



Bedienungsanleitung
Taumelschüttler

Operating Instructions
Three-Dimensional Shaker

Mode d'emploi
Agitateur tridimensionnel

VERSION 04 / 2018

TL 2



Operating Instructions
Three-Dimensional Shaker

Thank you for having chosen an original Bühler product.

TL 2



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The original version of these operating instructions is in German.
Subject to technical alterations and mistakes.

1. General Notes

You have chosen a Bühler high-quality product for supporting you in your work. All Bühler shakers were developed for the use in laboratories in a neutral environment. To ensure a long life and optimal operation of the device we recommend to observe the following points.



Read the operating manual carefully before initial operation.



The user must acquaint himself with the safety instructions and operating conditions in order to avoid damage / injuries to material and personnel.



Liability and all claims under warranty end immediately in case of damages which result from misuse and / or abuse.



The devices were carefully checked for perfect functioning and condition before delivery.



Necessary servicing or repair work may only be done by

- personnel of the manufacturer (Edmund Bühler GmbH)
- their authorized agents
- personnel trained by Bühler



For shipping, the device must be adequately and safely packed. If possible, use the original packing.



If the device is returned to Bühler for repair, it should be cleaned and free from any harmful substances or residues.

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1.1 General Notes concerning areas of application and mode of operation

The devices can be used in all laboratory fields in which it is necessary to mix and shake homogeneously under constant and defined conditions.

Areas of Application (Examples)

- Homogeneous mixing of different liquids as well as of solid and liquid components (e.g. nutrient solutions)
- Shaking of kits for diagnostic tracing reactions
- Solvent extraction of different phases in separating funnels for chemical investigations
- Evenly changing agitation of liquid phase (nutrient solutions) or gaseous phase (cell culture in Petri dishes)
- Coloring and decoloring of gels

Thanks to their different motions and high loading capacities, and especially their variable „Combifix“ rack systems, Bühler shakers offer solutions both for general as well as individual shaking tasks.

For keeping the samples at constant temperatures, the shaker models SM 30, KS 15 and TiMix 5 can be equipped with an additional incubator hood. Temperature range: +5°C above ambient up to +50°C, optionally up to +60° C. A cooling coil for connection of an external flow-through cooler is available as an option (TH 30).

Incubator Hood TH 15 (Order No. 6161 000)

Incubator Hood TH 30 (Order No. 6162 000)

In case of enquiries please contact the Export Sales Department

Phone: +49 74 71 / 98 64 - 0

Fax: +49 74 71 / 98 64 - 75

e-mail: info@edmund-buehler.de

1.2 Safety Instructions



When shaking aggressive liquids / substances there is a risk of injuries caused by splashing or spilling. Work with adequate protective equipment only. In general, avoid splashing by choosing a suitable shaking speed.



Due to the movements of the device there is danger of clothing or body parts getting caught. During operation pay attention that neither clothing nor jewellery get into contact with moving parts.

2. Transport Instructions

Safe transport of the devices is only ensured if original packaging is used. If they are bumped hard or put down roughly, damages can occur.



Do not lift the devices at the shaking plate (tray)!
Transport the devices by holding them at the housing only!

3. Installation and Connection

Place the shaker on a level, smooth and firm surface so that it stands firmly also at high shaking frequencies. For connection requirements and operating voltage see technical data as well as the rating plate at the back of the device.



The system may only be connected to a mains with protection earth!



When installing the devices make sure that they are protected against splash water.



The safety distance between the device and other instruments or a wall must be chosen in such a way that the shaking plate is freely movable and that the operating personnel cannot be injured when the shaker is switched on or during operation. If other tasks are performed by personnel in immediate vicinity of the shaker, the shaker must be switched off for reasons of safety.



Maximum charge per quarter: 0.5 kg
Charging the tray with a higher load can lead to a standstill of the device.
Unequally distributed loads cause fatigue of material and should always be avoided.



4. Operating the models

4.1 Control panel and buttons

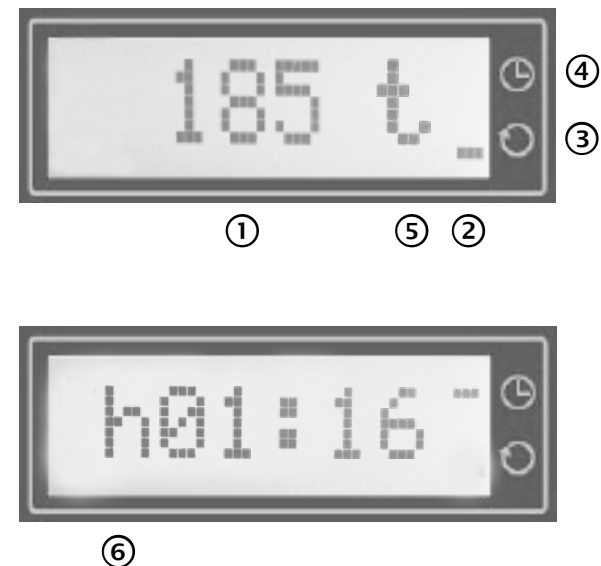


	Scroll button to scroll through the display during the shaking process
	„Up“ arrow button to increase the speed or runtime
	„Down“ arrow button to decrease the speed or runtime
	On/Off button to switch the device on/off and to stop the shaking motion



