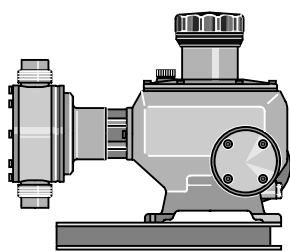


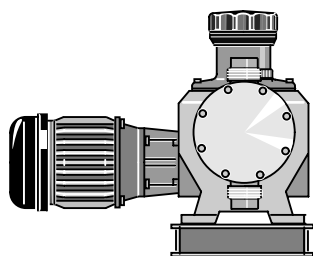
2.5 ProMinent® Makro TZ Diaphragm Metering Pumps

2.5.1 Makro TZ 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.

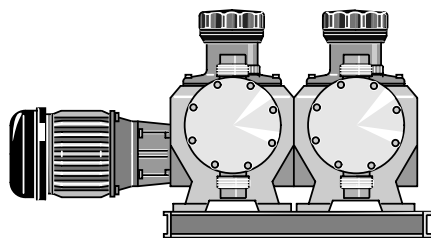
The stroke length can be adjusted by means of the shift ring mechanism from 0-10 mm (TZMb), with 0.5 % accuracy. The 5-speed gearbox is encased in a cast, seawater resistant, acrylic resin lacquered housing. Liquid ends are available in different material combinations to suit differing applications. 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 ± 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.

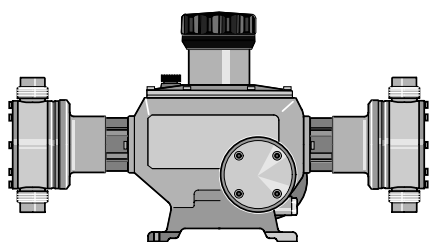


pk_2_013

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.



pk_2_014

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 (± 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 micro-processor 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)

Drive type	
H	Main drive
A	Add-on drive
D	Double main drive
B	Double add-on drive
Pump type: (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
Liquid end material:	
PC	PVC
PP	Polypropylene
SS	Stainless steel
TT	PTFE + 25% carbon
Seal material:	
T	PTFE
Positive displacement element:	
1	Multi-layer safety diaphragm with rupture indicator
Liquid end version:	
0	No valve springs
1	With valve springs
Hydraulic connection:	
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
Version:	
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
Electrical power supply:	
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
Enclosure rating:	
0	IP 55 (Standard) ISO class F
1	Exe version (ATEX-T3)
2	Exde version (ATEX-T4)
A	ATEX power end
Stroke sensor:	
0	No stroke sensor
1	With stroke sensor (Namura)
Stroke length adjustment:	
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)
Applications:	
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.
FM 650 - DN 25	PCT, PPT, TTT	1025164
	SST	1022896
	SST (without valve cpl.)	1022895

Delivery unit	Materials in contact with medium	Part no.
FM 1100 - DN 32	PCT, PPT, TTT	1025167
	SST	1022917
	SST (without valve cpl.)	1022916

Delivery unit	Materials in contact with medium	Part no.
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

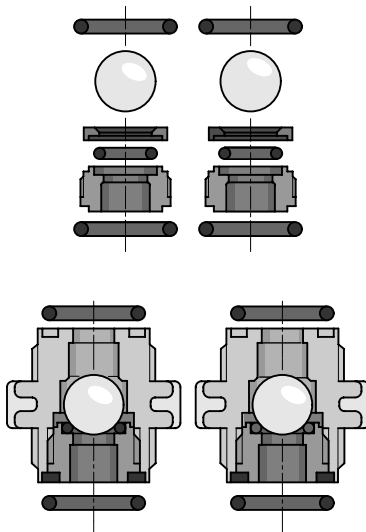
Part No

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	910461.
PPT/PCT (MTMa 6mm)	1001570.	
Liquid end FM 530 - DN 25	PPE	910453.
	PCA	910456.
	TTT	910459.
	SST	910476.
	SST additionally complete with 2 valves	910462.
PPT/PCT (MTMa 6mm)	1001568.	
Liquid end FM 1500 - DN 40	PPE	910463.
	TTT	910465.
	SST	910477.
	SST additionally complete with 2 valve	910466.

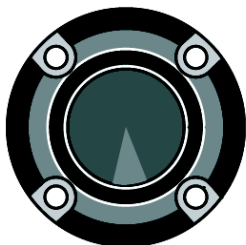
Spare parts kit, Meta HK

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.