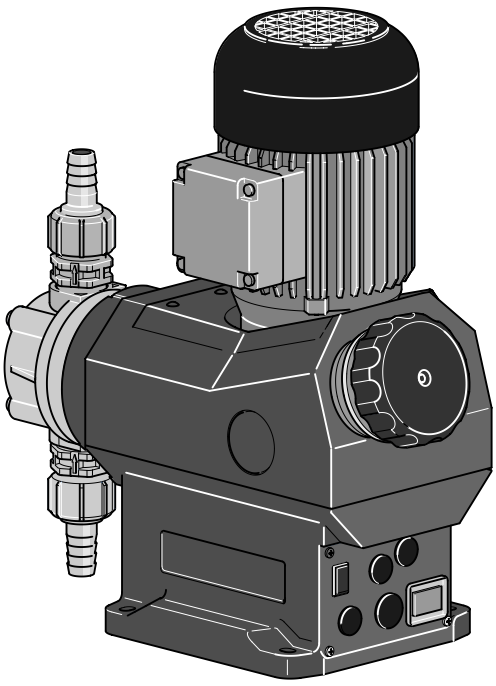
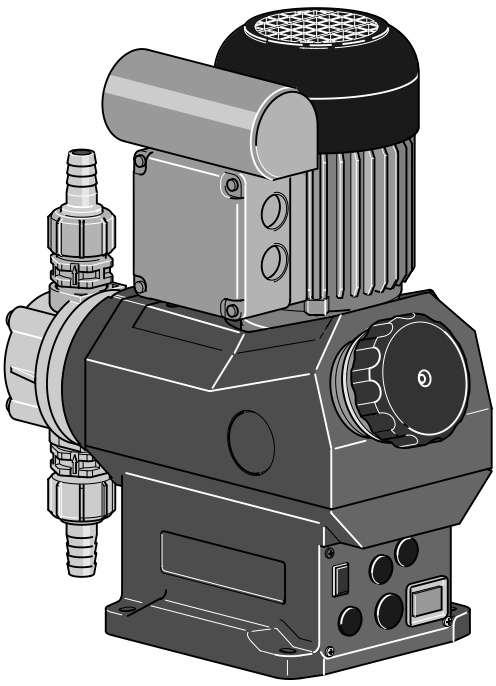
Operating Instructions

ProMinent® Vario, VAMc Metering Pumps





VAMc ___ ___ ___ ___ ___ ___ ___ ___

Please enter ident code of the device here.

For safe and correct operation of ProMinent® Vario metering pumps,
two sets of Operating Instructions are required:
The product-specific Vario Operating Instructions and “General Operating Instructions ProMinent® Motor-Driven Metering Pumps and Hydraulic Accessories”. Operating Instructions must be read together!

Please completly read through these operating instructions first! · Do not discard!
The warranty shall be invalidated by damage caused by operating errors!

Part No. 987096 ProMinent Dosiertechnik GmbH · 69123 Heidelberg · Germany BA VA 013 06/03 GB

Publishing details:
Operating Instructions ProMinent® Vario C

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Subject to technical modifications.

Product Identification/Identcode

Please enter the identity code given on the device label into the grey boxes below.

VAMc **Vario Diaphragm Dosing Pump, Version c**

Pump type: (figures 1 + 2 = back pressure [bar], figures 3, 4, 5 = feed rate [l/h])

10008 10 bar, 8 l/h
10016 10 bar, 16 l/h
07026 7 bar, 26 l/h
07042 7 bar, 42 l/h
07012 7 bar, 12 l/h
07024 7 bar, 24 l/h
04039 4 bar, 40 l/h
04063 4 bar, 64 l/h

Liquid end materials:

PVT	PVDF, PTFE seal
SST	Stainless steel with PTFE seal

Liquid end version:

0	No valve springs
1	With 2 valve springs, Hastelloy C4, 0.1 bar

Hydraulic connectors:

0	Standard connector according to technical data
1	Union nut and PVC insert
2	Union nut and PP insert
3	Union nut and PVDF insert
4	Union nut and stainless steel insert
7	Union nut and PVDF hose connector
8	Union nut and stainless steel hose connector

Version:

0	With ProMinent label (standard)
1	Without ProMinent label

Electrical power supply:

M	1 ph., 230 V	50/60 Hz
N	1 ph., 115 V	60 Hz
S	3 ph., 230/400 V	50/60 Hz

Stroke sensor:

0	without stroke sensor
3	with Namur stroke sensor

Stroke length adjustment:

0	Manual stroke length adjustment

VAMc _____ ___ _ _ _ _ _ _

1 Safety relevant instructions for ProMinent® metering pumps

Safety precautions and important operating instructions are divided into classes and provided with symbols. Please familiarise yourself with the following designations and symbols.

WARNING

Describes a potentially dangerous situation. Could result in loss of life or serious injury if preventative measures are not taken.

CAUTION

Describes a potentially dangerous situation. Could result in lesser injuries or damage to property if preventative measures are not taken.

IMPORTANT

Describes a potentially threatening situation. Could result in damage to property if preventative measures are not taken.

NOTE

Guidelines are intended to make your work easier.

1.1 General notes

Correct use

- The Vario must be used for liquids only!
- The Vario may be used only in compliance with the technical data and specifications given in the operating instructions!
- It is forbidden to use the Vario for any other purpose, or to modify it in any way!
- The Vario is not suitable for dosing gases or solids!
- The Vario must be used by trained and authorised personnel only!

