



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

E5903.00 Shaker Power Unit
Variable Speed with Timer and Tachometer
60-240 rpm 115V 50/60Hz

USE AND CARE FOR CATALOG NUMBER:

- E5903.00 Shaker Power Unit

Variable Speed 60-240 rpm with Digital Tachometer and Timer
115V 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*** benchtop reciprocating shaker (catalog #E5903.00) features:

- A continuously variable speed range, adjustable between 60 and 240 osc/min with stock stroke length set to 1.50" (Fixed).
- A Brush DC Motor Drive for quiet operation and low maintenance.
- A digital timer and tachometer for simple and accurate use.
- A maximum shaking weight of 100lbs at low speed and linearly to 65 lbs at high speed (with stock 1.50" stroke setting).

Contact ***Eberbach Corporation Technical Support*** for other stroke setting weight limits.

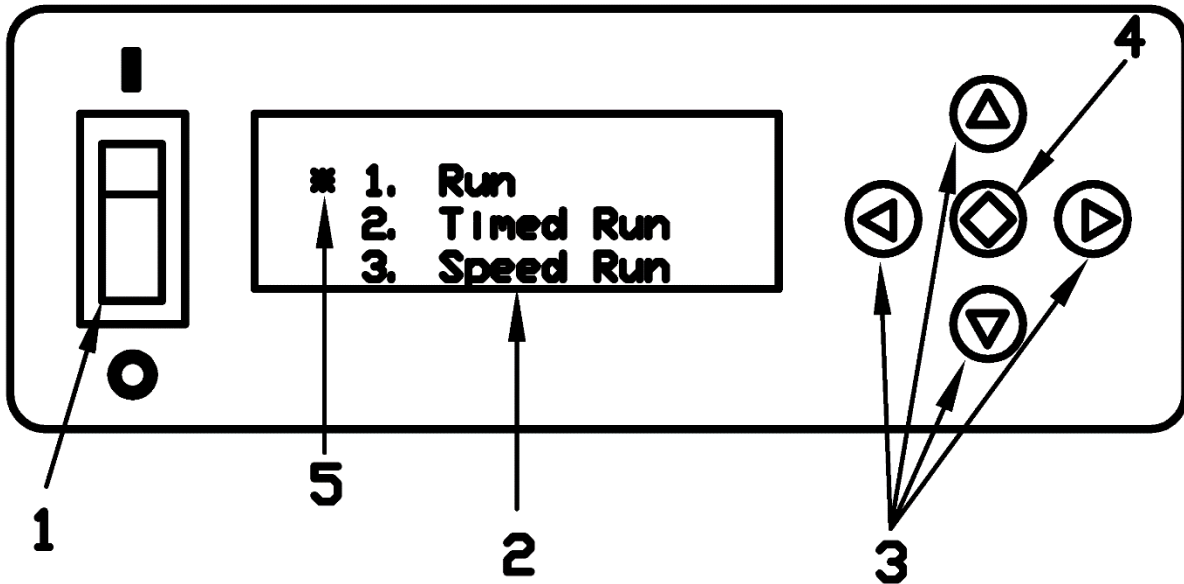
INITIAL PREPARATION:

This shaker power unit is furnished without carriers and prior to installation of any carrier the unit should be run.

WEIGHT/SPEED CONSIDERATIONS:

Maximum load and maximum speed specifications for Eberbach shakers are established both as a guide to ensure long operational life of the units and as safety parameters for the operator. When shaking heavy loads at higher speeds always monitor the progress of the shaking action for a few minutes. Pay particular attention to the stability of the load as objects may shake loose from the platform/box carrier if not properly secured. Always turn the shaker off before adding, adjusting or removing items. Be mindful that solid masses will affect the shaker differently than will the same mass of a fluid. If you have any concerns about your shaking protocol please call Eberbach technical support.

FRONT PANEL DISPLAY



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

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

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**.

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TIMED RUN SETUP
RUN TIME HR: MN: SC
* RPM          100
START          EXIT
```

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**.

SPEED RUN SETUP		
RPM		100
* START		EXIT

SPEED RUN SETUP MENU

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.


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

```

SPEED RUN MENU

Error: Over Speed and No Tachometer

There are two basic Error conditions that will display during your Run. If the Tachometer value exceeds your Maximum Speed setting by over 6% RPM the main relay will be turned off (if equipped). The Over Speed Error message will be flashed across the top line.

If the Tachometer should fail your machine will shut down for safety reasons. This can also be caused by a stalled motor or unplugged Tachometer cable. The No Tachometer Error message will be flashed across the top line. It is possible to run the machine without a Tachometer although the accuracy of the speed may vary. You will be prompted to select Open Loop mode. Although this is not recommended for Safety Reasons.

