

# USER'S MANUAL

## LABORATORY SHAKER VIBROMIX 50



<u>Edition</u>	<u>Month</u>	<u>Year</u>
7.	December	2020

ID 400357

# DOMEL®

**Domel, d.o.o.**  
Otoki 21, 4228 Železniki, Slovenia  
**BU Laboratory Systems**  
Na Plavžu 79, 4228 Železniki, Slovenia  
Tel.: +386 (0)4 5117 500  
Fax.: +386 (0)4 5117 501  
Internet: <http://labs.domel.com>

---

<b>TABLE OF CONTENTS .....</b>	<b>Page</b>
<b>1. SAFETY REGULATIONS.....</b>	<b>3</b>
<b>2. GENERAL DESCRIPTION.....</b>	<b>3</b>
2.1. INTENDED USE.....	3
2.2. PRINCIPLE OF OPERATION .....	3
<b>3. TECHNICAL FEATURES.....</b>	<b>4</b>
3.1. CONSTRUCTION .....	4
3.2. TECHNICAL DATA .....	4
<b>4. INSTALLATION OF THE SHAKER.....</b>	<b>4</b>
4.1. UNPACKING .....	4
4.2. SELECTING THE RIGHT PLACE .....	4
4.3. ATTACHING THE POWER CORD .....	5
4.4. OVERALL VIEW .....	5
<b>5. INSTALLATION OF THE SHAKING PLATFORM.....</b>	<b>6</b>
<b>6. INSTRUCTIONS FOR USE.....</b>	<b>6</b>
6.1. CONTROL PANEL DESCRIPTION.....	6
6.2. BASIC OPERATION .....	7
6.3. ADDITIONAL OPERATIONS .....	9
6.4. AUTOMATIC DETECTION OF INSTALLATION STABILITY.....	9
<b>7. ADJUSTABLE COUNTERWEIGHT .....</b>	<b>10</b>
<b>8. MAINTENANCE .....</b>	<b>12</b>
8.1. CLEANING.....	12
<b>9. TROUBLESHOOTING .....</b>	<b>12</b>
<b>10. REPLACING THE FUSES .....</b>	<b>13</b>
<b>11. EQUIPMENT DISPOSAL .....</b>	<b>13</b>
<b>EC DECLARATION OF CONFORMITY.....</b>	<b>14</b>

## 1. SAFETY REGULATIONS

In the interest of your own personal safety, always observe the following regulations:

- The shaker may only be used in the manners specified by the manufacturer and for specified applications.
- Do not replace any accessories during the shaking process.
- The shaker may not be used in a hazardous or potentially explosive environment and for shaking of inflammable, explosive or highly reactive substances.
- Do not use the device in aggressive atmosphere.
- When handling toxic, aggressive or radioactive materials, observe national regulations or regulations defined by World Health Organization.
- If aggressive liquids are spilled, the surfaces must be cleaned immediately with a damp cloth and mild soap solution.
- Take care, that water will not enter into device, especially by cleaning procedures.
- Before cleaning the shaker, turn off the main switch and unplug the mains cord from the wall socket.
- Fluids or materials used for cleaning and disinfecting should be disposed of in accordance with approved laboratory regulations.
- Do not put any electricity conducting objects into device. There is a danger of electric shock and the destruction of device.
- In case of malfunction unplug the device from mains socket and call authorized service. Repairs may only be performed by an authorized service technician.

## 2. GENERAL DESCRIPTION

### 2.1. INTENDED USE

Shaker VIBROMIX 50 is a laboratory equipment. It is designed for use in medical, scientific and industrial laboratories, for shaking of different substances in test tubes, bottles and other laboratory vessels. In particular, it is intended for preparation of human samples (body fluids), before further analysis. It enables the shaking up to the maximum speed of 500 RPM.

### 2.2. PRINCIPLE OF OPERATION

Device consists of two main parts:

- Motor with heavy duty eccentric drive mechanism.
- Microprocessor controller with feedback.

Shaker is driven by the asynchronous motor, which enables silent operation and constant shaking speed, independent of the load or power supply oscillations.

Motor movement causes orbital movement of triple shaker's eccentricity mechanics and generates shaking effect.

Controller supervises motor speed, time and functioning of the key, knob and display.

