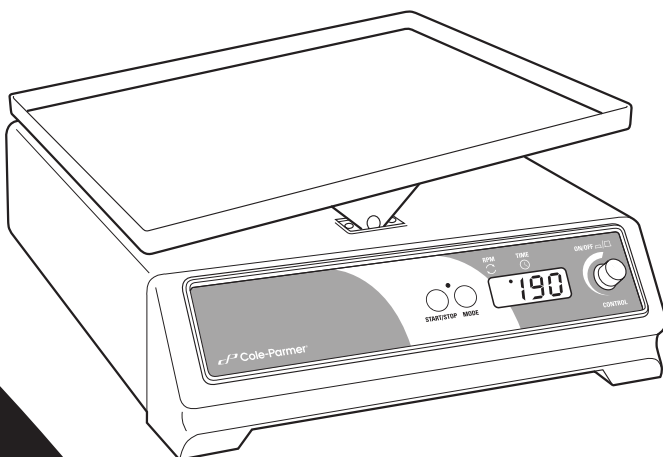


Shakers & Rockers



User Guide

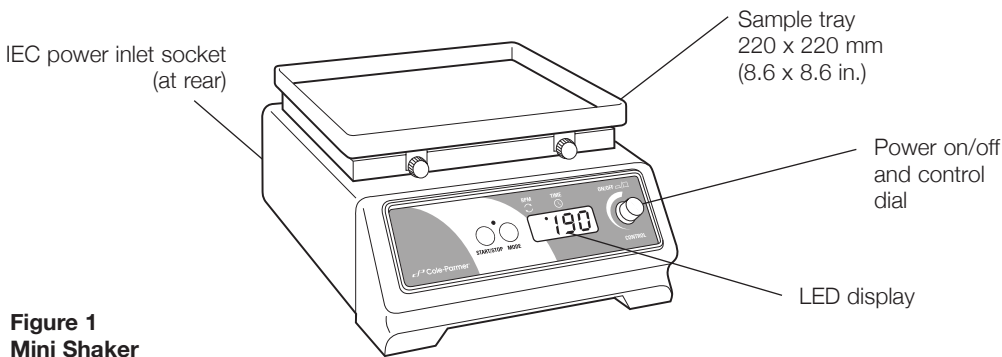


Figure 1
Mini Shaker

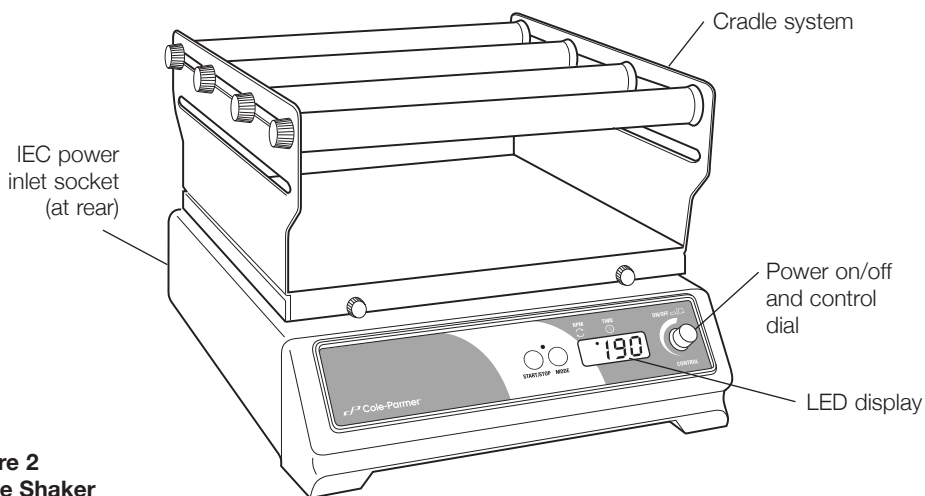


Figure 2
Large Shaker

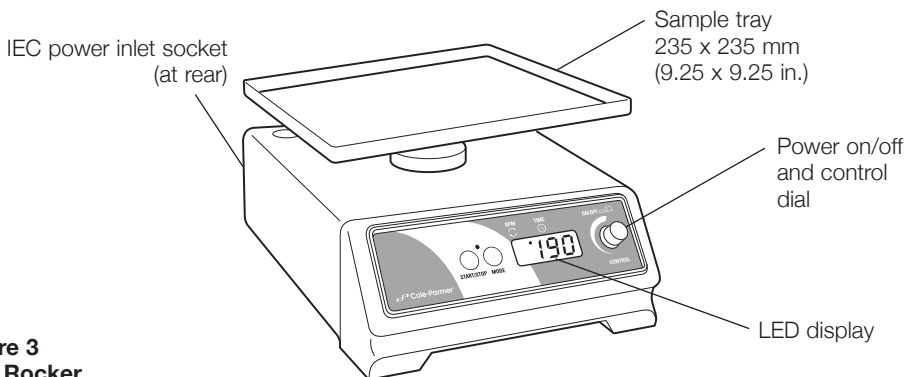
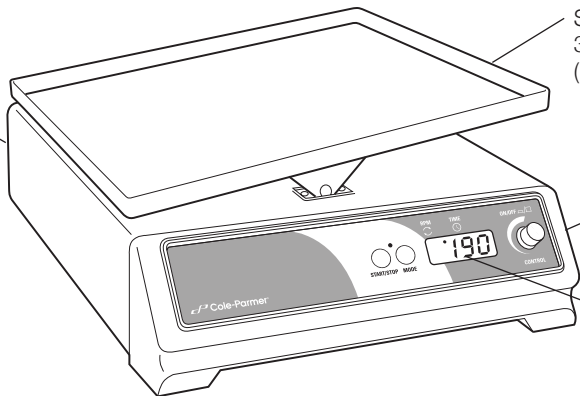


Figure 3
Mini Rocker

IEC power inlet socket (at rear)



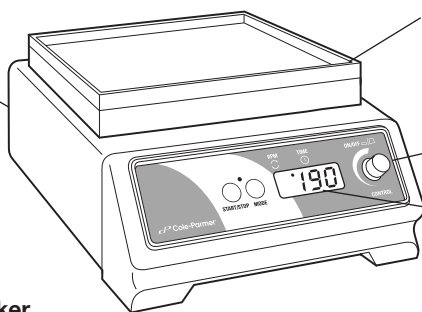
Sample tray
355 x 355 mm
(14 x 14 in.)

Power on/off
and control
dial

LED display

Figure 4
Large Rocker

IEC power inlet socket (at rear)



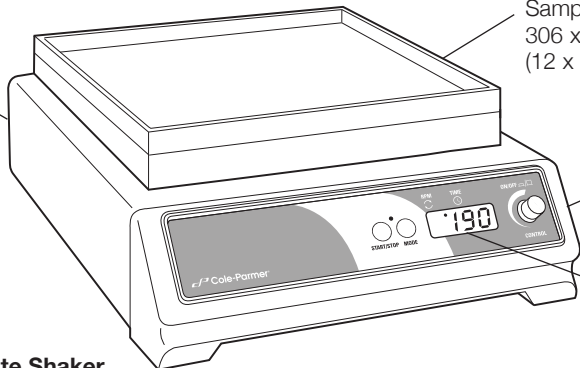
Sample tray
220 x 220 mm
(8.6 x 8.6 in.)

Power on/off
and control
dial

LED display

Figure 5
Mini Microplate Shaker

IEC power inlet socket (at rear)



Sample tray
306 x 306 mm
(12 x 12 in.)

Power on/off
and control
dial

LED display

Figure 6
Large Microplate Shaker

Shakers & Rockers

Introduction

Thank you for purchasing this Cole-Parmer product. To get the best performance from the equipment, and for your own safety, please read these instructions carefully before use. Before discarding the packaging check that all parts are present and correct.

This equipment is designed to operate under the following conditions:

- ❖ For indoor use only
- ❖ Use in a well ventilated area
- ❖ Ambient temperature range +5°C to +40°C (+41°F to +104°F)
- ❖ Altitude to 2000m (6500ft)
- ❖ Relative humidity not exceeding 80%
- ❖ Power supply fluctuations not exceeding 10% of nominal
- ❖ Overvoltage category II IEC60364-4-443
- ❖ Pollution degree 2 IEC664
- ❖ Use with a minimum distance all round of 200mm (8 in.) from walls or other items

If the equipment is not used in the manner described in this manual and with accessories other than those recommended by the manufacturer, the protection provided may be impaired.