CAUTION

- **Assembly of ProMinent® metering pumps with foreign parts which are not tested or recommended by ProMinent is not permissible and can lead to injury to persons or damage for which no responsibility is accepted!**
- **Pumps must be accessible for operating and servicing at all times. Accesses must not be obstructed or blocked!**
- **For servicing and repair work where dangerous or unknown dosing media are being used, first empty and flush out the liquid end! Observe the safety data sheets for the dosing liquid!**
- **When metering dangerous or unknown liquids those working on the liquid ends must wear protective clothing (goggles, gloves, ...)!**
- **The plug (item. 9 in Fig. 6, page 13) must be fitted during operation!**

Sound intensity level

The sound intensity level is < 70 dB (A)
at maximum stroke, maximum stroke rate, maximum back pressure (water) in accordance with:
DIN EN 12639 (Metering Pump Noise Measurement)

1.2 Notes for installation, commissioning and operation

CAUTION

- **The metering pump may still contain residual water in the liquid end from testing in the factory.**

  In the case of media which must not come into contact with water, the liquid end must be cleared of all water before commissioning. To do this rotate the pump 180° and empty the liquid end and then flush from above through the intake connection using a suitable medium.
- **When operating the metering pump against a closed isolator at the pressure end, the backpressure can reach several times the maximum permissible backpressure. This can cause the delivery line to burst!**
  To avoid this, a pressure relief valve is recommended which limits the backpressure!

IMPORTANT

- **Design the pressure lines so that pressure peaks on the discharge stroke do not exceed the maximum permissible pressure (fit a pressure relief valve if necessary)!**
- **Adjustments to the stroke length should only be carried out with the pump running!**

NOTE

- **The pump shall be secured in such a way that no vibration can occur!**
  The valves of the liquid end must always be vertical to ensure correct operation!
- **Intake and delivery pipes must always be arranged such that strain-free connection to the liquid end is guaranteed!**
  Pipes shall be secured in such a way that no vibration can occur!
- **Use only the locking rings and hose fittings designed for the particular hose diameter and also use original hoses with the specified hose dimensions and wall thickness, otherwise the security of the connection is not guaranteed!**

  Reductions in hose sizes are to be avoided!

  The permissible pressure stress of the hoses is to be observed.
- **When dosing extremely aggressive or dangerous media an arrangement which relieves back into the tank is advisable!**

  Moreover, an shut-off valve should be fitted on the pressure and suction sides!

1.3 Notes on servicing and repair

CAUTION

- **Metering pumps and their peripherals may only be serviced by expert and authorised persons!**
- **When carrying out servicing or repairs where dangerous or unknown media are used, always flush the liquid end first!**
- **When metering dangerous or unknown liquids, those working on the liquid end must wear protective clothing (goggles, gloves, ...)!**
- **The pressure in the metering pipe must first be released before working on the pump.**

  Always empty and flush the liquid end!

  Observe the safety data sheets for the metering liquid!

WARNING

- **Isolate the supply cable or withdraw the mains plug before opening the pump.**

  Check for freedom from voltage!

  Always secure the pump against unauthorised restarting during repair work!
- **Pumps which are used for dosing radioactive media must not be shipped!**

IMPORTANT

- **Pumps must only be returned for repair in a clean condition and with the liquid end flushed out!**

2 Product Description

2.1 Marking/Identification of pump type

Each Vario metering pump shall be provided with an identification plate on the side of the foot.

