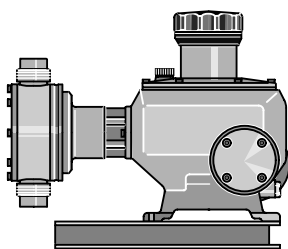


## 2.5 ProMinent® Makro TZ Diaphragm Metering Pumps

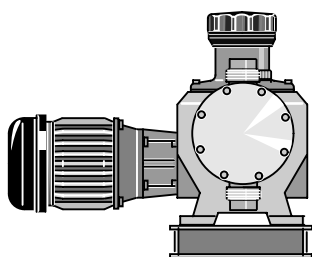
### 2.5.1

#### ProMinent® Makro TZ Motor Driven Diaphragm Metering Pumps



The ProMinent® Makro TZ diaphragm metering pump is a 0.75 kW dual-wound three phase motor driven metering pump, 230/400 V, 50/60 Hz, enclosure rating IP 55, insulation class F.

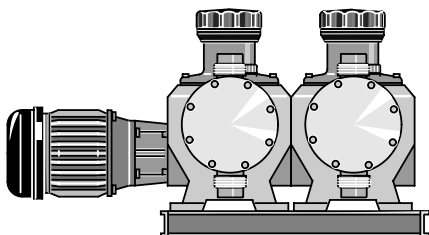
The stroke length can be adjusted by means of the shift ring mechanism from 0-10 mm (TZMb), with 0.5 % accuracy. The 5-speed gearbox is encased in a cast, seawater resistant, acrylic resin lacquered housing. Liquid ends are available in different material combinations to suit differing applications. The suction lift varies according to the density and viscosity of the medium, the dimension of the pipework and the pump stroke rate. Reproducibility of metering is better than  $\pm 2$  % in the stroke length range from 30 % -100 % subject to defined conditions and correct installation. (You must follow the instructions in the operating instruction manual). All motor driven metering pumps must be fitted with appropriate cut-out systems for safety reasons.



pk\_2\_012

#### ProMinent® Makro TZ TZMbA Add-On Pumps

The ProMinent® Makro TZ main diaphragm metering pump can be converted to a duplex or triplex pump with the ProMinent® Makro TZ add-on diaphragm pump (several add-on pumps can be operated at reduced back pressure). Multiplex pumps can also be retrofitted by the operator; all the necessary components and fittings are included with the TZMbA. Different stroke rates can be achieved with the add-on pump independently of the main pump as each TZMbA has its own reducing gear. The main power end can be fitted for this purpose with a more powerful drive motor. A base frame is required when using add-on power ends.



pk\_2\_013

#### ProMinent® Makro TZ Double Head Version TZMbD/TZMbB

The double head version of the ProMinent® Makro TZ is similar to the simplex pump. It is, however, fitted with a second liquid end.

The liquid ends work in push-pull mode by means of a coupling element in the gearbox.

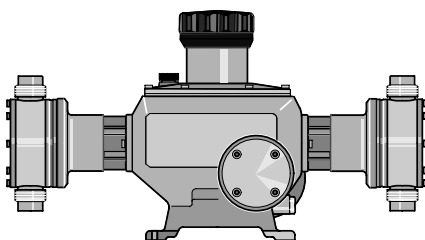
#### Actuation of Makro TZ Metering Pumps

##### Makro TZ stroke length-actuator/stroke controller

###### Makro TZ stroke actuator

Stroke adjustment motor for automatic stroke length adjustment, adjustment time approx. 1 sec. for 1 % stroke length, fitted with 2 limit switches for min. /max. setting, 1 k Ohm feedback potentiometer; enclosure rating: IP 54. Power supply 230 V ( $\pm 10$  %), 50/60 Hz, 40 W. Mech. stroke length indicator fitted to Makro TZ power end.

Alternative current / higher enclosure rating / Ex-protection to order.



pk\_2\_014

###### Makro TZ stroke controller

**Stroke controller** comprising actuator with stroke adjustment motor and integrated microprocessor controller for stroke length adjustment via a standard signal. Technical data see actuator.

###### Version:

Standard 0/4-20 mA current input, corresponds to 0-100 % stroke length. Change over switch for manual/automatic mode. Key switch for stroke adjustment in manual operating mode. 0/4-20 mA actual value output for remote display.

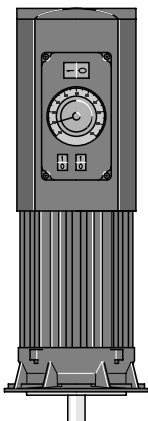
##### Variable speed motors with integrated frequency converter (Identcode characteristic V)

Power supply 1 ph 230 V, 50/60 Hz, 1.5 kW (see section 2.17.2).

Optional 0/4-20 mA external control. (see Fig. pk\_2\_103)

##### Speed controllers in metal housing (Identcode characteristic Z)

The speed controller kit comprises a frequency converter in a separate metal housing and 1.5 kW variable speed motor (see section 2.17.2).