### 3. TECHNICAL FEATURES

#### 3.1. CONSTRUCTION

The casing of the shaker is made of steel plate varnished with high resistant polyurethane lacquer.

#### 3.2. TECHNICAL DATA

CODE	621.3.000 (230V) 1621.3.000 (120V)
ELECTRIC POWER SUPPLY	230V $\pm$ 10% - 50/60Hz 120V $\pm$ 10% - 50/60Hz
POWER CONSUMPTION	250W
FUSES	2 x 2AT 250V (230V) 2 x 5AT 250V (120V)
RPM REGULATION	DIGITAL, from 50 to 500 RPM in 1 RPM step
SHAKER ORBIT	25 mm
TIMER	30 s - 99 min, timer HOLD function
DIMENSIONS W x D x H	600 mm x 550 mm x 150 mm
PLATFORM DIMENSIONS W x D	610 mm x 460 mm or 760 mm x 460 mm
WEIGHT	48 kg
AMBIENT TEMPERATURE	4 °C to 75 °C
MAXIMAL RELATIVE HUMIDITY	85 %, non-condensing

### 4. INSTALLATION OF THE SHAKER

#### 4.1. UNPACKING

Before starting the installation, carefully examine the delivery for possible damage or missing parts.

- Open the box and lift the device together with shock absorbers, out of the box. Because the shaker is heavy, be careful when lifting it, to avoid the injury!
- Remove the shock absorbers and check that the shaker has not been visibly damaged during the transportation. Keep the packing material, until you are sure that the shaker works properly.
- Check information on the shaker's name label: type, serial number...
- Check that the stated power supply voltage and the mains cord are in conformity with the local standards.

If any kind of damage occurred during transportation, immediately make a complaint to the carrier. Any incorrect delivery or missing parts should be reported to the distributor.

#### 4.2. SELECTING THE RIGHT PLACE

When selecting the right place for the device, please consider the following:

- Put the device on a smooth, horizontal and stable place.
- Leave enough space beyond the device for normal air circulation, min. 10 cm.
- Leave enough space around the device, so that you can easy control and maintain it.
- Don't use the device in surroundings, where there are fast temperature and humidity changes. Avoid places under direct access of sunlight and places nearby heat producing devices.
- Avoid places, where possibility of shocks and vibrations exists.

**NOTE:** The equipment shall not be placed so, that it is difficult to pull out a mains cord plug from the wall socket.

#### 4.3. ATTACHING THE POWER CORD

Fit one end of the mains cord, which is included in the delivery, into the mains receptacle of the device. Connect the other end of the cord to a grounded wall socket. To avoid noise interference, surges and spikes, a dedicated line is preferred. If no such line is available, avoid lines on which powerful electric motors, refrigerators and similar devices are connected.

