Magnetic

MIXING SYSTEMS

The Magnetic Mixer is a well-established single-use (SU) mixing system ideal for solid to liquid applications requiring efficient mixing. It is a mobile, flexible, and modular mixing system that provides reproducible SU mixing from 6 to 3000 L in a wide range of biopharmaceutical applications, and is particularly suited for buffer and media preparation. This system is designed for use with SU mixing systems manufactured in ISO 7 (in operation) cleanrooms.

The Magnetic Mixer consists of an interchangeable magnetic drive unit and proprietary magnetic-impeller SU mixing system fitted into either stainless steel (SS) tanks, or plastic tanks located on a trolley. The drive motor is enclosed on a portable cart that can be easily disconnected and reconnected to another SU mixing system. This allows mixing in multiple SU mixing systems of various sizes with a single drive unit.

Additionally, the plastic and SS tanks are interchangeable with LevMixer™ system technology, allowing process flexibility and CAPEX savings. Coupling the drive unit with SU mixing systems and their containers is simple and quick to complete.

The Magnetic Mixer utilizes SU mixing biocontainers made from Allegro™ bioprocess film. The product-contacting layer of Allegro film is produced under cleanroom conditions. It is then laminated to create a gas barrier film of exceptional cleanliness, strength, and clarity that is animal derived component free (ADCF) and complies fully with USP Class VI requirements.

The system is simple and efficient. If any data transfer or control is desired, it can be paired with the control box or Allegro MVP system, allowing Code of Federal Regulations (CFR) Title 21, Part 11 compliance, and fully automated and documented process steps. Recent additions on standard manifolds—accessories like the automation/control box and inflation box—have enhanced the flexibility and modularity of the mixer portfolio.

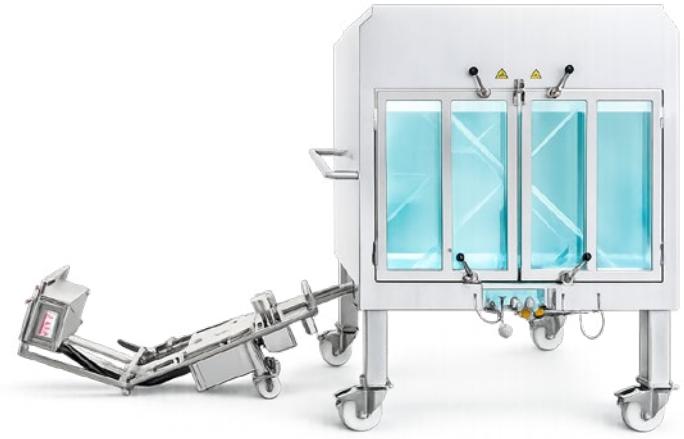

Fig 1. Magnetic Mixer system.

Features and benefits:

- Accommodates scaling from 6 to 3000 L
- Interchangeable with LevMixer system technology (same containers)
- Strong track record and reliability since 2006
- Drive unit flexibility (fits all container sizes)
- Ergonomic, easy to operate and control
- Simple and quick SU installation
- Data transfer and control options via Allegro MVP single-use system (SUS) or a control box

Applications:

- Buffer preparation
- Media preparation
- High viscosity mixing (up to 1200 cP)
- Heavy powder loads
- Product hold
- Downstream applications

Optional biocontainers including single-use probes (pH and conductivity)

The Magnetic Mixer can be configured with pre-installed SU Hamilton pH and conductivity probes, enabling reliable in-process monitoring while maintaining the advantages of a closed, SU workflow. The probes are integrated directly into the biocontainer, eliminating the need for probe installation or autoclaving, and supporting fast, consistent setup across batches. This configuration is well suited for applications where accurate pH and conductivity control are critical, such as buffer and media preparation, pH adjustment, neutralization, and intermediate process steps.

SU Hamilton probes are compatible with mixing systems across multiple working volumes, supporting process development through manufacturing-scale operations. Combined with our gentle, low-shear mixing technology, the integrated sensors help deliver robust process control with minimal hold-up volume and reduced risk of contamination.