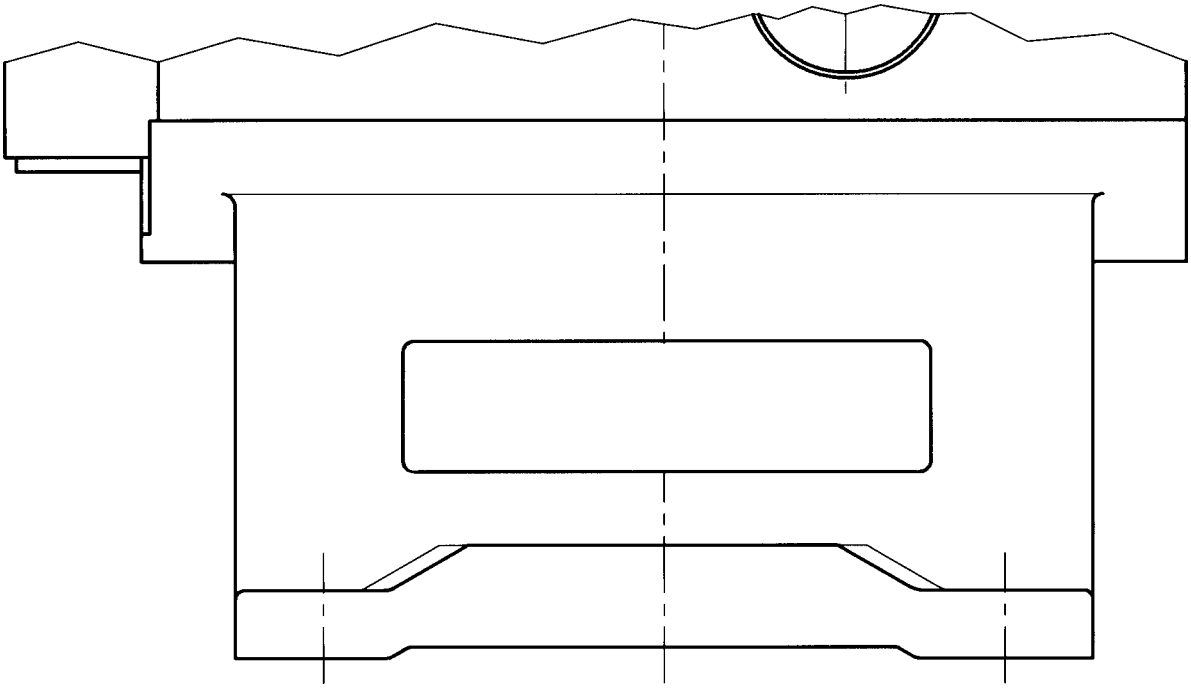


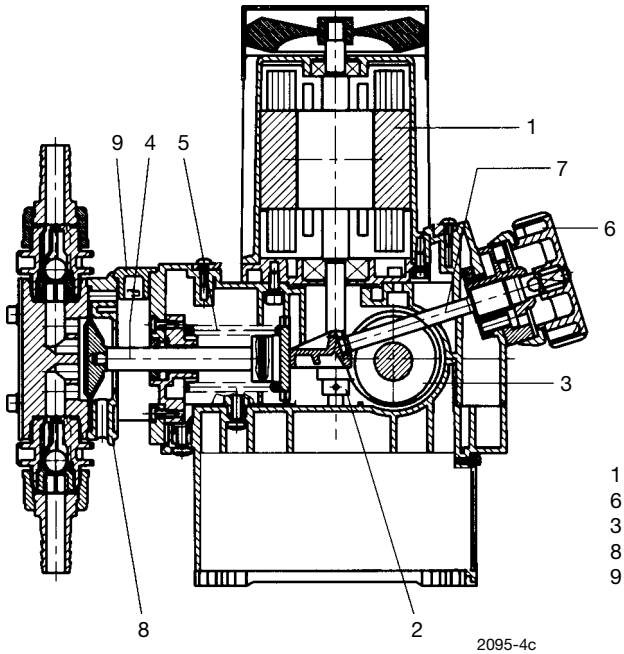
Fig. 1

The identity code and serial number shall be given in addition to the normal technical data. Both these numbers are to be used in all enquiries as they enable the type of metering pump to be clearly identified.
See page 4 for key to the identcodes.

Technical modifications reserved.

2.2 Construction and functional description of drive unit

The ProMinent® Vario is an oscillating displacement metering pump whose stroke length can be adjusted in steps of 1%. It is driven by a special custom built single phase AC motor or a standard three phase motor (1). Its drive rotation is reduced by the worm gearing (2) and transmitted via the eccentric roller (3) to the connecting rod (4) and therefore changed to an oscillating motion. A powerful return spring (5) holds the connecting rod against the eccentric roller to provide a return stroke. The length of the stroke is adjusted by using the stroke adjustment knob (6) and shaft (7) to limit the return stroke. The stroke is transmitted directly to the piston. In conjunction with the valves, this generates the pressure or vacuum in the liquid end which is necessary for delivery. The delivery flow is pulsating.



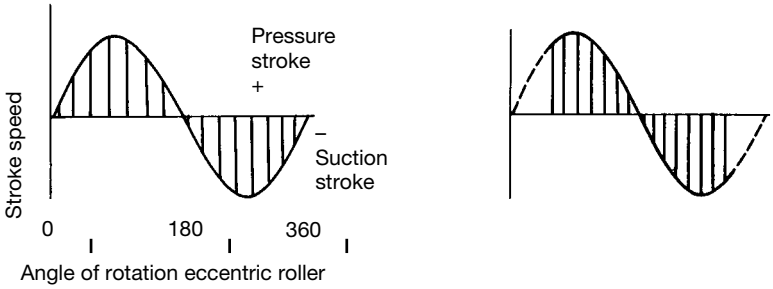
1 Motor
6 Adjustment of stroke
3 Housing with gearing
8 Discharge unit
9 Protective plug

Fig. 2

2.2.1 Diagram showing operation of stroke

a) Stroke during max. number and length of strokes

b) with reduced stroke length



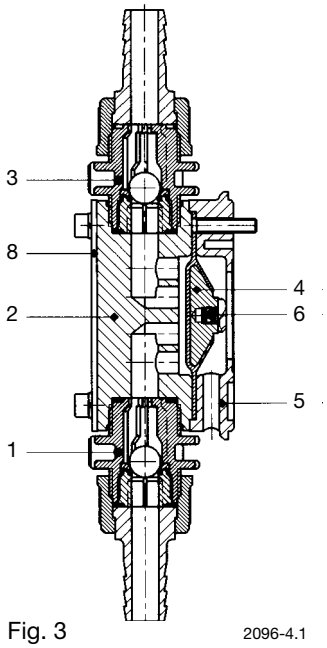


Fig. 3

2.3 Construction and functional description of diaphragm delivery unit

The heart of the delivery unit is the DEVELOPAN® metering diaphragm (4). It hermetically seals the delivery chamber of the liquid end (2) and effects the displacement in the liquid end (2). The end washer (5) of chemically-resistant plastic separates the drive housing from the delivery part and protects the drive from corrosion in the event rupture of the diaphragm. The suction valve (1) and pressure valve (3) which are of identical construction, operate in conjunction with movement of the diaphragm to provide the delivery operation. The valve balls can be spring-loaded for metering viscous media.
The connecting dimensions of valves and liquid ends which are the same size but of different material are the same. The parts can be interchanged as required.

2.4 The drive motor

1-phase motor

The client connects the equipment directly to the terminal box (see also section 5.3 technical data).

Standard three-phase motor

The Vario is also optionally available with a 3-phase dual-wound motor. 3 ph., 23/240 V, 50/60 Hz. The client connects the equipment directly to the terminal box (see also section 5.3 Technical data).

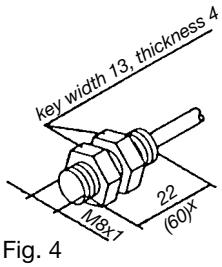


Fig. 4

Namur type stroke sensor

Material - stainless steel

Switch aperture s_n inset	1.5 mm flush See figure above
Electrical cabling:	DC, two wire, as DIN 19 234 (NAMUR)

Fixtures:

as DIN 19 234 (NAMUR)	NJ 1.5-8GM-N

Features:

Operating switch apertures s_a	$0 \le s_a \le 0.81\ s_n$
Reduction factor at	V2A 0.85; Al 0.4; Cu 0.3
Reproducibility R	≤ 0.01 mm
Switch hysteresis H	approx.. 10 %
Standard measurement plate 1 mm Fe	8 mm x 8 mm
Operating voltage U_B	5 bis 25 V DC
Residual ripple	≤ 5 %
Switch frequency f	5 kHz

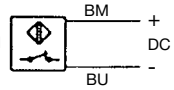
Electrical Data:

Standard voltage	8 V DC (Ri approx. 1 k/ohm)
Individual inductivity	20 µH
Individual capacity	16 nF
Output/power uptake	
active surface free	≤ 3 mA
active surface covered	≤ 1 mA

Mechanical Data:

Ambient temperature	248 - 373 Kelvin (-25 °C bis +100 °C)
Enclosure rating as DIN 40 050	IP 67
Permissible impact and Oscillation stress	b ≤ 30g, T ≤ 11 ms f ≤ 55 Hz, a ≤ 1 mm
Connector	2 m, PVC-Kabel, 0,14 mm²

Standard symbol/connection:



3 Commissioning

3.1 General notes

The pulsating operation of the ProMinent® Vario as an oscillating displacement metering pump causes high pressure differences in the pipes on each discharge stroke. If these pressure differences are too great because of unsatisfactory lines, it can lead to high metering errors or to failure of the metering pump. When dosing very viscous media or where the metering lines are very long, a larger internal diameter for the pipe should be chosen if necessary and/or a compressed air chamber or diaphragm pulsation damper should be fitted.

