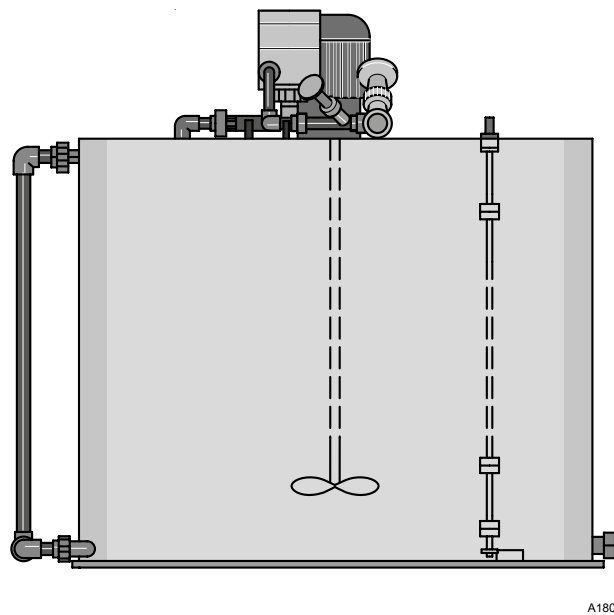


Assembly and operating instructions

Ultromat® MT

Single-chamber system for polyelectrolyte preparation



Please carefully read these operating instructions before use! · Do not discard!
The operator shall be liable for any damage caused by installation or operating errors!
Technical changes reserved.

General non-discriminatory approach

In order to make it easier to read, this document uses the male form in grammatical structures but with an implied neutral sense. It is aimed equally at both men and women. We kindly ask female readers for their understanding in this simplification of the text.

Supplementary information

Read the following supplementary information in its entirety!

The following are highlighted separately in the document:

- Enumerated lists
- Instructions
 - ⇒ Results of the instructions

Information



This provides important information relating to the correct operation of the system or is intended to make your work easier.

Safety information

Safety information are provided with detailed descriptions of the endangering situation, see ↗ *Chapter 1.1 'Explanation of the safety information' on page 4*

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1 Safety and responsibility

About this product

The Ultramat® manufactured by ProMinent is an automatic poly-electrolyte preparation system. It can be used in any application where synthetic polymers are to be automatically prepared to form polymer solutions to act as flocculation aids. As such a dissolving station, the system is suitable for a large number of process engineering applications, e.g. in the water treatment sector, in waste water treatment and paper manufacture.

1.1 Explanation of the safety information

Introduction

These operating instructions provide information on the technical data and functions of the product. These operating instructions provide detailed safety information and are provided as clear step-by-step instructions.

The safety information and notes are categorised according to the following scheme. A number of different symbols are used to denote different situations. The symbols shown here serve only as examples.



DANGER!

Nature and source of the danger

Consequence: Fatal or very serious injuries.

Measure to be taken to avoid this danger

Danger!

- Denotes an immediate threatening danger. If this is disregarded, it will result in fatal or very serious injuries.



WARNING!

Nature and source of the danger

Possible consequence: Fatal or very serious injuries.

Measure to be taken to avoid this danger

Warning!

- Denotes a possibly hazardous situation. If this is disregarded, it could result in fatal or very serious injuries.



CAUTION!

Nature and source of the danger

Possible consequence: Slight or minor injuries, material damage.

Measure to be taken to avoid this danger

Caution!

- Denotes a possibly hazardous situation. If this is disregarded, it could result in slight or minor injuries. May also be used as a warning about material damage.

**NOTICE!****Nature and source of the danger**

Damage to the product or its surroundings

Measure to be taken to avoid this danger

Note!

- Denotes a possibly damaging situation. If this is disregarded, the product or an object in its vicinity could be damaged.

**Type of information**

Hints on use and additional information

Source of the information, additional measures

Information!