pk\_2\_103

## 2.5 ProMinent® Makro TZ Diaphragm Metering Pumps

### 2.5.2 Base Model Identcode Ordering System (TZMb)

TZMb Motor-Driven Metering Pump TZMb Makro TZ 10 (mechanically driven add-on diaphragm pump)												
TZMb	<b>Drive type</b> H Main drive A Add-on drive D Double main drive B Double add-on drive											
	<b>Pump type:</b> (digits 1 +2 = back pressure [bar], digits 3-6 = feed rate [l/h]) 120260 070430 040840 120340 070570 041100 120430 070720 041400 120510 070860 041670 120650 071070 042100 material version PCT/PPT/TTT max. 10 bar											
	<b>Liquid end material:</b> PC PVC PP Polypropylene SS Stainless steel TT PTFE + 25% carbon											
	<b>Seal material:</b> T PTFE											
	<b>Positive displacement element:</b> 1 Multi-layer safety diaphragm with rupture indicator											
	<b>Liquid end version:</b> 0 No valve springs 1 With valve springs											
	<b>Hydraulic connection:</b> 0 Standard connection 1 PVC union nut and insert 2 PP union nut and insert 3 PVDF union nut and insert 4 SS union nut and insert											
	<b>Version:</b> 0 with ProMinent® logo 2 No ProMinent® logo A 0 with ProMinent® logo, with frame, simplex B 0 with ProMinent® logo, with frame, duplex C 0 with ProMinent® logo, with frame, triplex M Modified											
	<b>Electrical power supply:</b> S 3 ph. 230/400 V 50/60 Hz (dual wound) P 3 ph. 230/400 V 60 Hz (Exe, Exde) L 3 ph. 230/400 V 50 Hz (Exe, Exde) R Variable speed motor 4 pole 230/400 V V (0) Variable speed motor with integr. frequency converter V (2) variable speed motor with integr. frequency converter (Exde) Z Speed control kit 4 No motor, with 56 C flange 7 No motor, with 120/80 flange 8 No motor, with 160/90 flange 0 No motor, externally mounted drive											
	<b>Enclosure rating:</b> 0 IP 55 (Standard) ISO class F 1 Exe version ATEX-T3 2 Exde version ATEX-T4 A ATEX power end											
	<b>Stroke sensor:</b> 0 No stroke sensor 1 With stroke sensor (Namur)											
	<b>Stroke length adjustment:</b> 0 0 Stroke length adjustment, man. 1 230 V stroke actuator 2 115 V stroke actuator 3 230 V 0-20 mA stroke controller 4 230 V 4-20 mA stroke controller 5 115 V 0-20 mA stroke controller 6 115 V 4-20 mA stroke controller (servo motors for Ex zones on request)											
	<b>Applications:</b> 0 Standard											
TZMb	H	120260	PC	T	1	0	0	0	S	0	0	0

## 2.5 ProMinent® Makro TZ Diaphragm Metering Pumps

### Technical Data Add On Pump AM Continued

with 1500 rpm motor at 50 Hz					with 1800 rpm motor at 60 Hz						
Pump Capacity at Max. Back Pressure		Max. Stroke Freq.			Pump Capacity at Max. Back Pressure		Max. Stroke Freq.		Suc- tion Lift	Connection Suction/ Discharge Side	Shipping Weight PP, PC, TT/SS
Pump type TZMbH	bar	l/h	ml/ stroke	strokes/ min.	psi	l/h	gph	strokes/ min.	mWG	G-DN	kg
120260	12	260	60	72	174	312	82	86	4	1 1/2 - 25	46/54
120340	12	340	60	96	174	408	108	115	4	1 1/2 - 25	46/54
120430	12	430	60	120	174	516	136	144	4	1 1/2 - 25	46/54
120510	12	510	60	144	174	612	162	173	4	1 1/2 - 25	46/54
120650	12	640	60	180	174	–	–	–	4	1 1/2 - 25	46/54
070430	7	430	99	72	100	516	136	86	3.5	2 - 32	50/64
070570	7	570	99	96	100	684	180	115	3.5	2 - 32	50/64
070720	7	720	99	120	100	864	228	144	3.5	2 - 32	50/64
070860	7	860	99	144	100	1032	272	173	3.5	2 - 32	50/64
071070	7	1070	99	180	100	–	–	–	3.5	2 - 32	50/64
040840	4	840	194	72	58	1008	266	86	3	2 1/4 - 40	56/80
041100	4	1100	194	96	58	1320	348	115	3	2 1/4 - 40	56/80
041400	4	1400	194	120	58	1680	443	144	3	2 1/4 - 40	56/80
041670	4	1670	194	144	58	2004	529	173	3	2 1/4 - 40	56/80
042100	4	2100	194	180	58	–	–	–	3	2 1/4 - 40	56/80

Stroke length 10 mm

Polymer version: max. 10 bar back pressure

The admissible priming pressure on the suction side is 50 % of the maximum back pressure.

The TZMa version is still available „on request“.

### Materials In Contact With Chemical In Version

Dosing Head		Suction/ Dis- charge Connector	DN 25 Ball Valves			DN 32/DN 40 Plate Valves**		
			Seals	Valve Balls	Valve Seat	Seals	Valve Plate/ Valve Spring	Valve Seat
PPT	Polypropylene	PVDF	PTFE	Borosilicate glass	PTFE	PTFE	Ceramic/ Hast. C + CTFE**	PTFE
PCT	PVC	PVDF	PTFE	Borosilicate glass	PTFE	PTFE	Ceramic/ Hast. C + CTFE**	PTFE
TTT	PTFE with carbon	PVDF	PTFE	Ceramic	PTFE	PTFE	Ceramic/ Hast. C + CTFE**	PTFE
SST	Stainless steel no. 1.4571/1.4404	Stainless steel no. 1.4581	PTFE	Stainless steel no. 1.4401	PTFE	PTFE	Stainless steel 1.4404/Hast. C	PTFE

Multi-layer safety diaphragm with PTFE coating

\*\* The valve spring is coated with CTFE (similar to PTFE)

Custom designs available to order.