CAUTION

- **Check that the materials used can withstand the chemicals which are being metered (refer to ProMinent® Resistance List in the Product Catalogue).**
- **The safety notes in Chapter 1 must be observed.**

3.2 Installing and connecting

- The metering pump must be installed vertically with its base on a horizontal support.
- The intake and delivery lines shall be laid in such a way that the coupling to the liquid end is free of mechanical strain.
- The pumps and pipes shall be secured so that no vibration can occur.
- The pipes shall be attached in such a way that the pump and liquid end can be moved sideways if necessary.
- When metering extremely aggressive or dangerous media it is advisable to have a relief back to the tank and to have an isolating valve on both the delivery and intake side.
- If the installation instructions are complied with and the stroke length is greater than 30%, a reproducible metering accuracy of more than ± 2% is obtained.

Delivery line

- The delivery line shall be designed in such a manner that pressure peaks on the discharge stroke do not exceed the maximum permissible operating pressure.
- To protect against overload, a pressure relief valve with a return to the feed tank is to be provided on the pressure side.
- A pressure relief valve shall always be fitted in conjunction with a compressed air chamber or pulsation damper.

CAUTION:

- **Motorised metering pumps may under certain circumstances work against a substantially increased operating pressure for short periods without the electrical safety devices responding.**
  For this reason the maximum permissible operating pressure must be complied with to protect against accidents and premature wear.

Intake line

- The intake line must always be laid vertically.
- It should be as short as possible.
- It shall be dimensioned with regard to cross-section and length such that vacuum which occurs on suction does not reach the vapour pressure of the medium to be metered.
- Curves should be used where possible instead of angles for bends.
- Excessive vacuum on the intake side leads in extreme cases to a break in the column of liquid or to an incomplete return stroke (the return stroke can no longer be detected at the stroke adjusting knob).
- The product h · rho shall not exceed the specified maximum suction head.
  h = geodetic height
  rho = density
  e.g.: h = 2 m rho = 1.48 2 · 1.48 = 2.96 mWS (mWG)
  For details of the suction head refer to Chapter 5.1, page 15 „Performance data“.
- It must also be guaranteed that no overload of the drive unit occurs on the suction side. Where there is a positive suction head the above limits shall be observed.
- The suction line shall be dimensioned such that no overload occurs at the end of the suction stroke due to mass lag.

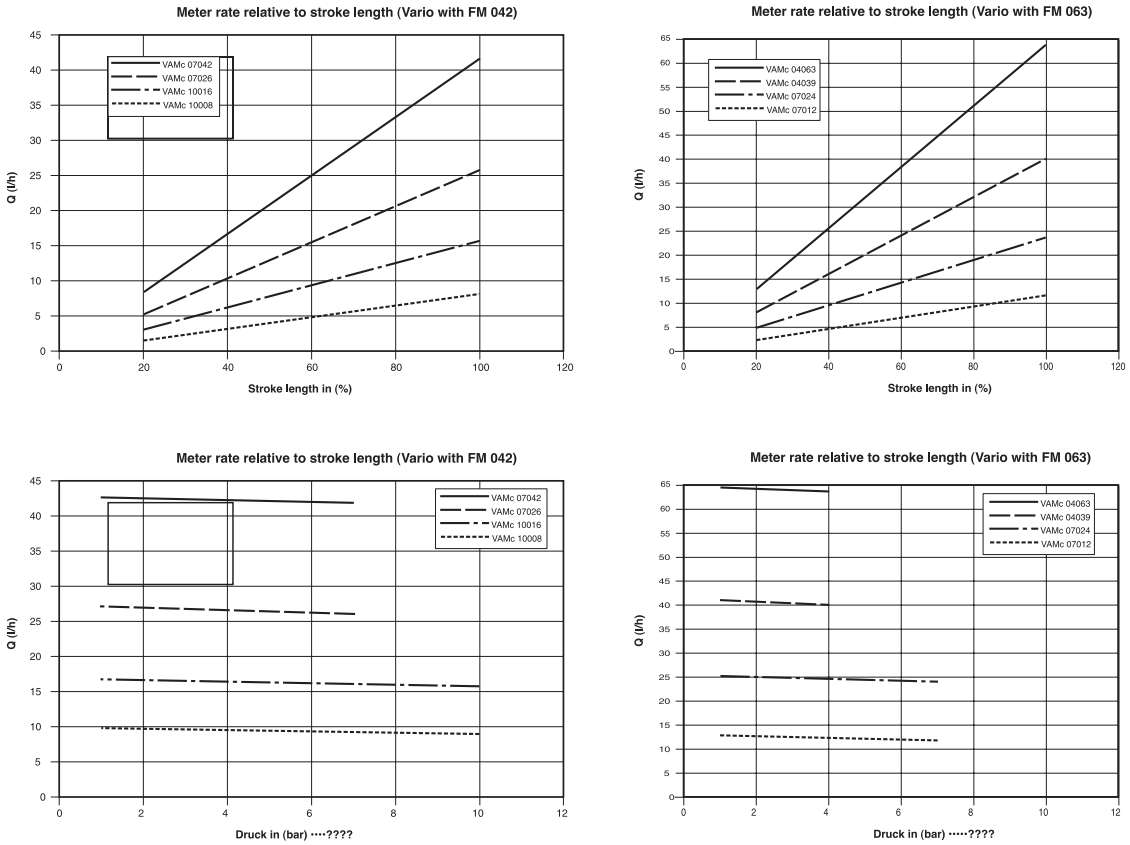
Pipe calculations
The necessary lines can be calculated in accordance with the „Calculations of metering lines“ instructions.

