Section 1:
System-Specific Information

System Identification and Configuration

SSEC MODEL 3305 ROBOTIC COAT/BAKE/CHILL/EXPOSE PROCESSOR

- 60" Wide x 70" Deep x 95" High (With Filter) System Fully Contained
- Mirror Finished Stainless Steel Series 3 Construction
- Removable and Hinged Interlocked Wafers
- PC Based Control System with ASCII File Format, Message Log File With Time/Date Stamping; Year 2000 Compliant
- Windows User Interface with Windows XP Professional
- Device Network Configuration
- Safety Default Programming
- Includes Full PC with Flat Wafer Display, Keyboard, Hard Drive, and R/W CD DVD ROM for SSEC Documentation, Logs, etc.
- All Electronics on DIN Rails Located At Machine Top & Isolated from Fluids
- EMO Chain Indication on PC Screen & EMO Module
- High Performance Drivers with Brushless Servo Motors or Stepper Motors with Positional Encoders with Real Time Motor Control
- Rear & Side Access for Processing Modules
- Rear & Side Access for All Wet Plumbing
- SEMI S2-0200 Safety Compliant
- SEMI S8 Ergonomic Compliant
- CE Marked
- ETL Certified

Safety Enclosure

- Mirror Finished Stainless Steel 316L Frame Enclosure
- Fitting for Exhaust Provided With Hardware Interlocked Exhaust Sensor
- Class 1 Minienvironment
- Includes ULPA Filtration & Air Reionizer

One Horizontal Loading System For Input/Output Cassette

- Ergonomic Operator Cassette Loading in Horizontal Cassette Position
- Includes PC Controlled Cassette Lifting, Placement and Cassette Tilting
- Fully Motorized System with PC Control
- 35" Height from Floor
- Configured for 50 mm and 100 mm Wafer Cassettes Without Tooling Change

Integrated Laser Wafer Scanner

- Integrated Scanner for Empty Wafers
- Maps Cassettes Prior to Robotic Operation
- PC Programmable Scanning System for 50 mm and 100 mm Wafers

Non-Contact Wafer Alignment System

- Optical Alignment System for Wafer Alignment
- No Particle Generation from Wafer Alignment
- Changeover From Wafer Size with PC Program Change
- Wafer Placement Correction Including X and Y
- Configured for SEMI Standard Wafers
- Backlighting Technique for No Surface Color Issues

One Dual Blade, Fully Sealed Scala Robotic Handler

- Robotic System #1 (Lower) for Wafer Transfer – 50 mm Wafer Edge Gripper With Flip
- Robotic System #2 (Upper) for Wafer Transfer – 100 mm Wafer Edge Gripper With Flip
- Handling of Wafers With Interlock and Error Recovery
- All Mechanics Completely Isolated from Fluids
- Programmable, High Speed, Multi-Tasking Robot Operation
- Each Robot is Three Axis System with Horizontal, Vertical and Radial

Sequencer Software

- Enables Timing Control Over Each Step
- Provides To The Second Repeatability In Each Process Step Including all Handling, Spindle and Bake processing.

Two For Wafer Bake, Precision Hot Plate Bake (Stations #1, #2)

- Universal Tooling for 50 mm and 100 mm Wafers on 300 mm Wafer Hotplate
- Programmable Time and Temperature

- Fully Programmable for Proximity and/or Contact Bake Process with Time Control Program for Pin Lowering, 0-15 mm, +/- 1 mm
- Universally Controlled Lifting Edge Grip Lifting Pins
- 0.001" Pin Height Control
- 100 Micron Hard Stop for Proximity Baking
- Programmable in 1°C Increments from 70°C to 150°C, +- 0.3º C Across Hot Plate

One Vapor Prime Kit for Hot Plate Vapor Prime Processing

- Atomization of Heated Solvent
- Includes 2 Kw ETL Listed Solvent Heater
- Pressurized /dispense System with Automatic Refill by Venturi Vacuum from Bulk Liquid Container; Venturi Vacuum Transfer, Pressurized Dispense System With PC Programmable Pressure, etc.
- Programmable, Motorized Exhaust System

One Heater for Heated Make Up Air to Hot Plate

- 100% Polished Stainless Steel 316L Gas Path
- Mechanically Encased Stainless Steel Tubing in Cast Aluminum Body with Stainless Cartridge Enclosure (No Exposed Heated Surfaces)
- Closed Loop Performance with Set Point and Over Temperature Controller
- Optimal Control Technique Software for Heater Controller
- User Programmable with 1°C Resolution from 50°C to 250°C, ±2%
- ETL Approved and Listed

One Air Cooling Stations (Station #3)

- 6 mm Bottom Side Contact Exclusion Zone
- Wafer Presence Sensor
- Class 1 Material
- Fully Programmable Dwell Time by Process Recipe
- Two Stations for 100 mm Wafer
- Two Stations for 50 mm Wafer

