

Contamination Free Fluid Handling with Levitronix® MagLev Pumps!



No Seals, No Bearings, No Contamination!

PuraLev® 200MU (Multi-Use)

2.6 bar	(38 psi)
21 liters/min	(5.5 gallons/min)

**Levitronix® Bearingless Pump Technology
Your Solution for Sterile, Aseptic, Low-Shear Pumping**

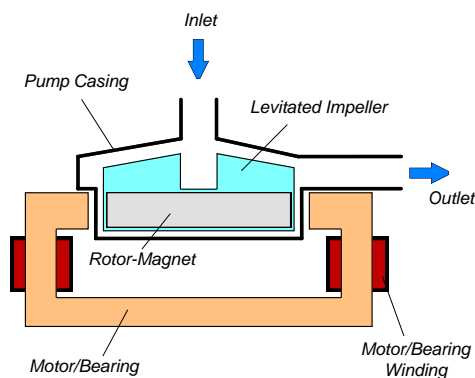


Figure 1: Schematic of the main elements of the maglev centrifugal pump

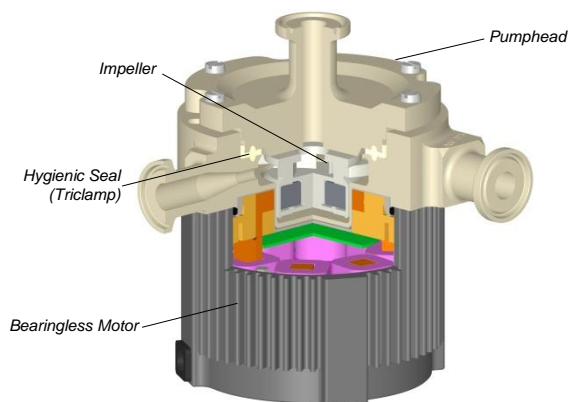


Figure 2: Cross-section of the bearingless pump motor and pump head.

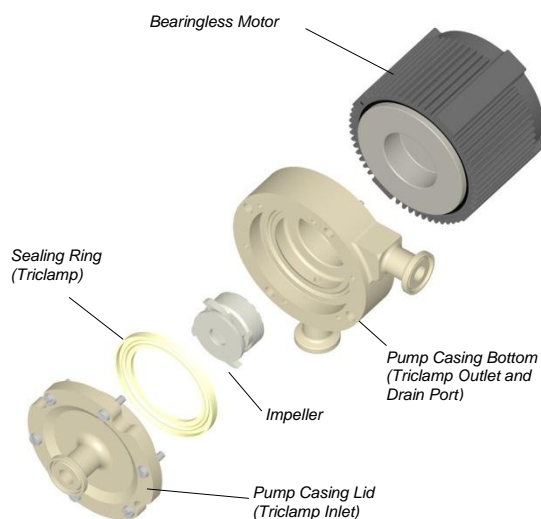


Figure 3: Disassembled Pumphead

REVOLUTIONARY MAGNETICALLY LEVITATED CENTRIFUGAL PUMP

Levitronix® has developed a revolutionary pump that has no bearings to wear out or seals to break. Based on the principles of magnetic levitation, the pump's impeller is suspended, contact-free, inside a sealed casing and is driven by the magnetic field of the motor (Figure 1). The impeller and casing are both fabricated from biocompatible (FDA, USP-VI, ABSE/TSE free and Animal free) fluorocarbon resins and together they make up the pump head. A continuous flow rate and pressure are precisely controlled by electronically regulating the rotor speed, which eliminates any pulsation. With the lack of mechanical bearings plus the self-contained pump head design, the risk of contamination is drastically reduced. The absence of narrow gaps between the impeller and pump casing, plus the low-shear pump design also allows the gentle pumping of sensitive liquids. The pump casing is fabricated with Triclamp fittings and has an aseptic seal design (see Figure 5).

