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www.Eberbachlabtools.com

E3703.00 VARIABLE SPEED CUTTING MILL (115-230 V, SINGLE PHASE, 50/60 HZ)

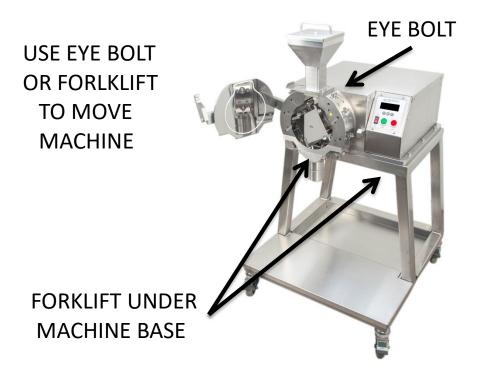
USE AND CARE OF CATALOG NUMBER: E3703.00 Mill (115-230 V, 50/60 HZ)

PRELIMINARY

Mill has been properly adjusted at the factory. However, clearance between stationary and rotor knives should be checked manually before power is turned on, to prevent possible damage caused if any of the stationary knives have shifted during shipment. Check for tip-to-tip clearance between all rotor blades and the six stationary knives by placing one or two pieces of paper of average thickness (.002 to .005 in) against each stationary knife. Turn the rotor shaft by hand counterclockwise so that all four rotor blades pass the stationary knives. Knives should touch the paper but not cut it. Greater clearance will interfere with the action of the mill. Blade clearance will depend on process and materials.

Unpacking:

The E3703.00 is shipped upright within its packing crate. Cut banding and remove the wood screws holding the top and front panel, removing both. Remove internal packing and braces. With a forklift remove the mill from the crate. Unlock the four wheels-the mill can now be rolled to its desired location.



****Stainless steel version shown above. ****
****Save packing material in the event the mill must be returned. ****

!!!DANGER!!!



NEVER REACH INSIDE CHAMBER OR HOPPER WHEN POWER IS ON.

NEVER LEAVE PLUNGER OR ANY LARGE OR HARD OBJECT INSIDE THE CHAMBER WHILE THE DOOR IS CLOSED AND POWER IS CONNECTED.

ALWAYS USE APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE)

FAILURE TO COMPLY WITH WARNING NOTICES COULD RESULT IN DEATH OR SERIOUS INJURY AND EQUIPMENT/PROPERTY DAMAGE AND VOID THE WARRANTY.



Installation:

The mill may be rolled on the four castors. Due to the high center of gravity be extremely careful when rolling the mill over uneven, cracked or pitted surfaces. Roll the mill backwards firmly holding onto the front chamber.

Locate the mill near an appropriate electrical outlet. <u>DO NOT USE WITH AN EXTENSION CORD OR MULTIPLE OUTLET STRIP. DO NOT PLUG INTO A GFI OUTLET.</u> The mill should be plugged into an outlet with no other appliances on the circuit.

Lock castors prior to use.

Assembly:

Open the mill chamber by turning the chamber hand wheel counter-clockwise. Lift the right arm of the support bracket away from the latch.

Assemble the hopper onto the top of the head. Seat the hopper cover.

To install a sieve, loosen the receiver assembly by turning the two sieve release hand wheels at the bottom of the mill until the alignment pins disengage.

Latch door and tighten chamber hand wheel. Attach power cord to rear of mill and plug into appropriate electrical socket.

Cleaning Cutting Chamber:

Use isopropyl alcohol to clean the interior of the cutting chamber. Once clean, wipe away remaining alcohol and allow the surface to dry before resuming processing.

Operation:

After power is applied to mill you must wait an additional 30 seconds for the HMI to load. Press the START button on the HMI screen to start the HMI Program. Rotation begins by using the Run Menu and pressing the green start button. Rotation ends by pressing the red stop button. Desired speeds are achieved by pressing the up/down arrows. Speeds vary continuously between 100-1200 RPM (1750 MAX) on 115V. Speeds vary continuously between 100-2500 RPM on 230V.

Start the mill before adding sample. Materials, which do not flow freely, may be forced into the chamber with the plunger.

For optimum results feed material slowly so that the rate of feed approximates the rate of delivery of ground material. Do not overload or overfill the chamber. The chamber should not contain more material than can be agitated by the revolving blades. Overloading may result in heating, caking, or clogging. The mill is equipped with a circuit breaker that will trip when overloading occurs. In cases of severe jamming the motor may shut itself down before circuit breaker trips. This can be corrected by clearing the Drive Alarm on the HMI Alarms screen.

Hard or tough materials should be reduced to small size before feeding into the mill. If jamming occurs stop the mill immediately (red stop button) and shut off power. Open the chamber door and remove the jamming particles.

Due to the static charge created when some plastics are ground best results are usually obtained at higher speeds, to take advantage of the fanning effect of the rotating knives.

A safety interlock prevents operation of the mill with the chamber open and/or with the hopper not seated properly.

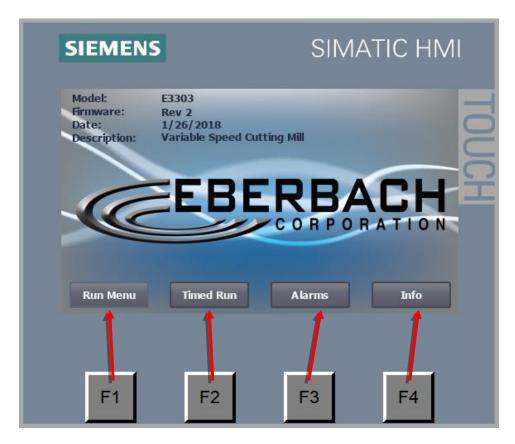
After each sample is ground, clean the chamber and receiver with a narrow, fairly stiff brush. Alternatively, a blast of clean, dry air is effective.