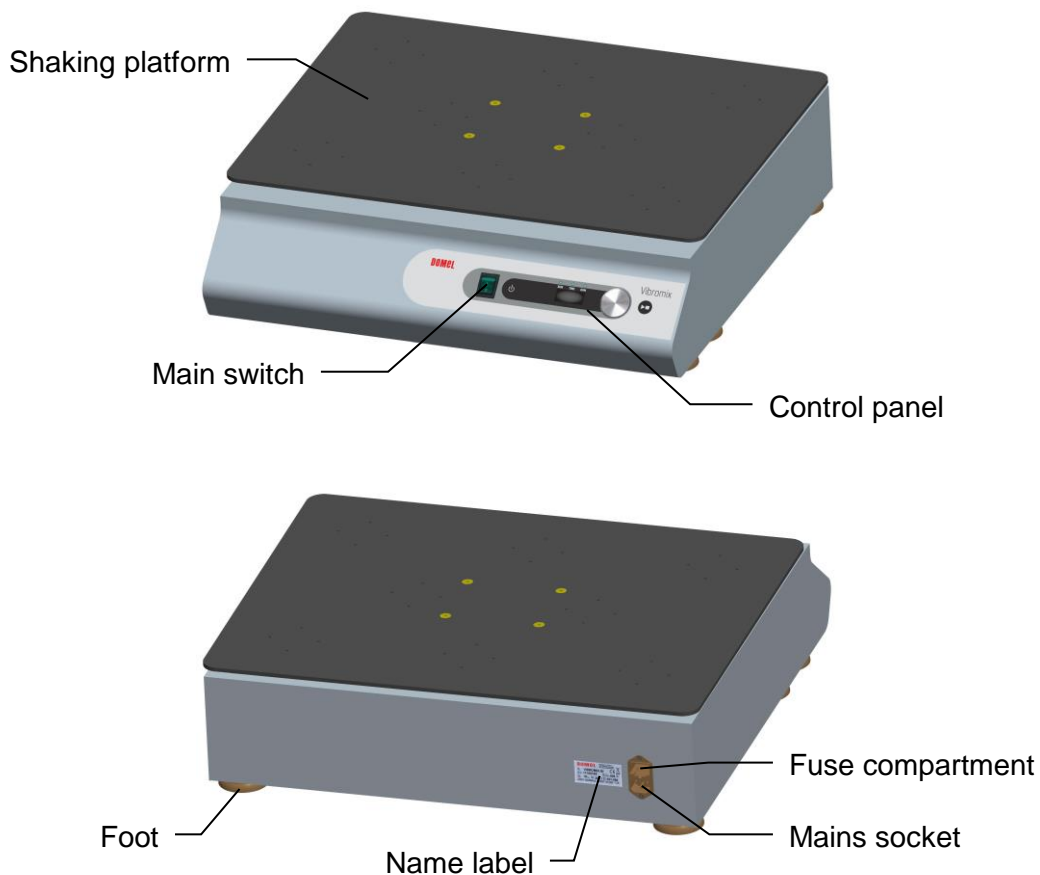


**Take care when you plug the cord to a grounded wall socket. Do not touch the plug with wet hands, because it can be very dangerous. Plug the cord to a grounded wall socket only with dry hands.**

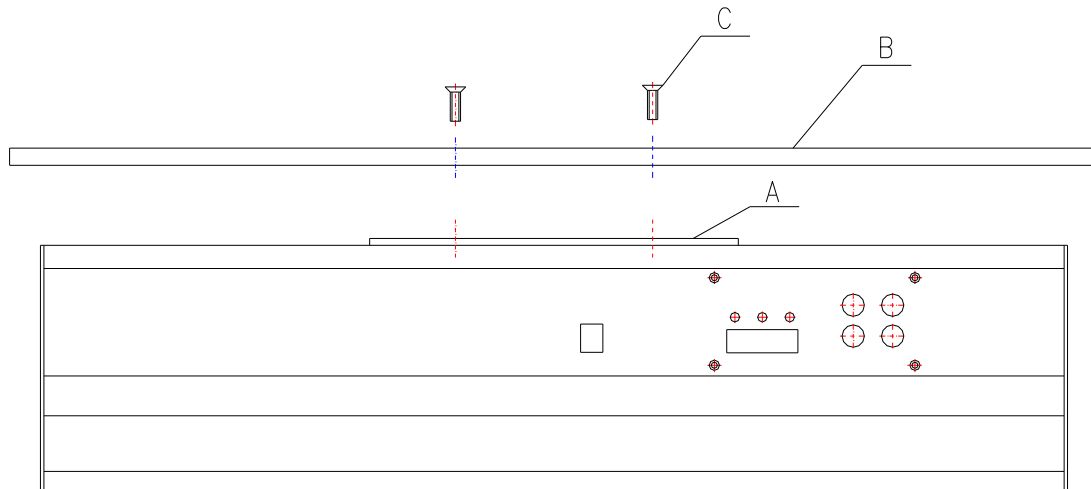
The power of the shaker can be turned on and off by main switch located on the front control panel of the device. Light, mounted in the switch, indicates when the power is on.

#### 4.4. OVERALL VIEW

Main parts of the shaker are designated on the following pictures:



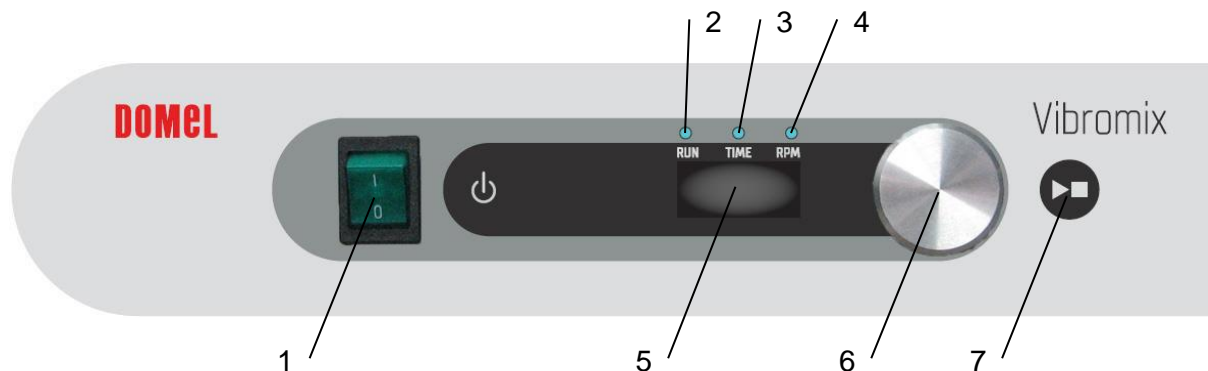
## 5. INSTALLATION OF THE SHAKING PLATFORM



- Put the shaking platform (B) on the shaking mechanism (A).
- Position the shaking platform so that the holes in the platform are aligned with the holes for the screws in the shaking mechanism.
- Screw down four screws (C), through the platform into the shaking mechanism, with hex key.

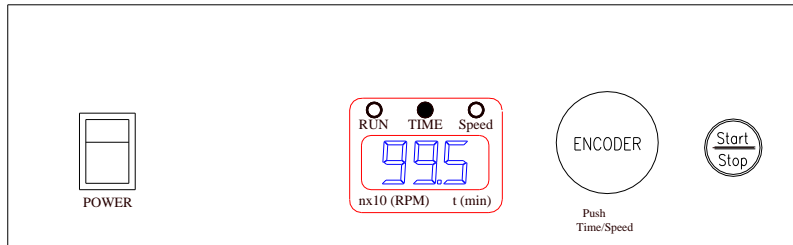
## 6. INSTRUCTIONS FOR USE

### 6.1. CONTROL PANEL DESCRIPTION



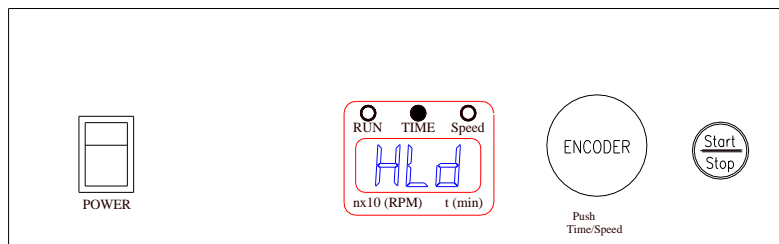
1. POWER main switch – for turning ON (switch shines) and OFF the shaker.
2. RUN green signal light – shines when the shaker is running.
3. TIME yellow signal light – shines when the shaker is set to time.
4. SPEED yellow signal light – shines when the shaker is set to speed.
5. Display for TIME and SPEED.
6. ENCODER knob (push or rotate) – with rotating encoder right (+) or left (-), you change TIME or SPEED on the shaker. Push encoder to switch between TIME and SPEED setting values.  
If you rotate encoder knob fast, values on display go up or down quickly.
7. START/STOP key – starts and stops the operation of the shaker.

6.2. BASIC OPERATION

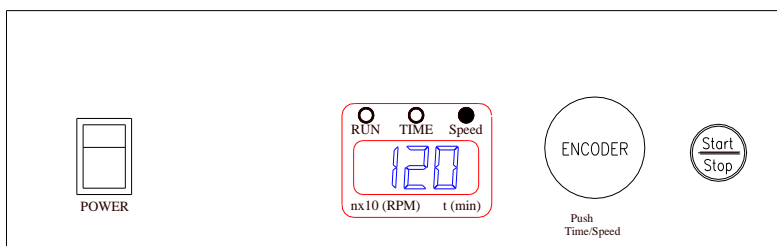


- Turn on POWER main switch on control panel. Time signal light shines. With rotating encoder right (+) or left (-), set the time to desired value from 30 s to 99 min:

98.5 ⇒ 98 min 50 s  
 9.59 ⇒ 9 min 59 s  
 0.59 ⇒ 59 s

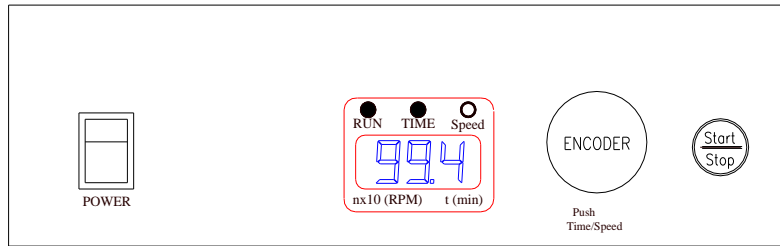


- If you want to set the time to hold (continued operation), set "HLd" on display. You get message "HLd" on display, under time value 0.30 or above time value 99.0.