One Integration of Exposure Lamp (Station #4)

- Unit Provided By Customer
- Mounted On Frame and Enclosure to M330x By SSEC
- Fully Integrated with Interlocked Facilities with Set, Low and High
- Fully Programmable, Universal Lifting Pins
- 0.1” Pin Height Control; All Pins PFA Tip; 6 mm Exclusion Zone Contact Only

- 100 Micron Hard Stop for Proximity Baking
- Typical Surface is 5 mm from Light Source
- Configured for 50 mm and 100 mm Wafers With No Tooling Change Required
- Programmable Open/Closing Door for Sealed Environment with Nitrogen Purge
- Includes Tool Less and Tamper Proof Exhaust

EMO Loop Integration One Molded, Sealed Resist Coat Processing Module (Station #5)

- 18" Inside Diameter, Molded Halar Containment Chamber
- Smooth Interior Surface
- Removable Coater Cup with 1 Spare Unit Provided
- Programmable, Motorized Exhaust Dampener With Make Up Air
- Exhaust Rate Monitoring for PC Program Control Of Exhaust Flow Per Step
- Tamper Proof & Interlocked Chamber Exhaust Monitoring
- Interlocked Chamber Door Which Will Not Allow Spinning or Dispensing While Opened

Chemical Delivery System

- **Five Programmable Fan Dispense Arms**
- **Arm 1: Resist/Pump #1 with Nozzle Tip Clean (EBR Solvent #1)**
- **Arm 2: Air Driven Single Shot Syringe with Nozzle Tip Clean (EBR Solvent #1)**
- **Arm 3: Air Driven Single Shot Syringe with Nozzle Tip Clean (EBR Solvent #1)**
- **Arm 4: Atomizer Head for Spray Coat Dispense with Self Clean (EBR Solvent #1)**
  Dispense A: Pressurized Resist #4 Dispense
- **Arm 5: EBR Dispense Needle/Topside EBR Solvent #1**

- **All Dispense Arms are Fully Programmable** By Individual Process Step
- **Programmable Height** in 0.1" Increments in ¾" Range
- **Programmable Motion:** Fixed, Linear, Hyperbolic, Parabolic and User Defined
- **Programmable Speed:** Inches per Second
- **Programmable Cycles and Time** in 0.1 Second Increments
- **Coater Cup & Chuck Wash System with EBR Solvent**

Spindle System

- Programmable, Brushless Direct Drive Closed Loop Spin Motor

- Vacuum Path Through Motor Shaft
- Venturi Created Vacuum On Board Facility
- Motor Specified from 5 RPM to 10,000 RPM, <1% Spin Speed Variation
- Full Digital Control with Automatic Tuning
- Programmable Speed, Acceleration, Deceleration By Process Step
- Programmable Stop Position for Correct Wafer Orientation

Plumbing System

- All Wet Plumbing with is Mounted in an Accessible Plumbing Panel
- Closed Loop Facilities Package with Sensor with PC Programmable High and Low Interlocks.
- The Model 3305 System is a SEMI S2-0200 Compliant Chemical Cabinet With Exhaust, Exhaust Interlock, Access Door Interlock to Depressurize Canisters when Open, Integrated Float Spill Interlocks, Containment and Drainage.
- Teflon Plumbing with Flaretek Fittings
- Teflon Membrane Pneumatic Valves
- Standard Teflon Tubing
- Stainless Steel Plumbing with Swagelock Fittings
- Stainless Steel Pneumatic Valves
- Standard ID Polished Stainless Steel 316L Tubing
- All Dispenses (Non-Resist) Are Configured with PC Programmable Fluid Pressure for Flow Rate Control, with High Low Programmable Interlocks And Interchangeable Flow Rate Control/Restrictors Which Provide Flow Based Upon Pressure.
- For One Resist, One 30 ml (Application Specific) Metering Pump (6-30ml per stroke, in 0.1 ml increments, +/-5%) which Includes an Integrated Resist Pump Controller which Provides Control over Dispense Volume, Dispense Speed, Pressure Monitoring, Suckback, etc.
- Resist Pumps are programmable for Air Pressure Operation. In Air Operation, PC Programmable Air Pressure pushes the diaphragm to push the resist out with the benefit of very short dispense times for high viscosity fluids.
- Resist Pumps are programmable for Motor Operation. In Motor Operation, PC Programmable Motor Speed, Acceleration and Deceleration is used to push the diaphragm to push the resist out with the benefit uniformly dispensing fluid over a specified time.
- Volumetric Calibration of Pumps with PC Programmable Gain, Offset, etc.
- All Pumps Mounted Directly Adjacent to Dispense Arms
- All Pumps Include 0.1 Micron Disposable Filtration
- Includes Provisions for Two Syringe Air Driven Single Shot Resist Pumps with PC Programmable Pressure Control.

