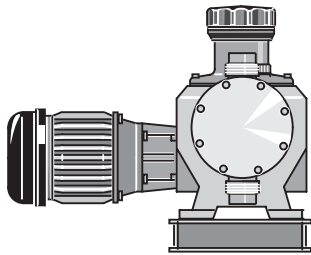
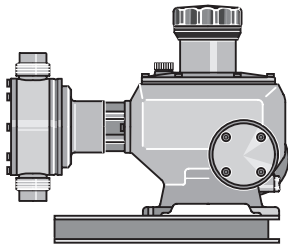
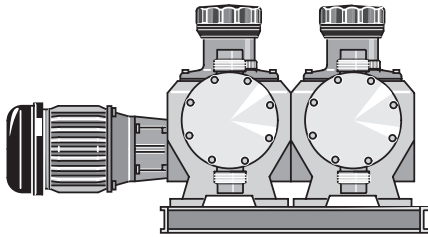


# 2.5 ProMinent® Makro TZ Diaphragm Metering Pumps

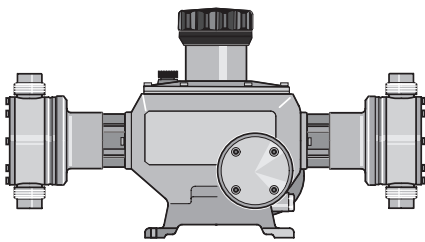
## 2.5.1 Makro TZ Diaphragm Metering Pumps



pk\_2\_012



pk\_2\_013



pk\_2\_014

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.

### 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.

### 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.

##### 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.

# 2.5 ProMinent® Makro TZ Diaphragm Metering Pumps

## 2.5.2 Makro TZ Diaphragm Metering Pumps

### TZMb Motor-Driven Metering Pump TZMb Makro TZ 10 (mechanically driven add-on diaphragm pump)

<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 0

# 2.5 ProMinent® Makro TZ Diaphragm Metering Pumps

## 2.5.3 Makro TZ Diaphragm Metering Pumps

### Spare Parts Kits Makro TZ (TZMb)

The spare parts kit generally consists of liquid end consumables

- 1 pump diaphragm
- 1 suction valve assembly.
- 1 discharge valve assembly
- 2 valve balls (Multi-layer safety diaphragm DN 32/DN 40 with shim and springs)
- 1 set of seals (O-rings, ball seat discs, ball seat housings)

Delivery unit	Materials in contact with medium	Part no.	Price
FM 650 - DN 25	PCT, PPT, TTT	1025164	
	SST	1022896	
	SST (without valve cpl.)	1022895	
FM 1100 - DN 32	PCT, PPT, TTT	1025167	
	SST	1022917	
	SST (without valve cpl.)	1022916	
FM 2100 - DN 40	PCT, PPT, TTT	1025169	
	SST	1022930	
	SST (without valve cpl.)	1022929	

### Multi-layer safety diaphragm for TZMb

ProMinent® multi-layer safety diaphragm with diaphragm rupture indication and PTFE Teflon coating on the wetted side.

Pump type	Part No.
Identcode: 120260, 120340, 120430, 120510, 120650; Makro TZ FM 650	1022887
Identcode: 070430, 070570, 070720, 070860, 071070; Makro TZ FM 1100	1022900
Identcode: 040840, 041100, 041400, 041670, 042100; Makro TZ FM 2100	1022921

### Makro TZ spare parts kits for TZMa

Delivery unit	Materials in contact with medium	Part no.
Identcode: 120190, 120254, 120317, 120381 Liquid end FM 530 - DN 25	PP	910452
	P	910455
	T	910458
	S (without valve cpl.)	910475
	S	910461
Identcode: 060397, 060529, 060661, 060793 Liquid end FM 530 - DN 25	PP	910453
	P	910456
	T	910459
	S (without valve cpl.)	910476
	S	910462
Identcode: 030750, 031000, 031250, 031500, 031875, 031050, 031395, 031740, 032100, 032500 Liquid end FM 1500/2100	PP	1001573
	P	1001574
	T	1001575
	S (without valve cpl.)	1001577
	S	1001576

# 2.5 Accessories ProMinent® Meta/Makro TZ Spare Parts Kits

## 2.5.4

## Spare Parts Kits

### Description/version

### Part No

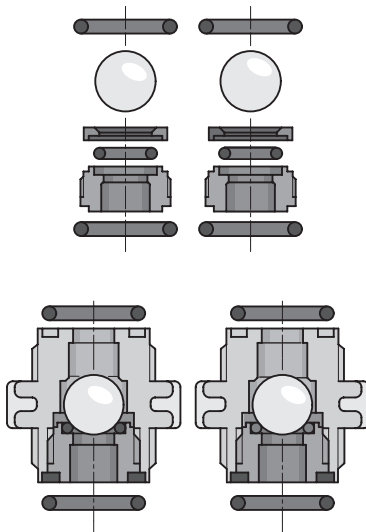
### Price

The spare parts kit generally consists of the liquid end parts which are subject to wear.

#### Standard kit for PP/P material version:

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

#### Spare parts kit Meta HM, Makro TZ-HM



pk\_2\_002

Liquid end FM 130 - DN 20	PPE	910451
	PCA	910454
	TTT	910457
	SST	910474
	SST additionally complete with 2 valves	910460
Liquid end FM 260 - DN 20	PPE	910452
	PCA	910455
	TTT	910458
	SST	910475
	SST additionally complete with 2 valves PPT/PCT (MTMa 6mm)	910461 1001570
Liquid end FM 530 - DN 25	PPE	910453
	PCA	910456
	TTT	910459
	SST	910476
	SST additionally complete with 2 valves PPT/PCT (MTMa 6mm)	910462 1001568
Liquid end FM 1500 - DN 40	PPE	910463
	TTT	910465
	SST	910477
	SST additionally complete with 2 valve	910466

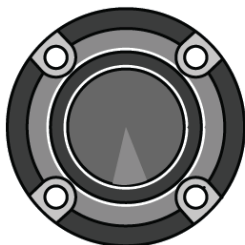
#### Spare parts kit, Meta HK

comprising: 1 ceramic plunger, 4 valve balls, 4 ball seat discs, 2 plunger packings of PTFE/graphite, 2 plunger guide ribbons, 14 gaskets, 2 O-rings

for Meta FK 12.5	910470
for Meta FK 25	910471
for Meta FK 50	910472

#### Pump diaphragm, PTFE

ProMinent DEVELOPAN pump diaphragm of fabric-reinforced EPDM, with large-area vulcanised steel core and PTFE Teflon coating on the media-contacted surface.



pk\_1\_008\_A

Meta, Makro TZ FM 130	811470
Meta, Makro TZ FM 260	811471
Meta, Makro TZ FM 530	811472
Makro TZ FM 1500	811473