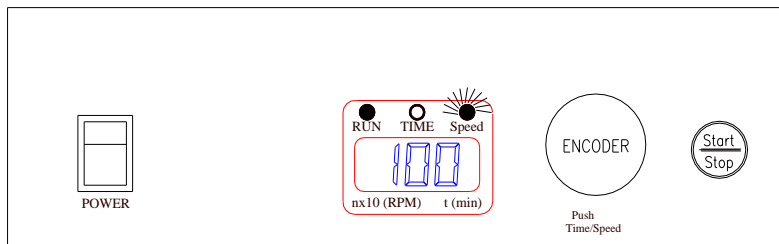
- Push encoder knob, so that Speed signal light shines. With rotating encoder right (+) or left (-), set speed to desired value from 50 to 500 RPM:

120 ⇒ 120 RPM

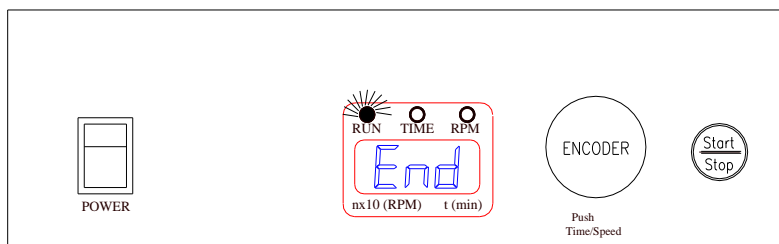


- Press START/STOP key, to start the shaker. RUN and TIME signal lights shine. The shaker counts down the time from set value.

**NOTE: You cannot modify time during the operation of the shaker.**



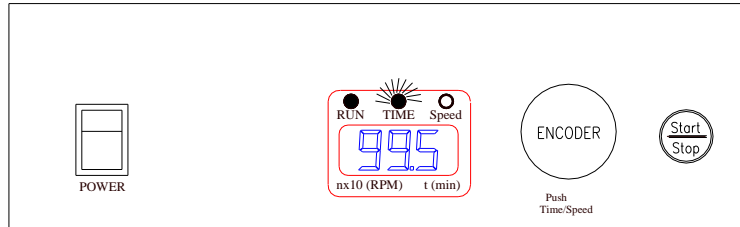
- If you want to change speed during the operation of the shaker, push encoder knob, so that Speed signal light shines. Rotate encoder right (+) or left (-) to desired value. In the meantime Speed signal light is flashing. When you stop rotating encoder knob, signal light Speed stops flashing after 2 s.



- When time elapses or when you press START/STOP key again, message "End" appears on display and RUN signal light flashes. When the shaker stops completely, it places itself on the last used values for time and speed.

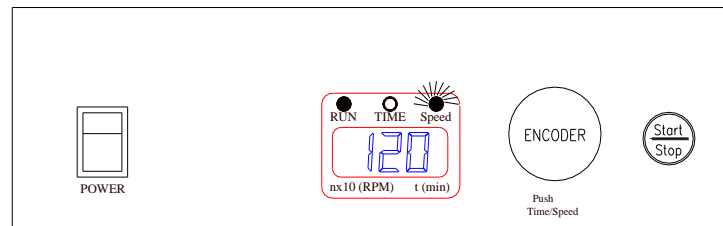


### 6.3. ADDITIONAL OPERATIONS



- If you want to check the set value for TIME during operation, rotate encoder for ONE CLICK right (+) or left (-). TIME signal light flashes for 2 s and display shows the set TIME value. After 2 s, the real TIME value is shown on display again and TIME signal light stops flashing.