Features and benefits:

- Pre-installed SU pH and conductivity probes integrated in the biocontainer
- Supports closed processing and reduces manual handling
- Enables real-time monitoring of critical process parameters
- Compatible with LevMixer gen V SU mixing systems up to 1000 L
- Suitable for process development and GxP environments

Minimum working volumes for each single-use mixer

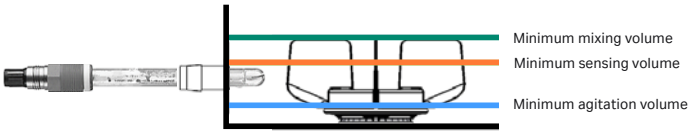

Fig 2. Minimum volume criteria for SU mixers.

Minimum mixing volume: the volume required to completely immerse the impeller blades at rest where liquid-liquid mixing is effective; mixing may not be adequate for some applications (e.g., challenging solid-liquid mixing).

Minimum sensing volume: the lowest volume that allows for the sensor probe to be fully immersed.

Minimum agitation volume: the lowest feasible working volume of the mixer defined as the volume required to reach the lowest parts of the impeller blades at rest.

Mixing tanks

The tanks or containers for the SU biocontainers can be made out of plastic, which offers a price advantage, or SS. The SS variants are available with load cells and/or thermal control jacket (available with ASME certification). Both plastic and SS tanks can be used with the Magnetic Mixer or LevMixer technologies and their associated biocontainers.

Automation

For data transfer and/or control via an external control system (decentralized control system [DCS] or supervisory control and data acquisition [SCADA] system), we can offer the control box along with the Magnetic Mixer drive unit for automated applications (product code: MMG403). The control box allows data transfer and external control via DCS or SCADA system. It is available in two variants: the basic and the advanced version.

The basic control box provides the following functionality:

- RJ45 ethernet socket via ethernet cable for S7/S7 PLC interface (for the Allegro MVP system interface).
- RJ45 ethernet socket data access via OPC/UA (for DCS/SCADA interface).
- Weight 4 to 20 mA (when connected to an appropriate tank including load cells).
- Temperature cable and PT100.

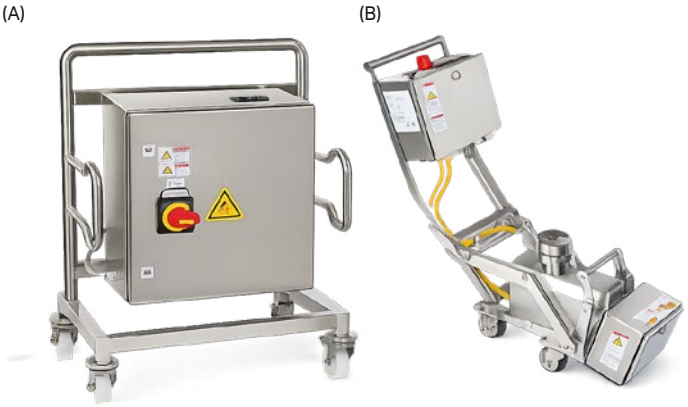

Fig 3. (A) Basic control box for drive unit, temperature, and load cell integration. (B) For automation integration designed Magnetic Mixer drive unit MMG403.

The advanced control box provides the following functionality:

- RJ45 ethernet socket via ethernet cable for S7/S7 PLC interface (for the Allegro MVP system interface).
- RJ45 ethernet socket data access via OPC/UA (for DCS/SCADA interface).
- Weight 4 to 20 mA (when connected to an appropriate tank including load cells).
- Temperature cable and PT100.
- Mettler-Toledo M300 transmitter for integration of on-line pH and conductivity via digital ISM sensors.

Fig 4. Advanced control box for drive unit, temperature, pH, conductivity, and load cell integration.

Fig 5. Magnetic Mixer drive unit MMG403 with advanced control box CBG401A and 400 L SS tank

Standalone automation

If you do not have a DCS or SCADA system but you still need data transfer for regulatory requirements (e.g., CFR Title 21, Part 11 compliance), we can help. The Allegro MVP system offers, amongst many other features, full local control and automation for mixing systems without the need for any external control system.

