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[www.Eberbachlabtools.com](http://www.Eberbachlabtools.com)

**E3503.00**  
VARIABLE SPEED CUTTING MILL  
(115V, SINGLE PHASE, 60 HZ)

## **USE AND CARE OF CATALOG NUMBER: E3503.00 Mill (115V, 60 HZ)**

Volts: 115Vac

Hz: 60Hz

Amps: 8.7A

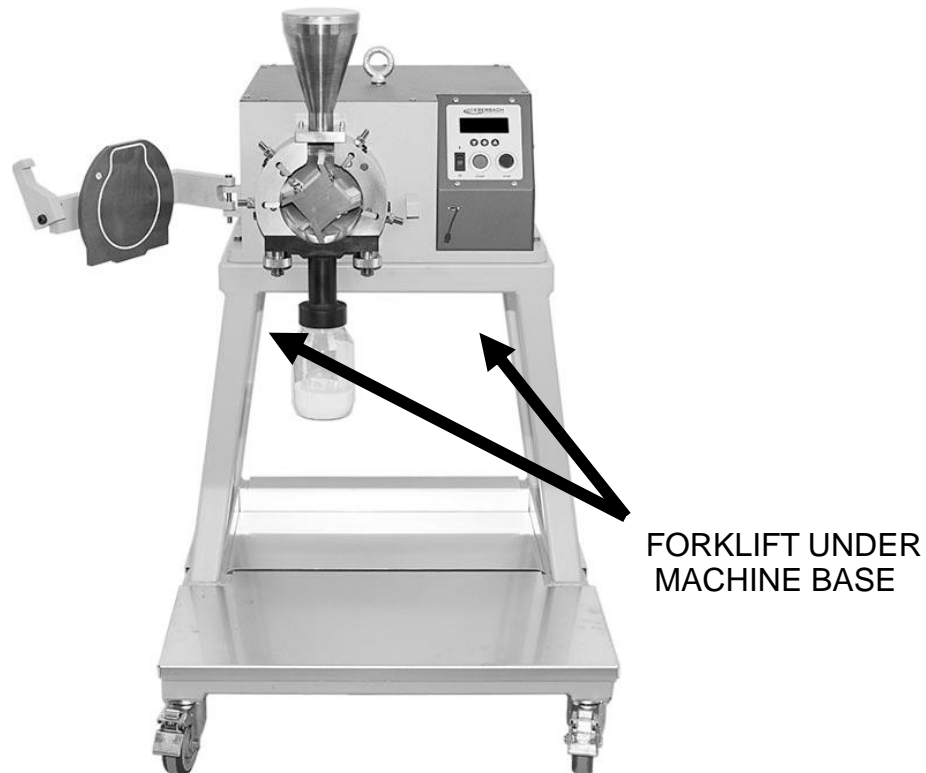
Speed: 3000RPM

### **PRELIMINARY**

Mill has been properly adjusted at the factory. However, clearance between stationary and rotating cutter head 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 a piece of paper of average thickness (.002 to .003 in.) against each stationary knife in turn and turning 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.

### **Unpacking:**

The E3503.00 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.



\*\*\*\*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.

**!!!DANGER!!!**

### **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. **DO NOT USE WITH AN EXTENSION CORD OR MULTIPLE OUTLET STRIP. DO NOT PLUG INTO A GFI OUTLET.** 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.

### **FIRST TIME SETUP:**

**WHEN MILL HAS NOT BEEN USED FOR 1 YEAR OR LONGER TURN ON POWER SWITCH AND LET MILL SIT FOR 2 HOURS PRIOR TO USE, THIS WILL REFORM THE DRIVE CAPACITORS.**

## **Operation:**

After power is applied to mill (see first time setup) you must wait an additional 30 seconds, after display lights up, for the motor controller to turn on. After motor controller is on, rotation begins by pressing the green start button and selecting a run mode. Rotation ends by pressing the red stop button. Desired speeds are achieved by pressing the up/down arrows on the keypad. Speeds vary continuously between 100-3000 (115V). Speed range will be set for appropriate voltage prior to shipment, but can be changed by the user.

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 cycling the power and clearing the jam.

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, stiff brush. Alternatively, a blast of clean, dry air is effective.

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## Main Program Screen



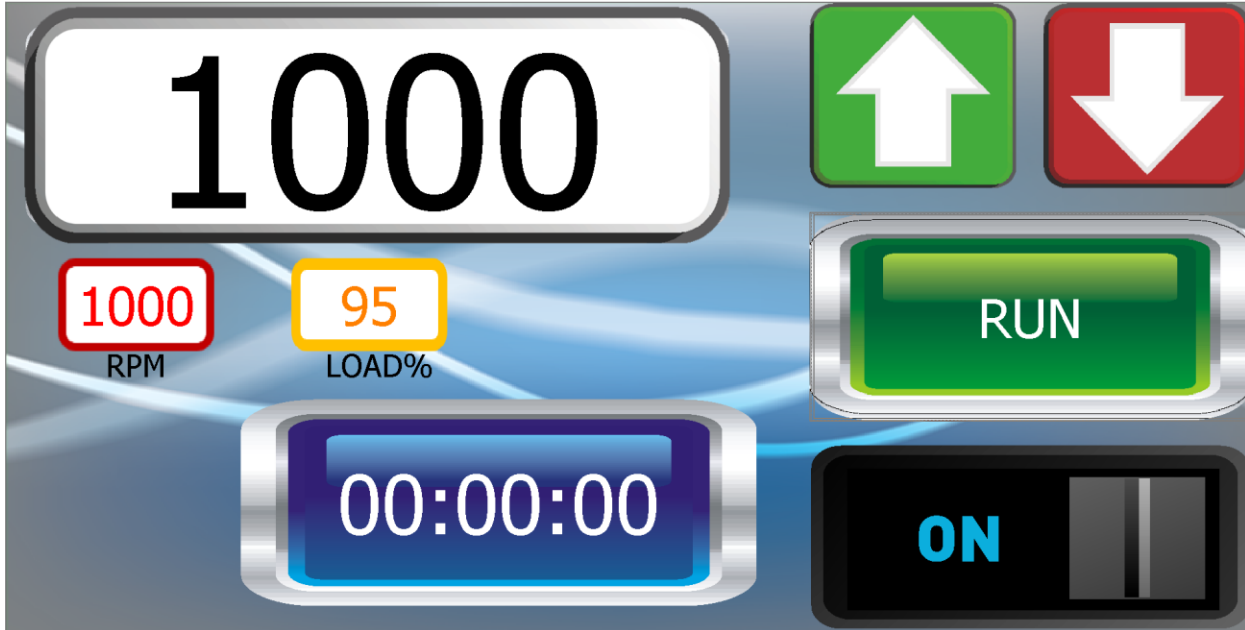
Power the Machine ON with the Rotary Disconnect on the Front Panel. Make sure the Circuit Breaker on the back panel is in the On position. After a few seconds the HMI will start up and automatically load the Run Screen.