SYSTEM BENEFITS

- Low shear-forces
- Reduced risk of contamination due to the self-contained design with magnetic bearings
- No particle generation
- No narrow gaps between the impeller and pump casing where bacteria could be entrapped
- Pumphead multiple times steam sterilizable (multi-use)
- Biocompatibility of wet materials: FDA, USP-VI, BSE/TSE free and Animal free
- Easy disassembling of pump casing for cleaning
- Aseptic pump casing design with Triclamp fittings and sealing technology
- Small size
- Dry running capability
- Proven technology in the medical (blood pumps) and semiconductor (high-purity pumps) industries
- Pulsation free

APPLICATIONS

- Pumping of shear-sensitive liquids
- Bioprocessing
- Recirculation in Bioreactors
- Perfusion of hollow-fiber reactors
- Sterile and aseptic flow circuits in the pharmaceutical and food industry

STAND-ALONE SYSTEM CONFIGURATION

The stand-alone configuration of the PuraLev® 200MU pump system consists of a controller with an integrated user panel allowing the operator to set the speed manually (see Figure 6). The speed is automatically stored in the internal EEPROM of the controller. As an option, the speed can also be set with an analog signal (see specification for Position 3a in Table 2).

EXTENDED SYSTEM CONFIGURATION

The extended version of the PuraLev® 200MU pump system (Figure 7) consists of a controller with an extended PLC interface. The PLC interface allows the speed to be set via an external signal, facilitating precise closed-loop flow or pressure control when either a flow or pressure sensor is integrated into the system (see specification of Position 3b in Table 2). A computer can be connected via a USB interface to allow communication with Levitronix® Service Software. Hence parameterization, firmware updates and failure analysis are possible.

ATEX SYSTEM CONFIGURATION

An ATEX certified motor together with the pumphead allows installation of motor and pump head within an ATEX Zone 2 area (see Figure 8). The ATEX motor (Pos. 2b in Table 2) comes with special connectors and relevant extension cables (Pos. 5a and 5b in Table 3). An ATEX conform solution is needed for the motor cables to leave the ATEX area. One option is an ATEX certified cable sealing system as listed in Table 4 (see Pos. 9) and shown in Figure 12.

- ATEX certified for Category 3G and 3D (Zone 2 for Gas and Zone 22 for Dust) (Testing and certification by Electrosuisse, Switzerland, CH-8320 Fehraltorf)
- Thermal classification T5 (< 100 °C = 212 °F) for maximum liquid temperature of 90 °C / 194 °F.
- ATEX marking of motor with pump head:
 - CE Ex II 3G Ex c nAc IIC T5
 - CE Ex II 3D Ex c tc IIIC T100°C IP67
- Explosion groups:
 - Group IIA: Propane (IPA), Methane, Acetone, Acetaldehyde
 - Group IIB: Ethylene, Ethylenglycol
 - Group IIC: Acetylene, Hydrogen (not carbon disulphide)
- ATEX listing corresponds to UL hazardous location Class 1 Division 2.