The speed is set in increments of 5 revolutions per minute (rpm)
 The running time is specified in minutes and seconds or hours and minutes (with running times over 1 hour).
 The maximum possible running time which can be set is 99 h 59 min.

4.2 Display layout




1	Actual value for speed and runtime
2	Selected display value (speed or remaining runtime)
3	Speed display selected
4	Runtime display selected
5	Flashing symbol „t“ when the runtime is set
6	Runtime display in hours and minutes



4.3 Operating the devices



The shaker TL2 has a modern touch technology.
 The devices are operated by touching the buttons on the front foil.

4.4 Starting the device









The device is started by touching the  button for at least 2 seconds.
The device type is shown in the display during the initialisation process.
The device is ready for operation at the end of the startup routine.
You are now in the speed menu.
The set value for the speed is 0 rpm after switching on.
The remaining runtime is also set to 00:00 (= continuous running).

4.5 Setting the speed

The speed is decreased or increased by pressing the ,  buttons.
Changes to the target value are saved immediately.

If the  button is pressed for an extended period, the speed changes to 0 rpm.
If the  button is pressed during the shaking process, it stops immediately and the remaining runtime is set to 0.

4.6 Setting the runtime

The runtime menu is called up by pressing the  button.
The value is decreased or increased by pressing the ,  buttons.
The value is increased in steps of 10 s when the  button is pressed for an extended period for the first time, and in steps of 1 s at first for fine adjustment when it is pressed again for an extended period.
When the  button is pressed for an extended period, the value is decreased in steps of 1 s at first.
The time is shown in mm:ss. If the set value is greater than 1 hour, the display changes to hh:mm and this is indicated by a „h“ in the display.
The set target value is started and stored by pressing the  button.
By touching the  button the last value which was stored is displayed. By touching the button again the time value is set to 00:00.
The speed menu is called up by pressing the  button again. An activated runtime is shown in the speed menu via a flashing „t“.

4.7 Switching the device off

The device is switched off by touching the  button for 2 seconds whilst the device is active.

5. Maintenance and Servicing Instructions

The devices are maintenance-free; excessive soiling should be avoided.
In case of failure, please contact the Technical Service Department of the Edmund Bühler GmbH.

Edmund Bühler GmbH
Technical Service Dept.
Schindäckerstraße 8
D-72411 Bodelshausen
Phone: +49 7471 / 9864-0
Fax: +49 7471 / 9864-75
e-mail: info@edmund-buehler.de

6. CE Declaration of Conformity

We,

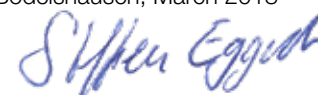
Edmund Bühler GmbH
Schindäckerstraße 8
72411 Bodelshausen

Manufacturers of this product, declare under our sole responsibility that this products corresponds to the EC directives 2006/42/EG (machinery directive), 2014/35/EU (low-voltage directive) and 2014/30/EU (EMC directive).

The following harmonised standards apply:
EN 61 010; EN 50 082; EN 55 014; EN 60 204; EN 60 555

Responsible for the documentation:
Steffen Eggert (Engineer)
Schindäckerstraße 8
72411 Bodelshausen

Bodelshausen, March 2018



Edmund Bühler GmbH

7. Warranty

The Edmund Bühler GmbH warrants that this device has the properties guaranteed by contract and that it does not have any defects which rescind its value or its use for customary and usual applications or applications foreseen by the contract.

(See General Terms and Conditions of the Edmund Bühler GmbH).

The warranty period ends 24 months after delivery (date of invoice). The warranty does not include wear parts. Excluded from warranty are malfunctions caused by misuse or improper use, installation, or maintenance.

Warranty ends immediately if the device is subjected to technical modifications which are not authorized **in advance** by Edmund Bühler GmbH.

8. Basic Equipment

Basic device incl. basic platform and rubber mat.