Step 1: Use the ON/OFF switch in the bottom right corner to turn the Servo On.

Step 2: Press the Gray "ENABLE" button.

Step 3: Use the Up and Down arrows to set a speed. Or click on the speed button in the upper left corner and enter your speed manually.

Step 4: Press the green “RUN” button to start the motor. The Run Timer will start counting. You can reset the Run Timer by clicking on it. You can also adjust the speed in real time using the Up and Down arrows or by entering the speed manually.





Step 5: Press the red "STOP" button to stop the motor. This will pause the Run Timer. The motor will still be enabled in this mode.

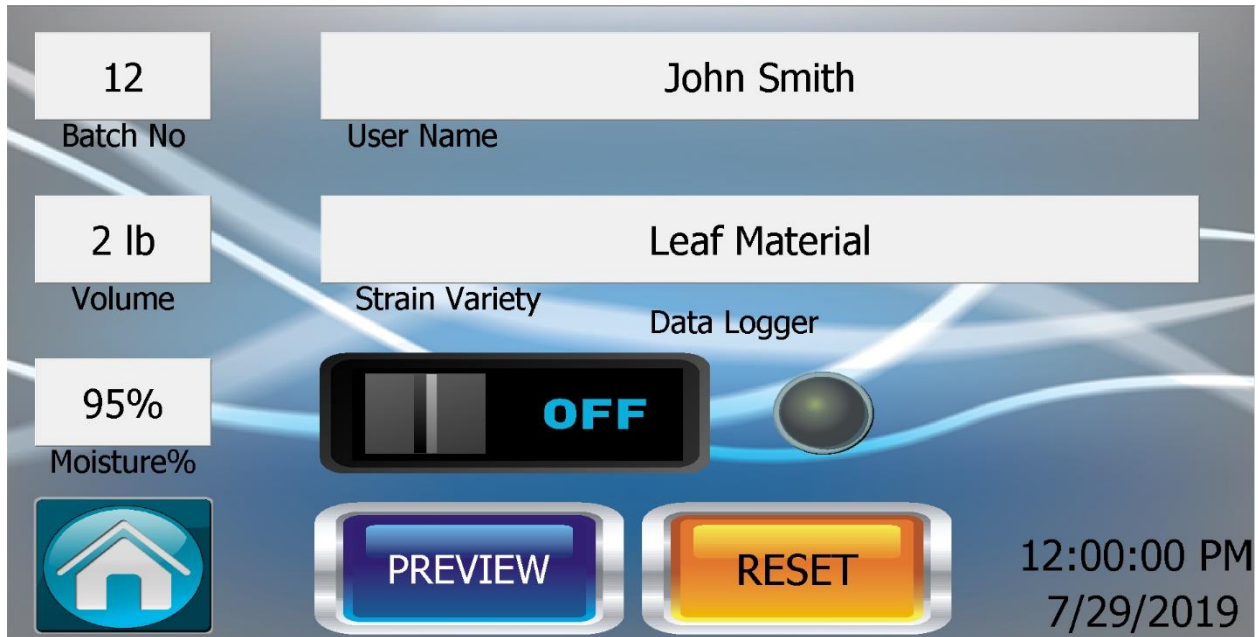
Step 6: Use the ON/OFF Switch in the bottom right corner to turn the Servo Off.



Step 7: Select the Settings Icon in the lower left corner to enter the Data Log Set Up screen.



Step 8: Set up your Data Logging information by pressing on each entry and inputting the data. When you are done use the ON/OFF Switch to enable Data Logging to begin. The run time information will be automatically gathered every 5 seconds. You can check the data in the Data Log preview screen. You can clear your Data Log with the “RESET” button. If you do not clear the Data Log your run time information will be continuously appended the existing Log.



1  
Batch No

JOHN SMITH  
User Name

52  
Volume

LEAF STRAIN  
Strain Variety

95  
Moisture%

ON

PREVIEW

RESET

10:15:53 AM  
12/6/2019

Step 9: Select the “PREVIEW” button to see the progress of your Data Log. Click the Refresh button to get the latest entries. You will need to refresh every 5 seconds to see the latest entries if your Log is still running in the background.

Event Time	RunTimeClock	Moisture	Torque	Tach	UserName
12/6/2019 10:16:25 AM		95			JOHN SMITH
12/6/2019 10:16:20 AM		95			JOHN SMITH
12/6/2019 10:16:15 AM		95			JOHN SMITH
12/6/2019 10:16:10 AM		95			JOHN SMITH
12/6/2019 10:16:05 AM		95			JOHN SMITH
12/6/2019 10:16:00 AM		95			JOHN SMITH
12/6/2019 10:15:55 AM		95			JOHN SMITH

BACK

EXPORT CSV

Step 10: Make sure your Flash Drive is plugged into the USB port on the machine. Press the “EXPORT CSV” button to write a CSV file to your Flash Drive. Press the “BACK” button to go back to the Set Up screen.

**Short Circuit Protection:** There is a 20A Circuit Breaker on the back of the machine located directly above the AC Inlet. The breaker is designed to trip in the event of a short circuit. Always make sure that the Circuit Breaker is in the ‘I’ position prior to use. If the Breaker trips immediately the machine will need to be serviced.

**Alarms and Safety:** During the course of operation you may experience the Door Open Warning, which is a flashing yellow triangle with a black exclamation mark. This warning tells the user the Door is open and there is a hazard. The machine will go into a safety stop and activate the Safety-Torque-Off feature. This is a Performance Level D safety category (PL D). Although the motor is de-energized it is always recommended to power the machine down and unplug the cord before cleaning cutting chamber.

You may also experience a Controller or Drive Alarm. This can be caused by overloading the motor, over temperature of motor, or a malfunction of some kind. If this happens the Alarm button will pop up on the Run Menu. This button is normally hidden, but will appear directly above the Home button. Press on the Alarm Button to bring up the Alarms Screen. The Alarms Screen will show the Alarm code number and description of the Alarm. There is a “RESET” button to clear the Alarm and two other buttons to navigate back to the Run Screen or Data Log Screen.