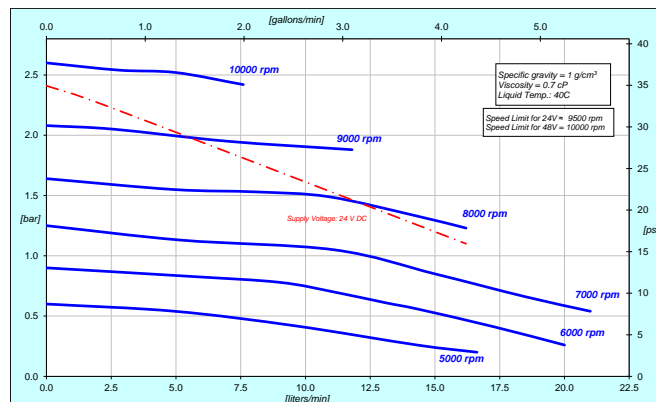


Figure 4: Pressure/flow curves

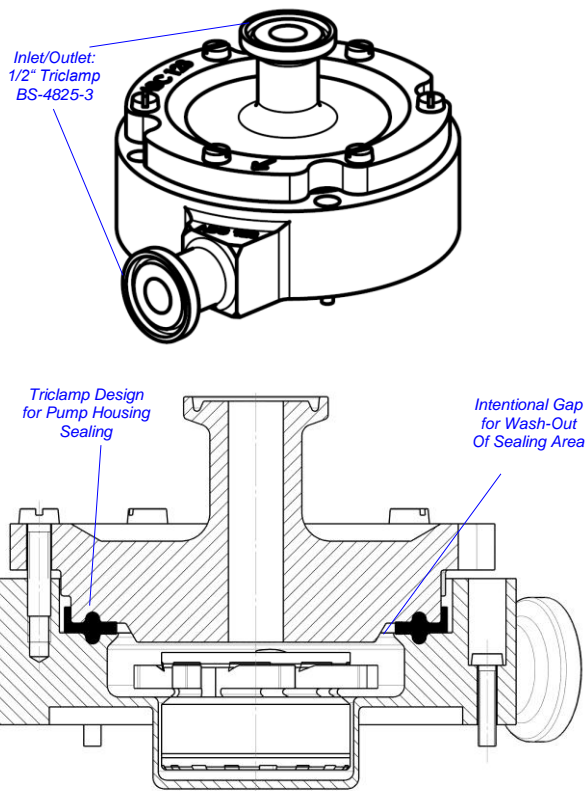


Figure 5: Aseptic design of pumphead

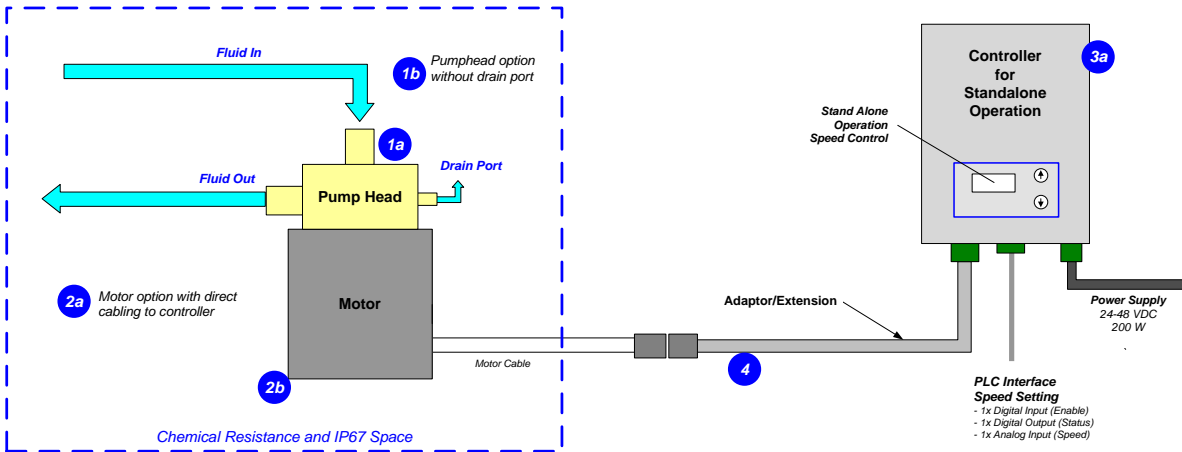


Figure 6: System configuration for standalone operation (Speed setting with integrated user panel)