Main Program Screen



After powering on the machine, the HMI Boot-Up screen will be displayed. Press the start button located in the middle of the screen.

Operations Screen



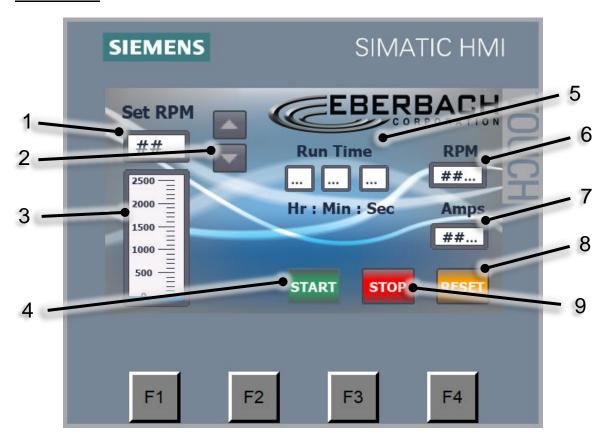
After pressing start on the main program screen, the operations screen will be displayed. Here the user can select from the following options.

SOFT BUTTONS

- F1 RUN MENU
- F2 TIMED RUN MENU
- F3 ALARMS MENU
- F4 INFO

^{*}NOTE: Model number and revision number may vary depending on what machine you have.

Run Screen

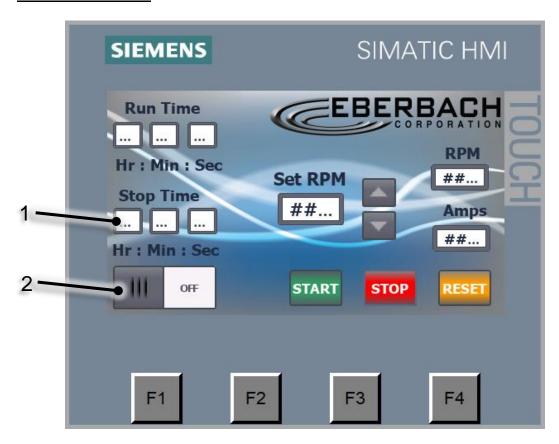


The run menu can be used for basic operation. The user can set the rpm by touching the "set RPM" White box (1). A numeric keypad will be displayed where the user can type in the desired run speed. The small Grey Up and Down buttons (2) allow the user to raise or lower the speed during operation by a set increment.

Once the desired speed is entered, the user can press start (4) to start the mill. During operation the run time (5), RPM (6), and Amps (7) are displayed.

To stop the machine, press the stop button (9). If multiple runs are conducted, the Run Time clock will remain persistent showing a cumulative run time. If individual run times are required, the user can press the Reset button (7) in between runs to reset the Run Time counter.

Timed Run Screen



The Timed Run menu has the same features and buttons as the Run menu. However, the Timed Run also can be used to automatically stop the machine after a specified duration of time. Turn this feature on using the grey button in the bottom left corner (2). To set the desired run time, the user must enter a "Stop Time" by pressing the White box below the words "Stop Time"(1). After the desired time is entered the user can press the White box under "Set RPM" to enter the desired speed. The user can then press the start button to start the mill.

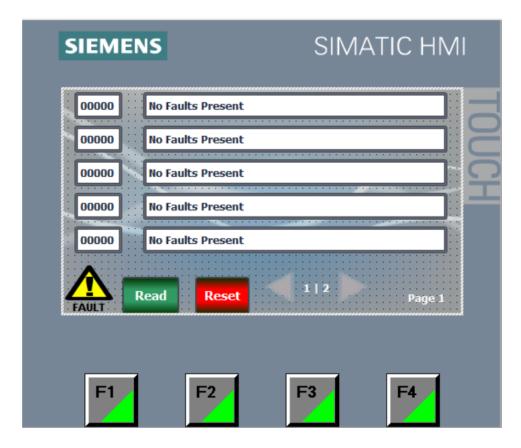
Alarm Screen



The alarm screen will display any active alarm to assist with trouble shooting. Alarm State and Alarm Buffer will display PLC alarms and faults. Drive Faults is only for the Servo Motor and Drive.

This information will be required by the Eberbach technical support staff to troubleshoot any machine malfunction.

Drive Fault Screen



The drive fault screen will display any active faults on the motor controller drive unit.

Press the green read button to get data from drive. When the fault condition has been cleared press the red reset button to reset the drive. There can be up to 10 faults stored in the memory. Use the page arrows to navigate between page 1 and page 2.

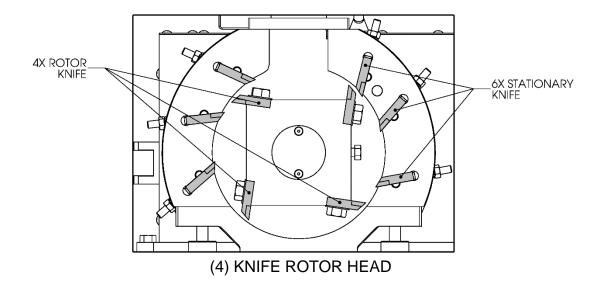
This information will be required by the Eberbach technical support staff in order to trouble shoot any machine malfunction.