Alarms and Safety icons shown below.





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

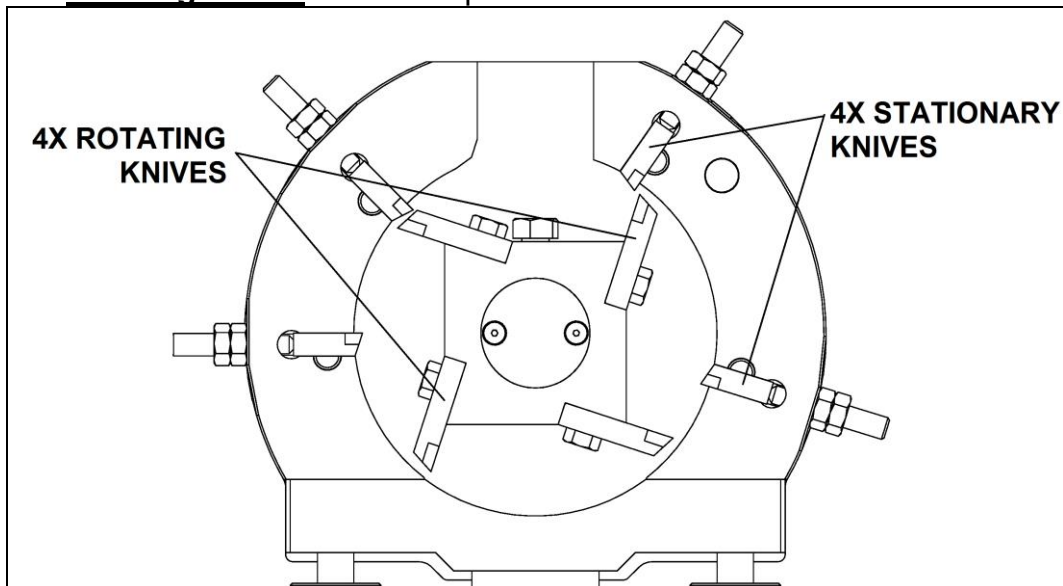
## CLEANING / REPLACEMENT OF KNIVES

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

**CAUTION: When replacing or handling rotating blades use appropriate personal protective equipment.**

1. Remove hopper from the top of the mill and open chamber door.
2. Loosen the hex head cap screw clamping the rotating cutter head to the shaft. Carefully remove the rotating cutter head and set on workbench. NOTE: There might be a spacer washer in the rotating cutter head cavity that must be retained in reassembly.
3. Using the wrench provided, remove the two cap screws and lift a knife from rotating cutter head.
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 rotating cutter head. Insert and tighten the two cap screws.
6. Repeat steps 2, 3, 4 and 5 for the remaining knives.

NOTE: **Rotating knives** must be replaced as a set.



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 rotating cutter head 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 rotating cutter head knives, and adjust the clearance by raising or lowering the stationary knife until it pinches the paper but does not sever it.

13. Slightly tighten the two setscrews holding the clamping bar on the knife. (May require further adjustment later.)

14. Turn rotating cutter head to make certain that all rotating cutter head knives clear the installed stationary knife. If one rotating cutter head knife projects beyond the others, adjust clearance of stationary knife with respect to this rotating cutter head knife. Identify this rotating cutter head 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.

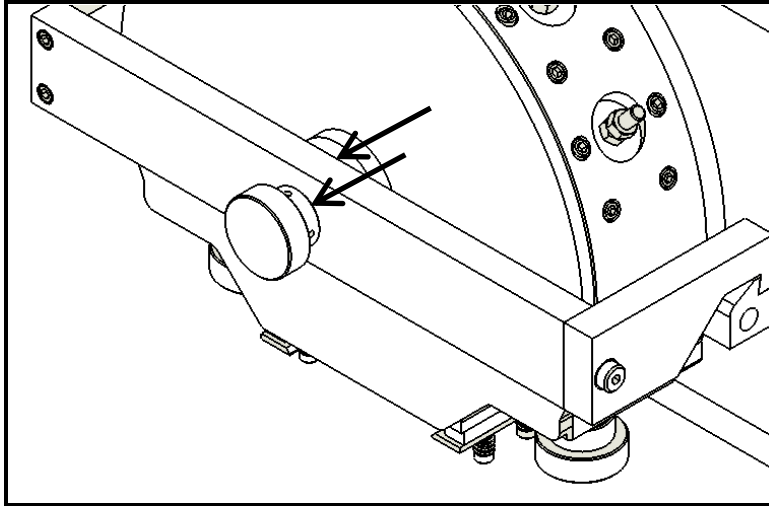
NOTE: Do not over-tighten to the point where threads may be stripped.