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 +/- 1% RPM.

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

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

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

INSTALLATION OF CARRIERS:

To install the large platform, Cat. No. E5910.00 onto the shaker platform, use the eight (8) 1 inch spacers and the truss head screws supplied with the platform. This large platform has 1/4 inch diameter holes for mounting Cat. No. E6090.00 Flask Holders by means of the threaded strips, Cat. No. E5913.00.

The large utility carrier is secured to the large platform by means of eight (8) machine screws and hex nuts furnished with the carrier. Additional crosswise bar clamps can be added to hold various size and shapes of containers. It will secure six (6) five-gallon Carboys or six (6) five-gallon Jerry Cans.

LOADING:

It is impossible to outline the exact limitations for loading a shaker, as resulting shaking action is dependent upon several factors. Principal among these is the size and shape of the containers, speed 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 platform
- At lower speeds, weight on platforms can be increased up to 100lbs 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 actually broken or if the cords are exposed and frayed. Small outer fabric breaks are not harmful.

BELT REPLACEMENT AND ADJUSTMENT:

To replace belt, loosen motor screws and/or the idler assembly and remove belt, then install new belt. Tighten the motor screws but do not tighten belt to the point where the bearings will be overloaded. When 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.

LUBRICATION:

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

Lubrication when shaker is used in continuous duty applications of 100 hours or more:

- A. Oil crank bearing through hole in center of bearing bracket every 3 months.
- B. Oil the 32 rocker arm bearing located at the top and bottom 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 32 rocker arm bearing located at the top and bottom 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 E5903.00