Fig 6. Magnetic Mixer (or LevMixer system) can be paired with the Allegro MVP system for full automation without the need for a local SCADA or DCS system.

The full mixing experience

Whenever there are mixing applications, there are often powder handling, temperature (need for a temperature control unit), inflation, liquid handling, or sterile filtration requirements. We can deliver a complete mixing experience.

For more information on our inflation box, temperature control units, transfer/storage/filtration sets, and other questions, please contact Cytiva.

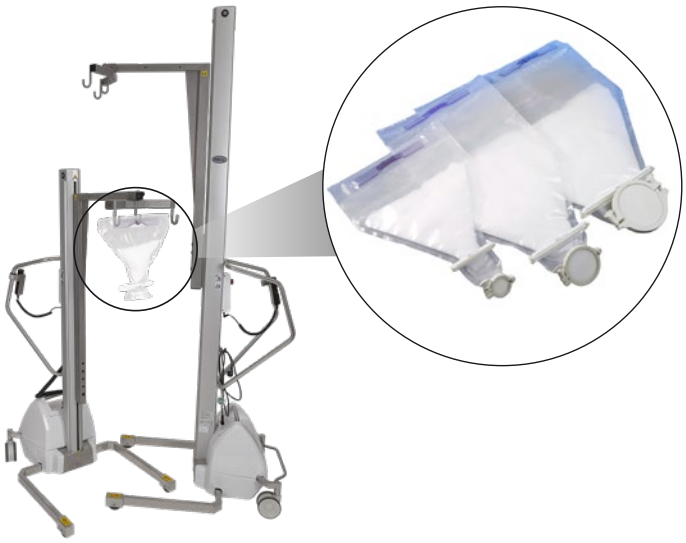

Fig 7. Powder bags and powder bag lift.

Fig 8. Temperature control unit from Lauda, which can be offered in a one-stop-shop package for mixing—allowing trouble-free integration and time-savings.

Fig 9. Inflation box for the optional inflation of mixing biocontainers. This allows mixing down to the agitation volume.

Technical specifications

Single-use impeller

Type	Radial flow
Number of blades	Four (4)
Material	USP Class VI, ADCF, gamma stable high-density polyethylene (HDPE)
Maximum speed	300 rpm
Impeller biocontainer location	Center, off-center

Fig 10. Magnetic Mixer impeller.

Magnetic Mixer drive unit

Power	Single phase 115 or 230 V, 50/60 Hz
Input wattage	< 180 W
Footprint	43 × 128 cm (16.8 × 50.3 in.)
Height	52 cm (20.3 in.)
Weight	32.2 kg
Hardware	SS frame, 2 cleanroom wheels
IP rating	IP 55
Remote control	Start/stop, speed 4 to 20 mA

Stainless steel tanks

General specifications

Facility	*Materials of construction:*	
	Body	302 stainless steel
	Wheel	Polyamide
	Surface finish Ra (brush polished)	≤ 0.89 µm (35 µin.)
Load cells	*Type:*	
	50 to 400 L	Minebea PR6211
	650 to 2000 L	Minebea PR6212
	Quantity	3 (4 for 1500 to 2000 L)
	Range	Nominal volume of size container
	Accuracy	0.3% of maximum nominal volume
	Indicator type	Midrics 2
	Indicator output	4 to 20 mA
	Indicator connector	Female PG7 Binder (3 pole) 
	Ingress protection rating:	
	Junction box	IP65
	Load cell indicator	IP65
	Electrical supply	Single phase 115 to 230 V AC, 50/60 Hz
	Cable (6 m/20 ft)	US: NEMA 5 to 15  EU: CEE7/7 
	Electrical safety	CE
	Printer	Cleanroom compatible printer available on request
Jacket	Type	Dimple jacket
	Insulation	Rockwool or Superwool Plus 2 in. thick
	Temperature range	-5°C–90°C (23°F–194°F)
	Jacket connections	1½ in. sanitary connection
	Jacket pressure rating	Max 6.2 bar (90 psi)
	Regulatory compliance	Pressure equipment directive (PED) 2014/68/EU
	Regulatory compliance ASME variant	ASME BPVC Section VIII Div. 1 Code Certification Stamp: U

