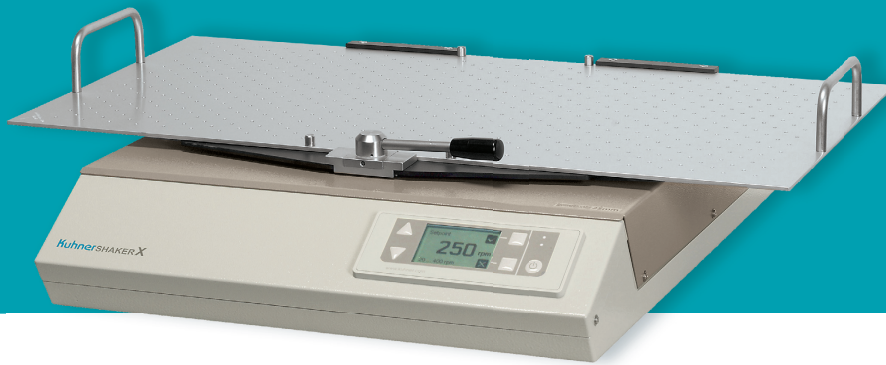**Kuhner** shaker

LS-X (Lab-Shaker)

Sturdy bench top shaker

The Kuhner LS-X is a sturdy bench top shaker designed for continuous and maintenance-free operation. The LS-X shaker has a load capacity up to 25kg.

Performance characteristics

+ Sturdy bench top shaker
+ Accepts loads up to 25kg
+ Linear or orbital movement
+ Large display and touch pad controls
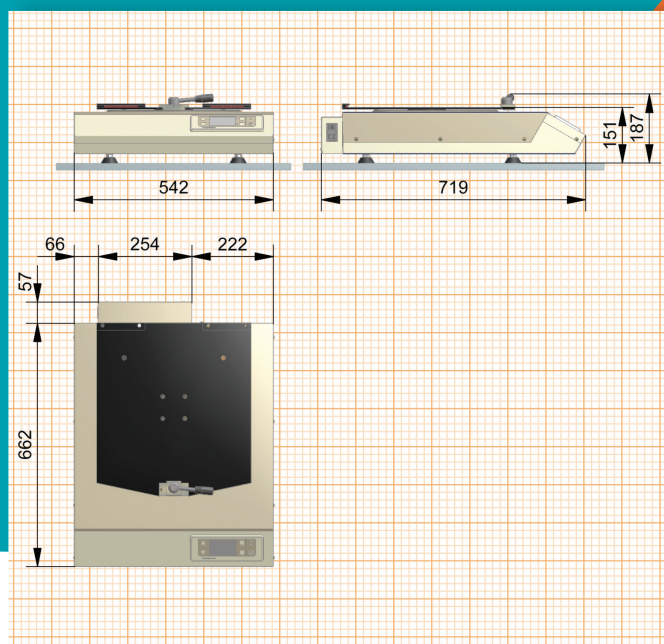+ Ideal base for customised trays and holders

Low energy requirements

The in-house designed Kuhner magnetic drive system guarantees accurate control and low energy consumption even at high speeds. The LS-X is available with orbital or linear movement. User friendly touch pad controls with a large display ensure easy operation. This shaker will accept loads up to 25kg and the shaking diameter can be adjusted at any time. There are three standard shaking diameters 12.5, 25 and 50mm, with custom shaking diameters available upon request.

The LS-X shaker is an ideal base for customised trays and holders to shake any type of container.

As with all Kuhner shakers, the LS-X is a cost effective investment in quality backed with a five year warranty.

Dimensions

Technical data

Machine	SMX1200
Weight	58kg
Operating menu in	de, fr, it, en, es
Interface, standard	CAN-Bus
Interface, optional	USB, Ethernet, digital, analogue
Ambient temperature	0°C to 60°C
Consumption, maximum	65W (130W with high torque drive SMX1031)
Consumption, typical	25W

Shaking unit	
1 x Tray, size	E (420 x 420mm)
or	EX (500 x 420mm)
or	F (800 x 420mm)
Loading, maximum	25kg
Setting, digital	1 rpm
Accuracy, absolute	± 0.1 rpm
Timer	1s...999h
Acceleration	controlled
Active brake	adjustable
Stop on position	adjustable

Shaking motion	Speed
* orbital, Ø 12.5mm	20...500 rpm
* orbital, Ø 25.0mm	20...400 rpm
* orbital, Ø 50.0mm	20...300 rpm
* linear, Ø 12.5mm	20...400 rpm
* linear, Ø 25.0mm	20...300 rpm
* linear, Ø 50.0mm	20...200 rpm
* can be changed	

Mains connection	
SMX1021	220 - 240 V / 50-60 Hz
SMX1022	190 - 210 V / 50-60 Hz
SMX1023	110 - 120 V / 50-60 Hz
SMX1024	95 - 105 V / 50-60 Hz

Universal tray
fitted with clamps for Erlenmeyer flasks and test tube holders

Accessories

To suit your application

Universal trays

The universal tray can be fitted with clamps for Erlenmeyer flasks, test tube holders, microtiter plates, sticky mats, or custom made holders to suit your requirements. Rearranging these clamps and holders is quick and simple.