Operating Instruction (0091 008)

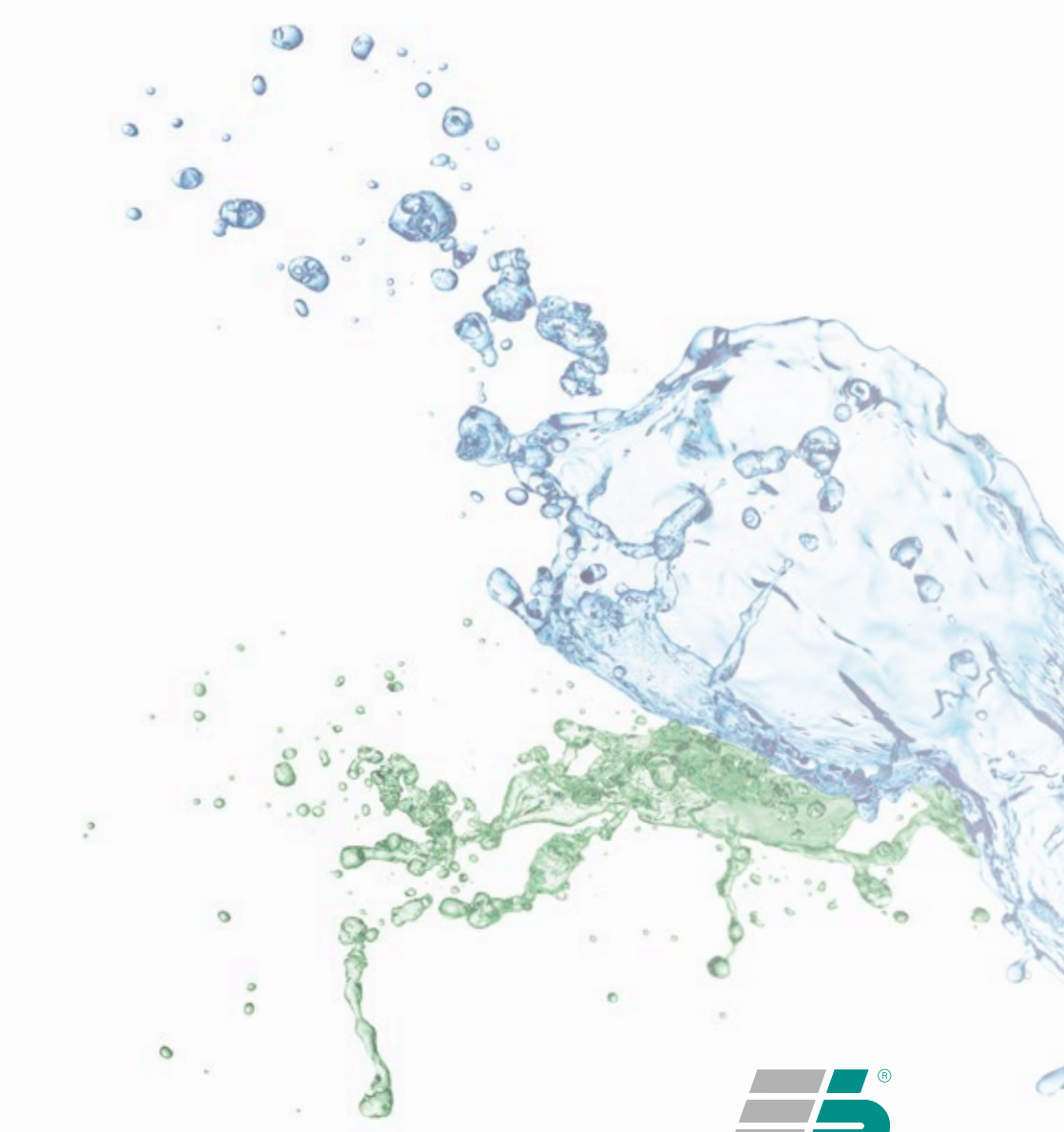
9. Technical Data

	TL 2
Article number	6139 000
Shaking motion	three-dimensional orbital motion
Shaking platform (w x d) mm	220 x 220
Max. load	max. 2 kg
Shaking speed	1 - 22 rpm
Angle of tilt	8° fixed
Runtime	1s - 100 h / ∞
LED display	Shaking speed and runtime
Relative humidity	~ 85 % (non-condensing)
Ambient temperature	5° C to 45° C
Electrical supply	100 - 240 V, 50/60 Hz
Enclosure protection	IP 21
Heat emission	max. 3 W
Dimensions (w x d x h)	250 x 415 x 118
Weight	9,1 kg

10. Rack Systems



Additional tray
incl. rubber mat
Height: 80 mm
Order No. 0060 001



www.edmund-buehler.de

MADE IN GERMANY

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