Tank operating volumes and dimensions

50 L mixer tank	Maximum operating volume	50 L
	Minimum agitation volume	7 L
	Minimum mixing volume	17 L
	Minimum sensing volume in mixer bag with reusable probes	13 L
	Minimum sensing volume in mixer bag with SU pH and conductivity probe	
	Temperature	17.1 L
	pH and conductivity	20.3 L
	Weight:	
	LM50NCN	58 kg
	LM50JCN	99 kg
	LM50NCMA	80 kg
	LM50JCMA	127 kg
	Width × length × height:	
	LM50NCN	74.5 × 78.9 × 93.9 cm (29.3 × 31.1 × 37.0 in.)
	LM50JCN	72.3 × 78.4 × 94.1 cm (28.5 × 30.9 × 37.0 in.)
	LM50NCMA	74.6 × 92.2 × 139.3 cm (29.4 × 36.3 × 54.8 in.)
	LM50JCMA	75.0 × 92.2 × 139.3 cm (29.5 × 36.3 × 54.8 in.)
100 L mixer tank	Maximum operating volume	100 L
	Minimum agitation volume	9 L
	Minimum mixing volume	24 L
	Minimum sensing volume in mixer bag with reusable probes	17 L
	Minimum sensing volume in mixer bag with SU pH and conductivity probe	
	Temperature	23.5 L
	pH and conductivity	28.1 L
	Weight:	
	LM100NCN	83 kg
	LM100JCN	130 kg
	LM100NCMA	150 kg
	LM100JCMA	204 kg
	Width × length × height:	
	LM100NCN	84.9 × 86.0 × 105.4 cm (33.4 × 33.9 × 41.5 in.)
	LM100JCN	80.3 × 84.4 × 105.6 cm (31.6 × 33.2 × 41.6 in.)
	LM100NCMA	85.5 × 126.6 × 158.0 cm (33.7 × 49.8 × 62.2 in.)
	LM100JCMA	85.5 × 126.6 × 158.0 cm (33.7 × 49.8 × 62.2 in.)
200 L mixer tank	Maximum operating volume	200 L
	Minimum agitation volume	14 L
	Minimum mixing volume	37 L
	Minimum sensing volume in mixer bag with reusable probes	25 L
	Minimum sensing volume in mixer bag with SU pH and conductivity probe	
	Temperature	36.7 L
	pH and conductivity	43.9 L
	Weight:	
	LM200NCN	107 kg
	LM200JCN	179 kg
	LM200NCMA	176 kg
	LM200JCMA	255 kg
	Width × length × height:	
	LM200NCN	84.9 × 86.0 × 105.4 cm (33.4 × 33.9 × 41.5 in.)
	LM200JCN	80.3 × 84.4 × 105.6 cm (31.6 × 33.2 × 41.6 in.)
	LM200NCMA	85.5 × 126.6 × 158.0 cm (33.7 × 49.8 × 62.2 in.)
	LM200JCMA	85.5 × 126.6 × 158.0 cm (33.7 × 49.8 × 62.2 in.)
400 L mixer tank	Maximum operating volume	400 L
	Minimum agitation volume	23 L
	Minimum mixing volume	60 L
	Minimum sensing volume (reusable):	40 L
	Weight:	
	LM400NCN	156 kg
	LM400JCN	262 kg
	LM400NCMA	215 kg
	LM400JCMA	336 kg
	Width × length × height:	
	LM400NCN	98.3 × 109.0 × 130.8 cm (38.7 × 42.9 × 51.5 in.)
	LM400JCN	101.6 × 105.9 × 131.0 cm (40.0 × 41.7 × 51.6 in.)
	LM400NCMA	95.0 × 126.6 × 158.0 cm (37.4 × 49.8 × 62.2 in.)
	LM400JCMA	101.6 × 126.6 × 158.0 cm (40.0 × 49.8 × 62.2 in.)