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

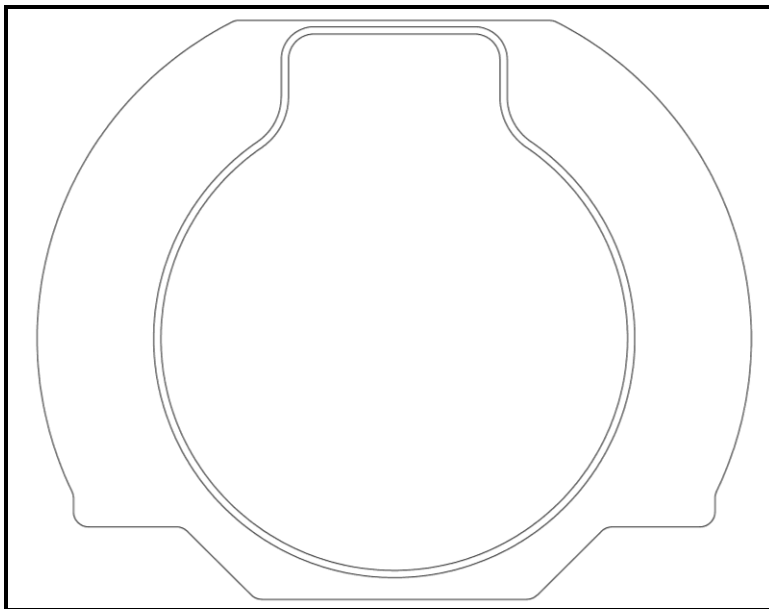
**CAUTION:**

**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.



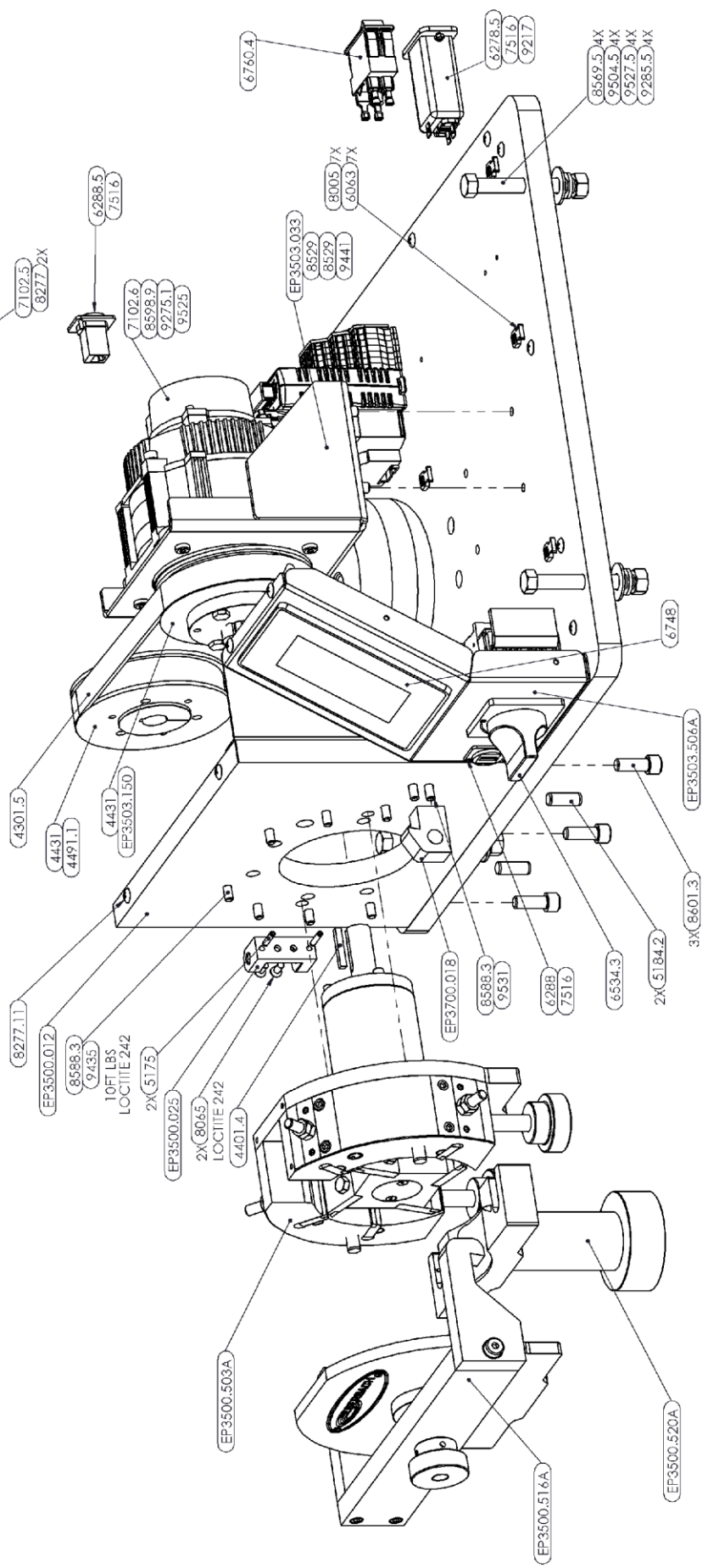
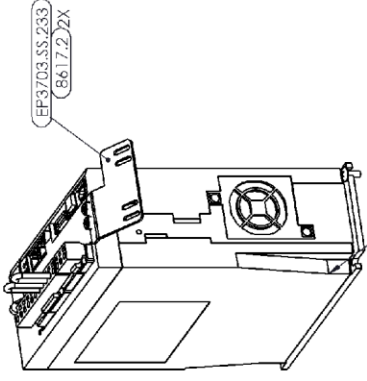
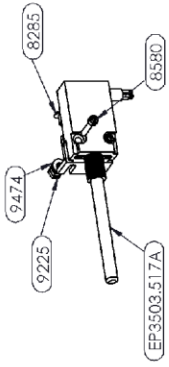
If the seal were to be damage replace with a suitable type. Standard seal (Viton) used on E3503.00 is Eberbach stock #5457.7