When submitting all necessary data in accordance with technical information sheet “Data for discharge line calculation” (see “General Operating Instructions Manual ProMinent® Motor Driven Metering Pumps and Hydraulic Accessories”) the discharge line can be tested at short notice in the plant free of charge.

3.3 Commissioning

- Check correct installation in accordance with the aforementioned points and installation notes.
- Bleed the pressure side. Switch on the pump and allow to operate at maximum stroke length until the liquid end is charged. Switch off the pump.
- Close the bleed on the pressure side, if necessary open the shut off valve in the discharge line and allow the pump to operate.
- Check the response pressure of the pressure relief valve.
- Set the required meter rate in accordance with the „Meter rate relative to stroke length“ diagram.
- Check the meter rate and correct if necessary.

Diagram for setting the meter rate



Setting the stroke length

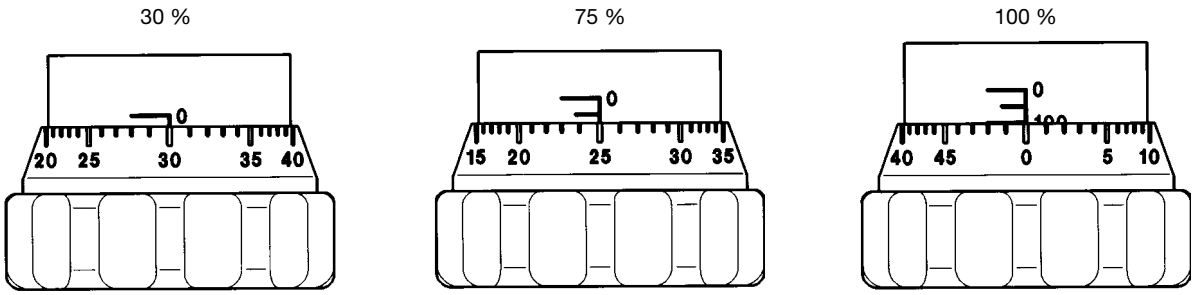


Fig. 5 1 rotation (360 °) ≙ 50 % stroke length 2625-4.1

3.4 Troubleshooting

Symptom	Possible cause	Remedy
- Metering pumps does not suck (on commissioning)	- Suction head too high	- Install pump closing to feed tank
	- Back pressure in the injection line (pressure side)	- Remove backpressure, (e.g. via bypass line)
- No metering even though the drive is running (after long operation)	- Stroke setting 0%	- Increase stroke length (➪100 %)
	- Feed tank empty	- Replenish metering medium and restart system
	- Gas bubble in intake line and liquid end	- Bleed intake line, check for leaks and restart system
- Leakage of metering liquid at the leak outlet of the liquid end	- Defective diaphragm	- Replace diaphragm (refer to Chapter 4.2)
- Loss of metering performance (after long operation)	- Defective wear parts in the valves	- Replace (refer to Chapter 4.2)
	- Deposits in the valves	- Clean or replace valve parts (refer to Chapter 4.2)

4 Servicing/Maintenance

CAUTION:

- **Repairs to electrical equipment may only be carried by qualified electricians. Serious danger can arise to the user due to incorrect repairs. Repaired electrical equipment must be subjected to a function and safety inspection in accordance with the valid regulations of the consumer country.**
- **The safety precautions given in Chapter 1 must be complied with.**

4.1 General servicing notes

- The servicing of Vario metering pumps is limited to checking the metering line and checking for leaks.
- The gearing is lubricated for life by packing with grease.
  (Type 1: Klüber ISOFLEX Topas NB 5051), capacity 24 ml).
- Spare parts are given in the accompanying spare parts list.
- The individual parts given in the spare parts list are regarded as wear parts.

4.2 Replacement of wear parts

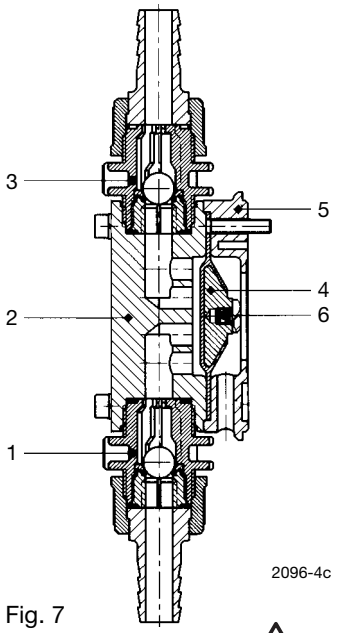


Fig. 7

Replacement of diaphragm

Flush the line (in the case dangerous media wear protective gloves and goggles).
Set the stroke length to zero when the pump is running. Switch off the pump and prevent it from being switched on again. Unscrew priming (1) and discharge connector (3). Remove the plug (9) from the lantern.
Slacken the 4 screws on the pump head (2) and withdraw approx. 5 mm from the screw holes but leave them in the liquid end. Then lightly twist the liquid end unit to the left to slacken the diaphragm (4) on the push rod (6) and unscrew (if necessary insert a suitable single-head eng. wrench through the opening for the plug (9) to hold the push rod (6) still). Clean the seal faces. Place a new diaphragm in the top plate (5) and position the pump head (2) so that the suction connector (1) is above the vent hole of the top plate (5). Insert screws and screw the diaphragm clockwise onto the push rod (6). Tighten by hand. Switch on the pump, set the stroke length to 100 % and turn liquid end to the right while the pump is running until the suction connector (1) is pointing vertically downwards. Disconnect the pump from the mains power supply so that the push rod (6) comes to a halt near the rear limit position
Then screw in screws and tighten alternately to 4.5 ... 5.0 Nm. Push plug (9) back into the opening. Connect priming- (1) and discharge connector (3). Check the pump for tightness at maximum back pressure.

IMPORTANT

Check the tightening torque of the liquid end screws after 24 h in operation!

Tightening torque for liquid end screws: 4.5 ... 5.0 Nm (for all sizes).