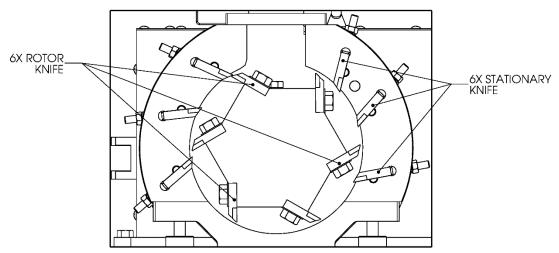
<u>CAUTION: Make certain all electric power to the mill is shut off before replacing any blades. Unplug mill from outlet as additional safety precaution.</u>

<u>CAUTION: When replacing or handling rotating blades use appropriate personal protective equipment.</u>

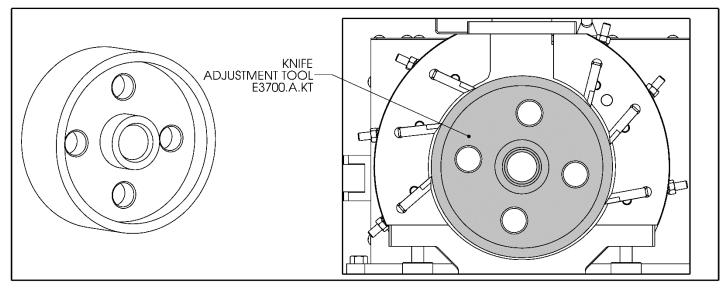
- 1. Remove hopper from the top of the mill and open chamber door.
- 2. Loosen the hex head cap screw clamping the rotor to the shaft. Carefully remove the rotor and set on workbench. NOTE: There is a spacer washer in the rotor cavity that must be retained in reassembly.
- 3. Using the wrench provided, remove the two cap screws and lift a knife from rotor.
- 4. Clean the knife seat, making certain that all burrs, chips and dirt have been removed.
- 5. Mount one of the replacement knives in the seat. Make certain that knife is positioned as far to the rear of its seat as possible, and also that the ends of the knife do not project beyond the front and rear faces of the rotor. Insert and tighten the two cap screws.
- 6. Repeat steps 2, 3, 4 and 5 for the remaining knives.

NOTE: Rotor knives must be replaced as a set.





- (6) KNIFE ROTOR HEAD. 230V 3-PHASE RECOMMENDED
- 7. There are two pairs of setscrews associated with each stationary knife. The pair which are in line with the threaded stud attached to the knife act as a back stop and also allow minute up and down adjustments to be made on either side of the knife. The other pair of setscrews, located clockwise from the threaded stud, bear on the clamping bar, holding the clamping bar and thereby the knife itself firmly in position.
- 8. Loosen the pair of setscrews holding the clamping bar on the first stationary knife that is to be replaced. (If replacing the entire set of stationary knives, it may be convenient to start with the knife in the upper right.)
- 9. Hold or support knife and remove the two nuts from the threaded stud. Carefully remove knife. Remove clamping bar from its slot.
- 10. If other knives are being replaced, remove the remaining knives, proceeding clockwise.
- 11. Unpack replacement knives. Replace the knife-clamping bar. Insert threaded stud into its hole and seat knife in slot. (See illustration for correct position of knife bevel.) Replace the two nuts and draw the knife up so that there is ample clearance between it and the rotor knives. Repeat this operation for all knives being replaced, and also draw up any remaining knives.
- 12. Loosen nuts of the first stationary knife to be adjusted. Insert a piece of paper of the necessary thickness between the knife and any of the rotor knives, and adjust the clearance by raising or lowering the stationary knife until it pinches the paper but does not sever it.



Set up tool shown above (optional accessory). Allows for quick stationary blade gapping in between cleaning. For use with new OEM rotating (rotor) blades only. Once rotating (rotor) blades are sharpened, the set up tool can no longer be used to set blade gap.

- 13. Slightly tighten the two setscrews holding the clamping bar on the knife. (May require further adjustment later.)
- 14. Turn rotor to make certain that all rotor knives clear the installed stationary knife. If one rotor knife projects beyond the others, adjust clearance of stationary knife with respect to this rotor knife. Identify this rotor knife and make all stationary knife adjustments to it.
- 15. Repeat steps 12 and 13 above for the remaining stationary knives. Recheck all clearance and all associated nuts and set screws.

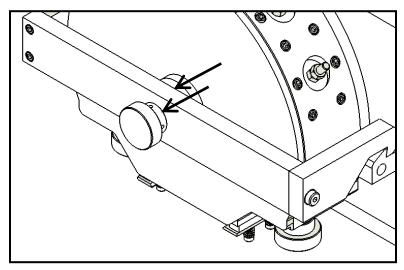
NOTE: Do not over-tighten to the point where threads may be stripped.

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

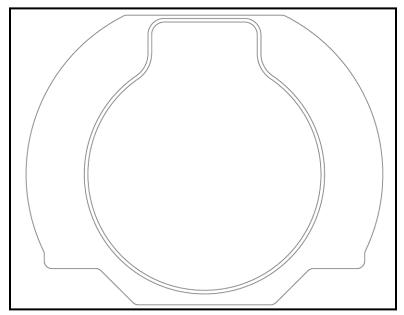
CAUTION:

DO NOT OPEN THE CHAMBER DOOR WHILE THE MACHINE IS RUNNING. SERIOUS INJURY MAY RESULT IF THESE INSTRUCTIONS ARE NOT FOLLOWED.