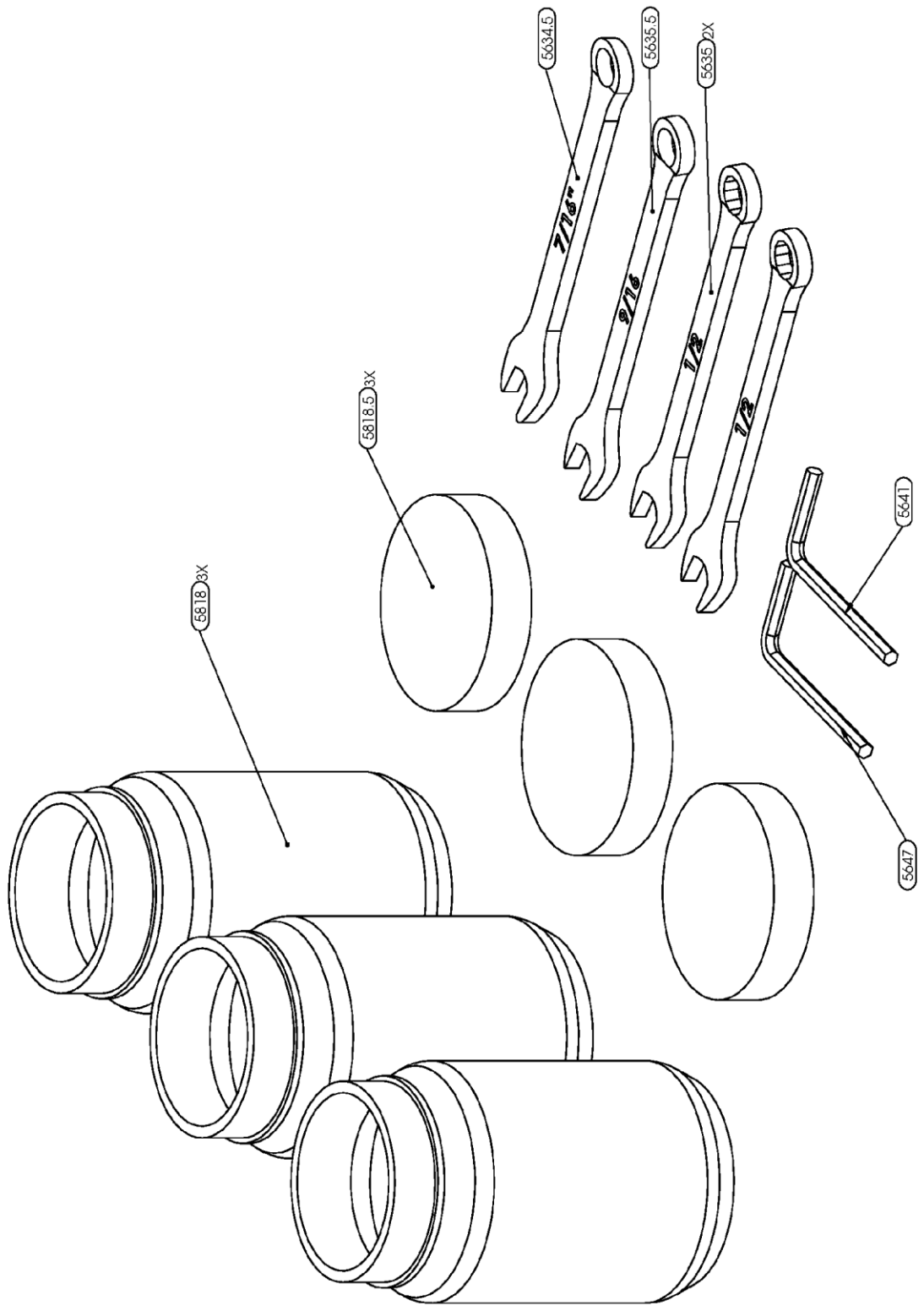
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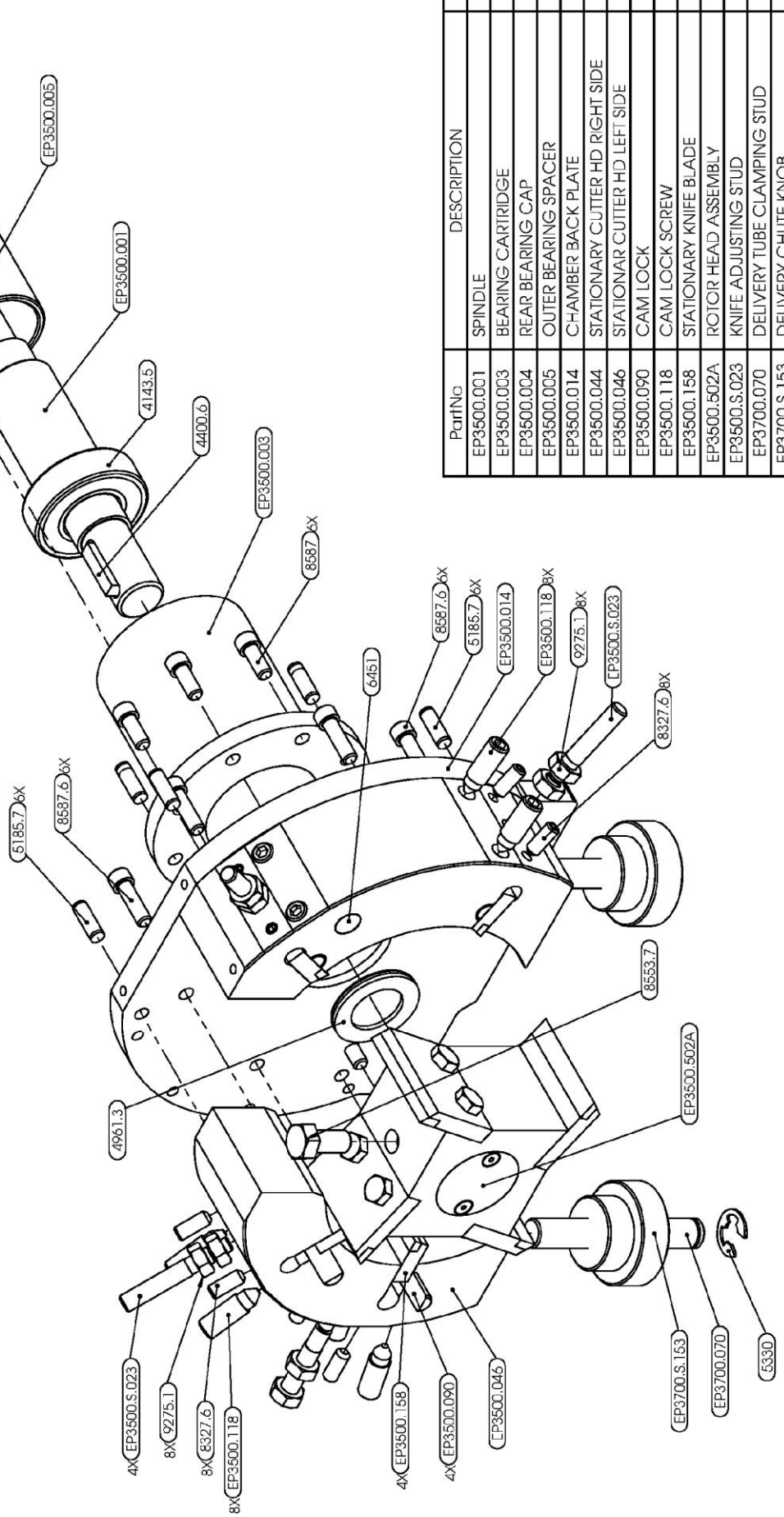
PartNo	DESCRIPTION	QTY.
4301.5	BELT, TIMING	1
4401.4	3/16" X 1-1/4" KEY	1
4431	PULLEY, 44 TEETH	2
4491.1	BUSHING, 3/4" SDS	1
4744	1/2 - 29/32 S/S HOSE CLAMP	2
5175	5/32 X 3/4 S/S SPRING PIN	2
5184.2	3/8" X 1" DOWEL PIN	4
5634.5	7/16" COMBINATION BOX WRENCH	1
5635	1/2" COMBINATION BOX OPEN END WRENCH	2
5635.5	9/16" COMBINATION BOX WRENCH	1
5641	1/8" ALLEN WRENCH SHORT ARM	1
5647	3/16 ALLEN HEX KEY	1
5706	LARGE BRUSH	1
5708	ANGLE SCRAPER	1
5818	MASON JAR, 16OZ	3
5818.5	MASON JAR LID	3
6063	CABLE TIE, LOW PROFILE MOUNT	7
6063.2	CABLE TIE	7
6278.5	FILTER AC INLET 20A	1
6288	USB PORT, PANEL MOUNT	1
6288.5	ETHERNET, PANEL MOUNT	1
6534.3	ROTARY DISCONNECT	1
6558	TRANSFORMER	1
6649.2	CORD AND PLUG	1
6760.4	CIRCUIT BREAKER	1
6790.2	ETHERNET CABLE 2FT	1
6790.3	ETHERNET CABLE 3FT	2
7102.5	SIGMA-7SIEC 1.0KW, 200V	1
7102.6	S7 MTR 850W, 200V BAT-LESS ABS KW TP	1
7106.4	ENCODER CABLE	1
7516	#4-40 X 3/8" SS FLAT HEAD MACHINE SCREW	6
8005	#8-32 X 1/2" FLAT HD. MACHINE SCREW	7
8065	#10-32 X 1/2" ZINC PLATED FLAT HD. SCREW	2
8277	#8-32 X 3/8" S/S TRUST HD. SCREW	2
8277.11	#10-32 X 1/4" S/S TRUST HD. SCREW	41
8285	#8-32 X 1/4" S/S TRUST HD. SCREW	4
8529	5/16"-18 X 3/4" HEX HEAD SCREW	4
8533.6	1/4"-20" X 2-3/4" HEX HEAD SCREW	1
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
8601.3	3/8"-16 X 1" SOCKET HD. SCREW	3
8617.2	M4 X 12 SS SOCKET HD. SCREW	2