- For Bulk Supply of Spray Resist, HMDS and EBR Solvent Solutions, Provisions for Three Bulk Chemistry Supplies in 1 or 5 Gallon Source Containers.
- On Board Venturi Pumps for Vacuum Driven Siphon Chemistry Transfer with Drainage in Waste Collection System.
- Bulk Chemistry Liquid Presence Sensing
- For Dispense of Spray Resist, HMDS and EBR Solvent Solutions, Three 3 Gallon, Electropolished Stainless Steel Pressurized Canister Systems are Provided, which is Rated to 75 PSI and Includes Over Pressure Relief.
- 0.1 Micron Disposable Filters are Included for Each Process Chemistry.
- The Pressurized Canister is Configured with an Isolated Pressure Transducer; a Pneumatically Actuated Three-Way Pressure Valve (Nitrogen to Pressurize, Vent to Drain and Source to Tank). An Over Pressure Relief Valve is Integrated with Each Tank which will Vent to Exhaust if Activated. With Activation of EMO, the Source (Nitrogen Gas) will be Turned Off and Tank Automatically Vented to Exhaust.
- Standard Four-Way Float Indicators are Canister. Conditions are OVER FULL, FULL, ALMOST EMPTY and EMPTY. When Used for Liquid Level Sensing in Each Pressurized the ALMOST EMPTY Float Indicator is Activated, the Model 3305 Will Finish The Wafer In Process But Start No New Process Until The Condition is Corrected.
- The Machine Wafers are Completely Interlocked That Will Not Enable Chemistry Transfer or Chemistry Pressurization While Door is Open.
- All Dispenses are Configured with Autopurge and Autoprime

Three Programmable Pressure Control Systems

- Software Programmable Pressure Control from 5 to 75 PSI
- Real Time Adaptive Pressure Control
- PC Programmable Low & High Interlocks with Pressure Display on PC
- One System for HMDS Solvent
- One System for EBR Solvent

One For Resist & Solvent Collection, Automatic Internal Waste Collection

- Includes Large Drain Line from Chamber to Disposable 2.5 Gallon Carboy On Electronic Scale with Adjustable Two-Way Level Sensing
- Light Tower and PC Screen Notification Provides Change Indication. System is Configured to Allow Cassette of Wafers in Process To Be Finished, But No New Cassettes Allowed to Run Until Condition is Corrected (i.e. Full Carboy Replaced with Empty Carboy.)
- The Carboy is Placed on Two Way Electronic Scale, Almost Full and Full Condition (EMO). When the Almost Full Condition is Reached, both PC Screen and Light

Tower Notification is Provided to Change This.

- System is Fully Contained in 3305 Frame, which is SEMI S2-0200 Compliant
  Chemical Cabinet with Leak Detection, etc.
- Includes All Plumbing, Electronics and Software.
- Coater Drain is Separate from Chamber Exhaust

Traffic Light Monitoring System with Green, Yellow and Red Lights including Lights, Hardware and Software

- Full User Programming of Conditions. Typical Conditions:

LIGHT STATUS	Model 3305 CONDITION
Green	Running
Yellow	Standby and Ready to Run
Green and Blinking Yellow	Running but Will Soon Run Out of Material
Blinking Yellow	M3305 is Stopped Due to Lack of Material
Blinking Red & Buzzer	Fault Condition
Red	M3305 is Down (Condition 5 + 3 Minutes)

Warranty

- One Year Parts Not Including Consumables
- One Year Labor Not Including Travel and Living Expenses
- 24/7 Web Support and Documentation
- 24/7 Telephone Technical Service with 1 Hour Response
- >95% Uptime Per SEMI Standards

Required Environmental Conditions:

Indoor use only

Altitude up to 2000 meters

Temperature range 5° C to 40° C

Maximum relative humidity 80% to temperature 31° C decreasing linearly to 50% at 40° C

Supply voltage configurable from 200 – 240 VAC, 50/60 Hz

Semi F47 compliant

Electronics box is dry nitrogen purged

All external cables protected by Teflon insulation or UL approved cable

Supply Wiring Requirements for Permanently Connected SSEC Equipment

SSEC supplies 10-13 ft of Liquid Tight Flexible Conduit and input wiring connected to the Main Disconnect inside of the SSEC Machine, to be connected to a permanent wiring location in accordance with the current requirements of the National Electrical Code (NFPA 70) by qualified wiring personnel.

Machine Frequency, Input Voltage, Current ratings, and Main Protector Interrupt rating (AIC) are shown on Name-Plate located on the rear of Machine.