Maintenance



The door screw could become difficult to tighten over time. If so apply MOLYKOTE 1000 on the threads.

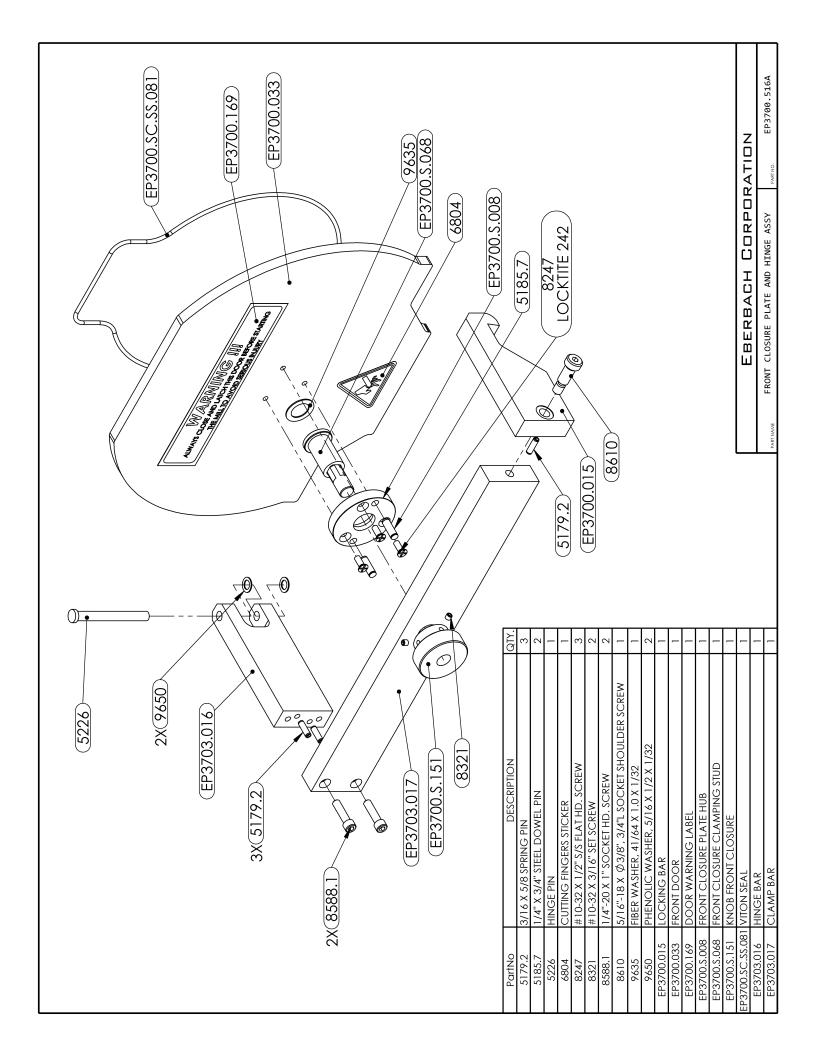


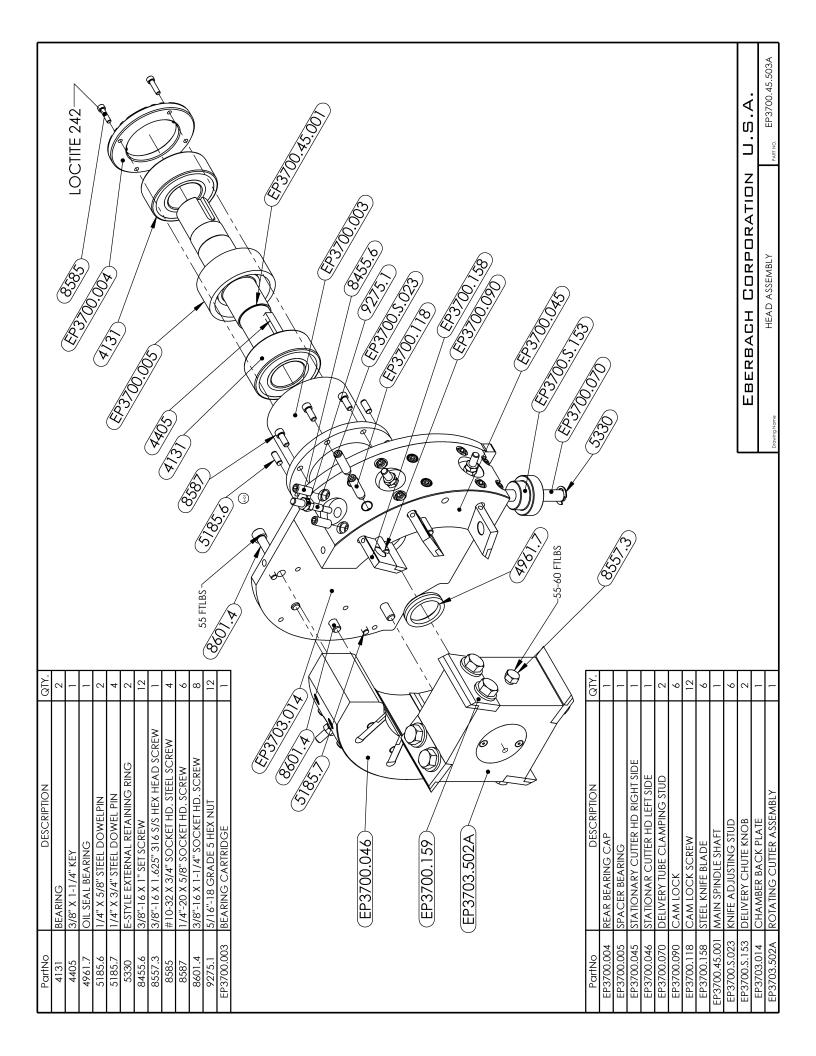
If the seal were to be damage replace with a suitable type. Standard seal (Viton) used on E3703.00 is Eberbach stock #5457.7