9217	#4-40 S/S NYLOCK NUT	2
9225	#6-32 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
9441	5/16" WASHER	4
9474	#6 S/S SAE WASHER	2
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	3
E3500.A.HP.S	HOPPER ASSEMBLY	1
E3500.A.S05	.5 MM SIEVE	1
E3500.A.S1	1MM SIEVE	1
E3500.A.S2	2MM SIEVE	1
EP3500.010	BASE	1
EP3500.012	FRONT PLATE	1
EP3500.025	STATIONARY OUTSIDE HINGE PAD	1
EP3500.028	LIMIT SWITCH BRACKET	1
EP3500.052	TOP COVER	1
EP3500.057	SIDE CONTROL CLEAT	1
EP3500.058	LEFT SIDE PANEL	1
EP3500.169	WARNING LABEL	1
EP3500.503A	HEAD ASSEMBLY	1
EP3500.516A	FRONT CLOSURE PLATE AND HINGE ASSY	1
EP3500.520A	DELIVERY TUBE ASSEMBLY	1
EP3503.033	MOTOR MOUNT	1
EP3503.150	MOTOR PULLEY HUB	1
EP3503.505A	REAR PANEL ASSEMBLY	1
EP3503.506A	CONTROL PANEL ASSEMBLY	1
EP3503.517A	SAFETY SWITCH ASSEMBLY	1
EP3503.653A	WIRING HARNESS	1
EP3700.018	LOCKING PAD	1
EP3703.059	RIGHT SIDE PANEL	1
EP3703.550A	DIN RAIL ASSEMBLY	1
EP3703.SS.233	SHIELD PLATE	1