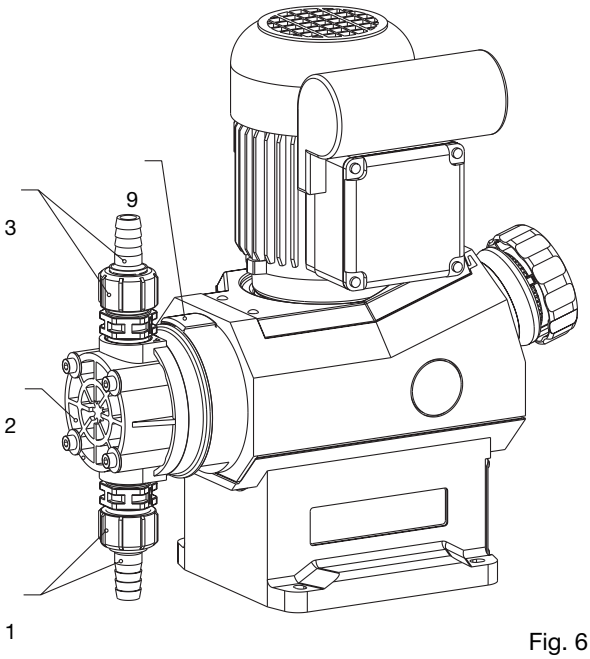


Fig. 6

Replacement of valve parts

Flush the line (in the case of dangerous media wear protective gloves, goggles, ...). Switch off the pump and disconnect from the mains. Slacken the connecting unions. Unscrew valve (1) and remove. Where the „valve assembly“ is being changed clean the sealing surfaces and fit the new valve and seal in place and tighten. Connect up. Switch on the pump and check the connections for leaks.
If the internal parts of the valves are being exchanged, unscrew and remove the valve and slacken the valve seat bush using a special tool and unscrew. Replace the parts as necessary and reassemble in reverse order. Clean the sealing faces. Continue as before.

4.3 Disposal of old parts

WARNING

- **Spring under pressure!**
  Ensure that the return spring (pos. 5, section 2.2) is held under strong mechanical pressure when dismantling the pump.
- **For disposal please observe all locally applicable directives!**

4.4 Spare parts set

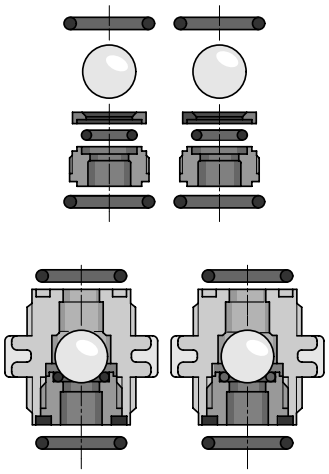
The spare parts kit contains all components required for maintenance of liquid ends.

PVT Version

1 pump diaphragm
1 suction valve compl.
1 discharge valve compl.
2 valve balls
1 set of seals (jacket rings, ball seat discs)

SST Version

1 pump diaphragm
2 valve balls
1 set of seals (jacket rings, flat seals, ball seat)



pk_2_002

Fig. 8

Vario Spare Parts Kit

(Applies to identity code: Type VAMc 10008, 10016, 07026, 07042)		**Order No.**
Liquid end FM 042 - DN	PVT	1003641
	SST	910751
	SST (with 2 valve sets)	910750

(Applies to identity code: Type VAMc 07012, 07024, 04039, 04063)		**Order No.**
Liquid end FM 063 - DN 10	PVT	1003642
	SST	910756
	SST (with 2 valve sets)	910755

Pump diaphragms		**Order No.**
Vario with **FM 042**	Type VAMc 10008, 10016, 07026, 07042	811458
FM 063	Type VAMc 07012, 07024, 04039, 04063	811459

5 Technical Data

5.1 Performance data

	at 50 Hz				at 60 Hz							
	Pump Capacity at Max. Back Pressure			Max. Stroke Freq.	Pump Capacity at Max. Back Pressure		Max. Stroke Freq.		Suction Lift	Perm. Admiss. Pressure Suction Side	Connector Suction/ Discharge Side	Shipping Weight
Pump Type Vario	**bar**	**l/h**	**ml/ stroke**	**strokes/ min.**	**psi**	**l/h/gph**	**strokes/ min.**		**mWG**	**bar**	**G - DN**	**kg**
10008	10	8.0	3.6	38	145	9.6 / 2.5	45	3.5	7	2.8	3/4 - 10	6.0 / 7.2*
10016	10	16.0	3.6	77	145	19.2 / 5.1	92	3.5	7	2.8	3/4 - 10	6.0 / 7.2*
07026	7	26.0	3.6	120	102	31.2 / 8.2	144	3.5	7	2.8	3/4 - 10	6.0 / 7.2*
07042	7	42.0	3.6	192	102	50.4 / 13.3	230	3.5	7	2.8	3/4 - 10	6.0 / 7.2*
07012	7	12.0	5.4	38	102	14.4 / 3.6	92	3.0	6	1.7	3/4 - 10	6.0 / 7.2*
07024	7	24.0	5.4	77	102	28.8 / 7.6	92	3.0	6	1.7	3/4 - 10	6.0 / 7.2*
04039	4	40.0	5.4	120	58	48.0 / 12.7	144	3.0	6	1.7	3/4 - 10	6.0 / 7.2*
04063	4	64.0	5.4	192	58	76.8 / 20.3	230	3.0	6	1.7	3/4 - 10	6.0 / 7.2*

* Data for SST version

Materials In Contact With Chemicals

	Liquid End	Suction/ Discharge	Seals	Valve Balls	Valve Seat	Standard connector
PVT	PVDF (Polyvinylfluoride)	PVDF	PTFE	ceramic	PTFE	choice, see identcode
SST	stainless steel no. 1.4571	stainless steel no. 1.4581	PTFE	stainless steel no. 1.4404	PTFE	choice, see identcode

DEVELOPAN® pump diaphragm with PTFE coating.