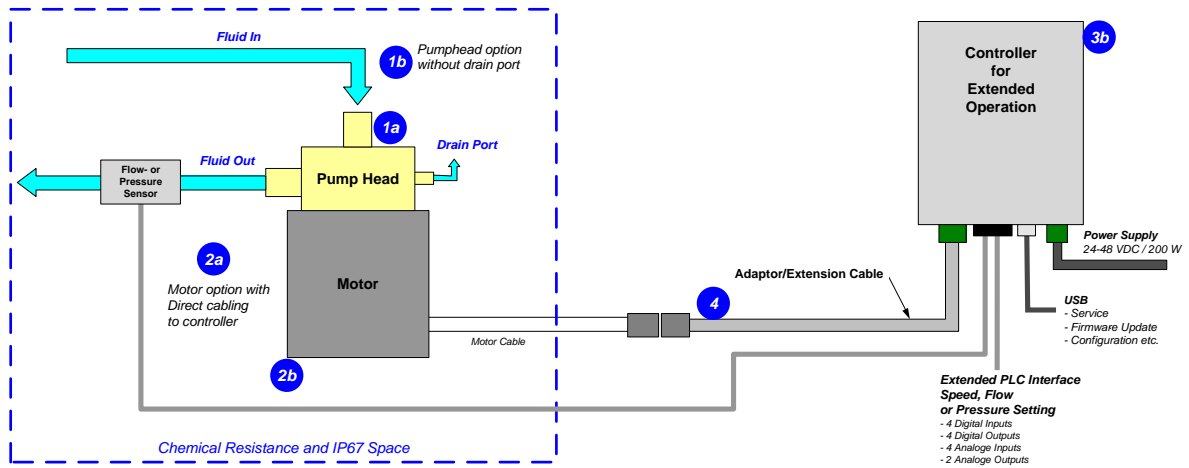


Figure 7: Extended operation (flow or pressure control) with extended controller

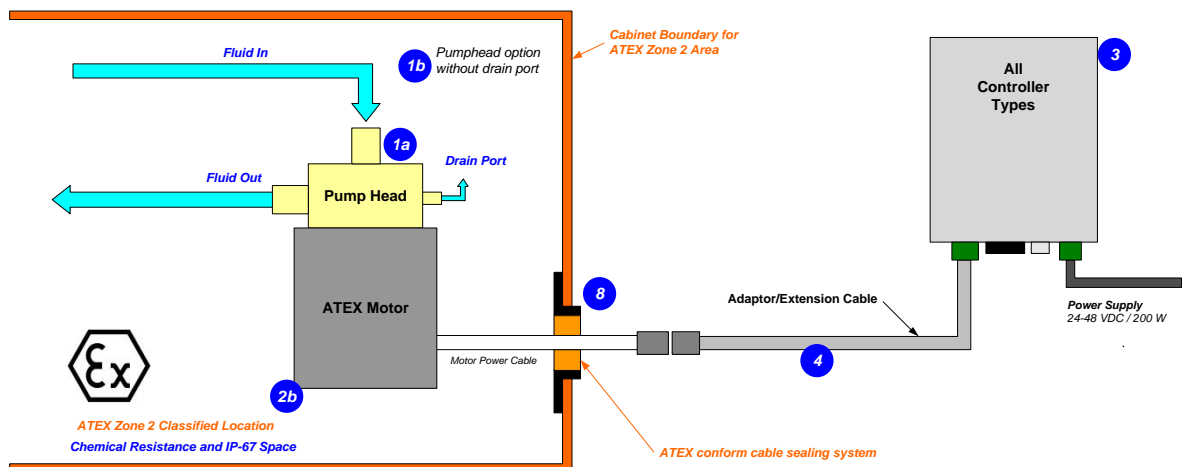
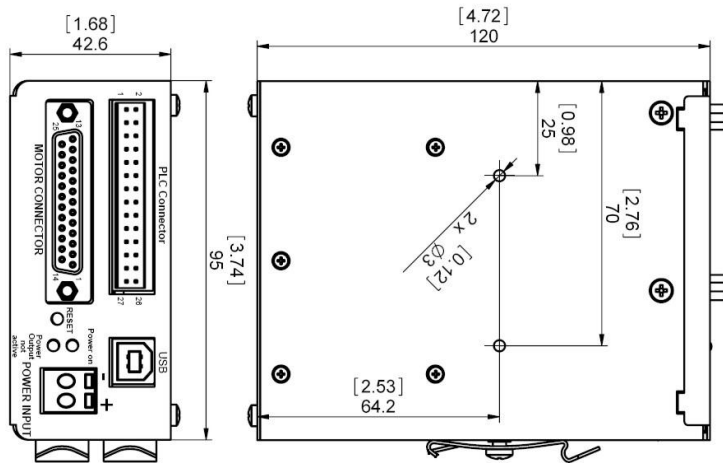