Electrical Installation



THIS EQUIPMENT MUST BE GROUNDED

Before connection please ensure that the line supply corresponds to that shown on the rating plate located on the base of the unit.

Power requirements:

230v Models		120v Models	
51700-10	50W	51700-08	50W
51700-14	50W	51700-13	50W
51700-16	50W	51700-15	50W
51700-18	50W	51700-17	50W
51700-20	50W	51700-19	50W
51700-22	50W	51700-21	50W
51700-24	50W	51700-23	50W
51900-53	50W	51900-51	50W
51900-55	50W	51900-57	50W

The 230v Models are provided with a UK 3-pin and a "Schuko" 2-pin plug. The 120v Models are provided with a NEMA 5-15 plug.

Should the cable not be suitable for connecting to the power supply, replace the plug with a suitable alternative.

THIS OPERATION SHOULD ONLY BE UNDERTAKEN BY A QUALIFIED ELECTRICIAN.

NOTE: Refer to the equipment rating plate to ensure that the plug and fusing are suitable for the voltage and wattage stated.

The wires in the power cable (230V) are colored as follows:

BROWN - HOT/LIVE

BLUE - NEUTRAL

GREEN/YELLOW - EARTH

The wires in the power cable (120V) are colored as follows:

BLACK - HOT/LIVE

WHITE - NEUTRAL

GREEN - EARTH

IF IN DOUBT CONSULT A QUALIFIED ELECTRICIAN

Should the power cable need replacing, a cable of 1mm² of harmonized code H05W-F connected to an IEC320 plug should be used.

The appropriate power cable should be connected BEFORE connection to the power supply.

General Description

Cole-Parmer Shakers and Rockers are ideal instruments for mixing and aerating various biological and chemical samples in the laboratory. All models have digital setting of speed and an adjustable digital timer that automatically stops after the set time (1 to 9999 minutes, 1 second to 90 minutes or 1 minute to 9 hours). The Mini range comprise of personal units with a small footprint while the Large range is the lab-scale equivalent.

Reciprocating Shakers 51700-08 and -10

The Reciprocating Shaker (only available in Large format) provides a side-to-side reciprocating action ideal for vigorous shaking applications. Speed range is 25 to 250 rpm. Max load 10 kg (22 lbs). Maximum speed with 10 kg (22 lbs) load is 200 rpm and maximum load for a speed setting of 250 rpm is 5 kg (11 lbs).

Orbital Shakers 51700-13, -14, -15 and -16

The Orbital Shaker range provides a smooth uniform circular motion with an orbit of 16mm. Speed range is 30 to 300 rpm. Max load 3 kg (6.6 lbs) and 10 kg (22 lbs) respectively.

3-D Gyrotory Rockers 51700-17, -18, -19 and -20

The Gyro-Rocker range provides a 3-D gyrotory motion, ideal for low foaming agitation, DNA extractions, staining and de-staining procedures etc. Speed range is 5 to 70 rpm. Max load 3 kg (6.6 lbs) and 10 kg (22 lbs) respectively. The angle of tilt can be adjusted manually, without the need for tools, between 3 and 12°.

See-Saw Rockers 51700-21, -22, -23 and -24

The See-Saw Rocker range have a see-saw rocking action that creates a wave motion within vessels such as culture flasks, Petri dishes etc. Speed range is 5 to 70 rpm. Max load 3 kg (6.6 lbs) and 10 kg (22 lbs) respectively.

Microplate Shakers 51900-51, -53, -55 and -57

The Microplate Shaker range is designed for use with microtiter plates and microcentrifuge tubes. High speed combined with a tiny orbit creates the vibrational shaking action required for mixing very small volumes. Mini format holds 4 plates; large format holds 8 plates. Speed range is 250 to 1250 rpm. Maximum load is 1 kg (2.2 lbs) and 2 kg (4.4 lbs), respectively.

Available separately are multiple types of tube holder racks, magnetic tiered platforms, and cradle platform systems to allow different size vessels or increase space available for samples. Please visit the Cole-Parmer website www.coleparmer.com for further information.