- *Denotes hints on use and other useful information. It does not indicate a hazardous or damaging situation.*

1.2 Correct and Proper Use

**WARNING!****Danger caused by incorrect use!**

Incorrect use of the Ultramat® can result in hazardous situations.

- The Ultramat® is only designed to produce a polymer solution as a flocculent from powdered polymer or liquid concentrate and with drinking water.
- All other uses or a modification of the system are only permitted with the written authorisation of ProMinent Dosiertechnik GmbH, Heidelberg!
- The system is not designed for use in areas at risk from explosion!
- The correct and proper operation of the system cannot be guaranteed if non-genuine parts or third party accessories are used.
- Please observe the relevant national regulations and the information provided in the operating instructions at all phases of the system's life!
- The Ultramat® may only be operated by adequately qualified personnel

1.3 Users' qualifications



WARNING!

Danger of injury with inadequately qualified personnel!
The operator of the plant / device is responsible for ensuring that the qualifications are fulfilled.

If inadequately qualified personnel work on the unit or loiter in the hazard zone of the unit, this could result in dangers that could cause serious injuries and material damage.

- All work on the unit should therefore only be conducted by qualified personnel.
- Unqualified personnel should be kept away from the hazard zone

Training	Definition
Instructed personnel	An instructed person is deemed to be a person who has been instructed and, if required, trained in the tasks assigned to him/her and possible dangers that could result from improper behaviour, as well as having been instructed in the required protective equipment and protective measures.
Trained user	A trained user is a person who fulfils the requirements made of an instructed person and who has also received additional training specific to the system from ProMinent or another authorised distribution partner.
Trained qualified personnel	A qualified employee is deemed to be a person who is able to assess the tasks assigned to him and recognize possible hazards based on his/her training, knowledge and experience, as well as knowledge of pertinent regulations. The assessment of a person's technical training can also be based on several years of work in the relevant field.
Electrician	Electricians are deemed to be people, who are able to complete work on electrical systems and recognize and avoid possible hazards independently based on his/her technical training and experience, as well as knowledge of pertinent standards and regulations. Electricians should be specifically trained for the working environment in which they are employed and know the relevant standards and regulations. Electricians must comply with the provisions of the applicable statutory directives on accident prevention.
Customer Service department	Customer Service department refers to service technicians, who have received proven training and have been authorised by ProMinent to work on the system.



Note for the system operator

The pertinent accident prevention regulations, as well as all other generally acknowledged safety regulations, must be adhered to!

1.4 Ultramat® Safety Information

**WARNING!****Qualification of personnel**

Danger due to incorrect operation of the system

The operating personnel must be instructed by a ProMinent service technician" (When the system is first operated)

The operating instructions must be available by the system!

**WARNING!****Danger of electric shock!**

Possible consequence: Fatal or very serious injuries

The control cabinet must always be closed during operation.

The mains switch must be set to "0" and secured against restart before any installation or maintenance work can begin.

**CAUTION!****Propellers are rotating in the reservoirs!**

Slight or minor injuries.

Switch off the system and only then remove the screwed cover of an inspection opening!

**CAUTION!****A screw conveyor and a loosening wheel are located under the safety guard of the dry material feeder.**

Slight or minor injuries. Material damage.

Do not reach into the dry material feeder.

**CAUTION!****Hot surface!**

Incorrectly set heating on the metering pipe may become hot!

Ensure that the metering pipe heating is correctly set!

1.5 Sound Pressure Level

The sound pressure level is < 70 dB (A) for powdered polymer, according to EN ISO 11202:1997 (Acoustics - Noise emission from machinery and equipment)

2 Transporting and storing the system

User qualification: trained user, see [Chapter 1.3 'Users' qualifications'](#) on page 6



WARNING!

High system weight

Possible consequence: Death or severe injuries, if the floor cannot support the system and breaks.

Measure: Ensure that the floor of the installation site can support the weight of both the empty and full system.



WARNING!

Never stand under suspended loads.

