

5900 Schooner Street – Belleville, MI 48111 – USA TEL (800) 422-2558 – FAX (734) 665-9099

www.Eberbachlabtools.com

E6003.00 Shaker Power Unit

Variable Speed with Digital Tach and Timer 115-230V, 50/60 Hz

USE AND CARE FOR CATALOG NUMBER:

E6003.00 Shaker Power Unit
 Variable Speed 60-260 rpm with Tachometer and Timer
 115-230V 50/60Hz

GENERAL INFORMATION

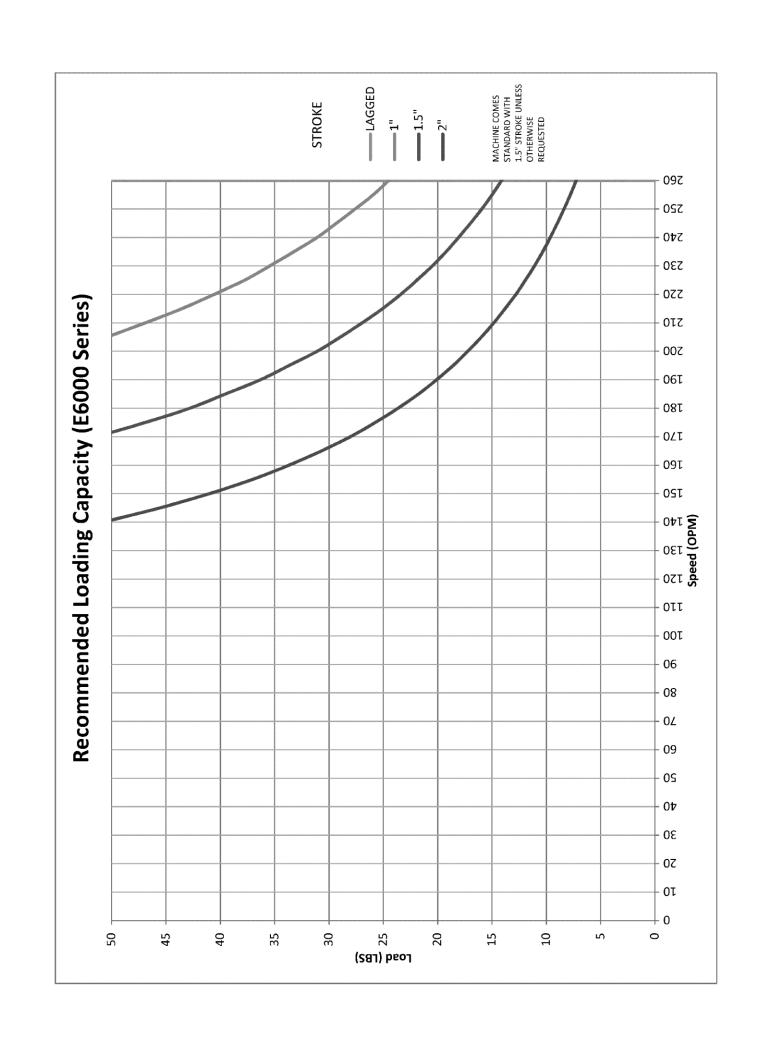
- Handle this unit with care. Unpack and check that the contents coincide with the packing-list. If any part is damaged or missing, please advise the distributor immediately.
- Do not install or use this equipment without first reading this manual.
- This manual should always be attached to the equipment and made available to all users.
- NEVER TOUCH THE RECIPRICATING PORTION OF THE SHAKER WHILE THE UNIT IS RUNNING!!
- If you have any doubts or inquiries, please contact your supplier or *Eberbach Corporation* technical service.

OPERATION

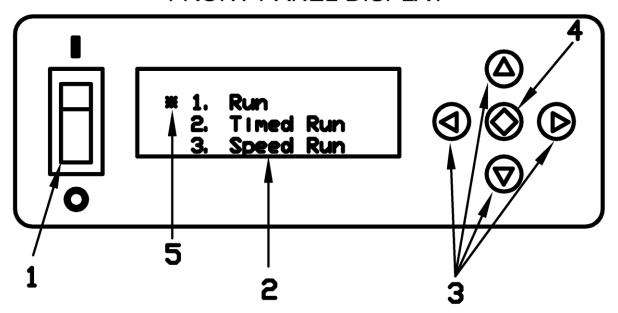
The *Eberbach* bench top reciprocating shaker (catalog E6003.00) features:

- A continuously variable speed range, adjustable between 60 and 260 osc/min with fixed stroke length set to 1.5" (38mm).
- A digital tachometer and programmable digital timer for simple and accurate use.
- A maximum shaking weight of 50lbs.

See the chart on the following page for the recommended loading capacity at various speeds.