5.2 Dimensions sheet Vario C

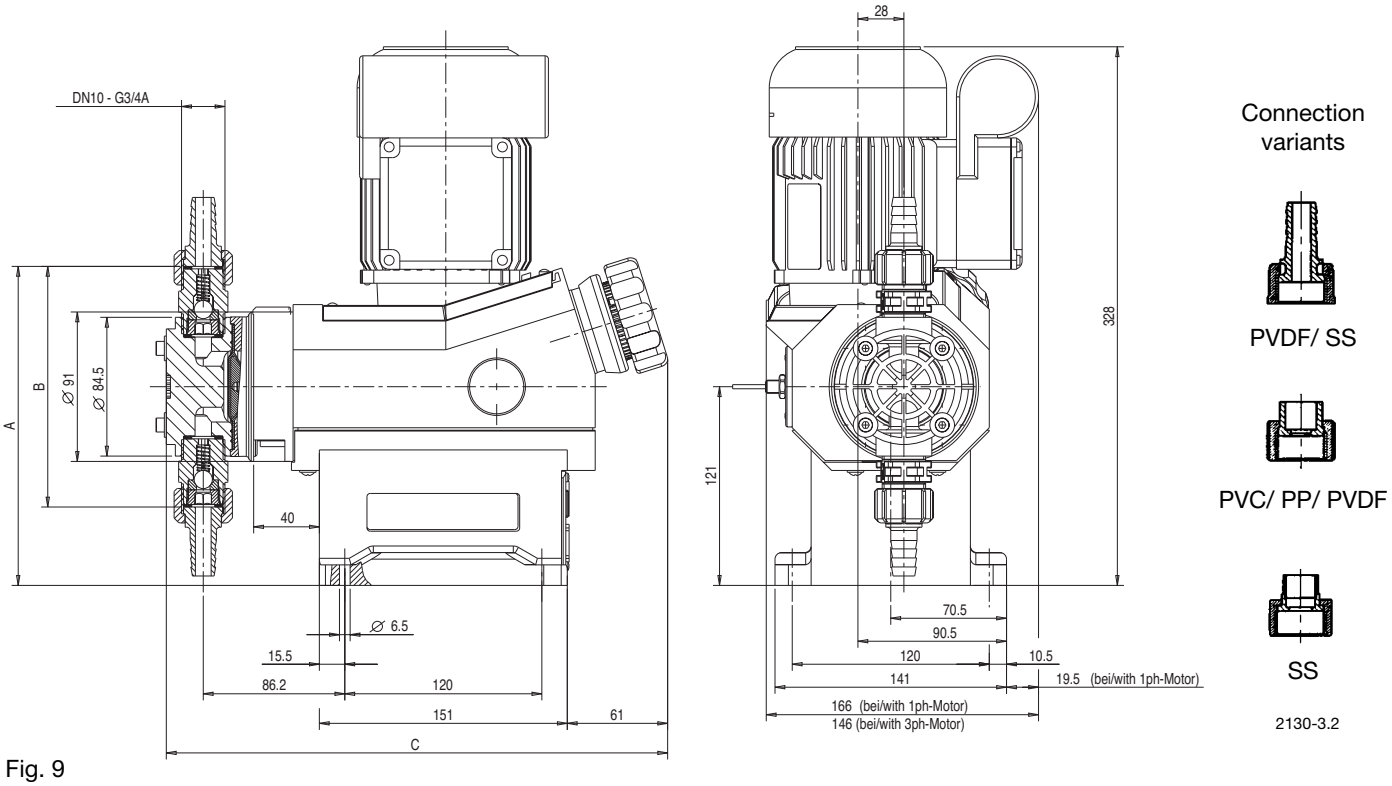


Fig. 9

Dimensions Vario C (in mm)

Material version	A	B	C
PVT	194	147	305
SST	192	143	300

Temperature details

Admissible storage temperature: – 10 to +50 °C

Admissible ambient temperature: – 10 to +40 °C

Temperature resistance of the material versions:

Material,	long term, at max. back pressure	short term, max. 15 min at max. 2 bar
PVT	50 °C	100 °C
SST	50 °C	120 °C

Short term higher temperatures (see above) are admissible e.g. for sterilization or flushing with hot water

Climate

Admissible humidity: 92 % vol. humidity, non condensing

5.3 Motor data sheets

Motor Datenblatt / Motor data sheet / Fiche technique pour moteur

Bestell Nr. **order no. / no. de commande**	**1021378**	**Hersteller** **producer / producteur**	**ATB**

Motor-Typ motor type type du moteur	RBF0,09/2-71RQ	**Leistungsfaktor** power factor facteur de puissance	0,78/0,80	
Maschinenart type of machine désignation	3-Ph. Motor	**Wirkungsgrad** efficiency rendement	65%	
Schutzart degree of protection degré de protection	IP55	**Bemessungsfrequenz** rated frequency fréquence nominale	50/60 Hz	
Bauform mounting construction	IMV18	**Bemessungsdrehzahl** rated speed vitesse nominale	2790/3350	U/min rpm t/mn
Bemessungsleistung rated output puissance nominale	0,07 kW	**Wärmeklasse** temperature class class d'isolement	F	
Bemessungsspannung rated voltage tension nominale	⅄ / Δ 400/230 V	**Anzugsstrom** starting current courant de démarrage	4,4/4,6	fach fold fois
Bemessungsstrom rated current courant nominale	0,20/0,35 A 0,19/0,33 A	**Anzugsmoment** starting torque couple de démarrge	2,8/2,6	fach fold fois
Geprüft nach tested in acc. with contrôlé selon	DIN EN 60034	**Kippmoment** pull-out torque couple de décrochage	3,0/2,8	fach fold fois
PTB Nr.		**Umgebungstemperatur** ambient temperature température ambiante	40 °C	
Ex-Schutzklasse ex-protective system		**Schaltung** connection branchement	⅄ / Δ	

Anmerkung
comments
observation

ProMinent

Pumpentyp VAMc_ _ _ _ _ S _ _

Die Daten entsprechen den Angaben der Motorenhersteller. Kenndaten funktionsgleicher Motoren anderer Hersteller ändern sich nur unwesentlich. Angaben ohne Gewähr. The data correspond to the details given by the motor manufacturers. Ratings of motors with the same functions made by other producers show insignificant changes only. This information is supplied without liability. Les données techniques correspondent au descriptif du fabricant des moteurs. Les données techniques des moteurs similaires chez d' autres fabricants varient très peu. Données sont d' ordre général.