**NOTE: Shaker must be in TIME mode – TIME signal light must shine.**



- If you want to check the set value for RPM during operation, rotate encoder for ONE CLICK right (+) or left (-). SPEED signal light flashes for 2 s and display shows the set RPM value. After 2 s, the real RPM value is shown on display again and SPEED signal light stops flashing.

**NOTE: Shaker must be in SPEED mode – SPEED signal light must shine.**

### 6.4. AUTOMATIC DETECTION OF INSTALLATION STABILITY

The shaker has a built-in vibration sensor, which ensures the safe operation of the device. If the device reaches the vibration limit value, the rotation speed is automatically limited, regardless of the fact that a higher speed is set. At the same time, RUN signal light and signal light of currently selected display (TIME or SPEED) start to flash.

The vibration limit value depends on the type of surface (must be horizontal, stable, non-slippery), load on the shaking platform and position of adjustable counterweight.

## 7. ADJUSTABLE COUNTERWEIGHT

The shaker has an adjustable counterweight, by which you can reduce unwanted vibration of the shaker, which depends of the load on the shaking platform. The shaker is shipped from the factory with adjustable counterweight in the middle position. If you want to change the setting of adjustable counterweight, you have to remove the shaking platform first (see chapter 5. INSTALLATION OF THE SHAKING PLATFORM and follow the reverse order). Before that, you have to unplug the mains cord from the wall socket.

### Position of counterweight

Counterweight is made of a fixed part and of two weights, which can be adjusted by semicircular movement. Before you can make the adjustment, you have to loosen two screws on the counterweight - one screw on each weight - by using the hex key. The counterweight is equipped with labels, for easier adjustment.

The maximum possible speed of the shaker is achieved on the basis of the load on the platform and correct counterweight position. If the vibrations are too high, then rotation speed is automatically limited by a built-in vibration sensor (see chapter 6.4. AUTOMATIC DETECTION OF INSTALLATION STABILITY).

When you finish the adjustment of counterweight, you have to tighten the two screws on the weights again, to fix the counterweight.

### Labels explanation

On the top of both weights, there is a label with an arrow, which represents the load on the shaking platform. It has marked directions for adjusting the counterweight to Min. and Max. positions. On the side of both weights, there is a small label with no markings.

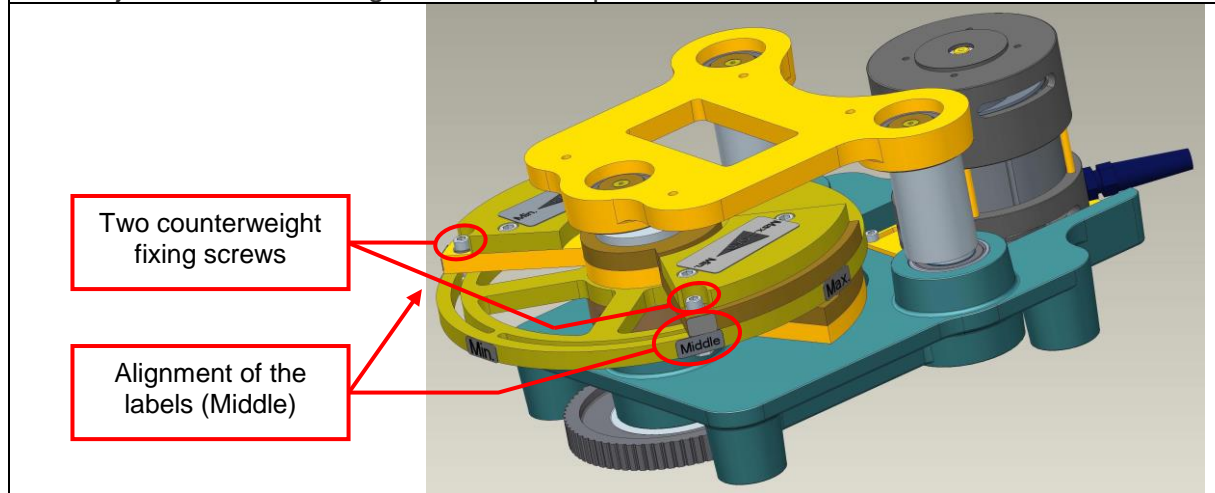
On the side of fixed part of the counterweight, there are small labels with markings for Min., Middle and Max. positions. You have to align the small labels on the side of two weights, with appropriate markings on fixed part of the counterweight, to adjust the counterweight to desired position.