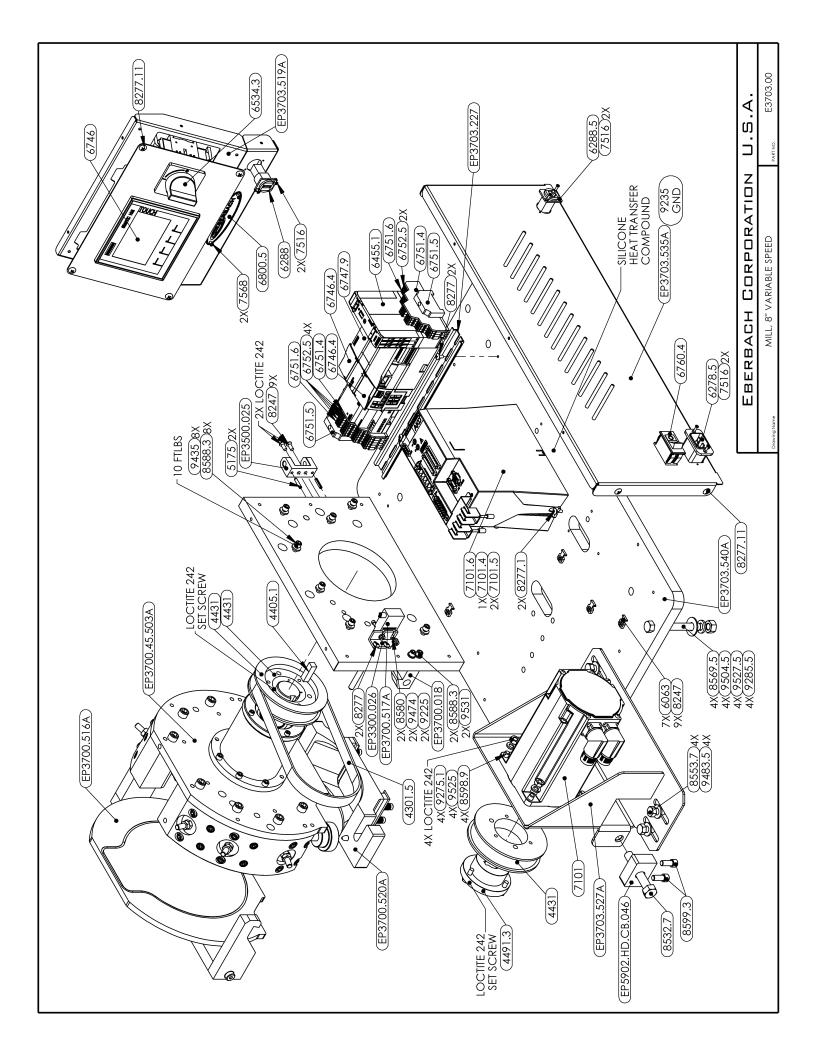
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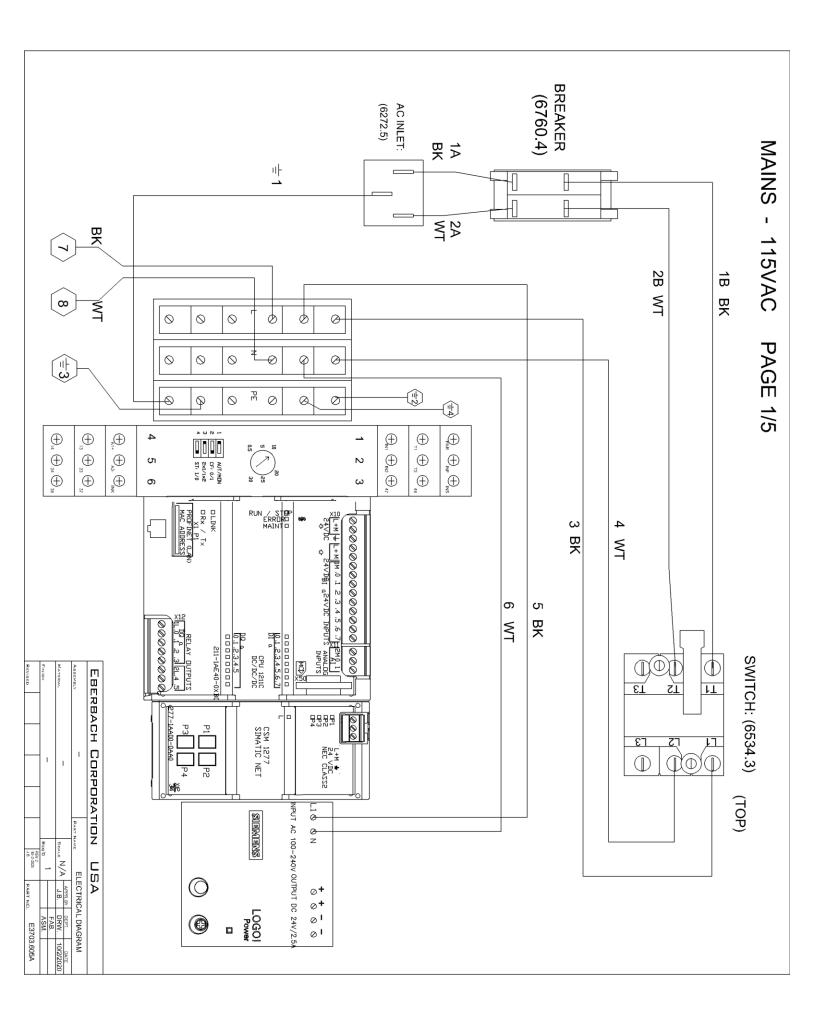
PartNo	DESCRIPTION	QTY
4301.5	BELT, 8MXT-720-21	1
4405.1	3/8" X 1-1/4" SS KEY	1
4431	PULLEY, 44 TEETH	2
4491	BUSHING, 1-1/2"	1
4491.3	BUSHING, 24MM SDS	1
5175	5/32 X 3/4 S/S SPRING PIN	2
5635	1/2" COMBINATION BOX OPEN END WRENCH	2
5635.5	9/16" COMBINATION BOX WRENCH	1
5636	3/4" COMBINATION BOX OPEN END WRENCH	1
5647	3/16 ALLEN HEX KEY	1
5652	SOCKET KEY, SHORT 1/4"	1
5706	LARGE BRUSH	1
5709	STRAIGHT SCRAPER	1
5818	MASON JAR, 160Z	3
5818.5	MASON JAR LID	3
6063	CABLE TIE, LOW PROFILE MOUNT	7
6063.2	CABLE TIE	6
6278.5	FILTER AC INLET 20A	1
6287.1		
	USB CABLE, 1FT	1
6288	USB PORT, PANEL MOUNT	1
6288.5	ETHERNET, PANEL MOUNT	1
6422	POWER SUPPLY 24V/2.5A	1
6455.1	SAFETY RELAY SINGLE CHANNEL	1
6534.3	ROTARY DISCONNECT	1
6649.2	CORD AND PLUG	1
6669.2	CORD AND PLUG, 230V NEMA 6-15 TO C-19	1
6746	HMI, 4" SIMATIC	1
6746.4	ETHERNET SWITCH 24V 4 PORT	1
6747.9	PLC, SIMATIC S7-1200	1
6751.4	TERMINAL BLOCK COVER	2
6751.5	TERMINAL BLOCK ANCHOR	2