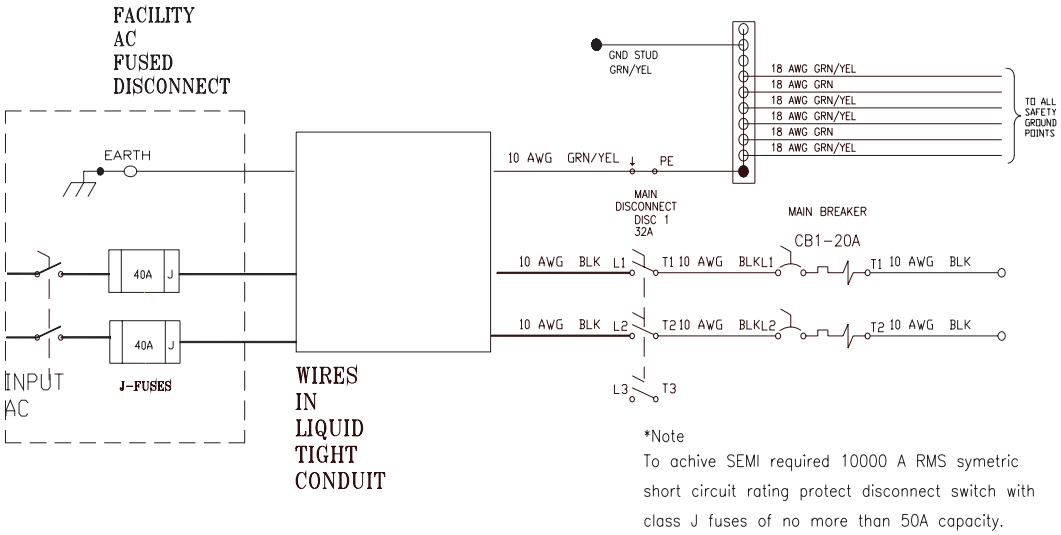
Input Voltage, Frequency and Wire Colors are shown on Sheet 1 of AC Schematics.

Factory Installation must use a Branch Circuit Disconnect Switch with Class J Fuses of no more than 100A capacity for a 63 amp rated Machine, and Machine Disconnect Class J Fuses of no more than 50A capacity for a 32 amp rated Machine.

The Machine being installed should receive electrical power from the facility to a single feed location which terminates on the specified main disconnecting means (Machine Main Disconnect).

A grounding electrode conductor (green/yellow wire in conduit) shall be run to each service disconnecting means (Fuse/Circuit Breaker Box) and shall be bonded (electrically connected) to each disconnecting means enclosure.

Schematic Example:



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Facility Drawings

The facility drawings are provided on the following pages.

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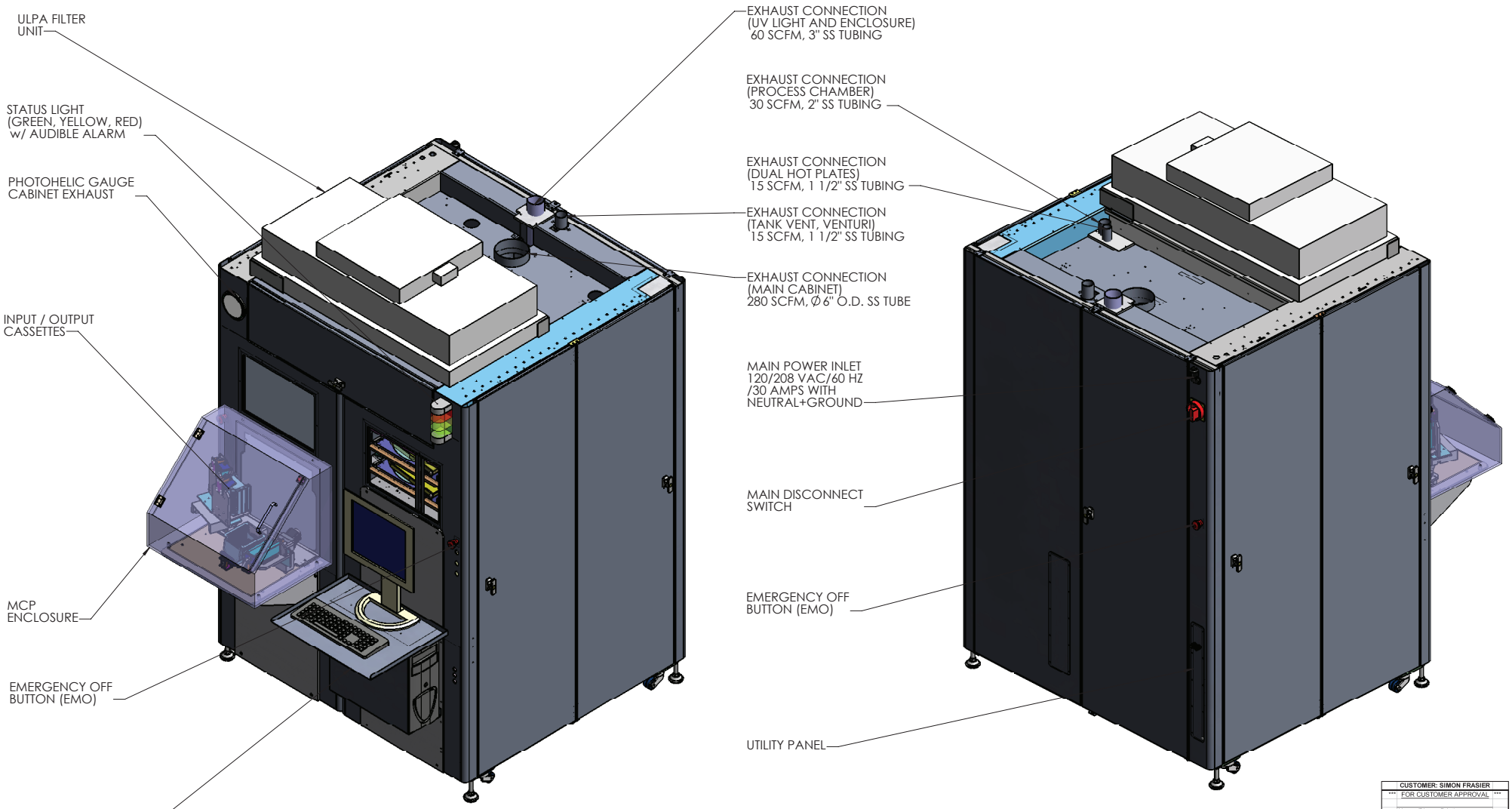
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED