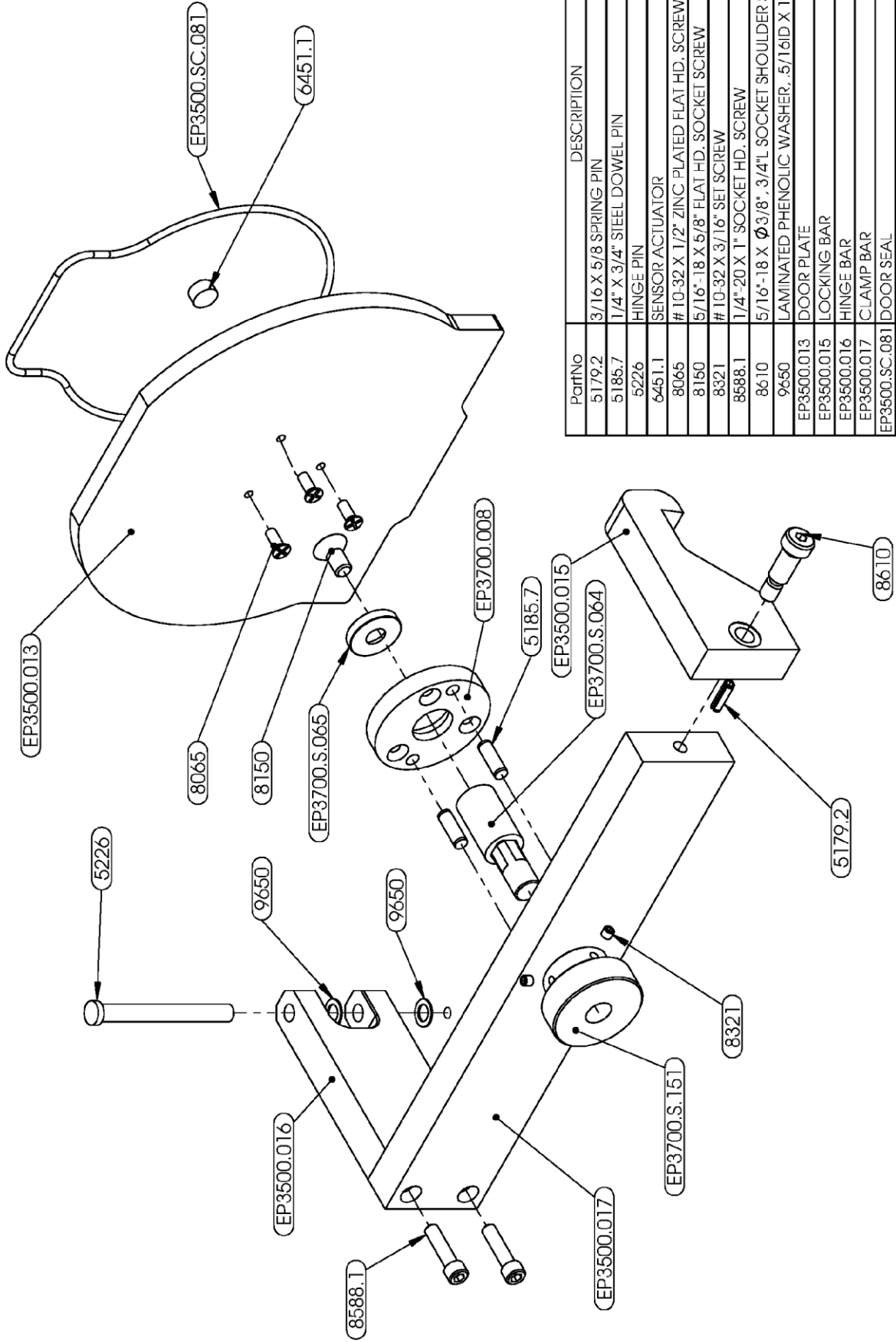


PartNo	DESCRIPTION	QTY.
4143.5	BEARING	2
4400.6	0.250X1.000 KEY	1
4961.3	V-RING SEAL SKF-CR400250	1
5185.7	1/4" X 3/4" STEEL DOWEL PIN	6
5330	E-STYLE EXTERNAL RETAINING RING	2
6451	12MM SAFETY SWITCH	1
8327.6	1/4"-20 X 5/8" SET SCREW	8
8553.7	3/8"-16 X 3/4" HEX HEAD SCREW	1
8585	# 10-32 X 3/4" SOCKET HD. STEEL SCREW	4
8587	1/4"-20 X 5/8" SOCKET HD. SCREW	6
8587.6	1/4"-20 X 7/8" SOCKET HD. SCREW	6
9275.1	5/16"-18 GRADE 5 HEX NUT	8



PartNo	DESCRIPTION	QTY.
EP3500.001	SPINDLE	1
EP3500.003	BEARING CARTRIDGE	1
EP3500.004	REAR BEARING CAP	1
EP3500.005	OUTER BEARING SPACER	1
EP3500.014	CHAMBER BACK PLATE	1
EP3500.044	STATIONARY CUTTER HD RIGHT SIDE	1
EP3500.046	STATIONARY CUTTER HD LEFT SIDE	1
EP3500.090	CAM LOCK	4
EP3500.118	CAM LOCK SCREW	8
EP3500.158	STATIONARY KNIFE BLADE	4
EP3500.502A	ROTOR HEAD ASSEMBLY	1
EP3500.S.023	KNIFE ADJUSTING STUD	4
EP3700.070	DELIVERY TUBE CLAMPING STUD	2
EP3700.S.153	DELIVERY CHUTE KNOB	2

