position).

- ▶ Unplug the flow monitor cable (to temporarily disable the flow monitor).
- ▶ turn adjusting knob to the left as far as it will go (“ - ”)
- ▶ set the required operating pressure at the discharge line (max. 16 bar)
- ▶ set the required feed rate at the pump (via frequency and stroke)
- ▶ plug the flow monitor cable back in
- ▶ the indicator “Flow” in the bottom left of the pump LCD display will disappear
- ▶ turn the flow monitor’s control knob slowly to the right turn (“+”), until the indicator “Flow” appears
- ▶ turn the control knob backwards slightly until the indicator “Flow” disappears again.
- ▶ now lower the stroke length at the pump by approx. 20 % (scale division) (note old value) - the indicator “Flow” should appear. If not, turn the flow monitor control knob slowly to the right (“+”), until the indicator “Flow” appears
- ▶ set the stroke length back to the old value - the indicator “Flow” must disappear again.

7 Maintenance

Check that the flow monitor is working correctly every 3 months.

If subject to heavy use we recommend reducing the intervals between services!

Checking settings

a) dynamic operation

- ▶ Lower the stroke length - if the stroke length is reduced by approx. 20 % (scale division) the indicator “Flow” must stop flashing. If not, find the cause and reset the Flow Control if necessary.
- ▶ set the stroke length back to the required value - the indicator “Flow” must start to flash again.

b) static operation

- ▶ Lower the stroke length - if the stroke length is reduced by approx. 20 % (scale division) the indicator “Flow” must appear. If not, find the cause and reset the Flow Control if necessary.
- ▶ set the stroke length back to the required value - the indicator “Flow” must disappear again.

8 Repair

IMPORTANT

- **If the metering chemical is hazardous, wear suitable protective equipment.**
- **Avoid getting the plug contacts wet.**

  Dry the connector before plugging in.
- **The reed-contacts must be fitted in the lower position in the case of Size I, in the upper position in the case of Size II (Fig. 1)!**

Clean any blocked or stuck areas inside the Flow Control (see exploded drawing in the appendix):

- ▶ unscrew dismantled Flow Control
- ▶ remove the counter magnets and the small o-ring from the bore hole for the float
- ▶ take out the float
- ▶ clean all parts with a suitable cleaning agent and suitable small brush
- ▶ check the orientation in which the float and counter magnet make contact
- ▶ slide the float into the bore hole
- ▶ insert the small o-ring into the bore hole for the float with tweezers
- ▶ insert the counter magnet so that it makes contact with the float
- ▶ screw the Flow Control tight again.

9 Troubleshooting

CAUTION

- **Protect yourself from hazardous metering chemicals.**
- **Depressurise the system before working on the Flow Control or the pump!**

IMPORTANT

Press the P-key in order to restore the pump to the operating mode after one of the following errors.

Error The pump stops during priming (red LED display lit, indicator “Error” appears and “FLOW” flashes)

Cause Air in the liquid end has prevented the Flow Control from emitting an acknowledgement pulse

Remedy
- ▶ Unplug the flow monitor cable during priming - The “Flow” function is temporarily disabled.

Error The pump stops while setting the Flow Control (red LED display lit, indicator “Error” appears and “FLOW” flashes)

Cause The Flow Control has emitted too few consecutive acknowledgement pulses

Remedy
- ▶ Press the P-key.

Error The pump stops during operation (red LED display lit, indicator “Error” appears and “FLOW” flashes)

Cause There is gas in the liquid end - gaseous metering chemical

Remedy
- ▶ Unplug the flow monitor cable from the pump
- ▶ vent the liquid end
- ▶ plug the flow monitor cable into the socket on the pump
- ▶ increase the number of acknowledgement pulses (see FLOW-menu).

Cause There is gas in the liquid end - the chemical feed tank is empty

Remedy
- ▶ Fill the chemical feed tank
- ▶ unplug the flow monitor cable from the pump
- ▶ vent the liquid end
- ▶ plug the flow monitor cable into the socket on the pump.

Cause There is gas in the liquid end - Leak between the chemical feed tank and the Flow Control

Remedy
- ▶ Repair the leak
- ▶ unplug the flow monitor cable from the pump
- ▶ vent the liquid end
- ▶ plug the flow monitor cable into the socket on the pump.

Cause Blockage between Flow Control and chemical feed tank

Remedy
- ▶ Remove blockage
- ▶ unplug the flow monitor cable from the pump
- ▶ vent the liquid end
- ▶ plug the flow monitor cable into the socket on the pump.

Cause The stroke adjustment knob has moved

Remedy see “Commissioning” - “Settings”

Cause The metering chemical is too viscous

Remedy see “Commissioning” - “Settings”

Cause The float has become stuck

Remedy
- ▶ Clean the Flow Control, see “Repair”

10 Disposal

NOTICE

Observe relevant local directives!

11 Technical specifications

Back pressure, max.: 16 bar

Viscosity:

Flow Control for gamma/ L	with pump types	Viscosity, max. (at 180/min)
Size I	1000, 1601 1602	50 mPa s 100 mPa s
Size II	all	150 mPa s

In the case of higher viscosity either:

- meter at lower stroke rate or
- operate with static flow monitoring (see “Settings” - “b) static”).

Materials information (materials in contact with chemicals):

Contact	Float	O rings
PVDF	PTFE coating	EPDM (in the case of Order No. 1009229, 1009336)
		FPM-B (in the case of Order No. 1009335, 1009338)

Weight: approx. 200 g

Electrical data, reed-contact

Switch power, max.:	10 W
Switch voltage, max.:	200 V DC
Switch current, max.:	0.5 A

Temperature data:

Storage temperature:	-10 °C to +50 °C
Ambient temperature:	-10 °C to +45 °C
Feed chemical temperature (at max. operating pressure):	-10 °C to +35 °C
Contact and enclosure rating:	IP 65 (in accordance with DIN EN 60529 and IEC 60529, corresponds to VDE 0470 Part 1)