FRONT PANEL DISPLAY



- 1) Power Switch
- 2) Liquid Crystal Display (LCD)
- 3) Directional Pad (D-Pad)
- 4) Enter Button
- 5) Cursor

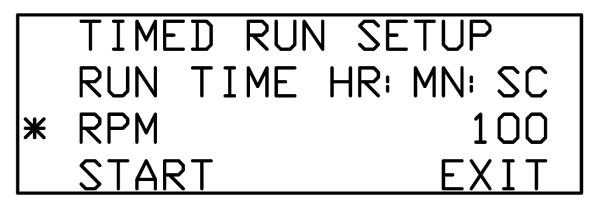
<u>Operation:</u> Press the <u>Power Switch</u> down into the ON position. The <u>LCD</u> should light up and show the main menu. There are three different run modes to choose from. Select a run mode by moving the <u>Cursor</u> (using the <u>D-PAD</u>) and press the <u>Enter Button</u>.

Run Mode: The shaker will begin the run mode at its lowest speed. The speed shown in parenthesis (xxxx) is the set speed controlled by the user. The speed listed to the right is the tachometer read out or the actual speed of the shaker in real time. The speed can be increased/decreased by pressing and holding the up/down arrows on the **D-PAD**. The longer the button is held down the faster the speed will increase/decrease. Once engaged the timer will begin counting all the way up to 999 hours before the timer overflows back to zero. To pause the shaker move the **Cursor** to the PAUSE item by pressing the left arrow on the **D-PAD** and press the **Enter Button**. The clock will pause at its current time and the shaker will gradually come to a complete stop. The clock and shaker can be resumed at its current time and speed by selecting RESUME and pressing the Enter Button. To go back to the main menu move the **Cursor** to the EXIT item by pressing the right arrow on the **D-PAD** and then press the Enter Button.

RUN TIME 00: 00: 00 RPM (100) 100 * PAUSE EXIT

RUN MENU

Timed Run Mode: The timed run mode features a count down timer that automatically shuts the shaker off when the time runs out. When selected the user will be taken to the Timed Run Setup Menu and will need to input the run time in hours, minutes, seconds and select the speed for the run. The left/right arrows on the **D-PAD** can be used to move the cursor between hours, minutes or seconds and the up and down arrows can be used to set the time. The longest run time allowed is 999:59:59. Once the time is set move the **Cursor** down by pressing the right arrow on the **D-PAD** until the **Cursor** is next to the RPM line item. The speed can be set using the up and down arrows on the **D-PAD**. Now that the data is set navigate the **Cursor** to the START line item using the left/right arrows on the **D-PAD** and press the **Enter Button**.



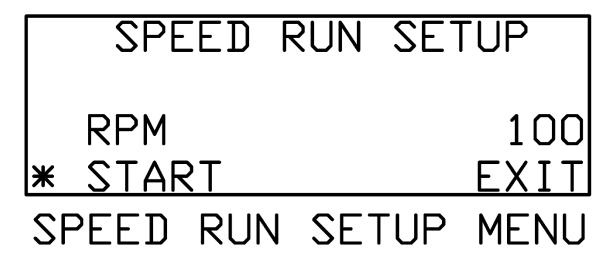
TIMED RUN SETUP MENU

After selecting START the shaker will begin at the selected speed and the timer will begin counting down. The speed can be adjusted in real time using the up/down arrows on the **D-PAD**. The speed shown in parenthesis is the target speed controlled by the user and the speed listed to the right is the actual speed as read by the tachometer. The shaker and countdown timer can be paused and resumed. Move the **Cursor** to the line item PAUSE by pressing the left arrow on the **D-PAD** and then press the **Enter Button**. Exiting the Timed Run Menu will bring the user back to the Timed Run Setup Menu.

RUN TIME 999: 59: 59 RPM (100) 100 * PAUSE EXIT

TIMED RUN MENU

Speed Run Mode: The speed run allows the user to program in a set run speed. Once engaged the timer will begin counting all the way up to 999 hours before the timer overflows back to zero. Select the speed run mode from the main menu and press the **Enter Button.** The user will be prompted with the speed run setup menu. Set the desired speed using the up/down arrows on the **D-PAD.** The left/right arrows can be used to move the **Cursor** between START and EXIT. EXIT will take the user back to the main menu. Keep the **Cursor** next to the START line item and press the **Enter Button**.



The user will now be taken to the speed run menu. The shaker will begin at the speed selected in the setup menu. The speed run menu behaves in the same way as the run menu with one exception. Pressing EXIT will not take the user back to the main menu instead pressing EXIT will take the user back to the speed run setup menu.