NOTE:
1. MACHINE CONFIGURED FOR Ø2" AND Ø100mm WAFERS.
2. CASSETTE TYPES: T.B.D.
3. APPROX. DRY WEIGHT OF MACHINE (W/O CHEMICALS) IS 1700 LBS (772 kg).
4. ALL DIMENSIONS ARE IN INCHES.

CUSTOMER: SIMON FRASIER
*** FOR CUSTOMER APPROVAL ***
Name (Please Print)
Signature
Date

C:\Working\
M3305-2504-Default

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/32
ANGULAR: MACH ± 1/2° BEND ± 1°
TWO PLACE DECIMAL ± .010
THREE PLACE DECIMAL ± .005
INTERPRET GEOMETRIC TOLERANCING PER: ANSI/ASME Y14.5M-1994
MATERIAL
FINISH
NEXT ASSY | USED ON | APPLICATION

	NAME	DATE
DRAWN	AP	9/20/06
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		

SOLID STATE EQUIPMENT
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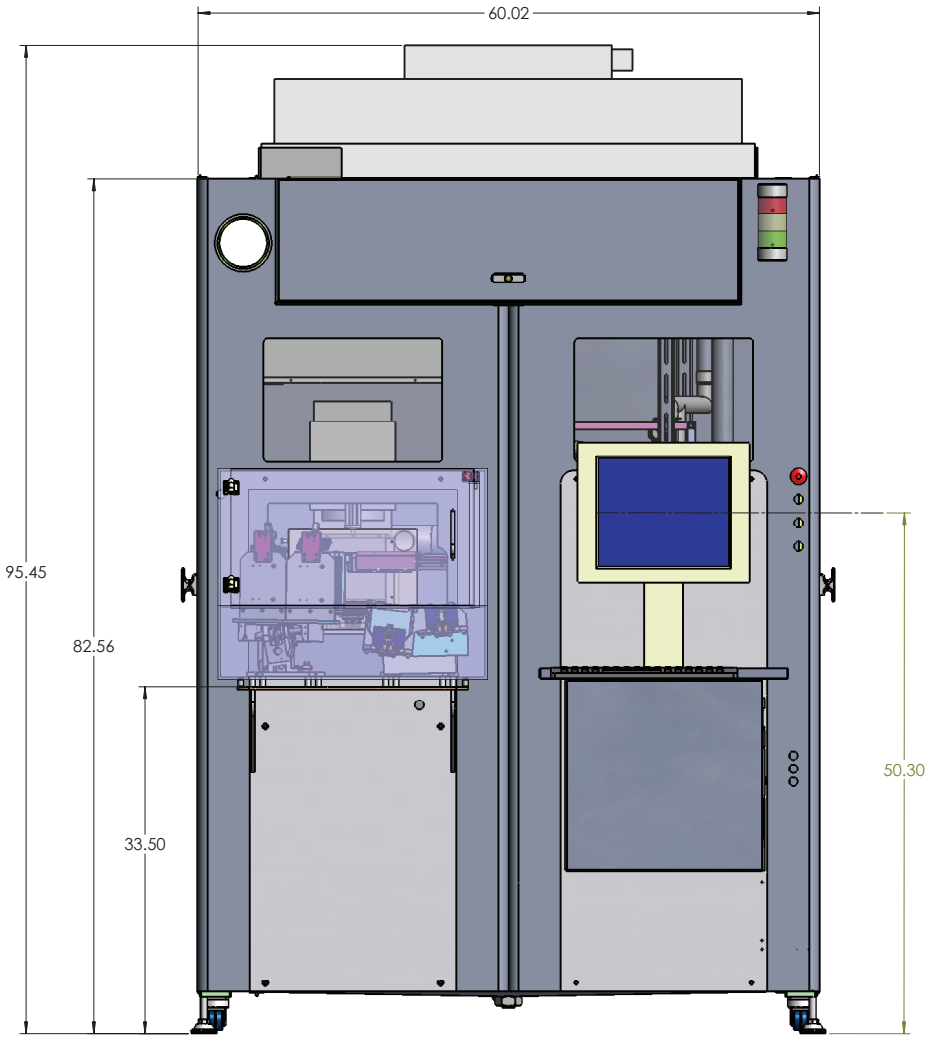
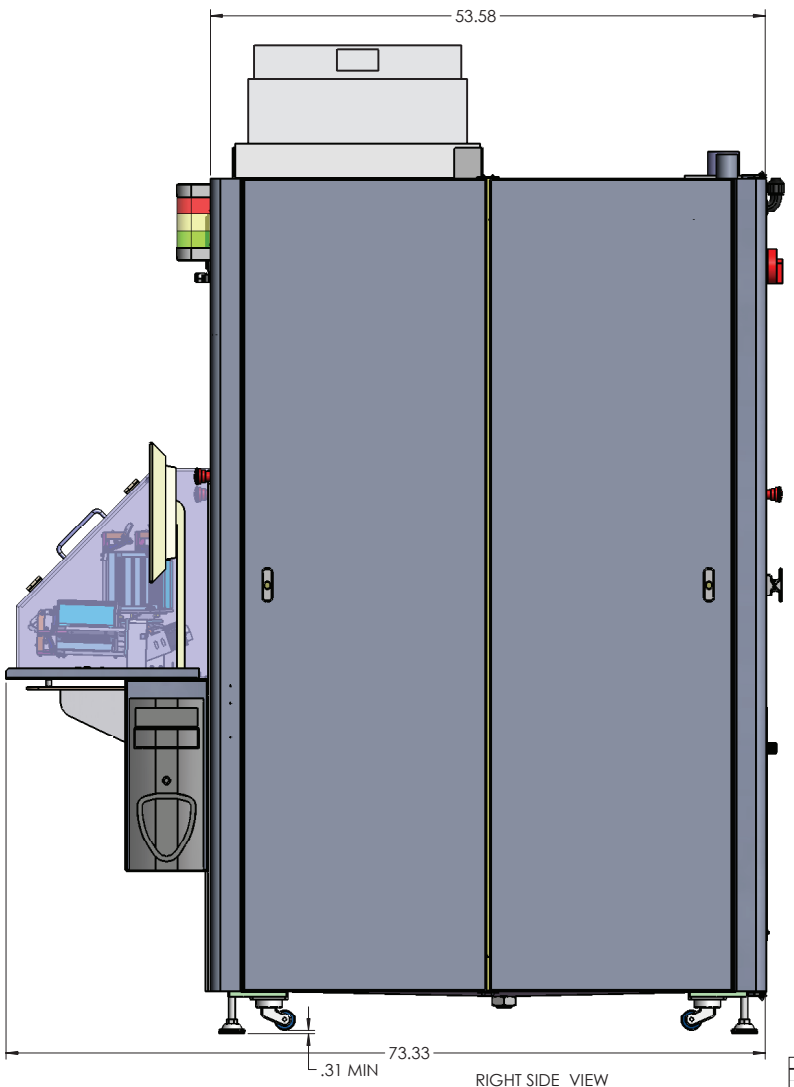
SIZE D | DWG. NO. M3305-6-2504 | REV -
SCALE: 1:8 | WEIGHT: | SHEET 1 OF 4



FRONT VIEW



RIGHT SIDE VIEW

CUSTOMER: SIMON FRASIER
*** FOR CUSTOMER APPROVAL ***
Name (Please Print)
Signature
Date