**NOTE:** Two counterweight fixing screws are marked on the following pictures. You have to loosen them to adjust the counterweight, and tighten them, when you finish the adjustment.

Following are examples for Middle, Min. and Max. positions of the counterweight:

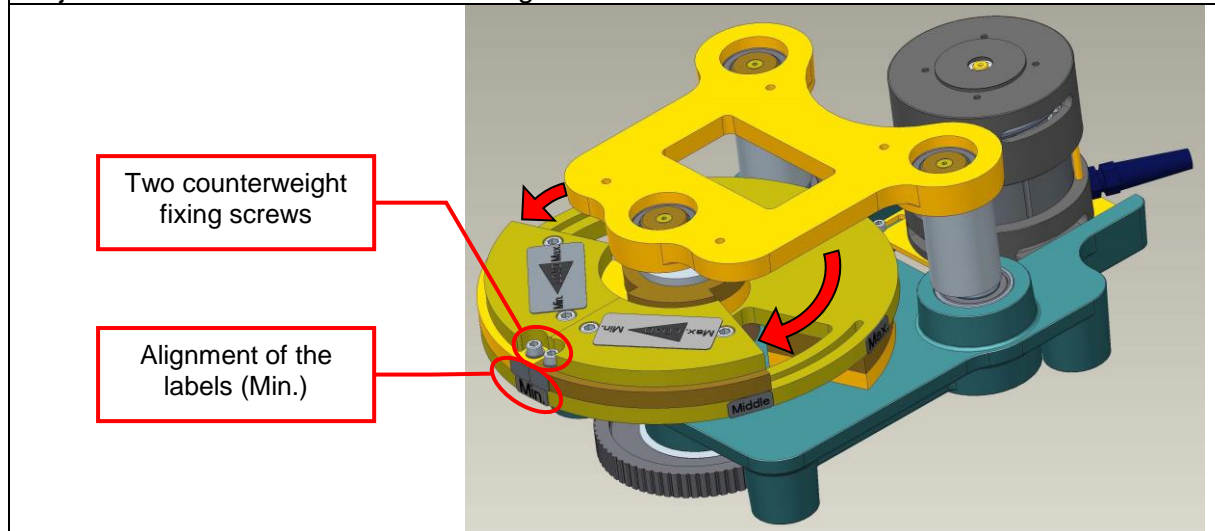
**1. Counterweight position for Middle LOAD:**

Adjust when the load is between 5 kg and 12 kg. The shaker is shipped from the factory with adjustable counterweight in the middle position.



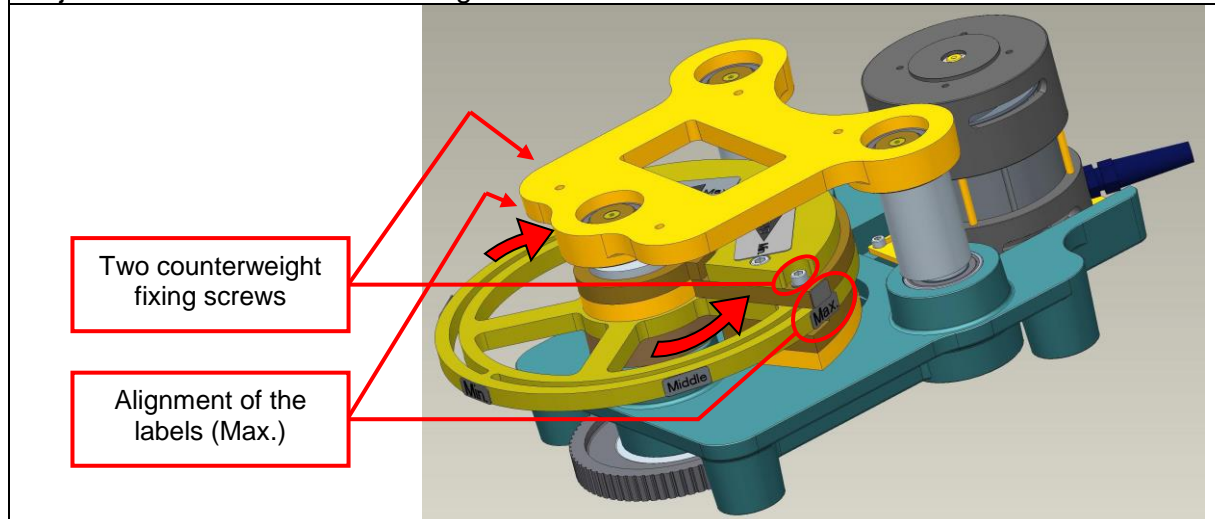
**2. Counterweight position for Min. LOAD:**

Adjust when the load is lower than 5 kg.