6751.6	GROUND TERMINAL BLOCK, UT2.5-3PE	2
6752.5	TERMINAL BLOCK, UT2.5-3PE	6
6752.6	TERMINAL BLOCK JUMPER	2
6760.4	CIRCUIT BREAKER	1
6790.1	ETHERNET CABLE, 1FT	2
6790.3	ETHERNET CABLE, 3FT	1
6790.5	ETHERNET CABLE, 5FT	1
6800.5	LOGO PLATE	1
7101	MOTOR	1
7101.2	POWER CABLE, MOTOR	1
7101.3	CABLE, MOTOR FEEDBACK	1
7101.4	DRIVER SHIELD PLATE	1
7101.5	DRIVER SHIELD CLAMP	2
7101.6	MOTOR DRIVER	1
7516	#4-40 X 3/8" SS FLAT HEAD MACHINE SCREW	6
7568	#4-40 X 1/4" S/S PAN HD. MACHINE SCREW	2
8247	#10-32 X 1/2" S/S FLAT HD. SCREW	9
8277	#8-32 X 3/8" S/S TRUST HD. SCREW	4
8277.1	#8-32 X 1/2" S/S TRUST HD. SCREW	2
8277.11	#10-32 X 1/4" S/S TRUST HD. SCREW	46
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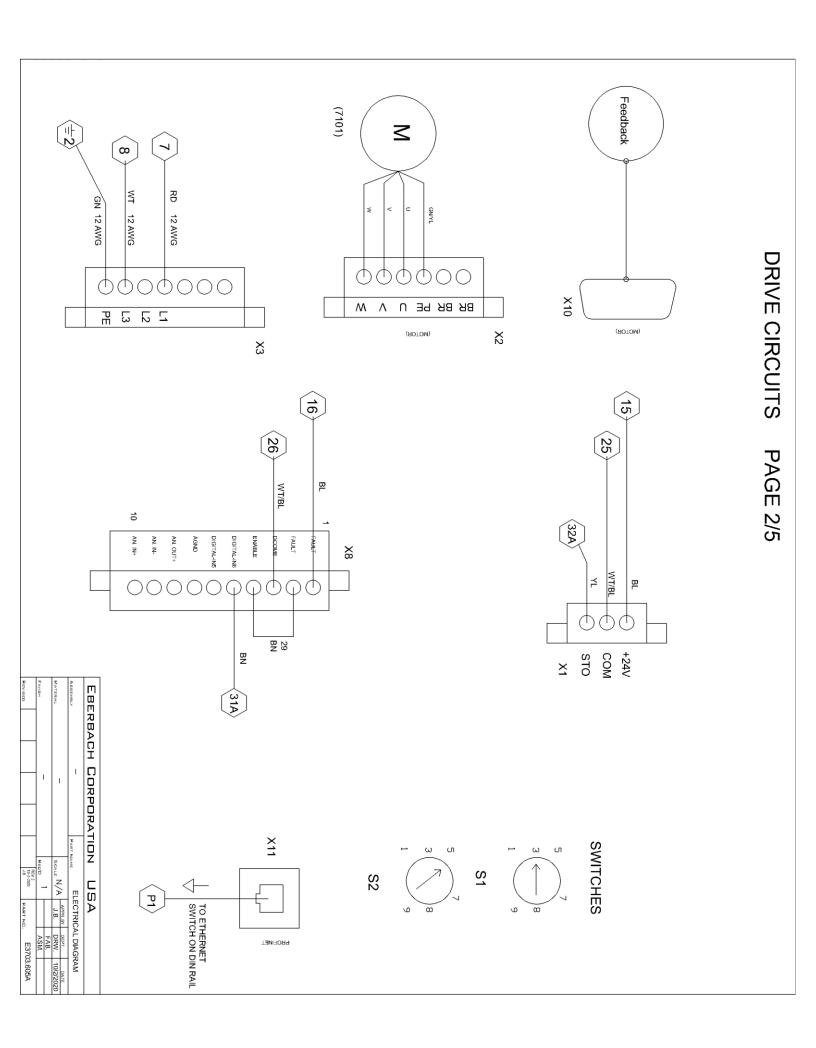
8532.7	1/2"-20 X 3" FULL THREAD HEX HEAD SCREW	1
8553.7	3/8"-16 X 3/4" HEX HEAD SCREW	4
8569.5	7/16"-14 X 3-1/2" S/S HEX HEAD SCREW	4
8580	#6-32 X 3/4" SOCKET HD. SCREW	2
8588.3	1/4"-20 X 1-1/4" SOCKET HD. SCREW	10
8598.9	5/16-18X 1" LOW PROFILE SHCS	4
8599.3	5/16"-24 X 3/4" SOCKET HD. SCREW	2
9225	#6-32 S/S MACHINE SCREW NUT	2