650 L mixer tank	Maximum operating volume	650 L
	Minimum agitation volume	31 L
	Minimum mixing volume	82 L
	Minimum sensing volume (reusable):	55 L
	Weight:	
	LM50NCN	198 kg
	LM50JCN	368 kg
	LM650NCMA	299 kg
	LM650JCMA	468 kg
	Width × length × height:	
	LM50NCN	111.0 × 115.4 × 144.7 cm (43.7 × 45.4 × 57.0 in.)
	LM50JCN	115.2 × 122.1 × 144.4 cm (45.4 × 48.1 × 56.9 in.)
	LM650NCMA	113.1 × 147.8 × 153.7 cm (44.5 × 58.2 × 60.5 in.)
	LM650JCMA	115.2 × 147.8 × 153.7 cm (45.4 × 58.2 × 60.5 in.)
1000 L mixer tank	Maximum operating volume	1000 L
	Minimum agitation volume	41 L
	Minimum mixing volume	108 L
	Minimum sensing volume (reusable):	73 L
	Weight:	
	LM1000NCN	257 kg
	LM1000JCN	484 kg
	LM1000NCMA	357 kg
	LM1000JCMA	583 kg
	Width × length × height:	
	LM1000NCN	124.7 × 129.6 × 160.2 cm (49.1 × 51.0 × 63.1 in.)
	LM1000JCN	128.9 × 129.9 × 159.9 cm (50.8 × 51.1 × 63.0 in.)
	LM1000NCMA	121.7 × 152.8 × 160.3 cm (47.9 × 60.1 × 63.1 in.)
	LM1000JCMA	129.1 × 153.3 × 159.9 cm (50.8 × 60.4 × 63.0 in.)
1500 L mixer tank	Maximum operating volume	1500 L
	Minimum agitation volume	44 L
	Minimum mixing volume	117 L
	Minimum sensing volume (reusable):	79 L
	Weight:	
	LM1500NCN	771 kg
	LM1500JCN	858 kg
	LM1500NCMA	790 kg
	LM1500JCMA	877 kg
	Width × length × height:	
	LM1500NCN	132.0 × 155.6 × 216.9 cm (52.0 × 61.3 × 85.4 in.)
	LM1500JCN	139.0 × 155.6 × 216.9 cm (54.7 × 61.3 × 85.4 in.)
	LM1500NCMA	132.0 × 162.3 × 216.9 cm (52.0 × 63.9 × 85.4 in.)
	LM1500JCMA	139.0 × 162.3 × 216.9 cm (54.7 × 63.9 × 85.4 in.)
	Height with the hoist lowered	189.4 cm (74.6 in.)
2000 L mixer tank	Maximum operating volume	2000 L
	Minimum agitation volume	44 L
	Minimum mixing volume	117 L
	Minimum sensing volume (reusable):	79 L
	Weight:	
	LM2000NCN	937 kg
	LM2000JCN	1058 kg
	LM2000NCMA	956 kg
	LM2000JCMA	1077 kg
	Width × length × height:	
	LM2000NCN	132.0 × 155.6 × 266.9 cm (52.0 × 61.3 × 105.1 in.)
	LM2000JCN	139.0 × 155.6 × 266.9 cm (54.7 × 61.3 × 105.1 in.)
	LM2000NCMA	132.0 × 162.3 × 266.9 cm (52.0 × 63.9 × 105.1 in.)
	LM2000JCMA	139.0 × 162.3 × 266.9 cm (54.7 × 63.9 × 105.1 in.)
	Height with the hoist lowered	239.4 cm (94.3 in.)

3000 L mixer tank	Maximum operating volume	3000 L
	Minimum agitation volume	45 L
	Minimum mixing volume	119 L
	Minimum sensing volume (reusable):	80 L
	Weight:	
	LM3000NCN	1226 kg
	LM3000JCN	1399 kg
	LM3000NCTA	1283 kg
	LM3000JCTA	1456 kg
	Width × length × height:	
	LM3000NCN	156.1 × 133.0 × 357.9 cm (61.4 × 52.4 × 140.9 in.)
	LM3000JCN	156.1 × 133.0 × 357.9 cm (61.4 × 52.4 × 140.9 in.)
	LM3000NCTA	156.1 × 133.0 × 357.9 cm (61.4 × 52.4 × 140.9 in.)
	LM3000JCTA	156.1 × 133.0 × 357.9 cm (61.4 × 52.4 × 140.9 in.)
	Height with the hoist lowered	330.4 cm (130.1 in.)