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
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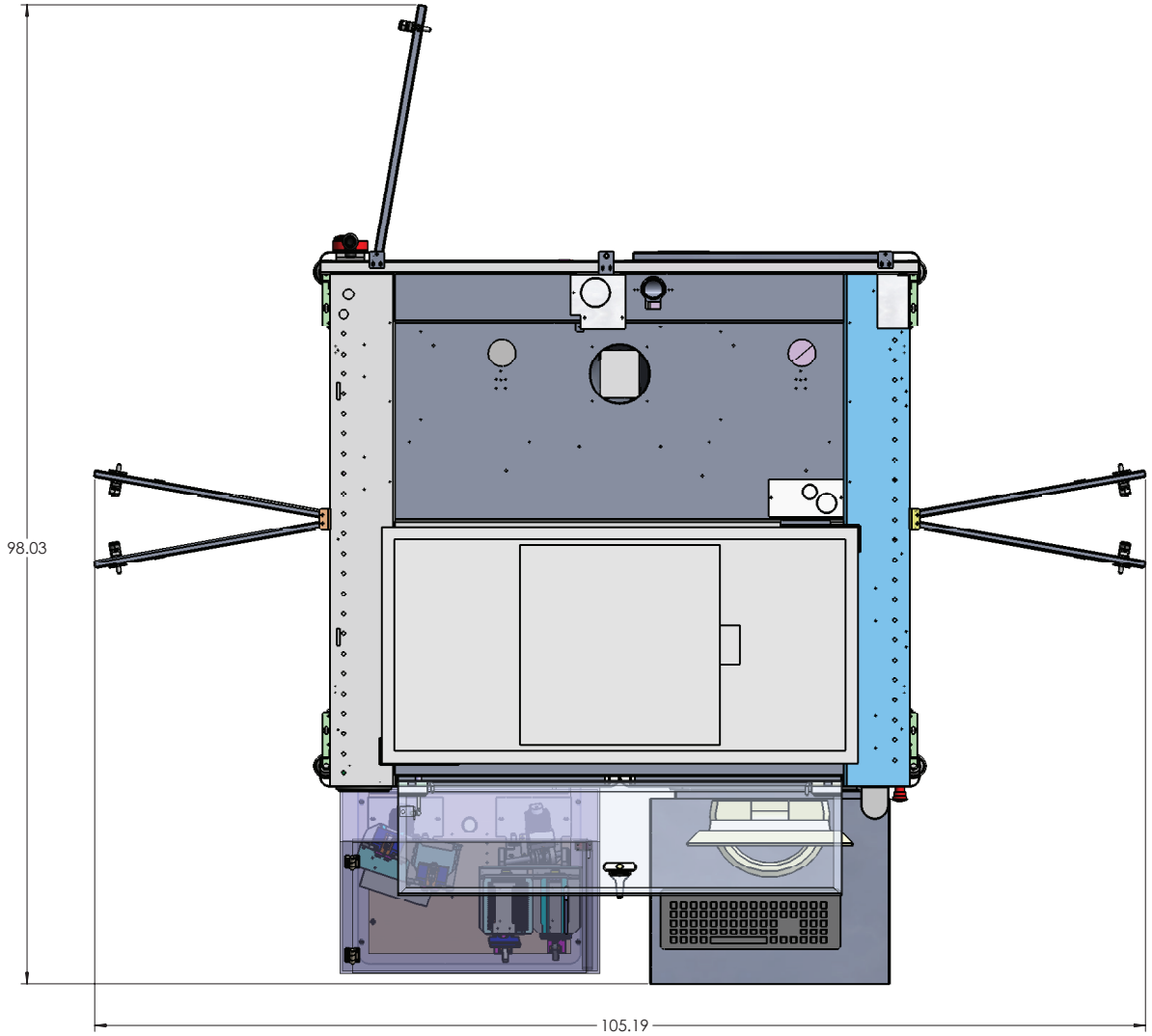
SOLID STATE EQUIPMENT

TITLE: OUTLINE & FACILITIES DRAWING M3305

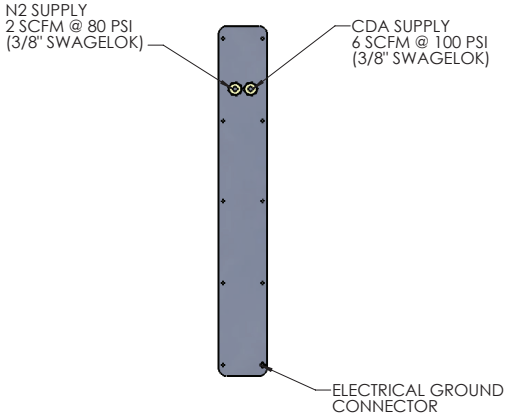
SIZE	DWG. NO.	REV
D	M3305-6-2504	-

SCALE: 1:6 | WEIGHT: | SHEET 2 OF 4

REV - D M3305-6-2504



TOP VIEW



UTILITY PANEL

CUSTOMER: SIMON FRASIER
*** FOR CUSTOMER APPROVAL ***
Name (Please Print)
Signature
Date

