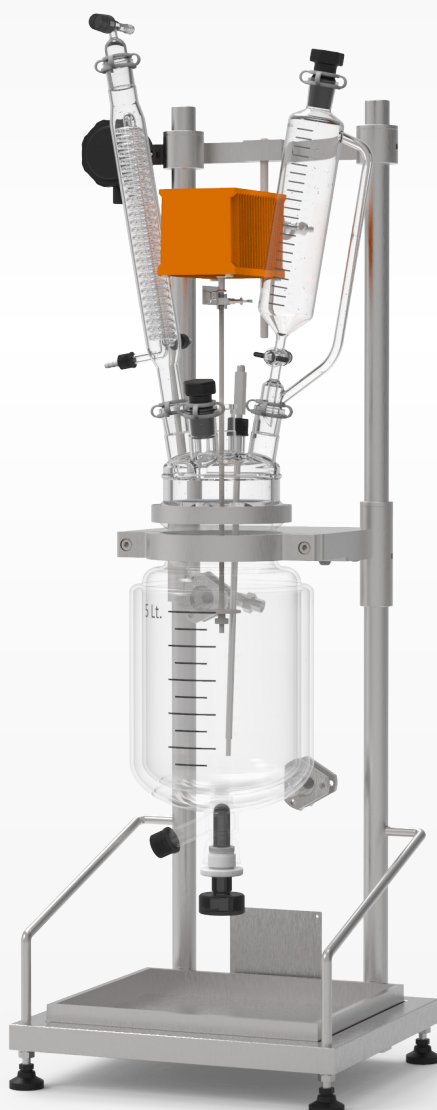


# LABORATORY MIXING SYSTEMS

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The indispensable bench tools for a successful scale-up



**DrM**

[www.drm.ch](http://www.drm.ch)

# Lab Systems

## This is DrM

### **Customized solutions**

Each solid-liquid separation system is tailor made to the specific application parameters of our clients. We view every application as a challenge to satisfy our clients, regardless if the application is straight forward or complex.

### **Application comprehension**

Every solid-liquid separation application is unique. DrM's comprehension of all of the applications begins with a discussion with the client and is followed by a request that the client complete an application questionnaire to the best of its ability. Following a review of the information submitted by the client, DrM application specialists may suggest that on-site testing and/or piloting be carried out. This hands-on work ultimately gives both DrM and its clients the confidence that the process is scalable. It also puts DrM in a position to submit a technical/commercial proposal that it will stand behind.

### **Quality above all**

DrM's Quality System is ISO 9001 certified for the design and manufacture plants. We are dedicated to continually improving the efficiency and the effectiveness of our quality management system. All of our products follow a rigid quality control program that employs the most current testing and inspection methods prior to shipment.

# Lab mixing units

The FUNDAMIX®, also known as Vibromixer, is a sophisticated mixing device where a plate with conical bores oscillates resulting in the liquid being pumped through the plate holes following the Bernoulli effect. No rotating parts (so low maintenance costs and lower risk of contamination) and low shear forces with a high mixing effect are among the key advantages of the system.

Lab scale tests can be meant to investigate a few basic parameters (homogenization efficiency, possibility to achieve a shear-free mixing, capability of suspending settling or floating solids, etc.) or can simulate a whole process (crystallization, fermentation, heat transfer, pH control). DrM can provide laboratory sets and accessories for special applications or complete customized systems based on the exact client's requirements.



FUNDAMIX® LAB SET881533.00

The FUNDAMIX® Lab Set is the perfect solution for lab scale experiments in order to analyse a mixing process with the ability to accurately upscale to our larger devices for production. With a broad experience offering mixing solutions for a wide variety of applications, boasting both excellent mixing performance with the added benefit of low shear forces. The lab set includes everything you need to analyse numerous mixing processes, including adjustable mixing plates, mixing shafts (with and without gas insertion) and a selection of atmospheric membranes. Easily installed on a variety of containers or flasks using a laboratory stand and provided clamp. The supplied controller provides manual adjustment of the mixing amplitude by means of a turn potentiometer.

\*Upon request the lab set can be tailored to meet your mixing needs.

FUNDAMIX®	Size 1
Mixing Volume (lt)	1-10
Pressure	Atmospheric
Voltage (V), frequency (Hz)	110-220, 50-60
Vibration Frequency (Hz)	Approx. 100
Max. amplitude (mm)	3 - 3.5
Mixing plates diameter (mm)	23, 45, 54, 65
Mixing plates material	SS 316L
Shaft length (mm)	400 (with and without gas insertion)
Amplitude controller	AC 1-3
Note	For special cases, disk in PVDF or PEEK can be provided

AMPLITUDE CONTROLLER AC1-3881085.00

The amplitude controller is the simplest system for adjusting the vibration amplitude. A potentiometer with graduated scale 1-10 allows variation of the mixing amplitude from 0 to a maximum of 3 mm.

Voltage (V)	110/230
Frequency (Hz)	50/60
Note	0-10 graduated scale to adjust the amplitude



FUNDAMIX® DEMO SET881500.00

Like the lab set the FUNDAMIX® Demo Set is an all-in-one solution to analyse mixing processes. The supplied 4L rounded wide neck flask provides ideal flow paths to quickly homogenise a solution, the modular design allows for numerous mixing configurations to be examined.

