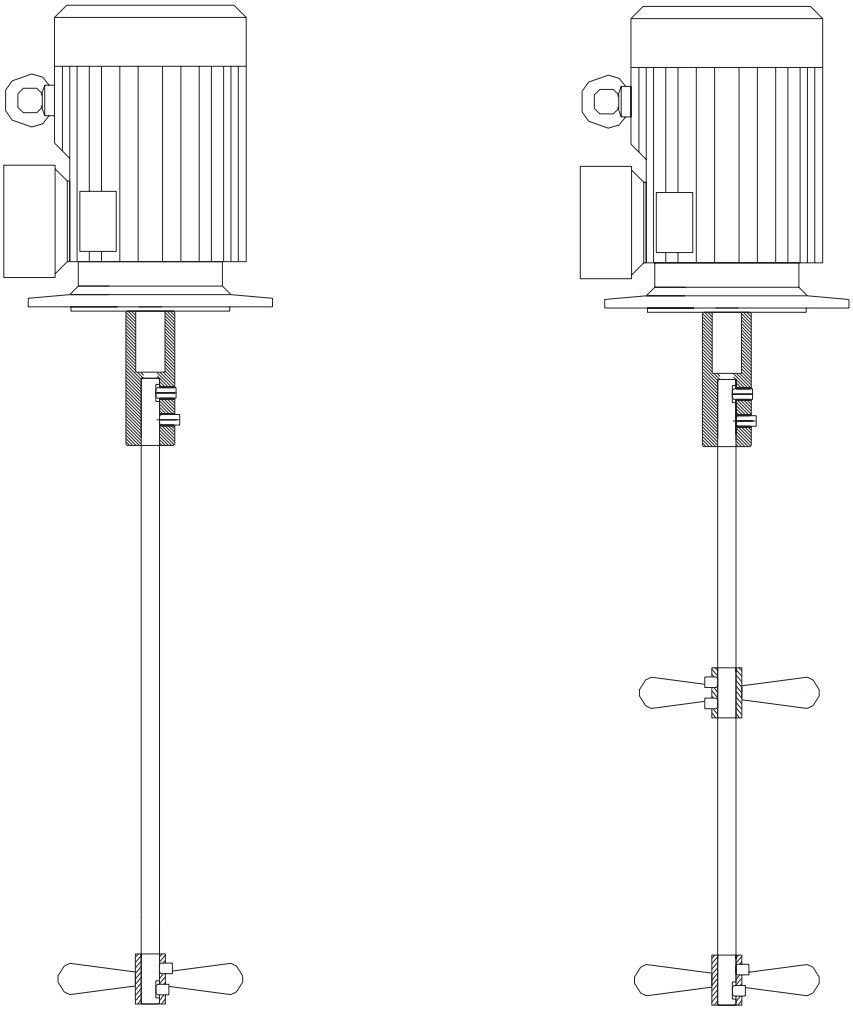
ProMinent® Systems

Operating Instructions

Electric Stirrers for Ultromat® Continuous Flow Systems



Completely read through these operating instructions prior to placing the system into operation and keep the instructions in a safe place!
The operator shall be liable for any damage caused by installation or operating errors!

Part No. 986474 **ProMinent Systems spol. s r.o. · 336 01 Blovice · Czech republic** BA UL 014 10/08 GB

Imprint:
Operating Instructions - Electric Stirrers

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Subject to technical modifications.
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General User Information

Please read through the following user information! This information will help you gain the greatest benefit from the operating instructions.

The following points are specifically highlighted in the text:

- Lists
- ▶ Instructions

Information on working procedures:

NOTE

A note provides important information on correct operating procedures of the system or is intended to make your work easier.

Safety information identified with pictographs (see Section 2).

1 About this Product

The electric stirrers are used for mixing polymer solutions in Ultromat® continuous flow systems.

The stirrers can be ordered and delivered individually as well as together with Ultromat® continuous flow systems.

The parts of the stirrers that come in contact with the medium are made of stainless steel.

The viscosity of the medium can be up to 1500 mPas.