9235	#8-32 S/S MACHINE SCREW NUT	2
9275.1	5/16"-18 GRADE 5 HEX NUT	4
9285.5	7/16"-14 S/S HEX NUT	4
9435	#12 SAE WASHER	8
9474	#6 S/S SAE WASHER	2
9483.5	3/8" S/S SAE WASHER	4
9504.5	7/16" S/S WASHER	4
9525	5/16" SPLIT LOCK WASHER	4
9527.5	7/16" S/S SPLIT LOCK WASHER	4
9531	1/4" SPLIT LOCK WASHER	2
E3700.A.HP.S	HOPPER ASSEMBLY	1
E3700.A.JH	MASON JAR HOLDER	1
E3700.A.S05	0.5MM SIEVE	1
E3700.A.S1	1MM SIEVE	1
E3700.A.S2	2MM SIEVE	1
EP3300.026	LIMIT SWITCH BRACKET	1
EP3500.025	STATIONARY OUTSIDE HINGE PAD	1
EP3700.018	LOCKING PAD	1
EP3700.45.503A	HEAD ASSEMBLY	1
EP3700.516A	FRONT CLOSURE PLATE AND HINGE ASSY	1
EP3700.517A	SAFETY SWITCH PLUNGER ASSEMBLY	1
EP3700.520A	DELIVERY CHUTE SUBASSEMBLY	1
EP3703.057	SIDE CONTROL CLEAT	1
EP3703.058	LEFT SIDE PANEL	1
EP3703.227	MOUNTING TRACK	1
EP3703.251	TOP COVER	1
EP3703.258	DISPLAY PLATE	1
EP3703.259	RIGHT SIDE PANEL	1
EP3703.519A	CONTROL PANEL ASSEMBLY	1
EP3703.527A	MOTOR BRACKET ASSEMBLY	1
EP3703.535A	REAR PANEL ASSEMBLY	1
EP3703.540A	BASE ASSEMBLY	1
EP5902.HD.CB.046	TENSIONER BLOCK	1
EP3703.651A	WIRE HARNESS	1