Order number	Description
SM3002	Universal tray EU (420 x 420 mm)
SMX3002	Universal tray EXU (500 x 420 mm)
SM3003	Universal tray FU (800 x 420 mm)

Clamps for Erlenmeyer flasks

Order number for 1 clamp	Flask size in ml	Max. number of clamps per Universal tray		
		EU	EXU	FU
SM310025	25	80	90	113
SM310050	50	49	56	100
SM310100	100	36	45	72
SM310125	125	26	35	50
SM310150	150	26	35	50
SM310200	200	24	27	44
SM310250	250	20	24	40
SM310300	300	18	22	37
SM310500	500	14	16	27
SM311000	1000	9	10	16
SM311500	1500	5	6	12
SM312000	2000	5	5	9
SM313000	3000	4	5	8
SM314000	4000	2	3	5
SM315000	5000	2	2	4
SM316000	6000	1	2	4

❶ Tray F-250 with fixed clamps

Trays with fixed clamps

The clamps are riveted onto these trays and cannot be removed. They offer maximum security and will often hold a larger number of flasks than universal trays. These trays (E, EX and F) are available in a variety of flask clamp sizes from 25 to 6000ml.

Tray E (420 x 420 mm) with fixed clamps

Order number	Description	# of clamps
SM320025	E-25 ml	81
SM320050	E-50 ml	50
SM320100	E-100 ml	39
SM320125	E-125 ml	30
SM320150	E-150 ml	30
SM320200	E-200 ml	20
SM320250	E-250 ml	18
SM320300	E-300 ml	15
SM320500	E-500 ml	12
SM321000	E-1000 ml	9
SM321500	E-1500 ml	5
SM322000	E-2000 ml	5
SM323000	E-3000 ml	4
SM324000	E-4000 ml	2
SM325000	E-5000 ml	2
SM326000	E-6000 ml	1

Tray EX (500 x 420 mm) with fixed clamps

Order number	Description	# of clamps
SMX320025	EX-25 ml	90
SMX320050	EX-50 ml	62
SMX320100	EX-100 ml	42
SMX320125	EX-125 ml	36
SMX320150	EX150 ml	36
SMX320200	EX-200 ml	27
SMX320250	EX-250 ml	22
SMX320300	EX-300 ml	21
SMX320500	EX-500 ml	14
SMX321000	EX-1000 ml	9
SMX321500	EX-1500 ml	8
SMX322000	EX-2000 ml	6
SMX323000	EX-3000 ml	4
SMX324000	EX-4000 ml	3
SMX325000	EX-5000 ml	2
SMX326000	EX-6000 ml	2

Tray F (800 x 420 mm) with fixed clamps ❶

Order number	Description	# of clamps
SM330025	F-25 ml	153
SM330050	F-50 ml	100
SM330100	F-100 ml	74
SM330125	F-125 ml	60
SM330150	F-150 ml	60
SM330200	F-200 ml	40
SM330250	F-250 ml	40
SM330300	F-300 ml	30
SM330500	F-500 ml	26
SM331000	F-1000 ml	16
SM331500	F-1500 ml	12
SM332000	F-2000 ml	9
SM333000	F-3000 ml	8
SM334000	F-4000 ml	5
SM335000	F-5000 ml	4
SM336000	F-6000 ml	3

2 Tray with sticky mats

3 Tray for centrifuge tubes

Trays for microtiter plates

Kuhner has designed trays specifically for microtiter plates. Handles at the front of the tray open and close the special clamping mechanism allowing plates to be loaded and unloaded. Trays of different heights (22, 47 and 77mm) allow the stacking of up to four microtiter plates. The trays are suitable for all types of plates (deep well, low well, 24, 48 and 96 well).

Tray E (420 x 420 mm) for microtiter plates

Order number	Description	Microtiter plates
SM3502.22	E-MT.22	12 - 24
SM3502.47	E-MT.47	12 - 48
SM3502.77	E-MT.77	12 - 72

Tray F (800 x 420 mm) for microtiter plates

Order number	Description	Microtiter plates
SM3503.22	F-MT.22	24 - 48
SM3503.47	F-MT.47	24 - 96
SM3503.77	F-MT.77	24 - 144

Trays with rubber mat

The whole tray is covered with a rubber mat and is particularly suitable for shaking containers at low speed (e.g. blood bags).

Order number	Description
SM3602	Rubber mat EG (420 x 420 mm)
SMX3602	Rubber mat EXG (500 x 420 mm)
SM3603	Rubber mat FG (800 x 420 mm)

Trays with sticky mats 2

A tray fitted with sticky mats is especially useful for flasks shaken at low speeds (up to 200rpm). The flask is placed directly on the sticky mat without the need for any other support. Flasks of all sizes can be used. Sticky mats are available individually or in sets and can also be supplied already fitted to a tray.