2 Safety Instructions

2.1 Identification of Safety Information

Keywords are used in these operating instructions for the different danger or hazard severity levels:

WARNING

Denotes a possibly dangerous or hazardous situation. If this situation is not avoided, fatal or serious injury may ensue.

CAUTION

Denotes a possibly dangerous or hazardous situation. If this situation is not avoided, minor injuries or damage may ensue.

These operating instructions use the following warnings for different types of danger:

Warning of a dangerous/hazardous location

Warning of unexpected start-up

Warning of dangerous electrical voltage

Warning of hand injuries

2.2 Use for Intended Purpose

- The stirrers are designed only for use in Ultromat® continuous flow systems.
- Any other use or modification is prohibited.
- Only use the stirrers as described in the Ultromat® operating instructions.
- Have the stirrers installed and connected only by qualified personnel.
- You must observe the information provided in the operating instructions at the various phases in the life of the system!

3 Storage and Transportation

Delivery weight: See Section 8.3 “Dimensions and Weights”

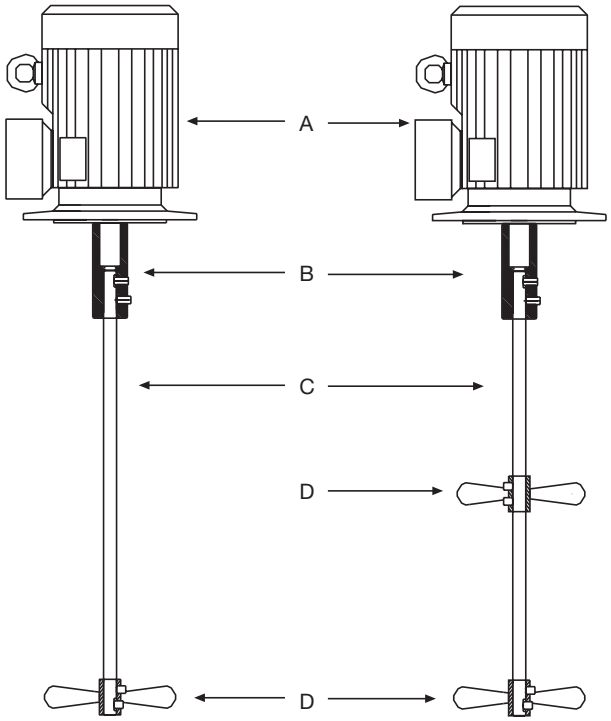
Ambient conditions for storage and transportation

Temperature: -10 °C to 50 °C

Humidity: Max. 95 % relative humidity, no condensation

4 Design

The stirrers consist of the following components:



A) Electric motor
B) Coupling
C) Stirrer shaft
D) Agitator

Fig. 1: Design layout of a stirrer with 1 agitator and a stirrer with 2 agitators

5 Mounting and Installation

5.1 Mounting

WARNING

Risk of injury!
The agitators can cause serious injuries if operated while the stirrers are not yet installed!
The stirrers must not be connected to the power supply before they are installed!

CAUTION

- **The stirrers must only be installed at the tank flanges of the Ultromat® provided for this purpose!**
- **An unobstructed supply of cooling air must be ensured!**

- ▶ If it is necessary to remove an old stirrer first, then proceed as described in Section 6 “Repairs”.
- ▶ Compare the data on the type identification plate with the data on the delivery note.
- ▶ Detach the stirrer shaft from the coupling.
- ▶ Fit the motor flange on the prepared tank flange and securely bolt together.
- ▶ Open the cover to the inspection opening of the corresponding chamber.
- ▶ Bolt the stirrer shaft to the coupling.

5.2 Installation

CAUTION

Danger of electric shock!
- **Only qualified electricians are permitted to connect the stirrers to the power supply!**
- **Connect the stirrers only when the system is disconnected from the power supply and correspondingly secured to prevent them being switched on!**
- **Only connect the motor to the mains voltage and frequency as specified on the type identification plate.**

WARNING

Risk of injury!
The agitators can cause serious injuries if operated while the stirrers are not yet installed!
The stirrers must not be connected to the power supply before they are installed!

