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 ±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 (± 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.

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).
2.5 **ProMinent® Makro TZ Diaphragm Metering Pumps**

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

<table>
<thead>
<tr>
<th>TZMb</th>
<th>Motor-Driven Metering Pump TZMb Makro TZ 10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(mechanically driven add-on diaphragm pump)</td>
</tr>
</tbody>
</table>

#### 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:
- 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 integral frequency converter
- V (2) Variable speed motor with integral frequency converter (Exde)
- Z Speed control kit
- 4 No motor, with 56C 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 (Namur)

#### Stroke length adjustment:
- 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

#### Applications:
- 0 Standard
2.5 ProMinent® Makro TZ Diaphragm Metering Pumps

Technical Data Add On Pump AM Continued

<table>
<thead>
<tr>
<th>Pump type</th>
<th>Pump Capacity</th>
<th>Max. Stroke</th>
<th>Back Pressure</th>
<th>Freq.</th>
<th>with 1500 rpm motor at 50 Hz</th>
<th>with 1800 rpm motor at 60 Hz</th>
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<tbody>
<tr>
<td>TZMbH</td>
<td>psi/l/h/gph/strokes/min.</td>
<td>psi/l/h/gph/strokes/min.</td>
<td>Back Pressure</td>
<td>Freq.</td>
<td>Weight</td>
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<td>12 260 60 72</td>
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<td>56/80</td>
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</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Dosing Head</th>
<th>Suction/ Discharge Connector</th>
<th>DN 25 Ball Valves</th>
<th>DN 32/DN 40 Plate Valves**</th>
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<tbody>
<tr>
<td>PPT</td>
<td>PTFE with carbon</td>
<td>PTFE</td>
<td>Ceramic/ Hast. C + CTFE**</td>
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<tr>
<td>PCT</td>
<td>PVC</td>
<td>PVDF</td>
<td>Ceramic/ Hast. C + CTFE**</td>
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<td>PVDF</td>
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<td>SST</td>
<td>Stainless steel no. 1.4581</td>
<td>PTFE</td>
<td>Stainless steel 1.4404/Hast. C</td>
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</tbody>
</table>

Multi-layer safety diaphragm with PTFE coating
** The valve spring is coated with CTFE (similar to PTFE)
Custom designs available to order.