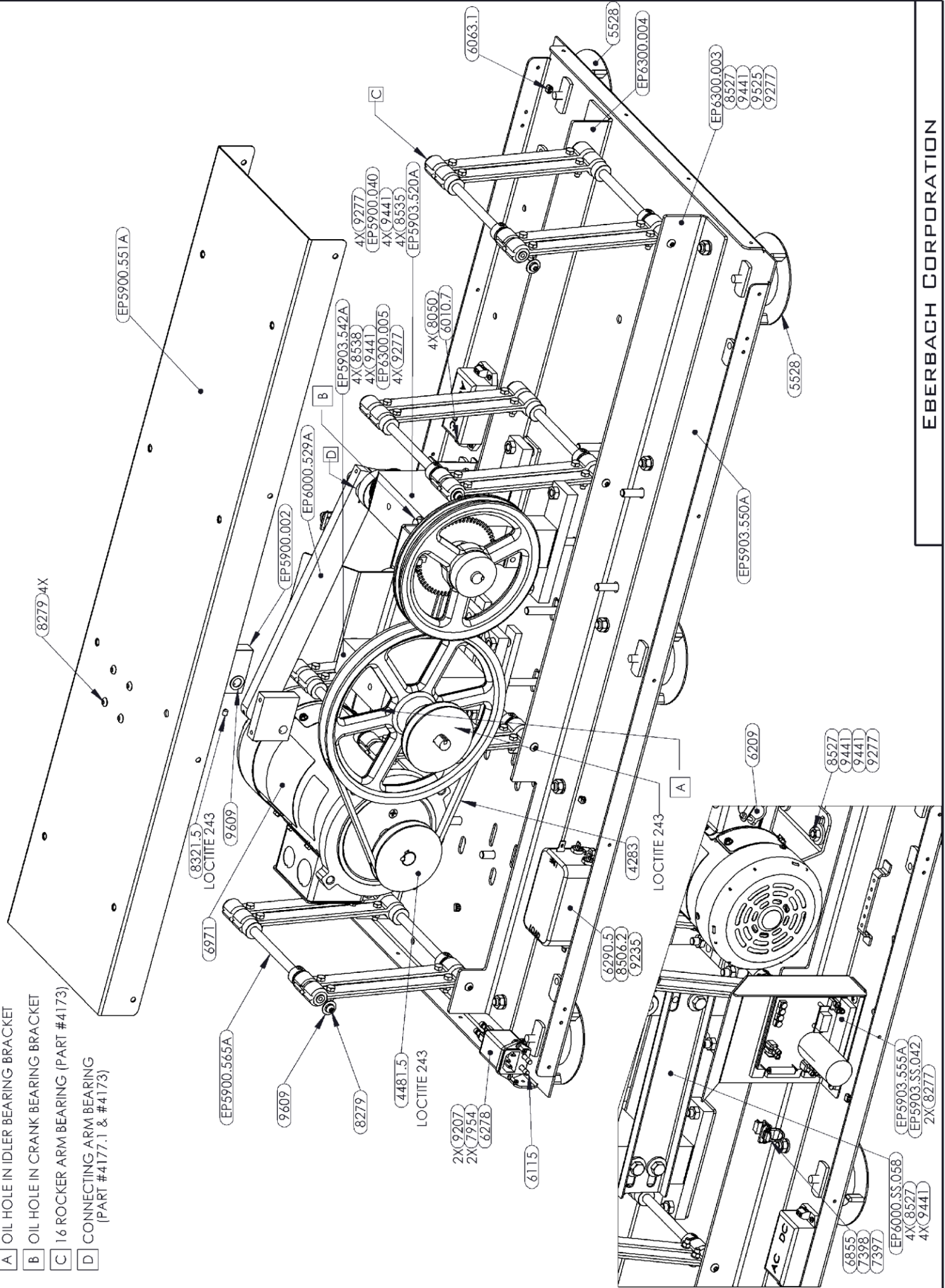
<u>PART or STOCK #</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
4281	3L300 V-BELT	1
4283	3L310 V-BELT	1
4481.5	AK30X.625 KEYED	1
5528	3.75" SUCTION CUP W/ 5/16-18 THREADED POST	6
6010.7	POWER SUPPLY, 5V 30W	1
6063.1	CABLE TIE MOUNT	10
6063.2	CABLE TIE	11
6102	OVERLAY	1
6115	FUSE, TIME DELAY 5A	2
6209	CABLE CLAMP, 3/8"	1
6217	FEMALE QUICK DISCONNECT	1
6220	ADHESIVE BACKED CABLE TIE	3
6278	AC INLET	1
6290.5	LINE FILTER 6A	1
6507.1	ROCKER SWITCH	1
6649	CORD AND PLUG	1
6851.500A	PCB BOARD W/POSITIVE LOCK ASSEMBLY	1
6855	USB BOARD	1
6971	1/2HP DC PERMANENT MAGNET 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	4
7954	#5-40 X 3/8" S/S FLAT HEAD MACHINE SCREW	2
8050	#4-40 x 3/8" S/S PAN HD. MACHINE SCREW	4
8277	#8-32 X 3/8" S/S TRUST HD. SCREW	2
8279	#10-32 X 3/8" SELF LOCKING BOTTEN HD. SOCKET SCREW	20
8285	#8-32 X 1/4" S/S TRUST HD. SCREW	48
8321.5	#10-32 X 1/4" SET SCREW	2
8506.2	#8-32 X 1/2" S/S HEX HEAD SCREW	2
8527	5/16"-24 X 3/4" HEX HEAD SCREW	18
8535	5/16"-24 X 1-1/4" HEX HEAD SCREW	4
8538	5/16"-24 X 1-1/2" HEX HEAD SCREW	4
9207	#5-40 NYLON-INSERT HEX LOCKNUT	2
9235	#8-32 S/S MACHINE SCREW NUT	2
9277	5/16"-24 HEX NUT	22
9441	5/16" WASHER	30
9525	5/16" SPLIT LOCK WASHER	10
9609	FIBER WASHER, 0.391 X 0.625 X 0.032	18
EP5900.002	STIFFENER JOURNAL	2
EP5900.006	REAR CENTER PANEL	1