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
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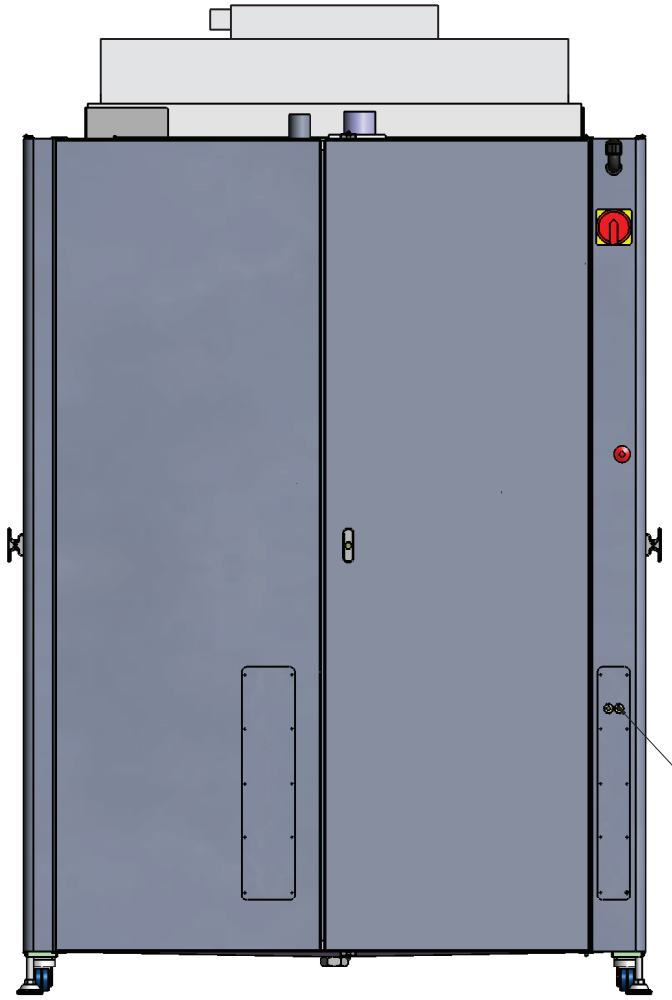
TITLE:
OUTLINE & FACILITIES DRAWING
M3305

SIZE	DWG. NO.	REV
D	M3305-6-2504	-

SCALE: 1:6 | WEIGHT: | SHEET 3 OF 4

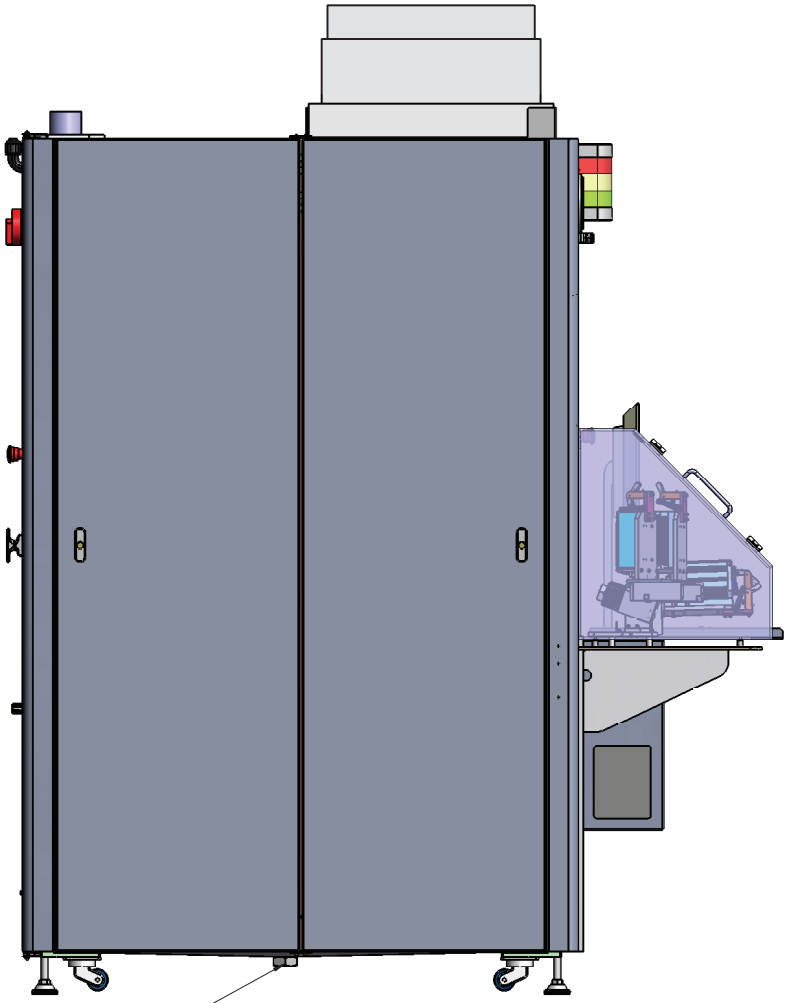
D | M3305-6-2504 | REV -



UTILITY PANEL

REAR VIEW

MAIN CABINET
SPILL DRAIN
3/4 NPT



LEFT SIDE VIEW

CUSTOMER: SIMON FRASIER
*** FOR CUSTOMER APPROVAL ***
Name (Please Print)
Signature
Date

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
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SOLID STATE EQUIPMENT

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SIZE D | DWG. NO. M3305-6-2504 | REV -

SCALE: 1:6 | WEIGHT: | SHEET 4 OF 4

REV
D M3305-6-2504