Possible consequence: Fatal or very serious injuries

- It is prohibited to walk under or stand underneath suspended loads
- When lifting and transporting the Ultramat ensure it cannot slip or topple
- Use suitable approved lifting tackle. Observe the information given in the lifting equipment data sheets.



CAUTION!

Possibility of damage to the system during transport

Improper transport can result in system damage.

- Only move the Ultramat® system when empty
- The storage tank wall must not be subjected to point loading
- Avoid heavy vibration and impact loads
- Only move the system with suitable hoisting and lifting equipment
- When using forklift trucks, use long forks, which extend across the entire depth of the storage tank
- If a crane is used, attach the slings, even if lifting lugs are fitted, such that shear forces are avoided

Ambient conditions for storage and transport

Permissible ambient temperature: -5 °C to +50 °C.

Humidity: None. Rain and condensation not permitted.

Other: No dust, no direct sunlight.

3 Functional description

Units	<p>The Ultramat® consists of the following units:</p> <ul style="list-style-type: none"> ■ Single-chamber storage tank made of PP ■ Float switch with three levels ■ Water pipework with wetting cone and injector ■ Stirrer with 750 rpm
Single-chamber storage tank	<p>A closed design PP storage tank with stirrer traverse, overflow, drainage and extraction connections. The inspection opening of the storage tank is secured with a tightly screwable cover.</p>
Float switch	<p>A float switch with three contacts and three floats monitors the liquid level in the storage tank.</p> <ul style="list-style-type: none"> ■ Maximum contact (opens if the level is exceeded) ■ Minimum contact (closes if the level is exceeded) ■ Dry run contact (closes if the level is exceeded)
Water pipework	<p>The water pipework supplies the system with the required solvent water. The water pipework consists of the following components:</p> <ul style="list-style-type: none"> ■ Regulating valves ■ Wetting cone ■ Injector
Stirrer	<p>The Ultramat® MT is fitted with an electric stirrer (230/400 V, 750 rpm).</p>

3.1 Function of the system

The Ultramat® MT is an automatic polyelectrolyte preparation system for feeding powdered polyelectrolytes. Powder is added manually. This means that batch concentrations of up to 0.5 % can be produced. The maturing period depends on the respective product, but is generally approx. 1 hour.

The system is designed as a compact system. Only electricity for the electric stirrer and water to feed the polymer solution need be supplied on site and connected. Use an external switch to switch the stirrer on and off. Install an external motor protection switch to secure the system.

3.2 Preparing a new batch

First you must measure the polyelectrolyte powder required for the batch.

Calculating the powder quantity:

- Polymer for one batch (kg) = volume to add (l) x solvent concentration (%) / 100.
- Example:
- Volume to add: 100 litres

- Solvent concentration: 0.5 %
- Polymer for one batch (kg) = $100 \text{ (l)} \times 0.5 / 100 = 0.5 \text{ kg}$

Switch off the water supply using an external stopcock. Set the feed quantity and liquid level in the wetting cone using the regulating valves. The water level in the wetting cone must be approx. 3 cm above the inner hopper. It is essential to let the water flow before adding the dry product in order to avoid any blockages.

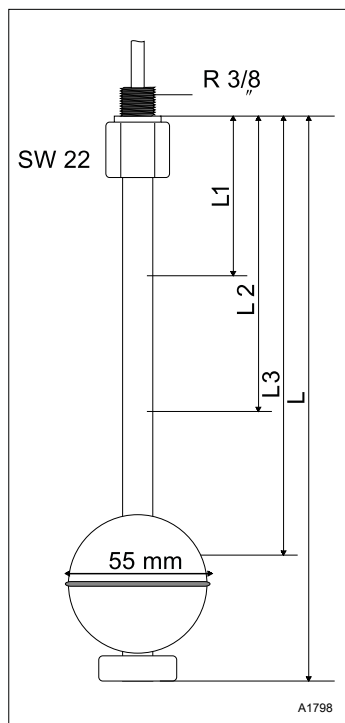
Add the powder slowly and continuously at an angle to the spray of water. An injector located below the wetting cone draws in the wetted particles and transports them into the Ultromat® MT storage tank. Optimum wetting is achieved through the injector without the particles sticking to the injector or forming clumps in the storage tank.