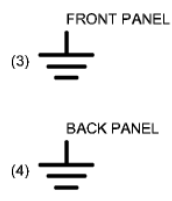
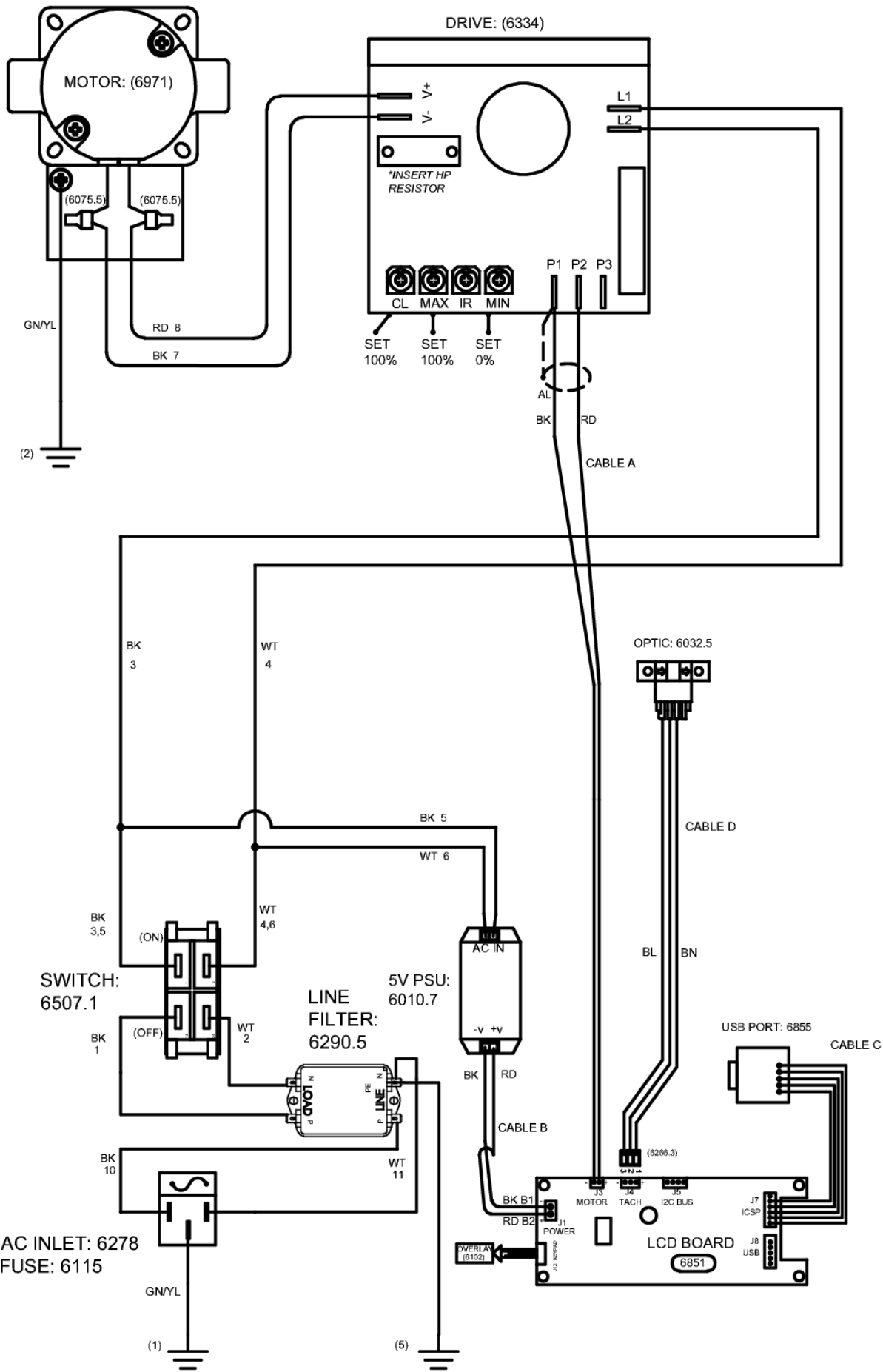
EP5900.008	END GAURD	2
EP5900.019	TOP LONG PLATE	2
EP5900.040	LEVELING SHIM	1
EP5900.500A	RIGHT END PANEL ASSEMBLY	1
EP5900.551A	TOP PLATE ASSEMBLY	1
EP5900.565A	ROCKER ARM AND SPACER ROD ASSEMBLY	4
EP5903.503A	RIGHT END PANEL SUB ASSEMBLY	1
EP5903.515A	DIGITAL FRONT PANEL ASSEMBLY	1
EP5903.520A	CRANK ASSEMBLY	1
EP5903.542A	IDLER JACKSHAFT ASSEMBLY	1
EP5903.550A	BASE ASSEMBLY	1
EP5903.555A	MOTOR CONTROLLER SUBASSEMBLY	1
EP5903.655A	WIRE HARNESS	1
EP5903.SS.042	MOTOR CONTROLLER SPILL GUARD	1
EP6000.529A	CONNECTING ROD ASSEMBLY	1
EP6000.SS.058	STIFFENER SPACER	1
EP6300.003	BASE SUPPORT ANGLE (FRONT)	1
EP6300.004	BASE SUPPORT ANGLE (BACK)	1
EP6300.005	IDLER JACKSHAFT SPACER STRIP	2

*If you have any inquiries concerning Replacement Parts and Installation please contact your supplier or **Eberbach Corporation Technical Support @ 1.800.422.2558.***

LUBRICATION POSITION (USE SAE #30 OIL)

- A OIL HOLE IN IDLER BEARING BRACKET
- B OIL HOLE IN CRANK BEARING BRACKET
- C 16 ROCKER ARM BEARING (PART #4173)
- D CONNECTING ARM BEARING (PART #4177.1 & #4173)





EBERBACH CORPORATION U.S.A.		ELECTRONIC ASSEMBLY	
ASSEMBLY	-	PART NAME	-
MATERIAL	-	SCALE	N/A
FINISH	-	DRW.	2/19/2021
REVISED	REV 12	REV'D	1
	J.M.	ASMT	
	6022	PART NO.	E5903.605A