CAUTION

The stirrer motors can be damaged if subjected to thermal overload!
Provide corresponding motor protection devices (e.g. motor circuit breaker with thermal overcurrent tripping device) to protect the motor from overload!
Fuses will not sufficiently protect the motor!

- ▶ Connect the motor to the mains voltage and frequency as specified on the type identification plate.
- ▶ Connect the motor as shown in the terminal connection diagram.
- ▶ Protect the motor with a corresponding motor protection device.
- ▶ Briefly switch on the system to check the direction of rotation of the motor (arrow on motor housing).
  If the motor turns in the wrong direction, immediately disconnect the system from the power supply and connect the motor correctly.
- ▶ Now close the cover to the inspection opening and secure with the screw!

6 Repairs

WARNING

Risk of injury to arms and hands!
The rotating agitators can cause serious injuries!

- **First set the master switch to OFF and secure to prevent it being switched on again. Remove the screw-secured cover to an inspection opening in order to reach into a tank chamber!**
- **The stirrers should be connected to the power supply only when installed in position!**

WARNING

Sudden start-up without warning!
The stirrers (together with their agitators!) can suddenly start up without warning as long as they are connected to the power supply via the system – even if a fault is signalled or with the system in stop mode (Start/Stop button)!

To remove the stirrer for repair:

- ▶ Set the master switch to OFF and secure it to prevent it being switched on again.
- ▶ Completely disconnect the motor from the power supply.
- ▶ Remove the flange bolts.
- ▶ Remove the cover to the corresponding inspection opening.
- ▶ Raise the stirrer a little and release the coupling.
- ▶ The motor can be removed by pulling upwards.
- ▶ The stirrer shaft with the agitator can be removed by passing it through the inspection opening.
- ▶ On completion of repairs, reinstall the stirrer in the reverse order.
- ▶ Now close the cover to the inspection opening and secure with the screw!

7 Maintenance

Regular

Regularly blow out the motor fan and the cooling fins with clean, oil-free compressed air.

The stirrers are otherwise maintenance-free.

8 Technical Data

8.1 Motor Data

0.18 kW stirrer motor (Order No.: 1031666):

Mains frequency	50 Hz	60 Hz
Output:	0.18 kW	0.18 kW
Voltage:	220 – 240 / 380 - 420 V	220 – 265 / 380 – 460 V
Current:	1.47 / 0.84 A	1.27 / 0.73 A
Speed:	675 - 695 rpm	810-850 rpm
cos φ:	0.59	0.64
Motor type:	K21R80K8	
Size:	80 K8	
Version:	IM V1 FF130	
Type of protection:	IP 55	
Weight:	10.5 kg	
Insulation class:	F	
Motor flange:	A 160	
Manufacturer:	VEM	

0.25 kW stirrer motor (Order No.: 1031669):

Mains frequency	50 Hz	60 Hz
Output:	0.25 kW	0.25 kW
Voltage:	220 – 240 / 380 - 420 V	220 – 265 / 380 – 460 V
Current:	2.15 / 1.23 A	1.86 / 1.07 A
Speed:	685 - 700 rpm	830 - 850 rpm
cos φ:	0.56	0.58
Motor type:	K21R80G8	
Size:	80 G8	
Version:	IM V1 FF165	
Weight:	12 kg	
Type of protection:	IP 55	
Insulation class:	F	
Motor flange:	A 200	
Manufacturer:	VEM	

0.55 kW stirrer motor (Order No.: 1031671):

Mains frequency	50 Hz	60 Hz
Output:	0.55 kW	0.55 kW
Voltage:	220 – 240 / 380 - 420 V	220 – 265 / 380 – 460 V
Current:	4.05 / 2.3 A	3.5 / 2.0 A
Speed:	690 - 700 rpm	830 - 855 rpm
cos φ:	0.60	0.61
Motor type:	K21R90L8	
Size:	90L8	
Version:	IM V1 FF165	
Weight:	18 kg	
Type of protection:	IP 55	
Insulation class:	F	
Motor flange:	A 200	
Manufacturer:	VEM	