Safety Advice

Users should be aware of the following safety advice:

- ❖ The unit should be carried using both hands with the fingers under the side edges.
- ❖ NEVER move or carry the unit with containers on the top or while still connected to the power supply.
- ❖ DO NOT mix combustible liquids or use the equipment in hazardous atmospheres.
- ❖ In case of power interruption, the unit will NOT continue to operate on removal of fault.
- ❖ In case of mechanical interruption (i.e., motor stall), the unit will continue to operate on removal of fault.
- ❖ Mechanical energy can lead to breakage of glass vessels. Use with care.
- ❖ DO NOT position the unit such that it is difficult to disconnect it from the power by removing the power cable from the socket at the back.
- ❖ NEVER stop the movement by hand and ALWAYS ensure the sample plate is evenly balanced.
- ❖ ALWAYS ensure is sufficient free space around the unit so that it does not come in contact with anything else during use.
- ❖ Additional mechanical hazard for the Reciprocating Shaker; cradle platform should be fully assembled before operation.

Operation

Position the rocker/shaker on a firm level surface but DO NOT connect to the power supply yet.

Please refer to the installation instructions for any accessories before applying power and ensure there is sufficient room for the unit to operate.

Setting the Speed

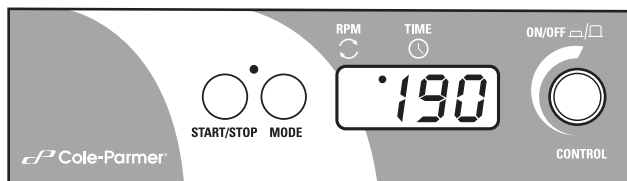


Figure 5

Connect the unit to the power supply and load the sample tray, ensuring it is evenly balanced.

Switch the unit ON by pressing the control dial in (see Figure 5). The LED display will show present set speed (red dot in the display shows RPM is selected). This can be adjusted by turning the control dial. Once the correct speed is displayed, press the START/STOP button to begin movement. Movement can be halted at any time by pressing the START/STOP button again. To switch the unit OFF completely, press the control dial in.

Setting the Timer

In order to use the timer, halt rotation and press the MODE button. The red dot on the display moves over to TIME. Select the desired count-down time using the control dial. When the display shows the correct time in minutes, press the START/STOP button to begin movement.

During operation, movement can be paused at any time by pressing the START/STOP button. If this button is pressed again, movement will start again and the timer will continue to count down. When the timer reaches zero, movement will be automatically halted and an audible alert will sound. The display settings will revert back to the last values saved in the memory (see Saving Speed/Time Values section below).

NOTE: To disable the timer and revert to continuous movement, select - - - in the display while in timer mode.

Saving Speed/Time Values

In order to save a commonly used speed/time value, switch the unit ON by pressing the control dial in (see Figure 5) and select both a speed value and a time value (either 1 to 9999 minutes, 1 second to 90 minutes, 1 minute to 9 hours, or continuous - - -) using the instruction given above. Then switch the unit OFF by pressing in the control dial. Wait 5 seconds and switch the unit back ON by pressing the control dial in. The inputted values are now saved in the memory. They can be altered at any time by following the same procedure.

NOTE: When the unit is switched OFF using the control dial, whatever values of speed/time that were set prior to turning the unit off will be saved, and will be the values restored when the unit is switched back on.

Changing the Timer Unit

The unit timer is defaulted to minutes only (1 to 9999 minutes). To change to minutes and hours (1 minute to 9 hours, where H is displayed in the left digit of the timer display), or to seconds and minutes (1 second to 90 minutes), turn the unit OFF by pressing the control dial. Hold down both the START/STOP button and the MODE button while simultaneously switching the power back on using the control dial. The display will temporarily show 88:88 then OFF. Using the control dial turn the unit on, the display will show nn:ss for minutes and seconds, H:nn for hours and minutes, and nn for minutes. Use the control dial to select the desired units of time and turn the unit OFF by pressing the control dial; OFF will be displayed. When the unit is next used, the timer will have been altered to the set units of time.