Figure 8: System Configuration for ATEX applications

DIMENSIONS OF MAIN COMPONENTS



Controller
LPC-200.1-02

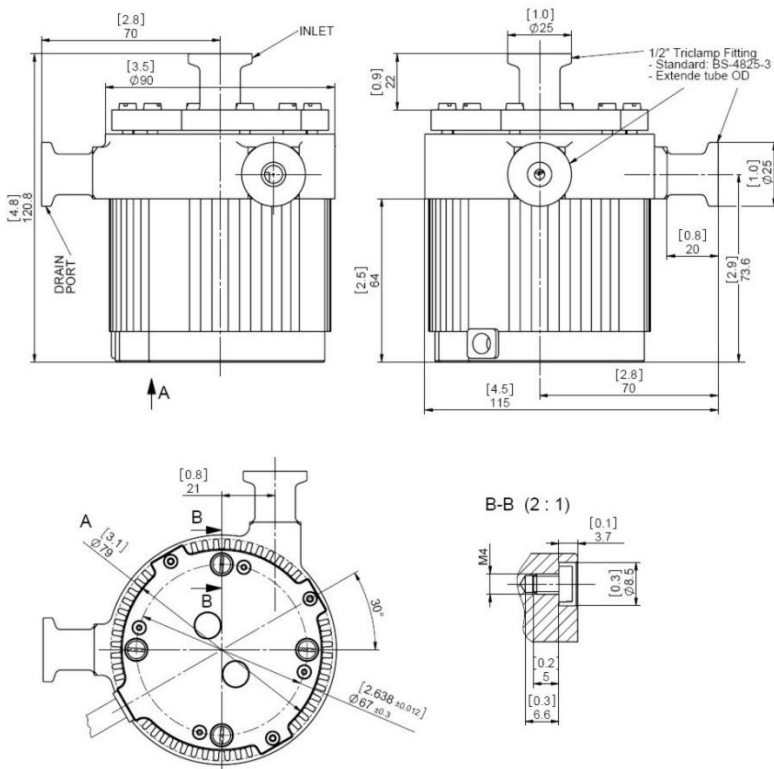
3a



Controller
LPC-200.2-02

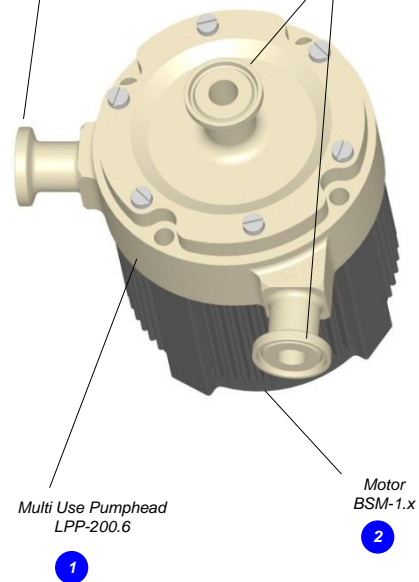
3b

Figure 9: Dimensions of controllers LPC-200.2-02 (same basic dimensions for LPC-200.1-02)