RUN TIME 00: 00: 00
RPM (100) 100
*PAUSE EXIT
SPEED RUN MENU

Note: All run menus will have two speeds listed. The leftmost speed will be displayed inside parenthesis. This is the target speed controlled by the user. The shaker will attempt to match this speed and should do so within ten seconds after making an adjustment. The rightmost speed is the tachometer reading, which shows the user what the shaker is actually running at. The tachometer reading will not necessarily match the target speed at all times, but is guaranteed to be within +/- 5 RPM when calibrated correctly. Tachometer will need to be recalibrated after belt changes or excessive belt wear. See following page for Calibration information.

Note: Reciprocating shakers will display OSC (oscillations) instead of RPM (revolutions per minute).

Note: Use slowest speed necessary to produce required shaking action.

To calibrate the tachometer system follow these steps:

Step 1 Hold down the Green Enter Button and power the machine on to access the utilities menu

Step 2 Select the "Tests Menu" and press the Enter Button.



Step 3 Select the "Calibration" item and press the Enter Button.

	1.	Auto	Test
	2.	Manual	Test
*	3,	Calibra	tion
	4.	Exit	

TESTS MENU

Step 4 Make sure the machine is empty and ready to be run at maximum speed. Select "Yes" and press the Enter Button.

Machine Will	Run At
Max Speed Be	Careful
Continue?	
* Yes	No

CONFIRM MENU

Step 5 Machine will now run at maximum speed for one minute. You will see the tachometer scaling ratio displayed on top and the DAC (Digital to Analog Converter) set point displayed on the bottom. The RPM (###) is your target speed. The RPM on the right side is the tachometer reading. You will need to monitor this value and compare it with your "Calibration Test Kit." The "Calibration Test Kit" will show the TRUE RPM reading of the machine.

Rat	i	0,	250)	
RUN	TIMI	 			00
RPM	(#:	###	‡)	##	###
DAC	40	92			

CALIBRATION MENU

Step 6 Use the up and down arrows to input your TRUE RPM reading. Select "Save" and press the Enter Button. Your Machine Tach Ratio will be adjusted to match the TRUE RPM reading. This should be capable of +/- 5 RPM of your "Calibration Test Kit."

The calibration is now complete. The tachometer should maintain its accuracy until your next belt replacement.

If you have any doubts or inquiries concerning operation contact your supplier or Eberbach Corporation technical service.

LOADING:

It is impossible to outline the exact limitations for loading a shaker, as resulting shaking action is dependent upon several factors. Principle among these is the size and shape of the containers, speed, length of stroke, and the amount and type of material being shaken.

Basic considerations should be:

- Use lowest speed consistent with the required shaking action.
- At higher speed use less weight on the platform.
- At lower speeds, weight on platforms and/or length of stroke can be increased up to 50lbs Maximum.
- When using one platform tiered above the other, place equal load on each, or
 if it is possible, place heavier mass on lower platform and lighter on the top. If
 shaking action imparts a "whip" to the upper platform, then either the speed is
 too high or the load is too heavy on that platform.
- If shaker has tendency to "walk" on floor, then rubber suction cup feet should be secured to the floor using rubber or contact cement.

For optimum operation of this shaking apparatus and for long trouble-free life, it is recommended that a minimum load be placed in the shaker when used. Good judgment in the selection of the factors will contribute to proper use of the shaker.

OILING AND ALL MAINTENANCE CAN BE PERFORMED BY REMOVING EITHER THE FRONT OR REAR HOUSING PANEL.

BELT INSPECTION:

Inspect belts at each oiling period and replace if broken or if the cords are exposed and frayed. Small outer fabric breaks are not harmful.

BELT ADJUSTMENT:

The motor belt driving the 9" idler pulley may stretch and become loose after a short time in operation, or the replacement belt may be a slightly different length. To adjust the belts, first run the shaker and dial in to the slowest speed. Turn off the shaker and prop up shaker so bottom fasteners are accessible. Then remove the front panel. Near the center of the bottom will be four hex head cap screws that hold the motor. Loosen the four hex head cap screws holding the motor and adjust the motor belt to proper tightness. Tighten the motor screws, but do not tighten either belt to the point where the bearings will be overloaded. When a belt is tight, the operator should be able to press lightly on the middle of the belt and cause it to bow in an amount equal to the width of the belt.

Contact Eberbach Tech Support **(800) 422-2558** for instructions on <u>replacement</u> of belt between idler assembly and crankshaft assembly.

LUBRICATION:

See exploded view of shaker power unit for points of lubrication. Use a good grade of SAE #30 oil.