0.75 kW stirrer motor (Order No.: 1031672):

Mains frequency	50 Hz	60 Hz
Output:	0.75 kW	0.75 kW
Voltage:	220 – 240 / 380 - 420 V	220 – 265 / 380 – 460 V
Current:	5.45 / 3.1 A	4.6 / 2.65 A
Speed:	700 - 710 rpm	840 – 860 rpm
cos φ:	0.60	
Motor type:	K21R100L8	
Size:	100 L8	
Version:	IM V1 FF165	
Weight:	23 kg	
Type of protection:	IP 55	
Insulation class:	F	
Motor flange:	A 200	
Manufacturer:	VEM	

1.1 kW stirrer motor (Order No.: 1031673):

Mains frequency	50 Hz	60 Hz
Output:	1.1 kW	1.1 kW
Voltage:	220 – 240 / 380 - 420 V	220 – 265 / 380 – 460 V
Current:	5.95 / 3.4 A	5.3 / 3.05 A
Speed:	695 - 710 rpm	830 - 865 rpm
cos φ:	0.67	0.71
Motor type:	K21R100LX8	
Size:	100LX8	
Version:	IM V1 FF215	
Weight:	28 kg	
Type of protection:	IP 55	
Insulation class:	F	
Motor flange:	A 250	
Manufacturer:	VEM	

2.2 kW stirrer motor (Order No.: 1031674):

Mains frequency	50 Hz	60 Hz
Output:	2.2 kW	2.2 kW
Voltage:	220 – 240 / 380 - 420 V	220 – 265 / 380 – 460 V
Current:	11.0 / 6.35 A	10.3 / 5.95 A
Speed:	675 - 695 rpm	805 - 850 rpm
cos φ:	0.68	0.73
Motor type:	K21R112MX8	
Size:	112 MX8	
Version:	IM V1 FF215	
Weight:	37 kg	
Type of protection:	IP 55	
Insulation class:	F	
Motor flange:	A 250	
Manufacturer:	VEM	

8.2 Materials

Assembly	Material
Stirrer shaft:	1.4301 / 1.4404
Agitator:	1.4571
Coupling:	1.4305

8.3 Dimensions and Weights, Spare Parts

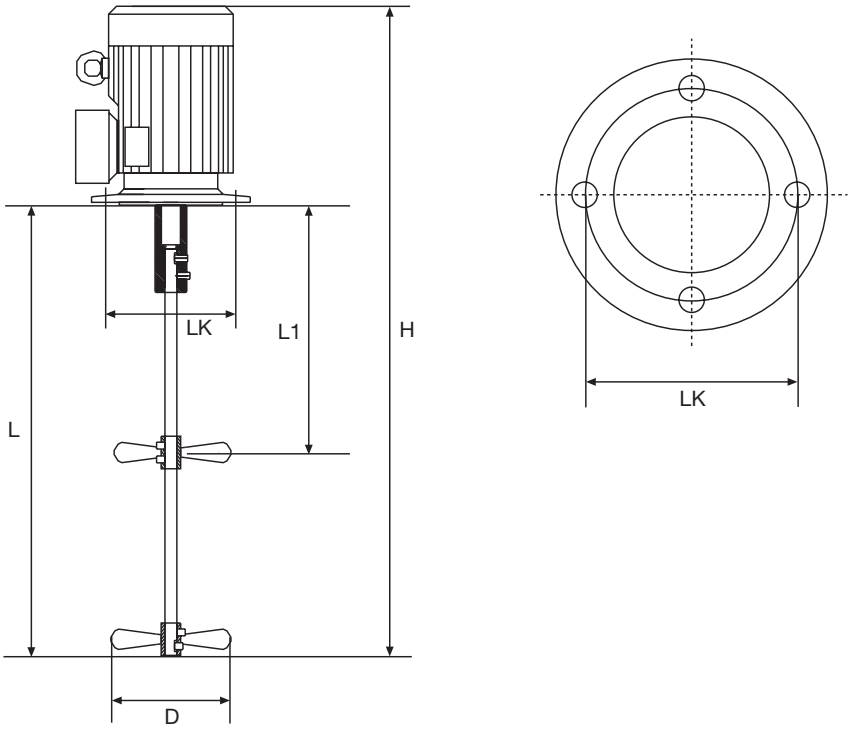


Fig. 2: Dimensions of a stirrer

Ultromat® Continuous Flow Systems ULTa

Dimensions and Weights

a) Stirrer with 1 agitator (dimensions in mm):