**EBERBACH CORPORATION ANN ARBOR, MI**  
 HEAD ASSEMBLY  
 PART NO. EP3500.500A

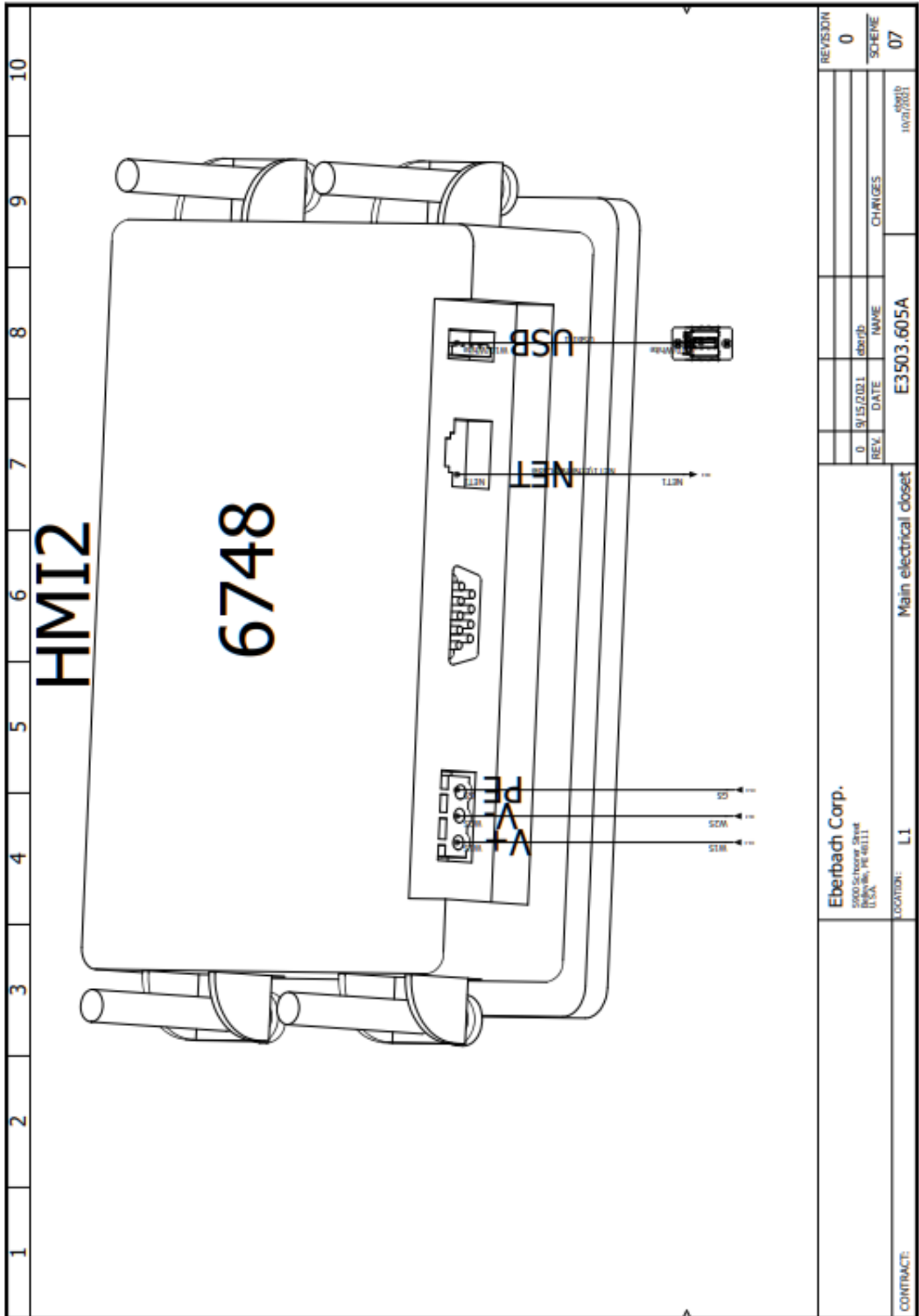


PartNo	DESCRIPTION	QTY.
5179.2	3/16 X 5/8 SPRING PIN	3
5185.7	1/4" X 3/4" STEEL DOWEL PIN	2
5226	HINGE PIN	1
6451.1	SENSOR ACTUATOR	1
8065	# 10-32 X 1/2" ZINC PLATED FLAT HD. SCREW	3
8150	5/16" -18 X 5/8" FLAT HD. SOCKET SCREW	1
8321	# 10-32 X 3/16" SET SCREW	2
8588.1	1/4"-20 X 1" SOCKET HD. SCREW	2
8610	5/16" -18 X Ø3/8" .3/4" SOCKET SHOULDER SCREW	1
9650	LAMINATED PHENOLIC WASHER..5/16ID X 1/2OD X 1/32	2
EP3500.013	DOOR PLATE	1
EP3500.015	LOCKING BAR	1
EP3500.016	HINGE BAR	1
EP3500.017	CLAMP BAR	1
EP3500.SC.081	DOOR SEAL	1
EP3700.008	FRONT CLOSURE PLATE HUB	1
EP3700.S.064	FRONT CLOSURE CLAMPING STUD	1
EP3700.S.065	STOP DISC FOR CLAMPING STUD	1
EP3700.S.151	KNOB FRONT CLOSURE	1

**EBERBACH CORPORATION ANN ARBOR, MI**

Drawing Name: FRONT CLOSURE PLATE AND HINGE ASSY PART NO. EP3500.515A





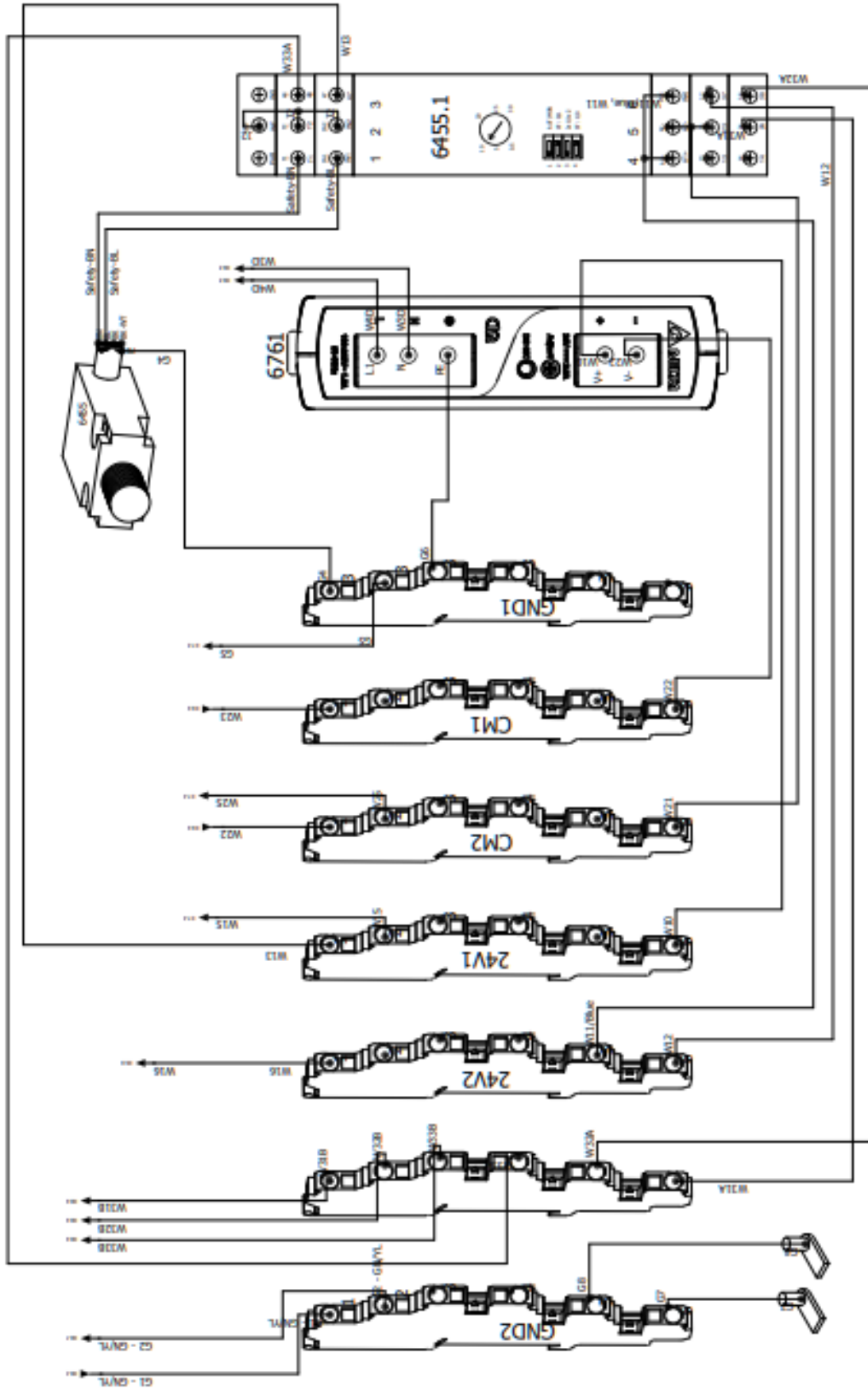
1 2 3 4 5 6 7 8 9 10

Eberbach Corp. 5000 Schroeder Street Piquette, MI 48611 USA		Main electrical closet		E3503.605A		07	
CONTRACT:	L1	LOCATION:		REV. DATE	NAME	CHANGES	SCHEME
				0 9/15/2001	ebn/zb		0
							07

Doc not released with revision 1-00-000-00-04-05



1 2 3 4 5 6 7 8 9 10



REVISION		0		
SCHEME		06		
REV.	DATE	NAME	CHANGES	
0	01/15/2021	dbor/b		
E3503.605A			10/01/2021	
Eberbach Corp.		Main electrical closet		
5000 Schreiner Street Plymouth, MI 48111 U.S.A.		LOCATION: L1		
CONTRACT:		E3503.605A		