After adding the weighed quantity of powder, you must continue to add water to the storage tank until it is full. Then you must close the gate valve in the water supply. You can switch off the stirrer using an external switch after the maturing period (30-90 minutes) has expired.

A metering pump can be used to transport the finished polymer solution into the application.

4 Float switch data sheet

Data sheet for stainless steel float switch for Ultramat® MT



- Float solenoid switch with stainless steel ball float
- Contact function: pulse contacts
- Screw-in thread: 3/8"
- Protection rating: IP 65
- Cable: NYLHY 0.75 mm²
- Minimum density: >0.8 kg/dm³
- Maximum temperature: 90 °C
- Fitting position: vertical ± 30 °
- Material: stainless steel 1.4571
- The contacts are designed as pulse contacts, i.e. the contacts close if the float is directly above them.

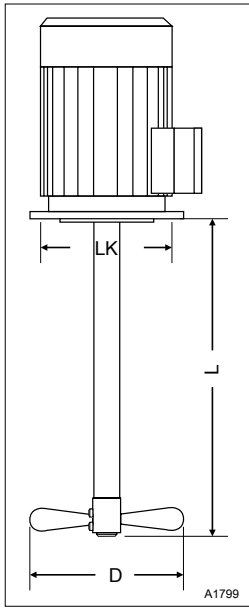
Fig. 1: Float switch

Technical data

Article no.:	1017419	1003694	1017420	1017420	700377
for Ultramat:	MT 140	MT 250	MT 500	MT 1000	MT 2000
Height of storage tank:	700 mm	1100 mm	1000 mm	1000 mm	1500 mm
Type:	ERV 3/8 VSSS-L650 VA	ERV 3/8 VSSS-L1050 VA	ERV 3/8 VSSS-L950 VA	ERV 3/8 VSSS-L950 VA	ERV 3/8 V L1445 VA
L1 (max)	150	100	150	150	150
L2 (min)	480	900	700	700	1000
L3 (dry)	600	1000	900	900	1390
L (total)	650	1050	950	950	1455
Material:	1.4571	1.4571	1.4571	1.4571	1.4571
Contact load:	100 VA/250 V=2A	100 VA/250 V=2A	100 VA/250V=2A	100 VA/250 V=2A	100 VA/250 V=2A
Contact function:	N/O	N/O	N/O	N/O	N/O
Cable length:	3 m	3 m	3 m	3 m	3 m
Float design:	Ball	Ball	Ball	Ball	Ball
Protection rating:	IP 65	IP 65	IP 65	IP 65	IP 65

5 Stirrer data sheet

Stirrers for Ultromat® MT



- 750 rpm at 50 Hz
- 900 rpm at 60 Hz
- Protection rating: IP 55
- Insulation class F, insulation protected against humidity
- Shaft material: 1.4404
- Agitator material: 1.4571
- Sleeve and pin material: 1.4305
- Radial shaft seal
- Wide-range voltage motors

Fig. 2: Stirrer

Technical data

Electrical data

Part no.:	1005114	1005115	1005116	1005117	1005118
Power:	0.18 kW	0.55 kW	0.75 kW	1.1 kW	2.2 kW
Motor type:	K21R80K8	K21R90LL8	K21R100L8	K21R100LX8	K21R112MX8
Motor part no.:	740878	740879	740880	740881	740882
Voltage 50 Hz:	220 - 245 V	220 - 245 V	220 - 245 V	220 - 245 V	220 - 245 V
	380 - 420 V	380 - 420 V	380 - 420 V	380 - 420 V	380 - 420 V
Voltage 60 Hz:	220 - 265 V	220 - 265 V	220 - 265 V	220 - 265 V	220 - 265 V
	380 - 460 V	380 - 460 V	380 - 460 V	380 - 460 V	380 - 460 V
Connection type:	3 ph. / delta Y	3 ph. / delta Y	3 ph. / delta Y	3 ph. / delta Y	3 ph. / delta Y
Speed 50/60 Hz:	750/900 rpm	750/900 rpm	750/900 rpm	750/900 rpm	750/900 rpm