FUNDAMIX®	Size 1
Mixing Volume (lt)	4 (Rounded wide neck flask)
Membrane sealing unit	Atmospheric
Membrane material	Silicone / Viton / EPDM
Power supply voltage (V), frequency (Hz)	110-220, 50-60
Vibration Frequency (Hz)	Approx. 100
Max. amplitude (mm)	3 - 3.5
Mixing plate diameter (mm)	65
Mixing plate material	SS 316L
Shaft length (mm)	400
Controller	AC 1-3

FUNDAMIX® GLASS / STAINLESS STEEL REACTOR

For a ready to use laboratory or small scale production system the FUNDAMIX® size 1 can be supplied with a broad range of glass reactors to meet your process needs, combining the assembly with our range of control systems allows full versatility with optional amplitude regulating/monitoring.

The key components have been designed in accordance with the food and drug industry sterile design guidelines offering a wide variety of materials to suit most application needs. Complete with full documentation including material and FDA certificates for the components in contact with the product.

FUNDAMIX®	Size 1
Mixing Volume (lt)	0.5 - 20 (with or without heating jacket)
Membrane sealing unit	Atmospheric / Vacuum
Membrane material	EPDM/PTFE / Silicone / Neoprene
Power supply voltage (V), frequency (Hz)	110-220, 50-60
Vibration Frequency (Hz)	Approx. 100
Max. amplitude (mm)	3 - 3.5
Mixing plate diameter (mm)	23, 45, 54, 65
Mixing plate material	SS 316L*
Shaft length (mm)	400 / 500 / 600 (with or without gas insertion)
Controller	FUNDAMIX® control cabinet / AC 1-3
	Complete with operating manual, material certificates, FDA certificates.
Note	The design can be tailor made upon request.
	*Upon request, mixing devices can be supplied in PVDF or PEEK.





FUNDAMIX® CONTROL CABINET

The FUNDAMIX® control cabinet combined with the optional accelerometer enables full control of the mixing system providing a number of functions directly from the front control panel. The amplitude can be set manually or maintain a defined set point using the automatic mode, optimisation of the system is possible by means of the frequency functions that allow the resonance frequency to be reached resulting in optimal mixing performance. Parameter adjustment from an external PLC control is also possible using the available connections.

FUNDAMIX®	Size 1 / 2 / 3 / 3+
Power supply voltage (V), frequency (Hz)	110-220, 50-60
Sensor (amplitude measurement)	Accelerometer
Note	<div>The control cabinet offer the following functions:</div> <ul style="list-style-type: none"><li>• Manual and automated amplitude control</li><li>• Manual and automated frequency adjustment</li><li>• Amplitude alarm settings</li><li>• Amplitude calibration</li><li>• PLC Mode (for external connection)</li></ul>



PLASTIC MIXER

When the process medium is not compatible with Stainless Steel, mixing plate and shaft are available in PP, PVDF or other materials upon request.

Diameter (mm)	80
Temperature (°C)	130



MEMBRANE SEALING UNIT

881160.00 / 881150.00

With mixing systems operating under pressure (max. 5 barg) or full vacuum, a specifically designed membrane sealing unit is flanged onto the vessel to provide a tight seal. The membrane is pre compressed by a spring system so that the force applied by the spring equals the pressure inside the vessel during the operation. As a result, the membrane is not exposed to any stress and a long operating life is assured.

Options	1) Vacuum 2) Pressure (max. 5 barg)
Material	SS 316L electropolished, membrane in PTFE



EXTENSION KIT FOR STAINLESS STEEL TSD FILTER

850157.88

This option allows the installation of a longer TSD candle (212 mm, included in the kit) and doubles the filter area to 0.024 m².

Kit includes	10 pcs. various cloths of extended length 1 FKM o-ring gasket 1 Vessel tri clamp 1 FKM profile gasket 1 PTFE profile gasket
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EXTENSION KIT FOR GLASS TSD FILTER

850157.68

This option features a borosilicate glass vessel extension with SS 316L connections, allowing a direct view of the filtration process.

Kit includes	1 candle extension 1 vessel tri clamp 1 splinter protection 1 FKM profile gasket 1 PTFE profile gasket 1 Stand extension
Max. Pressure (barg)	6
Max. Temperature (°C)	150
Filling Volume (lt)	1.35
Length / Diameter (mm)	300 / 80
Weight (kg)	~5.6



AUXILIARY KIT FOR STAINLESS STEEL TSD FILTER

850223.00

Kit includes	Various filter cloths Seal tape (Teflon) Clamps Pincer Gasket O-ring (Silicon/FEP) Various spanners Hexagonal screw wrench
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AUXILIARY KIT FOR PVDF TSD FILTER

850224.00

Kit includes	Various filter cloths Seal tape (Teflon) Clamp Pincer Screw joint-pneumatic Sealing section TSD PVDF O-ring (Silicon/FEP) Clamping ring Cable tie
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AUXILIARY KIT FOR FOR STAINLESS STEEL XL TSD FILTER

850279.00

Kit includes	Seal tape (Teflon) Clamp Pincer Screw joint-pneumatic O-ring (Silicon/FEP) Various spanners Filter cloths according to application
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FUNDAMIX® AMPLITUDE MONITOR

The purpose of this instrument is to monitor the operating frequency and amplitude of the FUNDAMIX® mixing plate for process validation and calibration. This is done by measuring the change in distance from the instrument to a measuring plate connected to the shaft of the FUNDAMIX® at a rate of 1.5 ms. The distance measurements are converted into a sine curve and through non-linear regression the amplitude and frequency are calculated.

880079.00

FUNDAMIX®	Size 1 / 2 / 3 / 3+ / 4 / 4+
Power supply (for charging)	5V Battery
Sensor (amplitude measurement)	Laser Class 2
Note	The amplitude monitor offers Amplitude measurement, Frequency measurement and Measurement storage



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