Drain Port:
1/2" Triclamp
BS-4825-3

Inlet/Outlet Fitting:
1/2" Triclamp
BS-4825-3



Multi Use Pumphead
LPP-200.6

Motor
BSM-1.x

Figure 10: Dimensions of motor with pump head

ORDER INFORMATION

Pump System Name	Article #	Pumphead	Motor	Controller	Note
PuraLev® 200MU.1	100-90578	LPP-200.6	BSM-1.4	LPC-200.1-02	Direct cabling between motor and controller
PuraLev® 200MU.2	100-90579	(with drain port)		LPC-200.2-02	
PuraLev® 200MU.4	100-90581	LPP-200.5		LPC-200.1-02	
PuraLev® 200MU.5	100-90582	(without drain port)		LPC-200.2-02	
PuraLev® 200MU.7 (ATEX)	100-90584	LPP-200.6	BSM-1.6 (ATEX)	LPC-200.1-02	Adaptor/Extension (0.5 - 10m) cables according to Table 3 (Positionn 5a and 5b) have to be ordered as separate article with specified length. ATEX Cable Sealing System can be ordered according to Table 4 (Pos. 8)
PuraLev® 200MU.8 (ATEX)	100-90585	(with drain port)		LPC-200.2-02	
PuraLev® 200MU.10 (ATEX)	100-90587	LPP-200.5		LPC-200.1-02	
PuraLev® 200MU.11 (ATEX)	100-90588	(without drain port)		LPC-200.2-02	

Table 1: Standard pump system configurations

Pos.	Component	Article Name	Article #	Characteristics	Value / Feature
1a	Pumphead	LPP-200.6 (with drain port)	100-90526	Impeller / Pump Housing Sealing Ring Fittings	PFA / PVDF (FDA, USP-VI, Animal/BSE/TSE free) Silicon (FDA, USP-VI, Animal/BSE/TSE free) Triclamp ½" for in/outlet, Triclamp ½" for drain port (BS-4825-3)
1b		LPP-200.5 (without drain port)	100-90525	Max. Flow Max. Diff.-Pressure Max. Viscosity / Density	21 liters/min / 55 gallons/min 2.6 bar / 38 psi 50 cP, 1.8 g/cm³
				Wet Pump Volume/Surface	25 ml / 158 cm³ (without drain port)
				Max. Liquid Temp.	90°C / 194°F
				Possible Sterilization Methods	CIP, SIP, Autoclaving
2a	Motor	BSM-1.4	100-10005	Housing	- ETFE (chemical resistant) coated Aluminum - waterproofed (IP67)
				Cable / Connectors	1x 5m cables with FEP jacket / 1x D-SUB (direct cable to controller)
2b	Motor	BSM-1.6	100-10063	Cable / Connectors	1x 3m cable with FEP jacket / 1x circular (M23, IP-67) (needs extension adaptor cable for connection to controller)
				ATEX Marking	CE II 3G Ex c nA c T5 CE II 3D Ex c tc IIIC T100°C IP67
4a	Standalone Controller (User Panel)	LPC-200.1-02	100-30030 (Enable connector included)	Voltage / Electrical Power	200 W / 24-48 VDC
				Interfaces for Standalone Controller	Panel to set speed (automatic storage on internal EEPROM) PLC with 1x analog input ("Speed") 4 - 20 mA 1x digital input ("Enable") 0 - 24 V (optocoupler) 1x digital output ("Status") 0 - 24 V (relais)
				Firmware	C2.25 (standard firmware)
4b	Extended Controller (PLC and USB)	LPC-200.2-02	100-30031 (PLC connector included)	Interfaces for Extended Controller	PLC with - up to 4 digital inputs 0 - 24V (optocoupler) - up to 4 digital outputs 0 - 24 V (relais) - up to 2 analog inputs 4 - 20mA - up to 2 analog outputs 0 - 10 V - up to 2 analog outputs 0 - 5 V
				USB interface (for service and system monitoring)	
				Firmware	C2.48 (standard firmware)

Table 2: Specification of standard components

Pos.	Component	Article Name	Article #	Characteristics	Value / Feature
4	Extension Adaptor Cable for Power	MCA-1.5-05 (0.5m) MCA-1.5-30 (3m) MCA-1.5-50 (5m) MCA-1.5-70 (7m) MCA-1.5-100 (10m)	190-10225 190-10231 190-10199 190-10232 190-10233	Jacket Material Connectors	PVC-jacket Wallmountable circular Hummel to D-SUB connector