Mechanical data

Size:	80 K	90 L	100 L	100 L	112 M
Mounting:	IM V1/3011	IM V1/3011	IM V1/3011	IM V1/3011	IM V1/3011
Flange size	A 160	A 200	A 200	A 250	A 250
Hole circle:	130 mm	165 mm	165 mm	215 mm	215 mm
L:	580 mm	930 mm	790 mm	790 mm	1240 mm
D:	120 mm	170 mm	200 mm	220 mm	260 mm
Shaft diameter:	22.0 mm	33.7 mm	33.7 mm	42.4 mm	42.4 mm
Mixer shaft part no.:	1008679	1007809	740893	1007810	1008680
Propeller part no.:	740883	740884	740885	740886	740887
Weight:	15 kg	23 kg	28 kg	33 kg	51 kg

Specification

Protection rating:	IP 55	IP 55	IP 55	IP 55	IP 55
Insulation class:	F	F	F	F	F
Colour/motor hood:	RAL 5003	RAL 5003	RAL 5003	RAL 5003	RAL 5003

Using stirrers in the Ultromats

Ultromat type:	MT 140	MT 250	MT 500	MT 1000	MT 2000
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6 Dimensioned drawing

Ultromat® MT 140

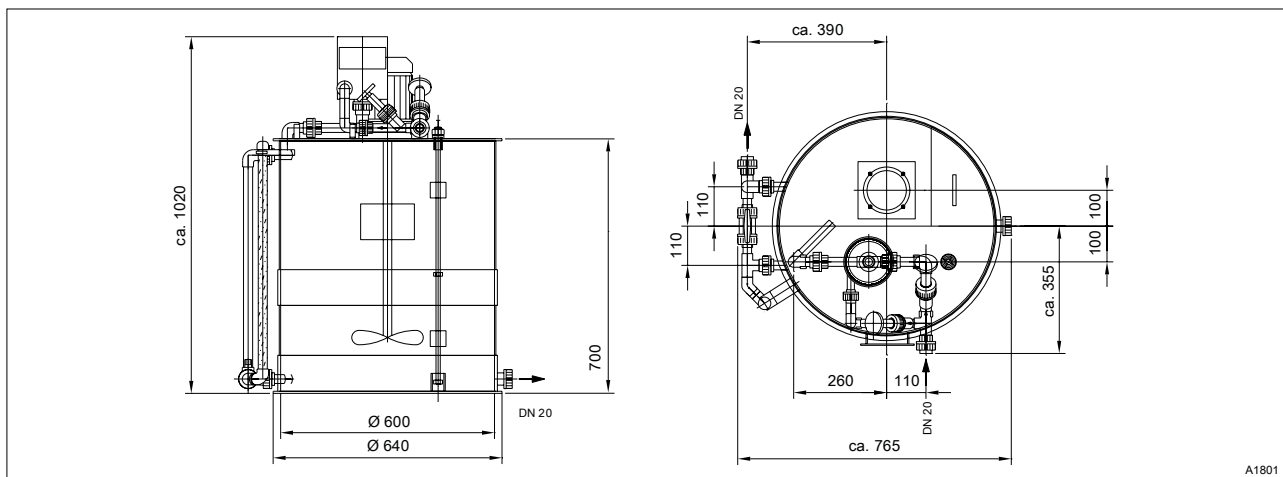


Fig. 3: Ultromat® MT 140

Ultromat® MT 250

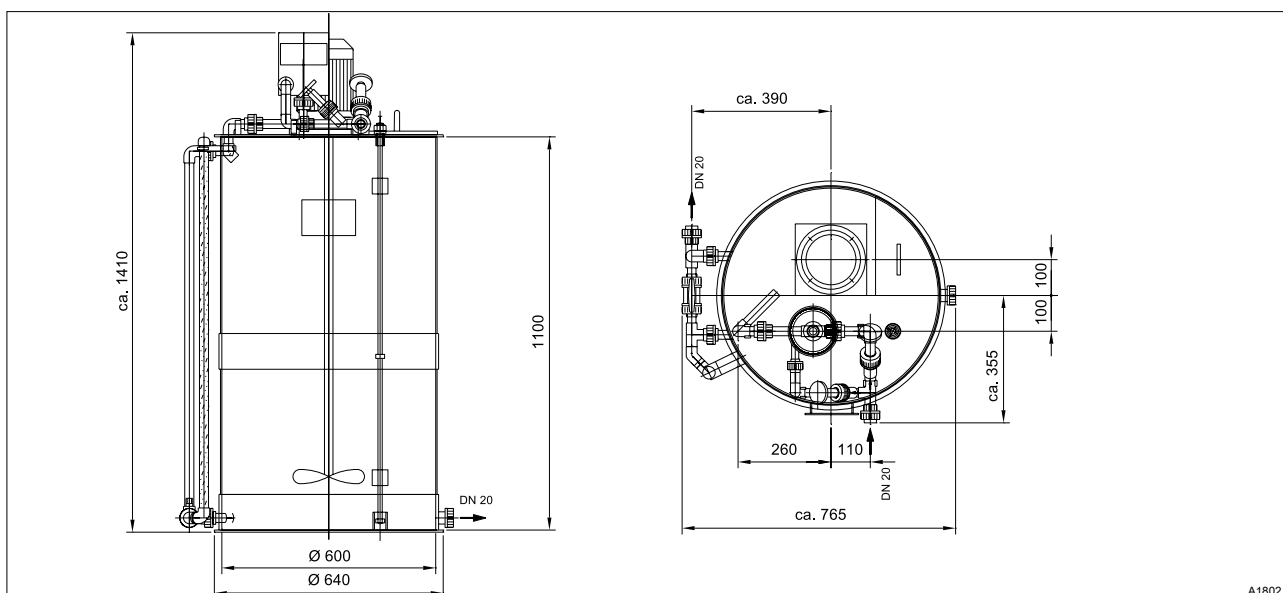


Fig. 4: Ultromat® MT 250

Ultromat® MT 500

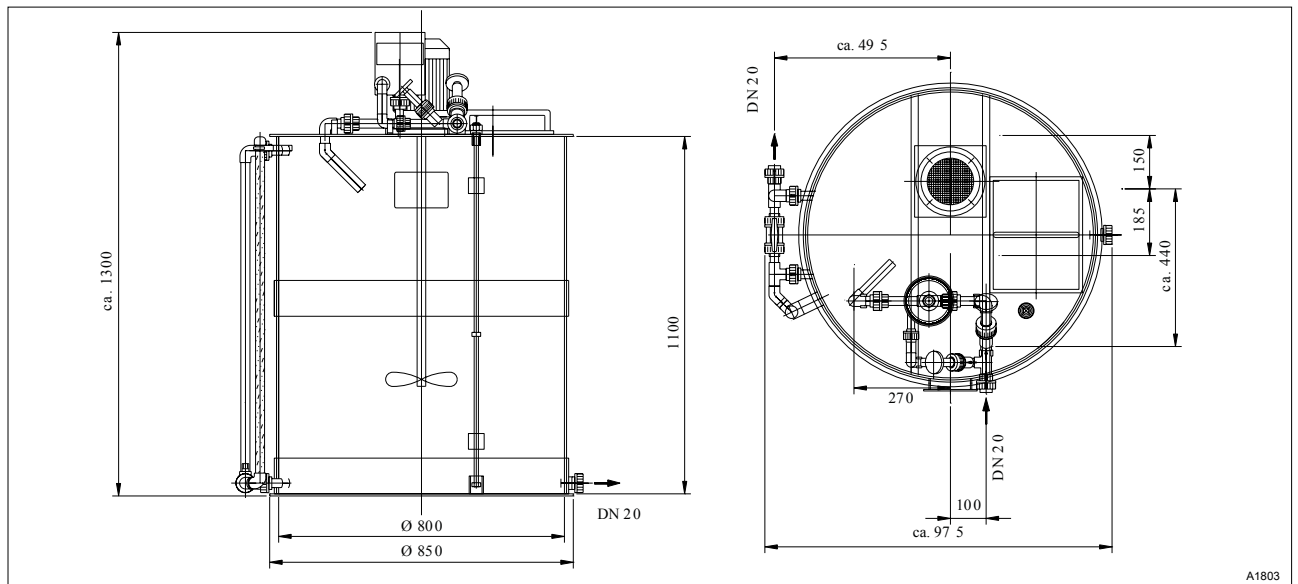


Fig. 5: Ultromat® MT 500

Ultromat® MT 1000

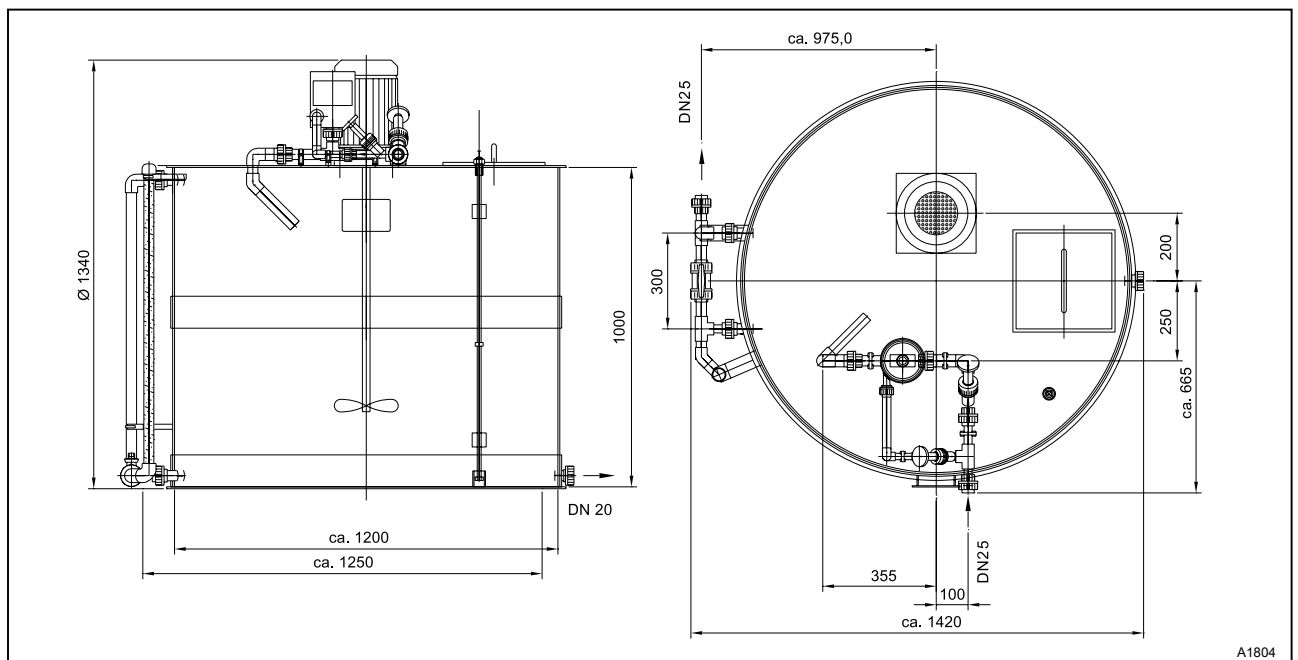


Fig. 6: Ultromat® MT 1000

Ultromat® MT 2000

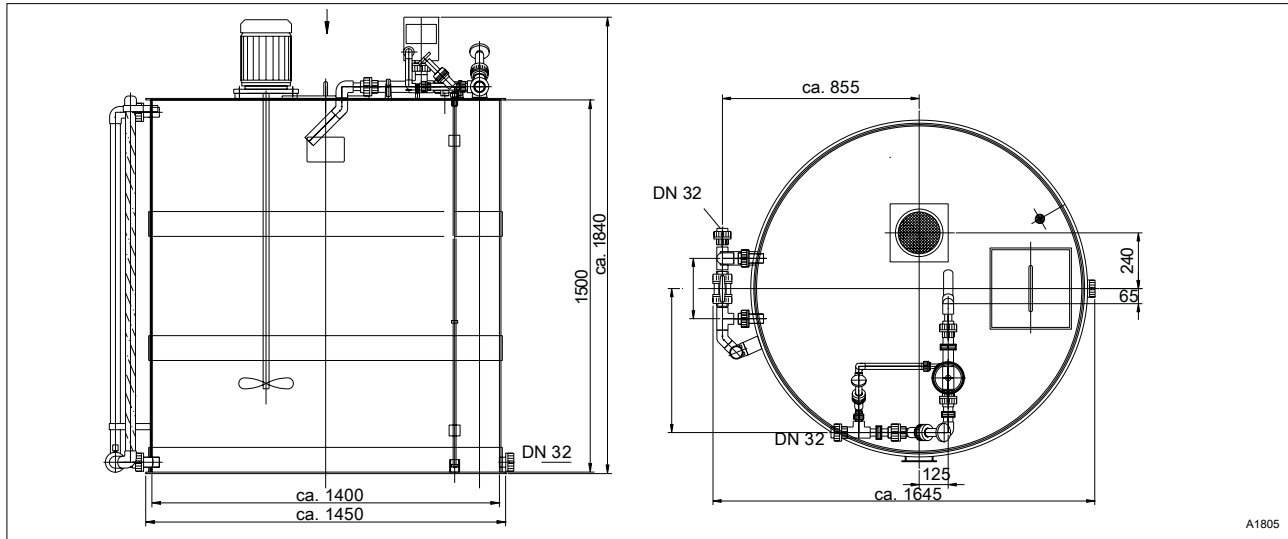


Fig. 7: Ultromat® MT 2000

7 EC Declaration of Conformity for Machinery