ProMinent Dosiertechnik GmbH · 69123 Heidelberg · Germany Nr./No. MD-1021378 Datum/Date 5.5.03

Motor Datenblatt / Motor data sheet / Fiche technique pour moteur

Bestell Nr. **order no. / no. de commande**	**1021379**	**Hersteller** **producer / producteur**	**ATB**

Motor-Typ motor type type du moteur	RBF0,09/2-71RQ	**Leistungsfaktor** power factor facteur de puissance	0,94	
Maschinenart type of machine désignation	1-Ph. Motor	**Wirkungsgrad** efficiency rendement	45 / 44 %	
Schutzart degree of protection degré de protection	IP55	**Bemessungsfrequenz** rated frequency fréquence nominale	50/60 Hz	
Bauform mounting construction	IMV18	**Bemessungsdrehzahl** rated speed vitesse nominale	2750/3340	U/min rpm t/mn
Bemessungsleistung rated output puissance nominale	0,060 kW	**Wärmeklasse** temperature class class d'isolement	F	
Bemessungsspannung rated voltage tension nominale	230 V	**Anzugsstrom** starting current courant de démarrage	2,5/2,3	fach fold fois
Bemessungsstrom rated current courant nominale	0,60/0,65 A	**Anzugsmoment** starting torque couple de démarrge	1,7/2,0	fach fold fois
Geprüft nach tested in acc. with contrôlé selon	DIN EN 60034	**Kippmoment** pull-out torque couple de décrochage	2,4/2,7	fach fold fois
PTB Nr.		**Umgebungstemperatur** ambient temperature température ambiante	40 °C	
Ex-Schutzklasse ex-protective system		**Schaltung** connection branchement		

Anmerkung
comments
observation

ProMinent

Pumpentyp VAMc_ _ _ _ _ M _ _

Die Daten entsprechen den Angaben der Motorenhersteller. Kenndaten funktionsgleicher Motoren anderer Hersteller ändern sich nur unwesentlich. Angaben ohne Gewähr. The data correspond to the details given by the motor manufacturers. Ratings of motors with the same functions made by other producers show insignificant changes only. This information is supplied without liability. Les données techniques correspondent au descriptif du fabricant des moteurs. Les données techniques des moteurs similaires chez d' autres fabricants varient très peu. Données sont d' ordre général.

ProMinent Dosiertechnik GmbH · 69123 Heidelberg · Germany Nr./No. MD-1021379 Datum/Date 5.5.03

Motor Datenblatt / Motor data sheet / Fiche technique pour moteur

Bestell Nr. **order no. / no. de commande**	**1021380**	**Hersteller** **producer / producteur**	**ATB**

Motor-Typ motor type type du moteur	RBF0,09/2-71RQ	**Leistungsfaktor** power factor facteur de puissance	0,98	
Maschinenart type of machine désignation	1-Ph. Motor	**Wirkungsgrad** efficiency rendement	42%	
Schutzart degree of protection degré de protection	IP55	**Bemessungsfrequenz** rated frequency fréquence nominale	60 Hz	
Bauform mounting construction	IMV18	**Bemessungsdrehzahl** rated speed vitesse nominale	3390	U/min rpm t/mn
Bemessungsleistung rated output puissance nominale	0,060 kW	**Wärmeklasse** temperature class class d'isolement	F	
Bemessungsspannung rated voltage tension nominale	115 V	**Anzugsstrom** starting current courant de démarrage	2,8	fach fold fois
Bemessungsstrom rated current courant nominale	1,30 A	**Anzugsmoment** starting torque couple de démarrge	2,3	fach fold fois
Geprüft nach tested in acc. with contrôlé selon	DIN EN 60034	**Kippmoment** pull-out torque couple de décrochage	3,2	fach fold fois
PTB Nr.		**Umgebungstemperatur** ambient temperature température ambiante	40 °C	
Ex-Schutzklasse ex-protective system		**Schaltung** connection branchement		

Anmerkung
comments
observation

ProMinent

Pumpentyp VAMc_ _ _ _ _ N _ _

Die Daten entsprechen den Angaben der Motorenhersteller. Kenndaten funktionsgleicher Motoren anderer Hersteller ändern sich nur unwesentlich. Angaben ohne Gewähr. The data correspond to the details given by the motor manufacturers. Ratings of motors with the same functions made by other producers show insignificant changes only. This information is supplied without liability. Les données techniques correspondent au descriptif du fabricant des moteurs. Les données techniques des moteurs similaires chez d' autres fabricants varient très peu. Données sont d' ordre général.

ProMinent Dosiertechnik GmbH · 69123 Heidelberg · Germany Nr./No. MD-1021380 Datum/Date 5.5.03

EC Declaration of Conformity

We,

ProMinent Dosiertechnik GmbH
Im Schuhmachergewann 5 - 11
D - 69123 Heidelberg

hereby declare that, on the basis of its functional concept and design and in the version brought into circulation by us, the product specified in the following complies with the relevant, fundamental safety and health stipulations laid down by EC regulations.
Any modification to the product not approved by us will invalidate this declaration.

Product description :	***Metering pump, series Vario C***
Product type :	***VAMc...***
Serial number :	***see type identification plate on device***
Relevant EC regulations :	***EC - machine regulation (98/37/EC)*** ***EC - low voltage regulation (73/23/EEC)*** ***EC - EMC regulation (89/336/EEC subseq.92/31/EEC)***
Harmonised standards used, in particular :	***DIN EN 292-1, DIN EN 292-2, EN 809*** ***DIN EN 60335-1 , DIN EN 60335-2-41*** ***DIN EN 50081-1/2, DIN EN 50082-2, DIN EN 61006-1***
National standards and other technical specifications used, in particular :	
Date/manufacturer´s signature :	***June 12, 2003***
The undersigned :	*Dr. Rainer V. Dulger, Executive Vice President R&D and Production*