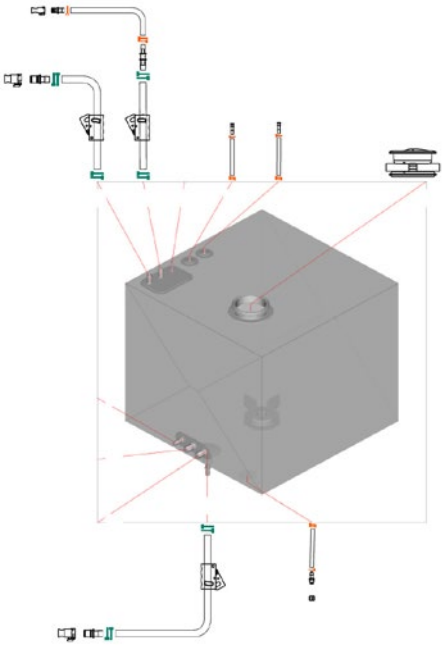

Fig 11. Standard cubical design (also applicable to standard round) for standard mixing applications with 2 inlets, powder port, bottom drain, and sample valve.

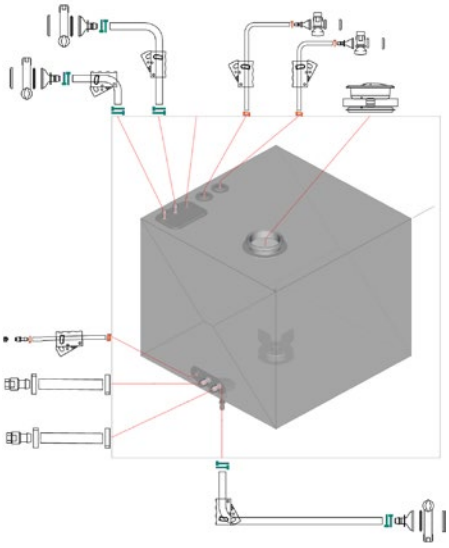

Fig 12. Example standard general use design, for open processing with vendor agnostic/ universal sanitary flange connections. General use designs have 2 main inlets, 2 side inlets, powder port, sampling port, 2 sensing ports, and a bottom drain. The design is made to be as universal as possible, and it is ideally suited for sensing, pH adjustment, and media prep applications, among others.

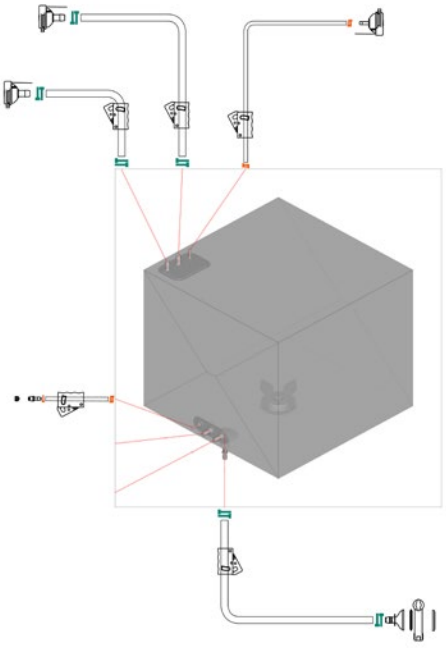

Fig 13. Example standard filtered product sanitary outlet design. The filtered product line is designed for closed processing (e.g., no powder port). It has Kleenpak™ Presto sterile connectors on all ports except the outlet. Here, the design has a sanitary flange outlet for direct connection to sterile filters.