Table 3: Specification of adaptor/extension cables

Pos.	Component	Article Name	Article #	Characteristics	Value / Feature
5	Air Cooling Module	ACM-1.1	190-10003	Material / Connection Port	PVDF / NPT ¼"
				Air Pressure / Consumption	~ 0.5bar (7.2 psi)
6	Mounting Base Plate	MBP-1.1	190-10004	Material	PVDF
7	ATEX Cable Sealing System	ACS-A.1	100-90292	Sleeve (a) / Gasket (b) Frame (c) Cable Module (d)	Stainless Steel and EPDM Roxylon (EPDM rubber) Roxylon (EPDM rubber)
				Note:	Lubricant (e) and measurement plates (f) are included.
8a	AC/DC Power Supply	SWS300-24 (Lambda)	100-40007	Voltage / Power Output	24 VDC / 300 W
				Voltage Input	85 - 265 VAC (automatic detection)
				Certification	TUV / UL / Semi F47 (208 AC input)
8b	AC/DC Power Supply	SWS300-48	100-40008	Voltage / Power Output	48 VDC / 300 W

Table 4: Specification of accessories

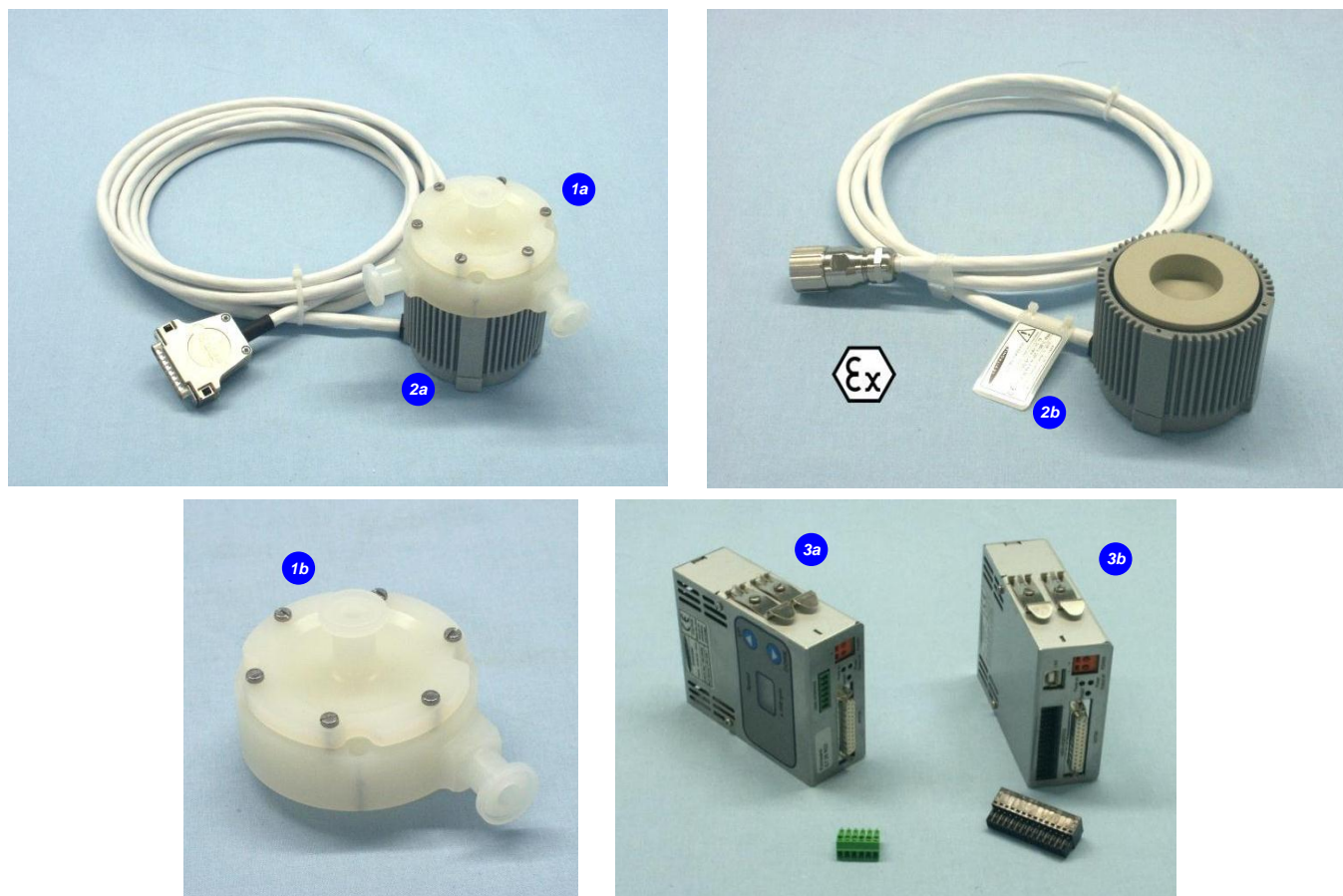


Figure 11: Pump system with standard components

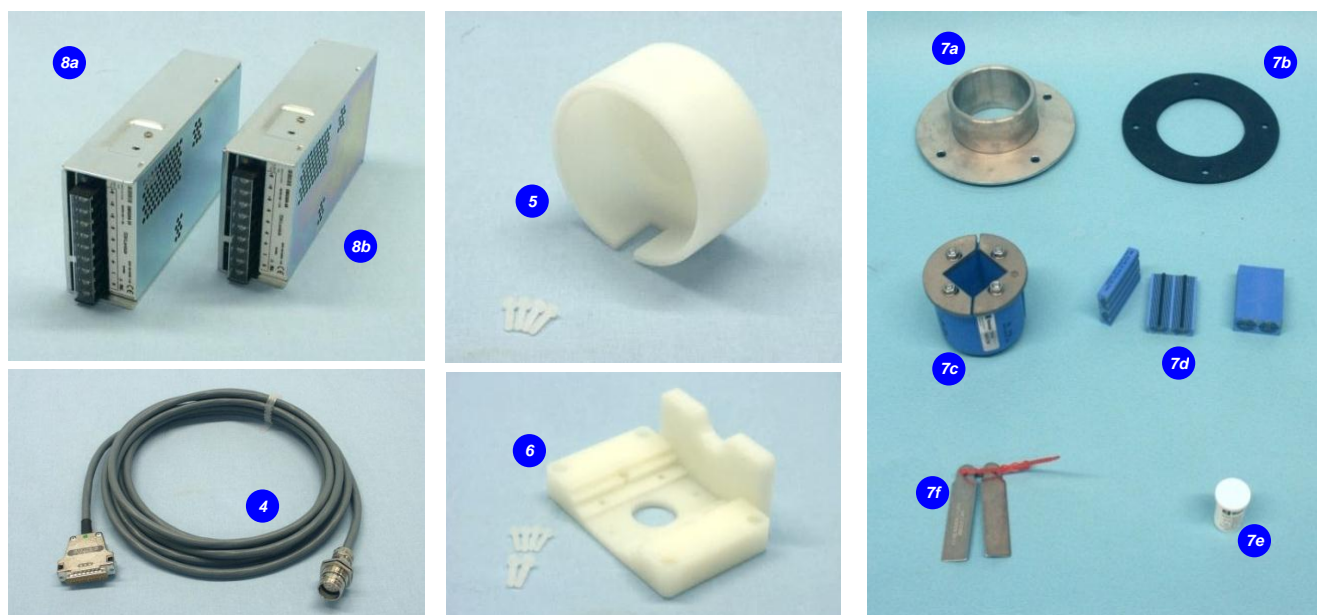


Figure 12: Accessories

Levitronix® Bearingless Pump Technology
Your Solution for Sterile, Aseptic, Low-Shear Pumping

LEVITRONIX® THE COMPANY

Levitronix® is the world-wide leader in magnetically levitated bearingless motor technology. Levitronix® was the first company to introduce bearingless motor technology to the Semiconductor, Medical and Life Science markets. The company is ISO 13485 and ISO 9001 certified. Production and quality control facilities are located in Switzerland. In addition, Levitronix® is committed to bring other highly innovative products like the LEVIFLOW® flowmeter series to the market.



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