In accordance with DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, Appendix I, BASIC HEALTH AND SAFETY REQUIREMENTS, section 1.7.4.2. C.

We,

- ProMinent Dosiertechnik GmbH
- Im Schuhmachergewann 5 - 11
- DE - 69123 Heidelberg,

hereby declare that the product specified in the following, complies with the relevant basic health and safety requirements of the EC Directive, on the basis of its functional concept and design and in the version distributed by us. This declaration loses its validity in the event of a modification to the product not agreed with us.

Extract from the EC Declaration of Conformity

Designation of the product:	Ultromat, ULTa..., AF, AT, ATF, AFP, ATP, ATFP, AFD, ATD, ATFD ATR, AFK, MT polyelectrolyte batching systems
Serial number:	refer to nameplate on the device
Relevant EC directives:	EC Machinery Directive (2006/42/EC) EC Low Voltage Directive (2006/95/EC) EC EMC Directive (2004/108/EC)
Harmonised standards applied, in particular:	EN ISO 12100-1, EN ISO 12100-2, EN 809, EN 60335-1, EN 60335-2-41, EN 50106, EN 55014, EN 61000-3-3, EN 61000-4-2/3/4/5/6/11, EN 61000-6-1/2
Date:	04/01/2010

You can find the EC Declaration of Conformity as a download under <http://www.prominent.de/Service/Download-Service.aspx>

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