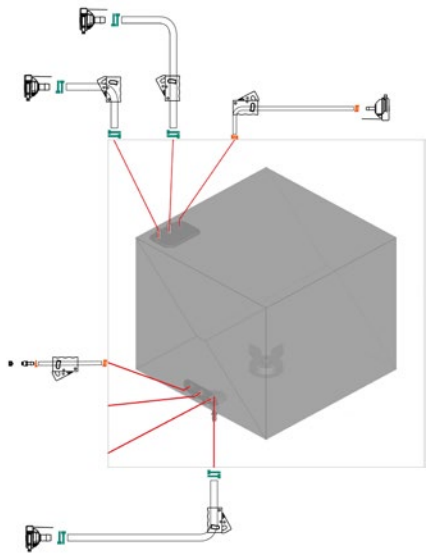

Fig 14. Example standard filtered product design. The filtered product line is designed for closed processing (e.g., no powder port). The biocontainers have 2 main inlets, a smaller side inlet, and a bottom outlet, all with Kleenpak Presto sterile connectors for closed processing. It also contains a sampling port.

Ordering information

Magnetic Mixer drive units

Product	Product code
Magnetic Mixer drive unit gen IV – CE/UL	MMG403
Magnetic Mixer drive unit – 100 to 120 V (fixed US plug)	DU011
Magnetic Mixer drive unit – 200 to 240 V (exchangeable plug)	DU010*

* Power cord required (ordering information below).

Magnetic Mixer standard SUS (round)

Round design with 4 in. powder port† and Allegro film.

Volume	Product code
30 L†	6404-1242C
50 L	6404-1102F
100 L	6404-1241W
200 L	6404-1155G
350 L	7404-1105Q
500 L	7404-0998R
1000 L	6404-1221Y
2000 L	6404-1221L

† 30 L round Magnetic Mixer has a 2 in. powder port.

Magnetic Mixer standard SUS (cubical)

Cubical design with 4 in. powder port and Allegro film.

Volume	Product code
50 L	7404-1105M
100 L	6404-1156Z
200 L	7404-0999B
400 L	6404-1127L
650 L	7404-0998T
1000 L	6404-1129H
1500 L	6404-1349T
2000 L	6404-1285S

Magnetic Mixer standard SUS (general use)

Cubical general use design with 4 in. powder port and Allegro film.

Volume	Product code
50 L	7404-1357C
100 L	7404-1358B
200 L	7404-1358J
400 L	7404-1360A
650 L	7404-1360B
1000 L	7404-1360E
1500 L	7404-1483S
2000 L	7404-1367C

Magnetic Mixer standard SUS (filtered product)

Cubical filtered product design with sanitary outlet design and Allegro film.

Volume	Product code
50 L	7404-1445V
100 L	7404-1452G
200 L	7404-1445S
400 L	7404-1442P
650 L	7404-1452F
1000 L	7404-1443B
1500 L	7404-1483P
2000 L	7404-1453F
3000 L	7404-1443D

Cubical filtered product design with Allegro film.

Volume	Product code
50 L	7404-1444F
100 L	7404-1451Y
200 L	7404-1401R
400 L	7404-1401T
650 L	7404-1452E
1000 L	7404-1444L
1500 L	7404-1483H
2000 L	7404-1453E

Magnetic Mixer standard SUS (including SU pH and conductivity probes)

Volume	Product code
50 L	4404-2482Z
100 L	4404-2429B
200 L	4404-2429E
400 L	4404-2429F
650 L	4404-2429G
1000 L	4404-2429J

Note: In addition to the above standard Allegro mixer systems, we can also offer SU customized systems with the Advanced Central Management System (ACMS). For further information, please contact Cytiva.

Plastic mixing tanks

Round medium density polyethylene (MDPE) mixing containers.

Volume	Product code
30 L	LEV30PR
50 L	LEV50PR
100 L	LEV100PR
200 L	LEV200PR
350 L	LEV350PR
500 L	LEV500PR

Magnetic Mixer dolly (for plastic tanks)

Compatible with probe support LT-SVSP471.