Cleaning and Care



WARNING: Ensure the unit is disconnected from the power supply before attempting maintenance or servicing.

The unit should be cleaned using a damp cloth and a mild detergent solution.

Cleaning is made easier if spillages are attended to promptly. In any case, spillages of acids and alkalis **MUST** be removed immediately as these chemicals can attack and damage the casework finish. Ensure that the appropriate safety precautions are observed.

Accessories

Multi-Platform System

Tiered platforms are available to increase the available space for samples.

Cradle System

Cradle platform systems are available and allow different vessel sizes to be accommodated.

Tube Holder Racks

Microcentrifuge tube holders are available to hold 1.5 mL, 0.5 mL, or 0.2 mL microtubes.

Please visit the Cole-Parmer website www.coleparmer.com for further information.

Servicing & Repair

This product range does not require any routine servicing.

Note: There are no internal user replaceable parts.

In the event of product failure it is recommended that any repair is only undertaken by suitably qualified personnel. For advice, please contact Cole-Parmer quoting the model and serial number.

Only spare parts supplied by the manufacturer or its agent should be used. Fitting of non-approved parts may affect the performance of the safety features of the instrument.

If in doubt, please contact Cole-Parmer.

Warranty

Cole-Parmer warrants this equipment to be free from defects in material and workmanship, when used under normal laboratory conditions, for a period of **three (3)** years. In the event of a justified claim, Cole-Parmer will replace any defective component or replace the unit free of charge.

This warranty does NOT apply if:

- ❖ Any repair has been made or attempted other than by the manufacturer or its agent.
- ❖ Any minor coating chips or scratches occur during normal use (i.e., wear and tear).
- ❖ Damage is caused by fire, accident, misuse, neglect, incorrect adjustment or repair, damage caused by installation, adaptation, modification or fitting of non-approved parts.

Technical Specification

MODEL

LARGE

230V: 51700-10
120V: 51700-08

Shaking action	–	Reciprocating
Platform dimensions (w x l)	–	335 x 335mm (13.1 x 13.1 in.)
Speed range	–	25 to 250 rpm
Orbit diameter	–	20mm (0.75 in.)
Maximum load	–	10kg (22 lb)
Overall dimensions (w x d x h)	–	360 x 420 x 270 mm (14.1 x 16.5 x 10.6 in.)
Net weight	–	11kg (24.3 lb)
Electrical supply	–	230V, 50Hz, 50W or 120V, 60Hz, 50W

MODEL

MINI

230V: 51700-14
120V: 51700-13

LARGE

230V: 51700-16
120V: 51700-15

Shaking action	Orbital	Orbital
Platform dimensions (w x l)	220 x 220 mm (8.6 x 8.6 in.)	335 x 335 mm (13.1 x 13.1 in.)
Speed range	30 to 300 rpm	30 to 300 rpm
Orbit diameter	16 mm (0.6 in.)	16 mm (0.6 in.)
Maximum load	3 kg (6.6 lb)	10 kg (22 lb)
Overall dimensions (w x d x h)	240 x 300 x 140 mm (9.4 x 11.8 x 5.5 in.)	360 x 420 x 270 mm (14.1 x 16.5 x 10.6 in.)
Net weight	5 kg (11 lb)	11 kg (24.3 lb)
Electrical supply	230V, 50Hz, 50W or 120V, 60Hz, 50W	230V, 50Hz, 50W or 120V, 60Hz, 50W

MODEL

MINI

230V: 51700-18
120V: 51700-17

LARGE

230V: 51700-20
120V: 51700-19

Shaking action	3-D gyratory	3-D gyratory
Platform dimensions (w x l)	235 x 235 mm (9.25 x 9.25 in.)	355 x 355 mm (14 x 14 in.)
Speed range	5 to 70 rpm	5 to 70 rpm
Angle of tilt	3 to 12°	3 to 12°
Optional tier height, mm	125/tier	125/tier
Maximum load	3 kg (6.6 lb)	10 kg (22 lb)
Overall dimensions (w x d x h)	240 x 300 x 150 mm (9.4 x 11.8 x 6 in.)	360 x 420 x 170 mm (14.1 x 16.5 x 6.7 in.)
Net weight	5 kg (11 lb)	10 kg (22 lb)
Electrical supply	230V, 50Hz, 50W or 120V, 60Hz, 50W	230V, 50Hz, 50W or 120V, 60Hz, 50W