**3. Counterweight position for Max. LOAD:**

Adjust when the load is over 12 kg.



## 8. MAINTENANCE

- No extra maintenance is needed.
- The maintenance personnel should regularly check the device's operation at least once a year.
- Regular cleaning is recommended.

### 8.1. CLEANING

You can use mild detergent and soft cloth for cleaning of the shaker's housing.

**NOTE: Do not use any aggressive or abrasive cleaners (acetone, nitro, polish etc.), because the surface of the shaker can get permanently damaged.**



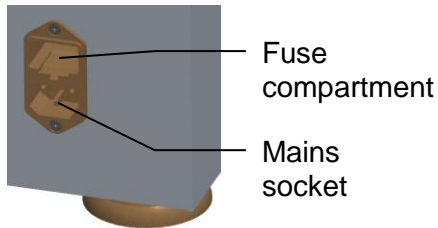
**Before cleaning, unplug the mains cord from the wall socket.**

## 9. TROUBLESHOOTING

Problem	Explanation / Solution
POWER main switch doesn't shine, when it is turned ON.	Check the mains power supply. Check fuses and replace them, if necessary. Call authorized service.
Display doesn't work.	Call authorized service.
Message "Er1" appears on display.	Motor overheated. Turn the main POWER switch OFF and wait for the motor to cool down.
Message "Er2" appears on display.	The machine can't reach the set speed, because of the overload. It tries to start 5 times, then "Er2" appears. Please check, if shaking platform is jammed and remove any obstacles. You have to turn the main POWER switch OFF and then ON again, to clear the error message and use the machine again.
Message "Er3" appears on display.	Voltage overload on the DC link. Error on frequency regulator. Call authorized service.
Message "Er5" appears on display.	This error means, that there is no communication between the processor and vibration sensor. There is a fault on control board, which must be replaced. Call authorized service.

When error message (ErX) appears on display, machine stops automatically, and you can't start it again by pressing the START/STOP key. You have to turn the main POWER switch OFF and then ON again, to clear the error message and use the machine again.

## 10. REPLACING THE FUSES



The following fuses are required for VIBROMIX 50:  
2 x 2AT 250V (230V); 2 x 5AT 250V (120V).

- Unplug mains plug from the mains socket.
- By pressing the locking device on the bottom side of the fuse compartment, fuse holder is released and you can pull it out.
- Replace fuses.
- Insert fuse holder and push it, until it locks.

## 11. EQUIPMENT DISPOSAL



This equipment is marked with the crossed-out wheeled bin symbol, to indicate that this equipment may not be disposed of as unsorted municipal waste.

It's your responsibility to correctly dispose of your equipment at life-cycle end, by handing it over to an authorized facility for separate collection and recycling of waste equipment. It's also your responsibility to decontaminate your equipment in case of biological, chemical or radiological contamination, and so protect the persons involved in the disposal and recycling of the equipment from health hazards.

For more information about where you can dispose of your waste equipment, please contact your local dealer, from whom you purchased the equipment.

By doing so, you will help to preserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.



## EU DECLARATION OF CONFORMITY

Manufacturer / name and address

**Domel, d.o.o.**  
BU Laboratory Systems  
Otoki 21  
4228 Železniki  
Slovenia

**DOMEL®**

We declare under our sole responsibility that

product:  
type / model:

**Laboratory shaker  
Vibromix 50**

is in conformity with the provisions of the following regulations and also complies with the following standards

1. Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits

Standards: EN 61010-1:2010, EN 61010-2-051:2015

2. Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility

Standards: EN 61326-1:2013

3. Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment, amended by Commission Delegated Directive (EU) 2015/863 and Directive (EU) 2017/2102 of the European Parliament and of the Council

Standards: EN IEC 63000:2018

Place and date of issue

Name, surname and signature of authorized person

Železniki, 02.10.2019

manager

Andrej Eržen