Each mat is 20 x 20cm and can be cut to size. The E-size tray accepts 4 mats while the F-size tray requires 7 mats.

Order number	Description
SM3702	E-tray with sticky mats (420 x 420 mm)
SMX3702	EX-tray with sticky mats (500 x 420 mm)
SM3703	F-tray with sticky mats (800 x 420 mm)

Trays for centrifuge tubes 3

The use of centrifuge tubes (e.g. 50ml Falcon tubes and TPP 50ml tubes) in cell culture screening is well established. Kuhner offers special trays in three different sizes for this purpose. The E and EX trays have a capacity of 72 (3x24) 50ml centrifuge tubes while the larger F size tray can take 120 (5x24) 50ml tubes.
Holders for 600ml TPP tubes are also available.

Tray E (420 x 420 mm)

Order number	Description	Centrifuge tubes
SM3804	50ml Tube E-tray (EPFL)	72 (3x24)

Tray EX (500 x 420 mm)

Order number	Description	Centrifuge tubes
SMX3804	50ml Tube EX-tray (EPFL)	72 (3x24)

Tray F (800 x 420 mm)

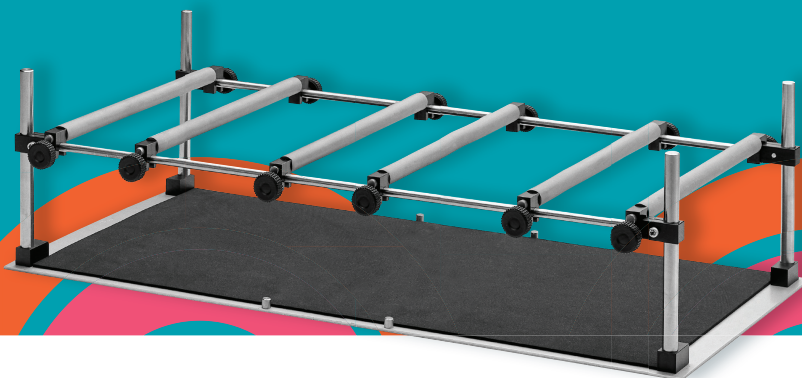| Order number	Description	Centrifuge tubes
SM3805	50ml Tube F-tray (EPFL)	120 (5x24)

ISIS-Software

Kuhner developed the user-friendly ISIS-Software for supervision, monitoring, and recording of data. The software is easy to operate.

Interfaces

Kuhner shakers are equipped with a CAN-bus. CAN-USB, CAN-Ethernet, EMI-60 and NET-60 are all well established interfaces.

④ Tray with support bars

Trays with support bars ④

These trays offer an alternative to both clamps and sticky mats and are ideal for tall containers. The tray is covered with a rubber mat and has an upright at each corner. E and EX size trays are fitted with four cross supports while the F tray is equipped with six. These support bars securely clamp containers.

● Order number	Description
SM4120.4	EA-tray with rubber mat and 4 cross supports
SMX4120.4	EXA-tray with rubber mat and 4 cross supports
SM4130.6	FA-tray with rubber mat and 6 cross supports

Trays for separating vessels

Kuhner has also designed a special tray for shaking separating vessels. This very flexible tray can take vessels of various sizes. It is also possible to add a second layer and double the capacity. Movable retaining rods allow vessels to be installed easily.

Tray E (420 x 420 mm)

● Order number	Description	Vessels
SM420250	ES-250	5
SM420252	ES-250/2	10 (2 layers)
SM420500	ES-500	4
SM420502	ES-500/2	8 (2 layers)
SM421000	ES-1000	3
SM421002	ES-1000/2	6 (2 layers)

Tray F (800 x 420 mm)

● Order number	Description	Vessels
SM430250	FS-250	10
SM4302502	FS-250/2	20 (2 layers)
SM430500	FS-500	8
SM4305002	FS-500/2	16 (2 layers)
SM431000	FS-1000	6
SM4310002	FS-1000/2	12 (2 layers)

Options

Tailored options for your shaker

Dual table

The dual table is an easy and economical way of doubling the shaking capacity. The dual shaking table consists of two levels. Each level will accept an E, EX or F size tray. However, with the dual table the shaking speed is limited to a maximum of 200 rpm.

IQ-OQ Documentation

IQ-OQ (Installation Qualification and Operation Qualification) is an equipment qualification required for GMP procedures. This service is available from Kuhner and can also be carried out at the customer`s premises.

Shakers & Accessories

www.kuhner.com

Kuhner

Represented by:

Adolf Kühner AG • since 1949

Dinkelbergstrasse 1   phone   +41 (0) 61 319 93 93
CH – 4127 Birsfelden (Basel)   fax   +41 (0) 61 319 93 94
Switzerland   office@kuhner.com

www.kuhner.com