Order No.	Output	H	L	D	LK	Weight
1031374	0.18 kW	670	430	120	130	12 kg
1031375	0.55 kW	960	720	170	165	21 kg
1031376	0.75 kW	1100	790	200	165	26 kg
1031377	1.1 kW	1480	1190	220	215	36 kg
1031378	2.2 kW	1540	1210	260	215	45 kg

b) Stirrer with 2 agitators (dimensions in mm):

Order No.	Output	H	L	L1	D	LK	Weight
1030267	0.25 kW	640	430	215	120	165	14 kg
1030269	0.55 kW	960	720	360	150	165	21 kg
1030270	0.75 kW	1100	790	395	170	165	26 kg
1030271	1.1 kW	1480	1190	595	200	215	36 kg
1030272	2.2 kW	1540	1210	605	220	215	46 kg

Spare parts

a) Stirrer with 1 agitator:

Item*	Spare part	For stirrers				
		(1031374) 0.18 kW	(1031375) 0.55 kW	(1031376) 0.75 kW	(1031377) 1.1 kW	(1031378) 2.2 kW
A+B	Motor+coupling	1031666	1031671	1031672	1031673	1031674
C	Shaft	1030665	1026267	1030664	1030666	1030667
D	Agitator	1031394	1031397	1031400	740886	740887

* See Fig. in Section 4

b) Stirrer with 2 agitators:

Item*	Spare part	For stirrers				
		(1030267) 0.25 kW	(1030269) 0.55 kW	(1030270) 0.75 kW	(1030271) 1.1 kW	(1030272) 2.2 kW
A+B	Motor+coupling	1031669	1031671	1031672	1031673	1031674
C	Shaft	1030665	1026267	1030664	1030666	1030667
D	Agitator	2x 1031394	2x 1031396	2x 1031397	2x 740885	2x 740886

* See Fig. in Section 4

Manufacturer's declaration

We,

ProMinent Systems spol. s r.o.
Fügnerova ul. 567
336 01 Blovice
Czech Republic

Hereby certify that the below product – as to its conception and construction – conforms to the workmanship in which it was placed on the market and to the appropriate EC-directives on occupational safety and health protection.

This declaration becomes ineffective in case of product modifications made without our consent.
The product is intended for installation in machines or – together with other components – for assembly of a machine. It is forbidden to put the machine into operation unless it is certified that the machine conforms to the provisions of government order 24/2003Coll. (98/37/EEC) and EC-certificate of conformity is issued and the machine has received CE-marking.

Machine part description: **Stirrer**

The stirrer with an output from 0.18 to 2.2 kW serves to polyflocculant mixing with a viscosity of up to 1500 mPas.

Technical standards:

- ČSN EN ISO 12100-1:2004 – Safety of machinery. Basic concepts, general principles for design. Part 1: Basic terminology, methodology
- ČSN EN ISO 12100-2:2004 - Safety of machinery. Basic concepts, general principles for design. Part 2: Technical principles
- ČSN EN 614-1:2006 - Safety of machinery. Principles of ergonomic design. Part 1: Terminology and general principles.
- ČSN EN 60204-1:2000 Safety of machinery. Electric equipment of machines. Part 1: General requirements
- ČSN EN 61000-6-4:2002 EMC – Part 6-4: Generic standards – Emission standard for industrial environment
- ČSN EN 61000-6-2:2002 EMC – Part 6-2: Generic standards – Immunity for industrial environment
- ČSN EN 55011:1999 – Industrial, scientific and medical radio-frequency equipment (ISM) – Radio disturbance characteristics – Limits and methods of measurement

Blovice, 3 December, 2007

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Executive, Stefan Maile

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