Product	Product code
Dolly full handle	LM-DBMC037
Dolly partial handle	LM-DBMC038

SS standard tanks (cubical)

Volume	Product code
50 L	LM50NCN-B4N
100 L	LM100NCN-B4N
200 L	LM200NCN-B4N
400 L	LM400NCN-B4N
650 L	LM650NCN-B4N
1000 L	LM1000NCN-B4N
1500 L	LM1500NCN-B4N
2000 L	LM2000NCN-B4N
3000 L	LM3000NCN-B4N

SS standard tanks with load cells (cubical)

Volume	Product code
50 L	LM50NCMA-B4N
100 L	LM100NCMA-B4N
200 L	LM200NCMA-B4N
400 L	LM400NCMA-B4N
650 L	LM650NCMA-B4N
1000 L	LM1000NCMA-B4N
1500 L	LM1500NCMA-B4N
2000 L	LM2000NCMA-B4N
3000 L	LM3000NCTA-B4N

SS jacketed tanks (cubical, non ASME certified)

Volume	Product code
50 L	LM50JCN-B4N
100 L	LM100JCN-B4N
200 L	LM200JCN-B4N
400 L	LM400JCN-B4N
650 L	LM650JCN-B4N
1000 L	LM1000JCN-B4N
1500 L	LM1500JCN-B4N
2000 L	LM2000JCN-B4N
3000 L	LM3000JCN-B4N

SS jacketed tanks with load cells (cubical, non ASME certified)

Volume	Product code
50 L	LM50JCMA-B4N
100 L	LM100JCMA-B4N
200 L	LM200JCMA-B4N
400 L	LM400JCMA-B4N
650 L	LM650JCMA-B4N
1000 L	LM1000JCMA-B4N
1500 L	LM1500JCMA-B4N
2000 L	LM2000JCMA-B4N
3000 L	LM3000JCTA-B4N

SS jacketed tanks (ASME certified)

Volume	Product code
50 L	LM50JCN-B4A
100 L	LM100JCN-B4A
200 L	LM200JCN-B4A
400 L	LM400JCN-B4A
650 L	LM650JCN-B4A
1000 L	LM1000JCN-B4A
1500 L	LM1500JCN-B4A
2000 L	LM2000JCN-B4A
3000 L	LM3000JCT-B4A

SS jacketed tanks with load cells (ASME certified)

Volume	Product code
50 L	LM50JCMA-B4A
100 L	LM100JCMA-B4A
200 L	LM200JCMA-B4A
400 L	LM400JCMA-B4A
650 L	LM650JCMA-B4A
1000 L	LM1000JCMA-B4A
1500 L	LM1500JCMA-B4A
2000 L	LM2000JCMA-B4A
3000 L	LM3000JCTA-B4A

Fig 15. Plastic container on dolly (LEV500PR tank and LM-DBMC037 dolly).

Fig 16. Example tanks: 1000, 400, and 200 L (shown with load cells).

Power cords

Required accessory for DU010[‡] and load cells.

Product	Product code
Australia	LT-SVSP367
China	LT-SVSP480
Europe	LT-SVSP366
Switzerland	LT-SVSP368
United Kingdom	LT-SVSP369
United States[‡]	LT-SVSP365

[‡] Does not apply to LT-SVSP365 (United States power cord).

Basic and advanced control boxes

Volume	Product code
Basic controller – temperature and weight; PLC – CE version (230 V)	CBG401B
Basic controller – temperature and weight; PLC – UL version (120 V)	CBG402B
Advanced control box – pH, conductivity, temperature, weight; PLC – CE version (230 V)	CBG401A
Advanced control box – pH, conductivity, temperature, weight; PLC – UL version (120 V)	CBG402A

Reuseable probes (order separately)

Type	Product	Product code
pH	EasyFerm Bio HB Arc 120	243632-2312
Conductivity	Conducell 4USF Arc PG-120	243590-1111

SU probe accessories

Type	Product	Product code
Conductivity	Hamilton Arc module Cond-P SU	30041748
pH	Hamilton Arc module SU pH	31189679
Bluetooth adaptor	Hamilton Arc WI 1G adaptor BT	31189680

cytiva.com

For local office contact information, visit cytiva.com/contact

CY37467-15Jun26-DF