<u>Lubrication when shaker is used in continuous duty applications of 100 hours or</u> more:

- A. Oil crank bearing through hole in center of bearing bracket every 3 months.
- B. Oil the 8 bearings located at the top and bottom of each of the 4 rocker arms every 3 months. Place oil on the shaft next to the bearing.
- C. Oil the connecting rod bearings every 3 months. Place oil on the shaft next to the bearing at the upper end and at the crank end of the connecting rod.

Lubrication when shaker is used for intermittent duty:

- A. Oil crank bearing through hole in center of bearing bracket every 6 months.
- B. Oil the 8 bearings located at the top and bottom of each of the 4 rocker arms every 6 months. Place oil on the shaft next to the bearing.
- C. Oil the connecting rod bearings every 6 months. Place oil on the shaft next to the bearing at the upper end and at the crank end of the connecting rod.

REPLACEMENT PARTS LIST FOR E6003.00

<u>PartNo</u>	DESCRIPTION	QTY.
4281	3L300R V-BELT	1
4283.2	3L290 V-BELT	1
4351	COLLAR	2
5528	3.75" SUCTION CUP W/ 5/16-18 THREADED POST	4
6009.1	200W POWER SUPPLY	1
6010.7	POWER SUPPLY, 5V 30W	1
6063.1	CABLE TIE MOUNT	7
6063.2	CABLE TIE	7
6102	OVERLAY	1
6113	FUSE, TIME DELAY 3A	2
6278	AC INLET	1
6291.5	CLAMP ON SHIELD BEAD ASSEMBLY	1
6507.1	ROCKER SWITCH	1
6649	CORD AND PLUG	1
6851.500A	PCB BOARD W/POSITIVE LOCK ASSEMBLY	1
6855	USB BOARD	1
6995.2	100W MOTOR CONTROLER (REPLACEMENT ONLY)	1
6996.1	100 WATT MOTOR	1
7397	#2-56 X 1/4" S/S PAN HD. MACHINE SCREW	1
7398	#2-56 X 5/16" S/S PAN HD. MACHINE SCREW	1
7568	#4-40 X 1/4" S/S PAN HD. MACHINE SCREW	8
7954	#5-40 X 3/8" S/S FLAT HD. SOCKET SCREW	2
8050	#4-40 x 3/8" S/S PAN HD. MACHINE SCREW	4
8274.5	#6-32 X 3/8" S/S TRUST HD. SCREW	2
8279.1	#10-32 X 3/8" S/S SELF LOCKING BOTTEN HD. SOCKET SCREW	8
8285	#8-32 X 1/4" S/S TRUST HD. SCREW	50
8507.5	1/4"-20 X 1/2" S/S HEX HEAD SCREW	4
8528.4	5/16"-24 X 1/2" HEX HEAD SCREW	4
8535.5	5/16"-24 X 1-1/4" S/S HEX HEAD SCREW	8
8598.2	5/16"-18 X 1" S/S SOCKET HD. SCREW	4
9207.5	#5-40 SS NYLON-INSERT HEX LOCKNUT	2
9235	#8-32 S/S MACHINE SCREW NUT	2
9257.5	5/16"-18 SS LOCK NUT W/ NYLON INSERT	4
9277.5	5/16"-24 316 S/S HEX NUT	8
9436	1/4" S/S SAE WASHER	4

9438.5	5/16" S/S SAE WASHER	12
9609	FIBER WASHER, 0.391 X 0.625 X 0.032	10
9799.1	#4-40 x 5/8" STAND OFF MALE-FEMALE	4
EP6000.529A	CONNECTING ROD ASSEMBLY	1
EP6000.565A	ROCKER ARM AND SPACER ROD ASSEMBLY	2
EP6000.SS.042	BACK PANEL	1
EP6000.SS.053	TOP COVER	1
EP6000.SS.054	LEVELING SHIM	1
EP6000.SS.058	STIFFENER SPACER	1
EP6000.SS.502A	TOP PLATE ASSEMBLY	1
EP6000.SS.522A	RIGHT END PANEL ASSEMBLY	1
EP6003.107	ORIENTAL MOTOR PULLEY	1
EP6003.519A	ORIENTAL CRANK ASSEMBLY	1
EP6003.542A	IDLER JACKSHAFT ASSEMBLY	1
EP6003.653A	WIRING HARNESS	1
EP6003.SS.106	SPLASH GUARD MOTOR CONTROLLER	1
EP6003.SS.502A	ORIENTAL MOTOR MOUNT ASSEMBLY	1
EP6003.SS.503A	FRONT PANEL ASSEMBLY	1
EP6003.SS.525A	DC LEFT END	1
EP6003.SS.551A	BASE ASSEMBLY	1
EP6013.SS.116	ORIENTAL POWER SUPPLY MOUNT	1

If you have any doubts or inquiries concerning operation contact your supplier or <u>Eberbach Corporation</u> technical service @ 1-800-422-2