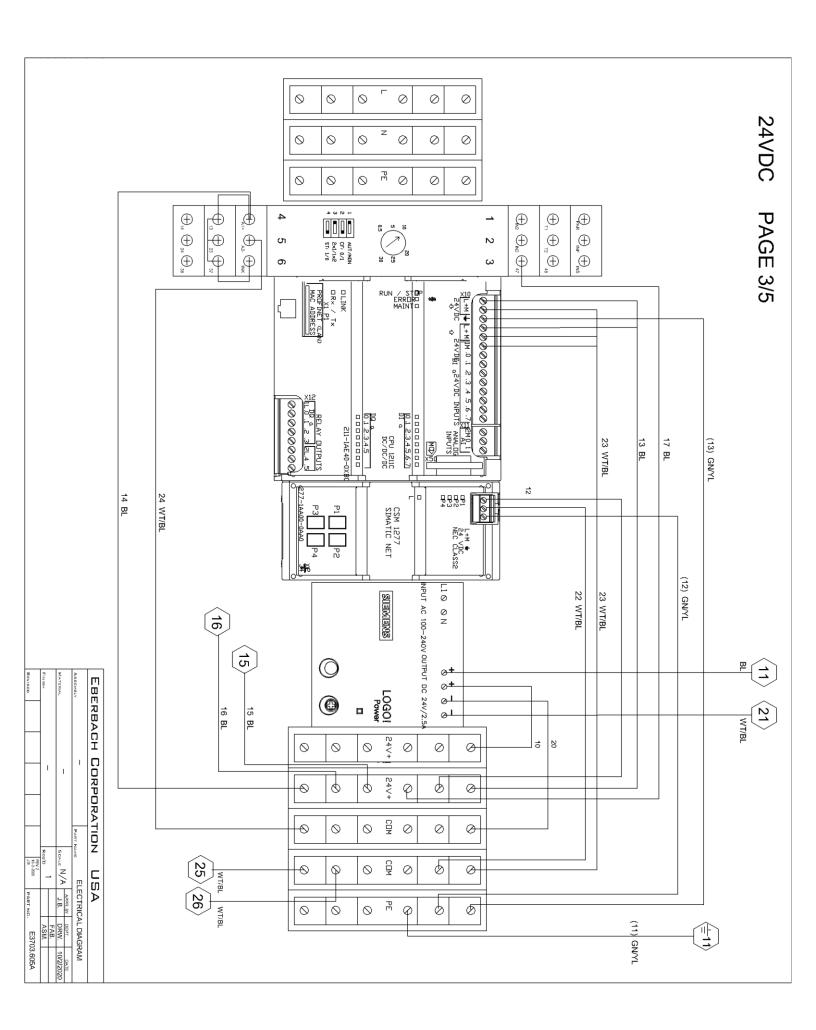


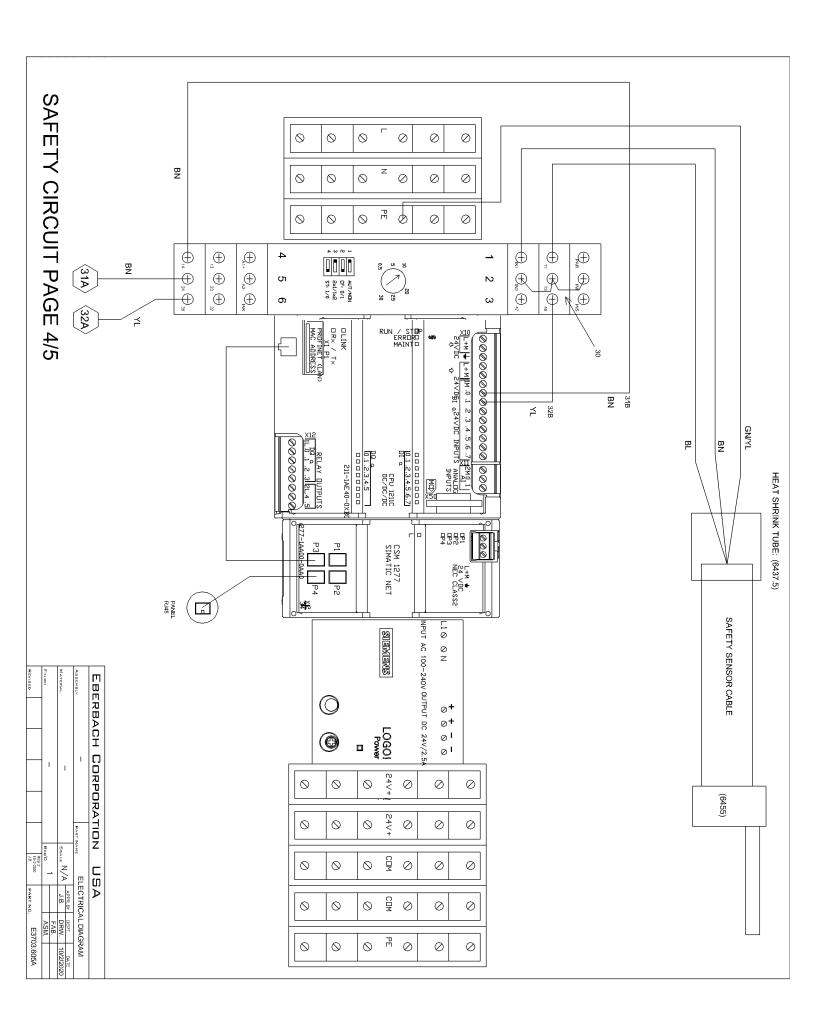






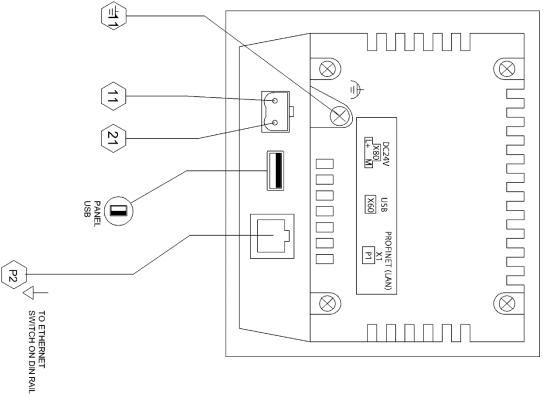






HMI CIRCUIT 5/5

HMI (6747)



	Revised		FINIBH			Assembly —	EBERBACH CORPORATION
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		ASM.	FAB.	DRW.	DEPT.	ELECTRICAL DIAGRAM	
)3.605A	E3703.605A			10/2/2020	DATE	RAM	