MODEL	MINI 230V: 51700-22 120V: 51700-21	LARGE 230V: 51700-24 120V: 51700-23
Shaking action	See-saw wave	See-saw wave
Platform dimensions (w x l)	235 x 235 mm (9.25 x 9.25 in.)	355 x 355 mm (14 x 14 in.)
Speed range	5 to 70 rpm	5 to 70 rpm
Angle of tilt	7°	7°
Tier height, mm	125/tier	125/tier
Maximum load	3 kg (6.6 lb)	10 kg (22 lb)
Overall dimensions (w x d x h)	240 x 300 x 150 mm (9.4 x 11.8 x 6 in.)	360 x 420 x 170 mm (14.1 x 16.5 x 6.7 in.)
Net weight	5 kg (11 lb)	10 kg (22 lb)
Electrical supply	230V, 50Hz, 50W or 120V, 60Hz, 50W	230V, 50Hz, 50W or 120V, 60Hz, 50W

MODEL	MINI 230V: 51900-57 120V: 51900-55	LARGE 230V: 51900-53 120V: 51900-51
Shaking action	Vibrational	Vibrational
Number of microplates held	4	8
Platform dimensions (w x l)	220 x 220 mm (8.6 x 8.6 in.)	306 x 306 mm (12 x 12 in.)
Speed range	250 to 1250 rpm	250 to 1250 rpm
Orbit diameter	1.5 mm (0.05 in.)	1.5 mm (0.05 in.)
Maximum load	1 kg (2.2 lb)	2 kg (4.4 lb)
Overall dimensions (w x d x h)	240 x 300 x 160 mm (9.4 x 11.8 x 6.3 in.)	360 x 420 x 160 mm (14.1 x 16.5 x 6.3 in.)
Net weight	5 kg (11 lb)	10 kg (22 lb)
Electrical supply	230V, 50Hz, 50W or 120V, 60Hz, 50W	230V, 50Hz, 50W or 120V, 60Hz, 50W



These products meet the relevant EC harmonized standards for radio frequency interference and may be expected not to interfere with, or be affected by, other equipment with similar qualifications. We cannot be sure that other equipment used in their vicinity will meet these standards

and we cannot guarantee that interference will not occur in practice. Where there is a possibility that injury, damage or loss might occur if equipment malfunctions due to radio frequency interference, or for general advice before use, please contact the manufacturer.

Declaration of Conformity

Catalog Number:	Description:
51700-08	RECIPROCATING SHAKER LARGE 120V
51700-10	RECIPROCATING SHAKER LARGE 230V
51700-13	ORBITAL SHAKER MINI 120V
51700-14	ORBITAL SHAKER MINI 230V
51700-15	ORBITAL SHAKER LARGE 120V
51700-16	ORBITAL SHAKER LARGE 230V
51700-17	3-D GYRO-ROCKER MINI 120V
51700-18	3-D GYRO-ROCKER MINI 230V
51700-19	3-D GYRO-ROCKER LARGE 120V
51700-20	3-D GYRO-ROCKER LARGE 230V
51700-21	SEE-SAW ROCKER MINI 120V
51700-22	SEE-SAW ROCKER MINI 230V
51700-23	SEE-SAW ROCKER LARGE 120V
51700-24	SEE-SAW ROCKER LARGE 230V
51900-51	MICROTITER PLATE SHAKER LARGE 120V
51900-53	MICROTITER PLATE SHAKER LARGE 230V
51900-55	MICROTITER PLATE SHAKER MINI 230V
51900-57	MICROTITER PLATE SHAKER MINI 120V

This product complies with the requirements of the EU Directives listed below:

2004/108/EC	EMC Directive
2006/95/EC	Low Voltage Directive (LVD)
2011/65/EC	RoHs Directive



**For technical, sales or
servicing information,
contact:**

Cole-Parmer
625 East Bunker Court
Vernon Hills, IL 60061-1844
Toll-Free: 800-323-4340
Phone: 847-549-7600
Fax: 847-247-2929
www.coleparmer.com